SCOTTISH URBAN HOUSEBUILDING, 1870-1914

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ABSTRACT

The initial stages of this study are confined to establishing a sound documentary, methodological and statistical basis for subsequent analysis of the forces determining housebuilding fluctuations in numerous Scottish burghs. Thus at the outset attention is concentrated on the strengths and weaknesses of the major data source, the Dean of Guild Court building permits. The strengths of this source prevailing, the various indices are constructed on a comparable basis both in terms of technique and base years to studies of English housebuilding fluctuations. The duration and severity of Scottish urban housebuilding fluctuations are investigated at a national, regional and individual burgh level and are related both to the entire period of 1870-1914 and its sub-periods. The amplitude and periodicity of Scottish housebuilding cycles are also considered in relation to those in England and Wales.

One of the important themes is the inter-relationship of housebuilding with other types of building work. Thus some attention is devoted to the trends of industrial and commercial construction, public building and jobbing work such as small alterations and additions. The patterns of fluctuations in these branches of building and their relative magnitude compared to housebuilding work is another topic of interest.

The relationship of Scottish housebuilding fluctuations to those in other areas of Scottish, British and American investment is investigated in chapter four in an effort to place the Scottish study within the context of the debate conducted on the theme of alternating flows of home anf foreign investment in the period 1870 to 1914. The hypothesis of a systematic relationship in the ebb and flow of domestic and overseas investment with an important role ascribed to migration patterns is demonstrably questionable, both upon criteria developed in earlier critiques and also, in a Scottish dimension, upon statistical series at a national and local level. Emphasis is in fact at various stages placed upon the avoidance of mechnistic and monocausal explanations of housebuilding fluctuations at the cyclically variable intensity of individual and composite factors is stressed. This theme is often apparent but is exemplified in the discussion of specifically Scottish legal and institutional arrangements which induced a time path different to that of England, and contributed not only a formative influence on housebuilding fluctuations previously overlooked by other researchers in this field but also, as a by-product, provided some information relating to

rural housebuilding and demolition in the section dealing with the implications of the Inhabited House Duty in Scotland.

Two chapters, one concentrating on demand factors and the other on supply influences, form the explanatory basis of housebuilding fluctuations in the various burghs. Disaggregated into several population influences and in conjunction with the local employment situation the demand explanations in most Scottish burghs occupy a position of lesser importance when the variety of supply factors are related to housebuilding fluctuations. In terms of timing and magnitude the amalgam of building costs, uncertainty and expectations, the size of firms and the structure of the building industry, existing stocks and the availability of finance exert greater influence on the course of local housebuilding in at least two-thirds of the burgh.

It is in the light of such findings that the concluding chapter attempts to relate the mechanics of housebuilding fluctuations to the wider forum of alternating factor flows, both human and capital, as represented in the idea of an 'Atlantic Economy'. Furthermore the contribution of Scottish housebuilding to income, employment and investment in the Scottish economy during the period 1870 to 1914 is also demonstrated to be a considerable one, amplified by related forms of building work.

CHAPTER I

The Basis and Biases of Housebuilding Fluctuations

Frequently assumptions in economic history are subsequently incorporated in print as though they were empirically derived laws, and popular interpretations go unquestioned until researchers eventually become aware of predecessors' biassed preconceptions. With incisive analysis, volumes of statistics and much ink a more balanced view of railways and American growth, the 'Great Depression, 1873-96' and inter-war growth rates, to name only a few major debates, has emerged. Though hardly a reinterpretation on a scale approaching those above, illustrations from the study of Scottish housebuilding fluctuations do call into question some of the assumptions accepted as unimportant or convenient by previous writers. In an area of sophisticated theory and subtle interpretation, reliable statistics and knowledge of their limitations is essential to contribute to the issue at hand. If discussion revolves around the date of recovery or recession in the housebuilding cycle and is based on a marginal change in the index, then the degree of reliability of that index value is critical in determining the validity of the conclusion.

In earlier studies of housebuilding fluctuations the source material almost exclusively relied on has been that of the municipal building authority, and the Scottish case study draws heavily on this source too. However with peculiarities of a parochial kind in the form of a distinct Scots Law and separate statutes applicable to Scotland, an investigation of the exact nature of the building authority's jurisdiction on the northern side of the border is a necessary first step in an assessment of

the reliability of statistics derived from such documents. Building control in Scottish burghs before 1914 was, and in many cases still is exercised by the Dean of Guild Court, the decision being given by the Dean or 'doyen' of the guildry on an application to erect some form of structure. While the derivation of statistics from such a source might appear acceptable, in fact numerous complications arise which demand further scrutiny. Not the least of these is the fact that not all burghs exercised and systematically recorded their building authority. Did the powers of Dean of Guild Courts coincide with municipal boundaries, and what happened when a town extended its boundary? What proportion of plans approved failed to be implemented? How long was it before buildings were completed? Do the qualifications which emerge imply a restriction on the use of statistics obtained from this source? Adequate solutions to these hurdles are pre-requisites for the adoption of this data source and any satisfactory statistical series founded thereon.

II

Fluctuations in housebuilding activity are best indicated by monthly or annual figures of completed dwellings preferably in the form of selling prices or costs of building which could be revised to take account of price movements. Such information for Scottish burghs is not available. Even the statistically conscious Glaswegians failed to record the cost of properties actually completed. With no ex post data, estimated values of intended building provide a satisfactory second best solution. With the notable exception of Glasgow[1] few burghs possess adequate series of

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1 A.K. Cairncross, 'The Glasgow Building Industry, 1870-1914', Review of Economic Studies, II, 1934, and, Home and Foreign Investment, 1870-1913, (Cambridge, 1953), Ch. II, pp. 12-36. The statistics are also available from the City of Glasgow, Office of Public Works, 'Memorandum of Linings Granted by the Dean of Guild Court'.

this kind. Incomplete series are available, however, for Ayr (from 1905);[1] Clydebank (1903-9, 1912-15);[2] Coatbridge (1894-);[3] Dumfries (1894-1905);[4] Falkirk (1905-);[5] Govan (1898-1912);[6] Hamilton (1896 only);[7] Hawick (1907, 1909-15);[8] Paisley (1902-10, 1913-);[9] and Partick (1899-1912).[10] Any index based on these sources would be seriously deficient in its coverage of urban areas and would be almost wholly determined by Glasgow.[11]

Observed similarities of fluctuations in values of new building and in the number of permits in other studies,[12] suggest that permits are a satisfactory proxy for an investigation of Scottish building. The existence of this relationship in Glasgow[13] indicates that the American procedure is not inappropriate for Scotland, given the qualifications that the granting authority corresponds to the urban area, that completions are not widely divergent from permissions to build, and that though

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1 Ayr, Dean of Guild Court, Register of Plans and Sections, 1893-1928. Subsequent to the investigation of this class of burgh records, the National Register of Archives for Scotland have catalogued most municipal records, and these class-marks are given as N.R.A. followed by the reference, in the case of Ayr, 1/3/3.

2 Clydebank.

3 Coatbridge, D.G.C., Minute Books, 1886-1928, N.R.A. 1/4/1-5.

4 Dumfries, D.G.C., Minute Books, 1906-1945, N.R.A., 1/4/3.

5 Falkirk, Town Council Minutes, 1893-1904, N.R.A., 1/3/1-2, and D.G.C., Register of Petitions, 1904-21, N.R.A. 1/3/10-14.

6 Govan, D.G.C., Register, 1873-1912, Glasgow City Archives, H - Gov 37.

7 Hamilton, D.G.C., Register of Plans, 1884-1935, N.R.A., 2/8/1-2.

8 Hawick, D.G.C., Register of Plans, 1884-1925, N.R.A., 3/1/1-3.

9 Paisley, Town Council Minute Books, 1888-99, N.R.A., 1/20/1-2, Extract Decree Book, 1888-1901, N.R.A., 1/20/3, and Roll Book of Applicants, N.R.A. 1/20/4.

10 Partick, D.G.C., Register, 1873-1912, Glasgow City Archives, H - Par 39.

11 See Appendix I.

12 W. Isard, 'Transport Development and Building Cycles', Quarterly Journal of Economics, LVII, 1942-3, Chart III, p. 108, quoting from, H. Hoyt, One Hundred Years of Land Values in Chicago, pp. 382, 474-5, and A.K. Cairncross, 'The Glasgow Building Industry, 1870-1914', op. cit., p. 15.

13 City of Glasgow, Office of Public Works, op. cit., Sheet 1, 1872/3 - 1928/9.

failures to use permits may occur, they do not, as a percentage of total permits, vary wildly during the course of the cycle.

There are certain intrinsic deficiencies in using value figures.[1] Estimation of the actual cost of the building may be inaccurate; changes in building costs are not always easily discernible and correction for such changes is dubious; estimated costs of building work are occasionally distorted to take advantage of the schedule of fees.[2] Common to both a 'value index' and a 'number of applications index' is the drawback of project applications rushed through to obtain permission in view of forthcoming tighter building byelaws. Other common defects include the absence of certain classes of buildings in applications, such as railway[3] and Government buildings,[4] and the introduction of discontinuities into a building series caused by boundary extensions. The problem of the definition of a 'house' in Scotland, which altered in the 1881 Census[5] - a 'tenement' could be treated as one 'house' under the Censuses of 1851, 1861, and 1871 - and whether municipal officialdom treated applications to build a 'house' differently in their records of the seventies and eighties is uncertain, though the likelihood is that they consistently made the distinction contained in the 1881 Census.[6] A defect of the

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1 J.R. Riggleman, 'Building Cycles in the United States 1875-1932', Journal of the American Statistical Association, 28, 1933, p. 175.
2 See Appendix II for General Schedule of Fees in Dean of Guild Court.
3 A.K. Cairncross, Home and Foreign Investment, 1870-1913, (Cambridge, 1953), Ch. II, p. 19.
4 J.R. Riggleman, op. cit., p. 175.
5 Parliamentary Papers, Report on 1881 Census, p. X.
6 The distinction between a 'house' (one dwelling with a private entry) and a 'tenement' (a building containing up to twelve or sixteen flats with a communal staircase entrance, or court entrance) was made in several burghs, see Rutherglen, D.G.C., Register of Applications, 1872-1932, N.R.A. 3/1/1-2;
Partick, D.G.C., Register, Glasgow City Archives, 1873-1912, h - Par 39; and
Irvine, D.G.C., Index to Register, 1812-1930, N.R.A., 1/6/6, and Minute Books, 1875-1919, N.R.A., 1/6/8-9.

reliance on numbers of permits is that both tenements and houses are treated equally, that is, as one application each.

The construction of an index of housebuilding based on numbers of permits granted incorporates an expectations element; that is, builders responses to the state of anticipated supply and demand in about six months, which was thought to be an average time of the construction of a house.[1] It may also reflect the current state of the housing market, and more specifically, the current state of housebuilding. As to whether this latter element would outweigh the expectations element is a matter for further research, but that contemporaries thought that the building cycle was reflected in the volume of permissions to build is certain. According to the Edinburgh Burgh Engineer, 'The work sanctioned under warrant of the Dean of Guild Court is always of interest as indicating in a measure the condition of the building trades of the City, ...'.[2]

III

The granting of 'warrants', 'linings' or 'permits', as they were variously called, fell in most burghs to the Dean of Guild Court, an early version of the Planning Committee of Town Councils. Each Royal Burgh had possessed, in a variety of forms, a Dean of Guild Court for centuries,[3] and the authority of the Court in granting permission to

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1 B. Weber, 'A New Index of Residential Construction 1838-1950', Scottish Journal of Political Economy, 2, 1955, p. 109, and A.G. Kenwood, 'Residential Building in North Eastern England 1853-1913', Manchester School, 31, 1963, p. 116.

2 Annual Report of the Burgh Engineer of the City of Edinburgh, 1902, p. 27.

3 R. Miller, The Edinburgh Dean of Guild Court, (Edinburgh, 1896), p. 5. Forty-one of the sixty-six Royal Burghs possessed a Merchant Guild in 1284, acting through their 'Statuta Gilde' or 'Laws of the Guild', in a way similar to a modern Dean of Guild Court. Edinburgh Dean of Guild Court Registers and Minute Books date back to at least 1403, according to Miller.

build was usually confined to the area of the Ancient Royalty.[1] Whether through urban growth, sanitary awareness of the onward march of municipal control similar powers were bestowed on such burghs previously without a Dean of Guild Court as wished to adopt the General Police (Scotland) Act, 1862'.[2] The lack of obligation in 1862 continued when building byelaws were not included in the Public Health (Scotland) Act, 1867,[3] as was lamented by the Chairman of the Board of Supervision, W.S. Walker, in his evidence to the Royal Commission.[4] When asked if clauses on building bylaws were incorporated in the Public Health (Scotland) Act, 1867 Walker's answer was an emphatic 'No', viewing the omission as 'a considerable defect' in the legislation. Walker, continuing his evidence, remarked that, 'In the towns they have a court which is called the Dean of Guild Court, and I think it is only in some of them that they believe they have the power to forbid the erection of a building where the arrangements are insanitary.'[5]

With the exception of those burghs which adopted the 1862 Act, or specific Municipal Acts extending their authority, for example, Glasgow[6] and Leith,[7] details of permits granted for building are limited to the Royal Burghs, until 1892, when a further Burgh Police

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1 J. Gowans, Evidence to the Royal Commission on Housing of the Working Classes, 1884-85, pp. 1884-85, XXXI, C. 4409, Vol. V, q. 18842. (Subsequently referred to as the Dilke Commission, after its Chairman, Sir Charles Dilke).
2 General Police and Improvement (Scotland) Act, 1862, PP., 1866, (171), III. 91.
3 Public Health (Scotland) Act, 1867, P.). 1867, (89), V. 61.
4 W.S. Walker, Evidence to Dilke Commission, op. cit., q. 18328.
5 Ibid.
6 Glasgow Police Act, 1866, parts 273-343.
7 General Police and Improvement (Scotland) Act, 1862, relating to Leith. P.P. 1863, (184) III. 487.

(Scotland) Act,[1] obliged adoption of these powers. Only from 1893, when the Act became operational, did all burghs record permit applications officialdon being displayed by the issuing of a standardised ledger for the purpose, and it is from these registers that the present index is compiled, with considerable reference to similar earlier data in those Royal or Municipal burghs possessing jurisdiction over building byelaws through the Dean of Guild Court or a Plans Committee of the Town Council.[2]

The degree of control exercised by the Dean of Guild Court within its defined jurisdiction was absolute, which renders an index based on its minute books and registers the more acceptable. The rules of the Port Glasgow court clearly reflect the decisiveness of its powers at the outset of its Rules and Regulations, 'No building of any kind shall be allowed to be erected or altered within the limits of the burgh, unless plans thereof have previously been submitted to, and approved of by, the Magistrates, as the Dean of Guild authority within the burgh'.[3] Later in the corresponding regulations for the

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1 Burgh Police (Scotland) Act, 1892, (188), III.

2 Plans Committees assumed the responsibility, for example, in Aberdeen and Dundee. In Dundee, a Dean of Guild Court existed alongside a Plans Committee, though the jurisdiction of the Court was strictly confined to the small riverside area of the Ancient Royalty. This land was almost completely built on by 1870, and control by the Court, therefore, applied mainly to repairs, alterations and demolition, whilst new building, by necessity, was restricted to the Plans Committee area. The index assumes no building, or constant building, in the Ancient Royalty, and so fluctuations are based on Permits granted by the Plans Committee.
I am indebted to Mr. Worseley of the Dundee Town Planning Department and Mr. Walker in the corresponding Aberdeen department for their explanations of the respective burgh situations.

3 Port Glasgow, D.G.C., Minute Book, Rules of Establishment of a Dean of Guild Court, signed by Town Clerk Dan. R. Macleland, 2nd October, 1877, N.R.A., 1/3/1.

burgh of Hawick,

> 'Every person who proposes to erect any House or Building, or to alter the structure of ..... shall lodge with the Clerk of the Court a Petition for Warrant so to do ...'[1]

That some efforts were taken to enforce its power can be seen from the letter circulated by the Town Clerk of Airdrie,

> 'I am instructed by the Dean of Guild Court to send to the Architects of Airdrie the enclosed Print of the Bye-Laws and Regulations of that Court, and to intimate to them that in future these ..... will be strictly enforced under pain of the Petition being dismissed if not complied with.'[2]

That Scottish municipal authorities took their responsibilities seriously under the Burgh Police (Scotland) Act, 1892, can be seen by the strict compliance of the Coatbridge Burgh Surveyor with a different section, number 191, of the act which provided building authorities in Scottish burghs. The surveyor, Christopher Young, informed the house factor, Mr. James Thomson, acting for the owner, Mrs. Esmey McDonnill of Ballynagarde, County Antrim, that the owner's tenement at 36a to 36 Whifflet Street, was in a dangerous state of repair and that if it was not repaired or demolished within three days then 'an Application will be made to the SHERIFF .... TO COMPEL THE CARRYING OUT OF THE WORK'.[3] Equally autocratic were the Dean of Guild Courts in other Scottish burghs. In the Kirkgate district of

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1 Burgh of Hawick, Dean of Guild Court, Rules and Regulations, (Hawick, 1936), p. 3, Rule 2.

2 Airdrie, D.G.C., Minute Book, letter of G.B. Motherwell, dated 10th February, 1902, N.R.A., 1/5/2-4.
Numerous strict letters applying the letter of municipal law exist in other burghs, as for example those in Falkirk, D.G.C., Minute Book for 19th April and 5th July 1900 indicating the illegitimacy of occupancy without the required Certificate and in the deviation from the warrant sanctioned by the Court.

3 Coatbridge, Town Council Minutes, letter of 30th October, 1902.

Burntisland non-observance of the accepted street alignment was to lead the clerk of the court to prepare indictments of the new buildings,[1] and in Kilmarnock,

> 'The Dean of Guild reported that the builder who had called in question the authority of the Court had ..... submitted his plans for approval so that the dispute was at an end.'[2]

The rejection by this Kilmarnock builder of Dean of Guild Court jurisdiction was a direct challenge of fundamental constitutional importance coming as it did at a time when the Kilmarnock Town Council were attempting to formalise the housebuilding procedures and the capitulation of their adversary was a test case the successful outcome of which no doubt the Council were delighted to hear.

It would seem, therefore, that over the intervening period between the formulation of rules and procedures in Port Glasgow in 1877, to the reprinting of the rules in almost identical wording by the Hawick Dean of Guild Court in 1936, few changes occurred in the effectiveness of the building authorities' jurisdiction, and the uniformity between burghs not just of their powers but also of their schedules of fees indicates the reliability of the administrative basis of the index of Scottish housebuilding.

The composition of the Dean of Guild Court could vary considerably; in Edinburgh, before 1879, it had a membership of seven, six of whom were elected by the Town Council, and the Lord Dean of Guild elected by the members of the Guild,[3] i.e., those who possessed the three year

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1 The Scotsman, Dec. 8, 1880.
2 Ibid., Dec. 2, 1880.
3 R. Miller, Guide to the Procedure of the Dean of Guild Court of Edinburgh, with a Short History of the Guildry, (Edinburgh, 1891), pp. 19-23.

residence qualification, were ratepayers, and who had paid the guild entrance fee of £7; after 1880, there were ten members of the Court which was entirely elected by the Town Council and Magistrates, although there were constraints, requiring five members to be councillors, and five to be local electors but not councillors. Three of the latter group were to have business experience in areas related to the Dean of Guild Court work, such as in architecture, surveying, or building.[1] The election of the Lord Dean was, as before 1879, by the guildry, although the qualification for membership was reduced to a guinea.[2]

The procedure of the Courts, which were held at fortnightly intervals, in consideration of petitions ensures that the index does not incorporate the discontinuities which might have arisen from less frequent or irregular meetings, and because of the duplication of the recording of applications[3] by the Master of Works' department within the Town Clerk's department and by the Burgh Engineer or Surveyor,[4] it is possible to use their records as interchangeable where inefficient recording or missing entries in registers now make complete series based on one source difficult. The compilation of burgh statistics upon which the index is based derives from the Town Clerks' source and resort to the alternative Surveyors' or Engineers' source was made only if there was an overlap of dates with a longer span of years in the Engineers' sources in an effort tc push the coverage of the statistics to an earlier date, or if an occasional

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1 Ibid., p. 45.
2 Dilke Commission, Evidence of J. Gowans , q. 18847.
3 Dilke Commission, op. cit., q. 18847.
4 A similar situation seems to have existed in England and Wales. For a brief account of the historical development of building control in English and Welsh boroughs, see J.H. Richards and J.P. Lewis, 'Housebuilding in the South Wales Coalfield 1851-1913', The Manchester School, 24, (1956), pp. 289-91.

void existed in the Town Clerks' records, or to provide a check on the Town Clerks' data. The exercise of double-checking provided a close correspondence in the two series,[1] the small discrepancies probably being accounted for by both recorder and researcher errors, and this observation is also true of the double-checking of overlapping years in the Dean of Guild Court Minute Books and Registers.[2]

The regularity of meetings and the regulations of the building authority provide an accurate, consistent and continuous basis for an index of Scottish housebuilding.

The conduct of business is, thus, an important aspect in establishing the credibility of the Dean of Guild Court as the authority for the index. The procedure of the Court is in itself of interest.[3]

Plans for new buildings or alterations had to be submitted a week before a Court sitting, to allow for a full consideration of the proposals contained in the application. This applied only to work

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1 Paisley, D.G.C., Roll Book of Applications, 1904-45 in the Town Clerks Department, N.R.A., 1/20/4, for 1905 shows 85 Petitions, and in the same year 83 are recorded in the Surveyors Department, D.G.C., Register of Applications, 1901-23, N.R.A., 3/1/2.

2 See for example the close correspondence of the common years 1880-89 of Kirkcaldy, D.G.C., Minute Book, 1878-89, N.R.A., 1/11/2 and the Kirkcaldy Register of Petitions and Plans 1878 - N.R.A., 1/11/3; or Ayr D.G.C., Minute Book, 1882-1921, N.R.A., 1/3/1, and the burgh's Register of Plans and Sections, 1892-1928, N.R.A., 1/3/3, for the common years 1890-99.

3 The uniformity of burghs' procedures, which is to be expected given the common legal authority of the Burgh Police (Scotland) Act, 1892, or the municipal acts which were modelled on previous burgh's acts, is evident from the literature. See R. Miller, Guide to the Procedure of the Dean of Guild Court of Edinburgh (Edinburgh, 1891), or, The Edinburgh Dean of Guild Court - A Manual of History and Procedure, (Edinburgh, 1896); Burgh of Hawick Dean of Guild Court, Rules and Regulations, (Hawick, 1936); Dumfries Dean of Guild Court, Rules and Regulations, (Dumfries, 1906); Dilke Commission, Evidence of Gowans, q. 18842-61, Turnbull, q. 20077-83, and Walker, q. 18328.

estimated to cost at least £10.[1] After the receipt and registration of plans, any ratepayer or owner could inspect the details of the application on payment of a shilling, a charge still in force. This facility was obviously seen as important by contemporaries in familiarising residents with sanitary and other building requirements, as explained Lord Dean of Guild Gowans, 'It is found to be very valuable because they can always come to court and see precisely how they stand as to drainage and other matters .....'[2]

The 'public interest' and adjacent proprietors' interests were protected by giving a copy of the petition to the town council on the one hand, and to 'conterminous proprietors'[3] on the other. Both of these affected groups could make appearances in the Court, which was frequently done, in opposition to certain of the proposals. In fact this was an effective means of public health control,[4] as the Burgh Engineer, who was informed of the application by the Clerk of the County, reported on the degree to which the application accorded with the sanitary, ventilation and other requirements. And these requirements were strict and numerous;[5] every room had to have at least one window (with the area of glass at least one tenth of the floor area), with the top of the window at least 7' 6" above the floor;[6] bed recesses were to open for three-quarters of their length.[7]

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1 For work of less than £10 estimated cost a 'Minor Warrant' was necessary. The plans were to be lodged with the Burgh Surveyor who registered the application, but could refer the matter to the Court if the public interest was affected. It is quite conceivable, although further research would be necessary to show this, that this small end of building work acted as a countercyclical force, with builders resuming jobbing work when the housebuilding and other building activity receded. There is some corroborative evidence in the main index 'additions and alterations' series and its countercyclical movements (See also Richardson).

2 Dilke Commission, Evidence of Gowans, q. 18850.

3 Burgh of Hawick, Dean of Guild Court, op. cit., Rule 2.

4 Dilke Commission. Evidence of Walker, q. 18328.

5 See Appendix III for details of Plans and Sections required in submitting an application to the Court.

6 Burgh Police (Scotland) Act, 1892, Section 173.

7 Burgh Police (Scotland) Act, 1903, Section 65.

Detailed specifications on draining, timber strength, thickness of walls, soil pipes, lighting and ventilation and many other aspects, non-compliance with any one of which could result in the withholding of permission, made the Dean of Guild Court a powerful municipal agency. Even if the public considerations were judged to be satisfied, private opposition, perhaps on grounds of loss of amenity or excessive noise might result in the application being refused.

Once permission was granted the application came under the jurisdiction of the Master of Works, or the Burgh Surveyor, depending on the burgh.[1] Deviations from the approved plan were reported, and the municipal officials could request another, amended application or a cessation of work; work in progress was inspected; and final approval of the completed project, as stipulated in the Court warrant was given.

IV

Normally these functions carried out by the Master of Works could be expected to provide information on the numbers of permits taken up and built as a proportion of total permissions to build. That such records of this role do not exist, except in the form of some datestamped plans, might be taken as evidence of a very high proportion of buildings being erected as passed, and no doubt such an assumption has validity. However the burgh records of Dundee and Falkirk shed some light on an area previously subject to varying interpretations.

Previous researchers' estimates of the percentage of applications granted but not executed seem to vary alarmingly. The work of Long[2]

1 Burgh of Hawick, Dean of Guild Court, op. cit., Rule 13.
2 C.D. Long, Building Cycles and the Theory of Investment (Princeton, 1940), p. 98.

suggests 2-3% of American permits were allowed to lapse, Cairncross[1] suggests 3-4%, and Weber[2] 'assumed that 10 per cent of the annual building plans failed to be executed',[3] a reduction factor also favoured by Saul.[4] To what degree permits were abandoned seems a matter of confusion for Lewis, as, in conjunction with Richards in their South Wales study,[5] he suggests a 10% level of non-construction, and in a more aggregative study,[6] Lewis thinks a 15% level more appropriate. In this later study, Lewis advances the claim for a 15% failure rate on the grounds that it allows him 'to make subsequent combination of these data with those of other areas possible'[7], although no evidence of this percentage around Manchester or indeed in any other part of the country is produced. Curiously, Lewis in the later aggregative study declares in the very section dealing with South Wales that 'on the basis of what information exists',[8] which is presumably his own paper in conjunction with Richards as reference is made to no dher, 'that 85 per cent of the houses planned were actually built'[9] and yet a casual reading of the joint paper would have revealed the contradiction, the contention there being 'that about a tenth of houses planned were never built'.[10]

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1 A.K. Cairncross, Home and Foreign Investment, Cambridge (1953), Ch. II, p. 19. He does not, however, refer to his authority for such conclusion, except to say that Dean of Guild Court officials think it accurate.
2 B. Weber, 'A New Index of Residential Construction, 1838-1950'. Scottish Journal of Political Economy (2), 1955, p. 109.
3 Ibid.
4 S.B. Saul, 'Housebuilding in England 1890-1914', Economic History Review, 15, 1962-63, p. 120.
5 J.H. Richards and J.P. Lewis, 'Housebuilding in the South Wales Coalfield, 1851-1913', The Manchester School, 24, 1956, p. 291.
6 J.P. Lewis, 'Indices of Housebuilding in the Manchester Conurbation, South Wales, and Great Britain, 1851-1913', Scottish Journal of Political Economy, 8, 1961, p. 148.
7 Ibid.
8 Ibid.
9 Ibid.
10 J.H. Richards and J.P. Lewis, op. cit., p. 291.

As no single printing error would reconcile this ambiguity, and an explanation in terms of revised data is ruled out by Lewis' acknowledgement of the joint paper as the source of his material on South Wales, and as 'about a tenth' cannot in all conscience be given a fifty per cent tolerance, then either an error is committed or an entirely different explanation is required.

Is the reconciliation of such a contradiction to be seen in the following terms? Abandoned housebuilding plans in South Wales represent 10% of the total approvals, and if the Manchester conurbation and other major centres suffer an 18-19% rate of abandonment, then South Wales may drag the overall British figure down to 15%. If a reconciliation of Lewis' contradictions is possible at all, and if it is in the form suggested above, there is no underpinning evidence for any of his assumptions. The conclusion which invariably confronts the reader is of hazardous guesses by Lewis, and therefore it would seem most dubious to transform permit figures into houses built. A convenience has probably been made to produce a single, national deflator for the permits series - a rather peculiar inconsistency in view of Lewis' objective of discovering regional building cycles. As the existence of regional cycles seems well established,[1] why should there not exist discrepancies in regional rates of lapsed permits?

The fact that the Kenwood study[2] produces a 15% rate is, of course, irrelevant to the Lewis procedures. In fact Kenwood's observation, 'that about 85 per cent of the houses approved were eventually built',[3] is based on West Hartlepool,[4] and though arguing

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1 J.P. Lewis, Building Cycles and Britain's Growth, (London, 1965), Chs. 4 and 5.
2 A.G. Kenwood, 'Residential Building Activity in North Eastern England, 1853-1913', The Manchester School, (31), 196, pp. 115-128.
3 Ibid., p. 116.
4 Ibid., p. 116, n.

for a regional treatment of unexecuted permits, there is little to suggest this borough is representative of north-eastern England.

Such margins, ranging from 2%[1] to 19%[6], based on little more than casual observation and assumptions, cast doubts on previous writers attempts to translate numbers of permits into numbers of houses built. The effect of selecting a high rather than a low percentage is not to alter the timing or degree of fluctuations - deflating the permits by 2% or 19% will provide the same index in both series - but it does alter the impression of the level at which the industry is operating.

Table 1

Effect of Using Different Deflators on Permits

	No. of Permits	2% deflator	19% deflator
Year 1	100	98	81
Year 2	130	127.4	105.3

Surely it is important to be able to say at what level the industry is operating? In Table 1 the amplitude of fluctuation is the same throughout, both series in Year 2 being 130, using respective Year 1 figures as 100, but the importance in selecting appropriate abandonment rates is that one series shows 127 houses built, the other 105 over the two years.

Thus it would seem that a uniform percentage figure for plans passed but abandoned is most helpful if that percentage is very low, as the error is minimised. However higher levels are by no means inappropriate for index purposes, but calculations of houses built

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1 C.D. Long, op. cit., p. 98.
2 A.G. Kenwood, op. cit., p. 116, n. See also hypothetical extension of figures of J.P. Lewis above.

based on these may be highly inaccurate. Varying percentages should probably be used in the component parts of the cycle to take account of inter-regional[1] and intra-cyclical variations, this sophistication being more necessary in situations of high rates of abandonment, such as the Weber-Lewis suggestions of 10-15%.

Intra-cyclical adjustments would be necessary to obtain more accurate estimates of houses built, because, as Kenwood demonstrates for West Hartlepool,[2] lapsed permits in periods of slack building activity ran at a higher than average figure, and conversely in booms. In any town or region it might, thus, be necessary to use several deflators to take account of cyclical movements.

Arrival at the various percentages by previous writers might be lesser transgressions were the methods more fully documented, but if the information is as impressionistically derived as it seems, it may prove that some reinterpretation of the Weber[3] and Lewis[4] statistics on houses built might be necessary.

The information available for Dundee is based upon the full notes of buildings 'not commenced', 'not proceeded with', 'approved to plan', or simply 'abandoned', compiled by the diligent Dundee Burgh Surveyor, David Kidd,[5] in the middle 1880s, and by his successors Messrs. Allan, Angus and Ross in the 1890s.[6] The datestamping of plans and sections by the Edinburgh authorities provides a daunting

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1 Intra-cyclical adjustments would also be desirable in estimating actual houses built, though this might be of more marginal help than the two refinements mentioned above.
2 A.G. Kenwood, op. cit., p. 116, n.
3 B. Weber, op. cit., p. 131, column 2.
4 J.P. Lewis, op. cit., pp. 151-2.
5 Dundee, Register of Plans Approved, Vols. 3-5, May 1879 - Aug. 1893.
6 Ibid., Vol. 6, Sept. 1893-Apr. 1901.

Table 2

Dean of Guild Court Plans Approved and Not Executed

	Dundee			Falkirk		
	Approved (a)	Not Executed (b)	% (p)	Approved (a)	Note Executed (b)	% (p)
1879	183	16	8.7			
1882	198	7	3.5			
83	210	7	3.3			
84	218	7	3.2			
85	124	10	8.0			
1894	184	8	4.3			
95	217	9	4.1			
96	240	3	1.2			
97	243	2	0.8			
98	257	4	1.5			
99	233	2	0.8			
1900						
1				132	10	7.5
2				94	4	4.4
3				98	2	2.0
4	298	6	2.0	74	3	4.2
5				68	0	0.0
6	247	9	3.6	59	0	0.0
7	217	6	2.7	34	2	5.8
8	199	4	2.0	34	5	14.7
9	168	3	1.7	36	5	13.8
1910	166	2	1.2	32	4	12.5
11	138	3	2.1	31	2	6.4
12	158	3	1.8	22	2	10.0
13	145	3	2.0	21	0	0.0
14	118	7	5.9	6	0	0.0

Source: Dundee, Register of Plans Approved, Vols., 1-9, 1870-1919.
Falkirk, Master of Works Registers 1901-15.

research task, but further study might reveal confirmation of the levels of magnitude observed in the Dundee Surveyors' notes and in the Falkirk ledgers specifically kept for that purpose.

The evidence on these burghs is illuminating. (Table 2). Regardless of the method of calculation,[1] not only is the Kenwood maximum figure of 19% of plans lapsing not encountered once, neither is the Kenwood-Lewis average, 15%, and on only three occasions, is Kenwood's minimum figure, 12% exceeded. The fact that the bulk of the observations, the inter-quartile range, fall between 1.45% and 5.53%, with a median of 3.0%, suggests corroboration for the Cairncross-Long 'guesstimates'.

Table 3

Percentages of Plans Approved but Allowed to Lapse
(Summary of Table 2)

Dundee		Falkirk	
Method (i)	Method (ii)	Method (i)	Method (ii)
2.9%	3.1%	5.2%	5.8%

In the only published source of information on lapses, that of Kenwood, it is by no means apparent which method of calculation was used, but the variation between the two methods of 0.2% and 0.6% for

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1 The mean number of plans abandoned could be calculated in two ways; either the mean of the sum of both approvals and lapses (i) or the mean of the annual percentages (ii).

Let approvals be a, abandoned plans b: n the number of years, and p and l be the two methods of calculation:

$$(i) \quad l_i = \frac{\sum_{i=1}^{n} b_i}{n} \times \frac{n}{\sum_{i=1}^{n} a_i} \times 100 = \frac{\sum b_i}{\sum a_i} \times 100$$

$$(ii) \quad P_i = \frac{\sum_{i=1}^{n} \frac{b_i}{a_i}}{n} \times 100$$

Dundee and Falkirk respectively, immediately introduces errors of at least 6% and 10% in the rates of warrants 'not proceeded with'[1] in these burghs.

Some evidence of intra-cyclical variations in the percentage of lapsed permits is apparent from Table 2. For example the 8.7% figure for 1879 coming as it does in a year of severe building contraction[2] indicates the gloomy interpretation of the housing market held by Dundee builders. By the early 1880s expectations were more accurate, the depression having evened out somewhat, but the rise in Dundee building in 1884 evidently misled builders, raising their hopes, and causing more abandoned plans in 1885 when the improved housebuilding conditions were realised to be only transient. The cyclical upswing of the 1890s, interrupted in Dundee during 1894-5, led few housebuilders to abandon the proposed and approved plans in the years surrounding the peak of activity, 1898. In the years following the Edwardian peak of 1905 in Dundee's housebuilding a slight upward movement transpires in the unexecuted plans of builders, but the more even contraction of the 1900s relative to the post-1876 period resulted in less disillusionment with the market as more realistic interpretations were held, as indicated by the proportionately low volume of abandoned housebuilding.

In the twentieth century data provided by the burgh of Falkirk some corroboration is provided for the cyclical character of lapsed permits to build for in years following the early-1900s boom the volume of plans approved but not pursued to the building stage rose quite considerably. Strangely the impending hostilities in Europe did

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1 A phrase frequently found in the Dundee Surveyors' reports, Dundee, Registers of Plans Approved.

2 Dundee, Register of Plans Approved, vols. 1-9. See also Table 4, Ch. 3 Other references to housebuilding activity are also derived from Dean of Guild sources, and are shown in Table 4.

not make builders disinclined to proceed, as in Dundee, though this would appear to be due to reduced numbers of plans and the greater certainty involved in those proposed at such a juncture. There is therefore some justification, given the different nature of Falkirk and Dundee, in attributing intra-cyclical variations in lapsed building to thw wider context of Scottish burghs as a whole. Argument after all has not centred so much on the existence and variability of lapses as to the rate, and in this sphere the Scottish evidence suggests levels well below those advanced elsewhere for English housebuilding.

Variations in the rate at which plans were not acted upon affected the level at which the building industry was operating. Thus, by introducing differing estimates of activity in a chosen base year the relative magnitude of cyclical fluctuations could be altered according to the assumed rate of lapses. It is perhaps worth stressing that in this study it is the absolute, unadjusted number of original permits for housebuilding which is under consideration and the attempted explanations of the oscillating levels of building activity are geared towards the forces which originally impelled builders to prepare plans.

The timing of the cycles might also be modified if the lag between passing plans and completion of building was imprecisely specified. Thus a six months lag would allow permits granted in April to be included in that year, whilst a nine months lag would push the building into the subsequent year.

As with plans actually built, there is no reason why the lag should be homogeneous throughout the country; indeed there is every reason to believe regional factors at work in this field too. Some variation in the number of months lag between permission to build and certificate of completion could be expected according to the phase of the housebuilding cycle. And so it is surprising to see a six months

lag emerging from previous studies as a uniform delay in this process.

Each of the studies by Weber,[1] Saul[2] and Kenwood,[3] 'assumed that it took six months to build a house',[4] although the first two mentioned derive from boroughs scattered throughout the country. The surveys of Lewis seem as confused on this subject. The contradiction again is specifically in connection with South Wales; the earlier work[5] suggests that 'on an average, houses took about nine months to pass from the planning to the completion stage',[6] and the later study[7] indicates 'a lag of six months has been introduced'. This information for South Wales was generalised to the other regions, as acknowledged in the estimates of building in the Manchester conurbation, 'The index for the whole area was computed in the same way as the South Wales index'.[8] Some reconciliation of this inconsistency is possible if by 'planning to the completion'[9] stage Lewis meant from architects drawing board rather than building authority to completion, but as the data was compiled from the latter this seems unlikely.

The assumptions of Cairncross[10] regarding the lag are derived from convenience and comparability of statistics rather than from observation. At first, from 1862-72, the six months lag is employed; from 1872, with greater statistical material available for comparison, he assumes ten months. This coincides with information from another Scottish city shown below in Table 4.

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1 B. Weber, op. cit., p. 109.
2 S.B. Saul, op. cit., p. 120.
3 A.G. Kenwood, op. cit., p. 116.
4 B. Weber, op. cit., p. 109.
5 J.H. Richards and J.P. Lewis, op. cit., p. 291.
6 Ibid.
7 J.P. Lewis, op. cit., p. 148.
8 Ibid., p. 149.
9 J.H. Richards and J.P. Lewis, op. cit., p. 291.
10 A.K. Cairncross, op. cit., p. 19.

While refinements to the indices of housebuilding would be a daunting task and some simplification in tackling the problem can be forgiven in that it would not substantially alter the results, the investigations on Long[1] in Richmond, Virginia, allow justifiable simplification within a theoretical framework. The conclusion was that the bulk of plans were completed within the calendar year in which the permit was granted, average completions for houses being no more than four months. The theory, presumably is that the onset of winter encouraged more efforts to finish projects, and so regardless of warrants issued in March or September completion would be before, say, December. How relevant these findings are to the Scottish climate and type of construction is open to question, but it is an interesting contribution, as is the suggestion of a structured lag, according to the size of project and the nature of it, i.e., whether it is residential or not.[2]

V

The index of Scottish housebuilding does not incorporate a lag. This is partly due to the findings of Long and partly to the confusion surrounding the length of the lag and the irrelevance of English and Welsh boroughs' lags to those of Scotland, a distinct region, but mainly because any investigation of the determinants of the cycle must be preoccupied with the investment influences in the year in which building was planned. The year of completion was less important as a source of information of the factors affecting the course and nature of the building cycle.

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1 C.D. Long, 'Long Cycles in the Building Industry', Quarterly Journal of Economics, LIII, 1939, p. 390n.
2 Ibid.

The sample of 79 warrants passed by the Edinburgh Dean of Guild Court and number of months lag before the Master of Works issued his 'Certificate of Habitation', was compiled from the Court registers and the plans submitted.[1]

The registers are in alphabetical order of street names, which introduces a degree of randomness in the sample, as under the entry 'c' a reasonable cross-section of types and classes of house will be represented.[2] Thus information was acquired on the poorer dwellings of Crosscauseway, the middling type of house in Comiston Road, and the more substantial houses of Cluny Avenue or Canaan Lane. Although the sample entailed a survey of warrants passed and completed in the 1880s which if the lag varied according to the phase of the cycle might render the decade of the eighties unrepresentative, in fact in the case of Edinburgh, this decade is far from being a depressed one, the index of housebuilding only once falling below 100, the average of the base years, 1900-09.[3]

Table 4

The Permit-to-Completion Lag in Housebuilding in Edinburgh

	Houses & Villas	Tenements and Tenements with shops	Total
Total Number of Months	365	445	810
No. of Observations in Sample	34	45	79
Average lag (in months)	10.74	9.89	10.25

Sources: Edinburgh, Dean of Guild Court Registers, 1880-89, and plans submitted to the Court initialled and dated by the Master of Works Department.

1 From 1929 only is there a Register of Occupancy Certificates. Prior to this the process was recorded by the datestamping of each plan following satisfactory inspection. It should be noted that the time required to actually finish the building work would be less than shown here, perhaps by as much as a month. Due to the nature of the control by the building authority, some time would elapse between permission to build and the start of the work and between notification of completion of building and inspection by the Master of Works department

2 See M.J. Cullen, 'Laurence Stone and the Manors', with a rejoinder by Stone, in Economic History Review, 24, February, 1971, pp. 114-6. for a discussion of this type of randomness.

3 Edinburgh, Dean of Guild Court Registers, also quoted in Table 4, Ch. 3.

It appears that the construction of a tenement took about a month less than a house, and that overall some 9-10 months, taking account of the bureaucratic delays mentioned above, was the average period builders had their capital committed on each warrant.

As to why building a house rather than a tenement should take longer, the table below indicates that an explanation

Table 5

The Average Cost of Houses and Tenements

	Houses			Tenements		
	Total cost (£)	No. of Houses	Average Cost (£)	Total Cost (£)	No. of Houses	Average Cost (£)
Clydebank	124390	294	423	383400	238	1611
Falkirk	43505	48*	906	61188	38*	1610
Govan	36750	116	317	424500	375	1132
Partick	314470	301	1045	767900	359	2139

* Number of warrants for houses and tenements respectively.

Sources: Clydebank Dean of Guild Court Registers 1903-9 and 1912-14.
Falkirk Dean of Guild Court Register of Petitions 1905-14 1/3/10 - 4.
Govan Dean of Guild Court, H - Gov. 37, 1898-1912.
Partick Dean of Guild Court H - Par. 39, 1899-1912.

in terms of the larger average cost of houses relative to tenements is invalid, as in each case tenements represented a substantially higher employment of capital. If the size of the project was unimportant perhaps the complexity was more relevant. More stereotyped both internally and on the exterior, the three- and four-storeyed tenements were usually sited in more central districts, where drainage and site preparation were easier and longer established by definition, and where new streets, sewerage, water supplies and other facilities could be provided as a convenient extension of the existing supplies. No doubt equally important in prolonging the period of house construction

was the individuality relative to the blocks of tenement. Journey to work on the outskirts involved more time, individual quirks of construction and rusty techniques to overcome them, and summonsing the next stage of building workers, for example, plumbers once bricklayers had finished, were disadvantages which delayed the completion of a house relative to the more easily, 'mass-produced' tenements. Perhaps too the longer lag in housebuilding was caused by greater attention to workmanship in finishing in these private houses, whereas the finish in rented accommodation was neglected.

While there are problems of explanation between these two types of housebuilding, difficulties also exist in accounting for certain aspects within the two classifications.

It would seem not unreasonable to expect that a warrant for fewer houses would see less time elapse than a warrant for a larger number. But no such pattern clearly emerges; one house in Gilsland Road[1] was completed in thirteen months, while five houses in Kilmaurs Terrace,[2] were passed as habitable in October 1886, only six months after the permit was granted in April 1886. This might be explained if the one house was of considerable size whilst the other warrant was for several smaller houses. But no such explanation is available for the warrant for two villas in St. Alban's Road,[3] passed in December 1880, and completed some fifteen months later in April 1882, while two villas of identical construction in the same street, St. Alban's Road,[4] required only ten months, being passed in the Dean of Guild Court in July 1882

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1 Edinburgh Dean of Guild Court, Warrant 22nd July 1886 and Master of Works Certificate, 24th August, 1887.
2 Ibid., Warrant, 8th April 1886; certificate, 24th August 1887.
3 Ibid., Warrant, 30th December 1880; certificate, 6th April 1882.
4 Ibid., Warrant, 13th July, 1882; certificate 15th May, 1883.

and deemed habitable by the Master of Works in May 1883. Greater homogeneity of product could reasonably be expected in the 4-storey tenement, yet widely differing completion times emerge. Thus separate warrants for a single tenement, both in Bryson Road, passed in May and July, 1880, took respectively six and nine months to build.[1] Similarly, two distinct warrants for blocks for two tenements on either side of Montgomery Street, granted permission to proceed in February and March, 1886, were finished respectively twelve and nine months later.[2]

Given the identity of the building work on these permits, and the simultaneous construction which rules out the possibility of shortages in the supply of factors of production some other explanation is required. The most likely is in terms of the nature of the industry; the concurrent existence of small and large units of production meant that on identical projects different intensities of factor inputs altered the date of completion. However the faster building of larger numbers of houses could be attributed to the concentration of resources by small firms, while winning contracts for several items of construction led to spreading assets and labour amongst sites on the part of larger operators, thus delaying the completion dates of individual houses. Such a hypothesis would require further testing, but there is some evidence for it in the case of the five houses built in Kilmaurs Road in the summer and autumn to 1886, by the firms of A. and R. Berry,[3] a firm of masons who had no other building on hand either before or after this work.[4] The long-delayed single house in Gilsland Road,[5]

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1 Ibid., warrants, 13th May, 1880 and 29th July 1880; certificates 27th November 1880, and 21st May 1881.
2 Ibid., warrants, 25th February, 1886, and 18th March 1886; certificates, 3rd March 1887 and 8th December, 1886.
3 Ibid., warrant, 8th April 1886; certificate 6th October, 1886.
4 Edinburgh Dean of Guild Court Registers 1880-95.
5 Edinburgh Dean of Guild Court Warrant, 22nd July 1886 and Master of Works Certificate, 24th August 1887.

which took twice as long to build was one of ten warrants obtained by John Oliver, another mason by training for three houses and villas and eighteen tenements between 1886 and 1891.[1]

Generalisations regarding the time-lag between permission to build and completion seem hazardous therefore. Though necessary for authors wishing to assess the fluctuations in houses actually built where some average lag or several lags need to be incorporated in the data, this study of Scottish housebuilding fluctuations and what caused them owes more to influences determining the application for a warrant than to influences affecting completion dates. If there is some justification therefore in leaving raw data unadjusted by imprecise and uniform estimates of lags and lapses, boundary alterations extending the square mileage of the municipality may also present complications for the Dean of Guild Courts' control of building.

VI

The progressive extension of burgh boundaries presented to previous researchers[2] considerable problems which they chose to neglect.[3] Dismissal of this problem was either on the grounds of cumulative complications[4] or that, 'in most cases the volume of building on the added area must have been small in relation to building in the town as a whole'.[5] While there is some validity in the latter explanation and while successive boundary changes, for example, in Dundee in 1876, 1892 and 1907[6] and in Glasgow in 1872, 1878, 1891, 1896, 1899, 1905 and

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1 Edinburgh Dean of Guild Court Registers, 1880-95.
2 B. Weber, op. cit., p. 108, and also J.H. Richards and J.P. Lewis, op. cit., p. 294.
3 B. Weber, op. cit., p. 108.
4 J.H. Richards and J.P. Lewis, op. cit., p. 294.
5 B. Weber, op. cit., p. 108.
6 Census of Scotland 1911, 1, Cd. 6097-II of 1911, Vol. 1, Part 1, City of Dundee, p. 92n.

1909,[1] might lend a degree of attractiveness to the convenience of the Richards-Lewis justification, there is another, possibly more relevant reason for neglecting boundary changes in many burghs. This is that the extension of the municipal area was often into completely unbuilt areas. Such an explanation would be more appropriate to smaller burghs, such as the Perth extension of 1908,[2] or that of Denny and Dunipace in 1909,[3] rather than to the closely packed conurbations of burghs around Glasgow. The encroachment of virgin countryside, noted above, is not without parallels in larger burghs. Edinburgh increased her municipal boundary in 1882[4] to include Roseburn. That new buildings quickly followed and that the Dean of Guild Court jurisdiction was correspondingly enlarged with municipal expansion is seen from the warrants in August 1883[5] for a tenement in Roseburn Street, and a tenement of sixteen dwellings and a shop on the corner of Roseburn Street and Roseburn Place,[6] and in July 1884, for two tenements each of sixteen dwelling and a shop in Roseburn Terrace.[7] The significant point is that although the area of Roseburn and Coltbridge did include a few scattered buildings,[8] it was not a hive of building work which with inclusion in the municipal acreage would give a sharp jump in building activity. Similarly with the

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1 Census of Scotland 1911. Cd.6097-I of 1911. Vol. 1, Part 1, City of Glasgow, p. 54n.
2 Census of Scotland 1911. Cd. 6097-XXVIII of 1911. Vol. 1, Part 2, p. 1762n.
3 Census of Scotland 1911. Cd. 6097-XXXIV of 1911, Vol. 1, Part 2, p. 2148n.
4 Edinburgh, Dean of Guild Court Record Room. Map of 1920 compiled by the City Engineer, A. Horsburgh Campbell of 'The Existing Area of the City, showing also the Ancient Royalty and the Areas of the Successive Additions'.
5 Edinburgh, Dean of Guild Court, Warrants, August 1883.
6 Ibid.
7 Ibid., July 1884.
8 Edinburgh Post Office Directories, 1881, 1882 and 1883.

boundary extension of 1896,[1] which incorporated parts of what now is Murrayfield and Blackhall. These suburban areas also were developed subsequently.[2]

The exclusion of refinements accounting for boundary changes in the index is thus done for a positive reason, perhaps more appropriate in the case of the smaller average size of burghs in the Scottish index compared to the size of boroughs included in the Welsh index,[3] or the 'corrected' Weber index of Lewis.[4] Exclusion for this reason is underpinned by the argument of Weber, where engulfed communities are usually small and contribute only marginal discontinuity to the data series and only at the date of first inclusion in the index, and of Richards and Lewis, whose expediency certainly renders the complexity of Glasgow burgh extensions the more approachable. By no stretch of the imagination could the inclusion of Hillhead (1891), Maryhill (1891) or Kinning Park (1905)[5] in the Glasgow city boundary or of Portobello (1896)[6] in Edinburgh, be considered marginal, though some refinement is possible by treating the burghs of Govan and Partick as separate.

The degree of harmonization between boundary changes and building permit statistics confirms the considerable evidence of Long to this effect,[7] and with the exceptions of Govan and Partick no attempt has been made to deal with boundary changes.

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1 Edinburgh Dean of Guild Court Record Room, op. cit.
2 Edinburgh Post Office Directories, 1895, 1896, and 1897.
3 B. Weber, op. cit., Statistical Appendix, pp. 129-132.
4 J.P. Lewis, 'Indices of House-Building in the Manchester Conurbation, South Wales, and Great Britain, 1851-1913', Scottish Journal of Political Economy VIII (1961), 148-56.
5 Census of Scotland 1911, Cd. 6097-I of 1911, Vol. 1, Part 1. City of Glasgow, p. 54n.
6 Census of Scotland 1911, Cd. 6087 of 1911, Vol. 1, Part 1, City of Edinburgh, p. 16n.
7 C.D. Long, Building Cycles and the Theory of Investment, (Princeton, 1940), p. 97; also referred to in B. Weber, op. cit., p. 108n.

It seems therefore that the Dean of Guild Court is an administrative and legislative unit which justifies some considerable confidence in its function as the basis for a study of building activity. This basis rests mainly on the strict supervision of all forms of building projects falling within its geographical orbit, which normally corresponded to the municipal boundaries. This correspondence was greatest in the Police Burghs, that is, those adopting Dean of Guild Court powers for the first time under the authority of the Burgh Police (Scotland) Act, 1892. Where discrepancies between the respective areas of Dean of Guild Court and municipal authority did occur, then the small size of Scottish burghs relative to some English conurbations involved no dramatic change in the housing market. The uniformity of procedures, regulations and fees, the regularity of Court meetings and the similarity of documentation especially after 1893 in standard registers provides a sound basis for the information obtained from this source.

Such administrative and legal soundness in the Scottish case is not seriously impaired by the complications of lapsed permits and lags in housebuilding. The varying estimates of these two aspects produced by other researchers seem doubtful and ambiguous, but by far the most important conclusion seems to be that a single figure for lapses and lags is inappropriate where in regional studies the assumption, borne out empirically, of widely divergent experiences in the boroughs both within and between regions, is evident. The limited information available in Scottish burghs confirms a low level of lapsed permits but it would be inconsistent to attribute this one percentage to such a heterogeneous collection of burghs, and consequently, the raw data is left undeflated on the grounds that the devil we do not know is hardly a satisfactory basis for adjusting statistics. Such an approach

is also relevant to the problem of lags. However while the uncorrected data may introduce biases there is no reason to believe that these impair the Dean of Guild Court basis of the study, and imperfections may at least be qualitively deflated at a later stage knowing the limitation of the statistics. One problem which such a basis for housebuilding fluctuations does create is the historical variation on the date at which burghs first collected such information, but these staggered dates do not present an insurmountable problem and can be investigated simultaneously with the construction of the index of Scottish housebuilding fluctuations.

Appendix 1: Indices and Values of Housebuilding Plans in Glasgow and other Scottish Burghs, 1873-1914
(1905 = 100)

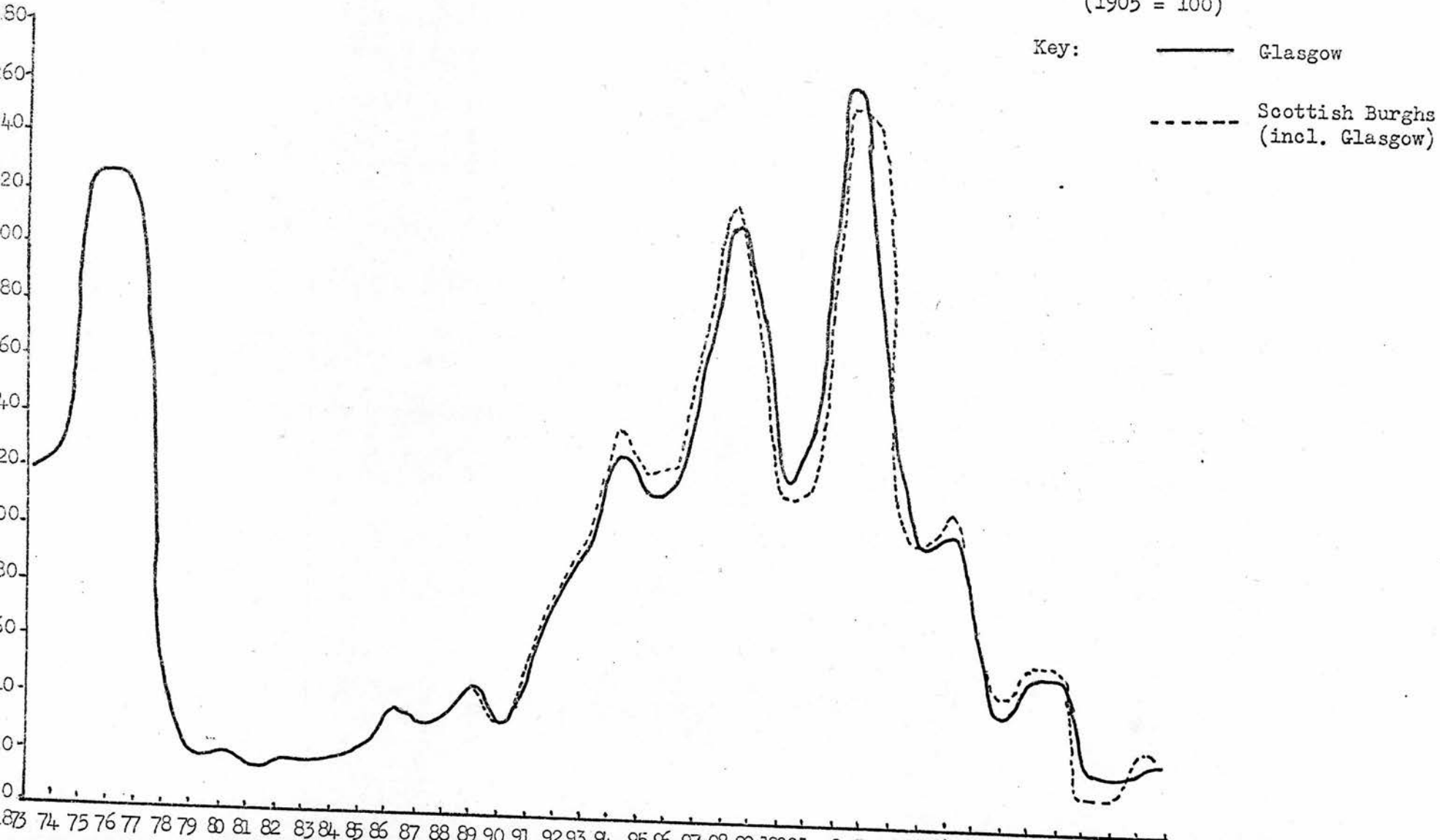
	GLASGOW		SCOTTISH BURGHS (incl. GLASGOW)	
	(1) Value (£)	(2) Index	(3) Value (£)	(4) Index
1873	668950	118.1	668950	118.1
74	707300	124.9	707300	124.9
75	1258850	222.3	1258850	222.3
76	1268500	224.0	1268500	224.0
77	1026130	181.2	1026130	181.2
78	222320	39.4	222320	39.4
79	93000	16.4	93000	16.4
80	105350	18.6	105350	18.6
81	77100	13.6	77100	13.6
82	90000	15.9	90000	15.9
83	88650	15.7	88650	15.7
84	101250	17.9	101250	17.9
85	128650	22.7	128650	22.7
86	208050	36.7	108050	36.7
87	174450	30.8	174450	30.8
88	196050	34.6	196050	34.6
89	249900	44.1	260950	44.5
90	180400	31.9	189000	32.2
91	293600	51.9	301400	51.4
92	457750	80.8	465950	79.4
93	538350	95.2	538350	95.2
94	785950	138.8	816885	129.2
95	691310	122.1	725860	114.8
96	708390	125.1	739840	117.0
97	997385	176.1	1043760	165.0
98	1240410	219.1	1394870	213.6
99	926385	163.6	1262405	181.3
1900	649367	114.7	863597	120.5
1	678574	119.8	1008974	140.8
2	1458710	257.6	2109370	263.1
3	1405589	248.2	1926359	211.2
4	621400	109.7	1173060	128.6
5	566241	100.0	1028039	100.0
6	635352	112.2	1060022	104.3
7	374680	66.2	623825	61.4
8	264201	46.7	410151	40.4
9	335970	59.3	539720	53.1
1910	324835	57.4	491865	54.3
11	60437	10.7	170797	20.8
12	51139	9.0	150044	18.3
13	164205	29.0	205871	24.5
1914	139340	24.6	192011	22.8

Sources: Dean of Guild Court Records for Glasgow, Ayr, Clydebank, Coatbridge, Dumfries, Falkirk, Govan, Hamilton, Hawick, Paisley and Partick burghs.

Fig. 1.

Value of Housebuilding Plans in Glasgow and Other Scottish Burghs, 1873-1914

(1905 = 100)



Appendix II

Table of Fees, approved of by the Auditor of the Court of Sessions

	£.	s.	d.
On every deliverance pronounced by the Court appointing Service.		2	6
On tabling of Petition		1	6
On Lodging Condescendence or Defences		1	-
On the borrowing of papers		.	6
On Lodging Reclaiming Petition		1	-
On Lodging Answers		1	-
On Lodging Productions for either party			6
On Making out and receiving Bonds of Caution -			
(1) For opening street		5	-
(2) For alterations and erections when they are estimated to cost -			
Under £250		2	6
£250 and under £500		5	-
£500 and upwards		10	6
On interlocular sheets, per sheet of 300 words		1	6
On Appeal being taken to Court of Session		7	6
For writing the Proof per sheet of 300 words		1	6
For each caveat (to be effectual for one year)		2	6
For each printed form on Petition for Lining			6
For each Service		1	-

For inspection of works where the work or operations authorized or reported on are estimated.

		£.	s.	d.
to cost -	Under £100		2	6
	£500		5	-
	£1000		10	-
	£2000	1	1	-
	£3000	1	11	6
	£3000 and upwards	2	2	-
Fee for Applications without Petitions			2	6

Sources: Dumfries Dean of Guild Court, Rules and Regulations, pp. 14-15, and other burghs 'Rules and Regulations'.

Appendix III

Schedule of Plans required by the Court

I Plan of the Site, showing;

1. The Site of new or to be altered Building.
2. Immediately 'conterminous' properties.
3. Position and width of any Street, Court or Footpath which adjoins or from which access is obtained.
4. Measurements and sizes of the above details.

II Plan of Foundations and Drainage, showing;

1. Method of Structure, Foundations.
2. Lines of digging on the Site.
3. Lines of main and subsidiary drainage.
4. Position of traps, cesspools and inlet ventilation.
5. Air gratings in walls, air openings in partition and air channels.
6. Measurements and sizes of the above details.

III Plans of Ground and other Floor, showing;

1. Means of construction and arrangement of the building.
2. The strength of walls, gables, party walls, partitions, and whether these are solid or not.
3. The strapping to avoid damp.
4. Ventilation inlets and outlets.
5. Measurement and sizes of rooms, windows, doors and openings contained in the building.

IV Roof Plan, showing;

1. Construction of the roof.
2. Valley gutters, flank gutters, spouts and gratings.
3. Party walls carried through the roof, and copings.
4. Chimney heads, vents, copings and cans.
5. Ventilation of plumbing work.
6. Measurement of the above aspects.

V Longitudinal and Transverse sections, showing;

1. Method of construction of floors and roof.
2. Height of rooms, projections of door pieces, cornices, pilasters, balustrades, etc.
3. Depth of digging of the site and foundations.
4. Damp courses and areas to be covered with damp courses.
5. Joisting and bridling.
6. Deafening ventilation, and heating channels.
7. Ventilation of rooms of less than 100 feet in area.
8. Ventilation of public buildings.
9. Levels of drains relative to the street, court, footpath, sewer and soil-pipes.
10. Heights and sizes of these items.

VI Elevations, showing;

1. Heights of walls, gables and chimney heads.
2. Rhones, gutters along the eaves, and spouts.
3. Windows, door openings, cornics and other projections.
4. Measurements and sizes of these.

VII Scales of Plans to be not less than;

Buildings under 100 feet long	- $1\frac{1}{4}$" - 10 feet
Building 100 feet and under 300 feet long	- 1" - 10 feet
Buildings 300 feet and upwards	- $\frac{3}{4}$" - 10 feet

VIII Detail Drawings as required;
Showing mode of construction
Ventilation plan and descriptions of supply of fresh air removal of 'vitiated' air.

Note: All plans deposited on application were to be on linen, and bound together. The plans also had to be dated, with the scale and dimensions given.

Source: Burgh of Dumfries Dean of Guild Court, Rules and Regulations (Dumfries, 1906), pp. 11-14.

CHAPTER II

An Index of Scottish Urban Building

As the tentacles of municipal involvement were considerably more restrained in the fifty years before the Great War compared to the subsequent decades, it is hardly surprising that only partial documentation occurred in the areas of peripheral interest. One such interest was building, an extension of sanitary and public health policy, and 'was part and parcel of the sanitary school of thought associated with Edwin Chadwick.'[1] By great good fortune social and sanitary reformers such as Littlejohn in Edinburgh, Chalmers and Russell in Glasgow and Simpson in Aberdeen were so wholly committed in their crusade for improved public health that they and their early staff were statistically conscious,[2] and thus provided if not the housebuilding records themselves the public outcry and awareness which often initiated the control, and thus the documentation of building.

Only occasionally did warrants granted by authority of the Dean of Guild Court systematically record how many houses or tenements were to be built, and so permission to build three or four villas might simply be written as 'villas'. It would produce sizeable inaccuracies if each permit was ascribed an 'average number of houses' as has been done by

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1 M. Bowley, Housing and the State, (London, 1945), p.2.

2 Royal Commission on the Housing of the Working Classes, 1884-5, PP. 1885, c. 4409, xxx1. Much of the Glasgow data in W.W. Watson Glasgow Statistical Reports 1863-80 and J. Nicol, Statistics of Glasgow 1881-5 and 1885-91 is drawn from the work of the Medical Officer of Health's figures.

Dundee Corporation Town Planning Department,[1] because even the briefest of inspections of what information is available indicates the wide range of values which the average could assume. Such variations existed both between burghs - some had a preponderance of tenements and others of villas, thus providing a very different number of houses per warrant[2] - and within burghs, where the phase of the cycle altered the number of items in each warrant.[3] Thus greater exactitude could only effectively be achieved by a detailed scrutiny of each of the 100,000 permits and thus of the 500,000 registered plans involved in this study.

At the absolute level, building data can only with difficulty be derived, and as a second best solution some measure of relative movements is needed. By attributing index values to the number of warrants, it is possible to progress considerably towards an indication of the extent of annual variations in the quantity of building work and it is to this end that the present indices are computed.

The basis of the Scottish index of housebuilding is the Dean of Guild Court records. The coverage of the index extends to thirty-four burghs and to avoid the pitfalls of sampling[4] and to give maximum

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1 Dundee, Town Planning Department, Calculations for Distribution of Dwellings (August, 1970). In this survey an annual average number of dwellings to each warrant is in fact based on a scale from 1872, the average for that year being 7.5, for 1873 7.0, and from 1876-1893 in downward steps of .25; from 1894-1905 the intervals are reduced by .1, and 1906-11 by .05, 1912-13 remaining constant. It is hardly surprising therefore that with this reducing factor each quinquennial estimate of housebuilding shows a lower level than the preceding quinquennium.

2 Ayr, Dean of Guild Court Register 1893-1914, N.R.A. 1/3/3, and Leith, D.G.C. Register 1877-1914.

3 Aberdeen, Planning Register, 1879-1919. During the 1880s the average of houses per warrant was between 1.6 and 1.8. This is in excess of 2.0 in the upswing of 1894-8.

4 For a brief account of the biases of researchers in samples, see D.B. Suits, Statistics - An Introduction to Quantitative Economic Research (London 1965), pp. 55-7.

coverage, the largest twenty-five towns by population in each census of Scotland between 1841 and 1951 were included. In fact this produced thirty-eight different burghs appearing at some stage in the 'top twenty-five' but four of these were excluded appearing once only in eleven censuses.[1]

The evolutionary state of towns, developing, declining or static, is accounted for by this wide choice of censuses. As there are three censuses before and after the period 1870-1914, and a ranking in only two secured inclusion, then burghs experiencing a long cycle in house building activity are not neglected. Montrose,[2] positioned twelfth in terms of population in the successive censuses 1841-51-61, slips to fifteenth and eighteenth in 1871-81, and is not present after that date. The spectacular growth of Clydebank,[3] by contrast, rising from 22nd place in 1901 to 8th in 1921 and the steadier performances of burghs such as Stirling[4] and Dunfermline[5] occupying almost the same position in each of the eleven censuses are incorporated thus in what at first glance seems a clumsy rule of thumb, an arbitrary criterion.

Of the thirty four burghs certain of these were discarded where inadequate coverage existed. In fact, twenty-eight burghs' statistics only are incorporated. The six which are excluded are Greenock where an incendiary bomb during the 2nd World War disposed of pre-1909 Dean of Guild records,[6] a fact testified to by the recent National Register of Archives survey whose first reference is to 1909.[7] In the cases of

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1 They were Campbeltown (1841), Kirklintilloch (1841), Rothesay (1851), and Renfrew (1951).

2 Censuses of Great Britain, 1841 and 1851, and Censuses of Scotland, 1861-1951.

3 Ibid.

4 Ibid.

5 Ibid.

6 For information on this point I am grateful to the Town Clerk of Greenock, the information being given in a conversation in August 1970.

7 Greenock, D.G.C., Register of Petitions 1909-16, N.R.A. 1/3/2.

Montrose and Dumbarton, incomplete registers or minute books have been preserved and the information collected from individual plans gives no indication either that it was a fair cross-section, or of the absolute level of activity. The probable explanation in the case of Montrose is that while a Dean of Guild existed in the 19th Century, some ambiguity of responsibility seems to have existed between the Police Commissioners and the Dean of Guild Assessors, a doubt only finally resolved in 1932 with the setting up of a Dean of Guild Court. A further difficulty with the statistics based on plans is that all applications after the Burgh Police (Scotland) Act, 1892 required plans to be submitted, but that is not to say all plans were approved. Rarely is the decision of the building authority recorded on the plans themselves. In the case of Arbroath, the non-existence of records before 1905[1] is dubious in itself given the legal requirement and complete absence of any applications in 1917 and 1918 confirms doubts concerning the validity and comprehensiveness of this information from Town Clerk's and Burgh Engineer's date. The short run of statistics for Dumfries (1893-1903) and the 'informality of procedure which operated at that time'[2] in Forfar meant that 'little if any records were kept of building consents etc.'[3] It would seem that this ancient Royal Burgh did in fact have a Dean of Guild Court as early as 1752, and in 1816, 1829 and 1835 it progressively extended its control over building by way of submission of plans,

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1 Arbroath D.G.C., Minute Book, 1904-34, N.R.A. 1/3/1.

2 Letter from Thomas G. Milne, Town Clerk, Forfar, dated 18th September 1970 in which he expressed the opinion of the Burgh Surveyor that no information before 1919 has been recorded, and no plans are available dating from before that date. Again, this is confirmed by the subsequent investigations of the municipal records of Forfar, by the National Register of Archives.

3 Ibid.

Fig. 1.

'Composition of Scottish Burghs' Index

A = Airdrie
C = Coatbridge
R = Rutherglen
P = Partick
Gr= Greenock
G = Govan
Pg= Port Glasgow

Note: Burghs underlined are excluded from the spliced index of total warrants.

procedure of business and powers and penalties of the Court.[1] However the Police Commissioners became the relevant authority from 1862, and the absence of records no doubt owes much to their confusing decision of 1872 to require the approval of plans by the Surveyor, Superintendent of Police and the Improvements Committee, although some bureaucratic simplification resulted from a Plans Committee set up in 1898.[2] Acknowledgment of this confusion of responsibility led to attempts in 1925 and 1945 to reimpose the lapsed Dean of Guild Court as a single authority. Only in November 1947 was this finally achieved.[3]

The exclusion of Montrose, Arbroath and Forfar is doubly unfortunate. First there is the loss of a distinctive regional housebuilding experience and, second, these burghs are peculiar in their declining rural setting and the absence of information on the responses of builders in such a context denies an insight into the workings of the industry. The regional locations of these three towns with the remaining burghs are shown in Fig. 1.

II

As the introduction of of building controls on a systematic basis varied considerably from one burgh to the next, the use of information on the basis of dates common to all burghs would limit the time coverage. Only from the inclusion of Musselburgh in 1898 do all burghs appear as recording building permits. If a common period was sought then the year 1894, when eight additional burghs began their registers in accordance with the clauses of the 1892 Act, would be an obvious choice. However

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1 D.T. Adams', 'A Review of the Administration of the Town's Affairs', (Forfar, 1967).

2. On the informality of building control I am grateful to Mr. T.G. Milne for his helpful correspondence.

3 D.T. Adams, op. cit., p.18.

such a procedure would neglect the valuable and reliable information from eighteen burghs during the 1870s and 1880s. The gradually decreasing scope of the index is shown by the fact that from 1898, the burghs represented in 1894 number twenty-six,[1] and narrows to a dozen in 1880[2] and finally to three, Dundee, Glasgow and Partick, in 1873.[3]

The construction of the index to render a single series from these numerous time periods of municipal records can take three forms, which might be termed 'splicing', 'chaining' and 'imputing'.

The 'splicing' form, which Lewis attributes to Weber[4] is more appropriately the technique of his American predecessors Riggleman[5] and Long[6] in their investigations of building cycles in American cities during the last quarter of the nineteenth century and early twentieth century. In keeping with the Weber series,[7] the base year for the Scottish burghs is the average of 1900 - 09 = 100, and it is upon the relative proportional contribution of each burgh to building in these years, as represented by the number of plans approved, that the index figure of any given year is calculated. Thus, for example, the index for 1873 is the number of warrants approved for Dundee, Partick and Glasgow as a proportion of the average of these three burghs for 1900-09 multiplied by 100. The index incorporates Govan from 1874 by expressing the combined total of

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1 Appendix 1 for burghs included in the index.
2 Ibid.
3 Ibid.
4 J.P. Lewis, 'Indices of Housebuilding in the Manchester Conburbation, South Wales and Great Britain, 1851-1913', Scottish Journal of Political Economy, 8, 1961, p. 149.
5 J.R. Riggleman, 'Building Cycles in the United States 1875-1932', Journal of the American Statistical Association, 28, 1933, pp. 175-6.
6 C.D. Long, 'Long Cycles in the Building Industry', Quarterly Journal of Economics, LIII, 1939, pp. 372-4.
7 B. Weber, 'A New Index of Residential Construction, 1838-1950', Scottish Journal of Political Economy, 2, 1955, p. 109.

permits for those four burghs in 1874 as a percentage of their average in the 1900-09 base period. Generally, this can be represented as

$$I_j = \frac{a_j + b_j + c_j}{\frac{\sum_{i=x}^{y} a_i}{n} + \frac{\sum_{i=x}^{y} b_i}{n} + \frac{\sum_{i=x}^{y} c_i}{n}} \times 100$$

where a, b, c, are individual burghs' warrants granted

j is a particular year

i is the range of the base year period

x, y are the inclusive base years, 1900 to 1909

n is the number of years

I is the index value

The denominator terms can be simplified to the mean values of individual burghs in the base period.

Thus,

$$I_j = \frac{a_j + b_j + c_j}{\bar{a} + \bar{b} + \bar{c}} \times 100$$

becomes the generalised form of the spliced index. In this way each successive burgh is introduced at the earliest opportunity, and this gives maximum coverage.

Apart from this, the main advantages of the method are firstly that it relies exclusively on historical fact, owing nothing to the derived calculations and assumptions of other methods. Secondly, where certain burgh records for a few years have been lost or are incomplete, such as Hawick (1895-96)[1] or Govan (1877)[2], then these burghs move in and out of

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1 Appendix 1.
2 Ibid.

the index without causing undue disturbance whilst maximising available information. A further attraction of splicing, though not unique to that method, exists when the municipal boundary of burghs is altered. When for example the Glasgow extension of 1912 encompassed Govan and Partick burghs, the artificial appearance of a boom in 1913 and 1914 can be circumvented. This would arise from the inclusion in the numerator of Partick and Govan housebuilding under the guise of Glasgow warrants at the same time as the subsumed identity of the two Clydeside burghs would see them removed from the denominator. This potential distortion to the housebuilding index can be avoided by retaining the Govan and Partick element in the denominator so as to match the enlarged city of Glasgow numerator. Hence this provides a method of overcoming boundary alterations.

Considerable defects are also apparent. Given the diversity of regional experiences as in London, Manchester, South Wales or in holiday resorts or cotton towns, it would be naive to think of Scotland as a homogeneous region. Hence the interpretation of the splicing method says little in the early years regarding national building fluctuations. To interpret a value of 194.6 in 1874 as representative of all Scottish burghs building activity levels would be foolish, though no doubt the limited coverage of 1873-79 fairly reflects the appropriate sign of the gradient of fluctuations in most burghs, a point illustrated in the generality of building conditions by William Paterson, General Secretary of the Associated Carpenters and Joiners of Scotland. 'The year 1878 will long be remembered as one in which thousands were reduced from comparative affluence to abject poverty. There is a decrease of 869 members during the year. This result is what was expected as many members have had to leave the country and others have fallen into arrears, mainly on account of the trend of work'.[1]

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1 Annual Report of the Associated Carpenters and Joiners of Scotland, 1878, pp. 3-4.

A further defect of this type of index construction is that narrowness of the base causes the eccentricities of the building pattern in one burgh to appear as representative of all. Thus the limited base causes greater volatility in the early years of the index. The problem of disproportionate or biased influence of a single element in the series is acknowledged by Weber in his isolation of London in the British case study,[1] and it is only natural that alternative methods of indexing should be investigated to avoid this and other difficulties, whilst retaining the advantages of the splicing method.

The 'chaining' method of indexing also takes account of the differing entry points of burgh data. This is done by obtaining the influence of the additional burgh by expressing the particular year with and without the new burgh as a percentage of the base period average, again 1900-09, and multiplying preceding years by this factor. Each additional burgh is treated in this way, so the general form is

$$I_{j-1} = \frac{a_j + b_j + c_j}{\dfrac{\sum_{i=x}^{y} a_i}{n} + \dfrac{\sum_{i=x}^{y} b_i}{n} + \dfrac{\sum_{i=x}^{y} c_i}{n}} \times \frac{a_j + b_j}{\dfrac{\sum_{i=x}^{y} a_i}{n} + \dfrac{\sum_{i=x}^{y} b_i}{n}} \times \frac{a_{j-1} + b_{j-1}}{\dfrac{\sum_{i=x}^{y} a_i}{n} + \dfrac{\sum_{i=x}^{y} b_i}{n}} \times 100$$

where the symbols are as used in the splicing method. By expressing the sigma term as the mean of the variable this becomes,

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1 B. Weber, op. cit., pp. 109-110.

$$I_{j-1} = \frac{\dfrac{a_j + b_j + c_j}{\bar{a} + \bar{b} + \bar{c}}}{\dfrac{a_j + b_j}{\bar{a} + \bar{b}}} \times \frac{a_{j-1} + b_{j-1}}{\bar{a} + \bar{b}} \times 100.$$

This is the method adopted by Lewis, 'In 1856 the value of the two-town index was 73.1 while the value of the four town index was 81.8. To obtain a single index for the period from 1852 based on the maximum amount of data, these two indices were spliced by multiplying the first three years of the two-town index by 81.8/73.1. This procedure was continued whenever a new town appeared in the index.'[1] It is not clear from this whether, with the introduction of the next borough in, say 1860, Lewis then multiplies the new values for 1852-5 as well as 1856-9 by the new fraction obtained as a result of the additional borough. Such a cumulative multiplicative process would have the effect of considerably altering the pattern of observed data.

The chaining process of Lewis amounts to a smoothing exercise,[2] and according to Lewis,[3] this is its strength. The index is akin to a moving average in its smoothing effect. Using such an index in an analysis of cycles and long swings may be suspect, however, following Adelman's conclusion that 'the long swings ----- are due in part to the introduction of spurious long cycles by the smoothing process, and in part to the necessity for averaging over a statistically small number of random shocks.'[4] Subsequent appraisals of the Adelman contention concentrate more on the degree to which long swings are endogenously

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1 J.P. Lewis, op. cit., pp. 148-9.
2 See Table 3 and graph 1, p. 20.
3 J.P. Lewis, op. cit., p. 149.
4 I. Adelman, 'Long Cycles - Fact or Artifact?', American Economic Review, 55, 1965, p. 459.

self-generating. For example, a recent investigation is more concerned with the causation of long swings, leaving the suggestion that data averaging can produce long swings in time series relatively unscathed.[1]

Apart from this difficulty, there exist in this method two fundamental assumptions which are dubious. Firstly the assumption is that the relationship at the point of entry of an additional burgh holds for preceding years. Were this observable over a long period of years for several burghs it would be more acceptable, but a priori reasoning, Lewis' own argument for regional cycles, and the peculiarities in the first year figure of many Scottish burghs suggests that this is less than accurate. In the Scottish cases of Port Glasgow in 1877,[2] Rutherglen in 1892-93[3], and in Airdrie,[4] and other burghs obeying the new Burgh Police (Scotland) Act in 1893, administrative difficulties seem to have had the effect of distorting the figure for the earliest year.[5] The second assumption is, that for those burghs common to the year of the additional entry the constancy of the relationship in that specific year needs in no way be the appropriate one beforehand. The effect of this would be to misrepresent the index in the preceding years as a result of multiplying their values by a doubtful factor. The index of raw data in these earlier years would thus be lost, quite apart from attributing uniform and composite features to highly variable local building circumstances. The 'chaining' method if applied to Scottish burghs would for example attribute the 1877-9 slump to the Edinburgh

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1 W.W. McCormick and C.M. Franks, 'A Self-Generating Model of Long Swings for the American Economy, 1860-1940.', Journal of Economic History, 31, 1971, pp. 295-343.
2 Port Glasgow, D.G.C., Minute Book, N.R.A. 1/3/1, 1877-1945.
3 Rutherglen, D.G.C., Register of Applications, N.R.A. 3/1/1, 1872-1913.
4 Airdrie, D.G.C., Minute Book, 1/5/1 N.R.A., 1885-95.
5 In cases such as these, the information has been excluded from the Scottish index.

building pattern, whereas documentary evidence contradicts this.[1] Similarly the counter-cyclical forces of Aberdeen and Edinburgh during the 1880s would increase the denominator in 1885 so that with the introduction of Hawick in that year the multiplicative factor applicable to 1880-5 would be diminished with the inclusion of these unrepresentative burghs.[2] Not only then are there theoretical pitfalls in the chained method; they also introduce inaccuracies in an applied or historical context.

The first problem, an unwavering relationship between burghs over time, cannot be removed from the chaining method as it is implicit in the technique. But the second difficulty could be minimised if, in the denominator of the ratio used to adjust the observed value of the index, the index in the earlier period of the burgh common to both parts of the chain is substituted for their index value in the second part of the chain, and, when this new ratio is obtained, the index value of the common burghs in the second period is multiplied by it.

Thus $\dfrac{(a_{j-1} + b_{j-1})}{(\bar{a} + \bar{b})}$ is substituted for $\dfrac{(a_j + b_j)}{(\bar{a} + \bar{b})}$

and the new ratio which is thus obtained is used to multiply

$$\frac{(a_j + b_j)}{(\bar{a} + \bar{b})} \quad \text{instead of} \quad \frac{(a_{j-1} + b_{j-1})}{(\bar{a} + \bar{b})}$$

This adjusted form of the Lewis chain index would then appear as

$$I_{j-1} \quad \frac{\left(\dfrac{a_j + b_j + c_j}{\bar{a} + \bar{b} + \bar{c}}\right)}{\left(\dfrac{a_{j-1} + b_{j-1}}{\bar{a} + \bar{b}}\right)} \quad x \quad \left(\frac{a_j + b_j}{\bar{a} + \bar{b}}\right) \quad x \quad 100$$

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1 Edinburgh, D.G.C., Registers, 1875-9.

2 Ibid., 1880-89; Aberdeen, Planning Registers, 1879-1919 and Hawick, D.G.C., Register of Plans, 1884-1949, N.R.A., 3/1/1. Burgh House-building series are provided in Table 4, Chapter 3.

The comparative techniques are shown below. This simplified version[1] highlights the basic distinction in the

Chained Method	New Method of Chaining
Data given:	
$a_{j-1}, b_{j-1}; a_j, b_j, c_j$	$a_{j-1}, b_{j-1}; a_j, b_j, c_j$
Adjustment Ratio:	
$\frac{(a_j + b_j + c_j)}{(a_j + b_j)}$	$\frac{(a_j + b_j ; + c_j)}{(a_{j-1} + b_{j-1})}$
Multiplicand	
$(a_{j-1} + b_{j-1})$	$(a_j + b_j)$
Index Formula	
$I_{j-1} = 100(a_{j-1} + b_{j-1})\frac{(a_j+b_j+c_j)}{(a_j + b_j)}$	$I_{j-1} = 100(a_j+b_j)\frac{(a_j+b_j+c_j)}{(a_{j-1}+b_{j-1})}$

methods. The chained method's deficiency - the inflexible relationship between burghs over time - is circumvented in the new method by obtaining an adjustment ratio which incorporates the common burghs' relationship in the two time periods. Similarly with the formula for the multiplicand which minimises the discontinuity between the two periods.

According to Lewis, the attraction and main advantage of his chaining procedure is that it introduces 'no spurious jumps'.[2] Certainly the chained index does have a smoothing effect but what is the value of that in a study of fluctuations, and how is the interpretation of such a smoothed graph to be made if its construction is questionable? Failure to take precautions against illegitimate 'jumps' for which Lewis criticises Weber,[3] is in fact invalid, as the Weber splicing method

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1 The base periods are excluded as they are unchanged.
2 J.P. Lewis, op. cit., p. 149.
3 Ibid.

laboriously avoids discontinuities by expanding numerator and denominator together. Thus incorporation of towns does not increase the absolute level of permits without reference to the extended coverage. In fact the argument can be turned on Lewis, for, laying aside the legitimacy of the method, its only advantage is to make the 'spurious jumps' marginally smaller spurious jumps. The problem of interpreting the chaining method can best be seen through Lewis' own interpretation of this technique, 'it cannot be said that a value of 29.7 per cent in 1860 indicates that building in that year has exactly 29.7 per cent of building in the base period'.[1] What, then, does it mean?

The term 'imputing' has been applied to a method of ascribing individual towns a weight,[2] based on their relative contribution to total building in the years 1898-1914 - the maximum time span when all burghs are included - and then imputing a number to represent their expected level of permits granted in those years for which statistics are unavailable, and derived figure being the weight multiplied by the actual number of permits in the reporting burghs in any given year. The series of actual warrants plus imputed warrants would then be given an index value, with the years 1900-09 forming the base.

This can be expressed as follows:

$$I_j = \frac{\left[\frac{k_i}{(a_i - 2_i)} \quad (a_j + b_j \ldots J_j + 1_j \ldots 2_j) + a_j + b_j + J_j \ldots 2_j\right]}{\frac{\sum_{i=x}^{y} n_j}{n} + \frac{\sum_{i=x}^{y} b_j}{n} + \ldots \frac{\sum_{i=x}^{y} J_j}{n} + \frac{\sum_{i=x}^{y} 1_i}{n} + \ldots \frac{\sum_{i=x}^{y} 2_i}{n}} \times 100$$

1 Ibid.

2 Calculations of differing proportional contributions in 'industrial/commercial' 'house building' and 'alterations' classifications of building work for each burgh was undertaken to take account of the varying nature of towns - dormitory, industrial, retired and so on. Failure to do this might for example mean that the large contribution of Edinburgh's housebuilding would be ascribed to her industrial contribution, which would not necessarily be valid.

that is

$$I_j = \frac{\left[\frac{k_i}{(a_i - 2_i)}\,(a_j + b_j + \ldots J_j + 1_j \ldots 2_j) + a_j + b_j \ldots J_j + 1_j \ldots 2_j\right]}{(\bar{a} + \bar{b} + \ldots \bar{J} + \bar{1} \ldots + \ldots \bar{2})} \times 100$$

where a, b, J, k, 1 and z are individual burghs

j is a particular year

i is the range of the base year period

x, y are the inclusive base years, 1900-1909

z is the number of years

I is the index value

The major assumption of the 'imputing' method is that of the constancy of burgh contributions to total building. The proxy variable, burgh populations at census dates, shown in Table 1 indicates the degree of validity of this assumption.

The point at issue is whether in the 'imputed' years, the burgh population proportion is similar to the period 1898-1914 upon which the weight is based. The constancy of the proportions in the smaller towns such as Musselburgh or Rutherglen is encouraging but not crucial, as their smallness implies a restriction on their contribution to the total. However, the fact that these and several other towns remain consistently small is heartening. What is more significant is that the larger towns such as Aberdeen and Edinburgh both requiring imputed values for 1873-79 closely conform in the 1861 and 1871 censuses to the proportional weight as represented in the censuses of 1901 and 1911. The variation in both cases is limited to a maximum range of .007 in fifty years, a comforting conclusion as far as the constancy assumption is concerned, as a sizeable range in the proportion would have introduced a substantial error between

Table 1

Relative Proportions of Burgh Populations, 1861-1911

	1861	1871	1881	1891	1901	1911
Aberdeen	.065	.065	.068	.072	.073	.074
Arbroath	.016	.015	.014	.013	.011	.009
Ayr	.017	.014	.014	.014	.014	.015
Dumbarton	.007	.008	.009	.010	.009	.010
Dumfries	.012	.011	.011	.010	.006	.007
Dundee	.081	.088	.091	.089	.076	.074
Dunfermline	.012	.011	.013	.013	.012	.013
Edinburgh	.151	.147	.149	.151	.150	.144
Forfar	.010	.009	.008	.007	.005	.005
Galashiels	.006	.004	.010	.010	.006	.007
Glasgow	.350	.350	.318	.326	.362	.353
Govan	.012	.024	.032	.036	.036	.040
Greenock	.039	.044	.043	.037	.032	.034
Hamilton	.012	.012	.012	.014	.016	.017
Howick	.008	.009	.011	.011	.008	.008
Inverness	.014	.014	.011	.011	.010	.010
Irvine	.008	.006	.007	.003	.005	.005
Kilmarnock	.021	.018	.017	.016	.016	.016
Leith	.032	.034	.039	.040	.037	.036
Montrose	.014	.012	.010	.008	.006	.005
Musselburgh	.008	.007	.007	.007	.006	.007
Paisley	.042	.035	.036	.038	.038	.038
Partick	.013	.018	.025	.021	.026	.030
Perth	.022	.019	.019	.017	.016	.016
Port Glasgow	.006	.007	.009	.008	.008	.008
Rutherglen	.008	.008	.007	.008	.008	.011
Stirling	.012	.011	.010	.010	.009	.010
Total Population of 27 Burghs (000s)	1129.7	1366.1	1537.2	1733.3	2107.0	2224.0

Sources Censuses of Scotland 1861-1911.

the imputed and the probable actual values. Moderately large towns such as Ayr, Kilmarnock and Inverness also confirm the assumption. Where sizeable deviations occur, such as in Glasgow, Govan, Dundee and Partick, due to good fortune rather than anything else, these burghs are either present all through, or require only occasional imputed values, and in the case of Partick where statistics are unavailable between 1889-93, the population proportion of 1891 is not far removed from the average of 1901-11.

Where long swings in a town's economic fortunes prevent the use of a constant weight in imputing levels of building, as is no doubt the case in certain English boroughs, then some flexibility in the weight could be introduced, possibly using the deviation of actual population from that expected under the constant proportion assumption as the refinement in this weighting procedure. Periods of decay and prosperity could then be included, even in years where borough data is absent.

The problem of how accurately population reflects building activity is not a serious one according to the theoretical model of Cairncross[1] and the empirical work of Thomas.[2] Some strong reservations however remainin other quarters.

The principal advantages of the imputed method are that it makes use of the maximum amount of information in the years in which warrants are granted, and, that by widening the coverage in the early years of the index it is possible to say something about aggregate building activity, whereas the splicing method only allows satisfactory interpretation insofar as the handful of burghs are representative at that time - an

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1 A.K. Cairncross, Home and Foreign Investment, pp. 5-6.
2 B. Thomas, Migration and Economic Growth: a Study of Great Britain and the Atlantic Economy, (Cambridge 1954), and also Migration and Urban Development (London 1972).

unlikely event. It is for this reason that the variation of these two methods narrows[1], as the degree of instability or unrepresentativeness of the Weber method diminishes with the inclusion of further burghs. A discrepancy such as this substantially alters the amplitude of the cycle if only marginally its periodicity.

Using the splicing method, the period of the cycle in all classes of building is 23 years, and in housebuilding it is 22 years. By employing the imputing method, it is 23 years in all building and only 21 in housebuilding, measuring from peak to peak.

The precedent of Burns and Mitchell's[2] measure of amplitude has been used. It is adapted only to allow comparison between peaks rather than between troughs, and thus is,

$$A = \frac{(P_1 + P_2) - 2T}{N},$$

where,

A is the amplitude of the cycle

P_1, P_2 are the peak year index values

T_1 is the trough year index value

N is the period of the cycle

The alteration of the amplitude and duration of the cycle according to which method of indexing is used is shown below in Table 2.

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1 See Table 3 and graph 1.

2 A.F. Burns and W.C. Mitchell, Measuring Business Cycles, (New York, 1946), p.27. Other measures, for example, that of C.D. Long, 'Long Cycles in the Building Industry', Quarterly Journal of Economics, LIII, 1939, pp. 391-2 provide similar results.

Table 2

Severity and Duration
of the Scottish Building Cycle

	All Building		Housebuilding	
	Average Annual Amplitude	Period	Average Annual Amplitude	Period
Splicing method	7.82	23	14.12	22
Imputing method	6.53	23	9.50	21

Source: Indices in Table 3 below

The significant points which emerge are the greater absolute severity of cycles in both series if the spliced index construction is relied on, and the substantially wider fluctuations of this method between the total building and housebuilding series.

The absolute volume of building and the fluctuations in building are two quite distinct aspects. By virtue of greater coverage it is possible from the imputed index to compare the level of building in any two years, something which the spliced index strictly only allows from 1894, though in fact from the early 1880s with qualifications, it is possible. The relative heights of the boom are thus comparable by using the imputed index.

For comparative purposes the three methods have been recalculated from the full-scale index, as the chain method requires complete series of statistics. Thus some information on Partick, Hawick and Govan is lost. The results are shown in Table 3 and Graphs 1 and 2.

In these comparative indices the basis of construction is identical from 1898 which accounts for the single stream of values from that date when all burghs are recorded and no adjustment operations are required. The desirability of the three methods varies enormously in the 1873-98 period

Table 3

Comparative Indices of Scottish Building (total series)
(1900-09 av. = 100)

	Spliced Method	Imputed Method	Chained Method
1873	117.5	103.0	116.0
74	124.4	103.9	122.8
75	138.0	115.2	136.2
76	132.1	111.2	129.7
77	101.4	90.0	97.1
78	74.4	67.9	85.0
79	49.6	45.2	56.7
80	73.1	67.5	72.5
81	67.1	62.7	66.5
82	68.2	63.8	67.6
83	63.8	59.7	63.3
84	69.5	65.0	68.0
85	60.8	57.5	61.2
86	70.8	67.2	69.2
87	80.1	76.0	78.4
88	71.3	73.5	78.3
89	82.4	80.7	80.8
90	76.4	74.8	74.9
91	81.3	79.6	79.7
92	89.5	87.5	87.7
93	99.5	97.8	98.2
94	107.9	106.8	107.5
95	117.2	117.0	116.8
96	137.7	137.5	136.8
97	140.0	140.0	140.7
98	141.4		
99	129.0		
1900	104.3		
1	111.7		
2	121.0		
3	117.3		
4	108.3		
5	103.2		
6	96.6		
7	85.5		
8	78.9		
9	73.1		
10	70.5		
11	67.1		
12	68.0		
13	68.0		
14	60.7		

Source: List of burghs included see Appendix 1.

Fig. 1. Comparative Indices of Scottish Urban Building (1873-1914)

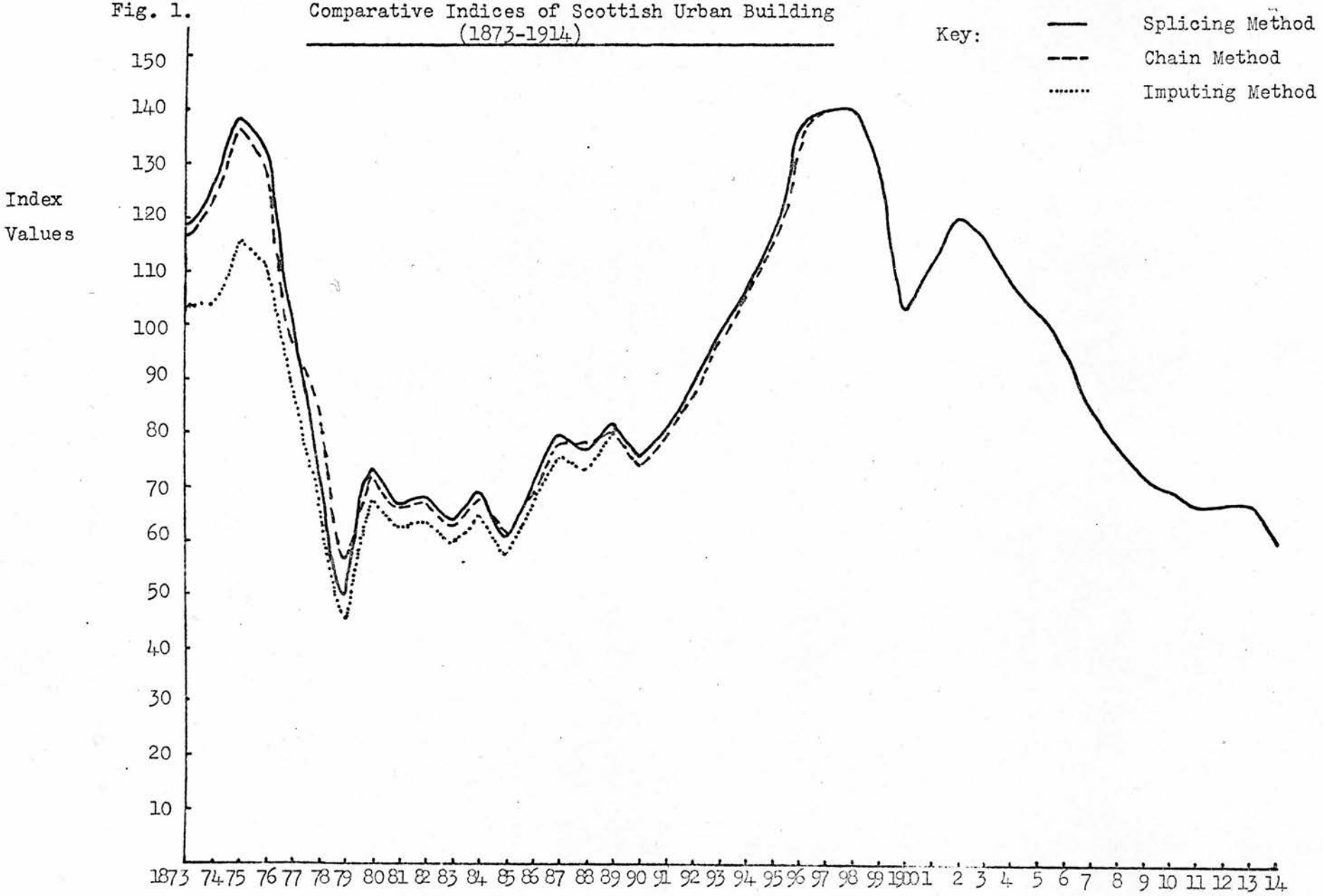
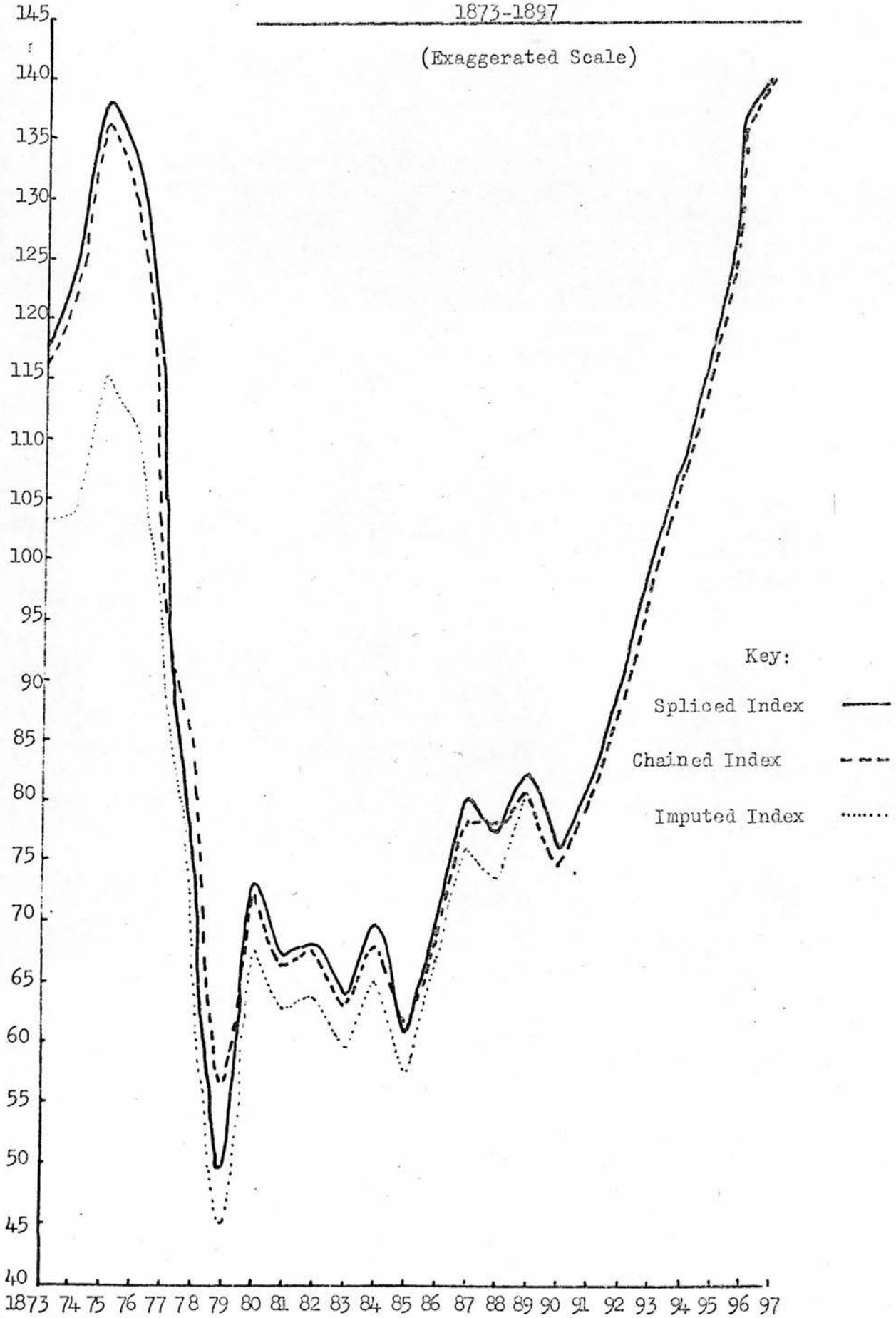


Fig. 2.

Comparative Indices of Scottish Urban Building, 1873-1897

(Exaggerated Scale)



however. The dubious characteristics of the chained method have already suggested its inferiority relative to the splicing technique, leaving a straight choice between splicing and imputing. The feature of the chaining method is essentially a rigidity at various points in time attributed to relationships between the building activity in burghs and this is a shortcoming also applicable to the imputing technique. This latter formula for indexing based on the assumption of a constant proportionate contribution to Scottish housebuilding in those periods pre-dating documentary evidence precludes an index value in excess of the spliced method in any given year. This is by virtue of the mechanistic upward adjustment in missing data cases but with the constraint imposed of not exceeding 100% of the observed data. Thus 105% may be the housebuilding level of 1877 but because the fixed proportions apply between 1900-09 the imputed adjustment is curtailed before it is warranted. Consequently the imputed index is invariably below the spliced index as years of unusual housebuilding upsurge cannot be accommodated (see Graphs 1 and 2).

Nor is the splicing method, of course, immune to criticism. Undue generalisation from a limited number of burghs to the aggregate Scottish building level is not acceptable but by employing actual data and avoiding spurious statistical adjustments this technique enjoys a balance of advantage over its competitors which is all the more so in that uninterrupted series are not a prerequisite. Thus from about 1894, and with adequate qualification during the 1880s, the cities and major burghs are incorporated in the spliced index when they can reasonably assume the title 'Scottish'. Prior to this the index while no doubt reflecting building trends if not magnitudes in Scotland generally is valid only for its constituent burghs.

It may seem pedantic to remonstrate over the relative virtues of indexing methods which display minimal divergence between 1873 and 1897

(Graphs 1 and 2). Nevertheless the characteristics of smoothing in the case of the chained index and a consistent understatement in the imputing demonstrate the mechanical shortcomings of such methods, whilst also highlighting the relative strengths of the spliced technique and its consequently satisfactory properties for subsequent analyses of causality in building cycles.

III

Four distinct classifications of building are in fact incorporated in the indices of Table 3. The basis of the full index comprises housebuilding; industrial and commercial building; public and municipal building, and finally alterations and additions to property.[1] The house-building category extends to warrants granted variously as 'houses', 'villas','tenements' and 'tenements with shop' whilst those in the industrial and commercial group are composed of such items as warehouses, offices, workshops, boilerhouses, occasionally stables and a wide range of other business construction. The area of public building includes projects such as the £6000 approved by the Paisley authorities for the County Council offices and the Model Lodging House extension by the same burgh estimated to cost £2000.[2] The £12000 expenditure on Dumfries Academy in 1895[3] or the simultaneous approval of a library and a museum in Kilmarnock in 1898[4] are indicative of other sizeable projects in this grouping. It is briefly worth noting that public building accounted for

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1 A fifth category, Crown Building, also existed but did not require Dean of Guild approval, whilst another group of residual types of warrants - advertising hoardings, street construction etc. - were granted by the Court, although they are not quantitatively significant.
2 Paisley, D.G.C., Roll Book of Applicants, 1910, N.R.A. 1/20/4.
3 Dumfries, D.G.C., Minute Book, 1895.
4 Kilmarnock, D.G.C., Register, 1898.

4.4% and 8.4% in Edinburgh and Glasgow respectively; in other Scottish burghs it was 4.6% and for all twenty-seven municipalities 5.4% of building warrants referred to this category.[1] This is not an insignificant proportion given the average value of public projects is normally well above private house or even industrial construction, and this 'lumpiness' of public building to a certain extent accounts for the uneven time factor of this type of building.[2] Such discontinuities are not difficult to envisage when considering the £13000 Paisley Y.M.C.A. building[3] or the church donated by ironmaster Andrew McCosh to the value of £9000 in Coatbridge.[4]

On a more humble level the alterations and additions warrants comprise small works, above a certain amount,[5] such as the building of a porch, or an additional room or as was often the case in the 1900s, a 'motor house'.[6] The alterations normally involved fitting dormer windows, enlarging rooms by removing partition walls and quite commonly during the late nineteenth century installing inside toilets.[7] Either repairs were rare, which seems unlikely, or they were recorded in the Dean of Guild

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1 Inverness, D.G.C. Registers, N.R.A. 1/14/5-8 do not distinguish warrants sufficiently and this burgh is thus excluded.

2 Glasgow, Office of Public Works, 'Memorandum of Linings Granted by the Dean of Guild Court'.

3 Paisley, D.G.C., 1907, N.R.A. 1/20/4.

4 Coatbridge, D.G.C., Registers of Minor Warrants is only one of many authorities in which very small works did not require consideration at the fortnightly meetings of the Court, approval being given by municipal officials of the relevant burgh department. The threshold, however, for such cases is not specified for example in either the Rules of Establishment of a Dean of Guild Court (Port Glasgow, D.G.C., Minute, 2nd October, 1877) or in the Dumfries Dean of Guild Court Rules and Regulations (Dumfries 1906). Inspection of D.G.C. documents suggests £10 as the distinguishing amount between Major and Minor Warrants.

6 Motherwell, D.G.C., Register, 1898, N.R.A. 1/5/4 gives an early case of garage building.

7 Galashiels, D.G.C. Register of Plans, 1910-14, reveals that in 357 houses W.C.'s were installed between 1910-14, and the tendency for this type of building to be concentrated over a few years is also demonstrated in Dundee (Register of Plans Approved, vols. 6-7 1901-6) when in six years 882 W.C.'s were constructed and Ayr (D.G.C. Register 1899-1900) which also displays certain countercyclical forces.

Court business as additions and alterations, for reference to them is infrequent and consequently any conclusion on whether repair and maintenance shows an inverse cycle[1] is precarious.

The attraction of broad classifications is that they avoid differences in burgh terminology which might result in certain elements of building appearing in the wrong series. Sub-groups would be no advantage where the warrant is to erect a 'Block of buildings'.[2] Only by an investigation of the petitioners' names, supplemented by recourse to Post Office Directories is it possible to ascertain the general nature of the projected works, though the repetition of larger industrial firms' applications such as those of Glenfield and Kennedy Ltd. in Kilmarnock reduces this problem. A subdivision of 'Industrial' and 'Commercial' would make the classification of the warrant of Mr. Burns of Falkirk[3] for offices a difficult task, but with broad groupings no mistaking this for either housebuilding or alterations and additions would occur, and no disparity between burghs with a similar warrant would arise.

Where an entry in the Dean of Guild Court Minutes or Register of Plans Approved exists for an addition or alteration to the factory, this is included in the industrial and commercial index, leaving alterations and additions to refer purely to housebuilding.

Except in the case of one burgh, Glasgow, the observations are for calendar years. The municipal year in Glasgow extended from 1st September to 31st August, and so an adjustment has been made on the assumption of linearity or evenness of 'linings' granted in each month. This is a rigid, mechanical alteration and subsequent sampling for a number of years might

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1 H.W. Richardson, Economic Recovery in Britain, 1932-39, (London 1967) p. 168.

2 Edinburgh, D.G.C., Warrant, 15th April, 1880. In fact this was part of the Edinburgh Corporation Offices in Fleshmarket Close, but further disaggregation of classes of building might produce a problem in allocating such a warrant.

3 Falkirk, D.G.C., Minute Book, N.R.A. 1/3/1, Minute of 17th May, 1900.

indicate that the spring months ought to be more heavily weighted.

The indices of these aggregate series of Scottish urban housebuilding are shown in Table 4 and Graph 3.

The underlying trends in the four sub-markets of the building industry, identified in table 4 and graph 3 display, broadly speaking, a fair measure of agreement; high, in some cases almost frenetic, activity during the mid-1870's,[1] a minimum point in 1879, the over-capacity and slack construction during the 1880's, followed by a number of consecutively prosperous years during the 1890's culminating in the late nineties peak. In each sector of the industry these were in excess of subsequent levels in the 1900's, and, with the exception of public building which sustained a moderately even and buoyant building programme in the decade preceding World War I, and with a progressive contraction evident from about 1902-14, these were features of fundamental agreement in different areas of the Scottish building industry.

Key aspects are apparent from table 4 which illustrate the nature and distinctive properties of the series. For example alterations and additions were a pale shadow of housebuilding fluctuations. The peaks, troughs, upsurge of 1886-9 and the double peak around the turn of the century all were present, though usually in diluted form. No complementarity here therefore which would permit an empirical vindication of the theoretically inverse cycles in the jobbing end of the industry.[2] Another point of interest between these two housing sector indices is that alterations and additions achieved peaks in the seventies and 1890's year or so in advance of the housebuilding branch, though in the intervening period they lagged

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1 Glasgow Municipal Commission, Evidence of Binnie, p. 306, refers to the years 1872-5 as ones of 'excessive speculation'.
2 H.W. Richardson, op. cit.

Table 4

Indices of Scottish Urban Building 1873-1914

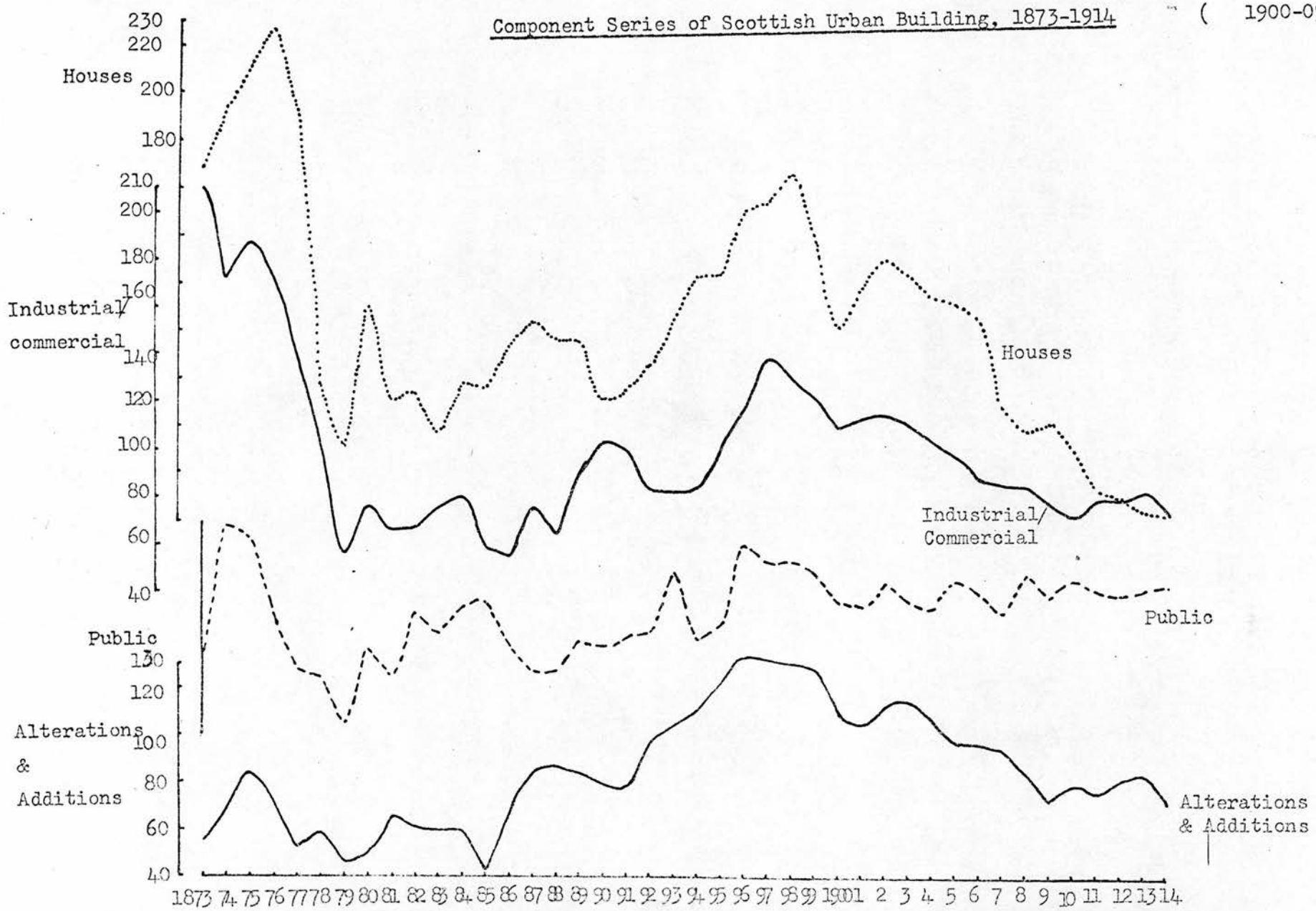
(1900-09 av. = 100)

	Total	Houses	Industrial Commercial	Public	Alterations & Additions
1873	110.9	168.2	209.4	73.4	55.3
74	119.5	194.6	172.6	128.7	68.4
75	134.6	211.5	187.7	123.8	84.3
76	129.1	247.2	172.4	91.6	72.4
77	98.8	193.3	137.9	67.3	53.1
78	71.8	78.5	100.4	64.9	58.8
79	48.1	52.3	57.3	44.6	46.0
1880	71.6	111.0	76.7	76.0	51.1
81	64.7	71.7	66.8	65.1	65.8
82	66.6	74.5	68.4	91.5	61.7
83	62.5	57.7	76.6	83.8	59.6
84	68.0	78.9	80.2	94.1	59.9
85	60.4	76.7	58.9	97.3	43.3
86	69.7	94.4	56.4	78.0	68.5
87	79.4	105.5	76.6	67.0	74.0
88	77.1	97.0	65.2	67.9	76.7
89	83.1	96.0	90.2	79.9	73.7
1890	76.6	72.4	104.1	77.5	69.8
91	81.1	76.8	100.3	82.2	77.9
92	89.0	87.6	84.1	83.4	97.4
93	98.7	107.3	83.7	109.4	104.1
94	107.1	124.0	85.0	81.6	110.6
95	117.1	125.7	103.9	87.5	122.5
96	137.7	153.4	120.0	120.7	133.7
97	140.0	156.5	139.5	113.6	131.9
98	141.4	168.1	131.8	113.9	131.5
99	129.1	138.4	123.1	108.9	128.6
1900	104.3	93.6	111.3	96.8	108.8
1	111.1	121.4	115.4	95.1	105.7
2	121.0	132.2	115.9	105.4	113.4
3	117.4	125.7	112.3	96.8	115.3
4	108.2	116.3	105.5	94.2	105.5
5	103.2	113.0	98.8	106.3	97.3
6	96.6	106.0	88.4	100.3	97.6
7	85.5	69.6	86.7	92.5	95.4
8	78.9	59.9	86.1	108.0	85.4
9	73.1	62.9	79.4	98.5	73.5
1910	70.5	51.9	73.3	107.2	79.3
11	67.1	35.1	80.9	103.7	76.2
12	68.0	31.5	80.5	101.1	82.4
13	68.0	25.9	84.5	103.4	85.0
14	60.7	25.3	75.5	104.3	72.0

Sources: D.G.C., Registers and Minute Books (See Appendix 1)

Fig. 3.

Component Series of Scottish Urban Building, 1873-1914 (1900-09= 100)



by one year the upturn in 1880 and the mild peak of 1887 in the house-building trade. This lag also occurred in the secondary boom, that of the early 1900's. There is thus some observed evidence for a systematic relationship between housebuilding and the alterations section of the building industry in terms of a suppression of the alterations boom in the peak year of housebuilding as more factors were directed to the speculative construction of largely working class property.[1] Furthermore the limited capital outlay and the correspondingly reduced risk involved in the alterations and additions sector provided a more stable level of this type of activity in recession which was especially relevant in the context of moderately sustained minor building, vis-a-vis other branches, in the post-1903 period, and it is evident that substitution between housebuilding and alterations and additions prospered in these circumstances of buoyant and dismal housebuilding.[2] Switching therefore occurred either when speculative gains in housebuilding outweighed the more secure prospects of minor additions, and this occurred only at the very peak of housebuilding in the 2-3 years preceding the climax, or, when security possessed a premium. This latter circumstance was however only operative after 1900, as beforehand the bankruptcies and depths of depression had been so acute as to prevent even a modest resumption to the smaller alterations type of building. Despite such activities the overall time shapes of both forms of building are basically similar.

Turning to the industrial and commercial construction between 1873 and 1914 certain discrepancies emerge in relation to previously mentioned series. The peak of industrial construction came in 1873 so far as can be

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1 G.M.C., Evidence of T. Binnie, p. 328, q. 7011.

2 For modern day examples of substitution between the branches of the industry I am grateful to the Scottish section of the National Housebuilders Registration Council.

ascertained[1] thereby corresponding with the trade cycle turning point,[2] a further validation of the industrial building-trade cycle link being obtained from The Economist's conclusion, 'It is very probably that the six years of Depression will .... be reckoned from September 1873 to September 1879'[3] which concurred with the dramatic recession in Scottish industrial construction over the same period. The proportions of the 1872-3 business construction boom clearly left a legacy of excess capacity in Scottish industry, for the level of industrial and commercial building enjoyed more of the transitory upsurges the residential sector, indeed a counter cyclical performance compared to housebuilding appeared during the 1880's. The Baring Crisis, elsewhere suggested as unimportant for Scottish investment trusts and confidence generally,[4] was not influential and industrial building during 1889-91 enjoyed something of a mild boom. The subsequent trough and early peak in industrial construction projects provides an interesting lead-lag relationship with housebuilding, as the mid-cycle residential building peak of 1887 and trough of 1890 is echoed three years later in both cases by industrial building. Such a lag in the business construction sector mid-cycle was not however demonstrated in peak years where a lead of respectively three and one years in the 1870's and 1890's was established, though according to the argument sustained subsequently the 1898 housebuilding peak was premature as indicated by, amongst other things, the volume of unextinguished demand between 1902-6, a feature absent in housebuilding fluctuations which normally suffered abrupt recessions.[5] Thus a later date, possibly 1900,

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1 Glasgow Office of Public Works, Memorandum of Linings granted by the Dean of Guild Court, indicates the last few months of 1872 and from January to September 1873 the heaviest period of approved industrial building.

2 W.W. Rostow, British Economy of the Nineteenth Century (Oxford, 1948), Table II, p.33.

3 The Economist, 'Commercial History and Review for 1869', p. 1.

4 J.C. Gilbert, A History of Investment Trusts in Dundee, 1873-1938, (London, 1939), p. 67.

5 R.C.O. Matthews, The Trade Cycle (Cambridge 1959, pp. 98-112.

would have provided a more realistic peak and consequently but for the interruption of the Boer War a reiteration of the 3 year lag of house-building peak on industrial building would have resulted.

The absence of a fixed housebuilding - industrial building relationship confirms empirical findings in America[1] and this conclusion on Scottish fluctuations where industrial building lags housebuilding into recovery and leads it into recession is not surprising considering the characteristics of the two series. Housebuilding, relatively homogeneous, was much less likely to have as in industrial building downward fluctuations in one sector offset by improvements in another. Consequently the severity of fluctuations in industrial building were curtailed.

Digressing temporarily to the debate on the home boom of the 1890's the index of Scottish industrial construction has some bearing. Towards the upper turning point of 1890's Scottish housebuilding achieves agreement with the findings of several writers regarding the improvement in prices, production and investment after the mid-1890's,[2] and more specifically, the improvement in railway capital investment in Scotland,[3] housebuilding[4] and bicycle construction in England[5] which with other sectors of gross domestic capital formation[6] witnessed buoyant conditions in the late 1890's, ultimately resulting in a 'home boom topped off by a war'.[7] Such a

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1 C.D. Long, 'Long Cycles in the Building Industry', Quarterly Journal of Economics, LIII, 1939, p. 379, and J.R. Riggleman, 'Building Cycles in the United States, 1875-1932', Journal of the American Statistical Association, 28, 1933, p. 182.
2 S.B. Saul, The Myth of the Great Depression (London, 1969), pp. 27-8.
3 W. Vamplew, 'Railways and the Transportation of the Scottish Economy', Economic History Review, 24, 1971, p. 40.
4 S.B. Saul, 'Housebuilding in England 1890-1914', Economic History Review, 15, 1962, pp. 119-37.
5 A.E. Harrison, 'The Competitiveness of the British Cycle Industry, 1890-1914', Economic History Review, 22, 1969, pp. 287-303.
6 B.R. Mitchell and P. Deane, Abstract of British Historical Statistics, (Cambridge, 1971) p. 374.
7 S.B. Saul, The Myth of the Great Depression, p. 27.

consensus is certainly not in doubt from the point of view of Scottish industrial building, but what is of greater relevance is the timing of this upswing in a Scottish context. The Sigsworth-Blackman contention,[1] supported by Feinstein's calculations,[2] is for a recovery dated early in the 1890's. Scottish industrial construction whose lower turning point is 1893, experiences a gentle recovery during 1894 quickening thereafter and, thus, given the existence of surplus capacity in the trough, the gradual appearance of sufficient demand and a lag before industrial investment was contemplated, there is some support for the upswing to pre-date the minimum gross fixed capital investment year of 1893, thereby coming, as Sigsworth and Blackman suggest, in the early 1890's. A qualification to the support for this proposition is however necessary. If 1892-4 is considered as an interruption, albeit a rather lengthy one to the previously rising building levels in Scottish industry, the origins of the home boom may well relate to the late 1880's. However the three year interruption represents a meaningful break in trend which would leave support for the Sigsworth-Blackman position uncontested. An interesting post-script on industrial and commercial building in Scotland during the 1890's is that the gradients of the slopes in graph 2 of this series and of housebuilding are very much in harmony, a point confirmed by Sigsworth and Blackman, who pointedly remark that although there are slight divergences, which are to be expected, the series do not move against one another.[3]

An interesting aspect of table 4 is the absence of an industrial construction boom parallel to the aggregate movement of industrial production in the United Kingdom. Excluding building output itself industrial

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1 E.M. Sigsworth and J. Bla ckman, 'The Home Boom of the 1890's', Yorkshire Bulletin, 17, 1965, pp. 75-97.
2 C.H. Feinstein, quoted in Sigsworth and Blackman, op. cit., Table III, p. 84.
3 E.M. Sigsworth and J. Blackman, op. cit., p. 78.

production indices advanced by 22-30% between 1902-13,[1] whereas the construction of warehouses, industrial buildings and offices in Scotland declined steadily from 1902 until 1910, recovering somewhat by 1913. A quite distinct upsurge of industrial activity in Britain during 1906-7 was greeted in Scottish urban districts by the largest single reduction (10.5%) of industrial and commercial in any twentieth century year. Although Scotland may not have shared the rate of industrial expansion in the kingdom as a whole nevertheless her industrial base was far from depressed as the dominant shipbuilding sector shows, launching 6.32 m. tons between 1902-13,[2] a 30% increase over the preceding dozen years. And so the reluctance to expand fixed assets such as property can only be explained by the existence of adequate capacity to accommodate the industrial expansion, the creation of these buildings being the product of substantial and prolonged capacity extensions during the home boom of the 1890's, and especially during the decade of 1895-1904, when the industrial building index was constantly in excess of 100. Individual burghs of course differed from the Scottish national pattern. In the burgh of Clydebank the industrial building programme was particularly active over the years 1905-7; in Hawick the declining construction of the twentieth century was no new phenomenon, merely extending the trend of the 1890's.

In a different realm of Scottish building, that of 'public' building a number of distinctive features are observed. The critical aspects are retained: a mid-seventies peak, a minimum index value in 1879, a late-nineties peak and a decline to 1914. But there were significant deviations. Unlike related branches of building an upward path of prosperity is revealed between 1880-5, followed by a near mirror-image of housebuilding

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1 Hoffman, Lomax and Feinstein indices of industrial production respectively increase by 29.5%, 27.0% and 22.4% between 1902-13. See B.R. Mitchell and P. Deane, op. cit., p. 272, and C.H. Feinstein, National Income Expenditure and Output 1855-1965, (Cambridge, 1972), Table 51, T112.

2 W.S. Cormack, An Economic History of Shipbuilding and Marine Engineering, Glasgow, Ph.D. Thesis, 1930.

between 1885 and 1891.

An inverse relationship is therefore apparent in this phase of the cycle. No prolonged upswing developed during the early 1890's in this field of building: in fact at this juncture there was a marked downswing in activity, the index falling by 28 points to 81.6 in 1894. A similarity with alterations and additions work followed with something of a plateau over the 1896-98 years, but the early years of the twentieth century were quite unlike any other form of Scottish building. From 1900 a series of undulating fluctuations occurred with rising values attached to each of the rounded peak years of 1902, 1905 and 1908, which were succeeded by a flattening or tailing off to this serpent-like series.

Random bequests, community need rather than economic circumstances and the sizeable and indivisible nature of public building[1] contributed to the diminished degree and recurrence of fluctuations as well as to the special characteristics of public building in Scotland. Another aspect of this series is the break in trend which is apparent from the middle of the 1890's. The undulating nature of fluctuations is in stark contrast to the abrupt alterations to the volume of public building prior to 1896, which is clearly demonstrated by the discrepancy in annual average index changes before and after 1896, these respectively being 15.4 points p.a. and 6.2 points p.a. True, some reduction in year to year fluctuations post-1900 developed in the other forms of Scottish building, but this stability in the post 1897 public building represents a 60% reduction in year to year fluctuations.

The 'lumpiness' of public building contracts not surprisingly affected the position of the residential builder. Competition for lime and labour, bricks and beams inevitably brought constraints on factor supplies to bear on the building industry in general.[2] Municipal building assumed a

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1 Paisley, D.G.C., Registers offer only one example of these features.

2 K. Maiwald, 'An Index of Building Costs in the United Kingdom, 1845-1938', Economic History Review, 7, 1954, pp. 187-203, is certainly aware of the overall demand for building materials.

variety of miniscule mantles as well as the prestige projects - items such as the swimming pools in Hawick (£2500)[1] and Paisley (£8000)[2] or the Coatbridge library (£10000)[3], and including museums, art galleries and hospitals too. The range of municipal involvement is nowhere better exemplified than in Dumbarton where the Town Council was heavily involved in schemes connected with the pier, gasworks, water mains, roads and footpaths,[4] as well as in laying out cemetries and parks and planning a town hall.[5] Hardly susceptible to speculative over-building, this arena of the building industry developed on a keel more even than housebuilding and yet, the very nature of the occasionally substantial public projects provided a destabilising impact on residential building (Table 5). Thus, for example, when the construction of houses in Dunfermline was proceeding briskly in 1913 the fact that public building contracts were valued at 126% of housebuilding work was of consequence to the activities of the latter, as was the abrupt cessation of such public building in 1914, releasing as it did factors of production for the housing sector. Similarly through its variability in Falkirk (1909-12) Coatbridge (1908-14) or Glasgow in the middle years of the 1880's public building exerted a syncopated impact on the activities of the housebuilding sector.

IV

The variform Scottish building industry experienced certain crucial distinctions within the branches of the trade during the years 1873-1914. Some summary remarks on the severity of fluctuations in the respective

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1 Hawick, D.G., 1912, N.R.A., 3/1/1.
2 Paisley, D.G.C., 1913, N.R.A., 1/20/2.
3 Coatbridge, D.G.C., 1903, N.R.A., 1/4/3-4.
4 The Builder, May 23, 1874.
5 Ibid., Jan. 30, 1864.

Table 5

Estimated Valuation of Public Building as a % of House Building

	Glasgow	Coatbridge	Paisley	Falkirk	Dumfermline
1883	115.6				
84	253.7				
85	35.4				
86	20.9				
87	31.6				
88	a				
89	a				
1890	a				
91	2.7				
92	5.2				
93	10.7				
94	3.4	37.5			
95	37.1	19.7			
96	8.7	21.9			
97	18.1	53.0			
98	10.9	1.1			
99	15.5	9.6			
1900	6.5	52.6			30.7
1	31.4	19.0			17.8
2	30.7	30.4	8.6		119.0
3	12.1	21.5	1.1		31.7
4	39.9	16.3	14.4		3.7
5	12.9	23.0	15.5	7.4	57.1
6	8.9	1.7	0.5	20.4	5.3
7	41.7	30.7	40.5	65.6	20.1
8	22.7	33.5	21.3	8.3	12.2
9	46.9	54.9	25.9	49.9	43.7
1910	64.5	6.7	27.5	208.3	7.6
11	411.9	101.9	n.a.	23.2	38.9
12	249.5	515.8	n.a.	213.8	1.3
13	45.9	100.0	177.6	a	126.6
14	87.8	364.2	128.1	b	28.8

Notes: n.a. not available
a public building valuation zero, percentage infinity
b housebuilding valuation zero, percentage infinity

Sources: Dean of Guild Court Registers, and City of Glasgow Memorandum of Linings.

building sectors have casually been referred to as differing over time and according to the type of building, and further information (Table 6) supplements the theme of differential time paths and amplitudes of fluctuation.

Table 6

Average Annual Amplitude of Scottish Building Fluctuations, 1873-1914

Type of building	Peak to Peak	Trough to Trough
All building	7.8	3.8
Housebuilding	14.1	7.4
Industrial	9.8	4.8
Public	7.3	?
Alterations etc.	6.0	4.3

Source: Table 4.

The most unstable of the sub-sections of building was, by a substantial margin, housebuilding. The oscillations in the volume of housebuilding were almost twice as severe as other branches of the industry on both criteria advanced in Table 6. Scottish industrial construction suffered average index changes of 10 points between 1873 and 1897 and of 5 points between 1879 and 1910, thereby indicating the abrupt downswing of 1873-9 and the more placid construction of the 1900's. The subdued variations in the volumes of public building and alterations and additions work are highlighted in Table 6 and these series, in common with industrial and housebuilding are less destabilised on the later, trough to trough criterion.

From another viewpoint, that of the extent to which the five series move in harmony, an indication of similarities between different forms of building activity is obtainable over the duration of forty years. Consequently from table 7 below yearly alterations to the volume of building activity in all sectors of the industry are compared. Correlation coefficients which approach 1.00 indicate those similarities in the timing

Table 7

Correlation Coefficients for Various Types of Building, as an Indication of Synchronised Fluctuations over the long term

	All Scottish Building	House Building	Industrial Building	Public Building	Alterations & Additions
All	-	.83	.77	.52	.74
Houses		-	.82	.22	.27
Industrial			-	.34	.22
Alts. & Adds.					-

Source: Table 4

of changes in building work and considerable agreement on the absolute level of such changes, and such a correspondence would advance tentative hypotheses relating to close resemblances in market conditions in the realms of costs of production, supply elasticities and the strength of demand factors. This is particularly appropriate in the relationship between Scottish industrial construction and residential property building with the coefficient +0.82 indicating a close alliance of factors responsible for such a correspondence. Covariations of this order in the fluctuations of two building series do not necessarily imply a causative relationship, though no doubt there is an element of causation involved, particularly running from the wider based industrial dimension to the housebuilding side.

The distinctive characteristics of public building projects and the more mundane alterations and additions work over four decades are illustrated in the dissimilarities, low correlation coefficients, contained in table 7. Disaggregation of public and alterations building into two time periods hinged on 1896, the earliest peak year of the four series produces higher correlation coefficients for public construction in the earlier period and for alterations work in the latter, 1896-1914 period (table 8). In fact as can be seen from this table, housebuilding, industrial

Table 8

Correlation Coefficients for the Various Branches of Scottish Building as an Indication of Synchronised Fluctuations over the periods 1873-96 (1) and 1896-1914 (2)

	All Scottish Building	House Building		Industrial Building		Public Building		Alterations & Additions	
		(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
All	-	.86	.98	.78	.97	.64	.62	.63	.98
Houses		-		.85	.92	.48	.37	.20	.93
Industrial				-		.43	.38	.08	.96
Public						-		.44	.43
Alts. & Adds.								-	

Source: Table 4.

and alterations building, and thus 'all' building, show considerably greater synchronisation in their activity levels in the 1896-1914 period. When each of these series is compared with the public building classification marginally greater harmony of fluctuations is achieved in the earlier 1873-96 period.

Returning to the overall comparisons of fluctuations, that is 1873-1914, in Table 7, the aggregated 'all Scottish building' series are quite closely matched by roughly equivalent fluctuations in alterations and additions building ($r = +0.74$), though public building fluctuations are less alike ($r = +0.52$). Both of these sub-sections of the building industry are less sympathetic than housebuilding and industrial building are to 'all building', though in these cases this is due to the larger weighting of these elements in total building. (Table 9).

The relative weightings of the various component parts of Scottish building appear to have a ratio of 9 : 5 : 3 : 2, as seen from the proportional valuations of approved plans (Table 9), with housebuilding almost double the value of industrial construction work which in turn was

Table 9

Relative Contributions of Different Sectors of the Building Industry

(by value)

Burgh	Housebuilding	Industrial	Public	Alterations & Additions
Partick (1899-1912)	64.1	16.2	11.1	8.6
Paisley (1902- ; 1913-14)	58.5	25.0	10.2	6.3
Coatbridge (1884-1914)	54.2	24.4	16.0	5.4
Dunfermline (1900-1914)	53.9	20.9	16.2	9.0
Govan (1889-92; 1892-1912)	49.1	24.8	24.2	1.9
Dumfries (1893-1905)	46.7	23.4	20.6	9.3
Falkirk (1905-14)	45.5	31.1	14.1	9.3
Glasgow (1873-1914)	45.0	25.3	15.5	14.2
Clydebank (1903-9; 1912-14)	44.6	47.6	5.4	2.4
Ayr (1905-14)	42.7	29.4	14.0	13.9
Hawick (1907, 1909-14)	18.3	35.9	40.6	5.2
Scotland	46.4	25.4	15.3	12.9

Source: Dean of Guild Court Register and Minute Books.

roughly equivalent to the sum of expenditure on public buildings and small alterations work. The Scottish ratio cited above although dominated by the Glasgow experience holds for a number of other burghs in table 9 with only minor adjustments. Thus in Dunfermline a ratio of 11 : 4 : 3 :2, or in Falkirk of 9 : 6 : 3 : 2 applies to the respective expenditure on houses, industrial building public projects and alterations and additions work. Despite such minor alterations the basic conclusion emerges consistently from these burghs that housebuilding is substantially the largest sector within the Scottish building industry and in most cases is roughly as important in terms of labour and material inputs as the sum of all other branches of the industry. Exceptions to this 'rule' naturally exist. In Paisley and Partick where observations are confined largely to years of buoyant housebuilding activity the housebuilding element shows an upward revision. In most other cases the years are not unduly biased towards an over-representation of certain cyclical phases. Even Hawick which might have fallen into such a category[1] with a run of depression years

1 Third Statistical Account of Scotland. The suggestion is that border woollen towns were building very few houses at this period. Thus 18% in Hawick may partly represent this long run trend, and partly the short-term phenomenon of a downswing within this limited volume of housebuilding.

involved shows a very low proportion of housebuilding, 18% of building, partly because of sizeable projects in 'public' building when two schools, a Dominican convent, a Church and swimming baths were constructed in the space of a few years, thereby inflating this sector at the expense of housebuilding.[1]

Points of subsidiary interest emanate from table 9. Industrial and commercial construction in most of the burghs represents between 20-25% of total building work, although a dramatic aberration from this weighting is the 47.6% of all Clydebank building attributable to the industrial upsurge in that burgh. Evidently further capacity extensions in the decade preceding World War I were urgent priorities for the entrepreneurs of Beardmores, John Brown's and the Singer Sewing Machine Company.[2] This industrial trio dominated Clydebank to such an extent that it was rare in some years to see more than a handful of industrial construction projects being undertaken by other companies.[3] Frequent capital expenditure by the Carron Company in Falkirk and substantial sums on harbour facilities and race course developments in Ayr also boosted the proportion of industrial and commercial building work available in these two burghs.[4]

Another interesting feature of table 9 is that while the relative weights of different sectors of the industry may alter marginally between burghs, the priorities, in descending order, are always housebuilding industrial building, public building and alterations and additions. Clydebank and Hawick, elsewhere noted as special cases, disobey this general rule. Despite consistently third and fourth rankings public building and other minor building cannot be lightly dismissed. Their cyclical paths have been investigated and shown to be unusual, but equally

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1 Hawick, D.G.C., Registers, 1907 and 1910-13.
2 Clydebank, D.G.C., Registers 1903-14.
3 Ibid., 1904-5; 1912-15.
4 Falkirk, D.G.C., 1911 N.R.A., 1/3/13, Warrants for £6,500 and £5,500 'Extensions' Carron Company, the petitioners for the warrants, were two only of a number of similar plans.

the absolute contribution to the Scottish building industry is important, being respectively 15.3% and 12.9%, and thus in a number of burghs at least a quarter of building income and employment was derived from this arena. In Clydebank the low expenditure in both these sectors indicates the essential priority attributed to housing and employment, the lesser importance attached to amenity in the form of public building and the unnecessary expenditure on a housing stock far from obsolescence in that its age distribution was limited to 1 to 30 years, even in 1914.[1] Such an experience is unique and not unexpected in the 'take-off' period of this nineteenth century new town. Only in Govan was an equally small proportion of alterations and additions work undertaken. No distinctive feature readily explains this phenomenon, though some emphasis may be put on the geographically engulfed nature of the burgh and the consequently reduced scope for additions in the predominantly tenement type of Govan housing. Thus the suburban additions and alterations work was unwarranted in this burgh. Another possible explanation is that with the 30% lower average cost of tenement building in Govan compared to Falkirk and Clydebank[2] it was more profitable for the jobbing end of the industry to turn its attention to more grandiose plans, and this may also amount for a higher than average concentration of Govan builders on the provision of housing accommodation.

Broad similarities superficially apparent in graph 3 throughout the various cyclical phases belie actual differences in the timing, severity and duration of fluctuations in housebuilding, industrial construction, public building and alterations and additions. Avoidance of year to year comparisons of each series has been preferred to enable the major features of each sub-section of the building industry to be highlighted, and to this end the pre-occupation of tables 6 - 9 has been geared towards an

1 Third Statistical Account of Scotland, County of Dunbarton, (Glasgow, 1959), p. 231.
2 See Ch. 1.

analysis of the overall pattern, the long swing of 1873 to 1914. The complementarity of the four main branches of the industry has been stressed with a view to noting the potential for factor substitution, a flexibility which was probably greater between housebuilding and alterations and additions. Considerable importance has been attached to relativities, the proportional contribution of the component sectors of the building industry, and although these do vary over the course of the cycle, as displayed by the experiences of Partick and Paisley builders, the orders of magnitude and the ranking of the branches of the building industry remain substantially unaltered over time and between burghs.

This section therefore provides a fairly comprehensive account of building fluctuations in Scotland in the wider context, and with certain information on the building industry and industrial capacity, the genesis of the home boom of the 1890s, and a few instances of capital investment in individual burghs a broader framework for the more detailed analysis of housebuilding is established.

V

A important point worth noting is that builders, and housebuilders in particular, were aware of the cyclical nature of their trade and that the construction of explanatory theories of fluctuations are not a fabrication foisted upon the building industry between 1873 and 1914, the circumstances of which it was unaware.

Frequent and numerous comments on 'the drabness of times'[1] 'renewed hope'[2] or the more exultant tones of 'an exceptional amount of housebuilding is in progress'[3] indicate a pre-war awareness of variations in the levels

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1 The Builder, Oct. 6, 1883, p. 447.
2 United Operative Masons' and Granitecutters' Journal (subsequently U.O.M.G.J.) Jan., 1903, p. 2.
3 The Builder, May 15, 1897, p. 448.

of building, which was statistically underpinned by data on membership, reserve funds and net changes in these indicators.[1] Thus the Scottish Union of Masons reported on £13,000 diminution in reserves between 1899 and 1901, thereby reducing funds to £4000.[2] But a more formal and explicit understanding of recurring fluctuations was presented as early as the 1870s. Contemporaries thus were aware of the 'excessive speculation of 1872-75'[3], the resulting 'overproduction' and the inevitable consequence of substantial quantities of unlet properties.[4] This crude interpretation of a capital stock adjustment model obtained additional support from a succinct formulation by a Glasgow authority who successfully traced the connection between rapid outbursts of housebuilding, a high level of empties and falling capital values which resulted from saturation, and the disgust with property investments which brought about minimal working class house construction.[5] The cyclical nature of housebuilding was very much in mind when Thomas Binnie, a prominent Glasgow builder and house agent, appeared as a witness before the Glasgow Municipal Commission on March 13th 1903. He was asked, 'Is not the record of the building trade an irregular record of great spurts followed by great drops?'[6] The response, which was affirmative, provided, gratuitously, confirmation of the cyclical characteristics of component sectors of housebuilding:

> '... different classes of buildings are put up at different times'

Elaborating on this statement, the witness then expounded on the individual cyclical characteristics of the housebuilding industry in the following

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1 Associated Carpenters and Joiners of Scotland (subsequently A.C.J.S.) Annual Reports, 1862 -
2 U.O.M.G.J., Jan. 1903.
3 G.M.C., Evidence of Binnie, p. 306.
4 Ibid.
5 W. Fraser, 'Fluctuations of the Building Trade, and Glasgow's House Accommodation', Proceedings of the Royal Philosophical Society of Glasgow, 39, 1907-8, p. 26.
6 G.M.C., Evidence of Binnie, p. 311, q. 6572.

terms:

> 'A few years ago the demand was for very superior houses of two rooms and kitchen. Quite recently there has been a demand for a still larger class of house. Another time you have a great demand for the room and kitchen and single apartment houses. They don't all go on regularly.'

In fact as early as 1868 knowledge and understanding of the cyclical nature of the building industry was available. Over-building and the reaction to it was very much the basis of the explanation advanced by prominent trade union offidals as the fundamental cause of depression. James Matson presented the trade union view:

> 'I think that any depression that has taken place in building of late years has been caused by overbuilding. A few years back certainly a number of speculators entered into the market for building and they overdid the thing.[2]

The inherent instability of the building industry was exacerbated during the 1870's by the west of Scotland bankers' credit policy and the unwarranted construction activity ultimately produced the cumulative contraction of which these contemporaries were all to well aware, the matter also being compounded by the failure of the apparently bottomless depression. In fact '... the failure of the City Bank sent two-thirds of the builders in Glasgow into the bankruptcy Court.'[3] Emphatic evidence indeed of the latent, and realised, over-reaction of the Scottish building industry.

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1 Ibid.

2 A.C.T.S., Minutes of Evidence of Messrs. Matson and Proudfoot before the Commissioners Appointed to Enquire into the Organisation and Rules of Trades Unions and other Associations, Glasgow, 1868, p. 25.

3 G.M.C., Evidence of Binnie, p. 328, q. 7011.

Such information on the weakness and vulnerability of the building was available to Victorians. Through trade journals, newspapers and trade union reports the mechanisms and inter-relationships of the building industry were accessible.[1] The problem was that the lure of profit and speculative gain in the short run blinded many housebuilders to the danger signals communicated in editorial and statistical fashion in the press and trade journals and eventually the lagged response of builders became both effective and over-compensating.

VI

That such divergent categories within the building industry exhibit a considerable measure of harmony, the Edwardian public building and 1870s peak for the alterations series excepted, encourages the view that fundamental factors of a generalised kind were common causative elements in the fluctuations of housebuilding, industrial, public and alterations building.

Exemplifying a general determinant of overall building fluctuations is the role of the Boer War in its effects on the supply of capital.[2] The building indices were uniformaly in decline in 1899, but the degree of contraction was influenced by the common element of capital availability. This had proved crucial in the recession of late 1876,[3] and twenty-two years on the Bank of England's discount rate changes, increasingly more

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1 The Scotsman, Mar. 1877, for example, indicated £1.4 million of work was undertaken in 1876; The Masons and Granitecutters' Journals gave statistics on the volume of building for several years preceding the months of issue, as well as monthly building trades employment figures; The Builder's Account of the Scotch Building Trade', Aug. 26, 1876, p. 839 also gave information on fluctuations in previous years. Newspapers frequently reported local Dean of Guild decisions and synopses of work sanctioned were sometimes published in tabular form, and thus considerable information was available.

2 S.B. Saul, 'Housebuilding in England, 1890-1914', Economic History Review, 15, 1962-3, p. 122.

3 A.C.J.S., Annual Report, 1877, p. 1.

effective,[1] were of relevance. For most of 1897 and 1898 Bank Rate moved only marginally around its 3% level, and whilst there was a relaxation in the first six months of 1899 from the October 1898 level of 4%, the last months of 1899 saw Bank Rate climbing quickly to 6% in November, which, though easing slightly, was still held at 4% for the first half of 1901 being above the 1897-8 rate by fully 1%.[2] The building peaks of the early 1900s were associated with the easier money conditions,[3] and thus this influence can be seen to cut across all sectors of the building industry.

Of relevance to each branch of the building industry was the overall performance of the Scottish economy. Industrial performance was of course particularly relevant to the questions of desired capital stock, existing plant, anticipated demand and capacity extensions, the latter being the capital investment largely represented in the industrial building sector. But it did affect the other building branches in generating income and employment and affecting the costs of building and thus the viability of projects in these other fields according to the pressure exerted on factors of production. Building in the wider context therefore was influenced by the prosperity of the coal and pig iron industries which in Scotland between 1900-14 achieved output levels on respectively eleven and ten occasions which was substantially in excess of the trend growth path, and on five instances, 1902, 1906, 1907, 1911 and 1913 at least three of the output figures for coal, jute, shipbuilding and pig

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1 R.S. Sayers, Essays in English Monetary History, Ch. 10, p. 143 makes the point that in 1899 Bank Rate was not effective, other devices being employed. He does however show that government finance through War Loans and monetary control through interest free advances and premiums on loans were adopted and thus had some impact on the cost and availability of capital, 'the Bank having the market well under control ... ', p. 142.

2 B.R. Mitchell and P. Deane, op. cit., p. 458, quoting from J.H. Clapham, The Bank of England (Cambridge 1944), Vol. II, pp. 429-32.

3 S.B. Saul, op. cit.

iron significantly and simultaneously improved on their trend growth line.[1]

Thus such factors as the cost of capital and the rate of growth of the money supply, industrial prosperity and the rate of obsolescence of the capital stock, a technical determinant of investment in each type of building, were generally applicable and these underlying factors must be duly considered in conjunction with particular circumstances at given points in time in any investigation of building cycles in Scotland.

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1 The statistics employed in the calculation of trend growth lines are as follows: coal: Memoirs of the Geological Survey of Great Britain, Mineral Statistics 1853-80, contained in Mitchell and Deane, op. cit., pp. 115-6; Jute: B. Lenman, C. Lythe, and E. Gauldie, 'Dundee and its Textile Industry, 1850-1914', Abertay Historical Society, 14, 1969; Shipbuilding: W.S. Cormack, Tonnage under Construction on the Clyde, in Glasgow Ph.D. Thesis, 1930; Pig Iron: Mitchell and Deane, op. cit., pp. 131-2.

Appendix 1.

Burghs Incorporated in the Scottish Building Indices, 1873-1914. (Dates refer to the point of entry into the index. Dates in brackets refer to years in which burghs are omitted from the index).

1873	Dundee; Glasgow; Partick (1889-93)
1874	Govan (1877)
1876	Irvine
1877	Leith
1878	Kirkcaldy; Perth; Port Glasgow
1880	Aberdeen; Edinburgh; Kilmarnock
1884	Inverness
1885	Hawick (1895-6); Dunfermline
1886	Coatbridge
1888	Clydebank
1889	Paisley
1893	Falkirk
1894	Airdrie; Ayr; Galashiels; Motherwell; Rutherglen; Stirling; Wishaw.
1896	Hamilton
1898	Musselburgh

CHAPTER III

Housebuilding in the Major Scottish Burghs, 1870-1914

The assembly and analysis of numerous case studies[1] of housebuilding in boroughs has been the recent response to the macroeconomic approach of the 1950s.[2] This has developed an inductive scrutiny of causation in housebuilding fluctuations, shedding new information previously submerged in the aggregative deductive approach. Another battery of case studies is now available in the form of Scottish burgh housebuilding series and it is hoped that these will adequately supplement those boroughs already enumerated by Lewis and Saul.[3]

The magnetic attraction of the long swing hypothesis, revolving on the twin poles of American and British inverse twenty year cycles, has diminished beneath the abundant empiricism on housebuilding, a central component in the field of investment upon which the alternating waves of activity were constructed. The balance of explanation of housebuilding fluctuations has accordingly shifted in favour of the endogenous elements - rents, building costs, empty property, demand factors - and the Scottish study endorses this change of emphasis. In essence the argument here is that while a common undercurrent of forces existed, the variety of housebuilding performances between 1870 and 1914 cannot be neatly encapsulated in an overall theory, and

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1 J.P. Lewis, 'Indices of Housebuilding in the Manchester Conurbation, South Wales, and Great Britain, 1851-1913', S.B. Saul, 'House Building in England, 1890-1914', Economic History Review, 15, 1962, pp. 119-37.

2 A.K. Cairncross, Home and Foreign Investment (Cambridge, 1953) and B. Thomas, Migration and Economic Growth (Cambridge, 1954).

3 J.P. Lewis, op. cit., S.B. Saul, op. cit.

therefore the largely local divergences in housebuilding are attributable to a number of local circumstances of varying intensity.

The aim here therefore is to present the indices of individual burgh housebuilding activity, and following some comparisons between burghs both individually and by groupings, use this information as a preliminary to an investigation of the determinants of their respective time shapes. The precedent, almost mandatory since Weber's pathbreaking venture,[1] of matching burghs in different parts of the country is also followed.

II

The general pattern of housebuilding in English and Welsh boroughs constructed by Weber shows an abrupt rise in the mid-1870s to a peak in 1876. The inexact twenty year cycle in fact takes two additional years to achieve the next peak but in the intervening period a prolonged trough ensues following the rapid decline in the late 1870s. The bottom of the cycle is in 1886 in fact, but the period between the peaks is that of a square U shape - rapid decline immediately following the 1876 peak and preceding the 1898 peak with very little variation in housebuilding activity between 1879 and 1895. Despite the financial stringency imposed by war time conditions, building activity during 1899 almost equalled that of 1898, and, given the rising index of 1902 which continued to produce a peak in 1903 equivalent to that of 1898, there is some evidence to suggest that the 1898 peak was an artificial one which without the Boer War would have been superceded in 1899 or 1900, given the level of unsatiated demand evident in the early 1900s. The Weber index shows a four year period following the second housebuilding peak when the industry was operating if not at full tilt then close to

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1 B. Weber, 'A New Index of Residential Construction 1838-1950'. Scottish Journal of Political Economy, II, 1955, pp. 104-32.

it, and from 1907 onwards Weber's research indicates a progressive contraction in housebuilding down to 1914.[1]

A not dissimilar pattern existed in the composite Scottish index. These burghs displayed the same major phenomena - sharp upswing and downswing around the 1876 peak, a trough during the 1880s, a rising level of activity in the 1890s to the twin peaks of 1898 and, in this case, 1902, with an extended run of good years until 1906, and finally the progressive contraction to the eve of war. But within this overall performance certain variations are contained which are the outcome of peculiar burgh circumstances. Thus the substantially wider amplitude of fluctuation particularly at the top of the cycle, the more buoyant building of the late 1880s, the rather higher primary peak of 1898 compared to 1902, tending to bear out the suggestion that the secondary peak was the product of interrupted yet unextinguished demand during the Boer War, each of these distinguishing Scottish features is the product of numerous local variations, and it is the detailed burgh fluctuations in housebuilding which form much of the material for this chapter.

It is possible, though not in an index form, to obtain a reasonably informed impression of Scottish housebuilding activity before the earliest burgh records permit more detailed scrutiny. Only in 1872 is some recognition given of general recovery in Scottish housebuilding,[2] although individual cases of buoyancy existed such as in Dunfermline in 1868,[3] and hesitant improvements in building prospects were guardedly voiced in 1871.[4] Unmistakeably, however, by 1872 the building trades

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1 B. Weber, op. cit., Statistical Appendix, pp. 129-32.
2 Annual Report of the Associated Carpenters and Joiners of Scotland, 1872, p. 2. (Subsequently A.C.J.S.).
3 The Builder, Nov. 21st, 1868, p. 863.
4 Annual Report, 1871, p. 2.

were enjoying an upswing and only then in terms such as 'the exceptionally good state of trade'[1] was the despondency created by stagnation from the late 1860s until 1871 cast off.

In the Glasgow case the 1871 turning point is to some extent confirmed by the substantial addition of over £100,000 to the city valuation roll of that year. (See Table 1). The increment, representing

Table 1

Increases in the Edinburgh and Glasgow Valuations 1856-1880.

	Glasgow Increase (£000s)	Edinburgh Increase (£000s)
1856	38.7	13.6
57	61.7	15.3
58	56.2	16.6
59	54.4	13.4
1860	52.0	23.8
61	41.2	24.0
62	35.8	30.7
63	43.3	34.4
64	33.3	38.4
65	29.7	31.9
66	54.6	33.1
67	50.6	31.4
68	73.3	41.2
69	68.5	49.6
1870	70.9	55.3
71	100.1	39.4
72	101.0	37.8
73	161.5	36.5
74	231.7	55.9
75	181.9	35.5
76	194.2	49.9
77	199.0	69.8
78	99.8	78.5
79	10.4	58.5
1880	20.7	52.0

Source: W.W. Watson, Glasgow Statistical Reports, 1863-80, Vol. 5.

4.7% of the total valuation, was 41% above the preceding three valuation years and was 100% in excess of the valuations in the earlier years of the decade. In fact, only at the height of the boom was such

1 Ibid., 1870, p. 2.

an addition to the city's rental value superceded, thereby indicating a precondition period to the building cycle in the late 1860s, with 'take-off' in 1871. A similar pattern emerges in the Edinburgh statistics with 1870 providing the turning point. A crucial distinction existed in the capital however where valuation roll additions in the late 1870s confirms the hypothesis of substantial Edinburgh housebuilding throughout the mid and late 1870s, much as in London, with a peak possibly in 1880.

Treated cautiously and in conjunction with price movements the valuation data yields certain clues as to housebuilding in the years prior to 1873. The data presented in table 2 shows the percentage of Glasgow housing standing empty. The rate of growth of housebuilding, as shown in

Table 2

Occupied and Unoccupied Houses in Glasgow 1861-79

	Occupied	Unoccupied	% Unoccupied	Cairncross
1861	82493	5086	5.81	
62	82885	6703	7.48	
63	85163	6536	7.13	
64	87767	4828	5.21	
65	90008	3280	3.52	
66	91623	1763	1.89	
67	92021	n.a.	n.a.	
68	93393	1609	1.69	
69	95516	1602	1.65	
1870	96995	2125	2.14	2.14
71	98414	2090	2.08	2.09
72	100177	2109	2.06	2.12
73	101902	2602	2.49	2.54
74	103423	4097	3.81	3.99
75	103696	4486	4.15	4.37
76	104530	5091	4.64	4.91
77	105062	7079	6.31	6.48
78	104496	8609	7.61	7.94
79	102448	11438	10.04	10.25

Sources: W.W. Watson, Glasgow Statistical Reports, 1863-80, Vol. 5, p. 94 and A.K. Cairncross, 'The Glasgow Building Industry', Review of Economic Studies, II, 1934-5, Table 2, p. 16.

table 4, flattens off considerably between 1876 and 1877, when the critical percentage of empty property lies between 4.64 and 6.48. The entire range

may of course be critical, or just some part of it, but it would be incorrect to assume that the upper and lower turning points of the house-building cycle are affected by the same range. Were this the case a noticeable upswing would be expected in 1864, when the empties level is 5.21%. What is more likely is that the empty property threshold as interpreted by builders is a lower one in the upswing, perhaps nearer 3%. Certainly the equivalent cyclical stage, 1891, when housebuilding begins to get under way again in Glasgow is at an empties level below 4.69%, and no doubt considerably below, as a full 1.4% fall the previous year had done nothing to excite housebuilders. A not unreasonable conclusion from table 2 therefore is that the sizeable proportion of unoccupied houses in the 1861-4 period disinclined builders to enter the housebuilding market, and only with the advent of persistently few unlet properties did house-building get underway again, and even then, not decisively until 1870 when the trade slump of 1867 was a receding black cloud on the horizon.

The building activity in the unextended, pre-1879 Edinburgh boundaries also provides some information on the housebuilding front in a major city. In Edinburgh the level of housebuilding throughout the 1870s is an

Table 3

Edinburgh Housebuilding, 1860-79

	No. of Permits		No. of Permits
1860	64	1870	96
61	49	71	84
62	57	72	97
63	69	73	90
64	50	74	92
65	57	75	106
66	53	76	82
67	62	77	90
68	63	78	106
69	63	79	75

Source: Edinburgh Dean of Guild Court Registers.

extremely buoyant one, with the upswing in 1870 and the peaks of 1875 and 1878 representing the best years of the decade. The sustained London-like prosperity of the late 1870s cannot unfortunately be traced to a peak in 1880/81, as in the metropolis, due to the confusion introduced by the boundary alterations of 1879. With the relatively low number of permits granted in the years 1861-6, excepting 1863, some corroboration exists for the long-swing hyp othesis. Thus the early and mid-1860s represent the cyclical predecessors of the depressed 1880s, with 1867-9 bearing an affinity to the 1887-9 years as a prelude to a more prolonged improvement in housebuilding, and the years 1870-2 casting some doubt in Cooney's argument for depressed housebuilding between 1869-73.[1]

III

Taking the first of the chronologically disaggregated phases of the housebuilding cycle, that of the mid-1870's, in each of the cases for which information is available[2] the dramatic upswing and peak is evident in each burgh, although in Glasgow housebuilding during 1877 is slightly in excess of that in 1876 (Table 4 and Figure 1). The acceleration in housebuilding between 1873 and the peak is indeed of sizeable proportions, being respectively 36%, 50% and 81% in Dundee, Glasgow and Partick. The 'exceptionally good state of trade'[3] which existed in 1872 was a view drawn from sixty-six locations in Scotland and demonstrates the generality of prosperity at an early stage of the upswing. The presence of only a limited number of burghs reporting the actual volume of residential construction is therefore no barrier in this instance to their representative-

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1 E.W. Cooney, 'Long Waves in Building in the British Economy of the Nineteenth Century', Economic History Review, XIII, 1960.
2 The burghs are Dundee, Glasgow, Partick and Govan.
3 A.C.J.S., 11th Annual Report, 1872, p. 2.

TABLE 4

Housebuilding in Scottish Burghs, 1873-1914 (1900-09 = 100)

	Major Scottish Burghs	Aberdeen	Airdrie	Ayr	Clydebank	Coatbridge	Dundee
1873	168.2						232
74	194.6						281
75	211.5						272
76	247.2						316
77	193.3						172
78	78.5						98
79	52.3						69
1880	111.0	126					160
81	71.7	100					58
82	74.5	60					56
83	57.7	64					54
84	78.9	130					94
85	76.7	129					56
86	94.4	188				134	67
87	105.5	155				48	125
88	97.0	114			35	96	111
89	96.0	126			59	120	111
1890	72.4	78			35	81	96
91	76.8	85			70	86	91
92	87.6	113			47	77	107
93	107.3	134			24	148	138
94	124.0	177	148	99	71	105	140
95	125.7	177	101	84	129	91	129
96	153.4	247	78	109	188	124	138
97	156.5	249	88	106	106	110	160
98	168.1	213	101	109	71	153	198
99	138.4	204	157	101	71	91	178
1900	93.6	122	88	89	82	101	85
1	121.4	123	152	101	71	115	120
2	132.2	127	115	77	78	153	98
3	125.7	154	129	126	35	110	107
4	116.3	121	134	168	94	139	105
5	113.0	118	101	143	235	101	131
6	106.0	81	97	136	177	62	114
7	69.6	54	55	86	153	101	71
8	59.9	57	60	27	59	57	78
9	62.9	44	69	47	94	62	91
1910	51.9	46	78	20	71	38	56
11	35.1	23	55	22	12	14	47
12	31.5	23	69	22	35	34	54
13	25.9	23	42	25	24	14	36
14	25.3	17	37	20	129	5	42

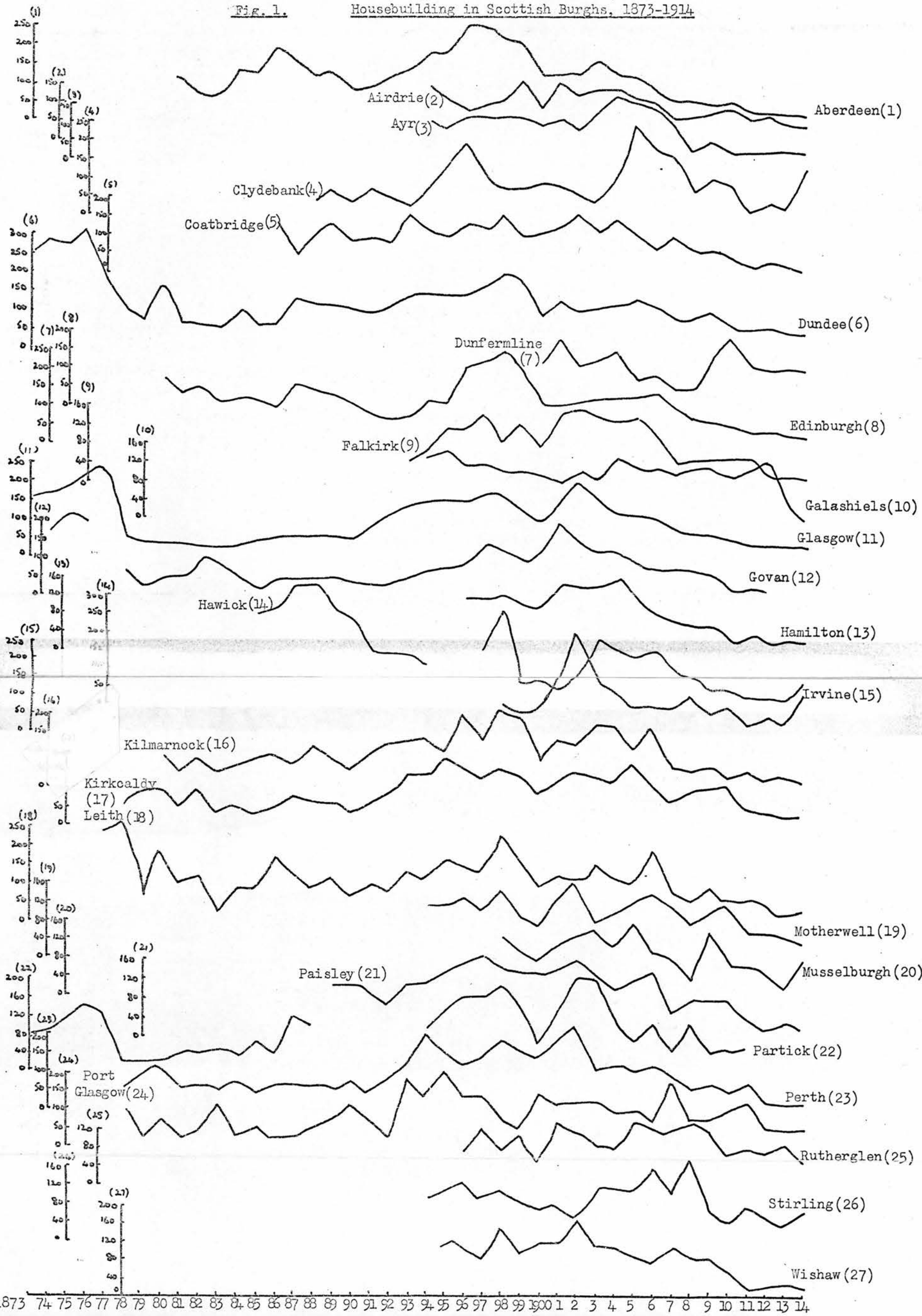
	Dunfermline	Edinburgh	Falkirk	Galashiels	Glasgow	Govan	Hamilton	Hawick	Irvine	Kilmarnock
1873					152					
74					157	163				
75					178	205				
76					218	190				
77					228	n.a.				
78					51	63				
79					35	16				
1880		181			31	37				89
81		129			27	37				39
82		141			23	90				77
83		109			20	79				39
84		115			26	37				54
85		106			39	11		244		73
86		94			43	39		256		81
87		150			44	32		346		58
88		135			51	37		346		108
89		125			49	47		256		85
1890		94			42	26		231		46
91		74			75	21		141		81
92		63			110	21		141		112
93		65	40		119	37		128		115
94		110	60	129	139	58		103		127
95		105	106	144	133	63		n.a.		92
96		199	106	114	141	79	110	n.a.		192
97		210	136	114	168	126	110	154		123
98		237	85	99	157	116	114	256	73	208
99		205	121	99	108	79	94	51	44	185
1900	109	109	75	91	93	116	98	64	59	69
1	172	97	141	76	141	190	138	39	132	119
2	102	104	151	99	197	137	130	77	265	112
3	117	110	141	83	148	111	134	180	132	162
4	145	115	126	129	114	111	146	154	103	162
5	66	123	136	106	106	84	118	128	59	96
6	78	134	101	106	101	63	73	154	59	150
7	43	88	40	91	71	68	61	90	59	46
8	43	61	45	114	55	63	49	77	88	39
9	125	58	45	106	58	58	53	39	44	46
1910	176	41	45	91	45	11	16	39	59	19
11	106	30	50	106	28	16	33	13	10	35
12	90	35	5	121	28	11	16	13	29	15
13	98	17	10	31	27	a	24	10	15	27
14	94	17	10	10	23	a	20	64	88	4

	Kirkcaldy	Leith	Mother-well	Mussel-burgh	Paisley	Partick	Perth	Port Glasgow	Ruther-glen	Stirling	Wishaw
1873						75					
74						82					
75						109					
76						136					
77		231				95					
78	50	269				14	52	109			
79	82	58				14	89	22			
1880	88	180				20	104	65			
81	44	96				34	47	22			
82	82	115				34	52	44			
83	26	19				41	42	109			
84	44	77				27	68	22			
85	24	83				61	37	44			
86	35	154				34	57	22			
87	68	128				109	57	22			
88	56	83				88	57	44			
89	50	109			96	n.a.	47	65			
1890	26	64			96	n.a.	68	109			
91	47	90			87	n.a.	37	65			
92	76	71			59	n.a.	73	22			
93	123	122			99	n.a.	115	174			
94	120	109	109		103	88	198	130	53	87	92
95	170	106	106		124	123	151	196	53	101	106
96	150	147	121		137	150	115	131	61	121	106
97	114	135	102		158	150	130	130	114	87	85
98	144	218	137	124	134	177	182	65	70	101	145
99	123	147	86	88	124	136	99	43	105	81	95
1900	70	83	66	74	118	54	73	130	44	67	110
1	106	109	117	103	130	129	130	109	123	67	106
2	129	90	156	118	149	191	214	109	105	47	166
3	120	141	70	132	121	191	99	108	79	107	106
4	109	109	82	103	87	102	104	87	70	114	103
5	153	96	117	147	103	61	94	86	132	107	81
6	97	180	125	88	127	95	109	65	114	154	71
7	53	71	106	74	37	41	78	174	105	101	103
8	79	45	66	29	62	95	47	65	123	175	81
9	85	77	94	132	65	41	52	65	105	60	74
1910	97	45	102	59	65	41	42	87	61	34	50
11	32	45	51	59	22	48	63	109	70	67	14
12	21	25	55	44	6	48	11	44	61	47	21
13	12	6	39	15	19	a	10	44	79	34	25
14	15	19	27	74	6	a	5	43	35	60	18

Note: The method of construction of these indices is identical to that of the aggregate index (Ch. 1.).

Sources: Dean of Guild Registers and Minutes (For further details see Appendix 1, Ch.).

Fig. 1. Housebuilding in Scottish Burghs, 1873-1914



ness. Indicative of widespread building buoyancy was the view that,

> 'It is a moot question if even English speculators in building land have met with the extraordinary success that has waited upon the Scots'.[1]

Indicative of the acceleration of the boom of the 1870's was the case of the Glasgow property bought for £22,000 in 1868 and with improvements the cost 'tottled' up to £33,000. It was sold in 1874 to the Caledonian Railway Company who paid £85,000 and 'competent' valuers thought £100,000 would have been more appropriate.[2] Brisk housebuilding was simultaneously proceeding in Edinburgh, and west of Scotland burghs adjacent to Glasgow were 'telling the London tale' with overbuilding rapidly developing.

Equally swift was the descent from 1876, 'the year of great speculation'.[3] The irresponsibility of speculative builders in the boom together with the crumbling financial confidence after the City of Glasgow Bank crash reduced bank advances to paltry proportions. According to Mr. Paterson, general secretary to the Associated Carpenter and Joiners of Scotland, 'Recent revelations in the Bankruptcy Courts ... have shown the manner in which many of the speculative builders manage their business'.[4] As a result 'An uneasiness has been caused among capitalists, and it is now scarcely possible to secure advances on property until it is finished and occupied'.[5] With such a hopelessness in the supply of capital to the building industry it is hardly surprising to find the overall Scottish burgh index at its lowest ebb in 1879. For most burghs 1879, if not the nadir, represented with 1878 the years of maximum contraction and the bottoming out of the

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1 The Builder, Mar. 24, 1877, p. 298.
2 Ibid.
3 W. Fraser, Fluctuations of the Building Trade, and Glasgow's House Accommodation', Proc. of the Royal Phil. Soc. of Glasgow, 39, 1907-8, p. 27.
4 The Builder, 19th Jan. 1878, p. 68.
5 Ibid.

trough. After all, from 1879 levels, little further scope for reducing housebuilding existed. Falls of 100 points in Dundee in the two years succeeding the modest 1877 level, almost 200 points over the same years in Glasgow, and slightly greater contraction in a single year in Leith could not be repeated, whilst both Partick and Port Glasgow reached in 1879 depths of depression never to be repeated.

Curiously housebuilding in both Perth and Kirkcaldy was on the increase in 1879. Absence of documentary material for the preceding years prevents anything more concrete than the hypothesis that for these municipalities, like Partick, the trough had been reached a year earlier than elsewhere. Such a proposition may derive mild corroboration from the fact that in both Kirkcaldy and Perth the membership of one building trade union, the Associated Carpenters and Joiners, declined rather more in 1878 than in 1879.[1] Almost certainly the improvement of housebuilding in these eastern burghs heralded the more general advance of Scottish housebuilding in 1880, a year of fundamental difference between the present study and that of Weber. Whereas English boroughs displayed continuing doldrums in housebuilding the overall Scottish index doubled in 1880. Such an upturn cannot readily be attributable either to the introduction of Edinburgh and Aberdeen into the index, as the splicing technique in a large measure minimises this, or to according these burghs a role equivalent to that of London in the Lewis 'All Towns' index[2] as the upswing is a more general phenomenon, affecting Dundee particularly, but also all of the other burghs for which information is available, excepting only Glasgow.

The year 1880 appears to be a classic case of a reaction to overshooting in the building industry: the dismay of 1878-9 was excessive if The Builder's view of slight upturn in late 1879 was accurate[3] and no doubt the

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1 A.C.J.S., Annual Reports, 1878-80.
2 J.P. Lewis, op. cit., pp. 150-1.
3 The Builder, 25th October, 1879, p. 1169.

unduly dismal conditions generated by the basic failure of 1878 were in some measure being overcome by 1880. Falling costs of borrowing and increasing bank deposits combined with expanding employment opportunities in the heavy industries particularly in the western industrial region of Scotland to provide favourable, if only short term, opportunities for housebuilding in 1880.[1]

The hopes and aspirations in this year proved transient. Nine of the eleven series recorded diminished housebuilding activity in 1881, Govan managing to hold its improvement of the previous year with Partick alone achieving a modest rise. Indeed the resumption of the pre-1880 decline and the prolonged duration of depression over the next decade amply demonstrates the intrinsic difficulties of achieving equilibrium in a product market whose characteristics are durability, immobility, long construction periods, and the resultant insensitivity to short term market alterations.

The 1880s were by no means a period of uniform depression. True, they represented the connecting trough between the booms of the mid-1870s and late 1890s, but there were considerable local and national variations. Apart from the peculiar years of 1880, and later years of the decade, 1886-9 provided some moderation to the depressed state of the building trade. Even the shipbuilding boom of 1881-3 served only to cushion the general decline in housebuilding, with Govan achieving index values of 90 and 79 in 1882 and 1883 respectively and Port Glasgow reaching 109 in 1883. Partick too enjoyed something of this prosperity. For each of the four cities, in their own way, the eighties were years of diminished housebuilding. The

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1 For statistical information see Mineral Statistics, Memoirs of the Geological Survey of Great Britain, 1853-80, and for later years, B.R. Mitchell and P. Deane, Abstract of British Historical Statistics (Cambridge, 1962), pp. 115-7; see also T.J. Byres, The Scottish Economy During the Great Depression 1873-1873-1896, Glasgow B.Litt. Thesis, 1963, and The Economist Commercial History and Review, 1873-1914 for information on interest rates. This and other statistical material is employed in the Quantitative Approach to Housebuilding, Ch. 4 . For full references see Ch. 4 Appendix 1.

Glasgow index fell to the low 20s, only matched again in 1914; Dundee housebuilding too was a pale shadow of the mid-70s, with the index resting in the 50s during 1881-3 and 1885; the Aberdeen volume of work in 1882-3 was half that of 1880, whilst the Edinburgh building trade although suffering fewer hardships in the early 1880s,[1] did experience more stringency in the years 1883-6.

In some burghs the difficulties of housebuilders were greatest in these middle years of the eighties, though other years in the decade were also far from rosy. Thus the shipbuilding group again moved in concert; Govan in fact from 1884-93 built relatively few houses, interrupted only in 1889, and Port Glasgow, 1884-8, built houses on a much reduced scale of operations. In Kirkcaldy, too, the years 1883-6 were extremely depressed, and even the subsequent period 1887-91 hardly achieved much improvement, while in Perth the long years 1881-91 were sluggish ones for the building trade, with the minor exceptions of 1884 and 1890.

In the aggregate Scottish series the index value range of 70-80 is a recurring and unifying feature of the years 1878-91, punctuated by occasional values for rather better or worse years. A quite distinct sub-period however exists within these slump years in housebuilding: the years 1886-89. And in this respect a further resemblance to the Weber index is evident, though in the English boroughs the upturn of 1887-89 is of much weaker proportions. In the Scottish burghs a considerable degree of unanimity is achieved; each of the thirteen Dean of Guild planning authorities recorded an increased tempo in housebuilding over the 1886-9 period, in eight of eleven recorded cases the upturn came in 1886/7 and in ten out of thirteen burghs the duration of the minor boom was terminated in 1889. Exception to this overall pattern existed; in Glasgow and Leith where marginally higher volumes of housebuilding were recorded in 1885

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1 The Associated Carpenters and Joiners of Scotland, 1883, p. 5 noted that overtime was being paid to building labour in the early 1880s.

and the duration of more active building proceeded unabated in Glasgow until 1890. Port Glasgow experienced a slight alteration in timing, the upswing coming in 1888, and lasting until 1891. Quite a unique case occurred in the borders. Hawick building trades enjoyed a feverish and unsurpassed level of activity in the middle and late 1880s, subsiding in early 1890s.

The relapse of the overall index in 1890-91 to the 70s appears to be primarily due to the difficulties and disenchantment of builders in Aberdeen, Govan, Hawick in relative terms to the mid 1880s, Dundee and Edinburgh housebuilding, on the wane in 1889, fell during 1890-2 to 50% of the average annual level of the 1880s. But these years in the early 1890s provided only a temporary check to an upswing which had got underway by 1886/7, and which had turned the corner as early as 1883. Although the minimum value of the overall burgh index occurs in 1879, individually the majority of Scottish burghs had witnessed their lowest volume of housebuilding before the 1886 date isolated by Weber, Partick doing so in 1878/9, Aberdeen in 1882, Dundee, Glasgow, Kilmarnock and Leith in 1883, Govan, Kirkcaldy and Perth two years later, and Edinburgh in 1886.

Thus the roots of Scottish housebuilding recovery were firmly embedded in the mid-1880s, and the blossoming developments of 1886/7-89, rudely checked over 1890-91, resumed a healthy expansive course thereafter, and accomplished a peak in 1898. With but one exception, Galashiels, where the active building of 1870-90[1] gave way to '..... the almost complete stagnation of the period 1890-1918 .....'[2] the decade of the 1890s was for all the Scottish burghs in Table 4 a spasm of booming housebuilding, culminating in a peak, usually 1898, in the latter part of the decade. The

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1 Third Statistical Account of Scotland, County of Selkirk, p. 246. The active building trade of Hawick, 1885-90, shown in table 4 partially confirms this unusual border housebuilding buoyancy when elsewhere in Scotland gloom and despondency abounded.

2 Ibid.

Edinburgh and Leith builders were 'fairly busy' in 1894 'and all hands were fully employed'[1] and although the winter months were difficult housebuilding in the following year burgeoned when 'building operations exceeded in number those of the previous two'.[2] The Scottish housebuilding crescendo of 1892-8 was as ever the subject of varying intensity and timing - the Aberdeen peak was twice that of Ayr; the building boom in Paisley achieved the same proportions as that in Airdrie but did so a year earlier and for some burghs, such as Kirkcaldy, the maximum point was achieved in 1895 - but a striking common feature was the consistent upsurge of housebuilding in these years. Indeed, taking a slightly longer view, over the years 1890-8, in 70.7% of cases Scottish burghs experienced more active housebuilding than in the preceding year. Not always, however, was the improvement a consistent one - 1895 was a year of setbacks in a number of burghs[3] - but several consecutive years of unrelenting and improving housebuilding were recorded in Aberdeen (1890-7), Clydebank (1893-6), Falkirk (1893-7), Govan and Paisley (1892-7), Glasgow and Kilmarnock (1890-4), Partick (1894-8) and Rutherglen (1895-8), while many burghs also enjoyed two or three consecutive improvements on more than one occasion.[4]

Another matter for virtual unanimity amongst Scottish burghs was the upper turning point of the cycle. Of the twenty-three cases for which such information is available seventeen (74%) achieve a peak in either 1897 or 1898, the remaining cases, with the exception of Airdrie (1899) reaching their maximum building levels beforehand. To a certain extent this confirms the Saul statistics,[5] in that housebuilding peaks are not scattered but concentrated on one or two years, as indeed was the case in the mid 1870s peak; it does also highlight the disagreement which exists amongst

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1 The Builder, Jan. 13, 1894.
2 Ibid., Jan. 5, 1895.
3 These included Dundee, Edinburgh, Glasgow, Kilmarnock, Perth and Rutherglen.
4 For example, Edinburgh, Perth and Dundee.
5 S.B. Saul, op. cit., Table 1.

burghs on the lower turning point, spread as it was over several years. A not unreasonable hypothesis, the subject of subsequent study, is that local factors are more relevant to the initiation of a housebuilding recovery while the onset of downswing and depression is more generally determined.

The onward marching success of Scottish housebuilding during the 1890s, albeit out of step on occasions, came to an abrupt halt after 1898 and the about-turns of 1899 involved some degree of cessation to building work in all but three burghs.[1] By 1901 housebuilding was on the advance again. Twenty burghs (77%) witnessed housebuilding on a more substantial scale than the previous year though even in 1900 some improvement in about a third of the Scottish burghs was underway indicating that the index was only temporarily interrupted during 1899 and 1900. No doubt this is indicative of some transient influence on housebuilding for although the dip in the index was real enough - construction in 1899-1900 fell by 45% compared to the 1898 level - the cause of the turn of the century downswing was of insufficient strength to completely finish off the boom, as the prosperous early Edwardian years testify. Clearly the shadow of the Boer War, exactly intervening the twin peaks of 1898 and 1902 is more than a coincidence. The 'coup de grace'[2] on building booms delivered from the cost side suggests that the materials element of costs was less involved and that more relevant was the insufficient supply of capital for builders,[3] with the consequent high price necessary to secure them diminishing the volume of profitable housebuilding to such an extent as to reduce the index by almost half over two years.

The twin peaks of the late nineties and early twentieth century with the intervening dip of 1899-1901 did occur in almost every Scottish burgh.

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1 These were Airdrie, Falkirk and Rutherglen.
2 A.K. Cairncross, 'The Glasgow Building Industry', Review of Economic Studies, II, 1934, p. 11.
3 S.B. Saul, op. cit., p. 133.

A greater measure of conformity existed in the first peak and subsequent recession, but no such common denominator could be attributed to the secondary peak of the 1900s. Secondary in fact may be a misnomer: for two-fifths of the burghs boom proportions in excess of those of 1897/8 were recorded, though Glasgow alone of the major cities fell into this category. Only a third of the burghs agreed with the general index peak of 1902, and if the peak is extended to include 1903, only 50% of the individual burgh peaks coincided with this. That the post-Boer War prosperity should be diffused over a number of years, 1901-6, with the absence of a protracted upswing culminating in a spectacular climax and closely followed by a speedy decline serves only to show that this is, as in the English and Welsh boroughs, a peculiar housebuilding boom, which, interrupted prior to the climax, only achieved a lukewarm and disintegrated recovery once the intervening forces had subsided. The Edwardian 'peak' 1902, - 21.4% below the 1898 level - was the year in which a third of the Scottish burghs also achieved their peak. Their geographical proximity and industrial similarity are striking features, as are the variety of peak years in other burghs. With Perth exceptional in this 1902 group, the burghs of Coatbridge, Falkirk, Glasgow, Irvine, Motherwell, Paisley, Partick and Wishaw provide the backbone of Scottish heavy industries and in each of these cases the previous peak is in every case 1897 or 1898[1] suggesting a strong industrial-housebuilding relationship. Other peak years in Ayr (1904) Dundee and Kirkcaldy (1905), Edinburgh and Leith (1906), Stirling (1908) and Dunfermline (1910) merely serve to reinforce the relationship when the variety of the Scottish industrial base is taken into account.

A casual glance at figure 1 produces the visual conclusion that for

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1 Perth again excluded.

a number of burghs their Edwardian peak of activity was succeeded by a tapering off in housebuilding down to 1914, with a few ripples and peculiar circumstances interrupting the downward phase of the long swing. Glasgow, Govan, Hamilton, Wishaw, Aberdeen, Edinburgh and Dundee are cases in point; other, perhaps less evenly, follow the same path - Leith, Motherwell, Kilmarnock and Falkirk for example. The composite burgh index, averaging out the individual variations, declines progressively from 1902 until 1908, though the bulk of the contraction occurs in 1907, a fall of 36 points. In the Scottish capital the comment on the year 1907 was that it must be classified as a 'lean year'.[1] Thus of the 55% reduction in housebuilding activity between 1902 and 1908, exactly half of this is attributable to 1907 alone, with 36% more evenly distributed over the years 1902-6, and the remainder taking place in 1908. Not that 1909 represented a change in trend. It was simply a 3 point interruption to the continuing downward direction of housebuilding over the next quinquennium.[2] A further 60% contraction on the 1909 volume of housebuilding was sustained over 1910-14, 1911 being a particularly poor year, so that on the eve of war housebuilding was a pale shadow of even the 1880s depression and was running at a fifth of the 1902 level.

At the burgh level several striking features are evident during this downswing of the early twentieth century. One such aspect is the prolonged peak in the 1900s; in Edinburgh (1901-6), Falkirk (1901-5), Stirling (1903-8), Rutherglen (1905-8 and Galashiels (1904- 12) this is conspicuous. Other pronounced short-term aberrations from the national trend include the resurgence of Dunfermline housebuilding after 1908, the belated peak of 1907 in Port Glasgow and a better than average improvement

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1 The Builder, Jan. 4, 1908.
2 S.B. Saul, op. cit., p. 133 indicates easier money may have contributed to a resumption of building in some English boroughs in 1909.

during 1909 in Musselburgh. In a number of instances burgh indices show an improvement in either 1913 or 1914, but it is precarious particularly in the absence of an upturn in one of the major cities to specualate as to whether this represents a cyclical turning point from which, but for the war, the pendulum would have swung dramatically upwards to a peak in the late 1910s or early 1920s. Certainly in such cases as are available few are in the vanguard of recovery in the equivalent phase of the 1880s and considering that none of the eight burghs repeats the improvement of 1913 in the following year - in fact a different eight display improving indices in 1914 - it appears that the homogeneity of these burghs, being usually ports, shipbuilding or steelmaking centres and the stimulus provided by the impending confrontation with Germany combined to produce the additional housing. Thus rather than a cyclical turning point explanation of these limited improvements of 1913-14 the interpretation rests more squarely on the existence of a small number of burghs, especially during the less extreme periods of the cycles, going against the more general pattern and encouraged by local circumstances of employment, effective demand and household formation. Similar examples of short-term counter-cyclical movements, especially in the middling years between cyclical turning points, may be found in the 1880s, and the post-1906 contraction.[1]

Certain special features appertain to several burghs. Remarkable aspects have already been noted, for example the Hawick housebuilding of 1885-90 and the pre-1914 upsurge within the Rosyth quarter of the Dunfermline boundary, but instances elsewhere of deviations from the trend can be found in Clydebank, where almost a decade intervenes between the twin peaks of 1895 and 1906, in Govan, where the 1890s upsurge if not

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1 For example, in 1911, there are some 10 or so burghs experiencing an improvement in building activity whilst the overall index is on the decline.

exactly imperceptible was of diminished proportions until 1896, and in the county town of Stirling, where the building boom was extended beyond the early 1900s to a peak in 1908. Also worth recalling are the buoyant housebuilding conditions of Aberdeen and Edinburgh during the 1880s, and their later similarity when from 1906 and 1907 respectively building activity falls abruptly and to levels not consistently recorded during their previous experience. Perhaps only coincidental confirmation of the twinning of these cities is the common 1914 index level of 17. Another pairing of burghs, though of a different kind, Leith and Port Glasgow, is valid if only for their frequency of oscillation rather than an identity of fluctuation.[1]

IV

The comparable amplitude of fluctuations is an important matter for consideration, as an index level may indicate doldrums for the housebuilding interests of one burgh and relative prosperity for another. This is the case in Aberdeen where the index value of 100 would represent a not wholly successful building year, whilst in Wishaw, Perth or Govan, for example, it would be a matter foe elation amongst housebuilders.

A number of instructive cases serve to illustrate the similarities and diversities in the degree of fluctuations in Scottish housebuilding. With Partick exceptional four of the five instances[2] in which data for both peaks is available indicates that of the 1870s is in excess of the later peak, confirming in fact the hypothesis that the boom of the late

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1 The instances of Leith and Port Glasgow raise a more general point. The smaller absolute size of Scottish burghs relative to the municipalities incorporated in the English and Welsh studies ensures that even moderately small fluctuations in the number of Dean of Guild sanctioned properties can produce disproportionate fluctuations in the index. It is therefore important to distinguish between a statistical characteristic and one which is attributable to real factors.

2 Dundee, Glasgow, Govan, Leith.

1890s was a more controlled and subsequently curtailed affair. The comparative depth of depression can be seen from the average index values spanning the 1880s, as given in Table 5. The aggregation of bright and

Table 5

Average Index Values of Selected Burghs during the 1880s

Burgh	Period	Av. Index Value
Glasgow	1878-91	37
Govan	1878-93	39
Partick	1878-87	43
Kirkcaldy	1878-92	52
Perth	1880-91	52
Port Glasgow	1878-92	56
Kilmarnock	1881-91	67
Dundee	1881-91	84
Aberdeen	1881-91	112
Edinburgh	1881-91	116

Source: Table 4.

gloomy years yields some indication of the overall prospects facing housebuilders in this depression decade, and the contrast of the first three burghs - Glasgow, Govan and Partick - with the other burghs lower in the Table provides some measure of housebuilders' hardship in the Clydeside burghs. This is the more severe when the amplitude of contraction over 2-3 years is considered, for in such a short space of time the Glasgow and Govan indices diminish from over 200 to less than 40. The less dramatic climax of Partick, 136 in 1876, would in some way modify the impact of the 1880s downswing, but no doubt for most builders in Scotland the level of work in Aberdeen and Edinburgh during these years would be a matter of envy.

Relating also to the levels of fluctuations the late Victorian peak transpired in thirteen burghs, and the Edwardian peak in ten,[1] with Glasgow the only major city to do so at this later date. None of the cases substantially over 200 in the 1870s achieves a repeat performance, although the double century is attained by several other burghs, notably Aberdeen, Edinburgh, Kilmarnock and Perth with Clydebank and Irvine managing to do so in a meteoric fashion. Quite modest peaks occur in many instances; for Rutherglen the peak index is in the 130s, in Hamilton and Musselburgh it is the 140s, whilst in Airdrie, Falkirk, Motherwell, Paisley and Coatbridge the peak value is in the 150s.

The Govan and Glasgow concurrence on the approximate absolute values for the 1870s peak and ensuing depression, agreement on the Edwardian peak at about a 190 value, with a progressive decline thereafter is demonstrative of the complementary use of amplitude and timing in analysing fluctuations. Thus in Table 6 another pairing displays similarities in the absolute level in 1894/5 and in later levels of fluctuations, noticeably in the 1897 dip, resurgence to an 1898 peak and a parallel reduction of 50 points in 1899. The 8 point discrepancy of the 1898 peak is echoed to a certain extent in the 10 point gap of the 1902 peak. Thereafter discrepancies in amplitude exist: the rate of decline post-1907 is more rapid in Wishaw, housebuilding holding up until 1910 in Motherwell.

The variability of housebuilding levels in 1914 with fourteen burghs languishing in the sub-25 index range, a few instances such as Port Glasgow (43), Dundee (42) and Rutherglen (35) floundering in a middling category and an elite group[2] topping the 60 mark, with Clydebank (129) considerably outdistancing the others, illustrates the heterogeneity of fluctuations in

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1 In four cases no firm conclusion is possible due to the absence of data immediately before 1898.

2 Clydebank, Dunfermline, Hawick, Irvine, Musselburgh and Stirling.

Table 6

Indices of Housebuilding in Motherwell and Wishaw, 1894-1914

	Motherwell	Wishaw
1894	109	92
95	106	106
96	121	106
97	102	85
98	137	145
99	86	95
1900	66	110
1	117	106
2	156	166
3	70	106
4	82	103
5	117	81
6	125	71
7	106	103
8	66	81
9	94	74
1910	102	50
11	51	14
12	55	21
13	39	25
14	27	18

Source: Table 4.

the major urban districts of Scotland. Consequently the ensuing analysis of the amplitude of cyclical fluctuations and the diverse absolute levels of burgh housebuilding forms part of an attempt to generate from the sample of burghs certain information which ultimately will prove instructive in the investigation of the causation of housebuilding cycles.

Broad agreement on the major turning point of housebuilding activity produces some uniformity on the periodicity of cycles in Scottish burghs. Thus from Table 7 below the 20 year building cycles, a generally accepted facet of housebuilding[1] is confirmed when attention is focussed on the peak to peak periods. Additional corroboration may also be drawn from

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1 See for example, R.C.O. Matthews, The Trade Cycle (Cambridge, 1959), p. 98.

Table 7

The Duration of Housebuilding Cycles in Scottish Burghs, 1873-1914

Burgh	Number of Years Peak to Peak	Number of Years Trough to Trough
Aberdeen		32
Dundee	22	30
Edinburgh	19	22
Glasgow	21	31
Govan	22	27
Kilmarnock		31
Kirkcaldy		28
Leith	20	30
Partick	22	31
Perth		29
Port Glasgow		27
Scottish Burghs	22	31

Source: Table 4.

the trough to trough interval of the 1860s to 1880s, which in the Glasgow case[1] displays a 19 year interval, although in Edinburgh it is a little longer being 26 years.[2] However, in the next trough to trough interval, with the exception of Edinburgh which acknowledges the twenty year cycle, there is common agreement on a thirty year interval.[3] However, far from suggesting an overthrow of this pillar of building cycle theory, it is

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1 A.K. Cairncross, Home and Foreign Investment, p. 16.
2 See Table 3 above.
3 An assumption on the last turning point has been made in that 1914 has been adopted without conclusive evidence that this is valid. However the minimal values of a majority of burghs confirms that if not 1914, then the turning point was imminent, the indices in many cases being incapable of further reduction, and thus the general conclusions on periodicity are not altered by this assumption. From Table 3 and from information from Dean of Guild records for both Edinburgh and Leith a peak in 1879/80 occurred which although not incorporated in index form in Table 4, is assumed to be the critical turning point year in these burghs.

suggested that historical accident, to which Scottish burghs responded in a similar manner, produced a quirk interval of a thirty instead of a twenty year period. Furthermore contemporary American data, insulated from the interruptions of the Boer War which prevented the customary climax and collapse in Britain and thereby deferred the normal responses in the housebuilding market, confirms the continuing existence and well-being of the twenty year cycle.[1] In fact the continued approximation to the twenty year cycle in the United States after 1900, following as it does upon the 22 year inverse cycles on either side of the Atlantic - 1876-98 in Britain and 1898-1900 in America[2] - suggests that the 30 year trough to trough experience in Britain is the product of abnormal circumstances. Even with diminished faith in the Atlantic economy hypothesis this places the 30 year interval in a more realistic framework.

Some measure of year to year fluctuations within the cycle can be obtained from the material incorporated in Table 8, which shows the relative annual fluctuations between burgh indices over comparable cyclical periods. Omitting consideration of the roughly common years, c. 1884-1898, in columns (a) and (b) two conclusions are immediately obvious; first the higher values of column (a) are demonstrative of the unprecedented boom proportions of the 1876 peak, and its corollary, the cataclysmic contraction. Second, that the relatively minor yearly oscillations of the trough-trough column are indicative of a more gentle contraction over a longer period down to 1914. Were the secondary boom assumed to be the major turning point a certain narrowing of the discrepancy between columns (a) and (b) would result, and this would be a fair conclusion in the cases of Glasgow and Govan (see bracketed figures in Table 8).

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1 J.R. Riggleman, 'Building Cycles in the United States, 1875-1932', Journal of the American Statistical Association, 28, 1933, pp. 174-83.
2 Ibid., p. 180.

Table 8

Average Annual Amplitude of Scottish Housebuilding Cycles, 1873-1914

	Average Annual Amplitudes of Indices	
	(a) Peak-Peak	(b) Trough-Trough
Dundee	18.5	10.2
Glasgow	17.0(14.8)	9.5(11.3)
Govan	14.0(14.3)	8.5(13.3)
Leith	22.5	13.7
Partick	13.0	9.6
Scotland	14.1	7.4

Source: Table 4.

Such an adjustment would certainly bring Glasgow and Govan fluctuations in the 1880s - 1914 period more into line with general experience. For comparability the amended column (b) of Table 8 is now incorporated with additional burgh information on trough-trough variations to provide, in Table 9, a more comprehensive view of the amplitude of Scottish housebuilding fluctuations.

It should be stressed that conclusions based on Table 9 refer only to the trough-trough period, mid-1880s to 1914, and that less volatile indices over this period may perform differently over another time horizon. Such is the case with Port Glasgow, which apparently muted in its trough-trough variations is demonstrably unstable at other times (see Table 10). True to form, however, Leith housebuilding is more unsettled than other burghs, and also as expected, the Partick building industry is less excitable than most. However an interesting contribution derived from Table 9 is the moderately high amplitude of trough-trough fluctuation in Aberdeen[1] and Edinburgh.

1 The minimum Aberdeen housebuilding level is difficult to ascertain; the year 1882 has been employed here, but there is some validity in the argument for choosing 1890, in which case the average annual amplitude would be 16.8, more akin to that of Edinburgh, which burgh Aberdeen in many ways resembles.

Table 9

Average Annual Amplitude of Scottish Housebuilding Fluctuations

Burgh	Trough-Trough
Aberdeen	13.2
Dundee	10.2
Edinburgh	17.9
Glasgow	11.3
Govan	13.3
Kilmarnock	12.0
Kirkcaldy	10.9
Leith	13.7
Partick	9.6
Perth	12.2
Port Glasgow	10.5
Scotland	13.3

Sources: Tables 4 and 8.

In both cases it occurs as a product of the substantial peaks respectively 249 and 237, from moderate beginnings, and the subsequent demise of housebuilding in these burghs to an index value of 17. The wider degree of fluctuations in these burghs, and to a certain extent in Govan, results from the curtailed period of the cycle in these burghs and not from the absolute levels of housebuilding as the equivalent index range appertains to burghs with a narrower amplitude.

Thus while a limited amount of information on the comparative depths of housebuilding fluctuations has already been considered, some supplementary data over an extended period for a larger sample of burghs would provide a more comprehensive picture of amplitude variations in Scottish urban housebuilding. Two complementary series are presented in Table 10 to this end. There is an element of overlap in that certain years are common to both series but the object is to

show average variations in the housebuilding activity of all burghs over a common cyclical phase in column 1, and the average year to year alterations over the entire period for which documentary evidence is available (column 2). The more gentle cyclical downswing in the housebuilding of Airdrie, Galashiels and Kirkcaldy is reflected in the small average reductions to the index over the second peak to trough phase of the cycle. In Galashiels, always exceptional, this minimal amplitude of fluctuation is attributable to the absence of an appreciable boom, but in Airdrie and Kirkcaldy the cause is illustrative of the fundamental determinants of column (1). These are the height of the boom, how early it was achieved and to what depths the pre-war recession ran. Hence, the 1900s peak in Govan, Partick, Perth and Stirling ensures a rapid rate of decline in housebuilding, though the lower figure of 10.8 points average decline in the indices of Rutherglen and Motherwell is informative concerning the mildness of the Edwardian downswing in these burghs. The idiosyncracies of housebuilding in Clydebank, Dunfermline and Port Glasgow emphasise the dramatic contraction in the building industry of these towns. Irvine provides another case of rapid contraction. Of the remainder, wider fluctuations are found in Wishaw and Musselburgh than in Paisley, Kilmarnock, Dundee or Coatbridge, and in the major cities the amplitude of fluctuation in the downswing is quite modest when averaged over the number of years involved, and no doubt is attributable to the eclectic and complementary interests inherent in cities rather than burghs.

The average annual alteration to burgh housebuilding indices (Table 10, col. 2) provides a longer term view of the degree to which various burghs are prone to fluctuation. Although the periods from which the information is constructed are not uniform, they nevertheless

Table 10

The Amplitude of Housebuilding Fluctuations in Scottish Burghs, 187 -1914

Burgh	Av. Index Change (over the Cyclical Phase 2nd Peak to 2nd Trough) (1)	Av. Annual Index Change (2)
Aberdeen	13.6	23.7
Airdrie	8.0	25.5
Ayr	14.8	19.6
Clydebank	37.2	42.2
Coatbridge	12.3	31.4
Dundee	10.1	29.7
Dunfermline	18.4	38.1
Edinburgh	13.8	22.1
Falkirk	14.6	24.6
Galashiels	7.1	19.7
Glasgow	14.5	20.0
Govan	16.3	21.9
Hamilton	16.3	15.2
Hawick	13.4	42.6
Irvine	28.3	43.7
Kilmarnock	12.8	36.9
Kirkcaldy	8.3	26.5
Leith	13.3	47.8
Motherwell	10.8	27.4
Musselburgh	14.7	36.1
Paisley	11.9	20.5
Partick	16.7	31.6
Perth	17.4	32.1
Port Glasgow	18.7	41.6
Rutherglen	10.8	28.6
Stirling	17.1	30.9
Wishaw	16.9	22.8
Scotland	8.9	19.6

Source: Table 4.

offer an indication of the relative magnitude of housebuilding fluctuations in the different burghs. Consequently a group of burghs emerges[1] which averages over 40 points p.a. alteration to the index level of building. Others such as Dunfermline, Kilmarnock and Musselburgh are also quite high but there is a large group almost equally subject to changes in housebuilding activity. Thus taking the average annual index changes between 19 and 24, then eight burghs are almost equally prone to this degree of oscillation in their house-building industry.[2]

Taking this generalised or summary view to a more detailed and appropriate comparison, Table 11 demonstrates relative amplitude of housebuilding fluctuations over a number of common periods. The phase of the cycle is not considered in this case except that the broad concurrence on major turning points and overall trends suggests that the arbitrary choice of dates does not jeopardise the conclusions.

And instructive conclusions on the relative susceptibility to housebuilding fluctuations there are. For example, in Port Glasgow until 1893 housebuilding fluctuations were more severe than in the majority of burghs, but from 1894 when they were still the seventh worst they declined to such an extent that between 1900-14 thirteen other burghs suffered more violent changes. Concurrently there was some abatement to the severity of cycles over the longer period, a secular improvement which affected Aberdeen, Dundee, Edinburgh, Leith and certain others, while in many cases, including Kirkcaldy, Govan, Wishaw, Paisley and Motherwell, the absolute level of housebuilding

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1 These are Leith, Irvine, Hawick, Clydebank and Port Glasgow.
2 These are Ayr, Galashiels, Glasgow, Paisley, Govan, Edinburgh, Wishaw, and Aberdeen.

Table 11

The Amplitude of Housebuilding Cycles: Average Annual Index Changes over Common Time Periods

	1873-1914	1877-1914	1878-1914	1880-1914	1886-1914	1888-1914	1889-1914	1893-1914	1894-1914	1896-1914	1898-1914	1900-1914
Aberdeen				23.7	21.8	20.6	21.1	20.1	19.0	17.2	17.0	12.9
Airdrie									25.5	24.4	26.0	20.8
Ayr									19.6	19.5	21.6	23.2
Clydebank						42.2	42.9	46.0	46.0	44.6	43.1	48.5
Coatbridge					31.4	26.6	28.8	28.4	27.7	28.1	28.1	26.9
Dundee	29.7	26.3	24.9	22.9	20.8	19.7	20.4	21.1	22.1	23.4	22.6	17.8
Dunfermline												38.1
Edinburgh				22.1	22.5	21.5	21.9	23.1	22.1	19.0	19.0	12.6
Falkirk								24.6	24.8	25.0	23.1	20.5
Galashiels									19.7	19.3	20.8	23.2
Glasgow	20.0	20.1	15.7	16.1	18.4	19.5	20.2	20.0	20.0	21.4	21.8	20.4
Govan		19.8	19.8	20.8	19.5	20.7	21.1	23.4	23.5	25.1	24.6	22.6
Hamilton										15.2	16.9	17.6
Hawick					43.8	43.7	41.6	43.2	44.8	44.8	40.6	30.9
Irvine											43.7	46.8
Kilmarnock				36.9	38.8	39.0	39.6	42.0	43.6	40.9	36.4	31.6
Kirkcaldy			26.5	27.0	26.1	26.3	27.2	26.5	27.7	26.8	26.1	24.5
Leith		47.8	46.8	39.7	36.3	36.4	36.8	37.1	38.3	39.0	38.2	34.0
Motherwell									27.4	29.4	29.8	28.9
Musselburgh											36.1	37.7
Paisley							20.5	20.7	21.6	22.1	22.0	24.0
Partick	31.6	32.4	30.7	32.8	37.9	36.8	n.a.	n.a.	35.7	36.9	40.2	37.5
Perth			32.1	31.6	33.0	35.5	36.6	37.3	39.2	38.9	39.6	37.5
Port Glasgow			41.6	39.0	38.0	40.1	40.9	35.2	34.8	31.3	31.1	26.6
Rutherglen									28.6	31.3	29.8	38.1
Stirling									30.9	32.4	33.4	35.8
Wishaw									22.8	24.6	22.6	21.1
Scotland	19.6	18.2	15.5	13.9	13.3	13.5	14.0	13.9	13.8	13.6	14.4	11.1

Source: Table 4.

fluctuations varied only marginally over the long swing. In Glasgow the amplitude of fluctuations declines between 1877-89 period. The average annual change in the index over the mid-1870s peak evidently was of considerable proportions, and appears relevant in the case of Govan construction too. The effect of discounting the more extreme housebuilding conditions not surprisingly is to diminish the range of variation in burgh indices, and in the cyclical repeat of the late-90s, the considerable average amplitude reductions of 1900-14 over other periods confirms the sizeable contraction of the index during 1899 and 1900 in Edinburgh, Aberdeen, Hawick and Kilmarnock amongst others. In fact in two-thirds of the burghs fluctuations in the years 1900-14 are appreciably less violent than in the preceding years of the nineteenth century. Of the remainder a number are those burghs which are late entries to the index - Hamilton and Musselburgh for example - whilst some such as Stirling, Clydebank, Paisley and Ayr simply suffer increasingly destabilised housebuilding during the early twentieth century years.

The overall index of Scottish burghs as expected was subject to few alterations to the magnitude of fluctuations over time. Thus a very even level of average index changes is maintained throughout, though particularly between 1880-1900. During these years, no matter the trend direction, fluctuations in Scottish residential building averaged out much the same one year to the next. On either side of this period discrepancies to the average 13-14 p.a. index point movements exists, with a more destabilised period beforehand - the boom and aftermath of the 1870s peak - with a less volatile era following 1900. Perhaps Scottish builders attempted to take some crumb of comfort from the protracted depression 'which was without parallel in the memory'[1] of delegates to the Joiners' annual meeting of 1909, in

1 49th Annual Report of the Associated Carpenters and Joiners of Scotland, 1910p Report of the Delegate Meeting, 1909, by Chairman George Maclean, p. 4.

that if prolonged, it was by no means as sharp a contraction and consequently avoided the spate of bankruptcies following the 1876 peak.[1]

The absolute size of year to year fluctuations is not a matter for agreement amongst Scottish burghs. Far from agreement, diversity is apparent. And it is a diversity which is not simply the product of municipal size. Thus a small burgh such as Falkirk experienced on average a movement of 20 points in the index of housebuilding, much the same therefore as that of Edinburgh, Govan or Paisley. The smallest town, Musselburgh, with a population of 16,000 in 1911[2] is subject to fluctuations akin to those of Partick or Perth, whose population numbered respectively 67,000 and 36,000 in 1911.[3] Size may be operative beyond a certain threshold nevertheless, for as Table 12 indicates, the cities are less prone to variations in building levels. As suggested previously this unlikely alliance of Scottish burghs is presumably due to a breadth of income producing interests rather than to what these interests are. That is the existence of shipbuilding, fishing and textile production does not imply intrinsic instability in city housebuilding but it does raise the probability relative to diverse interests which as well as shipbuilding include, for example, light engineering, distribution and a service sector of some size.

Such an explanation relying heavily as it does on income determination at the disaggregated burgh level acquires some support from the single-mindedness of such activities as shipbuilding in Clydebank and Port Glasgow, shipping in Leith and wollen production on Hawick. Furthermore the consecutive placements of Coatbridge, Motherwell,

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1 C.S. 318, S.R.O., and The Edinburgh Gazette 1856-1914.
2 Census of Scotland, 1911, P.P. 1912-13, Cd. 6097, CXIX and CXX.
3 Ibid.

Table 12

Relative Instability of Scottish Housebuilding

	Av. Annual Index Changes 1894-1914	Ranking	Ranking by Population(1901)
Clydebank	46.0	1	17
Hawick	44.8	2	19
Kilmarnock	43.6	3	10
Perth	39.2	4	11
Leith	38.3	5	6
Partick	35.7	6	8
Port Glasgow	34.8	7	20
Stirling	30.9	8	18
Rutherglen	28.6	9	22
Kirkcaldy	27.7	10	14
Coatbridge	27.7	10	9
Motherwell	27.4	12	12
Airdrie	25.5	13	21
Falkirk	24.8	14	16
Govan	23.5	15	7
Wishaw	22.8	16	15
Edinburgh	22.1	17	2
Dundee	22.1	17	3
Paisley	21.6	19	5
Glasgow	20.0	20	1
Galashiels	19.7	21	23
Ayr	19.6	22	13
Aberdeen	19.0	23	4

Sources: Table 11 and Census of Scotland 1901, PP. 1902, Cd. 898, CXXIX. 1133.

Airdrie and Falkirk with Wishaw in hot pursuit indicates unanimity in the steel complexes of Scotland as to housebuilding fluctuations. Another pairing of sizeable variations in construction are the county towns of Perth and Stirling, but the paradox of Ayr housebuilding being much less volatile is perplexing. Could the development of a holiday resort diminish the range of fluctuations by half? Certainly the period 1894-1914 offers a moderately representative 20 year span in which the majority of burghs are reporting their housing construction.

Comparison of English and Scottish variations in housebuilding (Table 13) shows greater susceptibility and wider fluctuations north of the border. This is true at both regional and city level; the average change in Scottish housebuilding is almost 2 points greater per annum than in the East Midlands or N.E. England and Aberdeen and Glasgow are 4-5 points adrift of Manchester and Liverpool. However, Scottish fluctuations are more muted in certain cases, for the degree of annual variation in Warrington or Rotherham, for example, is equivalent to the middle range of Scottish burghs such as Coatbridge and Kirkcaldy. Despite the fact that English and Scottish comparisons are difficult - Rotherham may be one of the most destabilised English boroughs with Kirkcaldy far from being the worst Scottish case - they do provide a perspective on Scottish housebuilding, and broadly speaking confirm the view that the construction of houses north of the border was far from placid and that the relative mildness of annual variations in English Housebuilding was absent in Scotland.

V

A more extensive analysis of the timing and amplitude of Scottish housebuilding fluctuations is permissible from data measuring

Table 13

Comparative Amplitude of Fluctuations in Housebuilding, 1890-1914

Housebuilding Series	Av. Annual Index Change
(1) Composite Indices	
Scotland[a]	13.8
E. Midlands[b]	9.0
N.E. England	12.1
Cotton Towns	12.1
Black Country	18.3
(2) Borough Indices[c]	
Manchester	14.0
Liverpool	15.7
Leeds	17.5
Keighley & Halifax	18.9
Warrington	26.2
Rotherham	27.9
Nuneaton	28.0
(3) Burgh Indices	
Aberdeen	19.0
Glasgow	20.0
Edinburgh	22.1
Dundee	22.1
Airdrie	25.5
Kirkcaldy	27.7
Stirling	30.9

Notes: a 1894-1914

b English series terminate in 1913

c 1891-1913, except Leeds (1890-1912), Rotherham and Liverpool (1891-1913)

Sources: S.B. Saul, 'Housebuilding in England 1890-1914' Economic History Review, 15, 1962, pp. 120-1; A.G. Kenwood, 'Residential Building Activity in North Eastern England, 1853-1913', Manchester School, 31, 1963, p. 125; Table 12 above.

simultaneously the degree of synchrony in both the severity of changes in construction activity and in the timing of such alterations. This is achieved by calculating correlation coefficients for each pairing of burghs according to their corresponding years of information. Thus with two towns A and B whose records commence respectively in 1880 and 1882, both terminating in 1914, a correlation coefficient for the common years 1882-1914 is obtained which denotes the extent to which housebuilding experiences follow the same path in terms of the timing and scale of operations. The absence of documentary material in an intervening year, say 1885, requires the omission of 1885 data in the paired burgh, calculations proceeding normally thereafter.

From the time shapes of undulating building activity displayed in Fig. 1, a linear relationship might appear a dubious assumption upon which to base such an analysis of correlation coefficients. In fact this is not a serious problem if the drift between two series approaches linearity, even if the absolute index values follow a cubic form. Therefore by plotting index values of burgh A on the Y-axis against index values of B on the X-axis, an approximately linear relationship develops, with the intercept denoting the drift between pairs of burghs. Linearity is thus not a convenient assumption but a description of the broad agreement amongst housebuilders in most burghs as to the fundamental turning points and trends in the cycle. A preliminary qualification of another kind is the likelihood of relationships between burghs occurring randomly. This is in fact a slim chance as the 5% confidence level is applicable to each coefficient and the 1% level is operative in a number of cases. Thus the correlation coefficients presented in Table 14 confirm actual relationships

rather than spurious statistical ones.

The classic textbook distinction between correlation and causation can be viewed through Table 14. In this table is contained material on the covariation of sets of series,[1] that is, the extent of sympathetic movements in the data, and the explanation of causation is not sought. In occasional circumstances an element of causation may be involved where burghs are geographically, industrially or otherwise akin, and influence the housebuilding in their neighbouring burghs, but such an impact is likely to be marginal at best and inoperative in a number of instances.

Returning to covariations, the individual burgh housebuilding patterns broadly conform to the overall Scottish index - the top line of Table 14 - and offer a summary view of the general degree of sympathy in housebuilding. In Hamilton, Kilmarnock, Paisley, Falkirk, Wishaw, Kirkcaldy, Perth and Ayr with coefficients in excess of +0.8 the correspondence with the aggregated Scottish data is greatest, closely followed in the +0.7 - +0.8 range by Aberdeen, Partick, Motherwell, Airdrie, Musselburgh and Coatbridge and also strongly correlated with the Scottish index is Edinburgh with Glasgow less so. The housebuilding fluctuations of these sixteen burghs is strongly and positively correlated with the overall Scottish fluctuations of which individually they form only a part. Furthermore in each of the pairings of these sixteen burghs generally speaking a high degree of covariation exists. Added to these three other burghs, Govan, Dundee and Leith, which show coefficients of only +0.25, +0.24, and +0.42 with Scottish housebuilding, display a considerable degree of synchronised construction activity when compared at the burgh level, and

1 These are the Dean of Guild Court warrants for each burgh.

Corr

	Irvine	Kilmarnock	Kirkcaldy	Leith	Motherwell	Musselburgh	Paisley	Partick	Perth	Port Glasgow	Rutherglen	Stirling	Wishaw
Scotland	.44112	.86329	.82995	.41640	.73852	.71533	.88093	.75806	.80065	.41919	.24647	.37308	.84170
Glasgow	.29100	.76291	.79101	.51270	.72109	.62758	.84737	.75684	.84111	.49953	.17204	.18375	.85290
Edinburgh	-.10624	.71295	.51579	.77751	.61054	.73718	.79918	.45471	.52008	.02149	.21183	.40206	.67567
Dundee	-.07881	.79022	.72966	.70601	.64257	.77030	.79661	.44682	.70040	.25172	.24791	.37848	.67470
Aberdeen	-.10606	.76574	.62294	.75683	.55361	.68886	.83625	.60622	.63998	.19649	.04293	.29982	.68483
Airdrie	.26374	.71731	.65856	.60081	.49286	.37376	.68533	.52165	.68206	.14864	.19137	.13699	.59219
Ayr	.12071	.81707	.67926	.75040	.54148	.48932	.70666	.44266	.59726	.28312	.27050	.50147	.62372
Clydebank	-.08809	.18484	.37346	.30950	.29153	.15691	.18461	-.16626	.74164	.18839	.17680	.47153	.62188
Coatbridge	.19332	.71542	.59152	.66761	.74789	.65140	.77142	.55553	.69856	.36382	.21595	.29499	.94318
Falkirk	.38467	.72412	.74559	.65780	.64013	.42034	.85172	.72585	.67335	.23231	.43744	.30919	.71673
Dunfermline	.64286	-.26135	-.03783	-.38770	-.24449	-.33566	-.26313	-.15962	-.12839	.03539	.99867	-.41106	-.27333
Galashiels	.42981	.18305	.39339	.26680	.19771	.0000	.16204	-.09029	.32382	.32179	-.12037	.35903	.10824
Govan	.13843	.55822	.45730	.41360	.42805	.54747	.75868	.49727	.56165	.28923	.45063	-.10324	.64191
Hamilton	.42390	.80564	.78767	.70130	.59047	.54139	.82801	.71531	.80657	.39887	.14338	.29499	.82100
Hawick	.35261	.31268	-.01395	.51139	.47867	.77972	.49360	.20237	.06978	-.28047	.10503	.57922	.58235
Irvine	-	.18366	.31231	-.10323	.27249	.22623	.17920	.50727	.36649	.14747	.28568	-.06966	.45712
Kilmarnock		-	.72734	.77490	.58903	.66885	.76637	.74450	.70161	.19095	.15341	.43936	.68657
Kirkcaldy			-	.49706	.76819	.66221	.76970	.66532	.79469	.45423	.21470	.39183	.74933
Leith				-	.66498	.76195	.81436	.33900	.48674	.17699	.14338	.48917	.67759
Motherwell					-	.58395	.74238	.45793	.81311	.36396	.39540	.22616	.76461
Musselburgh						-	.55321	.52526	.67334	.01854	.05923	.15462	.59943
Paisley							-	.77093	.76629	.37165	.28220	.32162	.81261
Partick								-	.66860	.32807	.09447	.19878	.71016
Perth									-	.47969	.13756	.22599	.81973
Port Glasgow										-	-.10828	.14345	.43536
Rutherglen											-	.33812	.24219
Stirling												-	.28913
Wishaw													-

Table 14

Correlation Coefficients for pairs of Burghs

	Scotland	Glasgow	Edinburgh	Dundee	Aberdeen	Airdrie	Ayr	Clydebank	Coatbridge	Falkirk	Dunfermline	Galashiels	Govan	Hamilton	Hawick
Scotland		.53040	.67527	.23954	.77037	.72336	.80568	.31466	.70984	.85684	-.08146	.20982	.25238	.88926	.11064
Glasgow		-	.43694	.76223	.68609	.68173	.65553	.09421	.72009	.78510	-.10961	.14063	.73523	.87109	.02115
Edinburgh			-	.76357	.78720	.52641	.70430	.31923	.59863	.66911	-.45670	.19977	.62301	.68255	.52311
Dundee				-	.77478	.67198	.69047	.22101	.63812	.62200	-.44474	.28688	.79682	.70490	.34500
Aberdeen					-	.60361	.65024	.21050	.70649	.67468	-.53139	.30506	.60163	.74650	.49774
Airdrie						-	.68024	-.06253	.66537	.74201	-.06455	.16658	.57826	.79310	.34840
Ayr							-	.46809	.76753	.79131	-.20639	.21546	.44095	.86320	.71929
Clydebank								-	.04916	.21435	-.05786	.16396	.00456	.16284	.01440
Coatbridge									-	.66828	-.28937	.19355	.62548	.90971	.39540
Falkirk										-	-.03775	.11428	.66449	.91795	.47550
Dunfermline											-	-.46589	-.01165	-.11450	-.62234
Galashiels												-	-.16531	.09736	.18312
Govan													-	.73889	.02245
Hamilton														-	.61387
Hawick															-
Irvine															
Kilmarnock															
Kirkcaldy															
Leith															
Motherwell															
Musselburgh															
Paisley															
Partick															
Perth															
Port Glasgow															
Rutherglen															
Stirling															
Wishaw															

when these nineteen burghs are investigated they account for 96.1% of all correlation coefficients in excess of +0.6, or 62.4% of all covariations.

The remaining housebuilding fluctuations, those of eight burghs are shown in Table 15. The contrast between these and the highly correlated housebuilding of the nineteen is striking: in 100% of the

Table 15

Distribution of Correlation Coefficients for Certain Burghs

Burgh	.6 to 1	.4 to .59	0 to .39	-.39 to 0	-.4 to-.59	-.6 to-1
Port Glasgow		5	20	2		
Rutherglen		2	23	2		
Stirling		6	18	2	1	
Galashiels			22	3	2	
Hawick	3	8	12	3		1
Irvine	1	4	14	7	1	
Dunfermline	1		2	18	5	1
Clydebank	2	2	19	4		
Scotland (total)	304	130	242	66	12	2
Scotland (av.per burgh)	10.86	4.64	8.64	2.36	0.43	0.07
8 Burghs (average)	0.88	3.38	16.25	5.13	1.13	0.25

Source: Table 14.

correlation coefficients a positive relationship is established for the larger group and for the eight burghs of Table 15 in 75% of cases the housebuilding covariations are positive. The eightsome also account for 55.6% of all the 0 to 0.39 correlation coefficients and for only 7.8% of coefficients above +0.4. Evidently these burghs form a distinct group in that their housebuilding fluctuations do not correspond at all closely with either the national pattern as a whole or the

individual burghs. Indeed in only a few cases do these eight burghs bear much resemblance with one another in the volume and timing of their housing construction.

In the first three municipalities in Table 15, Port Glasgow, Rutherglen and Stirling builders met with broadly similar market conditions in that local trends ran counter frequently to the conditions prevailing in most burghs. Rutherglen particularly shows only very weak synchronisation of housebuilding with other burghs, for in twenty-two cases the r coefficient is below 0.3, with the neighbouring Govan burgh producing housebuilding fluctuations most akin, the coefficient still only being 0.45 however. Although sympathetic construction activity transpires in Stirling and Port Glasgow when they are individually compared to the Scottish trend, the similarity in both cases approaching that achieved by Leith builders, a more detached analysis reveals that with one another and with the bulk of burgh fluctuations the correspondence is only weakly maintained. For housebuilders in Port Glasgow the Glaswegian circumstances are most closely approximated, and for Stirling and other county towns, Hawick offers the closest parallel, the correlation being 0.58.

In each of these three burghs the preponderance of similar amplitude and timing of housebuilding has been of a weak positive variety, suggesting that agreement with the majority of Scottish urban housebuilders can only be achieved at the critical or most accentuated points of the cycle. This is true also of the builders of residential property in Galashiels. But there is one divergence. No moderately strong relationship (0.4 to 0.59) exists in this burgh: housebuilding was uniformly unlike any other urban district. A point of unity amongst the four burghs heading Table 15 is that they do indicate Dunfermline,

Irvine and Govan to a lesser extent in addition to inter-relationships within the group of four as the burghs of negative covariation of housebuilding fluctuations.

Treatment of the remaining towns of Table 15 immediately isolates Hawick as atypical. A few strong coefficients demonstrate the sympathy of housebuilding with the trends in Musselburgh, Ayr and Hamilton. As in the previous group the overwhelming bulk of correlation coefficients are positive, but a number of middling resemblances with the housebuilding experiences of builders in various locations suggest a unique role for those interests in the burgh of Hawick. Contained in these moderately strong correlations are a diverse group of burghs including Edinburgh, Paisley and Stirling, though a noticeable absence is Clydeside burghs.

The provision of housing accommodation in Clydebank not surprisingly assumed peculiar proportions. From a farm with two neighbouring tenancies in 1871 to a population of 1,634 in 1881 and 37,548 in 1911 it aptly was know as 'the risingest burgh' in Scotland,[1] and the biological impossibility of such a population explosion meant that Lanarkshire immigrants required housing. High volumes of housebuilding in the late 1880s succeeded by equally intense activity in the early 1890s which provoked a peak in 1895, the subsequent flat trough of 1896-1902 and the peak of 1905 are ample evidence of counter-cyclical construction and this profile of housebuilding finds few others even approaching its idiosyncrasies.

The Ayrshire burgh of Irvine is another town whose housebuilding pattern follows a peculiar path. Only with Dunfermline ($r = +0.64$) is

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1 Third Statistical Account of Scotland, County of Dunbarton.

there any degree of similarity. But the striking characteristic of housebuilding in Irvine is its negative relationship with over a quarter of the other series, four of which are contained in Table 15, the others being Edinburgh, Aberdeen, Dundee and Leith. Thus Stirling is the western-most of the negatively correlated series which indicates that housebuilding in Irvine, insofar as it approximated anything, did so with the West of Scotland burghs almost exclusively.

As noted earlier builders within the Dunfermline boundaries experienced unique conditions. Active housebuilding between 1900-4 followed by a four year setback which preceded a resumption of prosperity, 1909-14, represented a timing and volume of construction absent elsewhere. Not surprisingly therefore Table 15 displays a unique occurrence: with but three positive correlation coefficients, Irvine (+0.64) Port Glasgow (+0.04) and Rutherglen (+0.01), the vast majority (92.6%) of housebuilding fluctuations bear little resemblance to those in Dunfermline and mostly run counter to the trends of this Fifeshire linen town. Even by the comparative peculiarities of housebuilding in those burghs in Table 15, Dunfermline bears no similarity to any other in its overall performance.

With such highly individualistic housebuilding fluctuations as those displayed in Table 15 considerable attention to local causation is mandatory. Consequently the dynamic population explosion of Clydebank, the construction of the Rosyth naval base with its attendant impact on Dunfermline, and the buoyancy of woollen textiles during periods of recession elsewhere in urban Scotland than Hawick and Galashiels demonstrate the importance of local circumstances. Equally, explanation of causation must take some account of burgh size. With the exception of Clydebank between 1901-14 the burghs of Table 15 are amongst those with the smallest number of inhabitants. Alteration

in planned housebuilding may proportionally appear of considerable amplitude and peculiar timing given the modest base level of these burghs, although the cases of Musselburgh and Wishaw amongst other small burghs apparently contradict such a simplification, and more importance may need to be attached to the income and employment structure of the smaller townships in much the same way as is relevant for more sizeable burghs.

The causal importance of industrial structure in urban housebuilding fluctuations accumulates additional evidence from the highly sympathetic changes in the timing and amplitude of variations in the building activity of the iron and steel centres of Scotland (Table 16). Thus changes in housebuilding in Wishaw were matched on

Table 16

Correlation Coefficients for the Housebuilding of Selected Scottish Burghs

	Airdrie	Coatbridge	Falkirk	Hamilton	Motherwell	Wishaw
Airdrie	-	.67	.74	.79	.49	.59
Coatbridge		-	.67	.91	.75	.94
Falkirk			-	.92	.64	.72
Hamilton				-	.59	.82
Motherwell					-	.76
Wishaw						-

Source: Table 14.

94% of occasions by equivalent movements in Coatbridge in terms of both timing and degree. Variations in construction in Hamilton were reflected to an extent of 82% by similar developments in Wishaw. The close association of housebuilding fluctuations in these burghs is therefore indicative of the general level of covariation in the housebuilding activity of the aforementioned group of nineteen municipalities.

Indeed in both Hamilton and Perth housebuilding is synchronised at a 70% or above level in all but three cases.

In the four cities of Scotland the different circumstances of the residential building sector are clearly reflected. Builders in Glasgow, Hamilton, Paisley and Wishaw moved very much in step, as did those in other Lanarkshire and Renfrewshire burghs, often closely shadowing the Glasgow industry. Thus a picture emerges of inter-relatedness not just in the West of Scotland industrial economy but also in the erection of residential property, a picture which is confirmed by the generally lower correlation coefficients which Glasgow housebuilding and several Lanarkshire burghs possess when compared to the building activity of many eastern Scottish burghs, including Edinburgh, Aberdeen and Leith. Glasgow housebuilding was only partly like that of Edinburgh ($r = +0.44$) and the peculiar features of the capital e.g. the buoyancy of the 1880s and the 1906 peak, not surprisingly resulted in generally lower covariations across the board.[1] Thus Dundee and Glasgow sustained on average greater sympathy with the housebuilding of other burghs, the countercyclical trends of Edinburgh and Aberdeen reducing their correspondence.

The cities as a rule were more closely synchronised with the smaller burghs than the latter were amongst themselves. The disparate interests of smaller burghs provided an individualistic character which reduced the likelihood of parallel housebuilding developments in other small burghs, increased the chances of some degree of mutual activity with larger centres, and established closest inter-relationships amongst homogenous groups of burghs such as the steel areas of Table 16. In other words, the amalgam of city interests minimised

1 Only in four instances, Aberdeen, Ayr, Leith and Musselburgh are Edinburgh coefficients greater than those of Glasgow.

the reciprocity of city and small burgh housebuilding fluctuations, the important determinants of which for the small burgh were invariably to be found in a related form in the city. Such was the case in Musselburgh where the housebuilding features of Edinburgh were echoed to the extent of 78% and the relationship with housebuilding in more distant cities was in excess of the correlation coefficients with the majority of smaller burghs. Similar connections were displayed in Paisley and Govan but the most instructive lesson drawn from these inter-relationships is an underpinning, based on a variety of Scottish burghs, of the Table 15 conclusion that comparative income and employment structures are crucial determinants of the correlation coefficients between burgh housebuilding series. Consequently crude dependence on burgh size or on the mechanistic demographic determination of housebuilding cycles is unsatisfactory as explanatory forces and thus the outcome of the information on synchronised housebuilding in Scottish burghs is to focus attention on the income-employment base in urban districts.

VI

Pursuing the income-employment- housebuilding links established earlier the construction of a number of composite indices, based on affinities between burghs in their industrial structure, has been undertaken with a view to making comparisons both within and between groups of towns. Geographical entities and industrial similarities are thus the common factors which determine at the burgh level, the composition of indices for county towns,[1] woollen towns,[2] shipbuilding

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1 Ayr, Galashiels, Hawick, Inverness, Perth and Stirling.
2 Hawick, Galashiels.

burghs,[1], iron and steel centres,[2] the Clyde valley burghs[3] and the remaining towns classified under the umbrella of 'minor urban'.[4] An additional group of Edinburgh, the borders, Lothians and Fife might have been added but the homogeneity of the West Central Scotland burghs was stretched much less than such an amorphous collection in the east would require and consequently only six groupings and an overall Scottish series are employed.

The indices contained in Table 17 by their aggregative nature smooth out the peculiarities of individual burghs. In all columns of Table 17, except that of 'woollen towns', this averaging takes place whereas in the woollen group the idiosyncrasies of Hawick and Galashiels remain evident. The broad pattern of peaks and troughs investigated in the previous section at the burgh level is understandably present in these grouped indices but certain generalisations are more appropriate at this stage. Thus the level of peaks and troughs, that is the amplitude, of housebuilding cycles was greatest in the shipbuilding burghs. A much more controlled degree of fluctuation existed in the aggregated Clyde valley series and in the many burghs involved in the heavy industries of western Scotland, an integral part of which, the burghs dominated by the iron and steel concerns, displayed a moderate degree of fluctuation, consistent with their homogeneity and overall similarity with the Scottish pattern. The county towns suffered a degree of instability not evident in England[5] but in the Scottish case this is partially affected by the inclusion of the

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1 Clydebank, Partick, Port Glasgow, Govan.
2 Falkirk, Hamilton, Airdrie, Coatbridge, Wishaw, Motherwell.
3 Glasgow, Rutherglen, Paisley, Hamilton, Motherwell, Wishaw, Airdrie, Coatbridge, Govan, Port Glasgow, Partick, Clydebank.
4 Dunfermline, Irvine, Kirkcaldy, Musselburgh, Port Glasgow, Rutherglen.
5 S.B. Saul, op. cit., p. 121.

Table 17

Housebuilding Indices for Groups of Scottish Burghs, 1873-1914
(1900-09 av = 100)

	County Towns	Woollen Towns	Ship-building Burghs	Iron/ Steel Towns	Clyde Valley Burghs	Minor Urban Burghs
1873			74.8		118.1	
74			181.4		116.1	
75			232.1		129.5	
76			236.3		123.0	97.7
77			95.2		102.8	34.5
78	53.8		84.8		61.9	64.3
79	61.8		21.2		37.5	53.3
1880	65.7		45.9		45.4	59.2
81	35.9		45.9		44.9	24.4
82	29.9		84.8		48.6	47.3
83	35.9		41.9		47.2	39.9
84	39.9		42.4		40.2	33.3
85	52.7	172.7	44.9		36.3	23.9
86	52.7	181.8	45.9	134.4	42.3	30.5
87	71.4	245.4	81.3	47.8	48.1	42.5
88	79.5	245.4	67.9	95.7	48.3	44.4
89	83.5	181.8	76.9	119.6	61.6	48.7
1890	77.0	163.6	58.8	81.3	63.4	46.8
91	76.2	100.0	58.8	86.1	76.9	60.1
92	62.4	100.0	49.8	76.6	76.6	59.2
93	94.1	90.9	76.9	95.4	106.8	82.1
94	115.4	136.4	97.8	103.0	112.2	101.0
95	118.0	81.8	130.4	102.1	113.3	122.3
96	139.3	45.4	160.3	107.7	125.9	138.9
97	121.2	154.4	165.8	104.9	129.5	130.6
98	131.9	209.1	154.9	124.0	132.2	134.4
99	103.2	63.6	116.8	105.6	121.2	126.5
1900	95.1	63.6	89.7	90.0	101.9	94.5
1	97.0	27.3	152.2	126.9	112.9	125.3
2	108.6	81.8	133.3	146.0	129.8	115.5
3	111.2	136.4	127.7	113.4	115.2	106.0
4	117.0	172.7	103.3	116.2	107.9	94.5
5	118.3	127.3	106.0	110.6	103.1	108.3
6	106.1	145.4	92.4	97.1	91.3	98.5
7	93.5	81.8	81.5	78.7	90.0	83.8
8	91.9	100.0	65.2	60.9	76.4	79.5
9	80.6	63.6	48.9	67.3	71.4	96.5
1910	68.0	45.5	48.9	55.3	72.9	93.7
11	78.3	45.5	43.5	35.4	65.4	84.2
12	73.8	63.6	38.0	33.3	69.6	70.8
13	57.4	49.1	30.5	26.2	84.4	92.9
14	53.8	45.6	99.2	18.4	77.0	81.1

Source: Dean of Guild Court Registers and Minute Books.

Scottish case this is partially affected by the inclusion of the unstable border towns. A notable feature of the minor urban group is the way in which building held up under the market difficulties in the several years preceding World War I.

Noted previously was the considerable degree of synchrony in both timing and amplitude of fluctuations in the iron and steel centres of Scotland (Table 16). At a lower level of correspondence, in the range +0.5 to +0.6, the county towns show similarities with other groups over the entire period, although discrepancies arise particularly in the case of the belated Stirling peak of 1908. In the case of the shipbuilding interests of Clydeside the maverick experiences of Clydebank tended to undermine unanimity, while in the borders, the experiences of Galashiels and Hawick though similar were not greatly so. Thus these groups have an aggregated and averaged appearance. They are shown below in Table 18.

Table 18

Correlation Coefficients for Housebuilding in Grouped Scottish Burghs, 1873-1914

	Scotland	Clyde Valley	County Towns	Wollen Towns	Ship-building Burghs	Iron & Steel Burghs	Minor Urban Burghs
Scotland	-	.93	.78	.37	.83	.83	.18
Clyde Valley		-	.58	.07	.85	.79	.25
County Towns			-	.75	.49	.73	.42
Woollen				-	.04	.36	-.18
Shipbuilding					-	.60	.36
Iron & Steel						-	.52
Minor Urban							-

Sources: Dean of Guild Court Registers and Minute Books.

Bearing in mind the substantial extent to which Scottish data is determined by the Glasgow and west of Scotland regions, the +0.93

coefficient for the Clyde Valley is not remarkable. What is, however, is the degree to which the county towns are in agreement with the highly industrialised areas of Lanarkshire and Clydeside, particularly the iron and steel dominated burghs, and with the overall Scottish performance. The similarity with the woollen burghs, Hawick and Galashiels, should not be treated too seriously given the common element of these border burghs in both woollen and county series. Not surprisingly given the individual characteristics of housebuilding in Galashiels and Hawick these towns together in no way compare with the overall performance of other regions and commercial interests, although on particular occasions there is agreement, such as an upturn around 1903-4. As to why these two towns should correspond more closely to iron and steel rather than shipbuilding interests is difficult to perceive other than in the terms that most groups of burghs possess a greater affinity to the former than to the latter. This is also true of the 'minor urban' category, a residual of heterogeneous burgh interests not immediately reconcilable with other groups and including most of the smallest towns in the Scottish data, and resultant from such features the aggregated indices bear little relationship to other series.

The comparison of regional housebuilding data can be satisfactorily extended by utilizing previous researchers' English series. The overall Scottish index over the period 1873-1914 therefore coincides in timing and severity of fluctuations to the extent of 58% and 57% of those in Britain and the North-East England respectively, while the correlations are +0.72 and +0.08 with Manchester and London (Table 19). At the regional level the steelmaking burghs of Falkirk and Lanarkshire are almost uniformly sympathetic in their housebuilding fluctuations with those in the English boroughs represented in Table 19 and this is

also largely valid in the Clydeside shipbuilding burghs, only the London - shipbuilding correlation being significantly lower (r = +0.10). This correlation analysis suggests that, in elucidating similar degrees of housebuilding fluctuations over the long swing between several dissimilar groups of towns, either broad agreement on turning points in the cycles exists to produce coefficients of +0.6 between English and Scottish towns, or, industrial structures within regions are sufficiently diverse and thus diminish the correlation coefficient of apparently appropriate pairings. The validation of these hypotheses

Table 19

Correlation Coefficients for Housebuilding in Grouped Scottish Burghs and Certain English Boroughs and Groups, 1873-1914

	Scotland	Shipbuilding Burghs	Iron & Steel Burghs	G.B. (Weber)	London (Weber)	North-East (Kenwood)	Manchester (Lewis)
Scotland	-	.83	.83	.58	.08	.57	.72
Shipbuilding		-	.60	.61	.10	.60	.63
Iron & Steel			-	.69	.67	.62	.50
G.B.				-	.67	.89	.75
London					-	.41	.24
North-East						-	.75
Manchester							-

Sources: Dean of Guild Court Registers; B. Weber, 'A New Index of Residential Construction .....', Scottish Journal of Political Economy, 2, 1955, Statistical Appendix; A.G. Kenwood, 'Residential Building Activity in North Eastern England, 1853-1913', Manchester School, 31, 1963, Table 1, p. 125; J.P. Lewis, 'Indices of Housebuilding in Manchester Conurbation .....', Scottish Journal of Political Economy, 1961 and Table 17.

could be attempted employing the numerous series presented by Saul and those of Weber and by running correlation analyses between boroughs and groups of boroughs.[1]

1 An important technical distinction, the method of indexing, is a relevant matter, and apart from complicating the suggestion of comparing the overall performance of boroughs, may be a factor influencing the Manchester (chained index) coefficients in Table 19.

Briefly another grouping of burghs is worth contemplating - the holiday resorts. Special characteristics have been attached to Bournemouth, Blackpool, Bridlington and Brighton[1] and it would be instructive to consider the Scottish dimension. Although some evidence of the English resorts' buoyancy, which kept the index above 80 in the 1910s, is apparent in Ayr, insufficient information of a documentary nature has as yet been studies to enable a satisfactory conclusion on this important aspect. Suffice it is to say that as early as the 1870s commentators were mindful of the increase in 'tourists from all parts of the world'[2] and such a growth in Oban of associated tourist amenities would no doubt be multiplied by the development and completion of the West Highland line and Clyde steamboat extensions. However only with further documentary coverage incorporating such burghs as Dunoon, Rothesay, Girvan, Ardrossan and certain east coast resorts can conclusions on the Scottish equivalents of English resorts be effectively established.

VII

It has been the intention of this chapter to present the house-building performances of Scottish burghs, and relying on documentary sources, to construct comparative indices which permit the investigations of the timing and severity of fluctuations paying particular attention to the peculiar patterns which exist at Scottish burghs and regional levels. While attempting to identify common and differentiating experiences in burgh housebuilding an overall assessment has also been attempted, the objective being to examine discrepancies in the activity

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1 S.B. Saul, op. cit., p. 121.
2 The Builder, June 22, 1878, p. 642.

level of proposed construction throughout the period. Thus the volume, timing and rate of change in the housebuilding of each burgh is compared over equivalent time spans, the resultant correlation coefficient describing the degree of synchronisation which exists between any two burghs.

No express effort has been made to attribute causality to the fluctuations observed. Some specific references have occasionally been noted and in the latter stages certain industrial characteristics were observed to provide a basis for regional comparisons. Geographical affinities have also been alluded to. But at no stage have alternative explanations been pre-empted. Indeed quite the reverse, for in many cases correlation coefficients of similar positive strength are attributable to burghs of very different characteristics, implying thereby that universal explanations in terms of industrial structure or any other variable for that matter are unsatisfactory and that causality is the product of an array of factors, the blend of which varies according to the state of the housing market.

CHAPTER IV

Building Cycles, Business Cycles and the 'Atlantic Economy'

One of the academic spin offs of the 'Great Crash' in the American stock market of 1929 and the ensuing years of depression appears to have been in the field of business cycle theory. Shortly after the plunge in Wall Street securities Kuznets postulated the existence of a 16 to 22 year cycle in a wide range of industries and indices which transcended national boundaries.[1] This penetrating new view of business fluctuations offered succour to a growing interest in business cycle dynamics in the 1930's, but despite the further wide-ranging treatment rendered by several other eminent academics in this field,[2] the longer cycles, 'Kuznets cycles',[3] became associated with the pattern of activity in the building industry.

In part this was due to a paper published in 1933 by Riggleman which demonstrated the tendency of building cycles to correspond to the general business climate.[4] This study which referred to the 1875-1932 period in America, was, however somewhat abivalent as to the nature of the lead-lag relationship between the two series. However, a more

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1. S.A. Kuznets, Secular Movements in Production and Prices, (N.Y., 1930).
2. For example, the work of

   A.F. Burns, 'Long Cycles in Residential Construction' in
6 A.F. Burns, (ed.), Economic Essays in Honour of Wesley C. Mitchell, (N.Y., 1935), pp. 63-104; G.F. Warren and F.A. Pearson, World Prices and the Building Industry, (N.Y., 1937).

3. P.J. O'Leary and W.A. Lewis, 'Secular Swings in Production and Trade, 1870-1913', Manchester School, 2, 1955, pp. 113-52, appear to have the 16-22 year cycle the 'Kuznets cycle'.
4. J.R. Riggleman, 'Building Cycles in the United States, 1975-1932', Journal of the American Statistical Association, 28, 1933, pp. 174-83.

forthright statement of the mechanism of building cycles was offered a year later when Cairncross observed that, 'It was the prosperity of the Dakotas, so to speak, that brought building to a standstill in Dalmarnock.'[1] Emigration, Cairncross explained, increased when foreign investment burgeoned, and when emigration was increasing the building industry of Glasgow was in decline.[2] Conversely, diminishing numbers in the emigrant passenger lists coincided with more buoyant building activity in Glasgow.

Thus, as early as 1934, orchestrated by the valume of international investment and the trans-Atlantic flow of migrants, the link was established between inversely synchronised housebuilding and business fluctuations in Britain and America. This was no new discovery, however, as Thomas pointed out some years later in his valuable resume of economic thought on the topic of migration, for in the words of J.S. Mill:

> 'The exportation of labourers and capital from old to new countries from a place where their productive power is less to a place where it is greater, increases by so much the aggregate produce of the labour and capital of the world'.[3]

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1. A.K. Cairncross, 'The Glasgow Building Industry, Review of Economic Studies, 2, 1934, pp. 1-17.

2. A.K. Cairncross, Home and Foreign Investment, (Cambridge, 1953), pp. 23-4.

3. J.S. Mill, Principles of Political Economy, 6th Edition (London, 1909), book 5, Ch. XI, p. 586, quoted in B. Thomas, Migration and Economic Growth (Cambridge, 1954), p. 11.

This reciprocity of interests, also advanced on a regional basis between Lancashire and the southern states of America,[1] was regulated according to the relative renumeration to factors of production on either side of the Atlantic.[2]

The original statement by Cairncross of alternating long swings in labour and capital flows, less explicit in 1934 than in his cogent re-statement in 'Home and Foreign Investment, 1870-1913' in 1953, appears to have been overlooked for many years, for the long swing hypothesis was mainly domestically orientated. The Kuznets cycle was related to purely American performances in the business sector as in the study by Newman,[3] supplementing the contributions of Burns and Kuznets, although the population variable was further stressed in the Newman case. Autonomously generated cyclical fluctuations were also investigated by Long,[4] and the transport connection more forcibly formulated by Isard in the determination of building cycles.[5] Each largely disregarded the suggestion by Cairncross of systematic long swings in both America and Britain and that these could be co-ordinated.

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1. L.H. Jenks, Migration of British Capital to 1875 (London, 1938), pp. 196-7.

2. The phenomenon of foreign capital flows as an instrument of economic development is of course much wider than a British-American link. It is, more properly to be considered as a British - new country relationship, with special emphasis on America and the Empire.

3. W.H. Newman, 'The Building Industry and Business Cycles', Journal of Business, V, 1935, pp. 1-73.

4. C.D. Long, 'Long Cycles in the Building Industry' Quarterly Journal of Economics, 53, 1939, pp. 371-403.

5. W. Isard, 'Transport Development and Building Cycles', Quarterly Journal of Economics, 57, 1942, pp. 90-112; and 'A Neglected Cycle: The Transport Building Cycle', Review of Economics and Statistics, 1942, pp. 149-58. Lengthy bibliographical notes on building and business cycles are available in several sources, but notably C.D. Long, Building Cycles and the Theory of Investment, (Princeton, 1940).

Three British contributions in the space of five years transformed the subsequent interpretation of the period 1840 to 1914. The first study, by Cooney[1], indicated that American and British building cycles fluctuated in opposite directions, and with housebuilding potentially representative of the wider spectrum of domestic investment, Cairncross[2] and Thomas[3], from the standpoints of capital and labour, respectively, produced volumes on the alteration aspects of the Kuznets or long-swing hypothesis. As the present study of Scottish housebuilding is concerned with the determinants of cyclical fluctuations the following sections attempt to provide the more detailed basis upon which this view, and the work of Thomas in particular, is founded. This is taken as the preliminary stage to the presentation of Scottish data at a similar level of aggregation.

II

The essence of the relationship between British and American investment cycle fluctuations revolves on the implications of switches in the intensity of labour and capital flows across the Atlantic. The heavier the export of capital from Britain, therefore, the more the associated manpower sent or attracted to foreign countries to conduct the new constructional activities. The loss of population to Britain left houses untenanted. The existence of empty property not only diminished housebuilders' inclinations to undertake further building

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1. E.W. Cooney, 'Capital Exports and Investment in Building in Britain and the U.S.A., 1856-1914', Economica, 16, 1949.

2. A.K. Cairncross, Home and Foreign Investment (Cambridge, 1953).

3. B. Thomas, Migration and Economic Growth (Cambridge, 1954).

but also reduced the volume of finance available to the building industry as the decrease in property incomes, a consequence of the rising level of empty houses induced such investors to seek alternative outlets for their funds.

The relative improvement of the terms of trade for British industrial workers over the agricultural sector from 1870, in respect of rising real wages and diversity of employment opportunities supplemented by advancing environmental health considerations, meant that a cessation to the outflow of capital, inanimate and human, re-activated the accumulated domestic demand for housebuilding. The interruption to foreign investment provided cheaper and more abundant domestic credit and the reduction of emigration levels intensified the numerical pressure on existing accommodation. The revival of urban employment opportunities, previously over-shadowed by the expansionist export sector, attracted the rural migrant. In this way, the conditions favourable to a renewed burst of house-building were achieved.

The building industry, it was argued, was only a representative of domestic investment. The relationship described above, therefore, held not simply between emigration and building but between home and foreign investment. This common pool of resources, upon which the domestic and export sectors alternately drew, was described by Cairncross:

> 'The emigrants of the eighties had they stayed at home might have been employed in the extension and widening of railway track, the building of waterworks, the operation of tramways. Their removal from the labour market and the consequent retardation of the growing demand for transport services and public works made home investment less advantageous and less urgent'.[1]

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1. A.K. Cairncross, op. cit., p. 221.

British housebuilding, then, was seen by Cairncross as part of a larger system in which the parameters of economic development both in Britain and elsewhere were interchangeable, and as such were inherently susceptible to alternating expansionist phases as conditions favourable to such booms successfully attracted resources from the other area.

It was also in terms of the larger economic scheme that Thomas simultaneously developed a model of economic growth in which the role of migration was fundamental. However, where Cairncross looked towards the relationship of Britain and the world, Thomas concentrated on the international economy, that is, the world economy was a 'whole' in which the international movements of labour, capital and commodities were treated as 'inter-regional'.[1]

An explicit statement of the 'inter-regional' nature of factor flows captures much of the flavour of the Thomas hypothesis:

> '... the Atlantic community of nations is conceived as being one economy made up of interdependent regions. Between 1830 and 1913 the economy underwent a transformation and the expansion of the whole entailed a certain rhythm of movement in the parts. Growth required the transfer of labour and capital from east to west (internal migration from the point of view of the Atlantic economy): but this process could not go on indefinitely'.[2]

The framework of the Kuznets cycle had thus become enlarged to incorporate the investment cycle as part of a theory of nineteenth

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1. B. Thomas, op. cit., p. 30. Methodologically this approach is interesting. Whereas Thomas is critical of Schumpeter in describing a closed model with deviations explained as external abberrations (pp. 27-8), Thomas internalised most indicators by employing a world level of aggregation and therefore runs the risk of circularity in the argument.

2. Ibid., p. 86.

century world economic growth in both industrialised and developing nations. The method by which the theory affected housebuilding, again used as a proxy for the wider forum of domestic construction, was outlined as follows:

> 'Building is a branch of investment which reacts directly to changes in population. If we postulate an autonomous fluctuation in the outflow of surplus population from an old country we may expect induced waves of building activity in the receiving country. Just as a large volume of immigration promotes investment in the new country so does a slump in emigration from an old country, by reinforcing the growth of population, tend to increase the demand for houses'.[1]

In addition to the statements relating to emigration and home and foreign investment, the existence of a 'surplus population, implies certain conditions prevailed in the labour market and allows conclusions as to the trend of wages and the proportion of wages to national income to be drawn. Movements in the levels of investment themselves have implications for the volume of employment, the size and disposition of aggregate income and conditions in the labour market. Thus the 'Atlantic Economy' is a macroeconomic model of simultaneous activity and growth patterns between countries. Increasing capital exports from Britain were associated with a boom in the export trades and an upsurge in emigration from Britain. The recipient countries enjoyed active domestic investment booms fired by capital imports and stoked by mounting population pressure for infrastructure investment - houses, transport and

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1. Ibid., p. 33.

public utility facilities. There was a corresponding diminution in demand for these in the countries such as Britain, where the safety valve of an increased rate of emigration diminished the need for such developments. Furthermore, despite the prosperity in the export sector of British industry, this failed to overcome the despondency of domestically orientated industry, and the rather unattractive income and employment conditions of British industry in depression encouraged the rural migrant to join the emigrant queues. 'Then, when the American system was digesting what it had swallowed, Britain's appetite for home investment would increase and her real income would grow faster than usual, while her exports of men and money became negligible'.[1]

The completion of a round of these events - the long swing - took some 18-20 years, but unfortunately Thomas does not elaborate on what changed 'Britain's appetite for home investment'. It is at this point that the Thomas analysis moves with difficulty from forward to reverse gear whilst the more subtle approach of Cairncross employs a syncromesh, allowing a smoother transition to the direction of factor flows by a more varied analysis which incorporates several supply influences. Thus, 'the final coup de grace to building booms came from the side of cost rather than of demand'.[2] Rents, prices, and the cost of capital were

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1. Ibid., p. 108.

2. A.K. Cairncross, op. cit., p. 34.

not neglected, and some evidence was marshalled to show that producers' goods industries and especially housebuilding, through fluctuations in their level of stocks between 2 per cent and 10 per cent, were susceptible to 'a cycle of, say, twelve years, without any change in demand whatever'.[1]

The alternating pulse of home and foreign investment is the common bond of the studies by Cairncross and Thomas, and if impelled from rather different standpoints, their statistical underpinnings are no lesser contributions than their provocative and stimulating conclusions. It is towards the statistical and diagramatic representation of alternation that attention is now turned.

III

The statistical background to the concepts of alternating trans-Atlantic factor flows developed by Cairncross and Thomas rely on the detailed development of several series for investment, including railway construction, coal output, public capital formation, as well as various forms of building. Exports, national income, money market indicators, wages, emigration, employment and various industrial output series are among the mass of statistical underscoring.

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1. Ibid., p. 31. Italics in original. H.J. Habakkuk, 'Fluctuations in Housebuilding in Britain and the United States in the Nineteenth Century', Journal of Economic History, 22, 1962, p. 210 also makes this point.

Further elaboration by Thomas, notably on demographic data, is also provided. The aim here, however, is to present some of the more telling statistical findings and thereby seek to capture the essentials of the alternation thesis.

At an early stage the nature of housebuilding and other constructural fluctuations is established. Table 1 shows the 'remarkable inverse relation between the course of building' in Britain and America.

TABLE 1

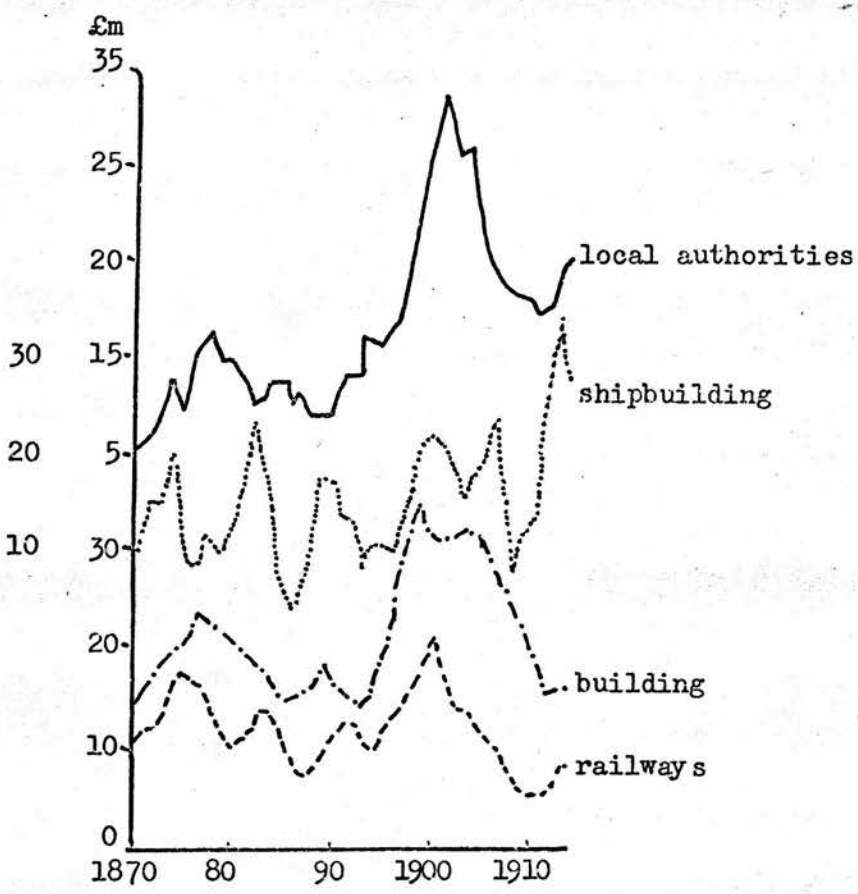
Peaks and Troughs in Building Activity in Great Britain and the United States 1871-1913

UK		US			
Building Investment		Non-Residential		Residential	
Peak	Trough	Peak	Trough	Peak	Trough
	1871	1871		1871	
1877			1877		1878
	1892	1892		1892	
1899			1900		
	1912	1913		1912	1900

Source: B. Thomas, Migration and Economic Growth (Cambridge, 1954), p. 103. Table 26.

To this pattern of British building fluctuation Cairncross had already established that new construction by railway companies, local authorities and shipbuilders broadly conformed (fig. 1).

fig. 1. New Construction Expentidure, 1870-1914



Source: A.K. Cairncross, Home and Foreign Investment, 1870-1913, (Cambridge, 1953), p. 168.

On a more crude basis ten years earlier Isard had shown that on the American side of the Atlantic housebuilding was not a misleading proxy for the wider category of domestic investment.[1] This link in the theory established, both Cairncross and Thomas demonstrated the sympathy of capital exports and the number of emigrants, together with their inverse relationship with employment and real wages. (fig. 2).

A further convincing diagrammatic treatment of inverse cycles was offered by Thomas in his presentation of data for coal output, railway miles added, building and immigration into the United States compared to series for British (and London) building,[2] foreign investment and emigration (fig. 3). The striking inverseness from 1870 then required only four more tables on national income, apologetically offered as 'only further evidence of the existence of minor secular fluctuations' and 'that they also underline the fact that the rhythm in the growth in Britain was different from that of the United States'.[3] These series, it was argued, with others for gold, unemployment, imports and the proportion of wages to national income[4] conclusively demonstrated the existence of an 'Atlantic Economy'.

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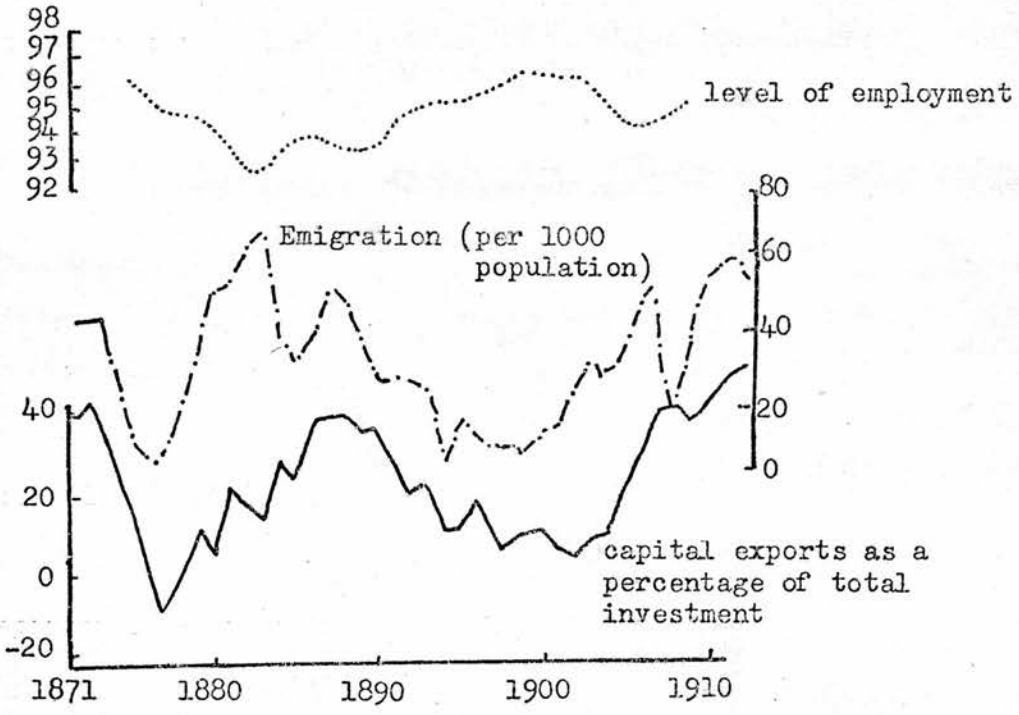
1. W. Isard, 'Transport Development and Building Cycles', Quarterly Journal of Economics, 57, 1942-3, Chap. 1.

2. The similarity of British and London housebuilding is interesting for, although London substantially affected the national figures it did pursue a most distinctive patter. As such this must cast some doubt on Thomas' fig. 26. See B. Weber, 'A New Index of Residential Construction in Housebuilding in Great Britain, 1838-1950', Scottish Journal of Political Economy, 2, 1955, pp. 124-32.

3. B. Thomas, op. cit., p. 110.

4. Ibid., fig. 39, p. 184.

fig. 2. Trends in U.K. Emigration, Employment and the Export of Capital, 1870-1914.



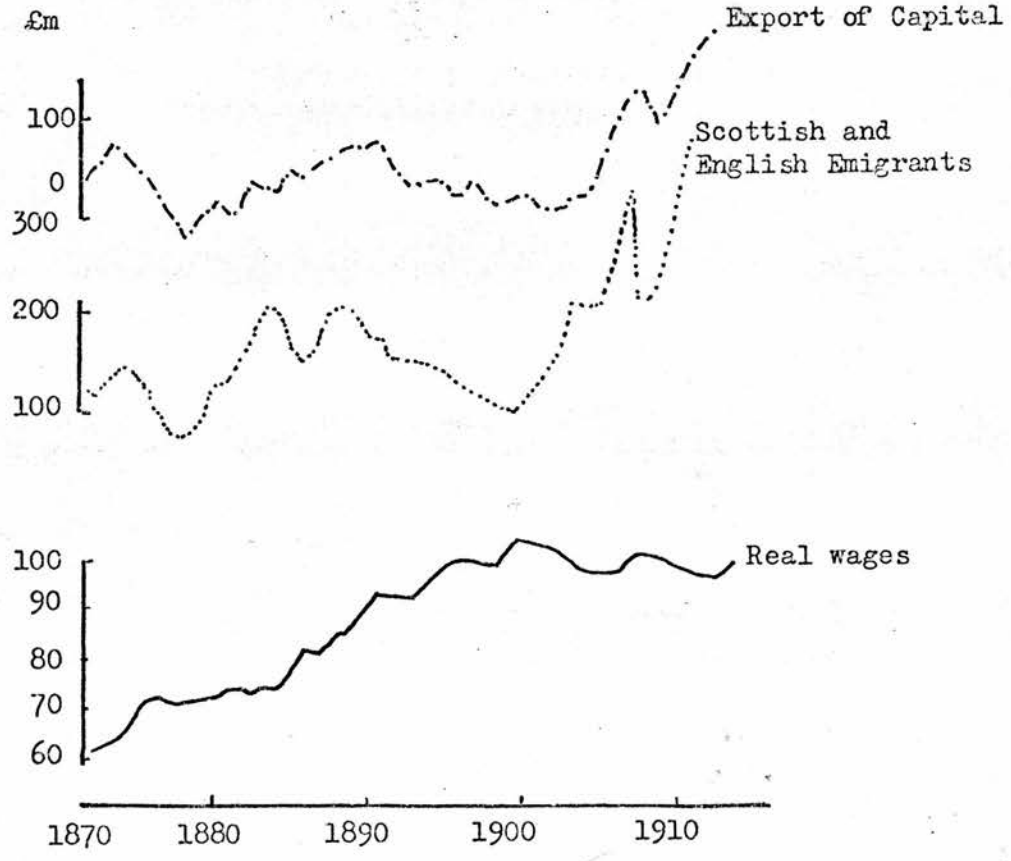
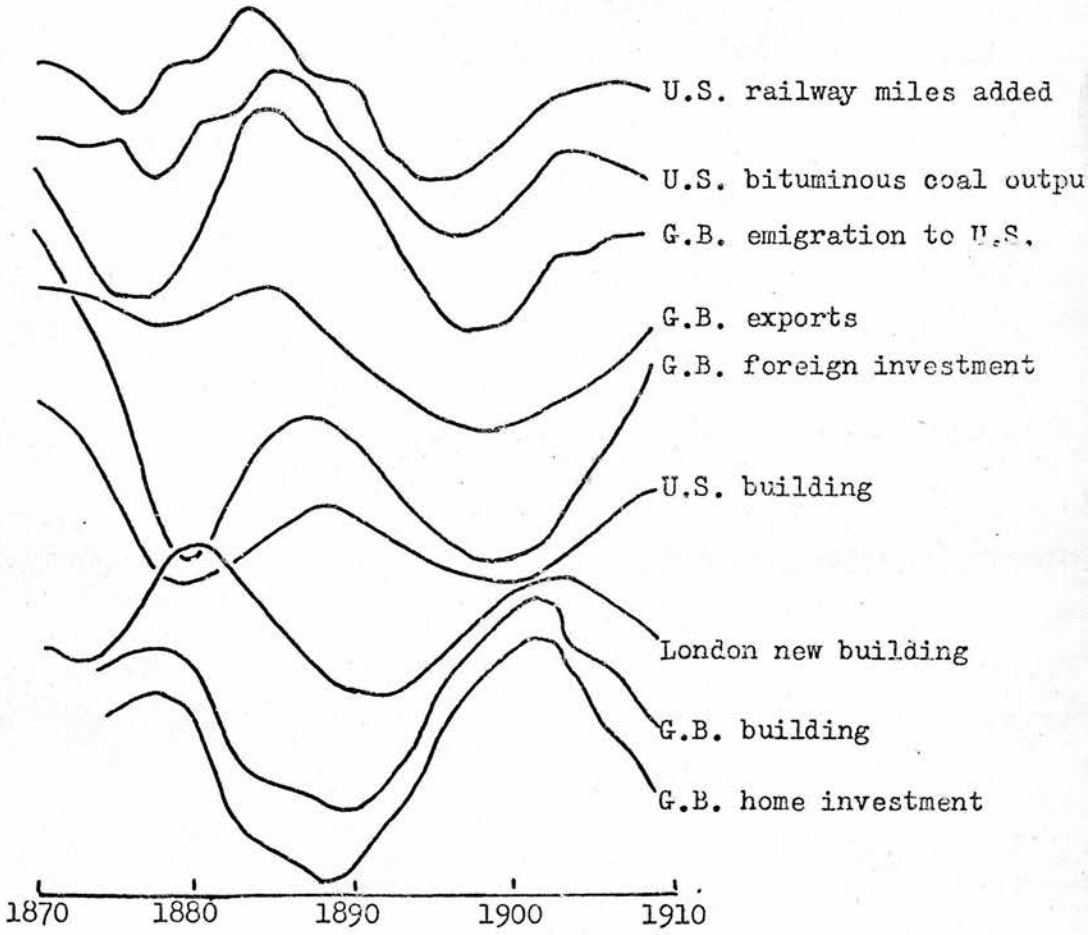


fig. 3. Nine Year Moving Average of Percentage Deviations from Trend; Various Series, 1870-1910



Source: B. Thomas, Migration and Economic Growth, (Cambridge, 1954), p. 108.

The general pattern which is established is that from about 1870 until the end of that decade British domestic investment, building included, was buoyant, with foreign investment and emigration slack. At the same time the United States series for domestic investment were equally depressed, the years 1880-90 only seeing a reversion to the propserity as the British domestic indicators swung into decline. One pointer of interest is that the emigration figures to the United States post-date the series for U.S. railway mileage and coal output, suggesting therefore that the factors initiating the revival of the 1880s and the relapse that subsequently occurred did not originate with emigrant flows. It was therefore attractive internal prospects which, as Habakkuk suggests,[1] induced domestic investment to get underway and thus favourable conditions already existed by the time the migrants arrived. The pattern of alternating economic growth was also equally evident from 1890, when the home boom during the late Victorian and early Edwardian years in Britain was mirrored by depression in America, fig. 3, showing that only in about 1904 did the experiences of the Atlantic economies become reversed.

Whatever the reservations regarding the timing of these inverse flows there is a striking complementarity in the British and American experiences. How far this pattern is reproduced on a regional basis is problematical but several purely Scottish series have been compiled in order that the 'Atlantic Economy' hypothesis

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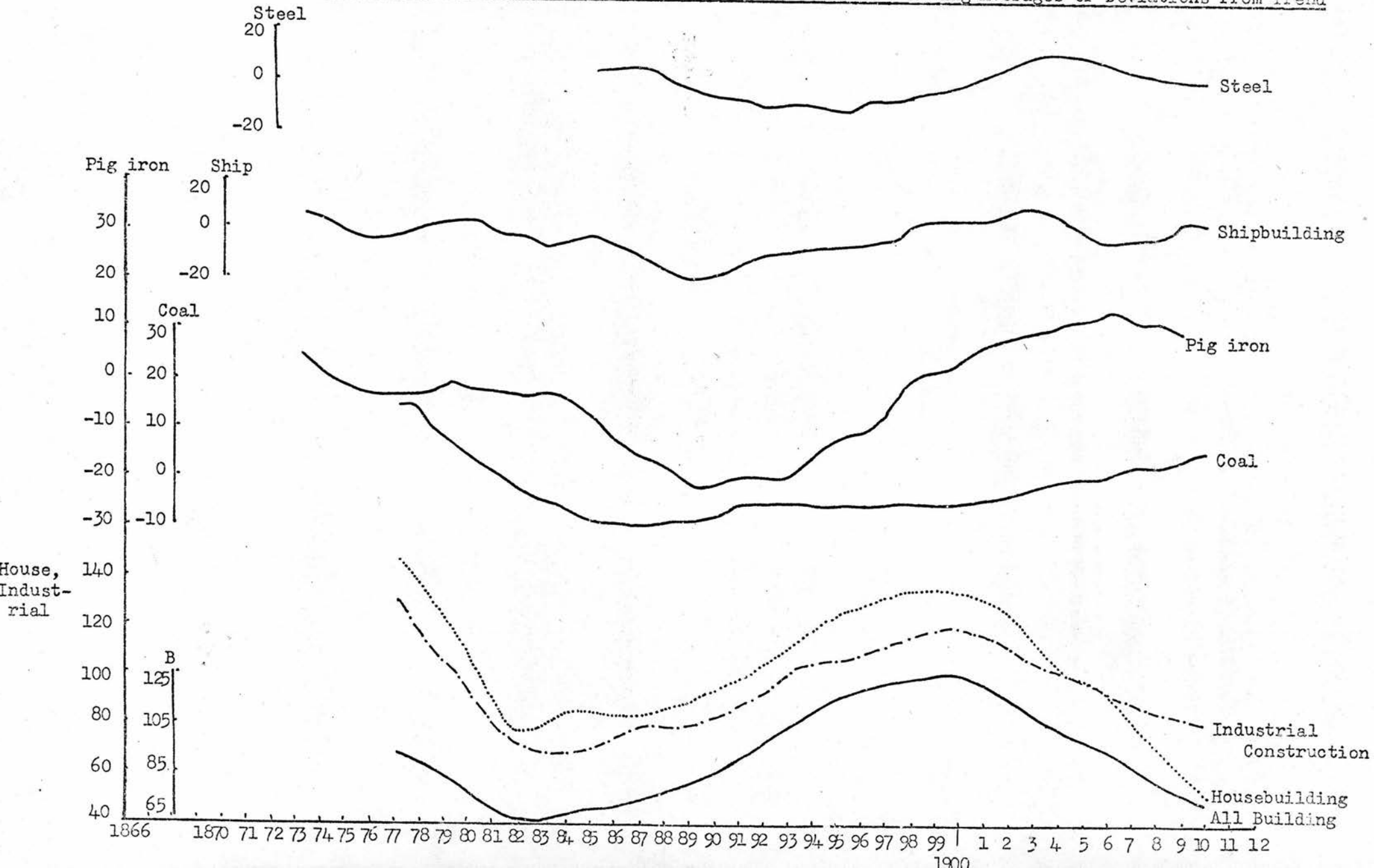
1. H.J. Habakkuk, op. cit., pp. 198-230.

can be examined at this level. Perhaps worth noting at this stage are the discrepant levels of aggregation for Scottish and American data series and the absence of annual estimates of Scottish overseas investment.

The rhythm of domestic Scottish investment is indicated in fig. 4. Housebuilding, factory and office construction, coal output, the tonnage of ships launched and iron and steel production data are compared. Scottish residential, corporate and indeed all forms of building construction registered a similar pattern during the years 1870-1914. Although this relates only to the constructional side of domestic investment and does not include plant installations, machinery and other forms of capital formation as, for example, presented by Cairncross in fig. 1, it was possible for Thomas to discover inverse cycles using a blend of output and investment data. Thus U.S. bituminous coal output and additional railway mileage were with building taken as an indication of American domestic investment. Such a procedure for Scottish data (fig. 4) illustrates that building diverged from other output series. For building output the minimum point of the cycle came in the early 1880s; it was in the mid- and late-1880s for other Scottish output data. The long-term down-swing in building dating from the beginning of the twentieth century was not apparent in the output indices of the major Scottish industries; the prosperous coal exporting trades, the buoyant shipbuilding industry and associated with it steel and pig iron production, enjoyed a rising tide between 1900 and 1913.

Scottish urban building did not coincide with the observed trend of British building cycles. The steep fall in Scottish

fig. 4 Scottish New Construction and Output, 1870-1914: Nine Year Moving Averages of Deviations from Trend



building to a minimum point in 1882-3 proved to be only a resting point for British building activity as it continued to subside to a trough in the mid-1880s.[1] Indeed, just as the British series recommenced its downward direction the Scottish construction sector resumed an upward path. Another Scottish-British building distinction is apparent at the peak of the next boom; the moving average analysis of Thomas for British building shows the maximum point of the cycle to be in 1902 whereas in Scotland a similar analysis shows this to be in 1899.

Despite inconsistencies both between Scottish building and other Scottish industrial series and between Scottish and British building trends, there is some evidence for a long swing in the Scottish economy (fig. 5). With the American building and Scottish emigration series inverted, the overall appearance of a synchronised trans-Atlantic long-swing would seem justified. However, even overlooking the extent to which Scottish building is representative of the wider aspect of Scottish domestic investment, the timing of the series creates some doubts. The existence of inverse cycles seems much less at issue in the

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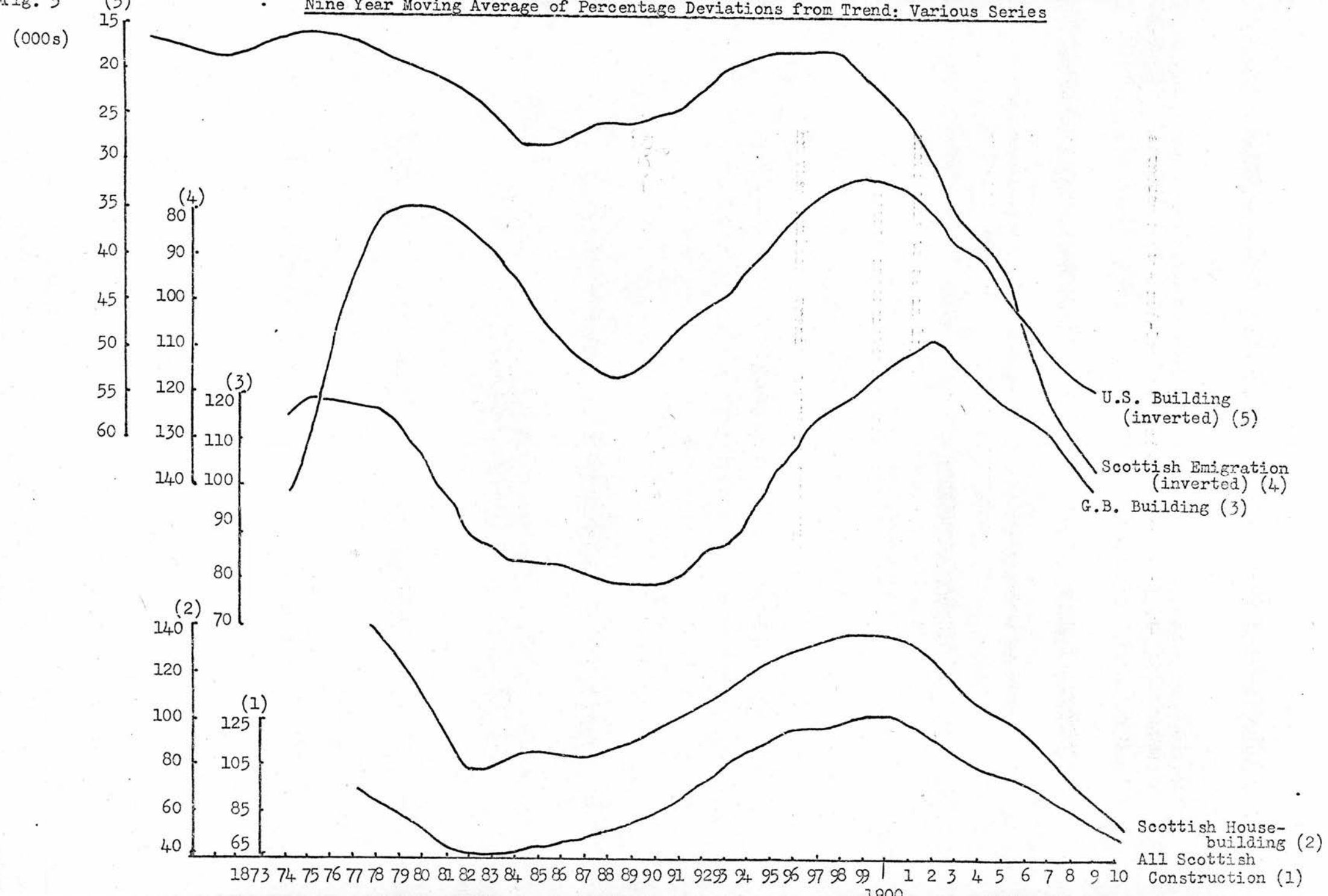
1. The minimum point of Cairncross' British building index is 1885, although the years 1884-87 represent roughly equally depressed building. This data source, upon which Thomas bases his British building series (with the trend removed) shows 1885-88 to be years of almost equal recession in building. The ensuing average process thus altered the original data by at least 1 year. The establishment of leads and lags is thus rather hazardous. Furthermore, Thomas' minimum figure of 72.57% (1892) as the percentage that the original (Cairncross) data represents compared to trend is not at all apparent in his diagramatic representation on p. 108 and this may suggest that a further rounding exercise has been undertaken. See B. Thomas, op. cit., p. 297, table 107.

Fig. 5

Nine Year Moving Average of Percentage Deviations from Trend: Various Series



Scottish American context from about 1890, although the turning points of the five series in fig. 5. are not entirely in agreement, ranging as they do from 1898 to 1902. It is in the years prior to 1890 however that the question of inverseness is most problematical. The peak building years in Scotland and more generally in Britain of 1875-6 are fully five years in advance of the minimum U.S. building index, and although in the subsequent British building trough and American boom the gap is narrowed to one year, the Scottish-American turning point in the 1880s is still five years adrift.[1]

The trend of Scottish emigration is also at variance with the required pattern of inverse cycles, but is only really questionable in the years surrounding the Scottish building boom of 1870s. The sustained period of low emigration between 1866 and 1876 is counter to the dictates of Thomas' inverse cycles theory. Thereafter the pattern is much closer to that expected. This correspondence post 1876 may well provide some evidence for the view that Scottish building and emigration were indeed linked, not with a mechanistic Atlantic economy, but with certain indigenous forces so that conditions favourable to the domestic economy, reflected in housebuilding

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1. Although it might be noted that Scottish series for iron, shipbuilding and coal coincide with the turning points of U.S. domestic indicators it should also be noted that from 1900 the Scottish and American series show divergent trends, thereby indicating only limited support for the existence of inverse cycles.

and industrial construction, were also conducive to attracting the rural exodus to urban Scotland. Such an interpretation would derive support from the Habakkuk thesis and also from certain domestic factors which influenced Scottish housebuilding from the supply side. An examination of these, in conjunction with important structural changes of a demographic nature, the availability of capital, is presented in greater detail in Chapter 8, but from fig. 6 there is some reason to believe that the trend of building costs and rents[1] may have influenced the pattern of Scottish building. Certainly the greater stability and relative attractiveness of fixed interest securities in the late 1870s and 1880s and again in the post-building boom years after 1901 offered a better prospect compared to investment in housebuilding and as such must be considered as a possible determinant of residential construction. The improving consols yield from the start of the Boer War would have to be taken into account in any investment analysis, as would uncertainty and the role of bankruptcies and shocks such as was registered by incidents like the failure of the City of Glasgow Bank in 1878 and the Baring crisis of 1890. Thus at this stage it is possible to suggest that the range and magnitude of influences affecting housebuilding from the supply side should arouse caution as to the validity of an 'Atlantic economy' theory of home and foreign investment which relies heavily on a demand-based approach.

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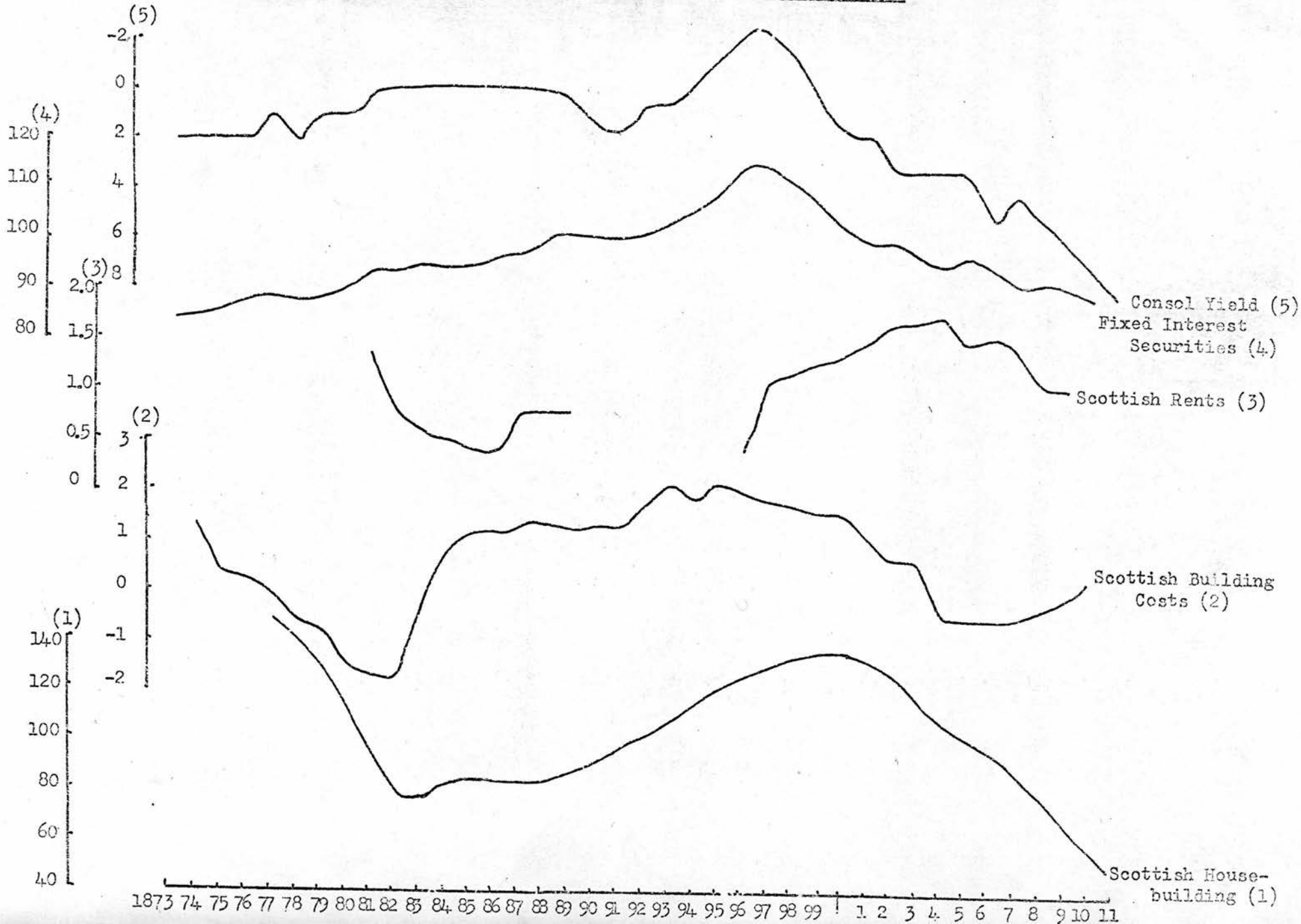
1. Appendix 2 briefly investigates the inflexible nature of rents.

Scottish Domestic Series: Nine Year Moving Averages, 1870-1914



IV

Criticisms of the 'Atlantic economy' approach to economic growth in Britain and the rest of the nineteenth century world have not been in short supply. Conceptual problems have been noted; how relevant is it to compare additional railway mileage and building activity?[1] How appropriate is a heavily demand-based theory of internal and international investment when supply variables are demonstrably crucial on certain occasions?[2] Scottish data series would lend further sceptical support to the degree to which building is representative of other areas of domestic investment, and subsequent examinations of supply influences such as building costs, empty properties and availability of capital would suggest that the building cycle is determined by several influences beyond those of the Atlantic economy model.

Statistical qualifications to Thomas' approach have also been observed. The difficulty of obtaining sufficiently

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1. D.J. Coppock, 'The Causes of Business Fluctuations', Manchester Statistical Society, 1959, p. 27 and C.F. Carter, Review of B. Thomas, Migration and Economic Growth, Economic History Review, 8, 1956, pp. 106-8.

2. S.B. Saul, 'Housebuilding in England, 1890-1914', Economic History Review, 15, 1962, pp. 119-37.

sensitive series of statistics for a sophisticated analysis of the type attempted is a serious one. Thus, for example, the use of gross emigration is likely to have been subject to considerable errors in the light of actual emigration data which in Scotland from 1893 was a volatile proportion of gross emigration.[1] Further, the emigrants may have left from Britain but were they British emigrants or were they simply reducing the price of a trans-Atlantic passage by moving westwards across Europe to British ports? The statistical problems of the Atlantic economy model are by no means purely at the documentary stage. Statistical manipulations which rely on a high degree of averaging such as smoothing by means of nine-year moving averages can produce long swings simply by rounding the data.[2] In addition moving averages often displace the actual turning

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1. N.H. Carrier and J.B. Jeffrey, External Migration - A Study of the Available Statistics, 1815-1950 (H.M.S.O. 1953), Table 1, p. 92.

2. R.C. Bird, M.J. Desai, J.J. Enzler and P.J. Taub, " 'Kuznets Cycles" in Growth Rates: The Meaning', International Economic Review, 6, 1965, pp. 229-39; I.Adelman, 'Long Cycles - Fact or Artifact?' American Economic Review, 55, 1965, pp. 444-63, and W.W. McCormick and C.M. Franks, 'A Self-Generating Model of Long Swings for the American Economy, 1860-1940', Journal of Economic History, 31, 1971, pp. 295-343.

points[1] as do the use of relatives to trend, the particular technique favoured by Thomas. The effect of such procedures at the analytical level is to base specific lead-lag relationships on data which is inappropriate to period analysis on an annual basis. Thus the lag analysis undertaken by Thomas,[2] and which is of crucial importance in establishing his thesis of inverse cycles, must be treated with a degree of caution when it deals in terms of a few months lag between individual series.

From the point of view of alternative theories of alternating investment flows two main strands may be observed. Taking Thomas' own claim for 'a structural change in the American economy just after the Civil War',[3] O'Leary and Lewis[4] indicate that the inverse pattern may have come about as a 'sheer accident' and they indicate that there was no mechanism to make building cycles alternate. In addition they suggest that the aggregate level of U.S. domestic savings so overshadowed the volume of British capital exports to the U.S.

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1. For example, see above, p. 8 , n. 28.

2. B. Thomas, op. cit., pp. 159-63.

3. Ibid., p. 93.

4. P.J. O'Leary and W.A. Lewis, 'Secular Swings in Production and Trade, 1870-13', Manchester School, 23, 1955, pp. 113-52.

that to attribute such disproportionate influence to this element is inappropriate. Further doubts regarding the Atlantic economy model are advanced by these authors on the basis of the coincidence of German and American building cycles between 1870 and 1900, and more generally between the German pattern which theoretically should approximate that of Britain but which was in fact 'a remarkable mixture of the British and American'.[1]

The criticisms by Habakkuk[2] of the Atlantic economy thesis are several. The importance of purely local factors is stressed, and the disparate English regional experiences post-1900 discovered by Saul are produced in support. Random stimuli to housebuilding are noted - the electrification of suburban transport in the 1890s, to which might be added the Tramways Act of 1870 permitting a similar extension some twenty years earlier. The rapid economic growth of developing countries and their more vigorous cyclical experiences is also observed as at variance with the magnitude of inverse British trends. But by far the most telling commentary

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1. Ibid., p. 130.

2. H.J. Habakkuk, op. cit., pp. 198-230.

on the Atlantic economy is advanced in relation to its central theme, migration. The Thomas hypothesis, superficially acceptable, that when migration to the towns was low, emigration was high and thus emigration caused the low urban immigration, is attacked. This is the common reservoir of factors of production so important to the Thomas thesis. However Habakkuk demonstrates[1] that a high level of migration in one area might stimulate further migration in that area, irrespective of British urban or American economic performance; secondly, 'when one competitor was prosperous and the other depressed, the prosperous one would get the migrants, but one could not say that one area was depriving the other of migrants'; and thirdly, that English towns and the United States may each have drawn on individual pools of migrants which would thus be non-competing. The mixed motives of migration, therefore, provide a powerful counter to the common pool of resources approach of Thomas, and thus offer a less mechnistic interpretation of migration and one which is historically consistent both with the various motives for migration which Thomas himself presents, and also with the occupational distribution

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1. Ibid., pp. 215-6.

of Scottish emigrants, the composition of which stewed more towards the professional, entrepreneurial and skilled groups than in England or Ireland, was less susceptible to trade cycle influences than other parts of the United Kingdom.[1]

With the early stages of the present study concerned with establishing the nature of Scottish housebuilding and other forms of building activity in the period 1870 to 1914, the current chapter has attempted to examine the way in which building has been employed by previous writers both as an important constituent of domestic investment and also as an integral part of international economic development in the years before 1914. The main milestones of academic contributions debating the nature and existence of long cycles with an approximately twenty year period have been examined, culminating in the comprehensive models of Cairncross and Thomas, and at a similar level of aggregation an analysis has been undertaken employing Scottish variables in an effort to

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1. B. Thomas, op. cit., p. 26, and pp. 65-7, figs. 4-8, H.J. Habakkuk, op. cit., also makes this point.

discover whether the key features of the Atlantic economy model - alternating patterns of home and foreign investment - are evident in a Scottish dimension. In the context of deficient statistical series, in part the consequence of no formal national boundaries, outright acceptance or rejection of an Atlantic economy would be inappropriate. There are however sufficient problematical areas in Scottish-American statistical relationships to cast doubt on any such all-embracing economic system.

Both in the light of the English studies where a concensus of empirical work at both regional and national levels places major causal emphasis on the internal origins of the building cycle, and in the light of the present Scottish study, which reaffirms the domestic derivation of the building cycle, the systematic relationship envisaged in the Atlantic Economy thesis of Thomas must come into question. The mechanistic responses of the British and American economies to the ebb and flow of emigrants is by no means discounted in the Scottish case but it is placed against the backcloth of endogenous factors in the housebuilding cycle. Previously, in the absence of precise regional data series for such determinants as capital availability, rents, building costs, uncertainty

and others, the demographic explanation has held an ascendancy difficult to reverse, particularly when, as Thomas attempted, the argument has been confined to the long swing, where small but important inflexions in the building cycle potentially yielding considerable information on the composition of the overall structure have been overwhelmed by the aggregative approach.

When the conceptual and statistical criticisms associated with the central theme of the Atlantic economy - the common reservoir of factors of production - are considered, then further reservations regarding this alternating approach to home and foreign investment are forthcoming. An underlying tendency for investment to appear alternately more attractive in America and then subsequently in Britain there may have been, but in this double concerto, to extend the Lewis metaphor,[1] the individual

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1. J.P. Lewis, Building Cycle and Britain's Growth (London, 1965), p. 186.

characteristics of the soloists frequently shaped the final rendering of the piece. Thus the tempo of Scottish housebuilding fluctuations was heavily dependent upon such stochastic factors on the City of Glasgow Bank failure of 1878, the onset of the Boer War, and to a lesser extent the Baring Crisis of 1890. The pulse of economic activity in the manufacturing and commercial sector and the state of builders' and investors' confidence were also relevant. However, one of the themes of the present Chapter is to emphasise that certain influences were neither uniquely, nor continuously effective. This can be seen through the impact of the trade cycle on the demand for housing. Although clearly attributable in part to the level of economic activity, it was earlier noted that the occupational structure of Scottish emigrants, compared to other British emigrants, made their exile less likely to have been prompted by the vagaries of the trade cycle. But for certain Scots, the buoyancy of the local economy was a critical factor in the volume of housing demand. Recognising this, Glasgow builders undertook the

construction of 3100 one- and two-roomed houses in 1873, but when the boom broke no more than 200-1000 dwellings of this type were projected in the decade 1878-87. Only the resumption of local prosperity involved a more active demand and to meet this annual construction of small working class houses rose from 1008 in 1890 to 3781 and 3715 houses in 1897 and 1898.[1] The picture was the same in Edinburgh. Working Class housebuilding in the districts of Dalry, Gorgie, Tynecastle and Canonmills was almost entirely restricted to the most buoyant years of the local economy.[2]

The varying intensity of this influence was echoed elsewhere. The rate of interest, alternative investment yields, the level of building costs were not consistently effective influences on Scottish housebuilding at either the national or local level. However, those and other factors were demonstrably crucial at specific cyclical phases and it is to the blend of external and domestic,

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1. City of Glasgow, Office of Public Works, 'Memorandum of Linings Granted by the Dean of Guild Court'.

2. Edinburgh, Post Office Directories, 1859-1914.

variable and constant contributions to housebuilding fluctuations that the remainder of this study turns. Thus, successively, legal and institutional practices, Scottish income and demographic trends, and several supply influences are examined over the period 1870 to 1914, those years most generally acceptable to commentators on the long swing hypothesis.[1]

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1. Several writers, Habakkuk, Coppock, O'Leary and Lewis amongst them, cast doubts on an Atlantic economy prior to 1870 and Thomas himself seems less emphatic about these years. The period after 1914 was also thought not to bear much resemblance to alternating factor flows, as demonstrated by M. Abramovitz in, 'The Passing of the Kuznets Cycle' Economica, 35, 1965, pp. 349-67, and, at an earlier date, acknowledged by Thomas, op. cit., p. 175 as inappropriate.

Appendix 1

Statistical Sources and Notes

Housebuilding Index

Dean of Guild Court Registers and Minute Books in the twenty-eight burghs included in the index. For methods of construction see Ch. II 'The Index of Scottish Housebuilding'.

Population

Annual Reports of the Registrar General for Scotland, 1870-1914. Although acknowledged to be imperfect in certain details the Reports form the best estimate of annual population changes.

Emigration

N.H. Carrier and J.R. Jeffery, External Migration - A Study of the Available Statistics, 1815-1950. (H.M.S.O., 1953), Table C (1), p. 92. Gross emigration to non-European countries is used as inward movements of migrants are available only from 1895. No adjustment for net migration before 1895 was attempted on the grounds that from 1895 this was a non-linear reduction and was likely to be so before that date. However it might be argued that in any case gross emigration is more relevant to the housebuilding cycle.

Rents

Tax Abstracts and Statistics, (Public Records Office, Ashridge), IR 16, 1-135, Schedule D, Inhabited House Duty Returns, Scotland. C.H. Feinstein, National Income, Expenditure and Output of the United Kingdom, 1855-1965, (Cambridge, 1972), T. 132, col. 5 was used to reduce these to real terms.

This series for rents is a generalisation of the Cairncross technique (op. cit., p. 9) and enjoys a major advantage over similar English data, such as that employed by B. Thomas, Migration and Urban Development, (London, 1972) Ch. 2., Appendix B, in that annual reassessments of the Duty were made, thus avoiding the adjustment problems which price level changes would ordinarily require.

Uncertainty

The Edinburgh Gazette, 1856-1914. Following the Act of 1856 intimation of bankruptcy had to be given in the London and Edinburgh Gazettes. The following building trades are included: Builder, Joiner, Plumber, Painter, Timber Merchant, Plasterer, Mason, Quarrier, Brickmaker, Glazier, Bricklayer, Slater.

Cost of Capital

T.J. Byres, 'The Scottish Economy During the Great Depression, 1873-96, with Special Reference to the Heavy Industries of the South West', Glasgow, B. Litt, Thesis, 1963, p. 216, Scottish Average Rate of Discount Charged on first class Bills on London, and for subsequent years, The Economist's, Commercial History and Review, 1896-1914.

Supply of Capital

J.M. Reid, The History of the Clydesdale Bank, 1838-1938, (Glasgow, 1938), pp. 171, 191, 228-9, 243 for details of growth in bank deposits. Trend removed from series.

Income

Coal: Mineral Statistics. Memoirs of the Geological Survey of Great Britain, 1853-80 and B.R. Mitchell and

P. Deane, Abstract of British Historical Statistics, Cambridge, 1971, pp. 115-7.

Iron: Mitchell and Deane, op. cit., pp. 131-2.

Building Costs

Dean of Guild Court Registers and Minute Books of ten burghs, giving the average cost per approved permit, and deflated by a price index (Feinstein op. cit., T. 132, col. 5, to remove price changes. (A matter for further research would involve the examination of whether money or real building costs, rents and other variables is more relevant). The ten burghs were Ayr, Clydebank, Coatbridge, Dumfries, Falkirk, Glasgow, Govan, Hamilton, Paisley and Partick.

Empty Property

A.K. Cairncross, 'The Glasgow Building Industry', Review of Economic Studies, II, 1934, Table 2, p. 16. No burgh appears

to have been as statistically conscious as Glasgow, and it must be remembered that by default attributing this local series to a regional level involves a degree of error.

Appendix II

The Rigidity of Rents

The inflexibility or 'stickiness' of rents has often been commented upon in the sense that only slowly do they adjust to prevailing market prices.[1] The assumption in the quantitative analysis was for current rent levels to be appropriate but several experiments using different rent formulations demonstrate that the emphasis on current rentals may not be the most satisfactory, builders preferring to take cognisance of earlier rental levels.

The first method involves several experiments in which different years are ascribed set weights. Thus if in years Y_t and Y_{t-1} rents are equally important in affecting housebuilding in Y_t but are twice as important as rents in Y_{t-2} then weights of 2/5, 2/5 and 1/5 are attached to the rental values for these years. The general form of this weighted lag influence of rents,

$$Y_t = a + bZ_t,$$

where $$Z_t = 4X_t + 4X_{t-1} + 2X_{t-2}$$

when X is the level of rents in given years,

Y is the housebuilding index,

Z is the coefficient of rental influence

t is the time period

a,b are constants.

is examined at some length elsewhere, as are the advantages and drawbacks of the method,[2] but the general outcome for the present study is instructive

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1 See for example, R.C.O. Matthews, The Trade Cycle, (Cambridge, 1959), p. 102.

2 P.J. Lund and K. Holden, 'An Econometric Study of Private Sector Cross Fixed Capital Formation in the United Kingdom, 1923-38', Oxford Economic Papers, 20, 1968, pp. 56-73.

and is outlined below in Table 1. Here it can be seen that the heavier

Table 1

Housebuilding - Rent Correlation Coefficient Using Rental Data Calculated from Different Weightings of the Previous 3 Years Rents

Y_t	Y_{t-1}	Y_{t-2}	Correlation Coefficient
55	30	15	.1494
55	35	10	.1480
60	30	10	.1461
66	17	17	.1453
70	20	10	.1793
40	40	20	.1574
100	0	0	.1248
0	100	0	.1698
0	0	100	.1958

Sources: IR 16, 1-135, P.R.O.

weighting attached to current rents (Y_t) was less relevant to housebuilding fluctuations than when weightings were more heavily concentrated on the previous year or years. In fact in this series of tests when housebuilding fluctuations are compared only to rents of two years previously (Y_{t-2} = 100), the best fit is achieved, the equation being

$$Y_t = 18.57 - .0745Z_{t-2}$$

Clearly numerous other permutations might be attempted with varying emphasis on Y_{t-1} and Y_{t-2} which would be consistent with the current findings that Y_t is of lesser relevance to housebuilding fluctuations than earlier rental levels.

The second approach relies heavily on the Koyck method,[1] by which each rental year assumes diminishing significance in the housebuilding decision. The general form is

$$Y_t = a + bX_t + Y_{t-1}$$

1 L.M. Koyck, Distributed Lags and Investment Analysis, (Amsterdam, 1954).

where Y is housebuilding
X is rents
a is constant
b,c are regression coefficients
t is the time period

but more specifically, the regression equation which best describes the Scottish housebuilding-rental relationship is,

$$Y_t = -.74 - .87X_t + 61.50Y_{t-1}$$

The correlation coefficient, significant at the 5% level, between housebuilding and this formulation of rents was +0.72, noticeably better than other permutations of the rent variable, the best of which achieved r = +0.40.

Evidently, then, the rigidity of rents was more than fictional for Scottish housebuilders. They took little notice of current rentals, greater notice of the rent level two years previously, and most attention was paid to the overall trend of rents over a prolonged period. Thus, insofar as rents affected the building decision their accumulated effect over several years - with greatest single year emphasis being placed on the rent levels 12-24 months earlier - provided the information upon which housebuilders planned their activities. Scottish rents as a result were rigid for only over time did they adjust to the prevailing demand and supply conditions in the housing market.

CHAPTER V

The Impact of Legal and Institutional Practices on Building Fluctuations

Rarely in the cyclical analyses of British building cycles is reference made to the law; only occasionally are institutional factors considered. Such omissions are not of course the preserve of the house-building field, a point recognised recently in another wider connection in the statement that 'The role of law in relation to social change is not well understood'.[1] Yet clearly 'The existence of property rights affects the allocation and distribution of economic resources',[2] and not unreasonably the terms 'property obligations' or 'property controls' could be substituted for property rights and conclusions on allocative and other effects for the factors of production in the building industry would be equally valid.

Given the array of interlocking and inter-reacting Victorian hobby-horses - alcoholism, nuisances, the morality of overcrowded housing, epidemics and public health considerations - which a casual reading of nineteenth century newspapers or 'The Builder's reports from Sanitary Associations would confirm,[3] it is remarkable that attention to legal and institutional arrangements and their impact on the operations of the building market have been so neglected. No doubt preoccupation with the construction of indices of building activity and an examination of alternating American and British experiences have conspired to demote this legal aspect.

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1 W.M. Landes and L.C. Solmon, 'Compulsory Schooling Legislation: An Economic Analysis of Law and Social Change in the Nineteenth Century', Journal of Economic History XXXII, 1972, p. 54.

2 S.L. Engerman, 'Some Considerations Relating to Property Rights in Man', Journal of Economic History, XXXIII, 1973, p. 43.

3 See for example, The Builder, 1870, Mar. 19 and 26, on the Sanitary and Social State of Glasgow.

Normally legal and institutional decisions are taken at a specific point in time although intended alterations to the existing code may be anticipated by entrepreneurs.[1] It is the contention of this chapter however that such adaptations of building regulations, statute law and town council policy formed building operations into the pattern that is presented in the Scottish index, and furthermore, that the fluctuations in Scottish housebuilding would have assumed a different time path and period had not these distinctive legal provisions existed.

In the previous chapter reference was made to a variety of statistical series which appeared both in terms of their amplitude and timing of fluctuations to have some bearing on the variations in the volume of housebuilding. Although some efforts have elsewhere been made to derive statistical conclusions based on the impact of a legal code,[2] the object here is to examine the nature and extent of legal and institutional arrangements and their impact on the timing and quantity of Scottish housebuilding. No firm statistical conclusions are offered here, though the evidence points to a sizeable if somewhat discontinuous influence on housebuilding from this quarter which has previously been overlooked as researchers have focussed more intently on explanatory forces readily susceptible to statistical treatment. Successively, therefore, local authority and institutional housebuilding, boundary alterations, and then taxation influences such as the Inhabited House Duty, local taxation i.e. rates, or other Scottish impositions and controls such as legal costs, building regulations and the system of land tenure affecting demand in a manner similar to that of taxation, are examined in the light of their impact on housebuilding in Scotland.

II

Four points of clarification are immediately necessary. The first distinction to be made is between legal and institutional influences; certain influences expressly relate to the dictates of

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1 Glasgow Municipal Commission on the Housing of the Poor (Glasgow and Edinburgh, 1904), Evidence of Binnie, p. 316, q. 6687. (Subsequently referred to as G.M.C.).

2 R.P. Thomas, 'A Quantitative Approach to the Study of the Effects of British Imperial Policy upon Colonial Welfare: Some Preliminary Findings', Journal of Economic History, XXV, 1965, pp. 615-38.

the Scottish legal system whilst others refer to the administrative structure, the town council and what may collectively be referred to as institutional provisions. Secondly a direct and an indirect influence on the building industry is apparent; housebuilding can be affected by an explicit legal or institutional decision, or alternatively, only after a period of time as the decision filters through to the housebuilding market from more closely affected factors. Next a disparity in impact is noticed according to whether the legal and institutional characteristics are effective or ineffective; unless it is the former this explanatory feature of the building cycle is of only academic interest. The fourth matter for clarification is the effect of the legal and institutional framework per se as compared with the distinctive features of these codes in England and Scotland and the variable impact on housebuilding which stems from such national differentiation. These preliminaries are of some consequence for the more detailed treatment which follows.

Considering the legal category first, the impact of local authority housebuilding on the building cycle might not unreasonably be thought of some importance. However such a notion may be promptly disabused. Local authority housebuilding assumed only small proportions, and this diminutive scale of operations could not conceivably have possessed the disproportionate influence over the private housebuilding sector to warrant it an important influence on the index. Contemplation of local authority provision of accommodation undoubtedly influenced builders' confidence to some degree,[1] but the more important indicators of housing stock and building costs were unaffected by Corporation actions.[2]

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1 G.M.C., op. cit.
2 W. Thompson, Housing up to Date (London 1907), p. 11.

Local authority building on its own account was limited before 1914 in Scotland. Generally speaking it took three forms - municipal housebuilding; the provision of lodging houses; and the activities of Improvement Trusts. No such generous financial subsidy arrangements of the 1919 kind operated before the Great War.[1] Indeed no obligatory requirement had been imposed on the housebuilding of Scottish burghs other than of a strictly public health variety, even though the Housing and Town Planning Act of 1909 applied Part III of the Housing of thw Working Classes Act of 1890 in a more liberal yet emphatic way,[2] and as a consequence more accommodation was provided in local authority housing schemes in 1921 alone than in all the years before 1914.[3]

In the provision of Common Lodging Houses local authorities in Scotland were considerably retarded compared to their English counterparts[4] and in the realm of the activities of the various Improvement Trusts the scale of operations apparently offered no disincentives for private builders. In Glasgow the Trust had only built 1,646 houses between 1866 and 1902 and was completely inactive for a decade after 1876.[5]

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1 M. Bowley Housing and the State 1919-44 (London, 1945). A differential effect of legal provisions for England and Wales and Scotland in the areas of Rent Control and subsidy arrangements, is frequently referred to in this work. Thus for example in Appendix 1, p. 263, n. 1, Bowley notes the loss of housing operations in Scotland are limited to 4/5 penny rate, and not the penny rate of England and Wales. This typifies the discrepancies in the legal framework which to some degree influenced the volume of Scottish housebuilding before 1914.

2 R.D. Cramond, Housing Policy in Scotland, 1919-64, University of Glasgow Social and Economic Research Papers, No. 1, (Edinburgh and London, 1966).

3 Scottish Development Department, Register of Houses Built, 1919-39, Vol. 1. This and other information on Scottish housebuilding between 1919-39 was kindly made available to me by officials at the S.D.D. Subsequently referred to as S.D.D.I.

4 W. Thompson, The Housing Handbook (London, 1903), pp. 61-2.

5 C.M. Allan, 'The Genesis of British Urban Redevelopment', Economic History Review, 18 , 1965, p. 606.

The contributions of the small institutional agencies such as the Edinburgh Co-operative Building Company and its sister societies in Aberdeen, Dundee and Glasgow were in aggregate of little significance, though it must be noted that in certain concentrated parts of the cities their efforts were evident. Thus by October 1865, the Reverend Dr. J. Begg was able to boast 159 houses built, of which 134 were sold, and another 40 under construction, all in Stockbridge, Edinburgh,[1] these activities transpiring in the four and a half years since the inception of the Company. In local terms this type of building agency may have had some effect, as may the Scottish section of the Co-operative Union, which until 1902 had only built 373 houses, and in the next four years added a further 1,100.[2] But more typical was the Pilrig Model Dwelling Company which built only 62 cottages in 13 years of operation, the Blackfriars Building Association which managed only two tenements and the Association for Improving the Dwellings of the Industrious Classes which erected scattered sundry buildings in Central Edinburgh.[3] These institutions and their contemporaries in Hawick, Grangemouth, Dalkeith and other Scottish burghs were insignificant in their volume of building compared to the permits submitted to the Dean of Guild Courts from other builders and the effect of institutional and local authority housebuilding together neither introduces discontinuities into the index in the way the inter-war years subsidies did, nor in quantitative terms did they alter the supply of houses or building costs on a scale likely to substantially influence the decision of the

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1 J. Begg, Happy Houses for Working Men and How to Get Them, (Edinburgh, 1866).

2 W. Thompson, op. cit., p. 179 and W. Thompson, Housing up to Date, op. cit., p. 152.

3 W.H. Marwick, Economic Developments in Victorian Scotland, (London, 1937), Ch. IV.

private builder, the clearance schemes, over-crowding restrictions and the zest of the powerful public health lobby removing many central properties with the resultant scarcity of accommodation and high rentals encouraging building activity,[1] quite apart from the legal responsibility, not always obeyed, for ensuring the rehousing of displaced persons elsewhere.[2] The abuse of these requirements contained in the Artisans' Dwellings Improvements Acts - the 'Cross Acts' - and the Improvement Trusts' obligations[3] nevertheless reduced the stock of empty houses if it did not build new ones,[4] and from the attention paid by builders to the numbers of empty houses this evidently altered their interpretation of the market.

Institutional housing arrangements of a related nature cannot be overlooked. Miners' rows especially epitomised company housebuilding for their own workers[5] but examples of other tied houses were found in the iron industry,[6] and of course in an agricultural context.[7] However the scale of such company activity like that of the building associations did not affect the overall building cycle greatly.[8] To a degree the 3464 houses constructed by the colliery company of Wm. Baird and Co. influenced the building industries of Bothwell, Twechar, Bathgate,

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1 J. Mann, 'Better Houses for the Poor -Will They Pay?', Proceedings of the Royal Philosophical Society of Glasgow, 30, 1898-9, pp. 83-4.
2 Royal Commission of the Housing of the Working Classes, 1884-5, Evidence of J. Crawford, q. 18712, and D. Crawford, q. 18438-581.
3 Ibid., Evidence of Laing q. 20270-588.
4 Ibid.
5 Royal Commission on the Housing of the Industrial Population of Scotland, Rural and Urban, Evidence (H.M.S.O. 1921) of Kirby, Vol. 4. Appendix XXVIII.
6 Ibid., Evidence of Gavin, q. 37336.
7 Ibid., Evidence of W.Smith, q. 4872; Anstruther, q. 27903; T. Smith, q. 28552-61.
8 B. Lenman, C. Lythe and E. Gauldie, 'Dundee and its Textile Industry, 1850-1914', Abertay Historical Society Publication, No. 14, 1969, p. 85.

Gartsherrie, Muirkirk, Kilwinning, Dalry, Nitshill and other coal towns involved, but such a number of houses built over three or four decades and distributed amongst a dozen or more burghs did not substantially alter regional and national patterns.[1]

Specific legal requirements for municipal housebuilding and institutional housing provisions were of only minor importance, therefore. The constructional and clearance efforts of local authorities combined with company construction was quantitatively modest before 1914, and even then was dissipated over many years. No such analogy exists pre-1914 then in the way that during the inter-war years subsidy acts substantially contributed to building activity.[2]

III

Another instance of legislative implication for the housebuilding index is in the nature of boundary changes. Extensions to the jurisdiction of the planning authority if untreated introduces spurious kinks in the volume of housebuilding. However this pitfall can in most cases be circumvented and thus artificial movements in the housebuilding index avoided. This is achieved by employing the flexibility which the method of indexing incorporates. In the case of the Glasgow boundary extension of 1912 engulfing as it did the neighbouring burghs of Govan and Partick,[3] the continued use in 1913 of the ratio of observed housebuilding to base year housebuilding would produce an artificial boom as the enlarged observed building of Glasgow, bloated by the addition of Govan and Partick, would be only related to the

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1 Ibid., Evidence of Forgie, Appendix XLVIII, p. 115, q. 25840.
2 S.D.D.1.
3 Census of Scotland, 1911, Cd. 6097, Vol. I, Part 1, City of Glasgow, p. 54n.

base Glasgow housebuilding. By continuing to employ Govan and Partick in the base, although legally subsumed by 1913, the comparison of housebuilding over the same area before and after the boundary extension is achieved.

One area in which legislative proposals, vigorously opposed, has influenced current interpretations of housebuilding fluctuations is the matter of boundary extensions to police powers and Dean of Guild authority. In Edinburgh opposition to the combination of police and municipal responsibilities first appeared in 1848, the year of the proposed amalgamation. The contention of the suburban residents of South Edinburgh was that they were disinclined to be 'subjected to the absurd and oppressive jurisdiction of the Dean of Guild Court'[1] and they claimed that the existing power of the sheriff, provided for in the Police Acts, was 'Perfectly sufficient' and that the 'peculiar constitution'[2] and 'the mode of procedure'[3] of the Dean of Guild Court were unattractive. Beaten off in 1848, similar proposals in 1856 met with continuing resistance, the claim being that the Police Acts and particularly that of 1848 provided adequate powers for building control and so an extension of the Dean of Guild Court was superfluous.[4] In fact the municipal extension of 1856 occurred, but the relevant clauses to the Dean of Guild Court had been deleted to assuage local opposition.[5] The matter remained dormant for only six years as in

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1 Remarks on the Lord Provost's Vindication of the Municipality Extension and Police and Sanitary Bills Proposed by the Town Council, (Edinburgh, 1848), p. 19 (Anon.).

2 Interim Reports by a Special Committee of Commissioners of Police upon the Proposed Bill as prepared and Lodged by the Magistrates and Town Council, 1848.

3 Ibid.

4 Ibid.

5 Conversations with the Edinburgh City Archivist, W.H. Makey, and Professor P.J. Smith, Department of Geography, University of Alberta have been illuminating on this point.

1862 the Town Council again considered an extension of the Court's powers.[1] This was subsequently dropped until in 1877 the proposed Police Bill which became law in 1879 again raised the matter.[2] However no opposition to the extended Dean of Guild powers was forthcoming and the modification to its powers passed into the statute book.

Such a challenge to the extended powers of the court - the aggrandisement was successfully delayed by thirty years - has influenced current interpretations of housebuilding fluctuations by depriving researchers of crucial information on the suburban building in 'that odd period of the late 1860's and early '70's'[3] and thus by default concentrating attention on other years. Deflecting scrutiny of the building cycle to the 1880s and subsequent decades provides the legal impact with two analogies, those of the 'Great Depression' and the inter-war growth rates controversy, the paraphrased conclusions of both being that the terminal dates selected largely determine the interpretation.[4]

Of less direct relevance to the building cycle itself though of some importance to the type of building constructed was the historical development of municipal boundaries. The heritage of walled cities so restricted the supply of building land that the cramped and concentrated populations and the attendant housing and sanitary problems resulted.[5] The difficulties of Dundee, Glasgow and Edinburgh, and the last with the 'highest overcrowded population in the world'[6] are thus in sharp

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1 Council Minutes, Vol. 284, April 1 and May 20, 1862.
2 Edinburgh Municipal and Police Act, 1879, Section 154.
3 S.B. Saul, Review of B. Thomas Migration and Urban Development, Economic History Review, XXVI, 1973, 373.
4 S.B. Saul, The Myth of the Great Depression, (London, 1969) p. 13 and J.A. Dowie, 'Growth in the Inter-War Period: Some More Arithmetic', Economic History Review, 1968, pp. 93-112.
5 P. Geddes, 'Housing in Scotland', Proceedings of the Royal Philosophical Society of Glasgow, (Proc. Royal Phil. Soc. Glasgow), 44, 1912-13, pp. 146-7.
6 Ibid., p. 248.

contrast to the 'free architectural style of Aberdeen'[1] and the role of the boundary constraint in the housebuilding industry is concisely demonstrated in Best's study of Scottish Victorian cities.[2] There is of course no reason to suppose that walled cities and restricted municipal developments are peculiar to Scotland's housebuilding fluctuations, and indeed they refer to only a handful of townships.

A formal policy statement by the manager of the Edinburgh Street Tramway Company announced the relationship which his organisation advocated between housebuilding and suburban transport:

> 'If tramways were to succeed (in financial terms) feuing must precede, and he hoped their tramways would not precede in order that feuing might succeed.'[3]

Although on occasions this company was blackmailed into branch line projects which anticipated residential development the normal pattern by which householders requested tramway extensions in areas such as Morningside in Edinburgh[4] and various suburbs of Glasgow[5] was indicative of the reluctant advancement of the municipal boundary through a transport medium.

Municipal legislative jurisdiction was variable in its impart on housebuilding. The geographical expansion of Scottish Victorian burghs was dictated to a greater extent by the policy of substantial urban landowners and their estate managers and less by the constraints of fixed municipal boundaries. True in some of the older cities such as Edinburgh medieval vestiges were of some relevance but for most nineteenth

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1 Ibid., p. 246.
2 G.F.A. Best, 'The Scottish Victorian City', Victorian Studies, XI, 1968, pp. 329-58.
3 The Scotsman, 31st July, 1883, brackets mine.
4 Edinburgh, Town Council Minutes, 20th December, 1881.
5 A.D. Ochojna, Edinburgh Ph.D. thesis, 1974. As contemporary postgraduate researcher I benefited greatly from discussions on and subsequently a reading of Chapters 5, 6 of this thesis. On the anticipation aspect of tramway development see pp. 171-2 and on the 'request' process see pp. 227-8.

century Scottish towns the burghal acreage was unaffected by the remnants of perimeter walls. Nor did the suburban transport networks substantially alter burgh boundaries. Only rarely did transport facilities extend town boundaries of their own volition and tended to succeed peripheral housebuilding developments once such new track mileage became a viable project. As a land supply constraint then municipal boundaries described by law were of negligible overall impact on the activities of the housebuilders within their jurisdiction.

IV

Of considerable legal impact was the direct and peculiarly Scottish working of the Inhabited House Duty.[1] This tax, levied on 'income from the occupation of lands, tenements, heridatments or heritages in the United Kingdom,'[2] was of particular cyclical importance as far as Scotland was concerned because it employed a rigid threshold, £20,[3] regardless of price movements over time. Thus this fixed £20 stipulation over the four decades before 1914 brought more rentals within the ambit of the tax as rents moved, perhaps stickily, with the general price increases of 1896-1914; conversely, in periods of declining prices and rents assessments to the tax diminished. Consequently price movements altered the real burden of the I.H.D. Inflationary periods increased the amount of rental income assessed to tax, given a fixed threshold, whilst at the same time payments in real terms declined as the tax bands were also fixed.[4] The opposite applied in periods of falling prices. Assessment to tax declined, but the real burden of those actually liable was increased.

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1 A more detailed account and some other aspects of the Inhabited House Duty are given in Ch. 6.
2 IR. 16, 1-135, P.R.O., uses this wording to describe Schedule B, the Inhabited House Duty.
3 Ibid.
4 Ibid., 3d, 6d and 9d in £ were operative from 1890.

The significance of the I.H.D. as far as housebuilding fluctuations are concerned is twofold. From the investors' viewpoint a tax on prospective and existing yields from housing altered the rate of return to capital invested. Had the incidence of the I.H.D. been constant then the relative attractiveness of housebuilding as opposed to other forms of investment would have been completely independent of the tax structure. As it was, the variable real impact of the duty marginally affected investors' views of the income streams available from property investment and thus the I.H.D. possessed both an incentive or disincentive effect on the supply side of housebuilding. Secondly, the forward shifting of taxation on to the consumer[1] - in this case, the tenant - comprised a small addition to rents, and the slightly increased price of accommodation in conjunction with an elasticity of demand provided an influence as the demand based determinants of housebuilding fluctuations.[2]

The role attributed to the I.H.D. must not however be overplayed. As the limited amount of duty collected demonstrates even in peak years such as 1888-90 and 1910-11 the real burden was never substantial. Considering that the average amount payable per house was never more

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1 Royal Commission on the Classification of and Incidence of Imperial and local Taxes, etc., 1899, C. 9528, XXXVI, Evidence of Marshall, p.115.

2 B. Weber, 'A New Index of Residential Construction, 1838-1950', Scottish Journal of Political Economy, 2, 1955, pp. 106-7, footnotes 8 and 9 provides a clue to a further source of the differential impact of the I.H.D. on both English and Scottish housebuilding, for the intervals in English reassessment years taken in conjunction with price movements would place a different interpretation on the attractiveness of property income. That is the burden or gain to investors available as a result of price variations and a fixed threshold would be compounded in England whereas in Scotland, annual reassessment avoided this destabilising English feature.

than £2 p.a. and fell to nearer £1 in the 1900's, then the net effect spread over fifty-two weeks of the year and amongst twelve or so working class tenement tenants was no more than an additional three farthings per week to the rent.[1]

An interesting point arises from the differing valuation criteria on either side of the border. Annual value in England was calculated according to the net rental derived from tenanted property, once insurance, repairs and other charges had been met, under 6 and 7 Will. IV, C. 96, whereas in Scotland the Lands Valuation (Scotland) Act, 1854 provided for assessment on the basis of gross rent. Although some effort to obtain an estimate of net rental was obtained for the purpose of levying rates it is clear that this precedent created by the Rating Authorities was not followed by the assessors of Inhabited House Duty. As the Valuation Roll employing as it did a gross rental criterion was used as the basis of the House Duty then Scottish occupiers found their assessment higher than their English counterparts by the difference between gross and net rental and a further source of a differential impact in England and Scotland was thus exerted.[2]

A related form of duty on housing arises in the form of local taxation. In an analysis of the burden of rates a pre-war report[3] cited the typical case of a Glasgow tenement dweller whose rates represented almost 30% of the annual cost of accommodation. Noting this considerable increase in the cost of housing the report pursued the effects on the supply side of the equation observing that this 'consequently diminishes still further the profitableness of supplying houses for the poorer class'.[4]

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1 See Ch. 6, table 1.
2 IR. 16, 1-135, P.R.O.
3 The Report of the Scottish Land Enquiry Committee (subsequently quoted as S.L.E.C.) (London, 1914), pp. 395-6.
4 Ibid., p. 394.

Before 1914 one English study has suggested that some 25% of the cost of accommodation originated from the rating element[1] and although this 5% difference between Scotland and England may rest on rather thin evidence, there is considerable substantive material on the variability of assessment rates within the major Scottish burghs[2]. In the valuation year of 1890-91 the rate per £ in Greenock was 3/8½d, 1/3d. more than in Edinburgh. However by 1913-14, the assessments in the four major Scottish burghs and Greenock displayed a considerable increase, the highest then being Glasgow at 4/7.88d in the £ , with the positions of other burghs also changed, except for Edinburgh, still the cheapest but then only 7½d below the highest assessment. From the viewpoint of cyclical analysis in housebuilding the attested importance of rates is clearly a variable one over time between burghs.

That rates varied between burghs was hardly surprising given the peculiar Scottish mode of assessment, based '... not upon the value of the land, nor upon the value of the improvements, but upon the value of the use to which the land is being put at the moment'.[3] The individual circumstances of demand and supply in each burgh frequently produced a differing assessment of the value of the land - the range of assessments in 1890-91 and their disparate rates of growth down to 1913-14 in the major cities were cases in point.[4] Despite rates being based on the usage value of land - and were thus a reflection of aggregate demand and supply influences - builders preferred to employ the more basic indicators such as movements in building costs and the percentage of empty houses in their analyses of disequilibria in the housebuilding market. There were however other ways in which the level and burden of

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1 M. Bowley, op. cit., p. 209.
2 S.L.E.C., op. cit.
3 Ibid., p. 477.
4 Glasgow Herald, 18th October, 1913.

this form of local taxation directly and substantially affected housebuilding.

In the statements for the financial year 1912-13 in the burghs of Clydebank and Paisley 31% of the municipal acreage was described as agricultural land and contributed respectively .002% and .001% of rates collected.[1] A more general survey of the previous year recorded in 190 Scottish burghs that the agricultural acreage within the burgh boundaries averaged 37%, and yet produced only .31% of total rates.[2] But while the usage criterion of the Scottish rating system allowed urban agricultural landowners to pay a disproportionately low amount of rates relative to the capital value of their land, vacant sites suitable for building had a more fundamental effect on housebuilding. In Glasgow the 1913 acreages showed 10.5% of the municipal area as suitable for building and paid rates at the figure of 5/6d. per acre; the agricultural acreages within the city, 15.8% of the total area, paid 1/7d. per acre, whilst the built up area paid at the price of £99 per acre.[3] More specifically two sites in the Calton district, quoted by the Lord Provost of Glasgow,[4] were valued at £2340 and £2842 and paid rates of £5 and £10 respectively, whereas implementation of the 1885 Royal Commission's recommendation of a fixed percentage levy on the capital value at 4%[5] would have required rates payments of £93 and £113 respectively. Another example existed in Dennistoun, Glasgow. Valued at £1480 not rates were paid whilst the site remained vacant , but the completion of houses with a rental assessed at £810 p.a. meant £313 was payable in rates.[5] In such cases important influences affected housebuilding as a consequence of the legal framework of local

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1 S.L.E.C. op. cit., p. 479.
2 Glasgow Herald, 18th October, 1913.
3 Ibid.
4 Ibid.
5 Second Report of the Royal Commission on the Housing of the Working Classes - Scotland. 1885. c. 4409, p. 69.
6 S.L.E.C., op. cit., p. 482.

taxation.

The burden of rates rested on developed property and, as the position of agricultural land and vacant sites confirmed, 'It is clear that in many cases there is no reasonable approach to the maxims of ability to pay or of benefit received'.[1] Between the groups of landowner, speculator and dweller inequalities existed in their rates payable. This regressiveness in local taxation was perpetuated within certain of these groups, and for urban dwellers, particularly working class groups, the payment of a fixed percentage in the £, irrespective of earnings represented a considerable and often voiced grievance. The arithmetic of disproportionate payments was not lost on officialdom. In 1901 it was noticed that 'A tax upon buildings proportionate to their value necessitates that the rent of buildings should represent a high rate per cent on their cost'[2] and even in 1917 the lament continued in the vein,

> '... that it is worthy of consideration whether a system could be evolved whereby working-class houses could be relieved to some extent of the disproportionately heavy burden which falls upon them in the matter of rating'.[3]

This conviction that lower income groups paid a higher percentage of their income in the form of rates compared to other groups in society was underlined by Marshall's view of the ultimate incidence of this form of taxation:

> 'Any tax which is so levied as to discourage the cultivation of land or the erection of buildings on it tends to be shifted forward to the ... users of the buildings'.[4]

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1 Ibid., p. 477.
2 Report of the Royal Commission on Local Taxation, 1901, Cd. 638, XXIV, 413, p. 167.
3 Majority Report of the Royal Commission on the Housing of the Industrial Population of Scotland, 1917, Cd. 8371, paragraph 1972.
4 Royal Commission on the Classification and Incidence of Imperial and Local Taxes, etc., 1899, C. 9528, p. 115.

The importance of local taxation and the legal distinctions of land use and land value quite apart from influencing housebuilding levels through the demand schedules of working classes particularly, was equally effective in other respects. The failure to penalise landowners who restricted the supply of building sites was compounded by providing an incentive - substantial capital appreciation[1] - through their paltry liability to rates. It is hardly surprising therefore that contemporary opinion viewed the outcome of the Scottish rating system as one which made housing accommodation both 'scarcer and dearer'[2] and thereby aggravated the problems of slum dwelling. The incentive to land speculators also assumed cyclical features. Improvements in the volume of housebuilding business inclined landowners to release certain properties, liquidating their frequently handsome capital gains, and this in turn produced more building and further attractions to sell sites. Shocks, business failures, downturns in building activity and other influences put the cyclical process in reverse gear, with land sales dwindling. The method by which land supply, fostered by the rating system, aided and abetted the housing cycle is demonstrated by the comparison of the volume of land sales and the number of years rental transacted in Glasgow's Faculty Hall, shown in Table 1, with the approved building plans in those years. The cyclical contribution of land supply to housebuilding cycles was

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1 Property owners were evidently well aware of this gain. Thus in Clydebank one property bought for £1452 in 1895 was worth £35,123 in 1914, and another, bought the same year for £1,000 was worth £29,170 on the eve of war. See, Royal Commission on the Housing of the Industrial Population of Scotland, Rural and Urban, 1917, Cd. 8731, Evidence of Ross, Vol. 4, Appendix CXXI, p. 130 in answer to q. 33765. The importance of capital gains in inflating building costs was by no means a novel departure. Many cases have been quoted but the conclusion of one periodical sums the position up: 'In the end tenants and occupiers have to bear this enormous increase in the value of land', The Builder, March, 24, 1877, p. 298.

2 S.L.E.C., op. cit., p. 507.

Table 1

The Cyclical Nature of Land Supply and Housebuilding in Glasgow, 1881-1907

Year	Number of Land Transact-ions	Number of Building Permits	Amount Realised (£)	Average Number of Years Purchase of Rental
	(1)	(2)	(3)	(4)
1881	58	26	148292	13.5
1886	67	41	140935	12.8
1891	132	72	338069	13.0
1896	192	135	580695	14.1
1901	111	135	415660	14.9
1906	41	81	100400	13.0
1907	40	54	84085	12.1

Sources: W. Fraser, 'Fluctuations of the Building Trade and Glasgow's House Accommodation', Proceedings of the Royal Philosophical Society of Glasgow, 39, 1907-8, p. 27, and, Memorandum of Linings Granted by the Dean of Guild Court (Glasgow, Office of Public Works) for column 2.

reflected in Fraser's knowledgeable assessment of market conditions in 1906-7, for although he referred to property owners as 'disgusted with their investments'[1] he reflected that they were not 'compelled at

1 W. Fraser, 'Fluctuations of the Building Trade and Glasgow's House Accommodation', Proc. Royal Phil. Soc. Glasgow, 39, 1907-8, p. 26.

present to force their properties on the market to meet obligations but are holding on and looking forward to better times returning soon'.[1] With the housebuilding index standing at 69.6 in 1907, a level of activity very nearly half that of 1902, property owners were clearly prudent, a fact confirmed in table 1 by their substantial sales at extended periods of rental in the boom of the late 1890s.

In a rather different way the system of rates by restricting land supply available for housebuilding also constricted other types of building. The availability of building sites to industrial purposes was one area in which income and employment dependent upon industrial development could be re-located, possibly in another burgh, and in this way associated housing demand was similarly re-located. This was aptly encapsulated in Campbell-Bannerman's assessment that 'Our present rating system operates as a hostile tariff on our industries'[2] The barrier was breached however in the re-siting of the Singer Sewing Machine Co. in Clydebank, thereby affecting building activity in both that burgh and Glasgow.

It is important, too, to remember that one of the effects of sizeable differences in the rates payable on vacant or agricultural lands was to determine the spatial development of the burgh. Frequently ringed by low-rated agricultural land the built-up area was only capable of expansion as the pressure on building sites forced the value of this suburban land upward. Thus, for example, much of North Edinburgh remained intact as the major estates of Inverleith and Warriston, supplemented by the acres given over to the botanical garden and Fettes College provided an effective barrier to housebuilding in

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1 Ibid., p. 28.
2 S.L.E.C., op. cit., p. 488.

the immediate northern environs of the city.[1] The result was to focus attention on the southern and south-western approaches to the city, where in the 1890s and 1900s entire new areas of housebuilding appeared in the valley between Craiglockhart Hill and Blackford Hill.[2] The physical geography of Scottish burghs was affected therefore by the preferential rating treatment of certain properties.

By restricting suitable building, by encouraging speculative landholding, by placing the burden of municipal expenditure on property in use and in discriminating against certain groups by requiring a higher percentage payment without reference to their ability to pay, and by providing a disincentive to other types of building the Scottish rating system provided important influences on the building industry. These cannot be overlooked as determinants not only of housebuilding levels but also of fluctuations.

It would be incorrect however to convey the impression that the method of rating and its impact on the building industry was unknown to contemporaries. Several nineteenth century comments on the local taxation system have been mentioned already but there also existed a forceful movement expounding the virtues of rating reform.

The Valuation Act of 1854[3] established, under Section 6, the principle of an annual assessment of the rental value of properties upon which local rates were charged. The inequity of such a system which allowed, for example, solicitors and other professional groups with sizeable incomes but using small properties for the transaction of their business to pay low rates, while retailers with smaller incomes

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1 Post Office Directories of Edinburgh, 1859-1914.

2 These are the points which enclose the Craighouse, Comiston and Cluny developments of the 1890s and 1900s. Similar developments of that period exist in other southern suburbs such as Craiglockhart and Newington , along with the important western developments, those in Murrayfield.

3 Valuation of Lands (Scotland) Act, 1854, (3), VI, 571.

were subject to disproportionate local rates was quickly realised, but from the publication in 1885 of an offical acknowledgement[1] of these discrepancies, the move and mood for a change progressed. A report from a committee of the Corporation of Glasgow in 1890 was only accepted in 1895 and the basis of this report, land valuation as the foundation of local taxation, was circulated to other Scottish Rating Authorities.[2] From that point progress quickened. By the following year the 62 Scottish Assessing Authorities had approved the Glasgow Corporation resolutions and were seeking Parliamentary action.[3] The Royal Commission on Local Taxation[4] received the Glasgow proposals, but although Parliamentary Bills were promoted in 1898 and 1902 little success was achieved.

Limited successes did follow however. The Lands Valuation Bill (Scotland), 1903[5] referred to unoccupied burgh sites without tackling the more fundamental and underlying problem of site values generally. The earlier 'Glasgow Bill', that of 1898 supporting a levy of 4% on the value of land, was reintroduced as the Land Values Taxation (Scotland) Bill, 1904,[6] and by 1906 it had managed to obtain a second reading before being referred to a Select Committee.[7] The major advantages through which the Committee communicated their support were:

> 'First: Houses and other improvements would be relieved from the burden of rating. This would encourage building and facilitate industrial developments.
> Secondly: As regards the large towns, it would enable land in the outskirts to become ripe for building sooner than at present, and would thus tend very materially to assist the solution of the housing problem'.

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1 Report of the Royal Commission on the Housing of the Working Classes, 1885, C. 4409, p. 69.
2 S.L.E.C., op. cit., p. 509.
3 Ibid., p. 510.
4 Report of the Royal Commission on Local Taxation in Scotland, 1894, C. 7575, LXXIV, Pt. II.
5 Land Valuation (Scotland) Bill, 1903, (93), ii, 403.
6 Land Values Taxation (Scotland) Act, 1904, (75), 487.
7 Report of the Select Committee on the Land Values Taxation (Scotland) Bill, 1907, (291), vi, 395.

With the Select Committee preferring valuation rather than rating reform the old Glasgow Bill of 1898 and 1904 was superceded by the Land Values (Scotland) Bill of 1907.[1] Political events intervened, however, and this and other bills failed to reach the statute book. Although the budget of 1909 did make for some adjustments in valuations the matter was only fully resolved in the Land Values (Scotland) Act of 1914.[2]

The concerted efforts of individuals, local authorities and Scottish M.P.'s, with a successful culmination only in 1914, confirms the importance attached to the valuation and rating methods. The frequent references to injustice for poorer income groups and the disadvantage incurred by the building industry underlines the importance of the legal terminology and the resulting financial obligation for the levels of housebuilding activity.

V

When, in 1903, the abandonment of Free Trade was being mooted, The Builder was quick to notice that a tax on food imports would result in a reduction of real wages.[3] From the building trades' viewpoint then the Chamberlain proposals represented a threat: a reduction in real incomes would diminish the demand for accommodation.[4] An additional voice in the Free Trade lobby cannot however be seen as a major determinant of housebuilding fluctuations in Scotland, but it does however demonstrate a crucial point. Any tax or imposition, Inhabited House Duty, rate burden or more specifically penal legal costs,

1 Land Values (Scotland) Bill, 1907, (194), ii, 593.
2 Land Values (Scotland) Bill, 1914, (20), iii, 573.
3 The Builder, Sept. 5, 1903, p. 239.
4 Ibid.

the incidence of which cannot be shifted and indeed rests most heavily on the groups least able to pay, reduced disposable incomes to an important degree. One casualty among many as a consequence was the demand for housing.

As early as 1865 The Builder reported[1] concern over the amount of legal costs payable on the transference of property, and this concern and even alarm was reiterated over the next half century. For fifty years criticism of legal costs on the grounds that they impaired cheap and abundant housing for lower income groups was recounted. Comments such as 'Facilities for rapid and cheap transfer of deeds would improve the situation of working class housing'[2] and 'The greatest difficulty is the law expenses ....'[3] were not infrequent, and a more formal statement of the relationship between high legal costs and housebuilding was given in one report:

> 'The high cost of transfer of heritable property is generally regarded as a serious hardship by those dealing in such property and it has a material effect in increasing the cost of houses'.[4]

Though a boon to latterday researchers the villain of the piece as far as inflated legal costs are concerned was the rigorous Scottish practice of recording property transactions in the Register of Sasines. This public register, non-existent in England, the searching of documents associated with the purchase, and the legal draughtsmanship in duplicate of long, jargonistic phrases made the relatively simple wish to sell a property one which required substantial, labour intensive professional work. The fees were correspondingly high. The

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1 Ibid., May 20, 1865, p. 351.
2 Royal Commission on the Housing of the Working Classes. Scotland, 1885, C. 4409, Evidence of Telfer, q. 19237.
3 Ibid., Evidence of Colville, q. 19085.
4 S.L.E.C., op. cit., p. 344.

legal code of course affected all types of property. Roughly the same exercise and procedures were necessary regardless of whether the property was of the tenement variety or a villa. Indeed the complications of feuing, ground burdens and other assorted restrictions were frequently a more costly business on the congested central sites.

Scots Law, therefore, required a complexity of legal conveyancing which from time to time produced a call for legal reform in the form of shortened deeds, simplified land registration and less examination and duplication of documents, the crux of this reforming call lying in the inequity and disproportionate charge levied on properties and incomes at the lower end of the spectrum. One authority encapsulated this feeling in the following terms:

> 'While the labour and expense may not appear unreasonable in the case of a valuable estate, it is, relatively, out of all proportion in the case of the transfer of a small house'.[1]

With the preponderance of Scottish housing being of a smaller variety - even in 1917[2] 54% of houses in Scottish towns were of two rooms or less, and in certain burghs figures of 66% were recorded[3] - the discrimination of regressive scales of legal expenses affected a sizeable slice of the population. This impediment to working class house purchase provided a further penalty on Scottish housebuyers throughout the period, a penalty which like the tariff imposed the equivalent of a tax, making the property more expensive to buy, and thus also to rent.

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1 S.L.E.C., op. cit., p. 345.

2 Royal Commission on the Housing of the Industrial Population of Scotland, 1917, Evidence of A. Fraser, Vol. 4, Appendix XXVI, p. 50.

3 The percentage of small houses, particularly one-room houses was higher in the 19th century. Efforts of Improvement Trust, tighter public health, nuisance and building regulations, and as Kellett has demonstrated, the impact of railway incursions reduced the density of housing and demolished many old central areas. For data on numbers of small houses, see Royal Commission on the Housing of the Working Classes, Scotland, 1885, C. 4409, Evidence of Dr. H.D. Littlejohn, q. 18939-19058, and of Collins, q. 19316-400.

No doubt another by-product was the restriction of labour mobility.

Unlike the sliding scale changes of the Dean of Guild Court for the inspection of works and submission of plans[1] no such scale existed for the stamp duty on legal documents. A flat rate was operative, regardless of house price.[2] Such an arrangement provided further ammunition for the view that the transfer of small properties was discouraged by the disproportionate burdens placed on such transactions by the legal code in Scotland.

The fixed costs of stamp duty and legal expenses were charges which, without reference to ability-to-pay or benefit received, diminished all housebuyers disposable incomes, but particularly harshly reduced those of the lower income groups. Not surprisingly then this represented a disincentive to housebuilders and affected the timing of the cycle in a way which will be elucidated at a later stage.

VI

In a determined attack[3] on the building regulations of Glasgow, and by extension on Scottish burghs, sustained by the President of the Architectural Section of the Glasgow Philosophical Society, considerable attention was paid to the minutae of building requirements in local byelaws. A further lament was the generating of 'rubbish heaps' of 'fully prepared architectural drawings' - some 3,285 sheets appertaining to 657 sets of drawings in 1875.[4] But despite agreement with the

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1 There were, however, certain fixed cost elements, such as 'on tabling a petition', 'on lodging answers', 'for each caveat' and so on. See, Burgh of Hawick Dean of Guild Court, Rules and Regulations. (Hawick, 1936).

2 S.L.E.C., op. cit., p. 344.

3 J. Honeyman, 'General Building Regulations for the United Kingdom', The Builder, July 1, 1876, pp. 634-7, and 'Building and Trade Unions in Glasgow', The Builder, Dec. 9, 1876, p. 1203.

4 The Builder, July 1, 1876, p. 635.

argument of Honeyman on the additional cost incurred, concurrence with his conclusion that the Dean of Guild procedures were 'for no earthly purpose'[1] would be most injudicious. The existence of checks and balances in the municipal machinery restricted the amorphous and uncontrolled developments of previous centuries and to a degree counteracted the urban scourges Honeyman himself identified as the 'three Fs - Frailty, Fire and Fever'.[2]

The rigour of the burgh building regulations was a matter of pride for certain civic commentators,[3] one in particular hailing the detailed requirements not only on water-closets, water supply, sink accommodation, drainage and 'plumber work' but also boasting that 'certain structural strength is demanded by the Dean of Guild Court'.[4] The general requirements of the Public Health (Scotland) Acts,[5] where, for example, Sections 31 and 74 respectively governed stairs and underground dwellings,[6] were backed up by more detailed specifications in the Burgh Police Acts of 1892 and 1903, such as the details of bed recess sizes and the window areas in sleeping apartments.[7] Mortar had to be composed of fresh burnt lime and clean sharp pit sand; joists under every hearth were to be bridled; no part of a chimney or flue could be less than 9 inches by 9 inches; each room had to have three coats of plaster and provision for rhones, gutters and perforated gratings over drains were just a few of the explicit code of

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1 Ibid.
2 Ibid., Dec. 9, 1876, p. 1203.
3 Annual Report of the Burgh Engineer of the City of Edinburgh, 1902, p. 41.
4 Ibid.
5 The most noteworthy were those of 1867 and 1897; see Best, op. cit.
6 Public Health (Scotland) Act, 1897, vi, 329.
7 Burgh Police (Scotland) Act, 1903, (135), i, 169, Sections 64 and 65.

regulations demanded by the Dean of Guild Court.[1]

Progressive tightening of building regulations affected house-building in no small measure. In some ways the reactions of officialdom in both Edinburgh and Glasgow in 1902 to additional controls over building was indicative of the influence such legislative developments exerted over the volume and timing of housebuilding, an influence which had its origins in the Nuisance Removal Acts and Public Health Acts[2] but which grew substantially with the adoption of Police Acts[3] for individual burghs and the formation of Dean of Guild Courts as watch-dogs over building developments. Tighter regulations therefore inflated the costs of building and contributed to increasing the height of buildings on a plot of land, thus distributing such additional costs amongst more dwellings.[4] At the turn of the century the Edinburgh burgh engineer indicated that,

> '... several new enactments have come into force which considerably affect the building industries of the City more especially where of a speculative nature'.[5]

As the speculative builder provided the bulk of working class dwellings, often, as in the mid-seventies and nineties at the upswing stage of the

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1 A general discussion exists on the subject of 'Sanitary Regulations of Buildings' initiated by Gowans and Professor Jenkin, in the Transactions of the National Association for the Promotion of Social Science, 1880, pp. 529-65.

2 There are a large number of these acts, for example, 1855, 1856, 1867, quite apart from the Torren's and Cross' Acts and their various amendments.

3 Airdrie, Clydebank, Falkirk, Govan and several other burghs adopted the Burth Police Act of either 1862 or 1892 which permitted them to initiate building regulation and control through the Dean of Guild Court.

4 W. Fraser, 'Rents and Ground Rents', Proc. Royal Phil. Soc. Glasgow, 33, 1901-2, pp. 136-7.

5 Annual Report of the Burgh Engineer of the City of Edinburgh, 1902, p. 27.

cycle when such accommodation represented a viable business proposition, further protective building regulations and byelaws also contained a discriminatory element whereby extra costs of construction were charged through purchase price and rents, this 'building regulation ind ced' component of rent representing a higher proportional change on working class incomes than on ther income groups.

Enactment did not of course imply enforcement. Awakening municipal responsibilities in environmental health and welfare did witness the appointments of Medical Officers of Health, Improvement Trust Commissioners and Sanitary Inspectors and the normally enthusiastic prosecution of their duties led such outstanding personalities as Littlejohn, Russell, Gairdner and Chalmers in the public health field and town planners such as Gowans and J.K. Crawford to implement the existing building regulations.[1] But there were exceptions to such zealous enforcement. Lenient penalties from the magistrates bench failed to discourage the transgressors of building byelaws and the underlying feeling in certain sanitary inspectorates was that the law breakers were not at fault and that the insufficiency of suitable housing was more fundamental.[2] Coupled with this the embryonic development of some municipal departments - the engineers', the surveyors' departments for example - resulted in an inadequacy in staffing, particularly when substantial numbers of completed properties were awaiting inspection before obtaining their 'habitation certificate', and thereby ensured that strict adherence to plans and regulations was neglected.[3]

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1 Royal Commission on the Housing of the Working Classes, 1885, C. 4409, Evidence of Gowans, q. 18841-938, Littlejohn, q. 18939-19058.

2 Report of the Glasgow Municipal Commission on the Housing of the Poor, (Glasgow and Edinburgh, 1904), p. 8.

3 Dundee Dean of Guild Court Registers, 1-8. Regardless of the number of houses awaiting certificates the inspectorate size remained constant before 1914.

However the balance seems to have been tipped in favour of effective policing of the building byelaws. Certainly this is the Best thesis,[1] that the Scottish municipal approach towards the urban problems of the nineteenth century was more vigorous and successful than their English counterparts. The system of 'ticketed' tenements bears this out.[2] The number of persons per house was specified and marked on an outer wall but the significant point is that a system to combat overcrowding and its attendant social problems was evolved, and not only was registration and labelling of premises undertaken, but also inspected by police and sanitary officials and the density regulations strictly observed.[3] Related policies for municipal enforcement also existed in the denomination of 'undesirables'[4] and in the 'hustling' policy.[5] Efforts were made to discourage certain groups in burghs which if they could be pressured to leave would relieve the concentration of filthy dwellings.

Building byelaws not surprisingly also existed in England.[6] In fact, in 1876 an authority in this field viewed the London Building Act which was the oldest as 'still the best",[7] though subsequent Scottish legislation might rival such a claim. Despite the existence

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1 G.F.A. Best, op. cit., p. 344.

2 J.B. Russell, 'On the Ticketed Houses of Glasgow ....', in (ed), Public Health Administration in Glasgow, (Glasgow, 1905), pp. 207-28. R.H. Campbell, Scotland since 1707, (Oxford, 1965), p. 194, provides a different view.

3 The ticketing system, first evolved in Glasgow in 1862, spread to other burghs, and proved equally effective. See Royal Commission on the Housing of the Working Classes, 1884-5, Evidence of Russell and Simpson.

4 Glasgow Municipal Commission, op. cit., Evidence of Mann, p. 413, q. 8881; Fyfe, pp. 43-62, q. 946; Binnie, pp. 313, q. 6612.

5 Ibid., Evidence of Motion, p. 247, q. 5419; Blackie, p. 379, q. 8142.

6 A brief summary of building regulations im England which does however demonstrate detailed requirements is in K. Hudson, Building Materials (London, 1972), Appendix 1, I am indebted to Dr. Sheila Marriner for this reference.

7 J. Honeyman, 'General Building Regulations for the United Kingdom', in The Builder, July 1st, 1876, p. 634.

of detailed English building byelaws, those in Scottish burghs clearly were more demanding, a point reiterated by several authorities. Thus in England the cost per apartment was,

> '... much less but many economies are practised there which would not be permitted by the authorities nor approved by the occupants in this part of the country'.[1]

Examples of the greater costs in Scotland can be shown from the requirements for heavier and more substantial roofs in Scottish burghs which in requiring stronger walls to support them added considerably to the total cost.[2] Similarly the Glasgow building byelaws specified a 9' 6" ceiling on ground floor flats and 9' on other levels, whilst the London County Council's stipulated 8' 6" and 7' 6" respectively,[3] a sizeable saving in building costs which also offered the possibility of an additional storey and more rent on the same area of land. Perhaps the most persuasive evidence of the impact of Scottish building regulations relative to equivalent English requirements can be seen from table 2.

Table 2

Differences in Costs Resulting from Building Regulations -

The Excess Thickness of Walls under the Glasgow Building Regulations Compared with the London Building Act.

	Stone Walls	Brick Walls	Foundations
1 Storey	33%	Same	Same
2	50	25%	114%
3	25	25	73
4	45	36	166
5	38	40	119
6	30	47	196
7	28	50	150

Source: Glasgow Municipal Commission on the Housing of the Poor, (Glasgow and Edinburgh, 1904), Evidence of Watson, p. 512, q. 11080.

1 W. Fraser, 'Fluctuations of the Building Trade and Glasgow's House Accommodation', in Proc. Royal Phil.Soc. Glasgow, 39,1907-8, p.323.
2 S.L.E.C., op. cit., p. 425.
3 Ibid.

From table 2 it can be seen that the basic material requirements for a Scottish house were considerably greater than for an English equivalent[1] and not surprisingly such additional costs were incorporated in rents.[2] Thus the Scottish working class tenant paid a disproportionately heavy element for his housing standards relative to both his English counterparts and better off categories in Scottish society,[3] and the realisation of this type of penalty on poorer tenants prompted the search for cheaper construction materials and the modification of building regulations. A considerable body of expertise recommended the substitution of brickwork for stone wherever possible, subject to the climatic limitations of Scotland, the adoption of concrete floors and the use of mechanical aids to minimise labour costs, particularly in the field of dressing stone,[4] all of which would require adjustments to building regulations which made tenements 'unnecessarily stable'[5] and 'too substantial'.[6]

A considerable firmness appears to have been the hall-mark of the implementation of the demanding Scottish burghs' byelaws governing housebuilding, and these high standards of accommodation affected the Scottish population as a whole, and notably the poorer elements in it. By enforcing strict standards of construction the Scottish municipal agencies responsible forced building costs upwards, thereby reducing the spaciousness and amenity which could be afforded by working class

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1 To generalise to Scottish from the Glasgow case is valid given the similar legal and institutional requirements in the Dean of Guild Court regulations, and as Hudson points out, the London regulations provided a blueprint for English boroughs.

2 Glasgow Municipal Commission, op. cit., Evidence of Fyfe, p. 66, q. 1054, and Binnie pp. 303-7, q. 6471 and q. 6469.

3 Ibid., Evidence of Mann, p. 404, q. 8623, Henry, p. 9, q. 159, and Fyfe, p. 57, q. 834.

4 Ibid., Evidence of Watson, p.516, q.11178, and McGillivray, p.593,q.1317

5 Ibid., Evidence of Hodder, p. 539, q. 11661.

6 Royal Commission on the Housing of the Working Classes, 1885, C. 4409, Evidence of Russell, q. 19316-896, especially on Glasgow Death Rates 1855-84, and Littlejohn, q. 18939 for death rates in Edinburgh.

tenants thus encouraging overcrowding and undermining their avowed intent to diminish slum dwellings and 'nuisances'. In effect officialdom had substituted sound and costly housing standards for deficient amenity at a cheaper price, the net effect as reflected in the mortality rates for central city districts being only a marginal improvement in the quality of accommodation.

It is hardly surprising therefore to find at the end of the period the conclusion on the impact of Scottish building and public health legislation that,

> '... both have acted adversely on the supply of a sufficient quantity of new houses, for a mere compliance with the letter of the sanitary laws has added to the cost of erection and maintenance of new houses and has therefore lessened the profitable inducements to build'.[1]

This check on private enterprise building coupled with the expense incurred by local authorities and transmitted through the rates in implementing this area of legislation hampered the provision of working class housing, the acknowledgement of which contributed substantially to the conclusions on the necessity of local authority housebuilding increasingly urged in reports of the early twentieth century[2] and culminating in the strong recommendation of the Royal Commission of 1917[3] and the legislation of 1919.[4]

VII

In a Scottish context the sporadic development of increasing housing obligation to both builders and occupants has to date been

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1 W. Thompson, Housing Handbook, (London, 1903), p. 10.
2 See, for example, Report of the Glasgow Municipal Commission of 1904, op. cit., pp. 14-16, and S.L.E.C., of 1914, p. 420.
3 Royal Commission on the Housing of the Industrial Population of Scotland, Rural and Urban, 1917, Cd. 8371, Majority Report, para. 1984.
4 Housing, Town Planning etc. Act, 1919.

the mainstay of the Engerman proposition[1] that property rights affect the allocation and distribution of economic resources. A further example exists in the Scottish land tenure arrangments - the feuing system - whereby factors of production were affected by the legal code in such a way that the interpretation and determination of building cycles, their periodicity and amplitude, must take due account of these legal arrangements alongside the income and demographic factors.

The salient features of feuing,[2] a vestige of Scottish feudal law[3] and of the Union of Parliaments, were that subject to the constraints embodied in the feu charter the buyer or vassal held the land of his superior so long as he paid in perpetuity a small rent or feu-duty.[4] This small payment 'in perpetuity' is a critical distinction between the predominant Scottish method of land tenure and those of leasehold and freehold in England, and it is in this legal climate that the allocation and distribution of economic resources was affected, particularly those of the building industry.

The most straightforward of the results of feuing for the building industry originated in the contents of the feu charter. Specifications as to the type, quantity and nature of building developments were often stipulated,[5] a matter thought to be unduly restrictive in some cases which penalised lower income groups through the prohibition of

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1 S.L. Engerman, op. cit.

2 J.R. Kellett, 'Property Speculators and the Building of Glasgow' 1780-1830, Scottish Journal of Political Economy, 8, 1961, demonstrates that feuars efforts to derive the maximum gain from relinquishment of ownership encouraged vertical, tenement building.

3 D.M. Walker, The Scottish Legal System, (3rd edition), (Edinburgh, 1969), pp. 124-7.

4 Several definitions of feuing are readily accessible; see, for example, A.D. Gibb, Scottish Legal Terms, (Edinburgh, 1946), p. 35.

5 S.L.E.C., op. cit., p. 288, and, Royal Commission on the Housing of the Industrial Population of Scotland, Rural and Urban, 1917, Evidence of Mickel, q. 21956-68.

buildings of the design suitable for their pockets.[1] Thus such 'onerous restrictions'[2] as the insistence on solid walls rather than a fence,[3] or the use of stone when cheaper brick courses would suffice unduly raised costs of construction.[4]

Subject to the observance of the conditions imposed in the feu charter land transfers in Scotland approximated a freehold situation. This was at variance with the predominant English arrangements of freehold and leasehold where no annual payments[5] were required and where, in the leaseholding case, the property returned to its original ownership on the expiration of the lease. Whereas the payment of a small annual sum was not seen as burdensome for the occupant,[6] it has been ably demonstrated as crucial to the business decisions of builders.[7]

Under Scots Law, the inextinguishable right over a property once purchased prohibited the resumption of absolute control by the superior[8] and as a result no capital gain was available to the superior in the way that the termination of a lease frequently provided in England. To compensate for this disadvantage the Scottish landowner availed himself of his legal right to charge a feu and thus obtain the maximum

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1 Report of the Royal Commission .... 1917, Cd. 8371, Majority Report, para. 1523.
2 Royal Commission on the Housing of the Industrial Population of Scotland, op. cit., Evidence of P.C. Smith, q. 34831-2.
3 Ibid., Evidence of Mickel, 21919-21.
4 Ibid., Evidence of Roxburgh, q. 19526-35, and J.C. Murray, q. 23906.
5 In some English boroughs a form of ground burden does exist. In certain Lancashire towns pockets of houses are to be found where annual burdens exist, though the bulk of houses make no such payment. I am indebted to Professor Willan for his helpful comments on this point.
6 S.L.E.C., op. cit., pp. 325-6.
7 J.R. Kellett, 'Property Speculators and the Building of Glasgow, 1780-1830', Scottish Journal of Political Economy, VIII, 1961, p. 212.
8 Contravention of the feu-charter did allow for repossession, however.

advantage in relinquishing his claim on the land. It is on this point of securing an adequate feuing income that the nature and development of Scottish housing turns.

Efforts to raise the feu per acre were successful in many burghs.[1] In Clydebank the feu duty of £2 per acre p.a. for a piece of land was offered at the sub-feu of £30 per acre, and in Inverness, Greenock and Dumbarton similar instances occurred. The general procedure was described by the Edinburgh Lord Dean of Guild, Gowans, as follows:

> 'There is a middleman. A builder or someone makes a venture of feuing from the superior at so much. A builder looks forward to the town increasing, and he takes a lot of land from the superior at £50 or more, and then by re-feuing or building himself, he works it up to £200 an acre. That has been done within this City and large fortunes have been made out of it.'[2]

The net effect on the building industry was to force builders to abandon plans for villas, cottages and better types of property which could not sustain such penal feu duties. To cease operations altogether and thus cause a 'slackness in the building trade'[3], was one possibility. Another frequently adopted possibility was to divide the feu duty amongst a greater number of houses and to this end the multiplicity of 'beetling tenements', three and four storeys high with their galleries of accommodation developed. One possibility reduced the number of houses built; the other enhanced it. As to which response prevailed depended largely on the level of demand. Thus in the 1880s with a substantial volume of empty property, higher unemploy-

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1 S.L.E.C., op. cit., p. 392.
2 R.C. on Housing of the Working Classes, 1884-5, op. cit., Evidence of Gowans, q. 18892-3.
3 United Operative Masons and Granitecutters' Journal, Dec., 1904.

ment and a despondency in trade high feu duties, which still prevailed as landowners could not afford to substantially reduce their price and liquidate their assets for all time, resulted in a suspension of building operations, whilst in more prosperous situations, for example the 1890s, - declining empties, rising employment - the division of high duties through tenement building resulted.

In concluding that the feuing system 'hampered the free development of land for building purposes'[1] the wisdom of the Royal Commission focussed attention on the type of houses built. It would now seem appropriate to broaden the horizons of their conclusion to encompass the impact of feuing on the amplitude of the housebuilding cycle.

Although only a small portion of rental payments could be attributed to the feu duty[2] - in two instances 5% and 6%[3] respectively of rent stemmed from this source - it did nevertheless represent an additional payment compared to the English situation. When considered in conjunction with repairs and maintenance ($7\frac{1}{2}\%$) management and collection costs ($2\frac{1}{2}\%$) and insurance ($1\frac{1}{2}\%$)[4], when the additional occasional feudal payments of 'composition', 'relief', and 'duplicands', and the builders' creation of 'ground annuals', a form of feu duty, was taken into account, the perspective on the average annual feudal burden altered somewhat. The provision of a successor not selected by the superior could require a 'composition' payment of a net rental;[5] where the successor to a feu was the last vassal's heir a year's feu duty, or relief, was payable;[6] and in some cases double feu duties, or

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1 Royal Commission on the Housing of the Industrial Population of Scotland, Rural and Urban, op. cit., para. 1511, and Evidence of H. Nicol, q. 27719-20.
2 S.L.E.C., op. cit., pp. 325-6.
3 Royal Commission on the Housing of the Industrial Population of Scotland, 1917, Evidence of J. Wilson, Appendix CXCII, p. 226.
4 Ibid.
5 S.L.E.C., op. cit., p. 310.
6 Ibid.

duplicands, were owing at definite intervals e.g. 19th year.[1] The Conveyancing (Scotland) Act, 1874,[2] declared the creation of new casualty payments, composition and relief illegal, though previous arrangements were left untouched, and the forfeit of this feudal right by superiors encouraged their extension of duplicands. The existence and extent of these legal, land tenure obligations was indicated in the endorsement by the Scottish Land Enquiry Committee[3] of the Feudal Casualties (Scotland) Bill. This was to alleviate the 'severe hardship'[4] of the casualty payments and duplicands by offering to the superior either a lump sum, or an addition to the annual feu. In any event such additional burdens were to be extinguished after fifteen years from the date of the bill.

The system of ground annuals produced a further burden on land. Originally a device to circumvent restrictive feu charters which prohibited sub-feuing,[5] the ground annual subsequently became a builder's arrangement for obtaining capital and was most commonly adopted in the major burghs of Scotland. The 'ground annual' then was a perpetual annuity payment created by the builder, and formed a second tier of burdens on the property. Like feus ground annuals presented an attractive source of income for investors and by selling the right to exact ground annuals builders could raise capital in advance of commencing operations. Somewhere between twenty and thirty years purchase of the ground annual, according to the attractiveness of housebuilding, was the normal purchase price. Not only this method

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1 Ibid., p. 311.
2 Conveyancing (Scotland) Act, 1874, I, 283.
3 S.L.E.C., op. cit.
4 Feudal Casualties (Scotland) Bill, 1913, 295, ii, 577, and 1914, 310, ii, 457. Support for the abolition of casualty clauses was concurrently received in Evidence to the Royal Commission of 1917. See for example the Evidence of C.M. Robertson, q. 19855.
5 Ibid., p. 307.

of raising capital was employed. Bonds could be obtained on the security of the ground annuals which were moderately safe, non-depreciating liquid assets.[1]

The predominant tenure system, feuing,[2] and the associated supplementary property rights concerning casualty payments were reinforced at one remove by the exaction of ground annuals. Though not universally applicable to each property this amalgam of legal rights and obligations considerably affected the operations of the building industry. Already mentioned have been the prohibition through the feu charter of certain types of building development, and, the encouragement indirectly offered to landowners to constrict the supply of available land by holding out for high feus, thus partially determining for builders the type, timing and viability of housebuilding projects. Other products of Scottish tenure arrangements were a stifled demand for housing,[3] and, the possibility of a reduction in the cost of building which lowered the purchase price or rental.[4]

Taking the latter case first, the argument was that bonds raised on the security of perpetual feus or ground annuals were a higher class of security than other forms of loans and thus interest payments were correspondingly lower. Furthermore the subdivision of a feu into a sufficient number of sub-feus allowed for both payments to the superior for the original feu and a certain amount for the builder: that is additional feus over and above the amount necessary to repay the superior were created which allowed the sale of the property at a lower than market price. Because the profit was obtained in the annual feuing,

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1 S.L.E.C., op. cit., p. 308. Although some variation in value was likely according to the attractiveness of investment in housebuilding, cases of twenty-four thirty-one years purchase indicate a small depreciation in these assets.

2 Other forms did exist e.g. burgage tenure, leaseholding but were of lesser importance. See S.L.E.C., op. cit., p. 288.

3 Royal Commission on the Housing of the Working Classes, 1885, Evidence of Gowans, q. 18894-917.

4 S.L.E.C., op. cit., p. 309.

this offered the possibility of a reduction in the purchase price or in the price of rented accommodation.[1] The land tenure system undoubtedly encouraged a flow of capital for builders who otherwise were restricted in their access to funds. No doubt this encouraged certain housebuilding developments but to argue that some philanthropic gesture by builders such as selling below market price was the outcome is naive. In an industry uniquely subject to lengthy depressions any accumulated cushions to withstand the inevitable forthcoming depression would not have been lightly surrendered.

Turning to the other instance of the impact of property rights, the effect on demand, some considerable weight must now be attached to this area. With between 5%[2] and 16%[3] of rent attributable to this amalgam of feu duty, casualties and ground annuals, the compounded effect was to raise the overall rent to levels beyond the capabilities of certain income groups, the net result being a search for cheaper accommodation, usually synonymous with greater deficiencies in amenity.[4] In effect Scottish land law imposed certain payments over and above the price of basic accommodation which forced the entire demand schedule for housing to the left, and did so more emphatically at the lower end of the housing market. To obtain equivalent space and amenity with his English counterpart, the Scot had to pay rather more, the excess being the feu duty, which was proportionately less in the upper echelons of the housing market and a more significant element in working class budgets.

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1 Ibid.
2 Royal Commission on the Housing of the Industrial Population of Scotland, 1917, Evidence of J. Wilson, op. cit.
3 S.L.E.C., op. cit., p. 308.
4 Evidence of Gowans, op. cit.

The Scottish feuing system and its appendages provide, through its impact on feuar and feuee, a classic case of how the legal framework influenced the allocation and distribution of economic resources. Capital supplied, final purchase price of the product, annual compensation for the absence of windfall gains, an outlet for investors which approximated gilt-edged securities, the physical nature of the final product; all were affected by the legal code and all were differently affected according to whether subject to the jurisdiction of English or Scots Law. Whilst the differential impact of the legal framework on both sides of the border is acknowledged, equally the variations within the Scottish context must be remembered.[1]

VIII

It has been the object of earlier discussion to indicate that certain legal, administrative and institutional arrangements, peculiar to Scotland, exercised both a direct and an indirect impact on house-building in Scottish burghs. The developing municipal and government function in Scotland, the unique legal system upon which distinctive forms of land tenure and transfer, local taxation and building control were founded, and limited institutional construction are cases in point. It is however possible to compress the impact of such factors as there exists a unifying common denominator.

This common denominator is the incremental cost which was added to house purchase or rental. An abundance of cases existed on the legal side. A feu duty, ground annual payments, vigorous building standards requiring more materials and labour, inhabited house duty, complexities of land transfer, these and other legal obligations imposed

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1 Royal Commission on the Housing of the Industrial Population of Scotland, 1917, op. cit., Evidence of Forgie, Appendix XLVIII, p. 115, q. 25840 (3).

additional costs upon the purchase and rental of accommodation which were not a charge upon an English counterpart. Although similarities between English and Scottish town administration occurred, these were often superficial, distinctive features existing in council housebuilding, suburban transport and compensation payments for slum clearance. And if a more vigorous Scottish municipal government did exist,[1] inevitably the corollary invdved additional finance with as a consequence a further burden on the rates.

Thus the legal and institutional framework imposed a number of small additional burdens and the cumulative effect of these altered the timing and amplitude of housebuilding fluctuations on Scottish burghs. That the demand for housing accommodation was fairly elastic can be seen from several sources and the following remarks relate the ebb and flow of trade activity to fluctuations in demand for housing accommodation:

> '.... in consequence of the depressed state of trade people who lived in a two-roomed house went to a one roomed house or otherwise two families would go together if they were relatives and would live together and thus keep down expenses'.[2]

The effect of the Scottish legal and institutional framework therefore was to augment the costs of building and house purchase, and thus of rents. A Scottish owner-occupier or tenant could afford less accommodation in terms of space and amenity compared to his English counterpart, and so because the Scottish arrangements increased the price of accommodation just beyond the means of a prospective buyer a certain amount of demand was thwarted. This applied across the board. For

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1 G.F.A. Best, op. cit.
2 Royal Commission on the Housing of the Working Classes, 1884-5, op. cit., Evidence of Laing, q. 20, 743.

each type of income and property the additional legal-building-taxation costs in Scotland left an element of demand unfulfilled. Throughout all the phases of the cycle therefore the legal framework guillotined a proportion of demand which would otherwise have been realised, as in England. The extent of the unfulfilled demand was greatest in depression, least in prosperity. In the downswing and trough phases of the cycle the additional Scottish costs represented a larger proportion of total costs - the flat rate payments e.g. legal costs, were a higher percentage of falling prices[1] - and thus were a greater deterrent to demand at such times. Conversely they were less significant in prosperous times.

The same point can be made in relation to incomes rather than property. The additional cost caused by the Scottish legal and institutional codes was a relatively stable amount not varying to the same extent as incomes, particularly working class incomes. Thus when incomes fell considerably, as in depression, the percentage burden of these legal costs was greater; in prosperous times it was less so. This is shown diagrammatically below. (figs. 1 and 2).

The naive interpretation (fig. 1) indicates how the burden of Scottish costs stifled demand by a consistent proportion throughout the course of the cycle. Scottish housebuilding (S1) thus display a fixed and constant relationship to English housebuilding (E + W). Another interpretation is to regard E + W as desired Scottish housebuilding (S_d), with S1 representing actual building. The difference therefore between desired and realised housebuilding is the impact of the additions to costs.

In figure 2, however, a more realistic approach to the impact of these quirks of Scottish circumstances, is attempted. The E + W curve

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1 W. Fraser, op. cit.

Fig. 1.

Naive Interpretation of Additional Costs on Scottish Housebuilding Cycle

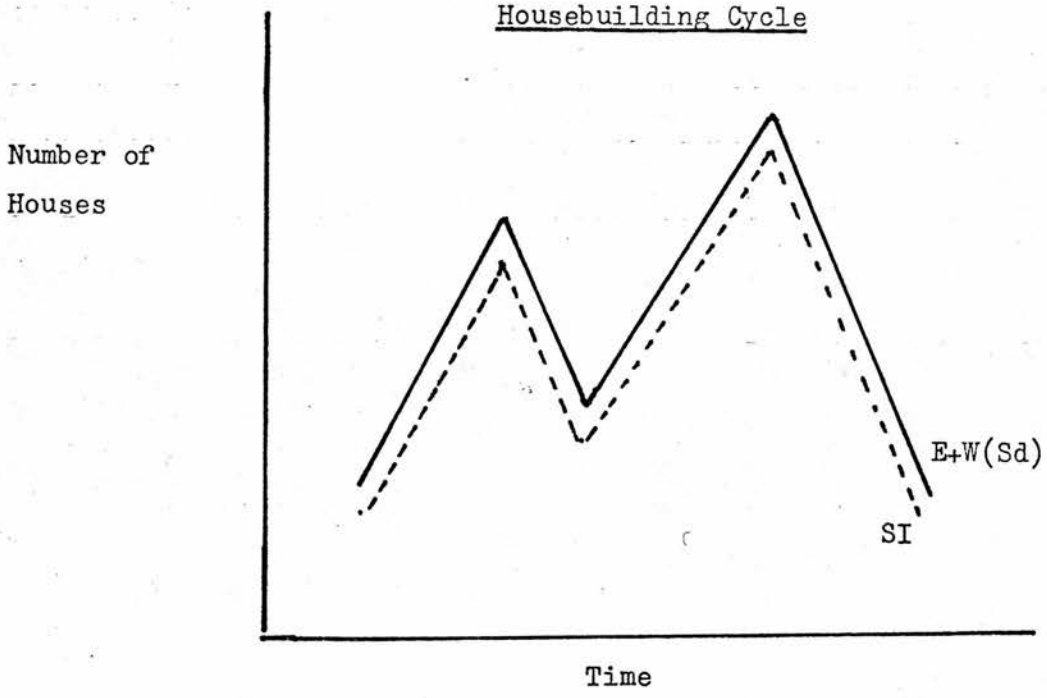
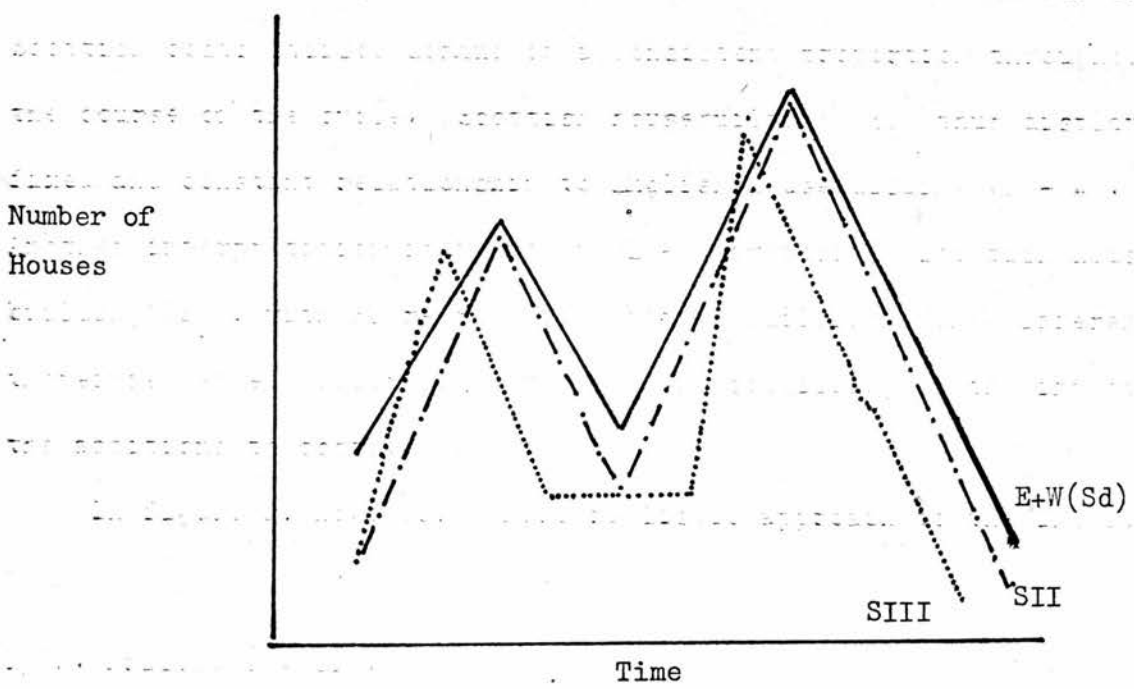


Fig. 2.

Realistic Interpretation of Additional Costs on Scottish Housebuilding Cycle



can again be considered as either housebuilding in England, or as the path of Scottish housebuilding in the absence of extra legal and other costs. Following the argument that such extra costs were more and less burdensome in periods of depression and prosperity respectively, S3 is constructed, which shows an alteration to the amplitude of the $E + W (S_d)$ cycle. The S3 line reflects the course of the cycle when both the amplitude and the timing are affected. Thus in S3 the additional costs placed on Scottish housebuilding affects demand to such an extent that not only were the levels of peaks and troughs influenced but also the period of the cycle was determined. Additional costs, stifling demand, diminished the height of a boom and brought it to a premature conclusion, while in the trough the extra payments and elasticity of demand combined to retard the upswing. Flat rate legal charges, fixed Dean of Guild scales, a firm threshold for liability to duty regardless of price movements, the regressive rating system, and the disproportionate burden of building regulations on smaller properties therefore constituted an enlarged burden in downswing and diminished burden in recovery and boom relative to the level of incomes or property prices and in conjunction with the elasticity of demand the periodicity and amplitude of the cycle were affected.

IX

A number of propositions regarding the Scottish housebuilding cycle develop from this scrutiny of the legal and institutional framework surrounding the building industry. In the first place the diagrammatic treatment demonstrates the impact ex post of certain legal influences. Any comparison of English fluctuations must take this into account, as repeatedly variations in domestic practice have been noticed north and south of the border. By implication simplistic

explanatory theories of housebuilding fluctuations must not now reject the legal and institutional determinants which go some way in accounting for the residual or unexplained variations in housebuilding noticed earlier.

The thrust of this chapter is directed towards dual targets. One is the impact of direct intervention on the building industry. Municipal and institutional building, property law and its determination of feuing practices, sanitary law and its immediate restrictions on building standards amongst others are instances of this direct intervention and determination of markets in which private housebuilders had to operate. Resource allocations for private builders was thus partially endogenously determined, even more so if the second target, the indirect impact is considered. These were the accumulated charges peculiar to Scotland which stunted demand, raised the threshold at which it was effective and altered the period and amplitude of the fluctuations in the way previously described (fig. 2). There were of course many other instances of legal and institutional arrangements and to a large extent they were responsible for a 'high rise' type of housing. That is to say the right to exact levies contributed a value in addition to the development value of land and which resulted in the more intensive use of an expensive resource.

Regressive taxation and other costs and burdens whose incidence rested more heavily on lower income groups formed a sufficient source of grievance for many nineteenth and early twentieth century commentators. Pamphlets, evidence to official enquiries, contributions to relevant journals, each contained bitter attacks on the variety of legal and institutional procedures, which, peculiar to Scotland, discriminated against the provision of housing on a footing equal to that in England. Scots Law, Scottish customs and institutions retained in

the Act of Union, provided an individuality for which Scots paid - and indeed still pay - in the form of dearer housing, a point subsequently acknowledged in the differential scales of rent control in the inter-war period.[1] The deterrent towards the profitable construction of working class housebuilding in Scottish burghs created by the legal and institutional framework and the additional costs involved therein led to a growing conviction,[2] realised only between the wars, that local authorities would ultimately be forced to build working class housing themselves. In some ways the heavy Scottish municipal commitment to council housing from 1919 relative to that of English boroughs illustrates the effect of additional housing costs north of the border on the working class ability to buy accommodation.[3]

From the viewpoint of Scottish urban housebuilding it is possible to confirm the propositions introduced at the outset, that the relationship of law and social change is indeed imperfectly understood and that the allocation and distribution of economic resources are profoundly affected by property rights and obligations.

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1 M. Bowley, op. cit., p. 22.

2 Glasgow Municipal Commission, op. cit., Report, pp. 14-15, and subsequently, Report of the Royal Commission on the Housing of the Industrial Population of Scotland, 1917, op. cit., pp. 8-9.

3 Other factors also determine the heavy council involvement in Scotland relative to that of England. For example the extent of deficient amenities in housing and the local authorities' responsibility to alleviate these brought them into the housing market to a greater extent.

CHAPTER VI

A Note on the Inhabited House Duty in Scotland[1]

In the preceding chapter certain conclusions on the incidence of the Inhabited House Duty (I.H.D.) were drawn on the basis of the monetary and real values of this tax. The detailed figures for such an analysis are presented in Table 1 below, columns 8 and 9. However a further investigation of this tax would appear appropriate in the light of the I.H.D. providing 'the basis of raw data yielding a more comprehensive record of regional cycles.'[2]

Before the First World War, with the exception of only seventeen years, those of 1834-51, a tax on occupied houses had existed since 1696. Various modifications to rates of duty and classifications of houses had of course taken place and the Inland Revenue Commissioners recalled[3] how onerous the duty had been in the years 1808-34, when the rates were for houses of annual value of £5 < £20, 1/6d in £, £20 < £40 at 2/3d in £, and over £40 at 2/10d in £. Similar ideas of graduated taxation were continued in the revised rates of 1890 when the previously flat rate of 9d in the £ for dwelling houses operative since the reintroduction of I.H.D. in 1851 was superseded by rates at 3d, 6d and 9d in the £ according to whether the annual valuation was within the bands of £20 < £40, £40 < £60 or over £60 per annum. Such differentials in duty invoking the 'benefit' principle rather than the 'ability-to-pay' approach to taxation were also

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1 Unless otherwise referred to all material upon which this note is based is drawn from Inland Revenue ledgers, I.R. 16, 1-135, P.R.O.

2 B. Thomas, 'Demographic Determinants of British and American Building Cycles, 1870-1913', Part I (2), p. 41 in D.N. McCloskey (ed), Essays on a Mature Economy: Britain after 1840 (London, 1971) and also quoted in B. Thomas, Migration and Urban Development, (London, 1972), p. 22.

3 28th Report of the Royal Commissioners of Inland Revenue, 1882/3, p.86.

Table 1

Statistics of Inhabited House Duty (I.H.D.) in Scotland, 1863-1912

Years (a)	Houses Assessed to IHD		Houses not assessed to I.H.D.		Total assessed and not assessed		Additions to Stock of Houses(000s)	Duty Charged	
	Value (£000s) (1)	Number (000s) (2)	Value (£000s) (3)	Number (000s) (4)	Value (£000s) (5)=(1)+(3)	Number (000s) (6)=(2)+(4)	(7)	Money Terms (8)	Real Terms (9)
1863-64	1645	37.9						58653	51905
64-65	1695	38.9						60435	53482
65-66	1747	40.0						62311	56135
66-67	1815	41.3						64783	57842
67-68	n.a.	n.a.						n.a.	n.a.
68-69	n.a.	n.a.						n.a.	n.a.
69-70	2047	45.6						73034	67003
1870-71	2156	47.7						76908	71211
71-72	2223	49.1						79249	71396
72-73	2298	50.5						81907	69413
73-74	2422	53.3						86256	71880
74-75	2526	55.5						89337	79059
75-76	2611	57.1	3179	533.3	5790	590.4		92218	84604
76-77	2911	62.1	3286	557.8	6197	619.9	29.5	101913	94364
77-78	3079	65.5	3578	576.0	6657	641.5	21.6	106873	98956
78-79	3228	69.3	3751	590.2	6979	659.5	18.0	110662	108492
79-80	3422	72.5	3871	597.9	7293	670.4	10.9	116103	117275
1880-81	3447	73.4	3986	606.0	7433	679.4	9.0	117213	113799
81-82	3492	74.3	4057	614.5	7549	688.8	9.4	118665	117490
82-83	3588	76.1	4149	627.2	7737	703.3	14.5	122101	122101
83-84	3607	76.2	4181	633.0	7788	709.2	5.9	123423	123423
84-85	3622	76.6	4236	641.5	7858	718.1	8.9	125068	131651
85-86	3672	77.5	4303	651.0	7975	728.5	10.4	127299	143033
86-87	3584	78.1	4379	662.4	8063	740.5	12.0	127766	146857
87-88	3711	79.2	4474	667.8	8185	747.0	6.5	128467	149380
88-89	3769	80.7	4537	674.6	8306	755.3	8.3	130484	151726
89-90	3798	81.6	4611	681.3	8409	762.9	7.6	131510	151161
1890-91	3826	82.6	4687	688.8	8513	771.4	8.5	89819(b)	103240
91-92	3876	83.9	4784	693.0	8660	776.9	5.5	91310	109454
92-93	n.a.	n.a.	4856	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
93-94	4065	88.8	4909	700.3	8974	789.1	n.a.	95315	109557
94-95	4134	90.9	5025	707.9	9159	798.8	9.7	96460	116276
95-96	4241	93.6	5125	717.1	9366	810.7	11.9	98525	121636
96-97	4365	97.2	5223	709.5	9588	826.7	16.0	100938	124615
97-98	n.a.	100.4	5365	741.5	n.a.	841.9	15.2	100363	120919
98-99	4696	105.4	5516	744.2	10212	849.6	7.7	107845	125401
99-00	4854	110.0	5682	761.1	10536	871.1	21.5	111033	132182
1900-01	5010	113.5	5906	774.4	10916	887.9	16.8	114004	128094
1-02	5115	116.2	6073	788.4	11188	904.6	16.7	116477	132260
2-03	5237	119.7	6225	798.7	11462	918.4	13.8	118802	135002
3-04	5404	123.7	6402	803.7	11806	927.4	9.0	121797	136850
4-05	5534	127.5	6642	817.2	12176	944.7	17.3	123578	137309
5-06	5627	130.2	6780	830.3	12407	960.5	15.8	125003	138892
6-07	5721	132.5	6941	835.4	12662	967.9	7.4	126186	138867
7-08	5809	135.1	7058	847.0	12867	982.1	14.2	122518	131740
8-09	5907	138.4	7171	849.5	13078	987.9	5.8	129370	142165
9-10	5949	139.4	7216	854.9	13165	994.3	6.4	129908	141204
10-11	6062	141.2	7288	855.3	13314	996.5	2.2	131450	139840
11-12	6030	142.8	7357	856.4	13387	999.2	2.7	130896	137785

Notes:

n.a. not available.
(a) year ending 5th April or 31st March for 1863-74, and 24th May from 1874.
(b) alteration in rates of duty charged.

Sources:

Inland Revenue Ledgers, I.R. 16, 1-135, P.R.O., Column 3 has been taken from B.R. Mitchell and P. Deane, Abstract of British Historical Statistics (Cambridge, 1971), pp. 236-8, and price adjustments in Column 9 have been made using C.H. Feinstein, National Income, Expenditure and Output of the United Kingdom, 1855-1965, (Cambridge, 1972), T. 140, Column 3.

applied to houses occupied for trading purposes, these being dutied at 2d, 4d or 6d in the £ over similar groupings to the private dwellings from 1890, the old flat rate 6d in the £ for these shop and lodging houses falling into disuse from that date. It is also of interest that the threshold idea of modern taxation was employed and that this minimum was raised from under £5 annual value between 1808-34 to under £20 from 1851.

It took until 1881 in Scotland before the Census definition of a house was in accord with contemporary understanding[1] of what constituted a house, but the problem of definition was even at a national level a thorny issue for the Commissioners of Inland Revenue. Not surprisingly therefore conclusions based on I.H.D. statistics whether of English or Scottish houses must be approached with caution.

A crucial point of distinction between England and Wales and Scotland was the frequency of re-assessment to Inhabited House Duty. As noted earlier the relative infrequency south of the border was avoided by annual re-assessments in Scotland,[2] the administrative machinery for which also being largely responsible for the high rate of recovery of duty on unoccupied houses.[3]

Another matter of interest arises from the allowance for repairs which could be offset against the annual value of a property. Thus a sixth of the rental was allowable,[4] raising the real rental threshold to £23.13.4d.[5] With such a real annual value the incidence of I.H.D. would be further diluted, although the influences described in the text would still remain operative.

The classification of houses in the Inland Revenue ledgers, substantially

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1 Census of Scotland, 1881, Report, p. X.
2 See above, The Impact of Legal Practices on Building Fluctuations, Ch.5.
3 J. Stamp, British Incomes and Property, (London, 1922), p. 134.
4 Ibid., p. 111.
5 Ibid., p. 115, notes that on certain farm properties an eighth was allowable, thereby reducing the threshold to £22.10/-.

followed by Mitchell and Deane[1] is for a distinction to be made both between houses and other premises and between liability to duty and exemption. This of course is merely a reflection of the discrimination of the tax rates with respect to private houses and other types of houses. It is at this point that the method of Thomas which concentrates on 'the total number of houses assessed and not assessed to duty'[2] overlooks the meticulous qualifications of Sir Josiah Stamp.[3] Thus under certain circumstances accommodation in farmhouses, lodging houses and hotels amongst others would be represented in the figures for 'other premises' and consequently an understatement of the number of houses exists on the Thomas interpretation of these statistics. Furthermore this is not a consistent understatement. The percentage of these other houses to the total number assessed to duty ranges from 8.1% to 17.4%[4], and the nineteenth century information suggests a cyclical influence where the number of private dwellings fell off in the downswing of the building cycle leaving the proportion of trade-related houses relatively higher, the reverse process being operative in the upswing phase of the early and mid-1870s. Certain problems undoubtedly exist in the classification of houses. In the Scottish case a criterion is adopted which incorporates a broad view of dwellings and includes farmhouses, residential shops and licensed premises. With some of the pitfalls of this documentary source briefly mentioned one further issue remains prior to a more intensive view of the Inhabited House Duty data. With detailed information on demolitions the translation of I.H.D. housing figures into a view of housebuilding is not strictly feasible as it would entail the confusion of a stock concept with that of a flow. Certain pointers are available however, and a useful

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1 B.R. Mitchell and P. Deane, Abstract of British Historical Statistics, (Cambridge, 1971), pp. 236-8.
2 B. Thomas, Migration and Urban Development (London, 1973), p. 45.
3 J. Stamp, British Incomes and Property, (London, 1922), pp. 112-22.
4 See Table 2 below.

Table 2

The Proportion of Trade Related Houses to All Houses Charged with Inhabited House Duty, 1863-1912

Year	%	Year	%
1863/4	16.4	1888/9	16.2
64/5	16.2	89/90	15.6
65/6	15.7	90/1	10.5
66/7	16.0	91/2	10.5
67/8	n.a.	92/3	n.a.
68/9	n.a.	93/4	10.7
69/70	15.6	94/5	10.6
1870/71	14.7	95/6	10.6
71/72	15.3	96/7	10.4
72/73	15.2	97/8	8.3
73/4	15.4	98/9	12.0
74/5	15.1	99/1900	11.4
75/6	15.1	1900/1	11.8
76/7	15.9	1/2	11.4
77/8	16.1	2/3	11.2
78/9	16.1	3/4	10.8
79/80	17.1	4/5	10.5
1880/1	16.9	5/6	10.2
81/2	17.0	6/7	11.1
82/3	17.4	7/8	9.1
83/4	17.4	8/9	8.9
84/5	17.1	9/10	8.7
85/6	16.9	1910/11	8.6
86/7	16.7	11/12	9.2
87/8	16.3		

Notes: n.a. not available

Years ending 5th April or 31st March.

Source: P.R.O., I.R. 16, 1-135.

by-product is some indication of the rate of demolition itself.

Broadly speaking the 'time shape of housebuilding'[1] reflected below in the chart (Fig. 1) of annual changes in the volume of housing stock corroborates the previously noticed, and more soundly constructed index of housebuilding based on local municipal records. The basic ingredients of the long swing are a common factor to both sources of data: the heavy building programme of the mid 1870s, the decay during the 1880s rising from the early 1890s to a peak later in that decade, and followed by a prolonged phase of contracting activity. This last period is one in which the series disagree to a certain extent, the fairly consistent reduction in housebuilding as seen from municipal records being reflected by a hesitant and halting decline in the additions to housing stock as viewed through the Inhabited House Duty ledgers.

The overall correspondence of the long swings in stocks and flows of Scottish housing and housebuilding requires qualification. Patently the changes in annual additions may be the product of demolitions rather than new house construction, and yet if the propositions of Cairncross[2] are accurate relating to cyclical fluctuations in demolition there is every reason to suppose that the fundamental pattern derived from changes in the housing stock will largely be unchanged.

Another dimension to Inhabited House Duty statistics is introduced from 1898 when a breakdown by county is available, a sophistication of almost a quarter of a century's standing in England and Wales.[3] Just as

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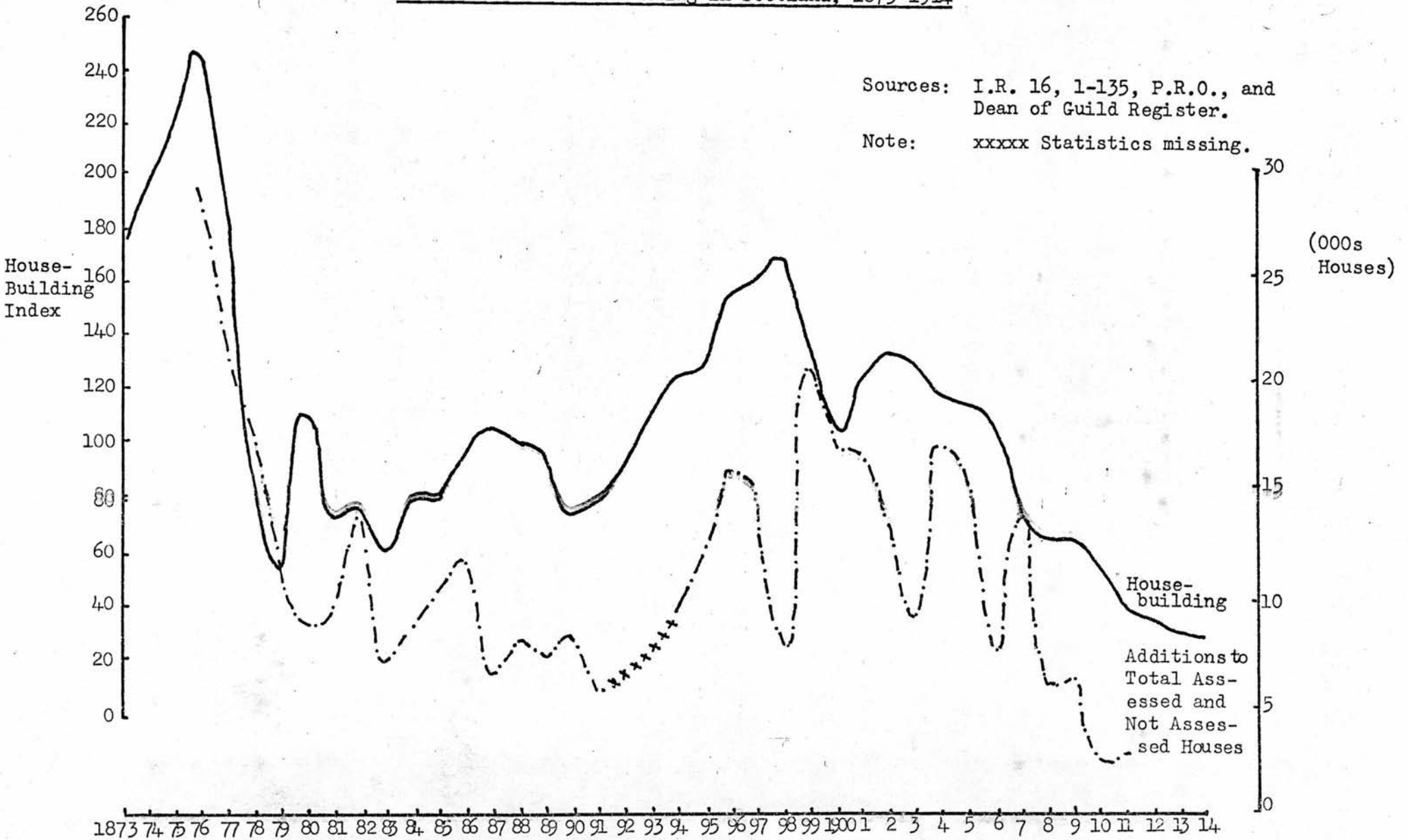
1 B. Thomas, op. cit., p. 46.

2 A.K. Cairncross, Home and Foreign Investment (Cambridge, 1953), p. 26. In Table 4 Cairncross demonstrates that the rate of demolition is higher in periods of active housebuilding, and lower in depressed conditions. He does qualify the relationship (p. 27) however by suggesting that demolition rates rise steeply only after the sharp fall in empty houses has occurred which may confirm both the slightly out of phase series of Fig. 1 and that the speculative builder after a few years of prosperity was increasingly short of attractive sites and was thus forced to demolish in order to rebuild, thereby contributing both to cost and risk, and consequently causing a slackening in activity.

3 B. Thomas, op. cit., p. 45.

Fig. 1.

Indicators of Housebuilding in Scotland, 1873-1914



the English data frustratingly denies material for the critical period of the build up to the boom of 1876, so it again denies the identical material at the remove of a complete cycle in the Scottish case, 1898, the peak year being the earliest available. Not surprisingly therefore a parallel analysis to that of Thomas[1] of long swings in regional building through this medium is not possible, although a curtailed version of fourteen years is instructive on certain points.

A classification of counties, rural and urban, has been used in Table 3 which is broadly in accordance with the location of the twenty-eight burghs incorporated in the index of Scottish housebuilding. This subjective distinction of counties is neither so crude nor so impressionistic if the more general picture of late-nineteenth century Scottish industrial life is recalled. Such pockets of activity as Cowdenbeath, Burntisland, Shotts, Kilsyth, Dalkeith, Kirkintilloch, Johnstone, Renfrew amongst many others[2] contributed to the industrial concentration of the central lowland counties, if not to the index of housebuilding based on their larger brother burghs. Quieter rural quarters persisted of course even in Lanarkshire.

Certain common features in the rural and urban counties are visible from Table 3. For example, the housebuilding peaks around the turn of the century are also echoed in additions to the housing stock. In both urban and rural counties of Scotland substantial increases in available accommodation took place in the year April 1899 - March 1900. The years 1898-1901, 1904-5 and 1907 were for both types of counties the most expansive years and agreement also existed from 1908 when the number of dwellings available ceased its previous rate of increase. In fact though the trends were similar the rate of increase to the housing stock was not;

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1 Ibid., Ch. 2.
2 W.H. Marwick, Scotland in Modern Times (London, 1964), Ch. 3, cites many cases of industrial and trading activity in these smaller burghs.

Table 3

The Scottish Housing Stock, 1898-1912[a]

Counties	1898-99	1899-00	1900-1	1901-2	1902-3	1903-4	1904-5	1905-6	1906-7	1907-8	1908-9	1909-10	1910-11	1911-
Wigtown	100	100.4	100.8	100.8	101.2	97.2	97.4	97.8	96.5	97.1	95.7	95.4	95.3	95.6
Dumfries	100	101.7	102.2	103.3	103.5	85.8	86.8	87.6	86.2	88.0	88.7	89.1	89.5	90.2
Kirkcudbright	100	102.0	101.7	102.2	101.1	100.0	101.1	101.6	102.2	102.7	103.0	103.3	103.6	104.4
Roxburgh	100	101.0	101.0	100.8	99.3	99.5	98.9	99.8	98.0	100.1	100.3	99.8	100.4	100.3
Selkirk	100	99.5	99.2	99.3	98.6	100.0	100.2	100.5	99.8	101.3	99.2	99.5	99.7	100.0
Peebles	100	100.3	101.1	101.2	102.3	104.4	105.3	105.8	105.0	107.2	103.0	103.7	103.8	103.8
Sutherland	100	102.6	102.1	103.7	105.3	106.6	109.5	111.2	112.9	115.8	129.4	130.9	126.3	125.7
Zetland	100	100.9	101.4	102.9	105.5	108.7	110.1	112.2	113.1	115.4	127.4	128.3	118.0	121.4
Caithness	100	100.1	100.4	100.0	100.1	99.3	99.0	99.4	99.0	99.7	106.2	107.9	99.9	98.2
Orkney	100	100.7	100.9	100.9	100.3	96.8	96.4	96.6	97.0	97.4	99.4	99.8	92.8	93.2
Inverness	100	101.5	103.6	104.4	105.9	107.6	108.3	108.6	108.2	109.8	110.2	111.1	111.0	112.0
Ross and Cromarty	100	101.1	102.0	102.2	102.6	101.6	102.0	103.2	103.1	104.0	104.5	105.6	106.2	106.1
Perth	100	100.4	101.0	103.6	105.7	104.5	106.2	107.7	107.6	109.0	108.7	105.7	105.4	106.2
Argyll	100	102.8	104.0	105.3	106.2	106.0	107.0	107.5	106.1	107.9	104.8	102.8	103.3	103.5
Kincardine	100	107.2	110.0	110.5	113.4	112.5	114.5	115.6	114.0	116.0	115.8	116.3	116.9	117.8
Elgin	100	101.5	104.4	105.4	106.5	114.5	115.5	116.6	117.1	118.2	118.6	119.9	120.5	120.5
Nairn	100	102.7	106.0	106.8	109.1	113.3	113.6	113.8	113.0	114.4	117.6	117.3	118.1	117.6
Banff	100	101.8	103.7	105.2	106.0	103.1	103.8	104.6	104.6	105.1	105.4	102.3	102.5	102.7
Bute	100	102.1	103.5	104.6	106.1	107.9	109.9	111.3	112.2	113.5	115.7	116.2	116.2	116.4
Kinross	100	99.4	99.4	99.5	100.9	112.6	113.0	114.9	115.6	116.6	109.6	115.8	116.5	117.2
Haddington	100	98.9	100.9	102.3	104.4	101.6	101.8	103.8	101.6	108.0	109.3	110.6	115.0	112.3
Rural	100	101.4	102.4	103.5	104.4	101.4	102.2	103.1	102.4	104.1	104.5	104.0	103.9	104.1
% Annual Growth		1.4	1.0	1.1	0.9	-2.9	0.8	0.9	-0.7	1.7	0.4	-0.5	-0.1	0.2
Dunbarton	100	101.4	104.8	106.4	107.5	107.5	109.9	118.8	128.1	134.5	133.3	140.0	142.3	143.0
Renfrew	100	102.8	105.6	107.4	109.4	112.7	117.0	120.4	122.5	124.8	128.0	129.3	130.8	132.2
Fife	100	101.8	105.3	107.9	110.7	108.4	111.2	113.5	116.0	117.6	123.4	125.9	127.5	129.7
Clackmannan	100	101.3	101.9	103.6	105.3	105.2	106.7	109.3	110.5	111.6	109.0	125.5	124.1	128.1
Linlithgow	100	102.3	104.5	107.7	111.7	113.6	116.2	118.0	117.0	119.7	119.4	122.2	126.9	126.2
Lanark	100	104.3	106.2	108.9	110.2	116.1	118.4	120.7	120.5	121.9	122.0	123.2	123.7	123.5
Ayr	100	102.4	104.8	106.7	108.8	109.8	112.1	112.3	116.1	117.7	117.1	117.3	117.6	118.1
Stirling	100	102.0	107.1	110.2	113.7	114.5	117.5	119.3	121.5	123.6	122.1	115.9	117.1	117.3
Edinburgh	100	103.1	105.3	106.4	108.8	106.8	108.8	110.4	111.7	113.2	113.6	114.6	115.2	115.3
Aberdeen	100	102.2	104.8	107.0	108.7	110.1	111.8	112.9	113.9	115.1	113.6	114.2	114.7	114.8
Forfar	100	101.4	102.5	104.3	104.6	103.3	103.8	104.6	104.8	105.7	108.2	108.3	103.5	103.6
Urban	100	103.0	105.3	107.5	109.3	111.3	113.6	115.7	117.0	118.6	119.4	120.5	120.8	121.1
% Annual Growth		3.0	2.2	2.1	1.7	1.8	2.1	1.8	2.3	1.4	0.7	0.9	0.2	0.2
Scotland	100	102.7	104.8	106.7	108.4	109.4	111.5	113.3	.2	115.9	116.6	117.3	117.6	117.9
% Annual Growth		2.7	2.0	1.8	1.6	1.0	1.9	1.6	0.8	1.5	0.6	0.6	0.3	0.3

Note: a The Stock includes houses assessed at all rates of I.H.D. and houses exempt from duty, but excludes houses and tenements not used as dwellings.

Source: I.R. 16, 1-135, P.R.O.

in most years the urban housing stock grew at double the rural rate.

In the urban counties case the net housing stock developed very much in parallel with housebuilding fluctuations; the twin peaks, lingering building activity until 1906 and a subsequent precipitous decline are features common to stock and flow concepts, the only difference apparently being in an approximately one year lag between the fluctuations in flow of new building and corresponding variations in the stock.

Of the urban counties Dunbartonshire added proportionately more than others to its available housing, with Renfrew, Fife and Clackmannan counties achieving growth rates slightly below the Dunbarton level. The other predominantly industrial regions witnessed something in the order of a fifth to a sixth more houses in existence in 1912 than in 1898. Exceptional to this however was the county containing Dundee, for Forfarshire experienced only very minor increases in the number of dwellings within its boundaries between the same dates. In most of the industrially based districts the rate of addition to the housing stock was greatest before 1906, falling off from that date. Between 1906 and spring 1912 an additional 1% only was added to available Aberdeenshire abodes; in Ayrshire it was 2% from 1906-12, in Lanarkshire 3%, Edinburgh county 3.6% and in Stirlingshire a degree of disinvestment developed as the volume of housing declined between 1906 and 1912. Peculiar to this overall pattern was the instance of Dunbartonshire where between 1904-12 the supply of dwellings rose at an average annual rate of almost 5%, whereas between 1898 and 1904 the housing stock expanded at little more than 1.5% p.a. To a great extent this reflects the delayed housebuilding peak of Clydebank which attained levels in 1905-7 twice those of 1898-1902[1]. Thus the housing stock of this rapidly developing industrial new town advanced by 8% in both 1905 and 1906. In the adjacent county of Clackmannan the

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1 Clydebank, D.G.C., Registers, 1898-1914.

pace of accretions to the housing stock also intensified from 1904 whilst in and around Edinburgh a more even pattern was established, with additional supplies of accommodation developing as much in the first seven years of 1898-1905 as thereafter. Hence it would appear that further investigation along such lines as regional diversities, industrial structures and their relative growth rates would prove fruitful in the contrasting experience of urban counties housing stocks.

With the rural Scottish regions adding most significantly to their available accommodation in the same years as the more heavily industralised areas of Scotland it may not be unreasonable to conclude that common features were operative. Thus negotiated pay awards in building unions whose branches extended throughout Scotland contributed to variations in building costs which affected the supply of new housing in both types of situation. Similarly the ebb and flow of emigration affected both rural and urban counties alike over the 1901-11 period when vast losses were sustained by the agricultural and crofting counties and the termination of the nineties influx to urban centres effectively presented the same circumstances.[1]

Within the rural category trends were often divergent. Although unanimity was achieved in the tax year 1907-8 when each of the twenty-two rural counties registered increments in their housing stock the overall impression of 1903-4 is misleading. This appears as a year of negative capital formation. In fact, it is one of zero capital formation , for in the border counties of Kirkcudbright, Dumfries and Wigtown the reductions in housing stocks are almost exclusively concentrated, and a peculiar regional influence therefore was operative in the south-west counties during the early years of the twentieth century.[2]

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1 Censuses of Scotland, 1901, 1911.

2 Census of Scotland, 1911, Vol. 1., Parts 14, 23 and 37, Cd.6097, xxii, xxiii, xxxvi, pp. 712, 1302 and 2262 show boundary changes were operative. However, while affecting each S.W. county slightly this does not alter the conclusion for the region as a whole.

Southern Scotland appears to have been very much in decline in terms of its housing stock. In Wigtownshire and Dumfriesshire capital formation in housing was in decline, whilst in Roxburgh and Selkirk stagnation prevailed the 1898-1912 years. No real growth in the housing stock of Peebles county existed, and in Berwickshire the stagnation of its neighbours was all too evident. Although the years 1898-1902 registered marginal gains to the quantity of accommodation the overall position in southern Scotland was in 1912 much as it had been in 1898. With demolitions in the rural context seemingly less likely in the face of declining population growth and with some properties falling into disrepair the course of housebuilding in this region most probably was a subdued and stagnant one throughout.

In the northern extremes of the country the housebuilding experience was a discrepant one. Some agreement in Caithness, Sutherland, Orkney and Zetland was achieved when between 1898-1902 slight additions to the housing stock of each county were registered, and later in 1908 when substantial increases in available accommodation developed, one year retarded on the remainder of rural Scotland. Within this foursome however two pairings are possible. The counties of Sutherland and Zetland underwent a continuation of the 1898-1902 growth with similar magnitudes and timing apparent. Thus by 1907 the indices of housing stock both showed a 15-16% growth over 1900. And both counties rapidly added to their housing stock in 1908, by some 12-13% in this year alone, with some disinvestment developing from 1909-12. By contrast Orkney and Caithness languished in a stagnating level of housing supply. It was even more so in Orkney than in Caithness, though in both counties despite the resurgence of 1908-9 the quantity of accommodation was less in 1912 than in 1898. In such northerly climes the pairing of Orkney and Caithness, Zetland and Sutherland are unexpected and thus this does not form a homogenous region, especially

when in the latter two counties the growth of the housing stock of some 20-25% is more in line with urban counties, while for Orkney and Caithness a 2-8% reduction of the capital stock in the housing sector took place over the same years. Housebuilders it seems witnessed rather different market situations in Scotland's most northerly counties.

The neighbouring counties of Inverness and Ross and Cromarty do not provide a resolution to the paradox. Both in fact followed something approaching the aggregate rural pattern as did Perthshire, with growth during 1898-1902 being succeeded by a plateau in the rate of additions to housing stocks, 1903-7. Thereafter additions to the supply of housing developed in Inverness-shire to produce overall a 12% growth over the fourteen years, whilst in Ross and Cromarty only half the Inverness rate, 6%, was achieved. Until about 1907 Argyll and Inverness counties pursued similar trends and growth rates in the position of their housing stock but from 1908-12 the number of Argyllshire dwellings declined whereas an increase developed in Inverness.

Another rural regional experience can be determined from Table 3. In an area running from the mouth of the River Ness and skirting the north-easterly aspects of the Grampian land mass, that is the north east and Moray coast counties certain elements of homogeneity are found. Thus in Kincardine, Elgin and Nairn counties of the 17-20% increment to 1898 housing levels which had developed by 1912 most was concentrated in the 1898-1903 period. Thus by 1903 a 12-14% addition to the 1898 level had been achieved. The declining rate of growth thereafter is also a feature of Aberdeenshire housing stocks; by 1903 a 10% increase had been effected, roughly in line with the three previously mentioned counties as was the overall increase of 15%. Aberdeenshire, despite the dominance of the 'granite city' could properly be included in the north-eastern mould. Banffshire, by contrast, differed. By 1902, the index showed a 6% addition

to the 1898 level of stocks and over the next four years the rate of growth declined, and eventually after a reduction in 1909-10 the level of housing stocks in Banffshire was only 2.7% above that of 1898. Apart from housebuilders in Banffshire then their counterparts in north-east Scotland fared rather better than builders in most parts of rural Scotland.

The Banffshire experience is rather puzzling. The rapid growth of the herring fishing industry between 1895 and 1914[1] might have been thought likely to influence the income levels and thus housebuilding demand in Shetland, Caithness and Banff, the counties most heavily involved. In the case of Shetland this does indeed seem to have been an important influence on housebuilding. The growth and prosperity of Wick, Pultneytown and Thurso in Caithness, however, seems to have had lesser overall effects on that county and was insufficient to offset other trends which on balance produced a stagnant construction level. Buckie in Banffshire drew extensively from the growth of fishing over this period, although its commitment was more in the provision of capital for the increasingly sophisticated steam drifters than as a centre of fishing itself. As such, then, unearned profits from this involvement may have had less impact on Buckie and Banffshire in general, the leakage perhaps affecting Shetland and Aberdeenshire to a greater extent.[2] Thus with the boats going elsewhere for the season and the requirement for shore workers in the salting, packing, curing and gutting functions being correspondingly reduced it is not perhaps unexpected that Banffshire did not fully participate in active housebuilding in the twenty years before 1914.

Other counties where rural builders were relatively successful

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1 I am indebted to Malcolm Gray for his helpful comments on suggestions relating to the fishing industry at this time.

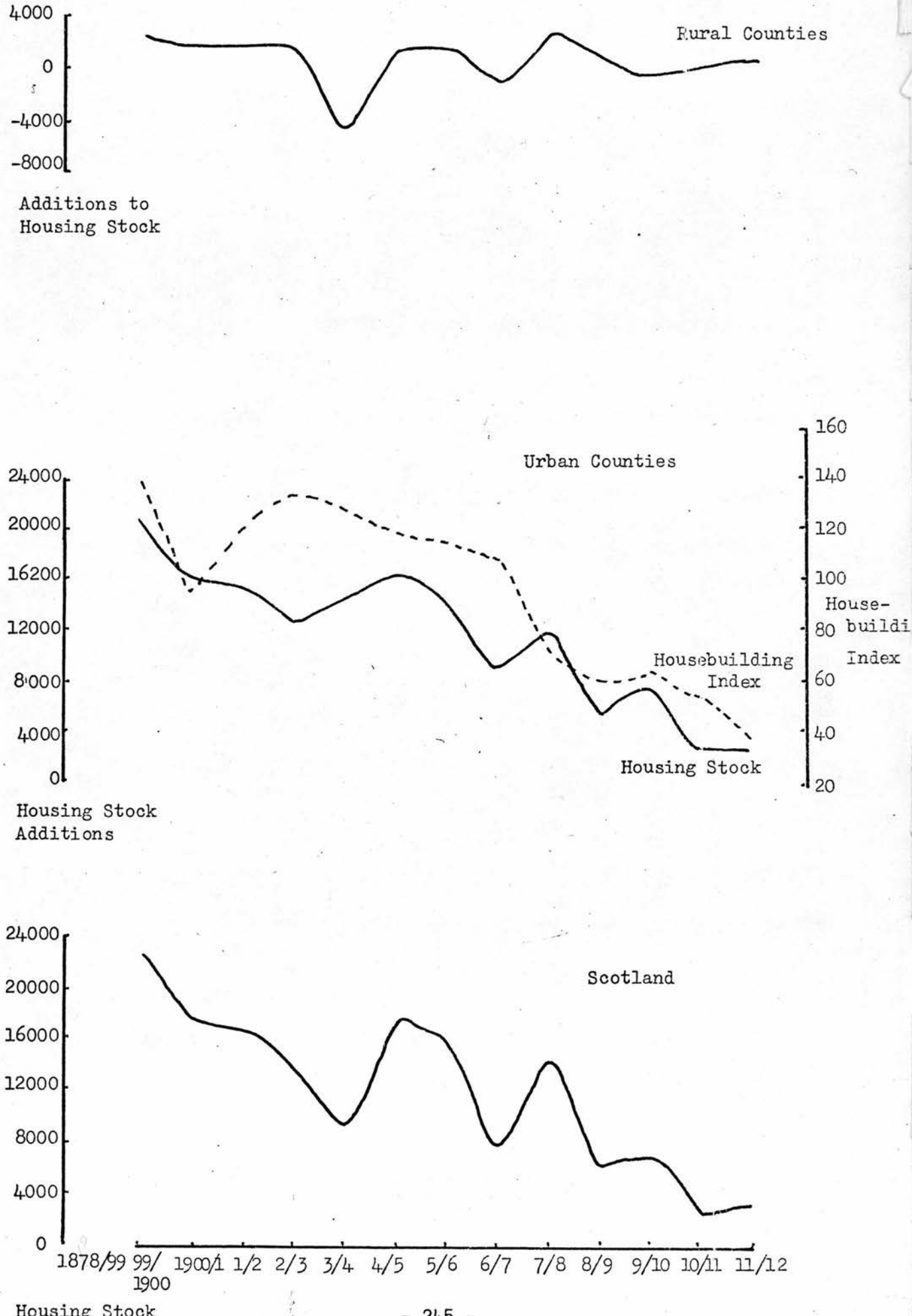
2 Aberdeen, Town Planning Registers, 1890-1914 records the heavy capital investment in shore facilities to service the entire fishing fleet and not just those registered from Aberdeen.

included Bute, Kinross and to a lesser extent Haddingtonshire. These counties were rather more central and thus through linkages with neighbouring industrial districts no doubt shared such growth as was possible in this period of growth followed by retrenchment. The case of Bute is interesting for in no year did the volume of housing decline. The inclusion of such burghs as Millport, Rothesay and Brodick would tend to support the view that the growth of holiday resorts was an influential factor in producing an atypical housebuilding pattern in this county.

As to why quite clear distinctions in the growth of the housing stock, and, in the assumed unimportance of rural demolitions, also in housebuilding is a matter meriting further scrutiny. Although an urban-rural division is appropriate variations within these categories would suggest the importance of the local regional economy in any analysis of housing stocks and flows, and as such this might add further support for the view of housebuilding fluctuations being endogenously created.

The rural-urban housing stock division is represented in fig. 2, with aggregate Scottish figures also included. The peculiarities of 1903-4 and 1907-8 in the rural sector are clearly demonstrated although removal of the S.W. counties in 1903-4 would largely eliminate this kink. Net capital formation in the Scottish housing sector substantially reflects the urban picture. Rural houses accounted only for a fifth to a sixth of Scottish houses over the 1898-1912 period and not surprisingly the heavier urban bias is reflected in the overall Scottish pattern. There is one exception. The unusual year of 1903-4 produces the only occasion on which the Scottish and urban graphs diverge in their gradient slopes.

Fig. 2. Annual Net Additions to Housing Stock, 1898-1912



The urban data is informative when compared to the index of housebuilding. The latter body of statistics is composed of annual flows of housebuilding: the former reflects net capital formation and is thus an annual stock position. The difference between the series is the rate of demolition. Whereas the Cairncross conclusions were confused by the conversion of houses to business purposes[1] no such difficulty arises in the present case, the I.H.D. statistics already having taken this into account. Definitional discrepancies over what constituted a house are further minimised here due to the inclusion of a number of different types of house in the I.H.D. statistics. However actual rates of demolition for Scotland cannot be obtained from this data as the number of houses built or planned in a year is unobtainable. What can be deduced from fig. 2 (Urban) using discrepancies in the gradients of the two curves are the years when demolition is progressing rather more quickly than in other years. The approximately similar slopes of 1904/5 - 1906/7 and 1908/9 - 1910/11 indicates that the rate of demolitions followed an almost pro rata adjustment of housebuilding. But in the earlier years of 1900/1 - 1902/3 a mirror image of housebuilding is apparent in the changes in housing stocks. Evidently in this situation of buoyant building, demolition was so widespread that net additions to housing accommodation were declining. Whenever the area between the curves is increasing then the rate of demolition is greater than the rate of building. A synopsis of the period and the demolition rate is given in Table 4. The rising demolition of 1900/1 - 1902/3 reiterates the Cairncross point regarding the earlier 1870s boom, that the highest demolition rates follow rapid increases in housebuilding and occupancy, whilst the declining rates of 1899/00 to 1900/1 equally reinforce that author's view that demolitions

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1 A.K. Cairncross, op. cit.

Table 4

Movements in Demolition Rates in the

Urban Counties of Scotland, 1898 - 1912

Rising Demolition Rate	Falling Demolition Rate	Approximately Steady Demolition Rate
1900/1 - 1902/3	1899/00 - 1900/1	1904/5 - 1906/7
1907/8 - 1908/9	1902/3 - 1904/5	1908/9 - 1910/11
1910/11 - 1911/12	1906/7 - 1907/8	

Source: P.R.O., I.R., 16, 1-135.

are low when the peak building period is underway.[1] Furthermore the slackening and steady rate of demolition between 1907 and 1911 more closely corresponded to the depressed building levels of the 1880s and their low demolition rates.[2]

Certain of these points made by Cairncross and relevant to the urban environment in the later building cycle, can also be sustained in the building periods for which they were originally intended. In Table 5 the relatively steady rates of demolition in the 1880s would indicate that the cost of demolition relative to the prospective gain from rebuilding on the site reaffirms the stunned and shocked condition of the building industry in the late 1870s and 1880s. Conversely the rather more attractive prospects of the 1890s encouraged substantial demolitions at the very time when building, and particularly speculative building, was bounding forward and this again duplicates at a national level what has been noticed in one burgh.[3] The absence of any year of rising demolition rates after 1906 reflects, as in the 1880s, an oversupply of houses and a despondency of builders' expectations of immediate and future

1 Ibid., p. 27.
2 Ibid., p. 26.
3 Ibid., p. 27.

building needs. Hardly surprising is it therefore when Table 5 shows steady or falling demolition rates after 1906.[1]

Table 5

Movements in Demolition Rates in Scotland, 1875-1912

Rising Demolition Rate	Falling Demolition Rate	Approximately Steady Demolition Rate
1880	1881	1877
1881	1882	1878
1891	1885	1879
1897	1888	1883
1898	1890	1884
1901	1899	1886
1903	1902	1889
1906	1904	1895
	1907	1896
	1911	1900
		1905
		1908
		1909
		1910

Notes: 1892-4 not available.

Source: Figure 1.

In general terms the broad pattern of stocks and flows in Scottish housing over the forty years prelude to the Great War occupied a similar time shape. It follows then that the difference between these two series, the rate of demolition, played a fairly consistent role - indeed a cyclical role, where rising building produced a razing programme, that is

1 It must be remembered that Table 5 is based on Scottish stocks of houses and twenty-eight burghs' housebuilding levels. Consequently although fig. 2 shows the Scottish housing stock figures are largely determined by those in the urban counties these conclusions on demolition rates between 1875-98 must be only tentatively advanced.

heavy demolitions, and this was followed by a period of slack building and fewer demolitions, the whole pattern coming round again as housebuilding resumed at a greater pace. There are, of course, exceptions to such a generalised description of the relationship between building and demolition - only belatedly does site clearance respond to the shortfall of land supply, for example, in the 1890s, but the comparison of housebuilding and net additions to accommodation presents a picture of a systematic relationship in which the rate of demolition holds the balance.

The Inhabited House Duty in Scotland therefore cautiously approached, presents a core of information which has far reaching implications. As a tax on occupation with the effect of shifting effective demand to the right and thereby delaying the resumption of building following a recession have already been noted, the quantitative effect admittedly being only marginal in aggregate terms as the volume of duty charged indicates.[1] The reintroduction of graduated rates, the raising of the threshold for exemption, the recognition of different types of housing and the purpose for which they were used exemplify a growing sophistication in taxation and a clear distinction in economic thought between a 'benefit' and an 'ability-to-pay' approach to tax. Equally the exceptions, exemptions and qualification to the basic concepts of I.H.D. demonstrate a complexity reminiscent of subsequent tax structure. Though reference has been made to the incidence of I.H.D. further work in detail on the growth of the three bands of duty might shed light on the relative changes in the provision of working class housing and the social structure of counties, just as Table 2 uses a tax classification at the national level to display a decline in the usage of house premises from which business was transacted, this presumably being achieved in premises which were either purpose built or physically distant from the home.[2]

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1 See Table 1.

2 Even after the reassessment year of 1890/1 there can be seen in Table 2 a decline in this category of houses in the late Edwardian years.

Quite independent of the taxation aspects, the I.H.D. provides a first approximation, albeit for only a few years, on rural housing stocks in Scotland. No missionaries have as yet charted this hazardous area and the I.H.D. provides a point of embarkation. In conjunction with detailed flows of housebuilding certain conclusions not so much on demolitions - highland site values would rarely be high enough to justify demolition - but more on the decay of rural property, the effects of clearances and the location of such economic growth points as did exist have been suggested. As in the urban context, scrutiny of the bands of tax would be valuable on the topic of rural social strata. Even in the limited information on capital formation in the rural housing sector which is available peculiarities appear as in 1907/8 and in the absence of a setback during the Boer War, and these raise fundamental questions about English indices which neglect rural housebuilding. Even during the 'Great Depression' in agriculture considerable sectoral and regional nonconformity would invalidate the exclusion of rural housebuilding from the index. It is one of the conclusions therefore derived from the I.H.D. statistics that certain articles convey a misleading impression of housebuilding activity by their exclusion of rural housebuilding.

A quite separate area of inquiry has been developed as a product of the data on net housing additions. This is the field of demolition. Previously only Glasgow has provided reliable information in this respect. Now a more complete Scottish picture is available based on the discrepant rates of growth of housebuilding and housing stock, and from the 1898-1912 sources there is every likelihood that the Scottish demolition pattern can be translated to an outline of urban demolition in the 1875-98 period also. Estimation of rates of demolition has not been attempted at this stage

although conceivably an index could be constructed based on the areas between the two curves. With certain exceptions then, the broad contours of the stock and flow data indicate a cyclical role for demolitions which is systematically related to the volumes of housebuilding and housing stock. In the wider context of national income the Scottish demolition rates provide a useful measure of capital consumption in this substantial component of domestic capital formation.

The Inhabited House Duty therefore yields a substantial marginal product in the investigation of the areas of taxation, demolition and rural building. Much of the Thomas study employs the I.H.D. figures in tandem with certain demographic statistics. A Scottish parallel is complicated at the disaggregated level by the short period under consideration but the objectives of the studies are perhaps the fundamental differences. Thomas set out to prove a point regarding the demographic determination of building cycles; in the present case this has been more comprehensively viewed in a preceding chapter, and in any event statistics of net additions to housing represent a second-best series for the causation of building cycles, the gross figures, those of annual housebuilding being preferable. It is the conclusion of the Scottish study of I.H.D. statistics that their value is overwhelmingly in the areas of taxation, rural building patterns and demolition.

CHAPTER VII

A Contribution to Explanatory Views of Housebuilding Fluctuations: A Composite Approach (Part I)

Analyses of fluctuations in the level of output normally initially revolve on a separation of demand and supply influences. The equivalent of two complete building cycles has elapsed since Cairncross attempted to isolate the major supply and demand factors and in so doing provided a reminder for his successors that to focus unduly on one aspect was irreligious, 'So much for the demand for houses'.[1] Such cautionary wisdom became submerged in the 1950s with the same writer's involvement in the imaginative concepts of alternating flows of domestic and foreign investment,[2] and this theme, reinforced by Thomas' contribution[3] a year later served to concentrate attention on migratory and demographic, that is demand, factors in domestic investment and especially housebuilding investment. Only with the subsequent revolt against a mechanistic explanation of investment patterns as presented by Atlantic Economy theorists did the academic pendulum redress the balance, greater prominence thereby being attached to supply factors and their causal contribution to housebuilding cycles.[4]

It is the contention of this chapter, therefore, that to concentrate

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1 A.K. Cairncross, 'The Glasgow Building Industry, 1870-1914,' Review of Economic Studies, 2, 1934, p. 10.
2 A.K. Cairncross, Home and Foreign Investment, (Cambridge, 1953).
3 B. Thomas, Migration and Economic Growth, (Cambridge, 1954).
4 H.J. Habakkuk, 'Fluctuations in House-Building in Britain and the United States in the Nineteenth Century', Journal of Economic History, 22, 1962, and S.B. Saul, 'Housebuilding in England, 1890-1914', Economic History Review, 15, 1962.

on the issues of home and foreign investment is to lavish attention on the migration variable and to a lesser degree on the supply of capital to the building industry. To argue for the consistent importance of one factor, and indeed the consistent unimportance of others is quite untenable, flying in the face not only of learned researchers[1] but also of contemporary interpretation which stressed building costs, land availability and regulations as crucial determinants of housebuilding activity.[2] Indeed no emphasis is attached in municipal, private or Royal Commission investigations to a reduction of population pressure by actively encouraging dispersal, developing new towns or devising schemes for emigration.[3] It was in fact just because '.... private enterprise unstimulated, unregulated, unassisted, undirected, has hopelessly failed'[4] that local authority involvement became necessary at the lower end of the market, but there was never a wavering doubt that from artisans upwards private enterprise builders and the operation of market influences could provide sufficient accommodation. This theme of the effectiveness of market mechanisms in the housebuilding decision, recently reiterated by Gauldie,[5] emphasises the relevance of several supply and demand elements.

The approach of this chapter is governed by two major principles. The first, as indicated above, is that not only are both demand and supply factors relevant, but also that the blend of causal influences varies over

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1 H.J. Dyos, Victorian Suburb, A Study of the Growth of Camberwell, (Leicester, 1966), p. 81, notes the 'fickleness' of the role of capital supplies and its variable contribution according to the cycle.

2 Royal Commission on the Housing of the Working Classes, 1884-5, Evidence of Telfer.

3 J.N. Tarn, Five Per Cent Philanthropy, (Cambridge, 1973), Ch. 9 indicates the limited development of garden suburbs and new towns, and in a seminar (Liverpool, November, 1974), he ascribes these less to a conscious reduction of population pressure and more to an inherent rural preference in housing.

4 W. Thompson, Housing up-to-Date, (London) 1957, p. 9.

5 E. Gauldie, Cruel Habitations, A History or Working Class Housing 1780-1918, (London, 1974).

time. An earlier chapter charted in quantitative terms the relative causal contribution of several factors over the entire period. Some refinement is now required and, by isolating with reference to burgh housebuilding experiences the varying impact of causal constituents, a kaleidoscopic view of the changing blend and balance of factors is obtainable at specific points in time. The second principle is that to explain changes in the volume of building attention must be directed towards alterations in the role, efficiency or operation of key explanatory factors. Thus a constant proportion of the population emigrating would become written in to builders' expectations; but an alteration in the level of immigration, or bank rate and so on, was of greater significance.

II

Concentrating attention initially on the demographic contribution it is immediately apparent that several categories of this eclectic demand factor are required. Using an aggregative criterion first it transpires that overall population growth rates roughly corresponded to the active housebuilding decades of the 1870s and 1890s, with less rapid population growth in the intervening years of the eighties and 1900s. (Table 1). Thus it can be argued that the basis of substantial pressure of demand for housing was laid in crude population growth rates. In reality the relationship appears to be less than exact. Central Scotland, accounting for 61% of the Scottish people in 1871 and 72% in 1911,[1] experienced during the 1860s population pressure equivalent to that of the following decade, but without the sizeable upsurge of housebuilding with which in the 1870s it was associated. The disparity between population pressure and housebuilding again developed in the first decade of the twentieth century, when population growth was at its lowest level for fifty years and yet

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1 Census of Scotland, 1951, vol. 3, Table F.

Table 1

Population Growth Rates, Scotland, 1861-1911

	Scotland	East Central[a]	West Central[b]
1861-71	+ 9.7%	+ 14.1%	+ 17.2%
1871-81	11.2	13.9	17.6
1881-91	7.8	10.6	13.5
1891-1901	11.1	12.6	19.2
1901-11	6.5	9.4	9.8

Notes: a Counties of Burghs of Edinburgh, Dundee, Counties of Clackmannan, East and West Lothian, Midlothian, Fife, Stirling.
b County of the Burgh of Glasgow, Counties of Ayrshire, Dunbarton, Lanark, Renfrew.

Source: Census of Scotland, 1951, Vol. III, Table F, p. xv; Vol. I, Parts 1-35.

residential construction was proceeding actively until 1905, the index standing at 106 in that year. Even over the years 1907-9 housebuilding was running at levels not dissimilar to the 1880s, although population growth by no means matched that decade.

Actual census to census alterations in burgh populations represent a net situation: that is, whatever the influences and for whatever reasons they come about, changes in recorded numbers of inhabitants reflect the change in net demand pressure on housebuilding. At the burgh level this information is presented in Table 2. Despite the vagaries of employing decennial data and the difficulties of intra-census variations, several Scottish burghs display a net population growth very much at odds with their housebuilding experience.[1] Curiously, therefore, Partick builders witnessed the general peak of 1876 and the subsequent 1878-9 contraction even though population pressure was much as it was the previous decade. The burgh of Ayr expanded by 15% and 14.9% respectively in the 1890s and

1 The chapter entitled 'Housebuilding in the Major Scottish Burghs, Table 4, provides the material for index numbers for housebuilding.

1900s, yet housebuilding was far from steady, the index ranging from 84 in 1895 to 168 in 1904 and returning to the 20 level in 1910-11. In case such steady population additions should be interpreted as corroborating the subdued amplitude of fluctuation in these burghs the case of Perth further demonstrates the lack of synchrony between population growth and building activity, for in the burgh population increments stabilised at about 2900 per decade. Housebuilding fluctuated quite widely, with the index standing at about 40 in 1885 and 1910, but in the intervening climax achieving the 200 mark.

Housebuilding in the 1880s was with few exceptions a pale shadow of the previous decade, particularly the years before 1877, and yet in Paisley and Falkirk the demographic constituent of demand increased, a contradiction which also exists in Glasgow although boundary changes obscure the situation somewhat. Unison certainly was absent in the housebuilding and population trends of many burghs; most noticeably in Dundee and Coatbridge but also in Govan and Leith housebuilding was in a doldrums while population growth was in excess of levels achieved in the 1890s, just at a time when housebuilding was pursuing a contrary, upward trend.

Not that all Scottish burgh housebuilding was inversely related to population growth. Some agreement was achieved in Aberdeen, Hamilton, Kilmarnock and Kirkcaldy for example, although there were others. Thus in Kirkcaldy successive decennial accretions of 16.5% (1881-91), 25.5% (1891-1901) were matched by average index values, over the same period, of 45.5, 113.7 and 102.8 respectively. In the north-east 43000 additional Aberdonians presented a strong demand influence for local builders and the housebuilding index, 85 in 1891, averaged 184.4 over the next decade. Between 1901-10 however, population growth slumped from the 38.9% of the 1891-1901 period to 6.8% and housebuilding also

Table 2

Inter-Censal Changes in Burgh Populations, 1861-1911

	1861-71	1871-81	1881-91	1891-1901	1901-11
Aberdeen	14281	16895	5465	42962	10388
Airdrie	566	-125	5772	3153	2100
Arbroath	2372	1795	1036	477	-2647
Ayr	-689	3033	3957	3753	4289
Clydebank	n.a.	n.a.	10014	8656	18878
Coatbridge	5301	1698	12534	6957	6295
Dumbarton	3155	2363	3141	3058	2004
Dumfries	817	1406	318	145	2919
Dundee	27477	21098	13348	7586	3831
Dunfermline	2945	3464	2242	3093	2853
Edinburgh	28858	31394	32852	55612	3481
Falkirk	517	3623	4142	11968	4294
Forfar	1773	1786	-760	-660	-548
Galashiels	3245	5652	1922	-3637	916
Glasgow	102865	64339	71382	103511	22787
Govan	11563	26360	16029	14943	13073
Greenock	15036	8883	-3281	4719	6998
Hamilton	810	7019	6342	7916	5869
Hawick	3165	4828	3020	-1901	-426
Inverness	4992	2875	1918	1935	978
Irvine	-255	1631	569	532	561
Kilmarnock	-2165	4760	2603	5718	563
Kirkcaldy	390	17691	3840	6924	5522
Leith	10233	14764	9222	8732	3049
Montrose	-74	386	-1915	-652	-1453
Motherwell	4018	5961	5822	11692	9962
Musselburgh	88	363	1008	2823	4227
Paisley	830	7381	10787	12938	5092
Partick	9524	9703	9128	17760	12551
Perth	8438	4687	2937	2954	2981
Port Glasgow	3568	2471	1391	2172	892
Rutherglen	1171	2231	547	4165	8134
Stirling	596	5139	769	1622	2797
Wishaw	4456	2544	2140	5621	4390
Total	269867	288098	240241	357247	167600
Second Difference		+18231	-47857	+117006	-189647

Note: n.a. = not available.

Sources: Censuses of Scotland, 1861-1911.

diminished after a brief resurgence, 1901-3, to the lowly index level of 23. For the border towns of Galashiels and Hawick population and building patterns were in sympathy but in this case, and in others it is difficult to refute the forcible contention that the parallel building-population trends are due more to the economic climate of those burghs, a theme which will be subsequently further developed.

Even if builders were sufficiently subtle to distinguish between first and second differences in population growth, that is between population changes 1901-11 as distinct from 1901-11 compared to 1891-1901, the evidence is unclear. The second differences of Table 2 should provide a plus-minus-plus-minus pattern to population changes if they are broadly to conform to the trends of the overall house-building index.[1] In fact, although 65.9% of signs conform to those expected, only eight burghs (23.5%) adhere to the appropriate pattern (Table 3). However the concurrence of almost two thirds of burghs as to the general trend no doubt is a sufficient concensus to provide an overall agreement with the direction of the building cycle.

The evidence on the relationship between changes in population pressure and the level of housebuilding is at best mixed. It certainly is not a systematic relationship. However this applied only to the aggregate level at this stage and several lines of enquiry are manifestly needed prior to firmer conclusions being offered. Investigation of population changes according to age groupings, natural increase, migratory flows, quinquennial evidence, all related to the burgh level would provide a more satisfactory basis in relation to housebuilding. In fact the information of Tables 1 and 2 alow no more than broad hypotheses such as that accumulated population pressure may be of

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1 The final line of Table 2 shows the second differences for the 34 burghs as a group.

Table 3

Second Differences in Burgh Populations between Censuses, 1861-1911

	1861/71-1871/81	1871/81-1881/91	1881/91-1891/1901	1891/1901-1901/11
Aberdeen	+ 2614	-11430	+37497	-32574
Dunfermline	+ 519	- 1222	+ 851	- 240
Hamilton	+ 6209	- 677	+ 1574	- 2047
Kilmarnock	+ 6925	- 2157	+ 3115	- 5155
Kirkcaldy	+17301	-13851	+ 3084	- 1402
Montrose	+ 460	- 2301	+ 1263	- 801
Motherwell	+ 1943	- 139	+ 5870	- 1730
Partick	+ 179	- 575	+ 8632	- 5209

Source: Table 2.

greater import to the housebuilder than short term demographic phenomena, or that alternating patterns of faster and slower population growth develop only after 1871 thus offering some support for Habakkuk's viewpoint.[1]

On English evidence the suggestion has been forthcoming that the rate of natural increase in the population, may have a bearing on the volume of housebuilding.[2] In Table 4 this possibility is examined in the light of Scottish data. Although in absolute terms the size of the natural increase in population is considerably more important than the migratory contribution to overall changes in population, it is a moderately stable proportion. Related to total population, the maximum percentage change in the natural increase is +0.8%, while the maximum migration change is +4.5%. In fact in each decade it is in excess of the maximum 0.8% attributable to the natural element of population growth. Much the same conclusion obtains when the industrial east-west axis is investigated, and although the stability phenomenon is present in both, the volatility of migration in western

1 H.J. Habukkuk, op. cit., p. 204.

2 C.H. Feinstein, Home and Foreign Investment: Some Aspects of Capital Formation, Finance and Income in the U.K., 1870-1915', Cambridge, Ph.D., 1959, Table 6.1.

Table 4

Gains of Population by Natural Increase, Population Changes, and Estimated Loss by Migration, 1861-1911

Period	Natural Increase (Births - Deaths)		Increase of Population		Estimated Loss by Migration	
Scotland						
1861-70	416285	13.6%	297724	9.7%	-118561	-3.9%
71-80	468793	14.0	374444	11.2	- 93238	-2.8
81-90	507864	13.6	290074	7.8	-217790	-5.8
91-1900	499811	12.4	446456	11.1	- 53355	-1.3
1901-10	542893	12.1	288081	6.5	-254092	-5.7
East Central						
1861-70	107978	13.8	104398	13.3	- 3580	-0.5
71-80	126102	14.2	119477	13.4	- 6625	-0.7
81-90	136096	13.5	97053	9.6	- 39043	-3.9
91-1900	131012	11.8	125605	11.4	- 5407	-0.5
1901-10	140783	11.4	97343	7.9	- 43440	-3.5
West Central						
1861-70	156211	14.7	181780	17.1	+ 25569	+2.4
71-80	198496	16.0	218686	17.6	+ 20190	+1.6
81-90	228742	15.7	196978	13.5	- 31764	-2.2
91-1900	252464	15.2	319024	19.2	+ 66560	+4.0
1901-10	298726	15.2	193114	9.8	-105612	-5.4

Sources: Registrar General's Annual Reports, 1855-1914.

Scotland is seen to be greater, the maximum change being -9.4% during the 1901-10 period compared to that of the nineties.

A more detailed enquiry (Table 5) of natural increases reveals a number of interesting conclusions. In those years of the early 1870s when Scottish housebuilding was gathering momentum the rate of natural population increase was in most cases declining. The peak year, 1876 and the remainder of that quinquennium of rapidly falling housebuilding witnessed a rising trend in the rate of natural increase and a similar one-period lag, that is, some 3-4 years at least, is evident in the upsurge of natural population increase in the early Edwardian years of 1901-6. Even in the virtually consistently good building years of the 1890s a majority of 'industrial' counties were still experiencing a dominant trend in the excess of births over deaths.

An interruption to this secular feature of a declining rate of natural increase - both births and deaths components assumed a diminishing path somewhere in the 1870s, with birth rates falling relatively

Table 5

The Rate of Natural Increase in Selected Scottish Counties, Quinquennially, 1861-1915, per 1000 population

	1861-65	1866-70	1871-75	1876-80	1881-85	1886-90	1891-95	1896-1900	1901-05	1906-10	191[illegible]15
Clackmannan	13.9	14.0	13.4	16.0	14.0	13.9	11.6	9.8	10.0	9.4	7.[illegible]
W. Lothian	22.0	20.9	19.7	19.2	20.1	23.7	21.2	20.4	21.3	19.7	18.[illegible]
Midlothian	10.9	11.6	10.1	13.3	12.6	11.0	9.4	10.0	9.3	8.5	6.[illegible]
Fife	13.6	14.4	13.8	14.9	13.7	12.8	12.4	12.2	12.9	13.9	11.[illegible]
Stirling	15.9	15.5	16.0	17.6	16.1	14.5	16.3	15.9	15.8	14.5	13.[illegible]
Angus	12.5	13.0	11.9	6.5	12.6	10.2	9.5	9.3	8.5	7.2	5.[illegible]
Ayrshire	16.2	15.3	16.2	16.9	16.2	14.5	14.5	10.6	14.9	13.0	11.[illegible]
Lanarkshire	14.5	13.4	14.6	15.1	15.1	14.3	14.2	15.0	15.8	14.1	12.[illegible]
Renfrew	12.8	12.9	9.9	14.0	13.5	12.9	11.7	12.0	10.7	10.6	11.[illegible]
Dumbarton	14.7	14.4	12.1	15.5	15.7	14.5	13.2	14.3	14.5	15.1	13.[illegible]

Note: The concurrent compilation of data from the Registrar General's Reports by myself and the Demographic Project in the Department of Economic History, Edinburgh, provided some useful checks for the data in Table 5. I am indebted to members of that project for their assistance, particularly on the classification of boundaries, and to Professor M.W. Flinn for permission to employ data not yet published.

Sources: Registrar General's Annual Reports, 1855-1915.

faster[1] - was thus a considerable achievement and occurred most noticeably up to five years after the peak building year. This lag,

1 T. McKeown and R.G. Record, 'Reasons for the Decline of Mortality in England and Wales during the Nineteenth Century', Population Studies, 16, 1963, pp. 94-122 suggest that by 1880 south of the border a diminishing natural growth rate was underway, and with birth rates beginning to decline at that point the decline in mortality was of greater significance in this trend.

therefore, in the rate of natural increase denotes that it is if anything a product rather than a cause of housebuilding and general business fluctuations. Such a conclusion is not to deny the possibility, as in Edinburgh in the 1880s, that natural increases provided a basis for housebuilding. Quite the reverse, for in accounting for a reasonably steady growth to the population it provided a cushion and ultimately an accumulation of demand for urban housebuilders which must have been coveted by building tradesmen in more rural parts.

The quinquennial natural increases in Scottish burghs provide a more detailed backcloth of demographic data to which housebuilding may be related.[1] Were this an important factor intensifying housing demand it could be expected to precede, or at least coincide with, more active housebuilding. From Table 6 however it is evident that no such relationship obtains. In Glasgow and Edinburgh the natural increase declines in the critical years preceding the housebuilding boom, and yet these burghs witness a building industry advancing at considerable pace, the Glasgow housebuilding index moving from 152 in 1873 to 218 in 1876. In Edinburgh the excess of births over deaths was slightly reduced between 1871-5, and yet the number of approved plans for houses soared by 39.2% over the previous five year period.[2] In Paisley the addition to population pressure on housing demand diminished by 100 from a natural increase of 1955 to 1856 in the 1866-70 and 1871-5 quinquennia respectively. Airdrie, Kilmarnock and Perth too followed suit, and prior to the next building boom even fewer burghs produced a natural increase in population to sustain any degree of demand pressure. A synopsis of natural increase is presented in Table 7.

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1 Subsequent references to housebuilding and natural increases in individual burghs are drawn from Dean of Guild Court registers, Registrar General's Reports and Censuses of Scotland, 1861-1911.

2 Edinburgh, D.G.C. Registers, 1866-1875.

Table 6

Quinquennial Natural Increases in Scottish Burghs (1861-1910)

	1861-5	1866-70	1871-5	1876-80	1881-5	1886-90	1891-5	1890-1900	1901-5	1906-10
Aberdeen	3741	5159	5521	6905	7764	7288	7875	9962	10360	9970
Airdrie	1093	1042	1279	1158	1342	2864	3128	3552	3904	3581
Arbroath	1079	1282	1293	1221	1238	1031	972	1017	806	721
Ayr	874	868	856	993	1294	1331	1261	1131	1469	1812
Coatbridge	1774	1661	1931	1672	1810	2723	2871	3255	3657	3658
Dumbarton	834	996	867	1183	1593	1444	1217	1382	1407	1300
Dumfries	514	408	271	674	458	433	206	527	302	137
Dundee	5704	6735	6952	9675	9152	7776	7625	7596	7393	6809
Dunfermline	704	883	1281	1693	1807	1807	1818	1561	1754	1441
Edinburgh	6911	8400	8330	13361	13179	12124	10113	11611	11256	10276
Falkirk	569	480	542	1067	1230	1213	2396	2822	3711	2972
Forfar	757	771	929	984	1019	767	621	585	374	332
Galashiels	321	486	586	771	862	687	847	526	370	309
Glasgow	21862	24250	23805	33845	31197	33848	36275	43110	46459	43374
Govan	1695	2474	3882	4599	5279	4350	4466	5646	8277	8160
Greenock	2748	4363	3960	5369	5648	4786	3883	4124	3936	4460
Hamilton	1108	1344	1363	2133	2810	2839	3230	3915	3888	3937
Hawick	597	199	576	758	822	798	460	411	260	469
Inverness	539	674	541	964	1144	926	622	717	603	323
Irvine	437	505	370	736	676	524	642	631	735	692
Kilmarnock	1934	1598	1570	2026	1830	1594	1705	2170	2228	2060
Kirkcaldy	766	856	947	1174	1283	1040	1046	1392	2281	2510
Leith	2940	3353	3721	5169	5426	4945	4590	5687	5807	5396
Montrose	572	672	517	643	539	393	135	136	-154	-205
Musselburgh	372	429	457	617	660	718	750	774	1103	1492
Paisley	2584	1955	1856	2434	3339	3951	3927	4527	4685	4527
Partick	1637	1607	2181	3189	3877	3181	3857	4781	5685	5915
Perth	778	1053	973	1290	1455	1316	1029	947	1055	968
Port Glasgow	622	894	1064	878	1061	927	1363	1286	1614	1602
Rutherglen	699	708	884	1029	1112	1238	1442	1658	1944	2290
Stirling	895	619	540	662	601	688	631	640	511	737

Source: Annual Reports of the Registrar General for Scotland, 1855-1914

Table 7

Percentage of Scottish Burghs Sustaining Natural Increases in Population with Respect to the Previous Quinquennium

1866-70	70%
71-75	60%
76-80	87%
1881-85	77%
86-90	30%
1891-95	50%
96-1900	63%
1901-05	63%
06-10	32%

Source: Table 6.

Information contained in Tables 6 and 7 suggests that although some accumulated pressure on housing accommodation arising from the 1866-70 period may have been contributory to the housebuilding upswing of the 1870s, no intensified support for the buoyancy of housebuilding was available from this source in the 1870-76 years. Indeed only in post peak years of 1876-85 did considerable natural increases transpire. That natural increases were unusual in these post building boom years can be seen from Table 8 where additional population pressure in the crucial quinquennia of the 1870s is studied.

In this survey of Scotland's major burghs natural increases in population were consistently higher in the later period, displaying therefore the characteristics of a series which lags the housebuilding fluctuations. Regardless of type, size or nature almost every burgh underwent an upward surge in the natural increase of population in the late seventies. That this should immediately follow the considerable building expansion of the mid-70s provides a penetrating view of causality or the absence of it, between natural increase and house-building, a view which is further substantiated in the continued increases of births over deaths in the next five year period, 1881-5. Furthermore at just that point in the housebuilding cycle, the early

Table 8

Percentage Additions to Natural Increases in Scottish Burghs 1871-80

	Percentage Increase on Previous Quinquennium	
	1871-5	1876-80
Aberdeen	7.0	25.1
Dumbarton	-13.0	36.4
Dumfries	-33.6	148.7
Dumfermline	45.1	32.2
Dundee	3.2	39.2
Edinburgh	- 0.8	60.4
Galashiels	20.6	31.6
Glasgow	- 1.8	42.2
Govan	56.9	18.5
Greenock	- 9.2	35.6
Hamilton	0.1	56.4
Kilmarnock	- 1.8	29.0
Leith	11.0	38.9
Paisley	- 5.1	31.1
Partick	35.7	46.2
Rutherglen	24.9	16.4

Source: Table 6.

1890s, when, if an increase in the natural growth of population was to be a causal mechanism with the level of building beginning to resume an upward path, this demographic factor was only registering increases in 50% of the burghs. Thus in Dundee for example, the natural increase diminished between 1891-5.

In fact the more the natural growth of population is investigated the more it seems at odds with the performance of housebuilding. The most severe building contraction during the late 1870s and first half of the next decade was matched by unprecedented levels of natural additions to demand pressure. The quinquennium 1886-90 suffered substantially reduced natural increases in many burghs while the house-building index over all stood at 94, 105, 97, 96 and 72 in these years, many burghs including the four cities and Leith, Coatbridge, Kirkcaldy and Kilmarnock enjoying a respite from the difficult housebuilding years of the early and mid-1880s. Although superficially the demo-

graphic series and housebuilding moved more in concert in the early 1890s the building recovery appears to pre-date that of natural population growth and in any event the evidence is not unequivocal. Dundee registered substantial building activity throughout the 1890s the building recovery appears to pre-date that of natural population growth and in any event the evidence is not unequivocal. Dundee registered substantial building activity throughout the 1890s while concurrently experiencing declining natural increases. In Edinburgh housebuilding in 1892-3 was at a lower level than in any previous or subsequent dozen years at a time when a natural decrease of 16.6% occurred, the largest between 1861-1911. For Kirkcaldy the evidence of a systematic relationship is further confused as in the 1886-90 and 1891-5 periods natural increases in population were unchanged and housebuilding averaged 47.0 and 107.2 respectively in these adjacent quinquennia.

Perhaps however it is in the 1890s as a whole that the relationship can be best discovered. This decade of buoyant housebuilding almost throughout recorded a larger number of burghs with additional natural increases in the second quinquennia. This group includes Aberdeen, Airdrie, Coatbridge, Edinburgh, Glasgow, Govan, Hamilton, Kilmarnock, Musselburgh, Partick and Rutherglen and generally housebuilding proceeded from strength to strength in these years of the nineties providing some corroboration for the housebuilding-natural increase relationship. However in Airdrie, Ayr, Hawick and Perth consistent losses of natural population were experienced which do not accord with the relationship. Others such as Leith, Paisley and Stirling registered in the first quinquennium net losses to their populations from natural causes even though housebuilding had turned upwards by that time, and gains from natural increase only arose once

prosperous housebuilding had been underway for some few years.

After the turn of the century contradictions appear. In Ayr after two quinquennia of successive losses two of successive gains developed with the housebuilding index moving inversely throughout. The burgh of Stirling enjoyed reduced population pressure from natural increase yet undaunted the builders proceeded to a peak in 1908 and incidentally natural increase rose in the period 1906-14 in the aftermath of the building boom. In those burghs whose major housebuilding peak was a twentieth century one natural increases were not always registered in the 1901-5 years; and for those who do record natural increases in this quinquennium the housebuilding peak was equally likely to be in the late 1890s as it was in the early 1900s.

Significantly therefore the conclusion emerges that a causal mechanism linking the volume of housebuilding to variations in the level of natural increase is inoperative both as to the question of appropriate timing, and also of quantitative significance. The movements of the two series frequently were inversely related rather than in harmony, and if anything natural increases lagged housebuilding movements which tends to suggest that they were contributory explanations of housebuilding fluctuations once construction was underway and thus did not determine the turning points of the industry. A marginal contribution is also the theme in a quantitative sense, for even in Edinburgh during the quinquennium of greatest natural increase, 5031 in 1876-80, this represented only 2.5% addition on the 1871 Census population, and thus an annual average contribution of 0.5% p.a. at a time when 'the suburbs of the city are extending rapidly'[1] and it is difficult to envisage variations of ½% p.a. at the maximum affecting to

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1 The Builder, 29 March, 1877, p. 289.

any great extent the building work of the capital, valued at £1,358,544 in that year.[1] Quite apart from the opposite trend of housebuilding and natural increase during 1876-80, even the maximum additions of natural increase, representing 1.1% of total population[2] in Falkirk and Irvine and 0.3% and 0.5% p.a. in Paisley and Dundee, respectively, would not account for much influence on the levels of housebuilding, and thus on the criteria of timing and magnitude the role of natural increase in housebuilding fluctuations in Scotland is of little importance.

Natural increase plus the net change in migration are the components of actual population changes. The intention to date has been to show that while the evidence relating to the net profit or loss, the actual increase, and its effect on housebuilding in indecisive, its components may themselves be influential. Additionally such aspects as the age structure of the population, household formation and marriage rates provide critical indicators of demand for housebuilding which are only partially incorporated in the equation outlined.[3] Returning to that equation, the natural increase constituent has already been examined and attention is now directed towards the migratory aspects.

Net migration is a term applied to the balance of emigrants from and immigrants to a burgh, determined by the discrepancy between first census population plus natural increase minus second census population. As to whether net burgh emigration went overseas, moved elsewhere in Scotland, or ventured south to England is difficult to assess, although a tentative effort has been made to distinguish between overseas

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1 Ibid.
2 Census of Scotland, 1871, is used to provide the maximum possible contribution.
3 B. Thomas, Migration and Urban Development (London, 1972), p. 52 shows how natural increase, in dealing with death rates, takes account of migrants death rates.

emigration and internal British migration. A net gain intensified population pressure and thus, communicated through levels of rents and vacant houses, conditioned the desirability of building. No account has been taken of transitory migratory flows, those people who through the nature of employment, or habit, moved from town to town between censuses, thus remaining statistically unrecognised though a not unimportant influence on available accommodation.

The argument that internal migration is a very important consideration for housebuilding cycles[1] cannot be disputed given certain of the magnitudes contained in Table 9. Internal migrants, often young people travelling to prominent urban centres from diffused rural areas, suddenly freed to find accommodation and to pay for it implies a qualitative importance to internal migration not immediately apparent in crude numbers. Indeed money wages and a concentration of urban housing demands provided an effective combination aiding house construction, these joint influences, neither prevalent to the same degree in rural areas only serving to frustrate demand in that environment.

Reference to the aggregate level of Table 9 indicates that the Scottish people, historically inclined to exile by choice or force of circumstances,[2] did so increasingly in the 1880s and 1900s. During the 1880s this rate of efflux was twice that of the previous score of years. The first decade of the present century saw five times the number of Scots leaving as in the last ten years of the nineteenth century. For the burghs currently under study the experience was rather different for even omitting that focal point of migration, Glasgow, gains were sustained overall in the 1870s and 1890s, although rather

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1 H.J. Habakkuk, op. cit., p. 217.
2 M.I. Adam, 'The Highland Emigration of 1770', Scottish Historical Review, 1919 and 'The Highland Emigration of 1783-1803' Scottish Historical Review, 1920.

Table 9

Net Migration To/From Scottish Burghs, 1861-1911

	1861-70	1871-80	1881-90	1891-1900	1901-10
Aberdeen	+5381	+4469	+1767	+13771	-9942
Arbroath	- 23	- 688	-1238	- 2404	-3449
Ayr	-2229	+1258	+1384	+ 1638	- 613
Dumbarton	+1325	+ 313	+1032	- 511	- 661
Dumfries	+ 396	+1055	+ 146	- 465	-2574
Dundee	+16621	+5104	-3703	-11528	-8576
Dunfermline	- 130	+8409	-1301	- 341	-6789
Edinburgh	+15297	+11659	+1520	+33888	-17599
Forfar	+ 219	- 28	- 981	- 420	-2736
Galashiels	+1735	+2321	+ 303	+ 1085	- 57
Glasgow	+36117	-23967	-10621	+24126	-63612
Govan	+8737	+16318	+3171	+ 7345	-9006
Greenock	+8789	+ 115	-16160	- 3377	-1398
Hamilton	+ 304	+5932	- 387	- 5863	-1177
Hawick	- 789	+1691	+ 744	- 2122	+3277
Inverness	+1177	+1668	+ 100	+ 1812	-5756
Irvine	-1107	+ 787	- 551	- 1253	-2515
Kilmarnock	-3016	-1804	-1320	+ 2322	-3725
Leith	+5469	+5518	-1329	- 2723	-8154
Montrose	-1129	- 640	-2807	- 672	-2694
Mussellburgh	- 251	- 606	- 408	+ 1064	- 751
Paisley	-3504	+3091	+3497	+ 2876	-4966
Partick	+10781	+9740	+4380	- 4806	+ 951
Perth	- 742	+1111	-1759	+ 129	+3769
Port Glasgow	+1102	- 94	-1808	- 469	-2355
Rutherglen	+ 24	+1122	+ 27	+ 1656	- 849
Stirling	- 936	-1685	- 857	+ 74	+3596
Total of Burghs	+99618	+51322	-27159	+54832	-148361
Total of Burghs (excl. Glasgow)	+63501	+75289	-16538	+30706	-84749
Scotland	-116871	-92828	-218274	-51728	-257895

Sources: Registrar General's Annual Reports, 1855-1914, Censuses of Scotland, 1861-1911.

substantial losses in the 1900s tended to compensate for the considerably fewer losses of the eighties.

At the individual burgh level sizeable variations existed. For burghs in the old county of Forfarshire, Arbroath, Forfar and Montrose, consistent losses virtually compensated for natural increase, leaving a static housing demand. By contrast Inverness continued to enjoy a positive balance to her migration account, sustained mainly by highlanders and islanders. For Aberdeen, too, the pattern was of net additions, though again like Inverness in the 1900s, her Grampian and Orcadian sources were directed elsewhere, thereby suffering Aberdeen to lose 10,000 inhabitants to more attractive areas. Housebuilding in this northern burgh appears to be in line with migratory flows, with the diminished migrant influx during the 1880s echoed in poorer housebuilding years, notably 1881-3 and 1890, and the rapid insurgence of migrants in the nineties also saw corresponding advances in building, the index rising to 249 in 1897 and for six years of the decade it was above 170. The losses of the 1900s, too, found a counterpart in the building industry: the index, past its 1903 peak of 154, slipped inexorably to the 20s during 1911-13.

The instance of Aberdeen reveals, in conjunction with other major Scottish urban centres, a pattern of alternating migrant flows, one decade of considerable additions being followed by net losses. Roughly, the seventies and nineties were the years of influx; the 1880s and 1900s are those periods of net emigration from the burghs.[1] Net migration in Scottish burghs corresponded therefore with the English experience,[2] though Table 10 indicates that only a handful religiously abide by the generalised picture. Actual decade to decade alterations to burgh migration are presented in Table 10 rather than the crude

1 Table 6, above.
2 C.H. Feinstein, op. cit., Table 6.3.

Table 10

Changes in Net Migration, Decade to Decade, 1861 - 1911

	1861/70-1871/80	1871/80-1881/90	1881/90-1891/1900	1891/1900-1901/10
Aberdeen	- 912	- 2702	+12004	-23713
Arbroath	- 665	- 550	- 1166	- 1045
Ayr	+ 3487	+ 126	+ 254	- 2251
Dumbarton	- 1012	+ 719	- 1543	- 150
Dumfries	+ 659	- 909	- 611	- 2109
Dundee	-11517	- 8807	- 7825	- 2552
Dunfermline	+ 8539	- 9710	+ 960	- 6448
Edinburgh	- 3638	-10139	+32368	-51487
Forfar	- 247	- 953	+ 561	- 2316
Galashiels	+ 586	+ 2018	+ 782	- 7142
Glasgow	-60084	+13346	+34747	-87738
Govan	+ 7581	-13147	+ 4174	-16351
Greenock	- 8674	-16275	+12783	+ 1979
Hamilton	+ 5628	- 6319	- 5476	+ 4686
Hawick	+ 2480	- 947	- 2866	+ 5399
Inverness	+ 491	- 1568	+ 1712	- 7568
Irvine	+ 1894	- 1338	- 702	- 1262
Kilmarnock	+ 1212	+ 484	+ 3642	- 6047
Leith	+ 49	- 6847	- 1394	- 5431
Montrose	+ 489	- 2167	+ 2135	- 2022
Musselburgh	- 355	+ 198	+ 1472	- 1815
Paisley	- 413	+ 406	- 621	- 7842
Partick	- 1041	- 5360	- 9186	+ 5757
Perth	+ 1853	- 2870	+ 1888	+ 3640
Port Glasgow	- 2043	- 867	+ 1339	- 1886
Rutherglen	+ 1098	- 1095	+ 1629	- 2505
Stirling	- 749	+ 828	+ 931	+ 3522
Total of Burghs	-48296	-78877	+81991	-203183
Scotland	+24043	-125446	+166546	-206167

Source: Table 9.

additions or bases of Table 9 and thus the signs are as significant as the absolute levels in an enquiry concentrating on alternating flows. The outcome is that only 22.2% of Scottish burghs exactly correspond in each decade to the required pattern,[1] but in two-thirds of the municipalities for which reliable information is available between 1861 and 1911 the net migration movements are in accord with the expected alternating pattern. Thus except, for example, the 1870s in Edinburgh, the 1890s in Leith, the intervening period of the 1880s in Ayr amongst others, a reasonable correspondence to the comprehensive view of waves of emigration is achieved in a majority of burghs.

Jointly Tables 9 and 10 offer an approximation to the mechanism of migratory movements rendered elsewhere.[2] Only at the Scottish level, however, do the statistics offer a measure of emigration - they are roughly in agreement with estimates derived from alternative sources[3] - and at the burgh level the data of Table 9 and 10 is best viewed as internal migration. Using the analogy of Prebisch[4] for development based on a centre and periphery relationship the major Scottish burghs net immigration was sustained from diffused rural and minor urban areas, and their net emigration no doubt reflects losses overseas and to England. Hence urban immigration proceeded when conditions in Scottish burghs were favourable, and the reversal of favourable employment and income opportunities resulted in a diversion of the migrant flows to other, frequently American and Imperial countries. The role of internal migration therefore is manifestly of

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1 These are Dunfermline, Galashiels, Govan, Inverness, Montrose and Rutherglen.
2 H.J. Habakkuk, op. cit.
3 N.H. Carrier and J.R. Jeffery, External Migration, (H.M.S.O., 1953), pp. 92-3.
4 R. Prebisch, 'Commercial Policy in Underdeveloped Countries', American Economic Review, 1959, pp. 251-5.

a supplementary nature to the housebuilding experience, prolonging peak and trough alike, for the very factors attractive or otherwise which influenced the migratory decision were, at least in the context of the 'pull' of the towns, common to the decision to build houses. Thus increasing rents and declining numbers of unoccupied houses meant to the builder what improved income and employment opportunities denoted to the prospective migrant.

For the major urban communities[1] of Scotland this relationship betwee internal migration and housebuilding was operative for fifty years after 1861. A considerable body of evidence, presented in Table 11, produces the conclusion that the major burghs basically determined the outcome

Table 11

Net Migration Change in Scotland, 1861-1911

	1861-70	1871-80	1881-90	1891-1900	1901-10
Major Urban Communities (1)	+101721	+ 45006	- 22675	+ 57941	-137948
All burghs in Table 6 (2)	+ 99618	+ 51322	- 27159	+ 54832	-148361
Scotland (3)	-118871	- 92828	-218274	- 51728	-257895
Rural urban Scotland (3)-(1)=(4)	-220592	-137834	-195599	-109669	-119947
Lesser burghs of Table 6 (2)-(1)=(5)	- 2103	+ 6316	- 4484	- 3109	-10413

Source: Table 9.

of migratory flows in the larger sample of towns contained in Table 9. That is, column (5), Table 11, is essentially a reflection of column (1), indicating thereby that the burghs of a less urban - more rural character corresponded rather more to periphery than centre. Generally therefore

1 The criteria adopted were size, and absence of a rural hinterland, thus excluding for example Perth, Ayr and Dumfries. The burghs included were: Aberdeen, Dundee, Dunfermline, Edinburgh, Glasgow, Govan, Greenock, Hamilton, Kilmarnock, Leith, Musselburgh, Paisley, Partick, Port Glasgow and Rutherglen.

these burghs failed to provide the magnetic attraction attributed to but a few Scottish municipalities. This centripetal aspect of internal migration ascribed to the four cities of Scotland, the next four largest burghs (Leith, Paisley, Greenock and Kilmarnock) and their conurbated burghs (Govan, Partick, Rutherglen, Port Glasgow, Dunfermline and Musselburgh) is compounded when the discrepancy between migratory flows in these burghs and Scotland as a whole is investigated. Hence, column (4) shows that the major urban centres (1) absorbed 46.1% and 32.7% of all Scottish migrants in the 1860s and 1870s respectively, and in the last decade of the century, the proportion rose to 52.8%. In the early twentieth century however and in the eighties, the position altered, for the recipients of such population movements themselves contributed to a net loss of Scots, which led to considerable emigration. Thus the efflux from rural and minor urban Scotland (4) which in the 1880s was in fact less than that of the 1860s, and in the 1900s proceeded at rates not dissimilar to the 1870s and 1890s, was no longer attracted to the Scottish cities as before, and in the Edwardian years these burghs themselves contributed substantially to the emigration of that period.

Alternating waves of migration there undoubtedly were, but far from confirming the Thomas thesis[1] the direction of causation between emigration and domestic investment is reversed thereby supporting Habakkuk's position[2] that, far from migration being the independent and causal variable, with housebuilding dependent upon it, both are dependent variables and both are the product of the economic climate of the country generally, and of the towns particularly. While to some extent a common international pool of labour existed, America did

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1 B. Thomas, Migration and Economic Growth, op. cit.
2 H.J. Habakkuk, op. cit.

not draw from it at the expense of Britain for Scots only sought foreign settlement once the Scottish urban possibilities had been exhausted, and for many this represented a second-best solution. Theirs was emigration by default, in the absence of a viable internal migratory solution.

As far as timing is concerned the net migration movements compared to the previous decade (Table 10) display a number of changes out of phase with the housebuilding experience. In the burgh of Partick, for example, considerable net losses in migration were recorded at a time when housebuilding was expanding at a rapid rate, doubling between 1894 and 1898. Thus the net gain of the 1880s of 4380 migrants, transferred into a net loss of 4806 persons and representing a change of -9186 over the two decades might have been expected to influence housebuilding. Similarly in the subsequent decade, for the losses of the nineties were transferred into a small net immigration of 951 people, a net change of +5757, yet house building followed the national trend falling from an index of 191 in 1901-2 to 95 in 1906 and halving again over the next four years, where it remained in the 40-50 range during 1909-12. In Edinburgh heavy emigration in the early twentieth century - a net loss of 17600 during 1901-10 in the capital contrasted to the net influx of almost 34000 in the previous decade - was not matched by the housebuilders of the city, for successively in the years 1901-6 an expansion of accommodation developed. Immigration into Glasgow in the 1870s did not grow apace with housebuilding; for Galashiels and Hawick losses were on balance sustained in the 1880s despite the buoyancy, never recaptured, of border workers in that decade and reflected in the Hawick building index; in Hamilton the building plateau of 1901-4 rapidly diminished over the next quinquennium while net emigration was stemmed from 23.6% of the population in the nineties

to 3.6% in the 1901-10 period, representing in effect an addition of one fifth to the burgh population compared to the previous decade. For Irvine in the 1890s, Stirling in the 1900s and Port Glasgow during the seventies net migration patterns were at odds with housebuilding experiences, and more generally such a conclusion is also valid. A marginally more systematic relationship only appears for those major burghs who are recipients of the centripetal migration mechanism mentioned earlier.

Quite apart from casting doubts on the causal contribution and the timing of migration flows with respect to housebuilding, further reservations are forthcoming when the quantitative significance of this demand factor is scrutinised (Table 12). In Scotland's cities decennial net migration as a percentage of the burgh population was between 1861 and 1911, less than 10%. Thus on an annual basis migratory flows accounted for an average 0.66% of Aberdeen's population; Dundee, 0.76%, Edinburgh, 0.68%, and Glasgow lowest with 0.53%. Hardly can it be said that as a result of a ½% change in the number of Glaswegians annual housebuilding index fluctuations of of 20 or 30 points or more developed.[1] Indeed in each of the cities and in a number of other towns a 1% alteration to the burgh population attributable to migration is unlikely to provide a fundamental cause - and thus only at best a contributory one - to an index inherently prone to fluctuations of a sizeable amplitude due to the very nature of the product concerned.[2] Such insensitivity implicit in the housebuilding industry is unlikely to be responsive to any significant degree to net migration flows of ½ - 1%, even if all such people form individual households.

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1 C.H. Feinstein, op. cit., p. 298 also makes this point.
2 A small amount of the work was replacement building. It was not related to population movements in the same way as new building.

Table 12

Decennial Net Migration as a Percentage of Burgh Population
(Major Scottish Burghs, 1861-1911)

	1861-70	1871-80	1881-90	1891-1900	1901-10
Aberdeen	+ 7.3	+ 5.1	+ 1.7	+12.5	- 6.5
Dundee	+18.2	+ 4.3	- 2.6	- 7.5	- 5.2
Dunfermline	- 1.0	+56.2	- 6.5	- 1.5	-26.9
Edinburgh	+ 9.1	+ 5.9	+ 0.7	+12.9	- 5.6
Glasgow	+ 8.6	- 4.0	- 1.9	+ 3.7	- 8.4
Govan	+63.7	+60.2	+ 7.0	+11.9	-11.8
Greenock	+20.5	+ 0.2	-24.2	- 5.3	- 2.1
Hamilton	+ 2.8	+51.6	- 2.1	-23.6	- 3.6
Kilmarnock	-13.0	- 8.6	- 5.1	+ 8.2	-10.9
Leith	+15.9	+12.3	- 2.2	- 4.0	-10.5
Musselburgh	- 3.4	- 8.1	- 5.2	+12.0	- 6.4
Paisley	- 7.4	+ 6.4	+ 6.3	+ 4.3	- 6.3
Partick	+72.3	+40.7	+16.0	-13.2	+ 1.8
Port Glasgow	+15.2	- 0.9	-13.6	- 3.2	-14.0
Rutherglen	+ 0.3	+12.1	+ 0.2	+13.8	- 5.2

Sources: Census of Scotland 1861-1911 and 1951, and Table 9.

This is not to deny, of course, that at specific points in time internal migration movements may tip the balance of the decision undertaken by the builder. Thus in those burghs and decades of substantial movements, net migration may prove crucial to the level of housebuilding, protracting boom or slump according to the direction of migration. For both Govan and Partick in the 1861-80 period this would seem to be the case. Possibly for Hamilton in the seventies and in Greenock a decade later it would also be relevant. What is less certain is the threshold at which net migration becomes effective, for in Dunfermline an annual average loss of population of 2.7% between 1901 and 1910 saw housebuilding peak in 1910 with index value of 176 above that of 1901,

and the average index for 1900-14 running at 104.3. Neither was a 2.4% p.a. net migration loss in Hamilton sufficient to prevent buoyant housebuilding in the mid- and late- 1890s. Drawing attention to such cases is not to argue for a 3% p.a. threshold, or indeed any specific level; the object is primarily to note how even annual population changes equivalent to a fortieth of all persons within a burgh were insufficient, even with a propensity for household formation greater than other groups in society, to counteract alternative forces determining the trend of housebuilding.

To date, emigration has only been considered as a residual of the rural and minor urban exodus which was unable or unwilling to reside in Scotland's major burghs. To this extent clearances, price trends for agricultural goods during the 'Great Depression' period and rising agricultural productivity in Scotland[1] confirm the Schumpeterian view[2] that the primary sector has much to do with the generation of capital flows, whether human or inanimate. This view, also developed by Thomas,[3] has conspired to provide the export sector, and particularly the export of people, as the motive force in the inversely related fluctuations of Britain and America. No study associated with this revered theme can now avoid an explicit treatment of emigration. With this object in view figure 1 can now be considered.

Only from 1891 is there any confirmation of an inverse relationship between Scottish housebuilding and Scottish emigration. From 1891 until the housebuilding peak of 1898 emigration remained fairly constant, declining slightly, if anything. Between 1900-2 both series moved in

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1 R.H. Campbell, Scotland since 1707 (Oxford, 1965), pp. 276-98 and E. Gauldie, Cruel Habitations, (London, 1974), p. 31.
2 J.A. Schumpeter, Business Cycles: A Theoretical, Historical, and Statistical Account of the Capitalist Process (London and New York, 1939) vol. 1, p. 319.
3 B. Thomas, Migration and Urban Development, pp. 74-7.

concert, but from 1903 they are quite definitely juxtaposed. Furthermore an abatement of the housebuilding downswing 1907-8 was matched by a reduced number of emigrants in that year, an inverse agreement between the series which was reiterated when the building decline slackened further after 1911. Nevertheless whether attention is directed towards gross or net emigration a broadly inverse relationship developed from the 1890s although the magnitudes particularly of net emigration seem inconsequential throughout the 1890s, even supposing the losses were entirely concentrated on the burghs in question. That this was not the case is apparent from Table 11. The volume of emigration during the first decade or so of the twentieth century was substantial, to which the burghs of Scotland contributed some 57.5%, and thus only from 1900-14 is there much evidence to indicate a significant inverse emigration-housebuilding relationship. What perhaps is more important is that increased emigration does not precede a reduction in housebuilding, thereby diminishing the status of emigration as a causative element of housebuilding. A four year lag 1900-3 is operative but in no other cases have adherents of inverse cycles posited this length of time.

Although some mild suggestion of alternation may appear in the years 1873-9 of fig. 1a this is in fact spurious when the longer period 1860-80 is investigated (fig. 1b), for if anything Scottish emigration and housebuilding in Scotland's principal cities move in sympathy, relatively low levels of housebuilding being proposed in the 1860s, when emigration was also much more subdued in comparison with the activity of the 1870s. Thus exactly when emigration should have diminished it burgeoned, in tandem with housebuilding. This synchronisation was further pursued in the 1880s as fig. 1a demonstrates and within the subperiod of 1885-91 the two series were noticeably in harmony.

Fig. 1a.

Housebuilding and Emigration, Scotland, 1873-1914

Sources: Housebuilding: Dean of Guilt Court Records.
Emigration: N.H. Carrier and J.R. Jeffrey External Migration (H.M.S.O., 1953).

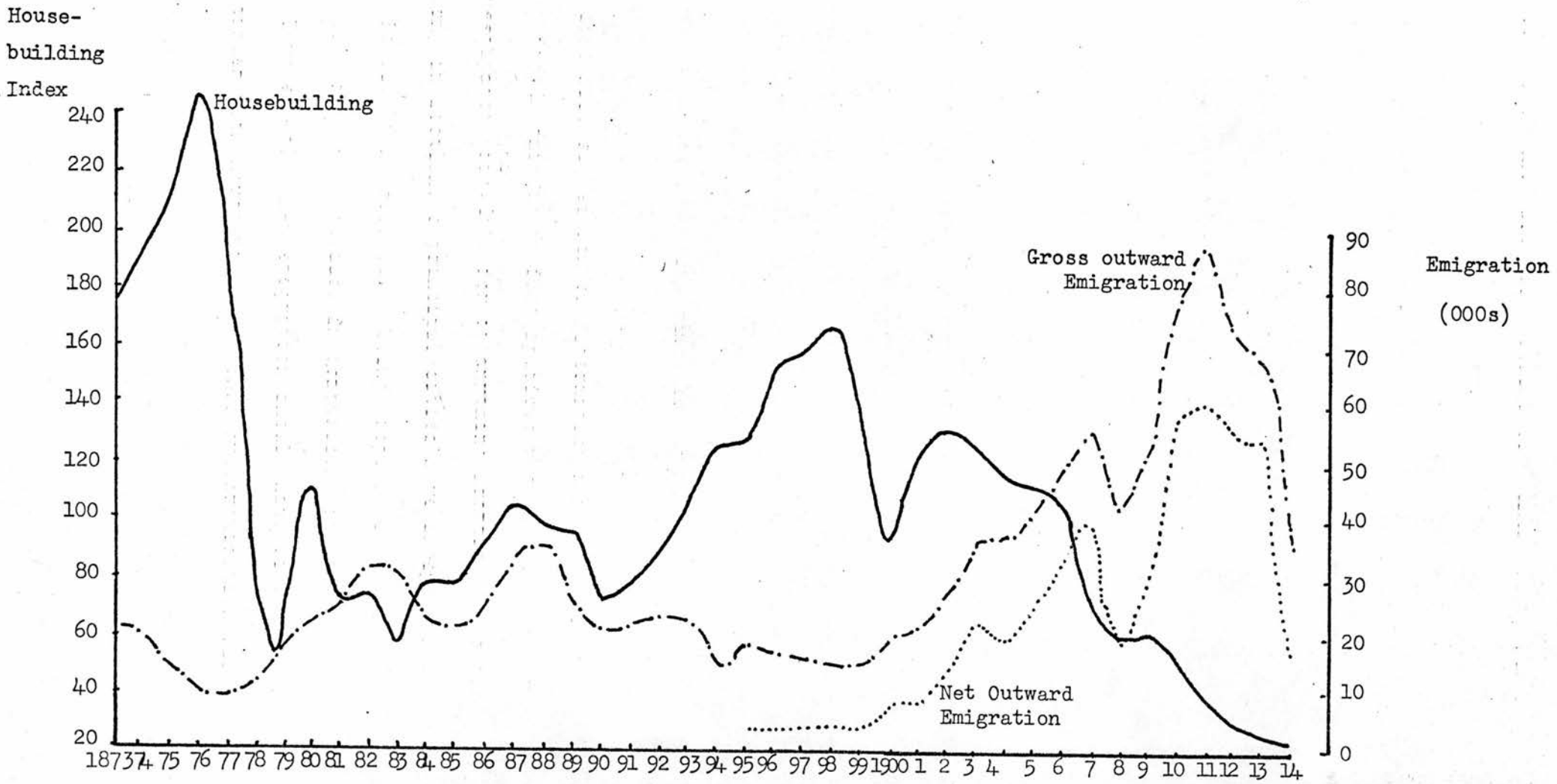
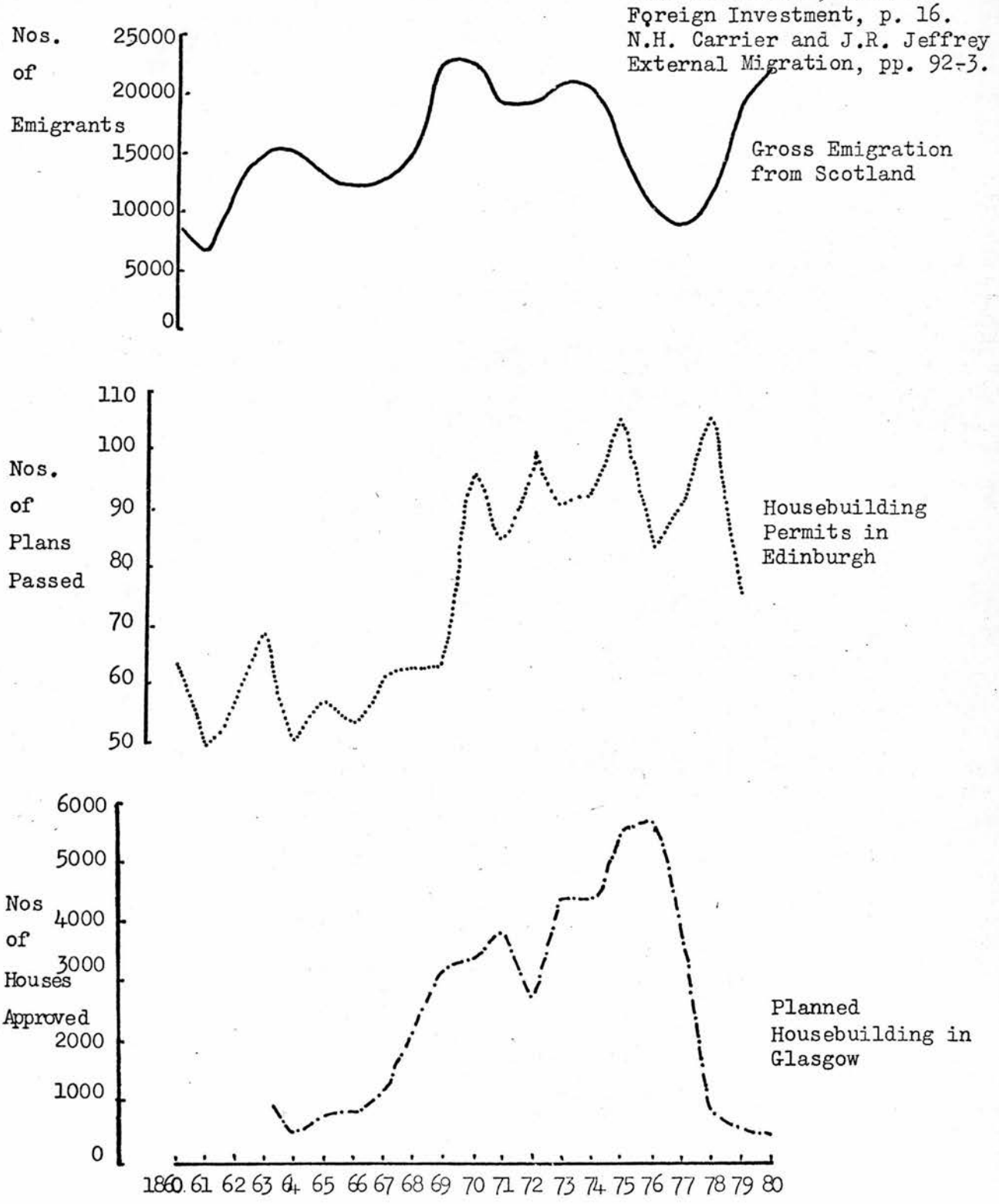


Fig. 1b.

Emigration and Housebuilding: Scotland and Two Principal Cities

1860 - 80

Sources: Dean of Guild Court, Edinburgh, 1860-80;
A.K. Cairncross, Home and Foreign Investment, p. 16.
N.H. Carrier and J.R. Jeffrey External Migration, pp. 92-3.



Having paid due homage to the emigration aspect of housebuilding the conclusion emerges that between 1860-90 an inverse relationship, the lynch-pin of the 'Atlantic Economy' is absent, and though evident from 1890 to 1914 is only operative on any scale between 1900-14. In conjunction therefore with the 1901-10 migration material in Table 11 the Scottish dimension of the interaction model only confirms the inter-relationship presented by Thomas[1] in the first decade of the twentieth century and even in this limited period domestic urban circumstances have been shown to be of critical importance. No avenue of agreement is available at a causal level with Thomas' view that,

> 'the upturn of emigration and foreign investment in Great Britain is accompanied after a short lag by a fall in the volume of building.'[2]

In the wider arena of such Scottish findings, flows of human capital must be borne in mind in any treatment of that joint pillar of alternation, flows of other types of capital.

III

Structural alterations to the demographic variable fulfil an essential role within the context of housing demand by exerting degrees of pressure on existing stocks and thereby initiating or constraining new housebuilding. Regardless of absolute changes to municipal populations factors such as the changing age structure, particularly that of the integral 20-44 grouping, and the age and frequency of marriage initiate influences of potential significance for the residential construction industry.

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1 B. Thomas, Migration and Economic Growth, op. cit., p. 108.
2 Ibid., p. 177.

Taking the view that longevity intensifies the pressure of demand for housing by increasing the number of household units then Table 13 dispels any plausibility that this may have as an explanatory element

Table 13

Proportional Age Distribution, Scotland, 1861-1911 (Proportion per 1000)

Ages	1861	1871	1881	1891	1901	1911
0-4	136	136	137	125	119	112
5-9	119	120	120	119	110	108
10-14	105	111	108	112	105	103
15-19	100	100	101	104	102	97
20-44	343	337	342	345	369	370
45-49	44	44	43	45	47	51
50+	151	152	148	150	148	159
Total	1000	1000	1000	1000	1000	1000

Source: Census of Scotland, 1951, Table 29, p. 43.

of housebuilding fluctuations. In addition to data drawn from the Registrar General's office[1] which provided Scottish substantiation for the McKeown and Record view of declining mortality as an important cause of population growth from 1861,[2] this census data confirms a further proposition, that no visible decline in mortality in the oldest group developed and the proportion of those Scottish inhabitants aged 50 or over is, if anything, marginally in decline until the early years of the twentieth century. Only then, when the rate jumped from 148/1000 to 159/1000, was there additionall housing demand from a group previously prone to earlier death and thus an earlier relinquishment of occupied property. Such a development, therefore, produced a counteracting influence on housebuilding to that of other demographic variables which were normally reducing the pressure on housing demand in the first twentieth century decade.

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1 Annual Reports of the Registrar General for Scotland, 1855-1914, quoted above in Table 5.
2 T. McKeown and R.G. Record, op. cit., fig. 2.

The age group of greatest significance for the demand for housing spans those years from the late 'teens until the mid-forties, covering thereby the majority of ages at marriage, household formation, female fertility and family additions. This group, shown to be of considerable importance in the British context[1] appears from Table 13 to be relevant, at a Scottish level, to the decade of the 1891-1901 intercensal period. Prior to 1891 constancy is the keynote in the 20-44 age group. The increase in the 1891-1901 period cannot be wholly undermined by the argument that declining birth rates from about 1880 increased the proportion of 20-44 year olds in the population. Firstly, it should, by the same token, increase the proportion of quinquennial age groups of 45 and older, which in fact in 1901 occurred in only 3 or 11 such age groups between 45 and 99. Secondly even if the entire reduction of the 0-4 proportion is a complete substitution with the 20-44 proportion, the reduction of that former group by 18 points[2] still produces the largest single decennial addition to the proportion of 20-44 year olds. Thirdly, in the ten to twenty years prior to 1901, that is, in the 1901 census, any spurious statistical increase in the 20-44 age group should be reflected in a reduced proportionate contribution in the 10-19 age group, as the product of a decline in the 1881 and 1901 censuses. Undoubtedly, therefore, while the partial explanation of a substantial rise in the 20-44 age element in the Scottish population of 1891-1901 involves a degree of overstatement due to the declining proportions of younger age groups there still remains a real addition to this household forming age group.

Qualifications to the increased 20-44 age group proportion of 1891-1901 expressed above, prove unfounded when the burghs comprising

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1 C.H. Feinstein, op. cit., p. 312 and Table 6.3.
2 Table 13, 1891-1901 difference in 0-4 proportion is 18/1000

the Scottish housebuilding index are investigated in detail. As Table 14 demonstrates, this increase is no statistical accident; it is a very real increase in the pressure of housing demand, as the addition of 190,025 people aged 20-44 between the censuses of 1891 and 1901 confirms.

Table 14

Age Group 20-44 in Scotland, 1861-1911

	All Scotland	Major Scottish Burghs	
	No. of 20-44 per 1000	Number of 20-44	No. per 1000
1861	343	426523	382
1871	337	506306	375
1881	342	576768	374
1891	345	633679	369
1901	369	823704	393
1911	370	860760	390

Sources: Censuses of Scotland, 1861-1911, 1951; Tables, 13, 15.

An interesting further point is that the pressure of demand from this the most significant of household forming age groups is consistently above that of the country as a whole. When it is considered that the burghs of Table 15 are incorporated in the overall Scottish figure, and account for from 40-46% of the Scottish population[1] then the regular 30/1000 excess of the urban group can be roughly translated to mean that in rural Scotland the proportion of 20-44 year olds was some 30/1000 less than the Scottish average, ranging from 310-340/1000. Thus in the urban areas of Scotland the age structure of the population was more heavily biassed to the household forming group which throughout provided the building industry with a higher volume of potential demand, but in the 1890s particularly the increase in this 20-44 age group

1 Censuses of Scotland 1871, 1911 show the proportions to be 40.2% and 46.4% respectively.

produced sufficient additional pressure of demand to enable house-building to proceed at an enlivened tempo for the duration of the decade, culminating in the peak of 1898.

The comparison of mounting demand, induced through the demographic medium of the 20-44 age group presented in Table 15, and burgh house-building indices is of value in assessing the extent to which the age composition of Scottish burghs contributed to or detracted from factors affecting housebuilding. Perhaps the most striking feature of Table 15 is the correspondence of those lower decades of house-building activity, the 1880s and 1900s with similar trends in the age composition data. Agreement was also reached over the trends of the last nineteenth century decade. That the 'growth of population in the economically significant age group'[1] was of importance in many burghs is evident in the considerable pendulum of percentage additions to this age grouping. In Perth percentage additions were successively 0.9%, 21.6% and 10.0% from the 1880s; over the same years Aberdeen and Edinburgh record 19%, 30%, 5% and 14%, 29% and -0.4% respectively. Indeed in two-thirds of Scottish burghs the decennial alternation of demand pressure from the active household forming groups can be traced from 1871, whilst if alternation is charted from 1881 almost four out of five Scottish burghs accords with the pattern.

That this coincides with the progressive prosperity of Scottish housebuilding in the 1890s is not surprising. Average additions of 30% to an important component of demand when the 10% of the eighties represented a more normal addition provided the sound basis from which builders formulated their plans. In the reverse direction the reduction to a 4.5% addition in this element of demand in the early

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1 C.H. Feinstein, op. cit.

Table 15

Intercensal Additions to the Age Group 20-44 in Scottish Burghs, 1861-1911

Burghs	1861-1871		1871-1881		1881-1891		1891-1901		1901-1911	
	Additional 20-44 year olds	% of age group	Additional 20-44 year olds	% of age group	Additional 20-44 year olds	% of age group	Additional 20-44 year olds	% of age group	Additional 20-44 year olds	% of age group
Aberdeen	4319	16.9	5880	19.7	6782	19.0	13017	30.6	2775	5.0
Airdrie							1490	22.4	738	9.1
Arbroath	471	7.8	441	6.8	460	6.6	379	5.1	-811	-10.4
Ayr	-546	-7.9	888	14.0	1215	16.8	2130	25.3	1677	15.9
Coatbridge							3238	29.4	2030	14.2
Dumbarton	996	29.7	794	18.3	863	16.8	1438	24.0	943	12.7
Dundee	9497	26.9	5999	13.4	4823	9.5	5292	9.5	1336	2.2
Dunfermline	363	8.3			1167	18.1	1850	24.3	1512	16.0
Edinburgh	9229	13.4	11114	14.3	12481	14.0	29134	28.7	-581	-0.4
Forfar	838	24.8	-119	-2.8	-296	-7.2	43	1.1	-83	-2.2
Galashiels					548	9.6	-1303	-20.8	871	17.6
Glasgow	29088	15.2	10384	5.5	28373	14.9	36485	16.7	3528	1.1
Govan			6198	46.1	2799	14.2	7397	32.9	4796	16.1
Greenock	6425	37.4	1586	6.7	-2685	-10.7	3362	14.9	3318	12.8
Hamilton	634	12.8	836	14.9	2369	36.8	3604	41.0	2186	17.6
Hawick	872	26.7	1588	38.3	1068	18.6	-471	-6.9	172	2.7
Inverness	590	10.3	-178	-2.8	316	5.2	1267	19.6	316	4.1
Irvine	-215	-7.9	612	24.4	-1204	-38.6	1411	73.7	236	7.1
Kilmarnock	4062	51.0	4547	59.3	2654	30.8	5154	52.1	307	2.4
Kirkcaldy					1333	17.1	3463	37.9	2195	17.4
Leith					2654	12.0	5154	20.8	307	1.0
Montrose	-275	-4.8	-250	-5.1	-712	-15.4	5	0.1	-238	-6.1
Musselburgh	-31	-0.9	147	4.5	397	11.7	425	11.2	1746	41.5
Paisley	-460	-2.8	3727	23.0	4325	21.7	5995	24.7	2285	7.6
Perth	-54	-0.6	1110	12.1	94	0.9	2240	21.6	1261	10.0
Port Glasgow	1118	41.3	1298	34.0	137	2.7	1093	20.8	384	6.0
Rutherglen	336	10.5	431	12.2	659	16.6	1508	32.6	3285	53.5
Stirling	-168	-3.3	644	13.1	378	6.8	923	15.7	1198	17.6
Total of Major Scottish Burghs	79783	18.7	61821	12.2	56911	9.9	190025	30.0	37056	4.5

Sources: Censuses of Scotland, 1861-1911.

twentieth century presented a less than hospitable environment for housebuilders.

In not every case did an increase in the numbers of the 20-44 age group correspond to enhanced building activity. In Musselburgh housebuilding rapidly diminished following the peak of 1905, yet this stratum of housing demand expanded at unprecedented levels, approaching a four-fold rate of increase compared to any previous period. Both Hawick and Galashiels saw demographic growth of this kind in the early twentieth century when housebuilding certainly did not expand apace: for example apart from the buoyant period of 1903-6 in Hawick the index varied for the remainder of the decade around the average of 59.5. For builders in the Fife burgh of Kirkcaldy the virtually identical percentage accretions to the 20-44 age group in the 1880s and the early twentieth century produced radically different responses. Housebuilding languished around the 40-50 mark, whilst in the 1900-10 period it held up remarkably well, the indices for 1908-10 being 79, 85 and 97, although over the next four years it fell away dramatically. Exactly reproducing the rate of addition of 20-44 year olds, 9.5%, in the last two nineteenth century decades. Dundee like Kirkcaldy also experienced widely diverging building patterns; after the ddrums of the early and mid-1880s a mild boom transpired between 1887-9, but in the 1900-10 period the index held up moderately well, achieving an Edwardian peak in 1905, albeit a poor reflection of the 1898 version. Another variation on the relationship between housebuilding and the age composition of burghs occurred in Glasgow and Dundee in the 1870s boom. A reduction of about 10% in the pressure of demand from the 'economically significant age group' far from being repeated in the housebuilding industry saw the supply of new housing advance at levels never again superceded before 1914, the indices for both burghs

exceeding 200 by a considerable margin. Relatively steady additions from the relevant age group in Paisley (1871-1901) and Edinburgh (1861-91) occurred alongside a fluctuating level of housebuilding and nowhere in this conclusion more appropriate than in Glasgow (1861-71, 1881-1901) where the housebuilding index ranged from 20 to over 200.

However, while there is evidence of some divergence in the relationship between the housebuilding and age composition variables the prevailing concurrence of a large number of burghs - in which Govan, Port Glasgow and Kilmarnock are prominent - strengthening noticeably from 1881, produced a cohesion in this demographic variable which was absent in others. Thus the variations in the age composition of burghs provided an underscoring of demand pressure for housing. In the event housing construction, over-riding the age composition influence, frequently diverged from the path suggested by it. On such occasions stronger determinants of housebuilding fluctuations transcended and reversed the underlying influence of this 20-44 aged stratum, indicating thereby its contributory and far from overwhelming role.

A postscript to the theme of housing demand created by the 20-44 age group can be related to Thomas' view of emigration and its causal connection with housebuilding. Two points are of relevance. Using, firstly, Thomas' own statistics[1] it is evident that whereas the 15-39 age group accounts for at its maximum 86.3% of British immigrants to the United States in 1893, the wider age group of 14-44 shows a diminished contribution in the twentieth century, standing at 77-80%.[2] Thus the numbers of that age group forming the backbone of housing

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1 B. Thomas, Migration and Economic Growth, op. cit., p. 58, Table 9.
2 Ibid.

demand was forming a lesser proportion of emigrants than in the 1890s, and thus provided a demographic force which diminished domestic housing pressure in the last decade of the nineteenth century and increased it in the 1900-14 period. The second point of interest concerns the occupational and class structure of Scottish emigrants, for increasingly these were of skilled and professional types.[1] As such they formed wealthier groups in society and were less subject to the influences of the trade cycle. Their housing demand consequently proved a more reliable and stable element in builders' activities relative to the more volatile construction on a speculative basis of working class dwellings[2] and as such the efflux of rather more artisan and middle class groups provided a moderating influence on the instability of housebuilding. This trend served to lessen the trade cycle - building cycle affinity in the latter part of the century, and consequently diminishes the argument for a common pool of resources operative in the 'Atlantic Economy'.[3] Thomas is also aware of this development[4] in the structural change of the occupations and classes of emigrants and, in conjunction with the previously mentioned aspect, further modification to the role of emigration in relation to housing demand, and thus housebuilding, is required.

It has not been possible to examine the quinquennial growth of the 20-44 age group, and thus only in broad terms has agreement been forthcoming with the conclusion that for this household forming group,

> 'These two periods (1891-5, 1901-5) thus provide an effective demographic basis for the rise and fall of the building boom of the late nineties'.[5]

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1 N.H. Carrier and J.R. Jeffery, External Migration, (H.M.S.O. 1953), p. 61, Diagram N.

2 Edinburgh, D.G.C. Registers, 1880-1914.

3 H.J. Habakkuk, op. cit., p. 205.

4 B. Thomas, op. cit., p. 271, Table 83.

5 C.H. Feinstein, op. cit., brackets mine.

However consideration of the number of marriages in Scottish burghs on a five-yearly basis in that it charts much the same concept, household formation, enables further more precise conclusions to emerge. The evidence of some thirty Scottish burghs (Table 16) permits an endorsement of Feinstein's view, and indeed additional information drawn from the 1871-75 and 1896-1900 periods facilitates a refinement of the mechanism by which marriages influenced housebuilding fluctuations.

Table 16

Changes in the Number of Marriages in the Major Scottish Burghs

Quinquennial Periods	Additional Number of Marriages	Percentage Increase on previous quinquennium
1861/5 -1866/70	3809	7.0
1866/70-1871/5	8781	15.0
1871/5 -1876/80	-2139	-3.2
1876/80-1881/5	5110	7.8
1881/5 -1886/90	696	1.0
1886/90-1891/5	8132	11.4
1891/5 -1896/1900	18081	22.8
1896/1900-1901/5	-314	-0.3
1901/5 -1906/10	233	0.2

Source: Annual Reports of the Registrar General for Scotland, 1855-1914.

The role of the number of marriages is a slightly different phenomenon to that of the growth of the 20-44 age group. Apart from the obvious distinction of actual,[1] as opposed to potential, household formation the number and percentage addition of marriages in the 1870s is in stark contrast to the static proportion of 20-44 year olds in the population. Even in the 1890s a 30% addition to the number of 20-44 year olds was surpassed by a 37% increase in the number of marriages, and so in these periods of prosperous building conditions demand was not simply the outcome of alterations in the age composition of burghs. Intensified housing demand resulted from a conscious, often income-related decision to marry at specific points in time; or, as in

1 R.C.O. Mathhews, The Trade Cycle, (Cambridge, 1959), p. 105.

the late 1870s and late 1880s, to postpone marriage was to diminish the pressure of demand for accommodation. Hence in Dundee for example, a 40% increase in jute imports in 1883[1] which guaranteed employment opportunities for some months into 1884 provided a climate sufficiently favourable for a larger number of wedding ceremonies to be performed in 1883 than in any year since registration commenced, including the trade cycle peak year of 1873.[2] This increase which from April 1883 until April 1884, was consistently above the monthly number of marriages in the equivalent months of the previous year[3] and which continued throughout 1884 at levels close to the 1873-6 plateau[4] produced an upsurge in housebuilding from an index value of 54 in 1883 to 94 in 1884,[5] though the transitory nature of the boom became apparent during 1884, and jute importations, down 45% on 1883 and equivalent to the trough years of 1878-80,[6] dashed the hopes of many brides and builders together. Marriages fell successively in Dundee from 1325 in 1883 to 947 in 1886,[7] and along with this decline, housebuilding from its buoyant level of 194 in 1884 fell to 56 in 1885, moderating slightly with some trade improvement in 1886 to 67.[8]

The trends apparent in Table 16 are in fact individually reflected in most burghs. Table 17 emphasises the parallels where in the 1871-5 period but for the less urban burghs of Montrose, Perth and Stirling, the remainder of Scottish municipalities registered increased, often considerably increased, numbers of marriages. Thus in the burghs of Dundee, Glasgow, Govan and Partick which collectively produced the

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1 Dundee Yearbook, 1883.
2 Annual Reports of the Registrar General for Scotland, 1855-83.
3 Dundee Yearbooks, 1869-1886.
4 Ibid.
5 Dundee, Register of Plans Approved, vols. 3-5, May 1879 - Aug. 1893.
6 Dundee Yearbooks, op. cit.
7 Annual Reports of Registrar General, op. cit.
8 Dundee, Register of Plans Approved, 1883-6.

Table 17

The Number of Marriages in Scottish Burghs, quinquennially, 1861-1910

	1861-5	1866-70	1871-5	1876-80	1881-5	1886-90	1891-5	1896-1900	1901-5	1906-10
Aberdeen	3117	3419	3524	3939	4239	4554	6597	6782	7139	6810
Airdrie	580	655	738	631	690	929	1132	1260	1331	1250
Arbroath	730	699	776	711	784	763	737	998	763	750
Ayr	668	724	817	722	868	822	1045	1160	1222	1277
Coatbridge	656	655	844	738	937	1059	1123	1355	1312	1345
Dumbarton	299	349	391	389	523	550	558	619	583	628
Dumfries	551	467	534	655	630	634	694	744	718	722
Dundee	4609	5010	5906	5271	5810	5521	6091	6617	6557	6526
Dunfermline	700	725	864	793	1021	1016	1122	1212	1309	1164
Edinburgh	8287	8868	9448	10135	10029	10898	11772	14401	14862	14623
Falkirk	349	291	366	469	440	475	994	1184	1301	1288
Forfar	415	464	532	444	514	441	477	541	469	482
Galashiels	143	198	247	281	285	373	495	509	479	486
Glasgow	18887	20895	24609	22798	24487	24346	27469	35762	35716	35403
Govan	733	922	1627	1598	1943	1768	1975	2494	2390	2806
Greenock	2319	2264	2805	2502	2535	2417	2331	2638	2562	2545
Hamilton	522	594	736	760	990	1076	1216	1548	1234	1384
Hawick	547	288	369	345	398	424	405	443	493	656
Inverness	626	586	599	763	783	801	1003	1211	1130	1071
Irvine	328	347	392	340	327	376	343	424	373	386
Kilmarnock	967	993	1149	919	1003	1054	1141	1428	1433	1376
Kirkcaldy	425	488	560	512	624	579	686	877	1300	1451
Leith	1691	2044	2310	2389	2464	2581	2740	3021	2667	2741
Montrose	543	566	538	476	431	381	398	456	402	420
Musselburgh	367	345	343	356	376	358	351	475	507	649
Paisley	2245	2089	2344	2224	2686	2581	2623	3270	3034	3104
Partick	708	922	1205	1357	1651	1352	1769	2267	1934	1930
Perth	1101	1102	1074	1150	1163	1129	1249	1458	1462	1442
Port Glasgow	490	474	511	413	565	497	492	638	693	686
Rutherglen	439	485	577	568	587	568	579	691	787	959
Stirling	739	662	636	584	561	615	663	708	775	810
TOTAL	54,781	58,590	67,371	65,232	70,342	71,038	79,170	97,251	96,937	97,170

Source: Annual Reports of the Registrar General for Scotland, 1855-1914.

Scottish index peak of 247 in 1876, quinquennial additions to the number of marriages compared to the late 1860s period were running at 17.9%, 17.8%, 76.4% and 30.7% respectively, thereby registering a substantial platform of demand for housing growing at an average rate of 3.6% per annum in Dundee and Glasgow, 6.1% p.a. in Partick and 15.3% p .a. in Govan. If this magnitude and unanimity achieved in the 1871-5 years contributed to demand pressure and advanced the building boom of these years then there was an encore in the 1890s. Marriages in 1891-5 increased in absolute terms by the same amount as 1871-5 and, although as a proportion this implied a slight decline given the overall population increase of two censuses, an 11.4% addition nevertheless represented the largest quinquennial increase since the early seventies. Thirty-five burghs recorded increased numbers of marriages in the first half of the decade and of the remainder the percentage reduction was small, usually only 3-4% of the previous quinquennium. Such dissension was quashed in the second half of the decade when all burghs experienced a larger number of wedding ceremonies than the levels achieved during 1891-5 and for Aberdeen, Edinburgh and Glasgow, demand pressure was swelled by 5-6% p.a. as newly-weds sought accommodation.

In the ten years before the housebuilding peaks of 1876 and 1898 therefore, marriages increased quite substantially; for the 1866-70 and 1871-5 years together 22% more marriages took place compared to preceding periods and in the 1891-5 and 1896-1900 quinquennium 34.2% more marriages were recorded. Consequently an average decennial build up of 2-3% p.a. in marriages cannot be completely ignored as an element contributing to housebuilding fluctuations. This is all the more relevant when in the intervening quinquennium the number of marriages initially declines by -3.2% and then registers small increases in the 1880s. The more substantial of the 1880s marriage increases, 7.8% during 1881-5, is in fact an increase

of some 5000 marriages but because of the decline in the previous decade this takes on greater significance and if related to the 1871-5 level of marriages represents only a 4.4% addition.

The number of marriages in the 1900s was virtually constant and thus from 1896 this contribution to housebuilding justified the Feinstein conclusion[1] as the 1891-1900 years, providing an undercurrent of housing demand, were followed by no further expansion in the twentieth century. Tantamount to a considerable decline this factor continued to exert some influence - a negative influence - over the house construction sector. A previously blossoming sector of demand therefore stabilised and in a great majority of burghs, including Kilmarnock, Aberdeen, Airdrie, Glasgow, Edinburgh, Dundee, Paisley, Perth and many others, no new additional demand was forthcoming from this source.

An important differential impact attributable to additional marriages can be traced on housing and housebuilding respectively. In almost every case household formation resulted in an extra demand for housing. That is, more accommodation was called for. Whether more housebuilding was also required depended on a number of non-demographic factors, not the least of which was the elasticity of existing housing. Inelasticity reflected in high occupancy per house and few vacant properties was most conducive to housebuilding. The role of building costs, the supply of capital and other factors were also of relevance. What Table 17 does demonstrate is that housing demand originating from higher marriage rates was a contributory, though neither a necessary nor sufficient, determinant of housebuilding.

That demand for married quarters was one of many influences on housebuilding can be seen from the case of Dundee where marriages were in the late 1890s only 20% above the 1886-90 quinquennium compared to almost

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1 C.H. Feinstein, op. cit.

a 50% excess in Aberdeen and Glasgow and 32% in Edinburgh, and yet the Dundonian housebuilding boom was far from retarded, the index reaching 198 in 1898 and thus exceeding the Glaswegian building boom. A substantial 41% increased marriage rate in Ayr in the 1890s was insufficient to overwhelm other forces which restricted the housebuilding boom to the moderate proportions of a peak value of 109. For the Renfrewshire cotton town of Paisley the building peak of 1897 came after marriages had increased only in 1896-7, the previous years five years of 1890-4 showing a lull in the number of marriages.[1] Only in rare cases, too, does an Edwardian building peak correspond to increased marriages in the 1901-5 years, although it is interesting to note that in Rutherglen and Stirling, rather atypically, with marriages rising during 1906-10 housebuilding held up rather well, to the extent that in 1911 it was twice the national index value.

With regard to marriages the conclusion emerges that it was a contributory, reinforcing element in housebuilding fluctuations. The basic determinants of housebuilding variations such as local, economic prosperity conditioned marriage prospects too, and thus housebuilding trends once underway in Scottish burghs were stoked or dampened by changes in housing demand from this quarter. Some further Scottish evidence is therefore adduced to the internally generated source of housebuilding fluctuations,[2] although it is unlikely that cyclical turning points could be explained in these terms.

IV

Any piece of analysis in economic history must focus on the dual criteria of timing and magnitude in an assessment of causality. The perspective on demographic contributions to housebuilding fluctuations must equally subscribe to such yardsticks. The perspective on components of

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1 Annual Reports of the Registrar General, Paisley, 1855-1914.
2 H.J. Habakkuk, op. cit.

housing demand is given in Table 18, whereby in urban Scotland only certain demographic influences were operative, either in timing or magnitude, on the building cycle. Both the net migration variable and that of the 20-44 age group declined throughout the 1860s, 1870s and 1880s and only in the nineties for the 20-44 group and in the early twentieth century in both cases did alterations in these aspects achieve quantitative significance such as to merit sufficient weight to influence housebuilding.

An addition of 36.4% to natural increases in 1876-80 compared to the previous quinquennium and of 15.4% and 26.2% in 1896-1900 and the subsequent five year period represent the two important features of natural increases. Thus plateaus in the level of natural increase were linked by such gains which followed rather than preceded housebuilding booms. In this respect this demographic aspect is unimportant in explaining either housebuilding turning points or the magnitude of the boom.

In the case of an increased number of marriages however some additional fuel to the builders' fire was forthcoming. For both the 1871-5 and 1891-5 quinquennium this applied. Such demand pressure may firstly explain both turning points in the cycle and the proportions of the boom, though this is more certain in the case of the nineties peak, when the rate of growth of marriages doubled over that of even 1891-5.

To a certain extent the adual increase in burgh populations probably best approximates the demographic contribution to housebuilding fluctuations. Thus more marked in the boom and trough of the seventies and eighties alterations in the level of actual increases in the succeeding two decades became more violent as all the various demographic influences moved more emphatically together. Previously net migration movements and changes in the 20-44 age group had undermined the impact of demographic variables on the demand for houses. From the early 1890s therefore population factors become a more effective explanatory force.

Table 18

Changes in the Levels and Percentage of Demographic Influences on Housebuilding in the Major Scottish Burghs, 1861-1911

	1861-70		1871-80		1881-90		1891-1900		1901-10	
	1861-6	1866-70	1871-5	1876-80	1881-5	1886-90	1891-5	1896-1900	1901-5	1906-10
Actual Increase	269867		288098		240241		357247		167600	
	+24.1		+21.0		+15.0		+19.3		+7.3	
Natural Increase	67660	76724	79845	108872	111512	109550	111003	128079	161661	136332
		+13.4	+4.1	+36.4	+2.4	-1.8	+1.3	+15.4	+26.2	-15.7
Net Migration	99618		51322		-27159		54822		-148361	
(as % of 20-44 age group)	+23.3		+10.1		-4.8		+7.1		-17.2	
Marriages	54781	58590	67371	65232	70342	71038	79170	97251	96937	97170
		+7.0	+15.0	-3.2	+7.8	+1.0	+11.4	+22.8	-0.3	+0.2
20-44 Age Group	79783		61821		56911		190025		37056	
	+18.7		+12.2		+9.9		+30.0		+4.5	

Sources: Censuses of Scotland 1861-1911; Annual Reports of Registrar General; Tables 2, 6, 9, 15, 17 above.

While from Table 18 this appears relevant generally it is also applicable at a burgh level. Thus 100% of the burghs register increased marriages during 1896-1900, a unison not previously enjoyed. Only four townships diverged from the marked migratory losses of the 1900s whereas previously eight burghs had been the lowest number in disagreement with the overall trend. A stronger concensus than ever before was achieved in the 1890s in the growth of the 20-44 age group, two-thirds of Scottish burghs witnessing at least a 20% addition to housing demand from this source.

Demographic contributions to demand were not always as co-ordinated as in the 1890s and 1900s and invariably there were housebuilding and population trends moving inversely in certain burghs. However it is possible to concur with Feinstein that in a Scottish context too 'it was the large scale population changes which created the ebb and flow in basic demand'.[1] But within such an apparently straightforward statement certain subtle inflexions must be remembered. Firstly, it is 'large scale population changes' which are relevant, and in the case of Scottish burghs this is mainly applicable to the last nineteenth century decade and the first twentieth century one, as the percentage increases of Table 18 demonstrate. Secondly the population changes provide 'basic demand' thereby implying a background condition of helpful proportions but not of crucial significance. Finally, Feinstein in referring to such population changes as themselves 'the product of other factors, some economic, some social' provides a critical clue as to his convections on the line of causation in housebuilding fluctuations. As in his 'basic demand' approach population changes were thus seen as an underlying, a secondary rather than a primary factor, and thus the

1 Ibid.

Scottish demographic data corresponds to this view and that of Habakkuk,[1] insofar as domestic investment and especially housebuilding investment was subject to locally determined fluctuations which were also of considerable relevance in influencing changes in population, encouraging marriages and urban immigration for example. Foreign investment, emigration and dismal housebuilding prospects were the product of locally unattractive opportunities and were thus not mechanistically involved in a systematic way with America or indeed other parts of the world, and thus such flows, human and capital, from Scotland's major urban centres were pragmatic solutions to temporarily depressed local conditions. It was therefore the prosperity and housebuilding of Dalmarnock or Oldham which determined that of the Dakotas or Oklahoma.[2]

V

Whether in north-east England,[3] South Wales[4] or in the cotton towns of Lancashire[5] much importance has been attached to the role of indigenous industrial prosperity in the causation of housebuilding fluctuations. Most noticeably the cotton and coal export booms of several years duration prior to the commencement of hostilities in 1914[6] and the exploitation of the Cleveland ore resources advanced local employment opportunities considerably which both brightened builders' expectations and consumers' effective demand. Regional

1 H.J. Habakkuk, op. cit.
2 A.K. Cairncross, op. cit., p. 6; and E.H. Phelps Brown, reviewing Thomas, Migration and Economic Growth, Economic Journal, 64, p. 256.
3 A.G. Kenwood, 'Residential Building Activity in North Eastern England, 1853-1913', Manchester School, 31, 1963, pp. 115-28.
4 J.H. Richards and J.P. Lewis, 'Housebuilding in the South Wales Coalfield, 1851-1913', Manchester School, 24, 1956, pp. 289-301.
5 S.B. Saul, 'Housebuilding in England, 1890-1914', Economic History Review, 15, 1962, pp. 119-37.
6 Ibid., p. 120.

deviations assumed distinctive characteristics in the Yorkshire woollen towns of Bradford, Keighley and Halifax,[1] and London too pursued a unique housebuilding path.[2]

Two emphatic arguments further underline the fundamental importance of local income and employment prospects as a critical demand factor in housebuilding fluctuations. The first concerns the colliery prosperity in Monmouthshire which not only stemmed the tide of Welsh emigrants but also contributed to the housebuilding upswing of 1900-10. Miners' incomes and colliery profits combined to stimulate speculative and company housebuilding.[3]

The second pillar of the income argument as a demand explanation of variations in housebuilding activity is founded on intra-regional divergencies, where in Yorkshire, for example, concentration upon the woollen or worsted sectors in certain boroughs produced distinctive patterns of trade prosperity and housebuilding activity.[4] The susceptibility of the domestic building industry to the local industrial climate is nowhere better demonstrated than in the north-eastern boroughs of Tyneside and Teeside.[5] For housebuilders in the Tyneside townships of Newcastle, South Shields and Wallsend fortunes fluctuated with the prosperity of the coal trade and migrants flocked to this conurbation in response to buoyant mining and coal-shipping conditions. These boroughs recorded their maximum immigration in the 1880s and Newcastle housebuilders responded to these combined demand influences, increasing their 1884-8 plans by 55% over the levels of 1874-8.[6] Middlesborough

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1 S.B. Saul, op. cit.
2 B. Weber, 'A New Index of Residential Construction and long Cycles in House-Building in Great Britain 1838-1950'. Scottish Journal of Political Economy, 2, 1955, pp. 104-32.
3 B. Thomas, 'Wales and the Atlantic Economy' Scottish Journal of Political Economy, 6, 1959, pp. 169-92.
4 S.B. Saul, op. cit.
5 A.G. Kenwood, op. cit.
6 Ibid., p. 120, footnote 2.

builders, by contrast reduced their planned housebuilding by 70%[1], a reciprocal experience to their Tyneside counterparts. Tyneside countercyclical to and Teeside in conformity with the national pattern demonstrate the awareness and responsiveness of housebuilders to the circumstances of local trade prosperity.

A more structured view of housebuilding in relation to an industrial setting is presented by Lewis in a penetrating view of building cycles.[2] Simplified to two industries, building and coal, Lewis effectively demonstrates the inter-relationships of demand and supply influences on both sectors. Market conditions for coal, particularly its selling price, affects the wages colliery managers can afford to pay employees. Given two industries only and interchangeability of skills, miners' wage levels dictate the volume of employment in coal-mining, assuming no bid by builders to induce more building workers to come forward. With wages determining employment this results in a volume of production which may or may not meet demand, and through alterations to the price of coal the mechanisms are again triggered. Building meanwhile has been influenced through the wage and employment levels; that is, by way of aggregate income. Housing demand is primarily conditioned by the supply price, rent, movements of which given some degree of income elasticity create variations in housing demand. Alterations in incomes result from changes in wage rates, these being determined by the relative strength of competition between the sectors for labour supply. Thus housing demand is conditioned by factors affecting the level and price of employment in the coal industry. Not only do employment conditions in the non-building sector affect housing demand, they also influence supply. By competing

1 Ibid.
2 J.P. Lewis, 'Building Cycles: A Regional Model and its National Setting', Economic Journal, 70, 1960, pp. 519-33.

for labour the wage rate may be driven up thereby contributing to building costs and thus pushing rents upwards as builders attempt to recoup costs. In this way rising rents can be reconciled with the apparently paradoxical rising volume of empty property, such as existed during the 1873-7 and 1901-4 years.[1] Also, by restricting the supply of labour to housebuilding the quantity of new houses constructed is depressed beyond desired levels. With demand in excess of supply this not only produces a short term rise in rents but in so doing induces expansion in the building industry, thereby creating through the prospects of long term profits a considerable building boom, and ultimately a sudden downturn, as the tide of profitability turns.[2]

The formal statement of the industry - housebuilding relationship elucidated by Lewis provided the analytical framework for the revisionist, anti-Atlantic Economy School of regional case-workers.[3] Embellishments ensued as a matter of course, to one of which, the dual economy of the north-east, reference has already been made.[4] Another such is the present study where alterations to the level of aggregate income at the burgh level suggests a re-entitlement of Lewis' work, 'a burgh model and its regional setting' would validate his conclusions on the industry-building relationship.

On the grounds of temperance many groups and individuals in Scotland appreciated that the expenditure on drink minimised the rent

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1 A.K. Cairncross, 'The Glasgow Building Industry', Review of Economic Studies, 2, 1934, p. 16, Tables II and IV.
2 J.P. Lewis, op. cit.
3 The umbrella term is employed to denote the work of Kenwood, Saul, Habakkuk, Hall and others.
4 A.G. Kenwood, op. cit.

component in the family budget[1] and on the grounds of morality others criticised the outcome - overcrowding and the absence of amenities such as a water supply and sanitation.[2]

Whatever the intention it was realised that demand for accommodation was quite elastic[3] and that not only did higher wages allow better and more generous housing, but also low or irregular earnings reduced the rental element of family income, a form of filtering down so that rent could be paid no matter the employment prospects of the breadwinner.[4] Because of low wages only the very poorest form of housing could be afforded, to which builders responded by erecting property as cheaply as possible, the return on such an investment being already small.[5] In a contemporary analysis of the problem of the 'struggling poor' the writer clearly presented the builders' attitude,

> 'Private builders leave them severely alone. Owing to their dirty and destructive habits, the heavy expense of closely detailed management and supervision combined with their inability or unwillingness to pay adequate rents, the financial results are far too precarious to suit the ordinary builder.'[6]

The 'ordinary builder' concentrated on the more stable elements of housing demand, as did the artisans' companies, a point which the manager of the Edinburgh Co-operative Building Company was quick to impress on the Commissioners when they enquired whether the Company built for the 'very poor', and which was answered by 'No, we build none for them.'[7] Accommodation for the poorest group in Scottish society was therefore by default provided by speculative builders, whose activities only assumed sizeable proportions once trade conditions

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1 Royal Commission on the Housing of the Working Classes, 1884-5, Evidence of Collins, Russell and Morrison, q. 19406.
2 Sir Halliday Croom, Annual General Meeting of the National Vigilance Association (Eastern Section) (Edinburgh, Nov. 1913), reported in the Glasgow Herald, 21st November 1913.
3 Royal Commission on Housing of the Working Classes, 1884-5, Evidence of Gentle, q. 20743.
4 Report of the Scottish Land Enquiry Committee (London, 1914), p.378.
5 J. Mann, 'Better Houses for the Poor - Will They Pay?', Proc. of the Royal Philosophical Society of Glasgow, 30, 1898 -9, p. 84.
6 Ibid.
7 Royal Commission on the Housing of the Working Classes, 1884-5, Evidence of Colville, q. 19072.

and industrial prosperity were underway and higher rents could be obtained from working class housing.[1] Consequently the cumulative expansion of the building booms of the 1870s and 1890s were only possible when trade was brisk and eventually when the housing market became 'overstocked' reverse gear was engaged and a cumulative and often lengthy contraction followed.[2]

Industrial expansion and speculative housebuilders combined effectively to superimpose upon the more placid house construction of 'ordinary builders' a violent upswing in housebuilding as mass demand was satiated. This is exemplified below in Table 19 where the approved plans of Edinburgh and Glasgow builders during 1895-1905 pursue a more stable level at the more expensive end of the market. At the lower

Table 19

Approved Housebuilding Plans, Edinburgh and Glasgow

Year	Edinburgh		Glasgow	
	1st Class Houses (Villas & Self-contained)	Tenements	1 and 2 Room Houses	4 + Rooms
1895			2457	548
96			2256	338
97			3566	332
98	276	189	4222	540
99	226	159	2685	453
1900	131	82	1726	416
1	171	56	1501	391
2	283	70	3031	791
3	149	96	2882	752
4	283	70	1994	374
5	315	62	1395	321

Sources: Reports of the work of the Burgh Engineer's Department, 1894, 1899, 1902, 1905; Glasgow, Office of Public Works, Memorandum of Linings.

end the termination of a trade boom coupled with an overstocked market

1 E. Gauldie, Cruel Habitations, A History of Working Class Housing, 1780-1914, (London, 1974), p. 161.
2 Royal Commission, op. cit., Colville, q. 19138.

resulted in a severe contraction, often exacerbated by the continuation of building past the peak and a slow rate of housing obsolescence.

Thus the fortunes of local industry were of considerable importance in explaining the translation of potential into effective demand for housing and this is most conveniently demonstrated by towns dominated by single industries. These most closely resemble Lewis' industry-building model, whereas in larger cities the tendency for counteracting industrial experiences to cloud the movements in wages in relation to housebuilding nonetheless highlights the importance of general explanations, such as the cost of capital or its availability.

VI

A classic one industry town situation existed in the border woollen towns of Hawick and Galashiels. For the Roxburgh county town, concentrating on knitting and hosiery yarn and woollen knitwear[1] housebuilding marched in step with the prosperity of local industry. The introduction of a railway connection to Galashiels and Hawick in 1847 and the Carlisle extension of 1862 combined with the application of steam power in the 1850s overcame the threatening Yorkshire challenge of the 1840s and allowed the border woollen industyr to proceed successfully during the mid-Victorian boom.[2] Only a minor recession transpired between 1873-9[3] despite the gloom of the national economic climate, and this illustrated border dependence on foreign markets. Thus the 1880s proved to be a highly successful decade in the border woollen towns, as in demonstrated by Wm. Watson and Son, the Hawick woollen manufacturers.[4] From a low point in 1879, their recovery during 1880-3 took on boom proportions subsequently especially during

1 C. Gulvin, 'The Scottish Wollen Industry, 1602-1914', Edinburgh University, Ph.D. Thesis, 1969.
2 W.P.H. Sinclair, 'The Economic Background of the Tweed Valley Woollen Industry', Scottish Woollen Textile College Yearbook, 1950, p. 32.
3 Ibid.
4 I am grateful to Dr. C. Gulvin for providing certain details on the border woollen industry, particularly statistics of Watson's woollen output.

1887-91 (Table 20), a period when housebuilding in that burgh was also in a particularly expansive phase. In that the housebuilding of 1900-09 averages 100, the perspective on the performance of Hawick housebuilding shows 1885-90 as very active years.[1]

A watershed was clearly reached in 1890. Although orders already placed sustained the Hawick firm in 1891, a 45% reduction in output occurred in the following 4 years. The growth of profits and incomes between 1880-90 as a result of the successful Scottish woollen penetration of the American market and which contributed significantly to unprecedented levels of housebuilding in the second half of the decade was rudely interrupted by the imposition of a 49.5% duty, the McKinley tariff, on American importations of Scottish woollens. A partial reversal of this policy of encouragement to domestic American producers in 1894 provided a slight stimulus for woollen and housebuilding recovery alike during 1896-7, but the Dingley tariff, at a rate of 57%, confirmed the crisis of the 1890s for border woollen producers, and for builders.[2]

Housebuilding in Hawick was therefore closely allied to industrial prosperity. The severe impact of the 1890 tariff can also be traced in Galashiels,

> '.... in the years of development from 1870-90 there were quite large building firms operating particularly in Galashiels, but with the almost complete stagnation of the period 1890-1918 there was a wholesale departure of building operatives, and these trades were never again built up to the old level'.[3]

Indeed the prosperity of the tweedmakers of Galashiels extended from 1856-90[4] during which time the 1870-90 period appears to have been most

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1 Hawick, Dean of Guild Court, Registers, 1885-1914, N.R.A. 3/1/1.
2 W.P.H. Sinclair, op. cit.
3 Third Statistical Account of Scotland, County of Selkirk, p. 246.
4 Ibid.

Table 20

Woollen Production and Housebuilding in Hawick, 1876-1902

	Weight of Woollens Produced by Wm. Watson and Son (lbs.)	Housebuilding Index (1900-09 av = 100)
1876	335098	
77	297137	
78	269524	
79	225829	
1880	250809	
81	258351	
82	241226	
83	305617	
84	306547	
85	340811	244
86	325867	256
87	382061	346
88	379000	346
89	397287	256
1890	374949	231
91	418396	141
92	344230	141
93	305930	128
94	254965	103
95	239441	not available
96	274763	not available
97	275503	154
98	256621	256
99	308858	51
1900	251734	64
01	236756	39
02	203438	77

Sources: Hawick, D.G.C., Registers, 1885-1914 and the Private Memorandum Book of Wm. Watson.

successful and when most of the jerry-built, speculatively financed, working class housing was constructed,

> 'The houses erected during the boom period 1870-90 particularly in the Galapark and Fifth Ward Areas though solidly built and still of tidy appearance were deficient in accommodation and without modern conveniences'.[1]

Thus the housebuilding boom in Galashiels was largely determined by the rapid upsurge in operatives' housing only feasible with the continuous employment and high wages consistent with trade prosperity. The depression of 1890-1909 abruptly halted housebuilding and the closure of seven mills resulted in considerable unemployment and emigration,[2] a reduction of population by 3600,[3] and a number of empty properties sufficient to discourage housebuilding for years to come. Only the Forest Gardens estate, built under the subsidy arrangments of the inter-war years,[4] and some installation of W.C.s to remedy the deficient standards tolerated during the 1880s boom provided employment for building workers.[5]

The 1890s crisis in woollens emphasised 'the precariousness of international trade'[6] but the responses of Galashiels and Hawick housebuilders during depression demonstrates not only the closeness of the industry-building link, but a more fundamental aspect of textile history.[7] Finished woollen goods failed to recover to the extent of semi-manufactured yarn products and thus the rejuvenation of

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1 Ibid.
2 Ibid.
3 Censuses of Scotland, 1891, 1911.
4 Third Statistical Account, County of Selkirk, p. 315.
5 Galashiels, D.G.C., Registers, 1893-1914, N.R.A., 1/4/2-3.
6 R. Hall, History of Galashiels, (Galashiels, 1898), p. 162.
7 R.E. Tyson, 'The Cotton Industry', Ch. 4 in D.H. Aldcroft, The Development of British Industry and Foreign Competition, 1875-1914 (London, 1968), p. 102 makes the same point for cotton producers. (On the whole, weaving was more profitable during the boom years but did worse in periods of depression as competition was fiercer than in spinning'.

an export sector, this time in Europe, produced a differential impact on the housebuilding of these two border burghs.[1] In Galashiels a fairly flat trend developed between 1894-1914, whilst in the case of Hawick over the same period marketing and product differentiation efforts[2] produced a sufficient improvement in incomes to allow a cyclical pattern not dissimilar to the national picture to emerge.[3]

Industrial output and housebuilding possessed a close relationship in the border context, 1870-1914. The dominance of one industry and the geographical independence of the borders facilitates the study of the mechanism by which aggregate income variations affected housebuilding levels. Another simplification of the relationship existed in Clydebank. From 1634 in 1881 the population expanded to 37548 in 1911[4] and often in response to spurts of industrial development. Virtually a nineteenth century new town this Dunbartonshire satellite of Glasgow attracted firms such as the shipbuilders J. and G. Thomson, Napier Shanks and Bell, Beardmores, and in different fields, the Parkhead laundry engineering firm of D. and J. Tullis, and of course the Singer Sewing Machine company, established at Kilbowie between 1882-4.[5]

The depressed years of 1893 and 1909 in which employment and thus incomes diminished rapidly in this burgh witnessed the Co-operative Society making donations to a burgh relief fund for the free distribution of bread.[6] It is not surprising therefore to find the housebuilding index standing at 24 in 1893 and in the aftermath of the later difficulties builders viewed prospects so bleakly that the index registered 71 in 1910 and fell to 35 in 1912 and 24 in 1913,[7] only to

1 W.P.H. Sinclair, op. cit.
2 Ibid.
3 Galashiels, D.G.C., Registers 1894-1914, N.R.A. 1/3/1-2; Hawick, D.G.C., Registers, 1885-1914 N.R.A., 3/1/1.
4 Censuses of Scotland, 1881-1911.
5 Third Statistical Account of Scotland, County of Dunbarton.
6 Ibid.
7 Clydebank, D.G.C., Registers, 1887-1914.

be rescued by the industrial stimulus provided by the war for Clydebank's specialist armaments firms. Housebuilding in Clydebank, like Dunfermline enjoyed a fillip during the war years with £88,570 and £72,720 of work approved in 1914 and 1915 respectively, levels of similar magnitude to the peak years of 1906-7.[1]

Industrial development in Clydebank and housebuilding activity demonstrated a close affinity in early Edwardian years. When in 1904 Beardmores embarked on an extensive programme of capital expenditure at their Dalmuir plant for an electrical workshop, naptha house, separate pattern and plumbing departments and the installation of overhead gas heating it was indicative of a mood of industrial optimism in Clydebank shared by other boards of directors, that of Singer's approving £950,000 for the construction of a cabinet factory.[2] The expansion of capacity in 1904[3] in fact heralded four successive years of massive industrial development for Clydebank: substantial projects such as Singer's £40,000 extension to the machine shop in 1906 and the £30,000 expenditure on the power plant and a sawmill the following were matched by sizeable lump sums by other firms, for example, £10,000 for the Clyde Navigation Trust in 1905, £4,000 for a gas plant at John Brown's shipyard the same year, and £12,000 for the Clydebank Co-operative Society in 1906, quite apart from numerous smaller projects of £1,000 or less.[4] While such levels of industrial expansion underway between 1903 and 1907 initially retarded housebuilding by successfully securing construction materials and labour, accumulated improvements in aggregate income eventually produced a pronounced housebuilding boom during 1905-7, and it is apparent that industrial upswing in Clydebank preceded that of housebuilding by 1-2 years.

Some diversion of housing demand resulted when steamer and rail links allowed Glaswegian commuters to procure daily employment in Clydebank

1 Ibid.
2 Clydebank, D.G.C., Register, 1904.
3 Clydebank, D.G.C., Register, 1903 indicates that the industrial recovery was underway from the latter part of that year.
4 Clydebank, D.G.C., Registers, 1905-6.

works.[1] However this is indicative of the growth of effective demand. Working class incomes allowed not only daily travel of this kind but also produced a considerable housebuilding demand through their ability to pay higher rents.

The conclusion offered in respect of another textile dominated burgh,[2] Dundee, adds further weight to the importance of employment prospects for the level of housebuilding,

> 'Fluctuations in housebuilding here seem not to bear too close a relationship to the American trade cycle but to have been much more affected by factors of purely regional significance.'.[3]

Not the least of a number of 'purely regional' factors was the existence of 'the enormous profits of the 1850s and 1860s.[4] in the jute industry during its take-off period when Dundee linen and flax manufacturing decayed rapidly. Such prosperity in employers profits it seems was also reflected in increased and more regular wages,[5] and in Dundee as elsewhere in urban Scotland this produced such a violent upswing in working class housing that public opinion subsequently viewed the amenity-deficient tenements of that speculative outburst of the late 1860s and 1870s as intolerable.[6] Again therefore in this city there is evidence to the effect that working class housing, closely allied to industrial fluctuations intensified the amplitude of housebuilding fluctuations which otherwise would have been more modest.

In the case of a span of years in the seventies or in the single year 1883, mentioned earlier in connection with the Dundee marriage rate,

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1 Royal Commission on the Housing of the Working Classes, Evidence of Russell, q. 19439-45, and Glasgow Municipal Commission, Evidence of Fyfe, q. 821; Menzies, q. 3223-33; Smith, q. 13441-546.

2 Royal Commission on the Depression of Trade, 1884-5, Evidence of J.H. Walker, q. 6259-60. Nine tenths of the Dundee population said to be dependent on jute.

3 B. Lenman, C. Lythe, and E. Gauldie, 'Dundee and its Textile Industry , 1851-1914', Abertary Historical Society Publication, 14, 1969, p. 88.

4 Ibid., p. 37.

5 A.L. Bowley, 'Changes in Average Wages (Nominal and Real) in the United Kingdom between 1860 and 1891', Journal of the Royal Statistical Society, 58, 1895, p. 263.

6 B. Lenman, C. Lythe and E. Gauldie, op. cit., p. 94.

housebuilding continued to mirror, though not always exactly or to the same degree, the ripples of industrial performance. Hence the relapse of 1885-6 in jute production[1] was echoed through diminished purchasing power in a reduced volume of housebuilding,[2] and the increased employment of 1887 in the textile trades facilitated the resumption of more active house construction. The slight shipping back of jute in 1888 was also matched by residential building falling off somewhat, and over the prosperous years for Dundee industry between the autumn of 1886 and that of 1892 housebuilding too enjoyed a period of success. Thus during the 1880s and early 1890s the similarity of an industrial ebb and flow and that of housebuilding is significant.

The temporary boom of jute production in 1883 initially saw house-builders dragging their heels. Only in 1884 did housebuilding respond. This lagging of the economic climate was reiterated when, from the last months of 1892 throughout 1893-4 and into 1895 the successes of cotton dampened the prosperity of the jute industry, the housebuilding sector continued its expansion.[3] The lag perpetuated itself during the improved industrial years of 1895-7 as demand for sacking swung upwards with British involvement in Venezuelan feuds,[4] yet housebuilding in Dundee was responding to the economic stimuli of the earlier phase. Again the lag continued in 1898, for a dismal year in textile production and thus employment and income, produced a housebuilding peak unequalled in twenty previous years. Thus like Clydebank in its twentieth century development phase a 1-2 year lag consistently operated between industry and housebuilding in the Dundonian experience of the 1890s. This was partly the result of the difficulty of abrupt and precise changes of trend in a product only capable of completion over a number of months. But it was also due, as

1 Dundee Year books, 1885-6.
2 Dundee, Register of Plans, 1884-8.
3 B. Lenman, C. Lythe, and E. Gauldie, op. cit., p. 90.
4 Ibid., p. 35.

in Clydebank, to rapid extensions of capacity in the industrial and commercial sector, when a 25% addition to industrial building in 1895, sustained and indeed advanced by a further 11% in 1896,[1] prevented house-builders from obtaining the necessary factors of production to respond to the upsurge in housing demand in these years.

Even though the South African war boosted demand for products made in Dundee the demand which it in turn generated for housing could not prevent a recession in housebuilding when the influence of local wage levels was over-ridden by other factors, notably the supply and cost of capital and the level of empty property.[2] In 1901, a poor year for the local economy, housebuilding was still responding sufficiently the the more prosperous 1899-1900 years to achieve an index equivalent to the national level.[3] And in 1902 the recovery of jute output, promoted by military orders from Russia and Japan and an excess of demand which Calcutta failed to satisfy,[4] again found housebuilding moving in an opposite direction. More cautiously from 1903 however housebuilders moved in greater sympathy with jute prosperity. Despite the highly successful textile industry years of 1902-6 builders did not react to several consecutive years of regular working class incomes as they had in the 1870s and 1890s by speculating ahead of demand which when wage improvements terminated provoked another over-reaction, a long dull period ensuing in the building industry. In this instance a more discreet approach was forthcoming conditioned by the knowledge that much of the potential profit had been reaped in the upsurge to 1898, that empties remained high, public opinion was antagonistic towards the speculative builder[5] and circumscribed

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1 Dundee, Register of Plans, 1894-7.
2 Census of Scotland, 1901, Dundee had a 4.6% rate of unoccupied property of compared 2.5% in 1891.
3 Dundee, Planning Registers 1899-1901.
4 B. Lenman, C. Lythe and E. Gauldie, op. cit., p. 36.
5 Ibid., p. 94.

in their activities by the massive industrial programme of expansion underway between 1902-6[1] which reduced supplies and raised building costs. The avoidance of an uncontrolled upswing meant that when a break in trend in 1907 resulted in a five year period of industrial stagnation, no swift cut back in housebuilding was called for, its activities already being of modest proportions.[2]

While it is possible therefore to concur with Campbell on the vulnerable position of Dundee textiles on the eve of war, it is inappropriate to view the jute industry as 'almost stationary' in the thirty years down to 1914.[3] Indeed the fluctuations were sufficiently severe for local textile historians to devote twenty pages to output variations alone,[4] and these were of some significance by way of aggregate income variations in Dundee to provoke considerable, if 12-24 months lagged, fluctuations in housebuilding.

The unique character of a mining town where coal dominated the lives of all was usually displayed in small villages clustered round the pit head. Only in one burgh, Hamilton, in the present study could a similar environment be said to exist on an enlarged scale. 'The vast majority of Hamiltonians', according to one authority, 'lived on wages earned in the pits or were largely dependent on the prosperity of the coal industry'.[5] Indeed the lack of alternative employment before 1914 was viewed as a major handicap during the inter-war years.[6] In this Lanarkshire coal town there exists a further example of the one industry-building relationship, and for those years for which housebuilding data is available the coal output of the Lanarkshire coal field is presented in Table 21.

For Hamilton collieries, as in Lanarkshire as a whole, the export led

1 Dundee, Planning Registers, 1905-6 indicate a 60% increase in the level of commercial and industrial building in 1906.
2 Dundee, Planning Registers, 1902-14.
3 R.H. Campbell, op. cit., p. 236.
4 B. Lenman, C. Lythe and E. Gauldie, op. cit., pp. 23-43.
5 Third Statistical Account of Scotland, County of Lanark, p. 366.
6 Ibid.

Table 21

Housebuilding in Hamilton and Lanarkshire Coal Output, 1895-1914

			Coal Output (m. tons) and Employment (000s)					
	Hamilton	South Wales	E. Lanark		W. Lanark		Lanarkshire	
			Output	Employ.	Output	Employ.	Output	Employ.
1895		99	8.40	23.5	7.52	20.4	15.92	43.7
96	110	102	8.41	21.5	7.39	20.1	15.80	41.6
97	110	106	8.29	21.1	7.53	20.7	15.82	41.8
98	114	90	8.37	21.7	7.77	21.5	16.14	43.2
99	94	73	8.52	22.6	7.90	23.0	16.42	45.6
1900	98	60	8.99	24.3	8.28	24.7	17.17	49.0
1*	138	64	4.62	13.3	11.99	36.1	16.61	49.4
2	130	89	4.64	19.6	12.41	36.7	17.05	50.3
3	134	102	4.63	14.4	12.72	38.0	17.35	52.4
4	146	97	4.72	15.0	12.48	36.9	17.20	51.9
5	118	93	4.75	14.9	12.01	36.5	16.76	51.4
6	73	94	4.96	14.8	12.25	35.4	17.21	50.2
7	61	99	5.34	15.9	12.63	37.5	17.97	53.2
8	49	111	4.75	15.8	12.27	39.4	17.02	55.2
9	53	125	4.77	15.9	12.53	39.3	17.30	55.2
1910	16	125					17.89	56.2
11	33	110					17.50	55.7
12	16	91					16.62	57.9
13	24	80					17.49	60.1
14	20						16.25	59.4

* In 1901 the parish of Hamilton, and others, was transferred from the east to the West Lanark district.

Sources: Hamilton D.G.C., Registers, 1895-1935, N.R.A., 2/8/2; Mineral Statistics, Memoirs of the Geological Survey of Great Britain, 1853- ; J.H. Richards and J.P. Lewis, 'Housebuilding in the South Wales Coalfield, 1851-1913', Manchester School, 24, 1956, pp. 115-28.

boom of 1900-14 apparent in South Wales and north-eastern England and which advanced the business of housebuilders in these regions,[1] did not materialise (Table 21). Historically Lanarkshire coal-mining was more closely allied to the fortunes of the iron masters - the eastern pits were more heavily involved with the export business to the Baltic and northern Europe[2] - and the decline of iron production in late Victorian Scotland contributed in no small measure to the declining demand for Lanarkshire splint coal.[3] In this stagnation experience therefore the Hamilton collieries differed from the production trends of the neighbouring Govan colliery, which enjoyed considerable prosperity over the same period.[4]

In such conditions with the absence of an export boom and dwindling demand from traditional sources it is not surprising to find the Hamilton housebuilding index presenting subdued and plateau-like peaks over 1896-8 and 1901-4.[5] The more prosperous conditions of 1900 served to keep housebuilding in this burgh above the national average and rather better coal production in 1903 and 1907 helped to sustain a building industry in 1904 and 1907 respectively. From 1907-8 however housebuilding declined to

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1 J.H. Richards and J.P. Lewis, op. cit., and A.G. Kenwood, op. cit.

2 T.J. Byres, 'The Scottish Economy During the Great Depression, 1873-1896', Glasgow, B.Litt. thesis, 1963, pp. 427-8 shows consistently higher exports from Fife and Lothians pits.

3 R.H. Campbell, op. cit., pp. 238-9.

4 A. Slaven, 'Earnings and Productivity in the Scottish Coal-Mining Industry during the Nineteenth Century: The Dixon Enterprises', Chapter 9 in P.L. Payne, Studies in Scottish Business History (London, 1967).

5 Royal Commission on the Housing of the Industrial Population of Scotland, Rural and Urban, 1917, Cd. 8371, Evidence of G. Fraser, App. CXVIII and q.31115, pp. 128-9 elucidated the peculiar housebuilding pattern of Hamilton housebuilding. Thus between 1899 and 1913 only 208 houses were built in this burgh at a time when in nearby burghs in the same Middle Ward of Lanarkshire smaller burghs such as Bothwell built 3287 over the same period. Hamilton was exceeded by amongst others Old and New Monkland (1213), Blantyre (908) as well as by Dalserf, Dalziell, Cambusnethan and Shotts, with only East Kilbride and Glassford and Stonehouse, small villages, building fewer houses. Thus the fairly steady housebuilding index is very much in keeping with the overall subdued pattern detailed in the Royal Commission.

minimal levels.

Only to a more limited extent then did housebuilding in Hamilton follow the vagaries of the local employment situation. Until the early Edwardian years the relationship seemed if not strongly forged then at least undisturbed. But later, from about 1908, the housebuilding index pursued a trend which was not so closely related to the mining experience. A substantial slump in property construction between 1910-14 existed at a time when even with the strike of 1912 output and employment maintained a stable level. Thus in Hamilton even the strengthening of income and population influences other factors presented sufficient opposition and forced the building industry into contraction.

VII

Based on geographically widespread burgh reports The Builder in 1913 reflected that 'The boom in the general prosperity of the country had not yet affected the building industry.'[1] That in so many Scottish districts industrial performance was expected to pre-date housebuilding recovery is highly significant, and in the case of those burghs whose employment was concentrated on shipbuilding the interpretation of the Builder is not in doubt in the final quarter of the nineteenth century. Certainly in the cyclical peak of the 1870s shipbuilding anticipated the climax of the housebuilding industry. Of 1870 The Economist reported business as 'most satisfactory'[2] and 1872, in equally rapturous tones, 'has been the most prosperous year in shipbuilding yet experienced on the Clyde.'[3] Marine engineering too enjoyed a boom in those years. But the peak years of tonnage launched from the Clyde, 1873-4,[4] gave way to recession apparent in 1874 and acute in 1875.[5] Thus the growth of Caird's and Scotts in

1 The Builder, May 21, 1913, p. 515.
2 The Economist, Commercial History and Review of 1870, p. 21.
3 Ibid., Review of 1872, p. 44.
4 W.S. Cormack, 'An Economic History of Shipbuilding and Marine Engineering', Glasgow, Ph.D. Thesis, 1930.
5 The Economist, Commercial History and Review of 1874, p. 1.

Greenock, the amalgamations of yards in Port Glasgow and the efforts of Dumbarton firms in conjunction with other companies produced a peak of production which preceded that of housebuilding.[1]

The interval between ordering and launching ships was apparently in the region of twelve months.[2] Thus by advancing the series (col (2), Table 22) for tonnage launched by a year it is possible to obtain some impression of the fluctuations in vessels ordered (fig. 2). Such variations in the timing of shipbuilding used in conjunction with alterations to the tonnage under construction (col (3)) provide some measure of employment and aggregate income fluctuations on Clydeside, a factor elsewhere seen to be of importance to housebuilders, and which can now usefully be compared with fluctuations in the housebuilding of certain Clydeside burghs.

Shipbuilding anticipated housebuilding in the boom of the 1870s. The minimum point in the decision to construct new tonnage, 1878, also pre-dated the nadir of housebuilding 1879, and again in the boom of the early 1880s Clydeside yards preceded housebuilders. However, changes in the relationship occurred from 1884 when the two series moved in step for a number of years. The trough of 1884-6 and revival, 1887-90, subsequently tempered during 1890-2, were common features for the two sectors of the economy, and this continued until 1898 with a prolonged period of expansive Clydeside housebuilding and shipbuilding.[3] The revival of planned construction in both industries was virtually simultaneous, 1893, although for the dockyards the first quarter of 1893 represented the turning point[4] while for the building industry it was during the spring months,

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1 Third Statistical Account of Scotland, Counties of Renfrew and Dumbarton.
2 W.S. Cormack, op. cit., p. 233.
3 See fig. 2.
4 W.S. Cormack, op. cit.

Table 22

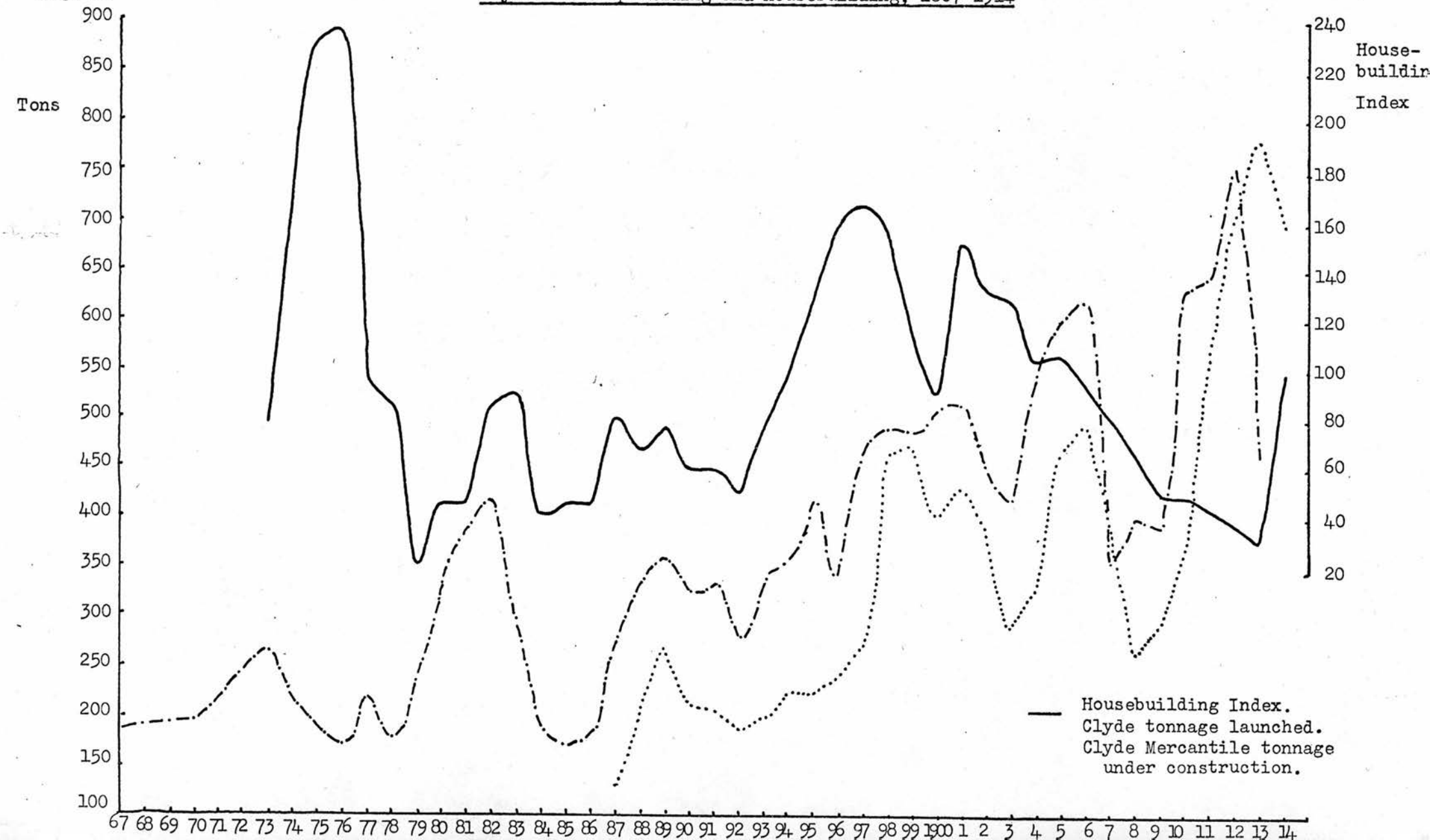
Clydeside Shipbuilding and Housebuilding 1873-1914

	House-Building Index (1)	Tonnage of ships launched on Clyde (000) (2)	Tonnage under construction Merchant (3)	Total (4)	Clydeside wages (1860 = 100) (5)
1873	74.8	252			130
74	181.4	267			131
75	232.1	222			128
76	236.3	188			126
77	95.2	170			125
78	84.8	222			124
79	21.2	175			121
1880	45.9	237			125
81	45.9	341			131
82	84.8	392			135
83	91.9	420			141
84	42.4	297			135
85	45.9	193			130
86	45.9	172			124
87	81.3	185	126		124
88	67.9	280	208		136
89	76.9	335	271		147
1890	58.8	362	212		151
91	58.8	325	206		150
92	49.8	336	186		145
93	76.9	280	200		144
94	97.8	341	226		144
95	130.4	360	225	292	144
96	160.3	421	243	306	154
97	165.8	340	273	340	156
98	154.9	447	466	542	164
99	116.8	491	475	561	164
1900	89.7	486	404	496	164
1	152.2	512	434	514	164
2	133.2	517	385	472	164
3	127.7	447	292	383	160
4	103.3	418	332	411	160
5	106.0	540	469	505	
6	92.4	599	496	550	
7	81.5	620	396	444	
8	65.2	356	260	274	
9	48.9	403	290	332	
1910	48.9	392	380	482	
11	43.5	631	560	677	
12	38.0	641	700	828	
13	30.5	757	779	940	
14	99.2	460	695	855	

Sources: (1) Dean of Guild Registers for Govan, Partick, Clydebank and Port Glasgow.
(2), (3) and (4) W.S. Cormack, An Economic History of Shipbuilding and Marine Engineering, Glasgow, Ph.D., 1930.
(5) A.L. Bowley, J.R.S.S. 69, 1906, pp. 102-5.

Fig. 2.

Clydeside Shipbuilding and Housebuilding, 1867-1914



the second quarter of the year historically being the months of renewed activity.

To the domination which Clydeside shipbuilding achieved over other Scottish industries, notably steel,[1] housebuilding also complied. Thus the upturns of 1881-3 and 1887-90, respectively attributed to the introduction of the triple expansion engine and the combination of rising freight rates , foreign demand and a reduction of excess shipping capacity,[2] produced employment conditions which were sufficiently favourable to provide opportunities for wage rises.[3] In 1881 a short but effective strike by ships' joiners produced a ½d. per hour rise and further efforts were made the following year.[4] Income gains in the early 1880s and later in the decade, notably in 1889, were translated quickly into housing demand,[5] and further strikes in 1893 and 1894[6] indicated the improving employment situation on Clydeside, with which housebuilding remained in step.

Further evidence for the synchrony of industry and housebuilding, displayed in fig. 3, shows substantially better than trend growth years,[7] namely 1872-4 and 1881-3, to be periods of housebuilding prosperity and the more subdued shipbuilding boom of the 1887-90 years was also reflected in a lesser housebuilding boom. The mid-1880s were considerably above trend growth, and again housebuilding reiterated this experience.

Through the phrase 'equilibrium in the building industry is also local'[8] Cairncross turned an apology for local statistics into an explanatory pillar of housebuilding fluctuations. Thus the euphoric

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1 R.H. Campbell, op. cit., p. 231.
2 W.S. Cormack, op. cit.
3 A.L. Bowley, 'The Statistics of Wages in the United Kingdom during the Nineteenth Century' Journal of the Royal Statistical Society, 69, 1906, pp. 162-5.
4 Associated Carpenters and Joiners of Scotland (henceforth ACJS) Annual Reports, 1881 and 1882.
5 Ibid., 1880-1900.
6 Ibid.
7 As defined as in excess of the standard error of the regression line.
8 A.K. Cairncross, op. cit., p. 1.

accounts of Clydeside shipbuilding in 1882-3 standing 'pre-eminently at the head of tonnage-producing rivers'[1] and transcending 'a height of prosperity never before obtained'[2] in the 'unprecedented activity of 1881-2-3'[3] reflected the local scene in the aggregate income context. The effect of industrial fluctuations on the number of empty houses by way of variations in local incomes was of considerable importance to housebuilders in Govan, Partick, Clydebank and Port Glasgow but whereas supply constraints, costs or lack of risk-taking in other burghs produced a lagged response, for these Clydeside towns minimal delays existed. The upsurge of housebuilding in the early 1880s was clearly not due to the absence of excess capacity. Indeed the housing stock of Port Glasgow registered 8.5% standing empty in 1881, and in Partick and Govan the rates were higher.[4] Thus housebuilders in each burgh overcame the disincentive from this source and renewed their construction efforts, sometimes vigourously as in Govan, where the index bounded upward from 37 in 1881 to 90 and 79 in 1882 and 1883.[5]

A crucial point therefore emerges from the experience of these shipbuilding burghs, and which was hinted at by the Economist in viewing the boom of 1881-3 in terms of, 'such a state of things naturally could not last long .....'[6] for in the approach of an inevitable and abrupt cyclical downturn in 1884 housebuilders concurred. Thus these years demonstrate that underlying demand influences for housebuilding on Clydeside could solicit a prompt response and thus the conclusion in other burghs where delays occurred must inevitably be that supply constraints were sufficiently powerful to overwhelm, at least in the initial stages of an upswing, the influence of mounting effective demand.

The industry-housebuilding relationship outlined above is only

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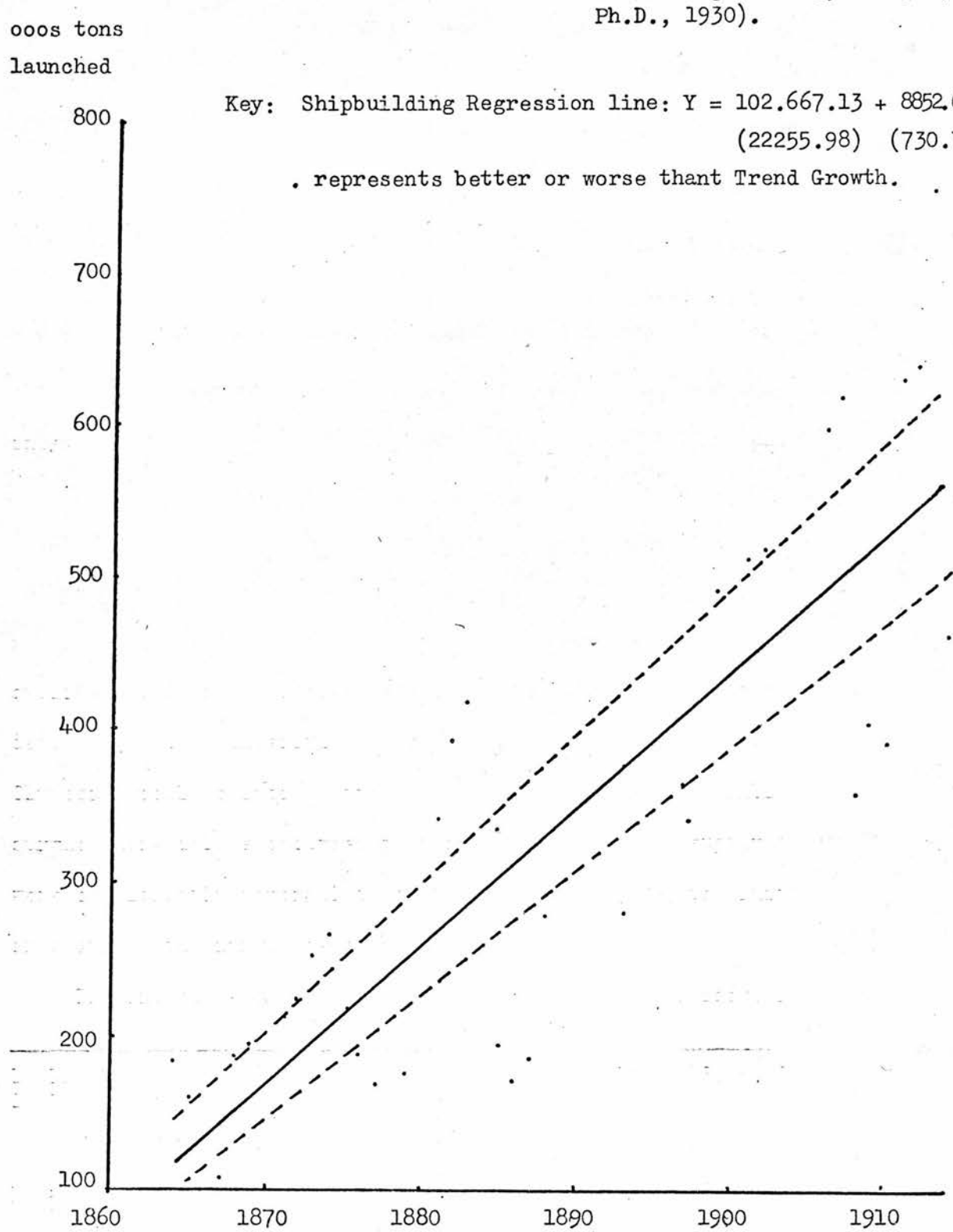
1 The Economist, Commercial History and Review of 1883, p. 31.
2 Ibid., Review of 1884, p. 32.
3 Ibid.
4 Census of Scotland 1881.
5 Govan, D.G.C. Registers, 1873-1912, Glasgow City Archives, H-Gov.
6 The Economist, Commercial History and Review of 1884, p. 32.

Fig. 3.

Trend Growth of Shipbuilding Launched on the Clyde, 1863-1914

(Source: W.S. Cormack, An Economic History of Shipbuilding and Marine Engineering, Glasgow, Ph.D., 1930).



Key: Shipbuilding Regression line: Y = 102.667.13 + 8852.67(x)
(22255.98) (730.79)

. represents better or worse thant Trend Growth.

appropriate from 1873 until 1900 or at the latest 1903. From the turn of the century the two series increasingly diverge. Following the conclusions of the Boer War the tonnage under construction moved steeply upwards in 1905-6, remaining high in 1907, and also in 1911-13.[1] Considerably above the trend growth line (fig. 3) in these years, shipbuilding enjoyed a boom period whilst housebuilding pursued, inexorably, a downward path, even moderating in its rate of decline in 1909-10 at a time when a severe though temporary depression existed in the local industry, shipbuilding.

Of course individual burgh circumstances were occasionally in keeping with shipbuilding experience, such as noted earlier in the Clydebank case 1904-7 or in Port Glasgow in 1907 and 1911 when housebuilding upswings followed, a year removed, the improved shipbuilding experience.[2] Peculiar circumstances such as the rise in freights during the Boer War or the three months boilermakers' strike in 1910[3] may explain particular movements in the ship-building order book, but previously sensitive, housebuilders no longer responded as in the later nineteenth century to such vagaries affecting local incomes. Whether excess capacity, fluctuating freight rates of threatening foreign competition influenced the demand for carrying capacity, housebuilders had largely acquiesced and varied their production accordingly prior to 1900. However, in the early 1900s the relationship was broken when shipbuilding, in response to various market factors, pursued a rapidly expanding course.[4]

Housebuilders however viewed their prospects with less enthusiasm. That they declined to respond to the frenzied activity of the industrial background serves to show the strength of other influences. Related to the building industry, the price of materials moved sharply upwards, as did the number of empty houses (Table 23) and shipbuilding may itself have

1 W.S. Cormack, op. cit.
2 Clydebank, D.G.C. Registers, 1900-14.
3 W.S. Cormack, op. cit.
4 F.E. Hyde, Blue Funnel; A History of Alfred Holt and Company of Liverpool, from 1865 to 1914, (Liverpool, 1956), p. 117.

Table 23

Percentage of Empty Houses in Relation to the Housing Stock of the Burgh

	1901	1911
Clydebank	4.1	15.5
Govan	4.1	10.5
Partick	6.1	10.1
Port Glasgow	2.1	3.4

Sources: Censuses of Scotland, 1901 and 1911.

jeopardised the development of housebuilding by securing its own financial and production requirements. The rise in the level of empty property also indicates that over-expansion in the building industry was complete prior to the resumed upward surge of shipbuilding in 1904-5 and thus factors intrinsic in the housebuilding cycle were of sufficient magnitude to stifle the expansionary influences emanating from the local employment scene 1904-14.

Further use of the model described by Lewis[1] and adapted above to a regional setting can be made by the substitution of ironworking trades in place of the coal industry. Ironworking, of course, was far from a homogeneous industry: in fact iron ore production, pig iron, malleable iron and steel can be separately differentiated[2] and certain of the Scottish burghs concentrated on specific areas, as for example the Falkirk firm of Carron Company did in the realm of foundry iron.[3] Steel, however, for Scotland more than for other regions of Britain was 'the creation of the second half of the nineteenth century',[4] a creation which developed from 1880 with considerable vigour, and

1 J.P. Lewis, op. cit., p. 519.
2 Many other separate products could be identified, as for example noted by the Committee on Industry and Trade in their Survey of Metal Industries, (HMSO, 1918), p. 2.
3 R.H. Campbell, Carron Company, (Edinburgh, 1961).
4 R.H. Campbell, Scotland since 1707, op. cit., p. 231.

which although subservient to shipbuilding, enabled Scotland's economic expansion to continue with dual leading sectors, these replacing the decaying cotton and iron interests.[1]

The paramount role of the shipyards which denied the steel industry of Scotland 'an independent source or stimulus for growth'[2] should not be allowed to cloud the issue that for housebuilders in Motherwell, Wishaw, Airdrie, Coatbridge and Falkirk, variations to the level of output for their iron-based products were of greater significance, according to the Lewis model, than the reasons for such variations, a point also noted on Teesside.[3]

Concentrating initially on the pig iron production of the Scottish industry (Table 24, fig. 4) housebuilding fluctuations in the Lanarkshire burghs and Falkirk tended to correspond with pig iron output variations, often doing so after an interval of about one year. Thus the housebuilding peak of 1889 and 1898, and recessions of 1890 and 1899 lag the path of pig iron production by a year. Even the temporary iron trade recovery of 1892 is echoed a year later in improved local housebuilding activity. Despite a sluggishness in pig iron during 1893-4 housebuilding although slackening for a few years did not go into depression which suggests that other factors were of greater importance to builders in the mid-1890s, the cyclical upswing being communicated through the agency of empty property, which in 1891 stood at 0.9% in Falkirk and was between 2.0 - 2.6% in the Lanarkshire burghs.[4] Evidently temporary recessions in aggregate income were insufficient to depress what housebuilders correctly discerned to be an impending boom. Buoyant trade conditions in the later 1896-8 years stoked the

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1 Ibid., p. 225.
2 Ibid., pp. 231-2.
3 A.G. Kenwood, 'Residential Building Acitivity in North Eastern England, 1853-1913', Manchester School, 31, 1963, pp. 115-28.
4 Census of Scotland 1891.

Table 24

The Income-Housebuilding Relationship in the Iron and Steel[a] Dominated Burghs

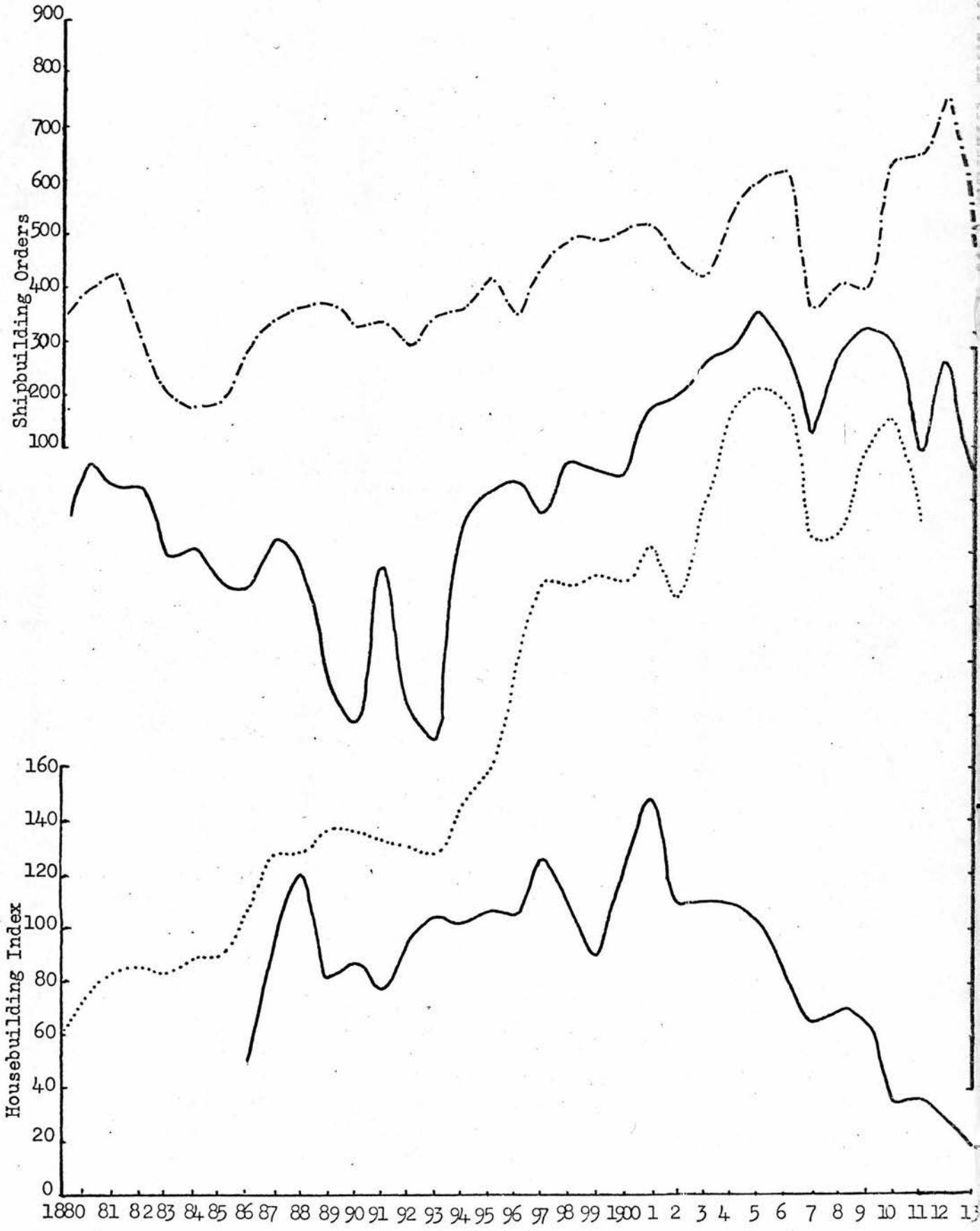
	Housebuilding Index	Scottish Pig Iron Output (000 tons)	Scottish Ingot Steel Output (000 tons)
1880		1049	85
81		1176	166
82		1126	213
83		1129	222
84		988	214
85		1004	241
86		936	245
87	48	932	334
88	96	1028	443
89	120	978	440
1890	81	737	485
91	86	674	479
92	77	972	462
93	95	793	447
94	103	642	437
95	102	1049	533
96	107	1114	586
97	104	1137	813
98	126	1063	948
99	108	1171	940
1900	88	1157	963
1	124	1136	950
2	149	1271	1013
3	109	1291	905
4	110	1351	1092
5	109	1375	1267
6	102	1451	1307
7	82	1389	1286
8	64	1225	1029
9	70	1377	1032
1910	64	1428	1202
11	36	1409	1257
12	37	1186	1047
13	27	1369	
14	18	1126	

Notes: a These burghs include Motherwell, Wishaw, Coatbridge, Airdrie and Falkirk.

Sources: D.G.C., Registers; B.R. Mitchell and P. Deane, Abstract of British Historical Statistics, (Cambridge, 1971), pp. 132-3; M.L. Simpson, 'Steel Works - A Twenty-One Years' Review,' Journal of the West of Scotland Iron and Steel Institute, XXI, 1913-14, p. 56.

Fig. 4.

Scottish Iron and Steel, Clydeside Shipbuilding and Housebuilding in Lanarkshire burghs and Falkirk 1880-1914



housebuilding boom and thus created favourable underlying circumstances for its development through the growth of disposable incomes.

From 1903 approximately pig-iron output like that of shipbuilding pursued an expansionary trend once more, whilst housebuilding contracted, again denoting that factors inherent in the building industry were uppermost and that income levels were thus of lesser significance. Only in the flicker of housebuilding improvement in 1909 did these two series possess much in common in the years 1902-14.

If it is not quite the truism which is suggested that 'when the Clyde is busy ..... trade generally and especially the iron and steel trade ..... is busy'[1] given that Clydeside yards accounted for 30% of steel output[2] and in 1886 a recovery in the steel industry of Scotland pre-dated that of shipbuilding,[3] then it is a generalisation which is not far wide of the mark. The buoyancy of Coatbridge steel production in the 1890s was based more on tube steel[4] than on ships' plates, but in neighbouring Airdrie the rivet and wire rope interests shared the growth of shipbuilding yards[5] and the strength of this source of demand persuaded the Rochsolloch Iron Works, founded in 1858, from the production of malleable iron to make the transition to steel.[6] Similar influences included Colville's Dalzell Iron Works in Motherwell to do likewise, a decision which the firm did not regret, theirs being the largest steel works in Britain in 1914.[7]

From the birth of open hearth steel production in Scotland in 1872 when the Steel Company of Scotland began operations at its Hallside

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1 T.J. Byres, 'Entrepreneurship in the Scottish Heavy Industries, 1870-1900' in P.L. Payne, Studies in Scottish Business History, (London 1967), p. 250, quoting W. Dixon in the Journal of the West of Scotland Iron and Steel Institute, XIX, 1911, p. 17.
2 T.J. Byrne, B. Litt Thesis, op. cit., pp. 532-3.
3 Ibid, pp. 510-11.
4 Third Statistical Account of Scotland, County of Lanark, p. 213.
5 Airdrie, D.G.C. Registers, 1900-14.
6 Third Statistical Account, op. cit., p. 170.
7 Ibid., pp. 355-6.

Works rapid development ensued. Such growth, spurred on by the combined Admiralty, Lloyd's and Board of Trade specifications for the tensile strength of plate steel used in ship building[1] is demonstrated in the statistics for the 1880-1912 period (Table 24 fig. 4). From 1894 shipbuilding, iron and steel production moved very largely in unison, but beforehand while steel and shipbuilding were in agreement the discordant note of decline in the iron industry was evident. In relation to housebuilding in the Lanarkshire burghs the interruptions to the upward surge of steel production are instructive. Thus during 1884-6, the early 1890s, and the duration of the Boer War declining growth rates in ingot steel production were matched by reduced housebuilding. There is little evidence for a lagged response from housebuilding however, as existed in pig iron production for example. In 1898, the steel production peak which signalled a period of stagnation was also a year of peak house construction. Another interruption on this occasion to a sharp contraction in steel output was matched by a halt in the decline of housebuilding, again in the same year, 1909. Although in 1909 there was some similarity more generally the years following 1903 witnessed housebuilding and activity in the steel industry pursuing divergent paths. Thus, as with related heavy industries in the West of Scotland non-income factors provided the dominant explanation of housebuilding fluctuations whereas the late Victorian years saw a much closer correlation in the industry-building relationship for the iron and steel burghs.

The growth and development of late-Victorian Kirkcaldy was closely related to the development of the linoleum industry and in Kilmarnock much the same role was played by the iron and engineering interests of the major employers, Kennedy's and the Glenfield Iron Co. which in 1899 became Glenfield and Kennedy Ltd.[2] An amalgam of interests in Glasgow with an

1 M.L. Simpson, 'Steel Works - A Twenty-One Years' Review', Journal of the West of Scotland Iron and Steel Institute, 21, 1913-14, p. 46.
2 Third Statistical Account, Counties of Fife and Ayr.

industrial backbone based on shipbuilding, steel and marine engineering meant that essentially Glasgow housebuilding followed the pattern of the heavy West of Scotland industries. The complementary nature of the renowned Glasgow locomotive engineering sheds - Neilson, Dubs and Sharp-Stewart, ultimately the North British Railway Company - and substantial mining, sugar, textile, aero - and civil engineering interests[1] provided a less vulnerable basis for Glaswegian housebuilders as aggregate incomes were not, as elsewhere, wholly dependent on a single sector of industry.

The use of wage rate data can be gainfully employed in establishing periods of industrial prosperity. The delicate managerial tight-rope of balancing lost production and profits against the cost of wage awards conveys the contemporary entrepreneurial assessment of market conditions and provides an industrial picture against which housebuilding fluctuations can be set.

In the case of Clyde shipwrights,[2] the wage rate slump of 1875-79 is in keeping with the paucity of the yards' orderbooks. From 29s. 3d in 1880 to 36s in 1883 advancing wage rates were achieved to be followed by a slumpt to 30s. 9½d two years later. The magical 36s figure was only again recaptured in the peak of the late 1880s and in 1896, and only in the exceptional years of the South African war was the 36s level exceeded.[3] Wage rates variations, therefore, moved in accord with output statistics in shipbuilding, represented alterations to the relative strengths of demand and supply influences in the labour market and, with the strength of supply largely determined by the level of unemployment wages may with care be interpreted as an indicator of the employment and aggregate income fluctuations in the industry.

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1 Ibid., City of Glasgow.
2 A.L. Bowley and G.H. Wood, 'The Statistics of Wages in the United Kingdom during the Last Hundred Years' (Part X) - Shipping and Shipbuilding. Journal of the Royal Statistical Society, 68, 1905, pp. 116-7.
3 Ibid.

Fluctuations in the wage rates of the Amalgamated Society of Engineerings membership in Glasgow, Greenock and Paisley likewise displayed movements which were in accord with housebuilding activity.[1] An increased ability to pay rents in the late eighties, or conversely the reduced ability in 1903 as a result of the 1s. reduction to weekly wage rates provided influences encouraging housebuilders to operate in like manner. For the skilled rivetters, patternmakers and platers alterations in wage levels were indicative of the general employment situation to which housebuilders responded, but more important from the point of view of substantial upswings and depressions in housebuilding, those trades outside the labour aristocracy of the A.S.E. and similar skilled unions, for example, the 'strikers' and 'holders-up' of the boiler shops, experienced wage rate changes similar to those of their skilled brethren.[2]

VIII

The relevance of accommodation at realistic rents has recently been noted in connection with its effect on housebuilding in that 'the decline in purchasing power of the often unemployed working class'[3] contributed to depressive influences in the construction sector. Indeed the long term palliative of an exodus to suburbia was a direct recognition of working class inability to pay rents on a scale sufficient to encourage housebuilders in the construction of property to suit their needs.[4] The advances in rate assessments in major Scottish burghs to the tune of about 25% between 1890 and 1912[5] exacerbated the inability of lower wage groups to pay economic rents, and thus the ebb and flow of industrial prosperity within a wide spectrum of burghs was important in that the stopcock on working class housebuilding was released as local employment buoyancy and its

1 Ibid.
2 Ibid.
3 E. Gauldie, op. cit., p. 167.
4 W. Fraser, 'Rents and Ground Rents', Proc. of the Royal Phil. Soc. of Glasgow, 33, 1901-2, pp. 136-7.
5 S.L.E.C., op. cit., p. 395. The increases were respectively, Glasgow 33%; Edinburgh 59%; Dundee 20%; Aberdeen 23% and Greenock 21%.

corollary of improving effective demand superimposed brief periods of bulk demand for housing upon the steadier, better-off end of the market.

Correlation coefficients between burgh housebuilding indices and the most appropriate single industrial series underline the strength of the income explanation of housebuilding. Even with the most unfavourable comparisons using unlagged data covering the entire period when breaks in trend often existed in the simplified industrial data the conclusion is unchanged; fluctuations in local incomes were of crucial importance for the level of housebuilding. In Dundee, significantly, the highest correlation is obtained +0.76. Even with the trend change in 1890 in Galashiels the coefficient is still +0.47, and the break in the relationship in Wishaw and Partick between industrial fortunes and those of housebuilding nevertheless still produced coefficients of +0.45 and +0.64 respectively, thus suggesting considerably stronger determination of housebuilding by income fluctuations prior to the change in the relationship. Edinburgh housebuilding too (+0.70) was in step with income fluctuations, and in Glasgow, Kilmarnock, Kirkcaldy and Perth the co-efficients were also above +0.6.

To a certain extent the remit of the Glasgow Municipal Commission in that it dealt with the 'Housing of the Poor" conveys the conviction that income and employment were crucial to the level of housebuilding and by extension, this is appropriate to other sections of the community. The mores of working people were irrelevant to the disinclination of builders to provide them with accommodation; indeed many were meticulous in the management of their homes.[1] The casual and migratory nature of employment allied to the frequency of unemployment acted as an effective deterrent to property investors and thus to housebuilder at the cheaper

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1 Glasgow Municipal Commission on the Housing of the Poor, 1904, (Edinburgh and Glasgow, 1904), (subsequently cited as G.M.C.) Evidence of Binnie, p. 306.

end of the market.[1]

Thus in the case of one-apartment houses that 'the supply .... is not anything like equal to the demand'[2] indicates the importance of the distinction between potential and effective demand. Such a distinction advances the cause of income explanations of housebuilding fluctuations where the ability, increasing of declining, to pay rent acted as a barometer for investors and builders alike.

The conclusion of one witness before a municipal tribunal on housing problems encapsulates the general tone of the current inquiry into the relative strengths of causal elements in the building cycle,

> 'even with no diminution of the population the number of unlet houses increases when trade becomes dull.'[3]

The conclusion based on examples drawn from geographically and industrially diverse studies demonstrates a close, though not unfailing, relationship between local industry and building and in consideration with the small and sometimes conflicting democratic trends of burghs in relation to their housebuilding experience adds some further fuel to the Atlantic Economy thesis. Hence, through an industry - housebuilding model the demand component of housebuilding fluctuations rests rather more on the income than the demographic, the latter only being encouraged by the economic circumstances which in any event caused a revival in housebuilding.[4]

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1 Ibid., Evidence of Henry, q. 41.
2 Ibid., Evidence of Fyfe, q.804.
3 Ibid., Evidence of Binnie, q. 7100.
4 R.C. on the Housing of the Working Classes, 1884-5, emphasises this point on several occasions, nowhere better than in the evidence of T.B. Laing, Town Clerk of Leith, q. 20372,

q. But you believe that a reason for the diminution of the population of this district was the cessation of work at the docks, and the consequent removal of the people who had been connected with the work at the docks?

a. Yes.

CHAPTER VIII

A Contribution to Explanatory Views of Housebuilding Fluctuations: A Composite Approach (Part II)

The demand based determinants of housebuilding fluctuations, principally demographic and income factors, have been investigated at the individual burgh level. That these influences were neither uniquely nor uniformly important throughout the cycle has been seen in a variety of Scottish burghs and it is intended in the present chapter to observe the role of several supply influences. The percentage excess of housing stocks, movements in building costs, variations in expectations and uncertainty, the cost and availability of finance for building operations, the structure of the building industry and the role of rents acting as a supply price are treated as having a potentially variable impact between burghs and over time. As such this chapter forms part of a composite approach to housebuilding fluctuations designed to refine the approaches which stress either demand or supply factors when in fact these are umbrella terms for several influences which may only be operative at restricted points in the cycle.

I

On the question of empty property[1] only sporadic mention was made

1 Glasgow Municipal Commission on the Housing of the Poor, 1904, (subsequently cited as G.M.C.) Evidence of J. Henry, q. 186-7 records a distinction between empty property, houses untenanted and not assessed to rates and unoccupied property, from which census enumerators obtained no response. A numerical discrepancy arises therefore from these definitions but housing authorities agreed that it was not a serious difference and this study uses the terms synonymously.

by witnesses to the Royal Commission on the Housing of the Working Classes, 1884-5. More striking therefore, twenty years on is the frequency of references to the role of empty houses in the mechanics of the housebuilding industry in evidence taken before the Glasgow Municipal Commission during the Spring of 1903. Whether the intervening years signify a move from the sanitary approach to local authority housing responsibility in the light of private enterprise failure is uncertain, but what is more definite is the critical contribution the level of empty property played in the determination of housebuilding activity.

Lamentations on the extent of empty property in 1884 by the presidents of the Glasgow Landlords Association and the House Factors Association[1] in the city were no doubt strategically aimed at obtaining sympathy for their economic plight and can thus be seen as an attempt to head off hostility likely to be aroused at builders' and investors' excesses which left the city with much idle capital. Whatever the politics of their joint submission the reality of excess accommodation was that it 'severely checked building operations.'[2] In Edinburgh, too, the suspension of building activity by the Improvement Trust in November 1902 when presented with statistical information on the availability of accommodation at less than £10 annual rental[3] reiterated the important contribution of empty property levels to the activities of housebuilders.

Such sensitivity seemed to be most effective in the boom phase of the cycle. The workings of the market whereby a declining number of vacant houses encouraged further housebuilding[4] or the overproduction

1 R.C. on the Housing of the Working Classes, 1884-5, Evidence of John Dansken and Jas. Finellevy Rees, Apendix C, p. 135.
2 Ibid.
3 The Scotsman, 11 Feb., 1903.
4 G.M.C., Evidence of Binnie, q. 6662.

of accommodation choked off the supply of new housing[1] was an important gauge for builders. Thus when it was thought that,

> '..... the difference between a landlord getting a decent return and no return at all is very often due to empty houses in his property.'[2]

then the supply of new housebuilding was reasonably responsive to changes in the level of empties, especially as

> '.... where the empties are above average it is only natural that the owners of such properties are inclined to be disgusted with their investments.'[3]

Thus declining annual income in relation to capital outlay - in some ways a measure of expected profits - and a falling capital value of property holdings as a result were the combined gloomy prospects which rising levels of empties produced. Not surprisingly property investors were anxious to cease their involvement in housebuilding and builders were very ready to terminate their operations least unsaleable houses should in conjunction with creditors' demands produce illiquidity, and thereby force them to the bankruptcy courts.

Implicit in the contemporary view that,

> '..... the builder, while quite equal to any demands for increased accommodation, speedily puts on the brake when he sees the necessity.'[4]

was the unwillingness of housebuilders to permit booms to proceed unchecked. Thus against the housebuilding background of Glasgow, 1903-8, with mounting empties evident from 1903-4, builders' assessments of oversupply truncated the house construction boom. Moreover, to the recovery of demand from a depression situation they were clearly willing to respond, but not to initiate.[5]

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1 Ibid., p. 306.
2 Ibid., Evidence of McKellar, q. 10780.
3 W.M. Fraser 'Fluctuations of the Building Trade and Glasgow's House Accommodation', Proc. of the Royal Phil. Soc. of Glasgow, 39, 1907-8, p. 26.
4 Ibid., p. 34.
5 G.M.C., Evidence of Eadie.

The outcome was that the stock adjustment principle, in this instance based on empty property, although not wholly inoperative in the trough of the cycle may have been of greater relevance at the upper turning point. A priori this is expected insofar as risk-taking in products with substantial planning to completion lags is less likely to respond to upward demand movements until they are shown to be permanent. Scepticism as to the transitory nature of the upswing then precludes the stock adjustment variable as an explanatory force at the lower cyclical turning point.

II

An attempt at a distinction between the level of empties in different classes of housing proves worthwhile. Although only fragmentary evidence is available there is some indication that the quantity of low-rented empty property exceeded that of higher rental groups. In Edinburgh, for example, 10.0% of property rented at less than £6 p.a. lay empty in 1884; for the £6–15 p.a. group of houses, a lower percentage, 7.1%, was recorded.[1] At a rather different cyclical phase, 1875, the differential also applied, the empty percentages being 3.4% for £6 p.a. houses and the 2.2% for £6–15 p.a. accommodation.[2] In the whole area embraced by the Leith Town Council's Improvement Scheme the percentage of empty houses in one–, two- and three-roomed was recorded as respectively 21.1%, 18.4% and 5.2%.[3] The Glasgow housing situation of 1900, if rather different in absolute terms, displayed the graduations of 3.5% of one roomed houses as being empty, and for two- and three-roomed properties the percentages were 2.7% and 2.4%.[4]

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1 R.C. on the Housing of the Working Classes, 1884-5, Evidence of R. Paterson, q. 18606-10.
2 Ibid.
3 Ibid., Evidence of Laing, Appendix C, p. 83.
4 G.M.C., Evidence of Binnie, q. 7096-99.

Separate though linked patterns in the levels of housebuilding and of empties according to the type of property were noted by the municipal official of Dundee, J. Gentle, the Town Clerk, responsible for the daily administration of building control in the burgh. Against the background of the city's building index which registered 88, 56, 54, 94, 56 and 67 between 1881-6, the evidence to the Royal Commission given by this specialist in the building industry is worth quoting at length.

> q. 20794 Do I understand you to say that, although you have a considerable number of houses empty, building is still going on? - Yes, but the buildings going up now are of a much better class.
>
> q. 20795 But the buildings that are going up now will be occupied by the wage-earning class? Yes.
>
> q. 20796 Do you find in the new houses built now that the builders build one-roomed houses, or two-roomed houses or three-roomed houses? - They are generally two and three-roomed houses.
>
> q. 20797 Then there is no inclination on the part of the builders to supply one-roomed houses? - No, because there is a bigger surplus of them than of any other kind.[1]

The view developed earlier was of a volatile working class house-building cycle superimposed upon a more gently undulating construction pattern, itself cyclical, but of a reduced amplitude due to less abrupt alterations in income levels. Furthermore it was suggested that speculative housebuilding outbursts were only feasible on any scale in response to the sustained income gains of lower wage groups, as only under such conditions was housebuilding and property ownership for mass demand a viable economic proposition. Analysis of empty property data according to its rental value now shows that while agreement with the conclusion that all types of property 'fluctuated in much the same way'[2] is tenable in a Scottish context, the proportionately greater rises in cheaper property standing empty were of more significance to

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1 R.C. on the Housing of the Working Classes, 1884-5, Evidence of J. Gentle.

2 S.B. Saul, op. cit., p. 129.

the curtailment of the housebuilding boom, striking as it did at the most volatile element of the boom. Thus in Glasgow during the 1901-2 financial year, the number of vacant one-roomed houses escalated by 30% whereas for two-roomed property the rise was a more modest 18%[1] and in the following year the Glasgow housebuilding index collapsed, falling forty points.[2] Furthermore in Leith, Glasgow, Dundee and Edinburgh the excess supply of houses even when low absolutely, retained the gradations in which one-roomed houses had the highest stocks. Thus higher rental houses reached a minimum point prior to the cheapest houses and the upswing in housebuilding was a moderate one to which construction for the lowest wage earners contributed little or nothing. Only after the lowest grade of housing achieved its minimum point in its excess of stocks did housebuilding activity gain any support from this quarter.

At the apex of the boom it was the bulk supply of cheaper housing which was mainly responsible for the active building trades, as in 1875-6 or 1896-8. Bearing in mind that it was this category of houses in which higher proportions of empty properties were found and that low rental houses were the first category to see the percentage of empties rising then there is some reason to doubt the assertion of Cairncross that 'The competition of empty and newly erected houses therefore may be very imperfect.'[3] Indeed it seems that the likelihood of new houses remaining unsold and unoccupied was the very real fear of many builders.[4]

Unfortunately no protracted empties series such as those employed

1 G.M.C., Evidence of Chalmers, q. 585.
2 Glasgow, Memorandum of Linings granted by the Dean of Guild Court, 1872 - .
3 A.K. Cairncross, Home and Foreign Investment, op. cit., p. 28.
4 G.M.C., Evidence of McKellar, q. 10780.

by Spensley[1] or Cairncross[2] have been uncovered. The reports of individuals quoted above and the study by Cairncross show the role of the empties to be alive and valid in Scotland. It is not surprising therefore to see (Table 1) housebuilding in Edinburgh proceeding rapidly - the index in a countercyclical fashion registered 100+ during the first quinquennium of the eighties - when the level of empties, admittedly of £6-15 p.a. houses was so subdued in the previous five year period.

Table 1

The Percentage of Empty Houses of £6-15 p.a. Rental in Edinburgh

	%	Housebuilding Index
1875	2.16	
76	1.17	
77	1.14	
78	1.52	
79	2.31	
1880	4.31	181
81	5.49	129
82	7.13	141
83	7.41	109
84	7.07	115

Sources: R.C. on the Housing of the Working Classes, 1884-5, Evidence of R. Paterson, q. 18606-10; Edinburgh, D.G.C., Registers, 1880-85.

On the wane in the 1880s in the face of a mounting oversupply, housebuilding complied with the dictates of the level of empties. In 1893 some 623 houses rented at less than £6 and 431 at between £6 - 10 p.a. stood unoccupied in Edinburgh while the housebuilding index recorded

1 J.C. Spensley, 'Urban Housing Problems', Journal of the Royal Statistical Society, 81, 1918, Table VII. On a rather different point, the index of Scottish building the Spensley estimates show certain similarities with the present index, albeit over the brief span of years 1909-14. Rather sharp falls were registered by both in 1911 and minor reductions for both series in 1912 and 1913 were followed by agreement on an insubstantial rise in 1914.

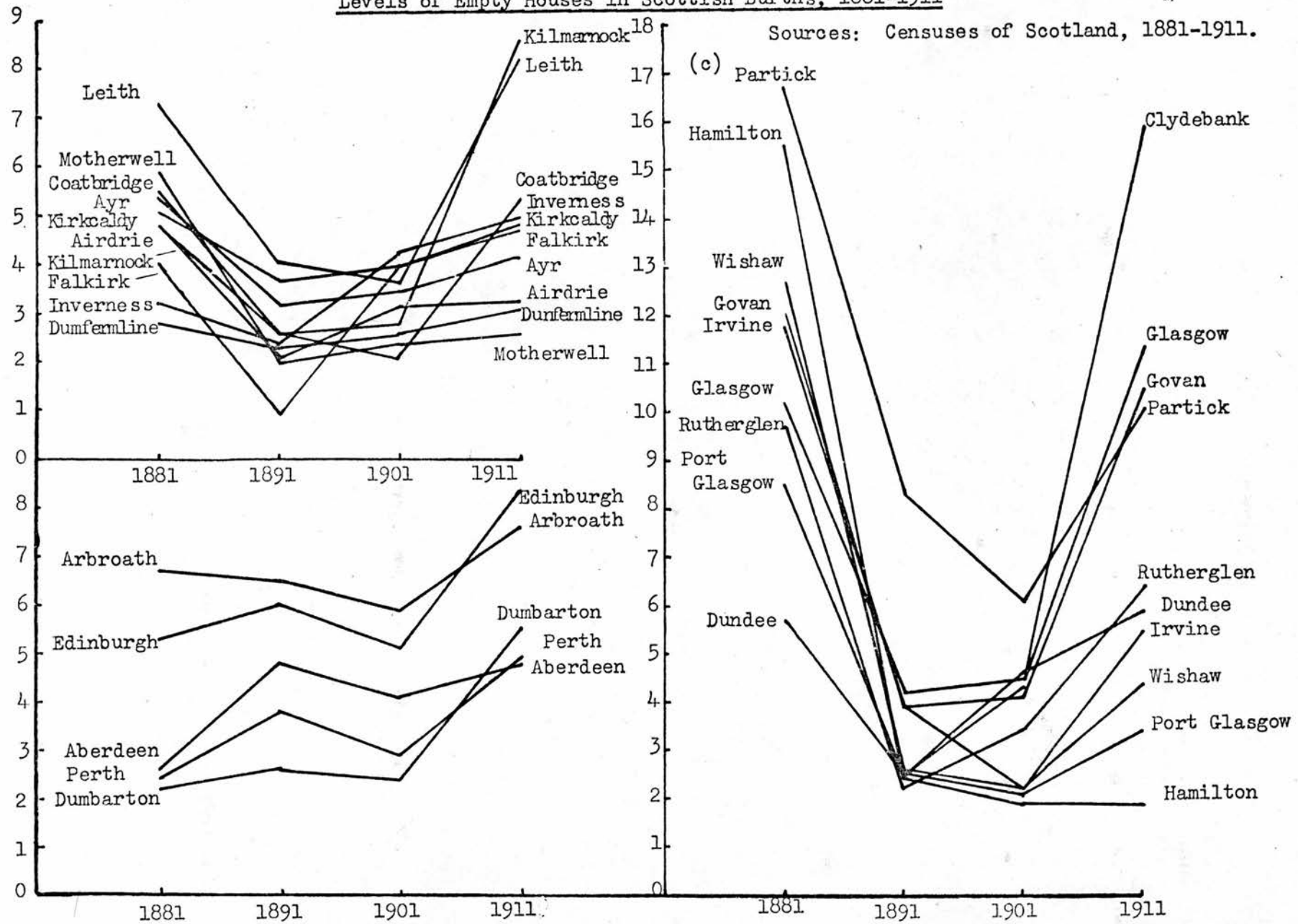
2 A.K. Cairncross, 'The Glasgow Building Industry', Review of Economic Studies, 2, 1934.

ig. 1.

(a)
%
of
Empties

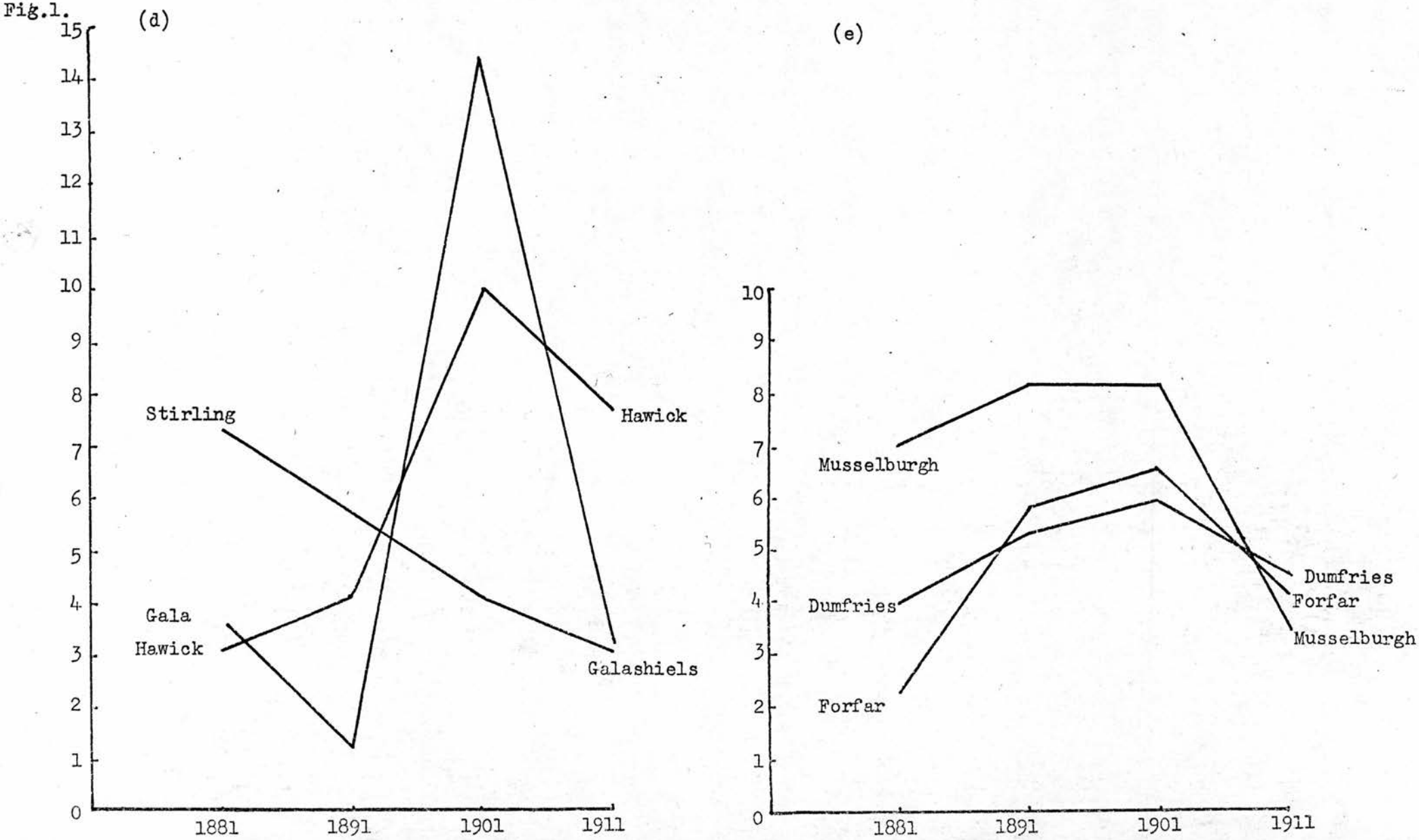
(b)
%
of
Empties

Levels of Empty Houses in Scottish Burths, 1881-1911



Sources: Censuses of Scotland, 1881-1911.

Fig.1.


(d)
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
1881
1891
1901
1911
Stirling
Hawick
Gala
Hawick
Galashiels
(e)
10
9
8
7
6
5
4
3
2
1
0
1881
1891
1901
1911
Musselburgh
Dumfries
Forfar
Dumfries
Forfar
Musselburgh

only 65. A rapid decline in the number of vacant houses developed subsequently so that in 1899 the buoyant index, 205, was matched by a dwindling volume of empties, 166 and 143 respectively in the under £6 and £6-10 categories.[1]

III

In the absence of continuous data on empty property census information must suffice. The percentage of empty houses in various Scottish burghs is presented in fig. 1 for the censuses 1881 to 1911 inclusive.[2] The expected path of empties in relation to the Scottish housebuilding index would show in 1881, considering the aftermath of the mid-seventies boom, a high degree of excess supply. A progressive diminution by 1891 would be required to be consistent with the upsurge of the middle and late-nineties housebuilding and in the light of continued post-1900 building a low level of empty property might reasonably be thought to obtain in the 1901 census. The more gentle decline in housebuilding during the Edwardian years would a priori be expected to produce an increased level of excess accommodation though perhaps not on the scale of 1881.

To a considerable degree figs. 1a and 1c endorse the above pattern, and this correspondence between stock and flow, empties and new building, emphasises the relevance of the stock-adjustment model in the house-building industry. Both figs. 1a, 1c therefore display a square U-shape andto a certain extent are a single diagram split for purposes of presentation. Apart from the overall shape three other common

1 Annual Report of the Burgh Engineer of the City of Edinburgh (1905), p. 6.

2 Subsequent references to percentages of empty houses are abstracted from the appropriate census. Although the omission of 1871 denies a view of oversupply in the industry before the upsurge of building 1872-6, it would be unwise to regard the census definition of a house to appear as comparable with subsequent censuses and for this reason 1881 is the earliest census employed.

features are apparent: firstly the approximately stable percentage of empties in 1881 and 1891, secondly the 2-4% range of those years, and lastly, 70% of the burghs in these two diagrams agree on an empties rate of less than 6% in 1911. For figs. 1d and 1c peculiar features secure their isolation, as is true to a certain extent for 1b, though common factors of low or steady proportions of empty property existed in the censuses of 1881-1901.

Two-thirds of the thirty burghs are represented by figs. 1a and 1c and to them attention is first directed. These two diagrams incorporate the industrial centres of Scotland; the keynote of the other three figures is their minor industrial importance, for as a rule they are commercial, distribution or rural burghs. No Lanarkshire burghs appear in figures 1 b, d or e; indeed only one west of Scotland burgh, Dumbarton does so. The unanimity of different types of burghs in their excess supply of housing is therefore striking. In a different though related context the entity of the housing market in the west of Scotland is also evident.[1] Overcrowding and the prevalence of one-roomed houses was greatest in burghs west of Falkirk,[2] and this is consistent with the view developed above that the cheaper grades of housing for low industrial wage-earners were largely constructed at the peak of the cycle. The contraction of housebuilding left substantial volumes of empty property, mainly in the cheaper category, that being proportionately greater in relation to the total housing stock than in other less industrially-based burghs where trade cycles were of lesser significance or complemented by other more stable employment.

Of the West of Scotland burghs the shipbuilding group suffered particularly in their over-expansion of the housing stock. In Port

1 S.L.E.C., pp. 350-1.
2 Ibid.

Glasgow with 8.5% of housing standing empty in 1881 the housebuilding index averaged only 52 over the adjacent years of 1879-83, the same level of building as Govan, and almost double that of Partick, where over the same quinquennium the highest level of empty property in Scottish burghs, 16.7%, permitted a quinquennial average housebuilding index of only 29. Small wonder that the shipbuilding prosperity of 1881-3 received such a cool response from Partick housebuilders. Excess supplies to the extent of 15.5% in Clydebank in 1911 provided little encouragement for housebuilders and the index stood at very low levels until the outbreak of war. In Port Glasgow however the percentage of unoccupied property moved only slightly upwards between 1901-11 and thus did not provide a serious obstacle to housebuilders. Their activities remained above the national index in the latter part of the decade and in response to the emergence from a shipbuilding slump 1908-10 responded to an improved trade situation in 1911, the index rising to 109 unhampered by the substantial oversupply of accommodation apparent elsewhere.

In the burghs of Falkirk, Motherwell, Wishaw, Coatbridge and Airdrie a broad agreement appertained to their excess housing stock. Although in Wishaw empties were reduced substantially by 1891, to which the builders of that town had responded by 1894, for the other burghs a 2-3% reduction between 1881 and 1891 was normal, followed by an approximately stable rate in 1901 compared to the previous census, with a resumption of the 1881 level being achieved in 1911 with a 2-3% rise in empties. Absolute levels of empties were thus similar to the burghs of fig. 1c, except in the aftermath of the 1870s boom as recorded in the 1881 census, when empties were generally 3-4% below the shipbuilding group for example. The response of housebuilders in the

realisation that empties in the steel burghs were none too severe as compared to elsewhere probably proved conducive to a less abrupt reduction of building activity in the 1880s.[1] The less dramatic response to the level of excess supply was also evident in the subdued peaks of the nineties when housebuilders in these burghs were less excited by the percentage reduction of the 1891 census which for the relevant burghs of fig. 1a fell from an average 5.1% in 1881 to 2.0% in 1891.

From fig. 1b it can be easily appreciated why the housebuilders of Edinburgh and Aberdeen enjoyed prosperity in the 1880s. The excess of stocks of houses did not exist to the same scale as in other burghs, and thus provided a lesser barrier to housebuilders in the more buoyant years of that decade. However when the tide turned and empty property assumed greater proportions construction interests in these cities also ceased operations and the higher empties figure of the 1891 census saw considerably reduced housebuilding in Aberdeen 1890-1 and in Edinburgh during 1890-3.

In the cases of Dumfries and Forfar (fig. 1e) an inverted U-shape owed much to the declining rate of population growth in which existing property rather than new building became in excess of requirements. It would seem that in the rural context the supply factor of housing stocks was also relevant to the quantity of housebuilding though in these instances it pursued a path contrary to the general trend in Scottish burghs.[2]

For Musselburgh (1e) and Stirling (1d) the only conceivable conclusion is that the housing stock variable was over-ridden by other

1 A.K. Cairncross, op. cit., p. 8, n. 2, makes this point effectively when he notes a greater steadiness of demand in areas where the staple production is some sort of consumption goods.

2 Dumfries, D.G.C., Register of Petitions, 1893-1905, N.R.A., 1/4/2-3; Arbroath, D.G.C., Minutes and Burgh Engineers' Registers, 1905- , N.R.A., 1/3/1.

influences on housebuilding. In the face of the straight line declining trend of empties in Stirling housebuilding in that county town pursued an unrelated course. In the mid- and late-nineties a generally high though variable volume of house construction was underway. But the projection of the trend of empty property in the 1901-11 decade witnessed something of declining housebuilding in the early 1900s, followed by buoyant building 1903-8 and then another considerable decline. Normally this apparent paradox might be reconciled by inter-censal variations in the level of empties, but in the case of Stirling, despite the peak index value of 175 in 1908 and subsequent indices of 60, 34 and 67 during 1909-11, the census recorded a very low level of empties when the reverse was to be expected. It would seem that housebuilders in this burgh at least took greater cognisance of other factors over these years. For the building decision in Musselburgh in the years spanning 1898-1914 the same conclusion obtained. This Midlothian burgh followed the general cycle- the dip of 1899-1900, post-war boom and decline to 1913 - at the same time as the empties percentage declined from 8.2% in 1901 to 3.5% in 1911. Only insofar as a reducing excess stock encouraged a belated peak, 1905, and in certain other years sustained Musselburgh housebuilding at levels beyond the national average was the proportion of vacant property consistent with the housebuilding industry's output.

American tariff policy was an important factor in the prosperity of the border woollen towns.[1] Before the tariff became effective from 1890 however, a boom developed in the 1880s which added substantially to the economic prosperity of the burgh, in which housebuilding shared.

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1 W.P.H. Sinclair, 'The Economic Background of the Tweed Valley Woollen Industry', Scottish Woollen Textile College Yearbook, 1950, p. 32.

The proportion of empty houses did not rise appreciably and as such was a contributory factor in the boom of 1898. A 10% excess of housing stock existed in 1901. As a housing boom had developed on the lines of the national pattern, with a peak in 1898 its development presumably had not been jeopardised by the building upsurge of 1885-90. The interruption of the eighties boom therefore was largely the result of the American decision, whereas in 1898 the growth of empties to 10% of the total housing stock brough a halt in building and was evident in the indices of 1899-1902 which were consecutively 51, 64, 39, 77.[1]

In Galashiels (1e) the cessation of active housebuilding in 1890 was again caused by the exogenous factor - the American duty.[2] A fairly even path to housebuilding in Galashiels developed 1894-1912, interrupted by a recession during 1898-1903 due in part to the mounting proportion of empties, 14.6% being recorded, and even the effect of a steep reduction to 3.2% by 1911 could not overcome the depressive effects of dismal prospects for the weaving section of the woollen trade.

In relation to the argument that rising numbers of empties topped off a boom contemporary accounts averred that it was so in 1875-6,[3] and for the subsequent cyclical peak some agreement is possible, although not entirely unambiguous. For example in those burghs where the proportion of empty property in 1901 was below that of 1891 the housebuilding peak was as likely to be in 1897-8 as in 1902-3. Similarly where the 1901 level exceeded that of 1891 the housebuilding peak was if anything marginally more likely to transpire at the later

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1 Hawick, D.G.C., Registers, 1899-1902, N.R.A.,
2 W.P.H. Sinclair, op. cit.
3 G.M.C. Evidence of Binnie, p. 306.

1902-3 stage where the reverse was to be expected. What seems more relevant is an investigation of the excess supply situation in 1891 and 1901 in that in many burghs only marginal variations occurred in the number of empty houses, and it would be inappropriate to expect a sensitivity and fineness of judgement which the very nature of the industry and its product precluded. Where the movement in the level of vacant houses was more decisive builders adjusted their operations accordingly. The post-1900 expansive phases of shipbuilding and steel-dominated burghs can be viewed in this light. To the prosperous industrial developments in western Scottish burghs during the Edwardian period housebuilders initially responded, unrestricted. The excess of housing stocks was at virtually minimum levels. The potential housebuilding boom as a result of the expansion of aggregate incomes was limited nevertheless by the rise in empty property and the saturation of the market, partially achieved in the pre-war peak of 1897-8.

The over-supply of housing was, therefore, at the peak of the 1902-3 boom a powerful influence which superceded the positive contribution from the income variable in the determination of house-building fluctuations. The continuance of this influence remained moderate certainly until 1911 and possibly to the eve of war. That it was applicable to the burghs of the Clydeside - Lanarkshire axis has already been illustrated but it was also of relevance in many other burghs, notably Edinburgh, Aberdeen, Kilmarnock, Leith, Galashiels and Hawick.

The stock adjustment determinant of housebuilding cycles was not always of major significance. The downturn of residential construction in 1899-1900 in most burghs was attributed to the Boer War. Despite depleted stocks of houses in Hamilton between 1891 and 1901 only a very

subdued housebuilding boom developed, and subsequently, in response to a flagging industrial performance housebuilding fell off quite substantially from 1905-11 though empty property in the burgh remained at lowly levels even in 1911. Emanating from local employment prospects the demand based explanation took precedence over the supply determinants of housebuilding in this instance and also in the case of the temporary Clydeside revival of the early eighties, where in spite of an oversupply of 9 - 10%, housebuilding enjoyed a short-term improvement in response to the shipbuilding buoyancy of 1881-3.

IV

A method for the comparison of building activity in relation to the extent of excess housing supply has been developed by Saul,[1] and it is useful to view the course of Scottish housebuilding in this light. A dynamic approach is adopted by Saul in asking to what extent was housebuilding increasing or decreasing in the past - as opposed to the pre-census years, the census point being the years in which a definite level of empty property is available. A variant of this is possible, a static approach, whereby the actual housebuilding level is correlated to the level of empties. The respective formulae are shown below:

Dynamic (a)	Static (b)
$\frac{\text{Indices 1911, 1912, 1913}}{\text{Indices 1908, 1909, 1910}} \times 100$	$\frac{\text{Indices 1910, 1911, 1912}}{3}$

Conceptually the distinction between the methods is quite marked. Deviations in the activity of housebuilding are significant, particularly where unusual years are apparent. In Govan, for example, in 1881 the average index value (static approach) for 1880-2 was 55, whereas the highly depressed years of 1878-80 when compared to the improving years

1 S.B. Saul, op. cit., pp. 126-8, and fig. 2.

1881-3 recorded an activity level of 176. Similarly in Partick, where the static approach recorded an average index of 29 compared to the Saul, dynamic formula, which was 227. If the 1881 census was surrounded by atypical years the discrepancies remain in a moderated form in other years. The different techniques of determining house-building in relation to excess supply are presented for a less bizarre year, 1911, in Table 2.

For the twentieth century censuses the empties - housebuilding relationship - a demand shaped curve sloping from top left to bottom right - appears valid. The gradient of the 1911 curves is steeper than those of 1901, signifying that in 1901 small variations in the level of empties by producing substantial variations in the volume of building was a more potent force than in 1911 in the shaping of housebuilding fluctuations.

Although generally applicable the empties-building relationship was not unambiguous. In Hamilton and Hawick housebuilding was equally slack even though the percentage of empties in 1911 was quite different, 1.9% in Hamilton and 7.7% in the border town. In Airdrie, Port Glasgow and Musselburgh empty houses comprised respectively 3.3%, 3.4% and 3.5% of all housing, but housebuilding in these burghs was more diverse -- the indices were 67, 80, and 54.

The link between Scottish housebuilding and empties in 1901 was far from 'tenuous' as has been noted south of the border.[1] True in certain burghs such as Paisley a sizeable number of empties had not disinclined housebuilding , and this was also the case in Partick where the percentage was again above 6%, but there was little of the increasing housebuilding in the face of mounting oversupply, as developed in Bath,

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1 S.B. Saul, op. cit., p. 128.

Table 2

Housebuilding Activity in Relation to Empty Property, 1911

	% of Empty Houses 1911	(a) Dynamic	(b) Static
Aberdeen	4.8	47	31
Airdrie	3.3	80	67
Ayr	4.2	73	21
Clydebank	15.5	32	39
Coatbridge	5.4	39	29
Dundee	5.9	79	52
Dunfermline	3.1	85	124
Edinburgh	8.4	51	35
Falkirk	4.8	48	33
Galashiels	3.2	83	106
Glasgow	11.4	53	34
Govan	10.5		13
Hamilton	1.9	62	22
Hawick	7.7	23	22
Irvine	5.5	28	33
Kilmarnock	8.7	74	23
Kirkcaldy	4.9	25	50
Leith	8.3	46	38
Motherwell	2.6	55	69
Musselburgh	3.5	54	54
Paisley	7.6	24	31
Partick	10.1		46
Perth	4.9	60	39
Port Glasgow	3.4	91	80
Rutherglen	6.4	73	69
Stirling	3.1	55	49
Wishaw	4.4	29	28

Sources: Census of Scotland, 1911; Dean of Guild Court Registers.

Brighton, or Bristol.[1] Indeed only two burghs, Galashiels and Hawick, differed to any extent from the general pattern (1901, (a)) and in these the response to a high number of empties was to reduce the scale of building in the years after 1901. Thus Scottish urban housebuilding responded with greater homogeneity than English towns to excess supply in the housing market.

Although only a few observations are possible in 1881 and 1891 an interesting point emerges in the last census of the nineteenth century. Virtually a horizontal straight line described the empties - house-building relationship. Housebuilding in all except three burghs expanded in 1891-3 relative to 1888-90, but appeared to do so irrespective of the level of empties. Thus in Glasgow with 4.2% of property standing unoccupied and in Kirkcaldy where it was 3.7% expansion proceeded at a rate far in excess of Clydebank, Dundee or Port Glasgow where only 2.5% of houses were empty. Although the 1891 data is insufficient it would tentatively suggest that the proportion of empties was unimportant in the housebuilding upswing of the 1890s. At best it was a facilitating factor in this phase of the cycle.

Of 1881 only the flimsiest of evidence is available. It indicates that the absolute level of empties was not dissimilar to the post-expansionary stage of 1911 and the regression line of this census also shows a gradient of steep proportions. However only with the greatest of caution can importance be attached to these features.

It is difficult to assess whether the decline in empty property after 1911 foreshadowed a resumption of housebuilding. Certain burghs had enjoyed a building improvement in 1913 or 1914 though none registered an increase in both years, and in any event housebuilding and empties could decline for some time before new house construction was resumed on any scale as the not too distant 1880s circumstances recalled.

The trend of empties was certainly downwards as Table 3 shows in

1 Ibid.

Fig. 2.

Scatter Diagrams for % of Empty Houses in Relation to Housebuilding Activity

Sources: Census of Scotland 1881-1911: Dean of Guild Court Registers.

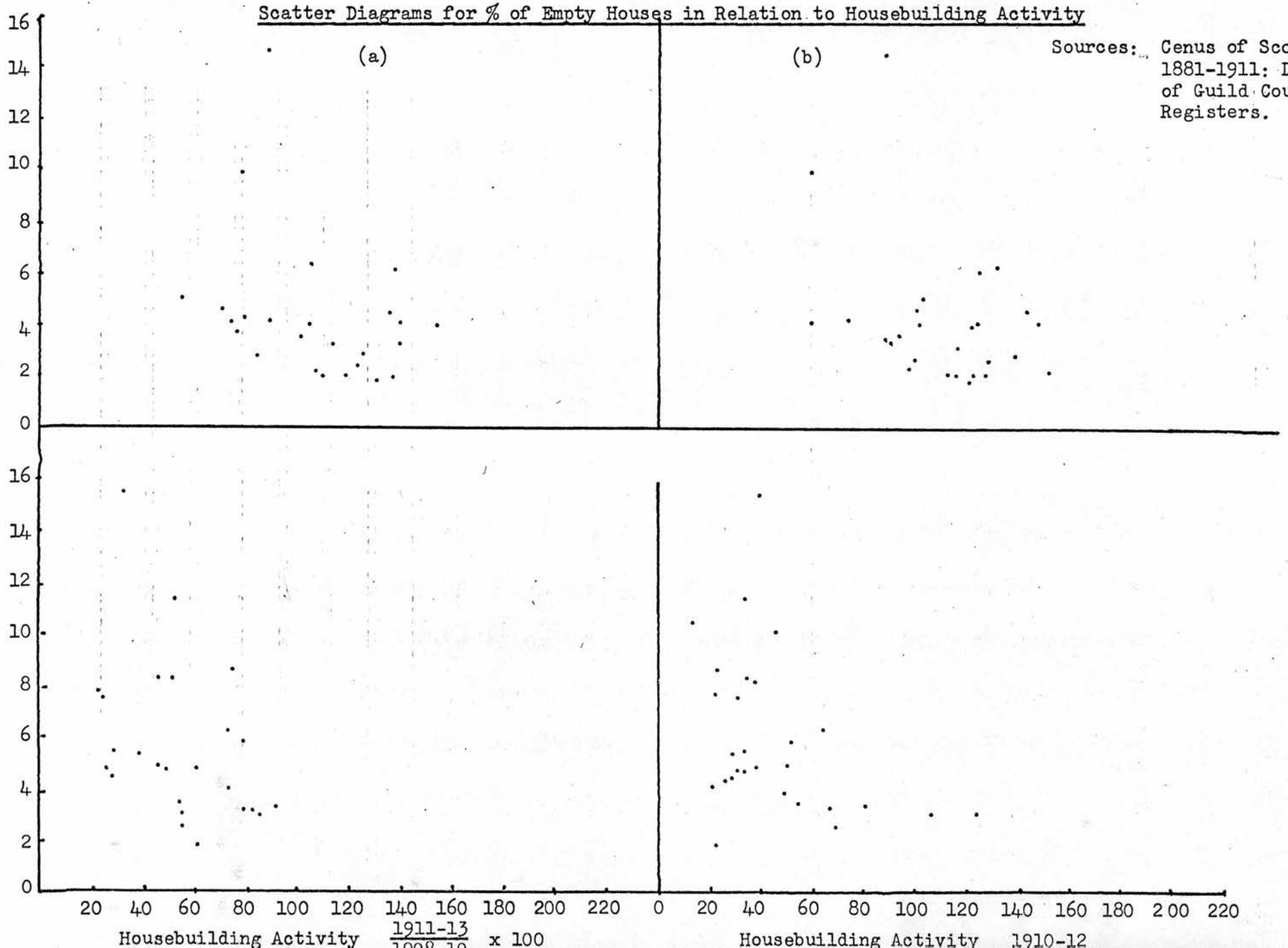
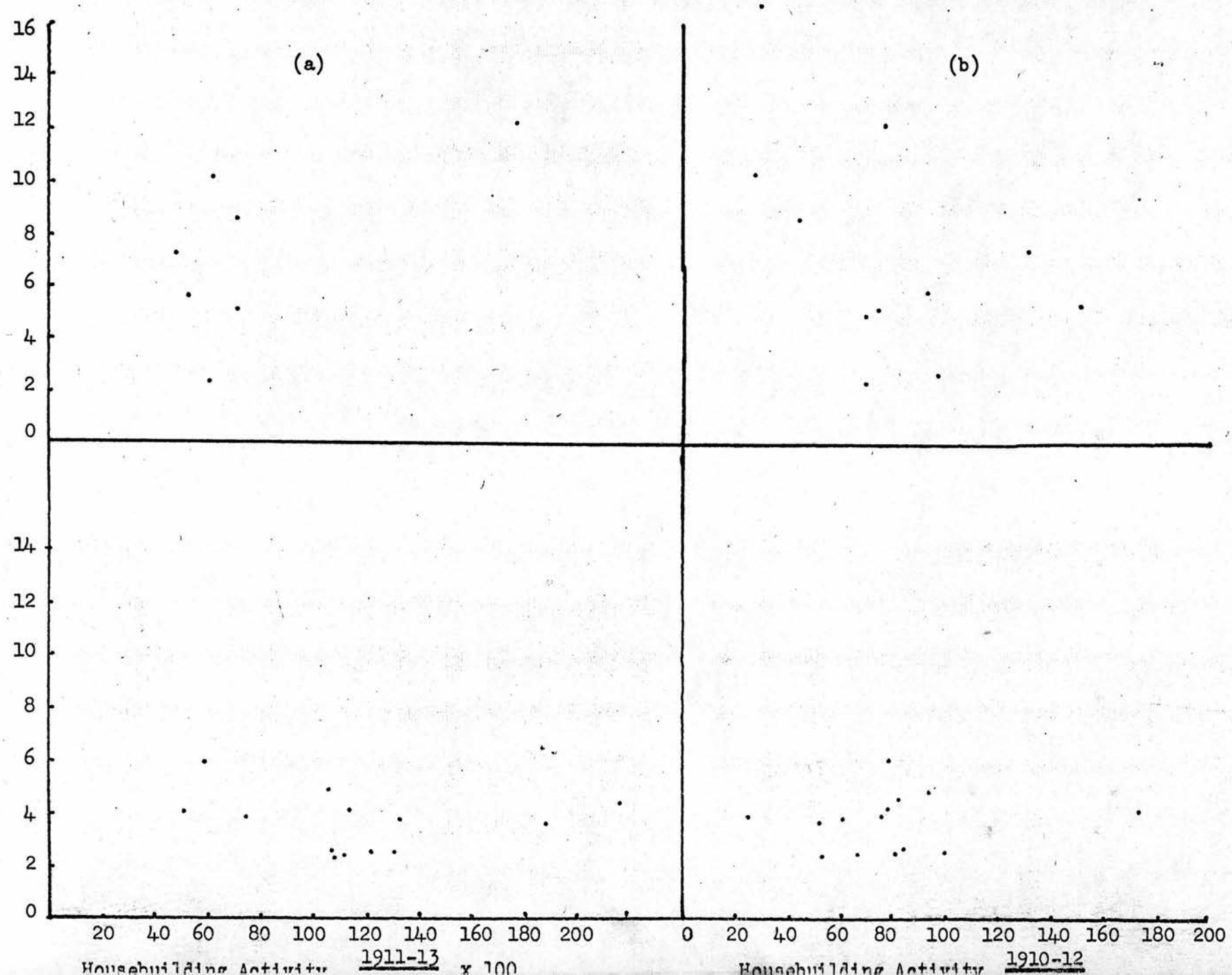


Fig. 2.


(a)
(b)
1881
% of
Empties
1891
% of
Empties
16
14
12
10
8
6
4
2
0
20 40 60 80 100 120 140 160 180 200
0 20 40 60 80 100 120 140 160 180 200
Housebuilding Activity 1911-13 x 100
Housebuilding Activity 1910-12

the years immediately preceding the Great War. For the burghs of western industrial Scotland the reduction of excess housing was substantial and in several negligible levels were apparent in 1914 suggesting an imminent building upswing in Clydebank, Rutherglen and Greenock. In Paisley the 4.3% rate of empties in 1914 was similar to the 1891 level which ushered in a housebuilding boom. However, in Glasgow, Dundee and Aberdeen empties were in excess of 5%, some 1-2% above comparable points of upswing in earlier cycles. The Annual General Meeting of the Edinburgh, Leith and District Building Trades' Association may not be untypical of the general Scottish housebuilding cycle in 1913:

> 'The Annual Report stated that recovery in the improvement of the building trade generally was proceeding slowly, and especially in speculative and private building, there was not much improvement.'[1]

It appears therefore that while recovery was expected at the outbreak of war,[2] it was not imminent, the cities of Scotland being furthest from an upward swing in housebuilding. Thus the considerable fall in the number of unoccupied houses during 1911-14 as in 1881-4 was likely to have been 'naturally slow in gingering up the industry'[3] and thus the upswing but for the war must at the earliest have been in 1916 and probably later.

Dating the probable upswing raises the issue of the trigger point of recovery. With the extent of empty property an effective pre-

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1 The Builder, Feb. 7, 1913.

2 Departmental Committee on Increases in Rental of Small Dwelling Houses in Industrial Districts in Scotland, 1916, Cd. 8154, heard evidence from several witnesses to the effect that the previous oversupply had by 1914-15 achieved a better equilibrium and that housebuilding on a more active basis was thus to be expected but for the war. See Speirs, q. 1215-26; Eadie, q. 1238; Faulds, q. 389-96; Wardley, q. 784-5.

3 A.K. Cairncross, 'The Glasgow Building Industry' op. cit., p. 7.

Table 3

Percentages of Empty Houses in various Scottish Burghs

	1911	1912	1913	1914	1915
Aberdeen	6.8	7.5	7.9	5.8	
Dundee	5.9		7.1		5.2
Glasgow	11.0	10.7	10.3	7.9	5.7
Partick	10.1			1.1	0.9
Govan	10.5			3.6	1.6
Greenock	3.7			0.4	0.2
Paisley	7.6			4.3	1.8
Rutherglen	6.4			2.2	0.9
Clydebank	15.5			0.4	

Sources: Departmental Committee on Increases in Rental of Small Dwelling Houses in Industrial Districts in Scotland, 1916, Cd. 8154. Evidence of McGowan, p. 110, Appendix XXXV; Evidence of Fraser, p. 101, Appendix XIV; Evidence of J.W. Smith, p. 99, Appendix IX: Evidence of Stiren, p. 106, Appendix XXII.

requisite for renewed activity what levels of empties were necessary to initiate housebuilding? In Scottish cities rather higher proportions of unoccupied houses were tolerated than in smaller burghs. In Aberdeen housebuilding got underway in 1891 with 4.8% of properties standing idle; in Glasgow it was 4.2% and in Edinburgh 6.0% in 1891. In Paisley it has already been noted that 4.6% of houses or 1 in 22 were empty in 1891 and in Leith and Govan it was 4.1% and 3.9%.In none of these cases was the higher level of empties a bar to the early development of the housebuilding boom, nor was the existence of 2.5% or one unoccupied house in forty in smaller burghs a factor producing an earlier recovery. Thus in Coatbridge, Port Glasgow and Kilmarnock the resumption of house construction was, as in larger burghs, well underway by 1893. In fact in the new town of Clydebank where 2.5% of

houses were empty in 1891 the boom developed later rather than sooner with factors other than empties more important determinants of fluctuations in the early nineties. In Falkirk, too, only every hundredth house stood empty in 1891 yet housebuilding was very depressed in 1893, and only slightly less so in 1894. Nor did a higher percentage of empties dampen the length or height of the boom, and in Aberdeen, Leith, Edinburgh, builders enjoyed a very prosperous economic climate. As did housebuilders in towns with a lesser proportion of unoccupied houses, and in certain cases of almost no excess supply in 1891, the buoyancy of the nineties produced only a modest climax, as in Hamilton, where the peak index value was only 114 in 1898 and in Ayr where only 3.2% of houses remained unoccupied and the plateau of housebuilding 1896-8 recorded the very subdued indices of 109, 106 and 109 respectively.

The critical level of empty property to which builders reacted was therefore several levels. While a small excess always existed whether to accommodate migratory workers or whether judged uninhabitable, deficient in amenity or obsolescent, the acceptable level of unoccupied houses varied from town to town. Thus in Glasgow this was thought to be 3-4%,[1] but as noted above, a 2-3% of empties level applied to 40% of Scottish burghs in 1891. Similar percentages therefore implied varied responses from housebuilders as in Edinburgh where 5.3% in 1881 and 5.1% in 1901 were insufficient proportions of excess supply to deter builders from continuing their activities. By the same token a similar excess in Dundee, 5.7% in 1881 and 5.9% in 1911, was very effective in applying the brake to house construction.

If the emerging conclusion is apparently to treat each case

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1 Ibid., p. 6.

individually recollection of the general agreement of fig. 2 (1901, 1911) provides a fair measure of corroboration for the inverse housebuilding - empties relationship in terms contemporarily expressed as:

> '.... when the highest number of empty houses was registered in the city ..... the lowest number of linings were passed by the Dean of Guild Court.'[1]

V

Thus concrete conclusions come from this study of Scottish empty property. The inverse relationship of empties and housebuilding is alive and well and effective, though mainly at the upper turning point of the cycle or on occasions of marked change in the level of empties, as in 1876-7 and 1903-4 in Glasgow. If not exactly a uniform relationship the variations represented in fig. 2 are not entirely unexpected given the existence of diverse trigger points - those critical empties levels to which builders in Scottish burghs attached varied interpretations. Within the overall pattern certain types are discernible. Larger burghs generally held a higher proportion of property unoccupied compared to their lesser brethren, although the divergent views of the minimum threshold of empties made little difference to the subsequent length, duration or intensity of the boom. The role of empty houses therefore in the recovery phase was apparently a facilitating but not a decisive factor, and the contribution only became more than marginal in the developing boom. Another type of burgh was identified where empties levels varied according to the employment make-up of the burgh. Commercial and consumption based municipalities such as Edinburgh, Aberdeen, Perth and Stirling were less subject to pronounced swings

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1 Department Committee on Increases in Rentals of Small Dwelling Houses, op. cit., Evidence of Speirs, q. 1151.

in empties often witnessed by burghs which concentrated more on a single staple industry, as in Galashiels or Govan. Consequently while the stock-adjustment determination of housebuilding fluctuations, as recorded by the levels of empty houses, is valid and allows concurrence with the Cairncross' conclusion 'that plans passed in 1872-3 will reflect changes in the number of empty houses between June 1872 and June, 1873'[1], in certain cyclical phases the demand explanations based on incomes superseded the oversupply factor, empties.

VI

In a contemporary view of the components of rent it was alleged that an important constituent was the 'cost of production'.[2] That costs occupied a central role in the determination of the supply price is of no surprise in a situation where the price mechanism was operative and thus building costs or 'the costs of production' can be seen as an essential element in the supply schedule of housebuilders. Not simply an influential factor but one varying with the cyclical nature of housebuilding delivering 'the final coup de grace to building booms',[3] building costs merit minute attention in the mechanics of housebuilding fluctuations.

The differential impact of costs on the building decision noted above echoed a late Victorian view that high costs of construction were influential more for the investment builder than his speculative counterpart.[4] Such a view in emphasising the relevance of costs with reference to the volume of residential construction requires the derivation and deployment of building cost data with respect to the

1 A.K. Cairncross, 'The Glasgow Building Industry', op. cit., p. 7.
2 G.M.C., Evidence of Fyfe, p. 66, q. 1054-5.
3 A.K. Cairncross, 'The Glasgow Building Industry', op. cit., p. 11.
4 Building Societies Gazette, 1 May, 1890, quoted in Saul, op. cit., p. 130.

housebuilding activity level.

Complete building cost data, wages and materials, for each Scottish burgh present enormous, if not insuperable, assembly problems. A degree of simplification such as the 50-50 wages-materials weighting of Maiwald,[1] permits some progress to be made. Equal weighting to these dual components of Scottish building costs was also thought to be appropriate.[2] Indeed wage payments were viewed as an accurate proxy for overall building cost movements, an increment of one penny per hour representing an additional £10 to the cost per room.[3] That most building trades' wages moved in harmony is a further apposite simplification in the Scottish case, as illustrated by Bowley,[4] and consequently variations in the wage rates of one trade, as demonstrative of disequilibrium in that labour market, may with caution be interpreted as representative of the building industry more generally. In Dundee, for example, the labourers' summer weekly wage after six years at 21s.3d. per week rose to 23s. 4d. in 1895, a gain which skilled tradesmen also enjoyed, masons moving from 35s. 1d. to 37s. 2d. and painters from 31s. 10d. to 34s. per week.[5] In the Scottish capital building tradesmen were apparently subjected to approximately similar labour market situations and wage rates moved if not with unanimity then with a general measure of agreement, as in 1892 when six of the eight classifications of building workers enhanced their weekly pay.[6]

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1 K. Maiwald, 'An Index of Building Costs in the United Kingdom, 1845-1938', Economic History Review, 7, 1954, pp. 187-203.
2 Glasgow Municipal Commission and the R.C. on the Housing of the Industrial Population of Scotland, 1917, both carried lengthy discussions of the wage and materials components. See for example, R.C., 1917, Evidence of Fraser, q. 38113.
3 Ibid., q. 38114.
4 A.L. Bowley, 'The Statistics of Wages in the United Kingdom during the Last Hundred Years', Part VII, Wages in the Building Trades, Scotland and Ireland, Journal of the Royal Statistical Society, 63, 1900, pp. 485-97.
5 Ibid., pp. 490-1.
6 Ibid.

The absolute cost levels of constructing identical properties varied enormously between Scottish burghs. Such was the case in the dozen miles which separated Peterhead and Fraserburgh or Hawick and Jedburgh,[1] and in the cases included in Table 4. Thus the capital cost of two cottages ranged from £225 in Glasgow to £250 in Dunfermline, and surpassed the £300 level in Aberdeen, whereas in the remote rural areas of Kirkcudbright and Argyll upwards of £320-330 was commonplace. But if variations in the central industrial zone existed to the extent of £50 per pair of houses, the differentials remained relatively unchanging. Wages in Glasgow and its hinterland remained the pinnacle for all Scottish building workers, and if the minor urban centres offered a labour supply at much reduced wages this was compensated by the additional expense involved in the procurement of materials, especially in transport costs.[2]

The wage component of costs formed a reasonably distinct geographical pattern between 1863-1910.[3] Wage rates in almost a hundred branches of the Associated Carpenters and Joiners of Scotland expressed as a percentage of the average of the Glasgow and Edinburgh branches are charted by groups in fig. 3. To be expected in the use of averages is the over-reaching of the percentage bands in which certain burghs were placed, as for example in burgh of Hawick in the buoyant housebuilding conditions of the 1880s, but overall the average ascribed to a burgh does reflect the wage level in relation to the

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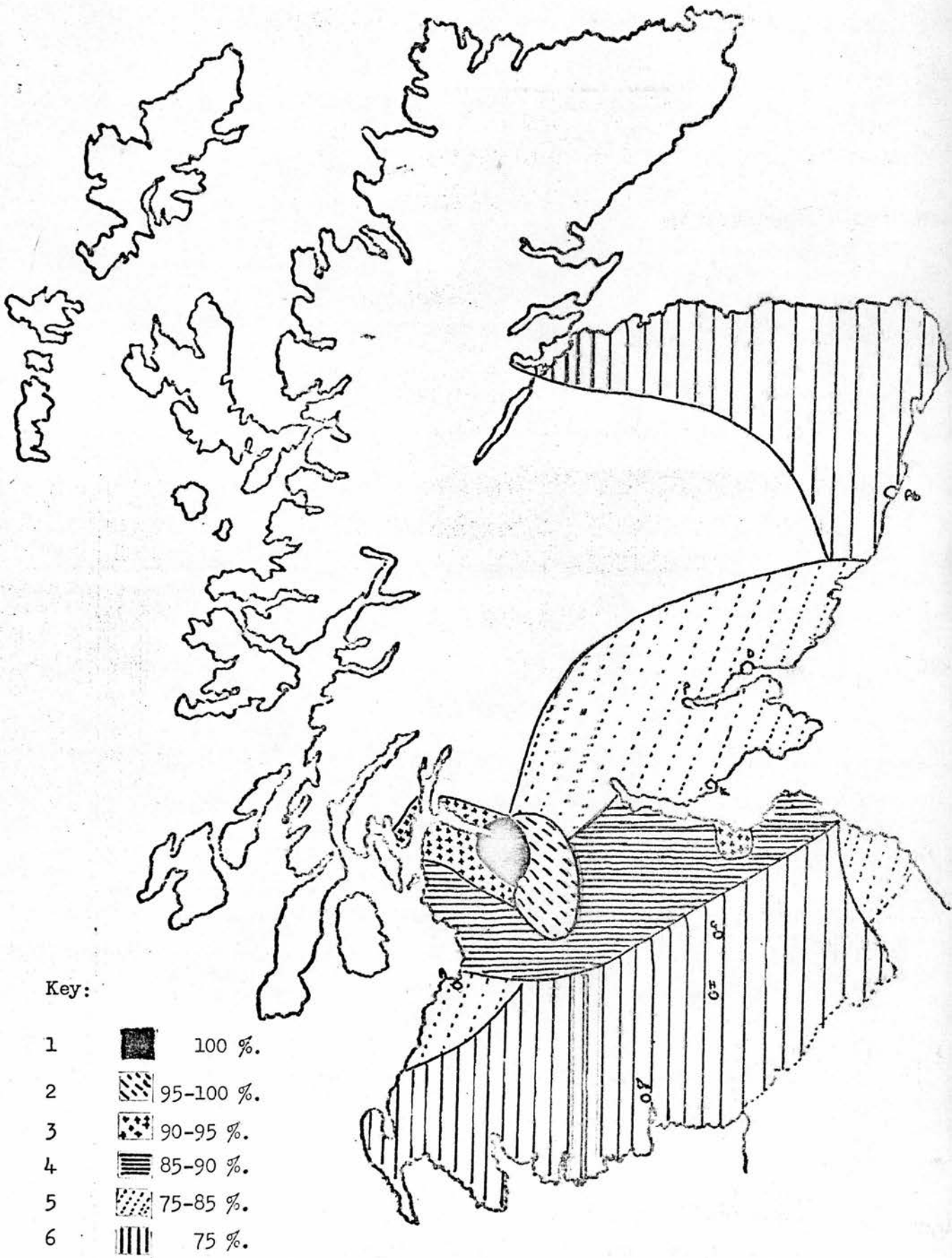
1 R.C. on the Housing of the Industrial Population, 1917, op. cit., Evidence of J. Wilson, Vol. 3, paras. 130-1, p. 124.

2 Ibid., Evidence of J. Wilson, q. 43901-3. It follows from this that the wages and materials components are not always equally important to all burghs. However for the present geographical coverage the weighting if not 50-50 is biassed towards the wage element and this forms the basis of the building cost data.

3 Associated Carpenters and Joiners of Scotland, Annual Reports 1862-1910 (quoted subsequently as A.C.J.S.).

Fig. 3.

Comparative Regional Building Costs in Scotland, 1860-1910



Glasgow/Edinburgh average = 100%.

Towns: Aberdeen, Perth, Kirkcaldy, Galashiels, Hawick and Dumfries all group 4. Ayr and Dundee, group 2.

Source: Associated Carpenters and Joiners of Scotland, Annual Reports 1860-191

Table 4

Comparative Costs of Building in Various Scottish Burghs

Burgh	Standardized Specifications for: Block of 2 Cottages cost per cu. ft.	Block of Four Double-Flatted Houses cost per cu. ft.
Aberdeen	7.15	5.94
Ayr	5.67	4.79
Clydebank	5.32	4.37
Dunfermline	5.40	4.59
Dundee	5.35	4.56
Glasgow	4.85	4.10
Hamilton	5.23	4.33
Edinburgh	5.32	4.47
Perth	5.73	4.86
Hawick	5.64	4.88
Stirling	5.97	4.03
Motherwell	5.29	4.70

Source: Royal Commission on the Housing of the Industrial Population of Scotland, 1917, Cd.8371, Evidence of J. Wilson, q. 43721, Appendix CXCV, Vol. 4, pp. 233-4.

two major cities, and the use of bands allows for a certain degree of flexibility. Wage rates in Glasgow were consistently higher than in Edinburgh, whatever the cyclical phase. Competing shipwright work on Clydeside apparently inflated the wage cost element in the Renfrewshire and Dumbartonshire towns for they were in no greater proximity to Glasgow than the Lanarkshire burghs to the east which were roughly 5% lower in their wage rates. Nor was accessibility a viable explanation of this discrepancy. In the late nineteenth century effective rail links connected Glasgow to adjacent towns, though the infrequent reference to commuting in official housing investigations would suggest this as inoperative, and in fact cheaper steamer rates which encouraged

labour mobility on Clydeside might have been expected through the expansion of the labour force to have restricted the building wage rates of that area relative to Lanarkshire. That it did not demonstrate the effective competition of the shipyards for this form of labour, though other grades - mason, bricklayer, plumber - may have experienced wage rates which diminished in concentric circles emanating from Glasgow.

Broad agreement on building wages was achieved within the geographical areas of the southern uplands, the central belt, the Moray Firth and Aberdeenshire coasts and also in east-central Scotland comprising the counties of Stirling, Clackmannan, Fife, Forfar and east Perth. The outer areas of these four, remote and sparsely populated, possessed wage levels in the joinery trades at a maximum only 75% of those operative in Edinburgh and Glasgow, and frequently this was less, as for example in Huntly, where it was 60%. If anything building wages in the southern upland burghs were marginally above their northern counterparts. Wedged between these low wage areas were firstly the burghs of the industrial heart of Scotland, including for example Kilmarnock, Irvine, Wishaw, Johnstone, Falkirk and many lesser lights - Larkhall, Bonnyrigg, Bo'ness - and in these wage rates were generally 85-90% of the Edinburgh — Glasgow axis. The second group of burghs bounded by the Forth to the south and running north-easterly to Montrose confirmed their minor urban status by wage rates ranging from 75-85% of the two major city levels. Seventeen burghs within this area complied with the 75-85% relativity and in so doing acknowledged not only their peripheral urban status but a more general phenomenon of radiating cost levels based on major industrial centres.

Radiating and reducing wage cost levels can also be demonstrated

on an individual burgh basis. Thus Kirkcaldy, Perth and Dundee experienced wage rates in excess of their environs; so too did border towns, though for Hawick, Galashiels and Dumfries the gulf was greater than between Perth or Dundee and their neighbouring towns. In Ayr an average of 90.9% of the base towns was slightly diminished in nearby Cumnock and Maybole, respectively 78% and 80%, and in Aberdeen too a full 10% in excess of the building wage rates of its rural environs developed. Glasgow, of course, performed just such a function for western Scotland,[1] many of the wage rates being effectively tied to the Glasgow rates.[2]

A structured view of Scottish building costs emerges in which cities and major industrial conurbations paid building labour at rates in excess of other townships, though in these latter cases the materials element of cost compensated to such an extent as to outweigh their cheap labour advantage and thus push the cost of the final product well beyond the levels of the burghs of central Scotland.[3]

VII

The synchronisation of alterations to building wage rates and the relative constancy of burghs and areas with respect to one another over a protracted time period forms the basis of the construction of an index of Scottish building costs which is generally applicable. Various estimates of the movements in Scottish building costs 1864-1900 are produced in Table 5, fig. 4, and for comparison the overall United Kingdom index of Maiwald is included. On the premise that the cue for wage rates was taken from larger burghs a weighting factor, based on

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1 G.M.C., Evidence of Kelso, p. 175, q. 4033.
2 A.C.J.S., Annual Reports.
3 R.C. on Housing of the Industrial Population of Scotland, 1917, Evidence of J. Wilson.

Table 5

Indices of Scottish Building Costs, 1864-1900

(1900 = 100)

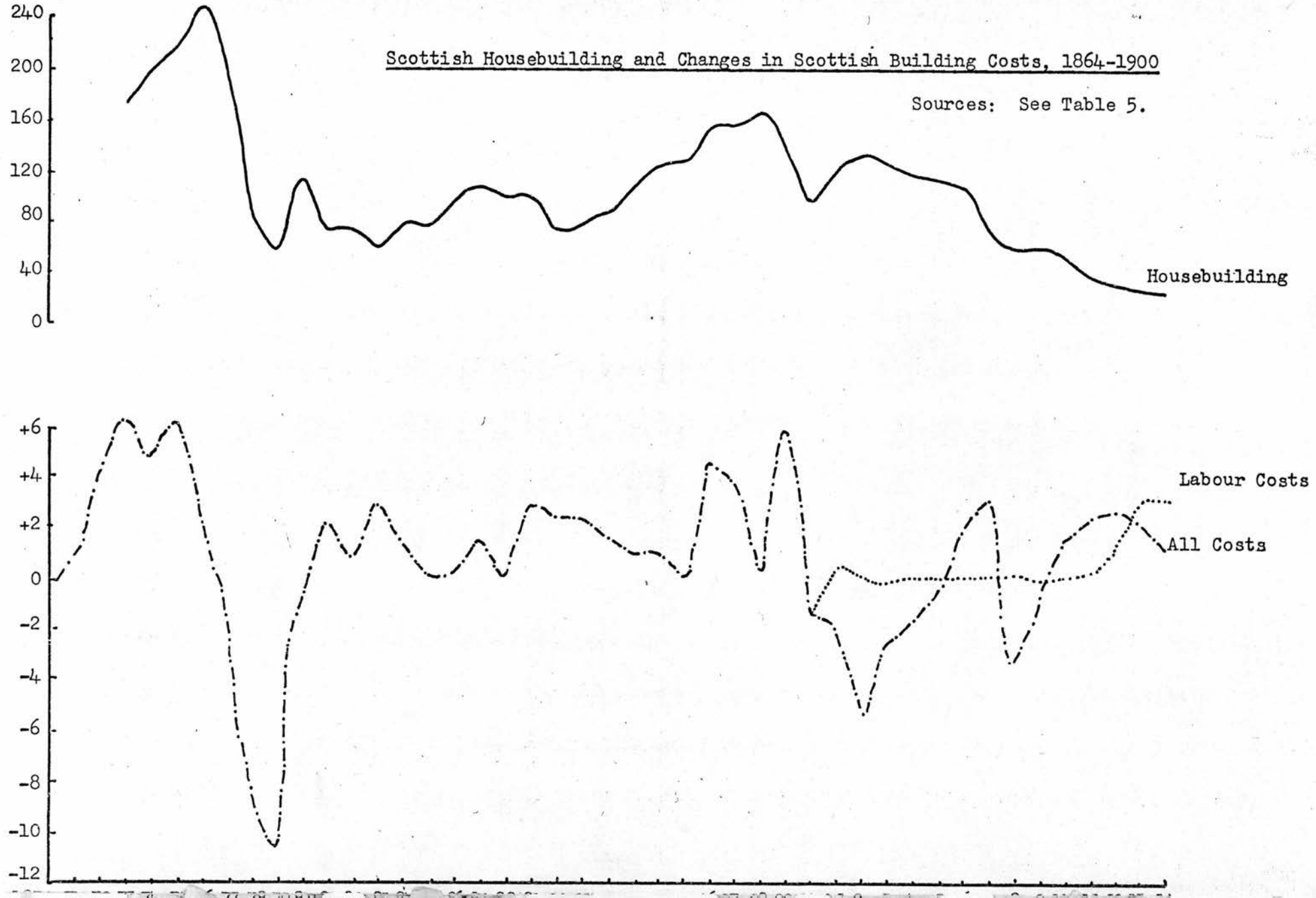
	Weighted Edinburgh and Glasgow: 7 Trades	(1)Weighted by Burgh Population	Maiwald UK Index	Edinburgh & Glasgow Carpenters: Weighted by Population	Glasgow (Carpenters & Masons) weighted	15 Towns Carpenters (Population weights)
	(1)	(2)	(3)	(4)	(5)	(6)
1864			60.1	59.8	63.0	59.9
65			61.2	60.6	66.7	61.7
66			64.2	66.9	67.8	67.2
67			66.4	66.9	69.2	27.0
68			69.0	66.9	69.2	66.8
69			72.4	67.8	67.8	67.7
1870			73.1	63.7	67.0	67.0
71			73.1	64.6	67.0	67.6
72			73.1	72.7	72.3	71.7
73			76.5	77.6	77.1	77.7
74			80.2	83.0	82.5	82.2
75			80.6	88.4	87.5	88.3
76			82.1	91.6	95.8	90.7
77			82.1	87.9	98.7	89.5
78			82.1	77.7	73.3	81.0
79			82.1	67.4	63.8	70.3
1880			85.6	67.4	63.8	69.3
81			85.6	70.9	69.1	71.4
82			85.6	70.9	69.1	72.1
83			85.1	74.2	77.1	75.0
84			85.1	74.2	74.3	75.1
85	75.0	74.9	84.9	74.2	74.3	75.1
86	74.2	74.2	85.1	74.2	74.3	75.1
87	72.6	73.2	85.1	76.0	74.3	76.4
88	73.3	73.7	85.1	76.0	74.3	76.4
89	74.1	74.7	85.4	79.5	76.5	79.3
1890	79.3	80.1	87.1	81.2	79.3	81.6
91	82.8	83.6	88.4	84.7	84.4	83.8
92	85.3	85.7	89.7	85.6	87.8	85.3
93	86.2	86.9	90.1	85.6	89.2	86.2
94	87.0	87.7	91.4	86.5	89.2	87.1
95	88.6	89.1	91.6	86.5	90.7	87.2
96	90.8	91.0	92.7	91.6	92.7	91.7
97	93.9	94.4	94.2	96.8	94.9	95.5
98	94.6	95.4	97.0	96.8	98.0	95.7
99	97.5	98.4	98.9	101.8	100.0	101.5
1900	100.0	100.0	100.0	100.0	100.0	100.0

Sources: Associated Carpenters and Joiners of Scotland, Annual Reports, 1863-1910; United Operative Masons' and Granitecutters Journal, 1901-9; A.L. Bowley, 'The Statistics of Wages in the United Kingdom....'. Journal of the Royal Statistical Society, 63, 1900, pp. 485-97, and K. Maiwald, 'An Index of Building Costs in the United Kingdom, 1845-1938', Economic History Review, 7, 1954, p. 192.

Fig. 4.

Scottish Housebuilding and Changes in Scottish Building Costs, 1864-1900

Sources: See Table 5.



burgh population in the mid-period census,[1] is adopted and an additional weighting technique according to the acknowledged[2] contribution of each trade to overall labour inputs is also employed.

It is arguable that an index heavily reliant on Edinburgh data is atypical given the patterns of housebuilding peculiar to the capital, and equally the exaggerated version of the overall Scottish housebuilding index which transpired in Glasgow might be viewed as disqualifying that burgh. Were such reservations sustained the eclectic carpenters data of col. 6 (Table 5) may be interpreted as most appropriate, although comparisons of cols. 4, 5 and 6 do indicate a concensus view of movements in Scottish building costs. A significant difference is perhaps the absolute level of col. 5 as opposed to cols. 4 and 6. The peak and decline of 1876-77 shows more abrupt proportions, and this phenomenon is consistent with more pronounced cyclical variations in Glasgow and certain other nearby burghs. The weighted index of carpenters' and joiners' wage rates in fifteen Scottish burghs (col. 6) has been adopted as representative of building costs and changes in the levels of costs in relation to housebuilding activity throughout Scotland are presented in fig. 4.

At the upper turning point of the housebuilding cycle in 1876 increases in building costs had begun to decelerate. However the sustained annual cost increments, 4-6 points or 5.8-8.4% between 1871-5, though ineffective for the speculative builders whose advances were of more relevance to the scale of their operations,[3] ultimately proved

1 Census of Scotland, 1891.

2 R.C. on Housing of the Industrial Population of Scotland, 1917, op. cit., Evidence of J. Wilson, p. 224; Wilkes, q. 4296; Bain, q. 19201; J.W. Smith, q. 41557. See also G.M.C., Eadie, q. 7359.

3 G.M.C., Evidence of Binnie, p. 314, q. 6631, and W. Fraser, 'Fluctuations of the Building Trade and Glasgow House Accommodation', Proc. of the Royal Phil. Soc. of Glasgow, 39, 1907-8, p. 323. Fraser's comment was that '.... the supply of cheap money for investment .... enabled the (speculative builders) to carry on their operations at a reasonable profit in spite of advancing costs'.

sufficient for the mounting costs of construction, - 34% between 1871-76 - eventually cast doubts on the viability of certain projects and confidence at first shaken, soon shattered. During 1872-6 building costs increased at a pace never approached at any other time between 1864 and 1914. Even the equivalent cyclical phase twenty years on showed more modest additions to costs, and in any event were registered in three interrupted years, 1896-7 and 1899, whereas consecutive increases developed over 1872-6.

To a certain extent the mild resumption of housebuilding in 1880 and 1886-9 may have been facilitated by the diminished cost of inputs. Costs achieved a minimum in 1880, falling to 69.3 and small additions to costs in 1881-3 may have stifled marginal housebuilding projects. So too the static building costs of 1883-88 eased the expansionary path of house construction boosted by a mild trade revival, though an abrupt rise of 3.8% in 1889 contributed to the delay of a more general housebuilding recovery.

Years of rather higher building costs were during the depressed decade of the 1880s associated with further mild reductions in housebuilding as in 1881, 1883, 1889; that is, building, as Cairncross noted,[1] when the market was generally saturated was more active in low rather than high cost years.

The role of building costs in the promotion of housebuilding recovery in the early 1890s is ably demonstrated in fig. 4. Although Scottish costs rose in every year from 1888 to 1899, between 1889-95 the percentage increase was diminishing - the actual cost additions were, successively from 1889, 3.8%, 2.9%, 2.7%, 1.8%, 1.1%, 1.1%, 0.1% - and thus the causal contribution of building labour costs is not

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1 A.K. Cairncross, op. cit., p. 11.

difficult to estimate. That the renaissance of Scottish housebuilding in the nineties was not checked due to steadily and substantially mounting costs of production has been noted. The potential duplication of the 1876 peak existed as costs escalated beyond the levels of the early nineties, but the second South African War intervened more effectively than rising costs to truncate the extent of the boom.

The housebuilding climaxes of 1876 and 1898 are instructive in that they permit two distinct interpretations of the role of building costs to be evaluated. First, wage movements, a reflection of labour market disequilibrium, the exact determination of which depended on whether and to what degree supply or demand was uppermost, was by definition synchronised with housebuilding. Thus while both an indicator of housebuilding equilibrium and an input cost for future housebuilding wages were dependent on housebuilding, and as a dependent variable were inoperative as a causal element of fluctuations. The second view is that the gradient of wage rate variations rarely matched the gradient of housebuilding fluctuations. Thus building costs exerted an influence proportionate to the discrepancy in the gradients and thus the steeper cost gradient of 1872-76, the more neutral trends of the early and mid-1880s and the disparity of building cost and housebuilding growth in the 1890-95 period exerted a certain amount of influence over the housebuilding process. Similarly an extension of more rapidly rising building costs from 1896, uninterrupted by war, would have effectively turned house construction downwards.

To a certain extent therefore building costs, a passive factor, a necessary though not sufficient factor, were spurred to greater effectiveness by the activities of speculative builders whose disregard of the cost element was outweighed in their calculations by harvesting of quick profits. Inflating house prices and the consequent capital

gains were of primary importance, the sale of properties their only concern and as a result competition for factors of production boosted costs to such an extent that the investment section of housebuilding was forced to suspend construction.[1] Thus in the upwards spiral of house prices allied to the role of the speculative builder, building costs achieved greatest effect, though not wholly inoperative in other phases of the housebuilding cycle.

Scottish and United Kingdom building costs pursued individualistic paths between 1864 and 1900, as seen in Table 5. The comparative cost series of fifteen Scottish burghs (col. 6) and Maiwald (col. 4), adjusted to 1900=100, demonstrates the similarity of absolute wage levels in 1864-5 on both sides of the border. Apart from 1864-5 and 1867 the next and only other two in which Scottish and United Kingdom cost indices are within 1 point of each other are 1873 and 1896, two years which foreshadowed building booms. In the intervening years the two indices of costs diverged somewhat. North of the Cheviots building costs fell by 22.5% from a peak in 1876 to a trough in 1880 and thereafter remained at depressed levels, only recovering previous prosperous proportions in the early nineties and only surpassing the 1876 peak in 1896. However in the thirty-nine towns which formed the basis of the United Kingdom index an almost continuously upwards drift to wage costs developed. Only in 1883 and 1885 in fact does the Maiwald index turn down and then only marginally, by 0.5 and 0.2. The frequency of falling wages was much greater and more severe in Scotland, as also were increases. Apart from minor wage reductions in 1867-8 and 1870, the four years 1877-80 in Scotland were marked by more rapid diminutions in wage costs than elsewhere, the percentages being -1.3%, -8.4%, -13.2%

1 G.M.C., Evidence of Menzies, q. 3208-15.

and -4.0%. Labour costs were therefore rather more variable in Scotland than Maiwald's study suggest for the country as a whole. The wider geographical study of Maiwald, its larger scale and aggregation may have produced a smoothing effect which obscures more localised cost variations.[1] What is apparent from Table 5 is that the volatility of building costs in Scottish burghs forged a more emphatic link between this factor and housebuilding fluctuations than elsewhere due to the more pronounced upsurges and lower thresholds.

The incomplete survival of Scottish building trades union reports between 1900-14 forces the adoption of Maiwald's labour cost index. The reservations which existed on the relevance of this series to the Scottish burghs prior to 1900 are to a degree dispelled. Whereas the wage component accounted for some four-fifths of all building cost increases between 1857-97,[2] the materials element became of greater significance in the decade preceding the outbreak of war in 1914, and thus with the greater stability of wage rates 1904-14 the Maiwald index is less prone to deviations from the Scottish state of affairs. This can be cross-checked by reference to trade union and also in official returns to the Board of Trade, published in the Labour Gazette. The Maiwald index (Table 6) is virtually static from 1900-11, and this is in accord with Scottish sources. For example the plateau of wages

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1 Maiwald's index although drawn from a number of districts relies on Laxton's Builders' and Contractors' Price Books on such occasions, frequent before 1880 (p. 198), when local data was available. The publisher's claim that their quotations are 'fair' for first-class work in the London district - upon which G.T. Jones Increasing Return (Cambridge, 1933) is founded - therefore introduces a London bias in Maiwald's index and as such an acknowledged countercyclical peculiarity contributes to the smoothing effect of which Maiwald was aware referring to the 'undue stability which is likely to result from this basis of compilation'.

2 G.M.C., Evidence of Eadie, p. 336.

Table 6

An Index of Building Costs in the United Kingdom, 1900-14
(1900=100)

1900	100.0
1	100.4
2	100.2
3	100.2
4	100.2
5	100.2
6	100.2
7	100.2
8	100.4
9	100.2
10	100.2
11	100.4
12	101.7
13	104.8
14	107.8

Source: K. Maiwald, 'An Index of Building Costs .....', Economic History Review, 7, 1954, p. 192.

illustrated by Maiwald between 1902-7 is recorded in the Board of Trade returns by a complete absence of wage rate advances,[1] and the small gain in labour costs noted by Maiwald in 1908 took the form of a wage award of an additional ½d per hour to Glasgow carpenters.[2] The slight decline and subsequent steadiness of the index during 1909-10 was echoed by the trade union account of the progress of wages,[3] as was the award of a halfpenny per hour to joiners in the west of Scotland in August 1911[4] and both of these features are reflected in the Maiwald index. Until 1912 only odd halfpennies and farthings accounted for alterations to labour costs, but the years 1912-14 abounded with consistently improved wage rates. Joiners in Aberdeen, Edinburgh, Leith and Midlothian achieved advances in 1912 which matched by an earlier award to joiners in most burghs in the west of Scotland.

1 Board of Trade, Labour Gazette, 1904-7.
2 Ibid., Aug. 1908.
3 A.C.J.S., Annual Reports, 1909-10.
4 Labour Gazette, Aug. 1911.

Thus the rate of 9-9½d per hour, operative in 1911 had been improved to 10-10½d in 1914 by such successes. Painters too made significant gains in Dundee, Perth, Clydeside and eastern Scotland,[1] and slaters, plasterers, plumbers and labourers also enjoyed at least one improvement in their rates of pay between 1912-14.[2]

Whatever the qualifications to the adoption of Maiwald's labour cost index north of the border before 1900, the levels and rates of change during 1900-14 are more in keeping with Scottish wages. Nonetheless the representation of variations in Maiwald's index in fig. 4 must be treated cautiously as its composition is essentially based elsewhere.

A temporary diversion to the consideration of trade union accounts of the period provides not only some corroborative evidence for housebuilding fluctuations by way of branch membership, but also an insight into Scottish builders' attempts to minimise their labour costs in a declining housebuilding market. From Table 7 it can be seen that the housebuilding decline which set in during 1904 and proceeded quite rapidly throughout 1905-7 encouraged builders to attempt to counteract market trends by engaging proportionately more apprentices. Laying off more highly paid skilled workers allowed for some economies to be effected on the costs of construction in an effort to stem the tide of declining demand. The converse applied in the mild recoveries of these years. In October 1903, January and October 1904, the following October and in March and July 1906 the improved employment was concentrated in the skilled section of the trade and given the rigidity of apprenticeship rules short term elasticity of labour supply could

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1 Ibid., July, Aug., 1912.
2 Ibid., Feb., May, 1912, May, 1914.

only be achieved by the engagement of the more highly paid journeymen.[1] Controls over the supply of apprentices contributed therefore to a more rapid acceleration of labour costs in the upswing of the housebuilding cycle bringing them into greater effect in the termination of the boom, whilst the ability to fire the more costly element in the downswing minimised labour costs and allowed the vestiges of demand to be tapped.[2]

Table 7

Employment and Housebuilding in Aberdeen, 1903-8

	Journeymen	Apprentics	Av. Housebuilding Index (1900=100)
1903 Sept.	730	158	
Oct.	792	159	154
Dec.	774	178	
1904 Jan.	797	176	
July	617	148	
Sept.	656	134	121
Oct.	718	148	
Dec.	598	163	
1905 Feb.	565	133	
Mar.	535	120	
Apr.	488	122	
June	460	104	118
July	443	103	
Oct.	465	112	
Dec.	444	109	
1906 Jan.	327	103	
Mar.	373	114	
Apr.	245	84	81
July	293	89	
Oct.	297	69	
Dec.	266	67	
1907 Jan.	260	69	
Feb.	196	66	
Mar.	177	72	54
May	138	58	
Oct.	167	48	
1908 Jan.	173	41	
Apr.	176	46	57
Nov.	147	32	

Sources: United Operative Masons' and Granite Cutters' Journal, 1901-9; Aberdeen, Planning Registers.

1 United Operative Masons' and Granitecutters Journal (subsequently U.O.M.G.J.), 1901-9.

2 A.C.J.S., Trade Censuses, 1866-91 endorse this view of employment in the building industry. The percentage of journeymen engaged during the seventies boom of 1870-76 was 77.8%. In 1876 it had fallen to 74.9% and thus was approaching the recession, 1877-9, average of 73.3%. By 1880 the proportion of apprentices began to decline somewhat as more journeymen were taken on, and between 1880-6 this category formed 77.6% of the work force, equivalent to the seventies period.

VIII

Labour costs and building costs so far have been treated as virtually synonymous. This is not far wide of the mark when consideration is given to contemporary views. Thus the association of a 7d. wage rate in 1872 with a building cost per room of £68. 10d. and £100 in 1876-7 and 7d and £70 in the 1880s and 1890s prompted the conclusion that,

> '.... when 1d per hour was added to or taken off the wages concurrently the cost per room roughly was increased or diminished by £10'.[1]

That building costs and labour costs were closely correlated reiterated a viewpoint advanced by experts with reference to the forty years prior to 1900. Between 1857 and 1897 according to one authority labour costs rose by 80%;[2] between 1860 and 1902 it was thought to have been 81%.[3] Even though a 50-50 weighting,[4] thought to fairly reflect the wage and materials components of costs,[5] might suggest the overall effect of an 80% wage increase would be halved, nevertheless movements in materials costs were of a much lesser magnitude before 1900 and thus total building costs responded very much to fluctuations in the labour element. Materials costs were in 1885 much as in 1861[6] and thus the 25% increase of 1857-97 was concentrated largely in the decade or so before the housebuilding climax of 1897-8.[7]

Individual components of building costs varied considerably in their rate of increase between 1860 and 1902. Masons', labourers' and bricklayers' wages advanced by 70-75%; for painters the rise from 5d to 9d represented 80%, and the 5d base also operative for plasterers and joiners in 1860 was

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1 R.C. on the Housing of the Industrial Population of Scotland, 1917, op. cit., Evidence of W. Fraser, q. 38113.
2 G.M.C., Evidence of Eadie, p. 336.
3 Ibid., Evidence of Binnie, q. 6415.
4 K. Maiwald, op. cit., also employs this weighting.
5 R.C. on Housing of the Industrial Population of Scotland, 1917, op. cit., Evidence of W. Fraser, q. 38114.
6 R.C. on the Housing of the Working Classes, 1884-5, Evidence of Colville, q. 19133.
7 G.M.C., Evidence of Eadie, p. 336.

9½d and 10d in 1902, increases of respectively 90% and 100%.[1] Although wage rates increased on average by 81% shortened weekly hours reduced this increase to about 60%.[2] However, declining productivity said to be due to unionisation[3] offset the effects of a shortened working week and thus an 80% rise in labour costs is not inappropriate.

The issue of labour productivity was evidently a contentious one. Several authorities remarked on the cost increasing effects of 'combinations', but quite apart from the deployment of the strike weapon one witness, Matthew Boyd Auld, commented at length on unions' restrictive practices. 'There is a tendency', he noted, 'in the trade unions to lower the standard of competence to the least competent'. Thus the 'first-class workman .... shows the other men up ...' and a lower standard resulted as, 'The first-class workman is told by his delegate not to do so much work'.[4] More specifically this witness recounted the case of an employer checking the progress of his workforce.

> (The workmen) had been at it for half a day and they had done very little, so he dismissed them. They were taking far too long to do what others were doing in about two hours. The delegate came down and asked the reason of dismissal, which he was told. He then went into the other cottages and asked the men working there, "How long did you take to do this?". The men said, "Five hours"; the delegate then said, "Oh, well, in future you will take nine."[5]

How frequent these practices were is uncertain. Auld viewed them as 'common', and as such additions to building costs. Perhaps more significantly his testimony in hinting at the disincentive effect on employers' use of dismissals which unionisation exerted, provided an important explanation of mounting building costs, for in their reluctance to fire poor workmen employers did little to counteract the incompetence

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1 Ibid., Evidence of Binnie, pp. 306-7.
2 Ibid.
3 R.C. on Housing of the Industrial Population of Scotland, 1917, op. cit., Evidence of Fraser, q. 39422.
4 Ibid., Evidence of Auld, q. 39919-26.
5 Ibid., q. 39923.

and defective workmanship which was particularly prevalent in the plumbing and joinery trades.[1]

As for materials prices these rose by a significantly smaller amount. Between 1860 and 1902 stone prices rose 30%, those of timber by 20%. Brick prices were relatively unchanged however,[2] and the overall assessment of changes in building costs was thought to be 'not less than 50%'.[3] This view was confirmed by a builder in Glasgow, although in attributing a 50-50 weighting, his division by two of 80% for wage increases plus 25% for materials produced an average of 58%![4]

The period after 1900 has already been shown as distinct from earlier years. Labour costs were almost unchanging, except for 1912-14, and of the overall building cost increases of 20%[5] it was thought that,

> '..... the main increase is due to the rise in the cost of both raw and manufactured materials.'[6]

Labour costs were indeed almost unchanging; between 1905-11 bricklayers' wages advanced only 2%, joiners' 5.5% and painters' 6% while for plasterers the wage rate was constant.[7] The rather better years 1911-14 added to wage rates though to no great extent. On the generally acceptable assumptions of the contribution of various types of building work to total cost[8] - brickwork 37%, joiner 31%, plumber 15%, plasterer 8%, and on the further assumption of a 60-40 weighting factor in favour of materials

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1 Ibid., q. 39926-30.
2 G.M.C., Evidence of Binnie, p. 307.
3 Ibid.
4 Ibid., Evidence of Eadie, p. 336.
5 R.C., on Housing of the Industrial Population of Scotland, 1917, op. cit., Evidence of J. Wilson, q. 43865.
6 Ibid., para. 136, p. 224.
7 Ibid., Evidence of J.W. Smith, q. 41557.
8 Ibid., Evidence of J. Wilson, J. Wilkes, J. Bain displays a unanimity that mason point work is at least 40% and the joiner work is agreed at 28%. Other variations also exist. Thus J.W. Smith's estimates must not be interpreted too strictly due to marginal discrepancies in this weighting aspect. Furthermore the 60-40 assumption is doubtful, as noted earlier. However these assumptions do not alter the point of Table 8.

Table 8

Increases in Scottish Building Costs, 1904-14.

		Percentage of cost of work	Estimated % Increase	Net Increase to cost of House (%)
Brickwork	Wages	12	3	0.36
	Materials	25	22	5.50
Carpenter/ Joiner	Wages	14	8	1.12
	Materials	17	30	5.10
Slater	Wages	2.5	3	0.07
	Materials	4.5	8	0.36
Plasterer	Wages	5.5	3	0.16
	Materials	2.5	20	0.50
Plumber	Wages	3.5	10.5	0.37
	Materials	11.5	45	5.17
Painter	Wages	1.5	9	0.14
	Materials	0.5	66	0.33
				+19.18%

Source: Royal Commission on the Housing of the Industrial Population of Scotland, 1917. Evidence of J.W. Smith, Appendix CLIX, p. 182.

Table 8 is constructed. Total building costs advances by 19.8% between 1904-14, of which 88% is attributable to the materials component, and thus the 2.22% addition to wage costs represented only 12% of the increased costs with which builders were confronted. Lead (75%), ranges and grates (40%) and timber (30%) represented the major materials increases, although cement, bricks, ironmongery, e.g. tubes, fireclay products such as sinks and many other items registered increases. Alone in stable prices were slates.[1]

An index of Scottish building costs constructed from Scottish building wage rates from 1860 to 1900 and from 1900 to 1914 based on Maiwald's total index can be interpreted as a reasonably accurate assessment of this factor on the supply side of the housebuilding equation. The search for

1 Ibid., Evidence of J.W. Smith, q. 41557.

economies, the dismay at mounting costs, the substantial portion of rent to defray the capital cost of housing ensures building costs a crucial role in an analysis of housebuilding fluctuations.

IX

Attention so far has been concentrated on the magnitude and timing of changes to building costs and this is broadly applicable to all Scottish burghs. However more specific conclusions are feasible in relation to the role played by building costs in the housebuilding fluctuations of two types of burghs, those in which small houses form a high proportion of all dwellings and those geographically located outside the central industrial belt.

In the latter case the semi-rural position of towns such as Ayr, Galashiels, Hawick, Perth and Stirling required fewer restrictive byelaws governing housing in view of their less congested accommodation. The prevalent tenement system of central industrial burghs was less evident in these towns and thus building regulations while operative were less complex and consequently presented a diminished effect on building costs.[1] Often expressed in terms of improving sanitary conditions the major cities proved the main body favouring a relaxation in building regulations and the absence of any impetus on this issue from the smaller rural towns was indicative of the reduced effects of byelaws on their building costs.[2]

In the minor urban settings of Ayr, Perth, Stirling and the border towns the role of building costs occupied by materials was of greater substance.[3] As the main cause of the alterations to the level of building costs in Scotland as a whole stemmed from the labour side prior to 1900

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1 Ibid., Evidence of J. Young, q. 40022-6.
2 G.M.C., Evidence of Watson, q. 11080, 11228, 11247, 11163.
3 R.C. on the Housing of the Industrial Population of Scotland, 1917, Evidence of J. Wilson, q. 43901-3.

some adjustment to the role of building costs in these burghs is necessary to take account of the more influential role of materials costs. Exactly what magnitude of adjustment is appropriate remains uncertain. But where, for example, in 1875 a 6.1% rise in labour costs (Table 5) contributed to a 3.05% addition to total building costs in that year the figure would be deflated somewhat for these semi-rural burghs, where the 50-50 labour-materials weighting would more appropriately be 40-60 at least.[1] On such a weighting the 3.05% reduces to a 2.44% addition to building costs and thus the impact on housebuilding fluctuations is diluted. Similarly the reduction of building costs by 4.25% in 1878 would in Perth, Hawick or Stirling have been more in the region of 3.40%. The applicability of this amendment is much wider than the burghs just mentioned. It is relevant to such burghs and rural districts where cheap labour costs relative to Glasgow or Edinburgh were outweighed by higher priced materials inputs and the border and north-eastern districts of Scotland incorporating such small towns as Castle Douglas, Lanark and Kirkcudbright in the south and Huntly and Elgin in the north as well as their more substantial neighbours Inverness, Lerwick and even Aberdeen.[2]

With the quantity of housebuilding on the increase rurally based builders enjoyed certain economies of scale in placing larger orders and in the reduction of unit costs as transport charges were distributed over greater quantities.[3] Thus a dampening influence was exerted on the rate of increase of building costs in a boom phase of the cycle, thereby

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1 G.T. Jones, op. cit., pp. 67-71 notes that 40 : 60 was a weighting operative in certain urban centres, such as Manchester, and it may be that in the context of rural Scotland a 35 : 65 or 30 : 70 labour : material ratio is appropriate. The same conclusions would therefore apply, only more so.

2 R.C. on the Housing of the Industrial Population of Scotland, 1917, op. cit., Evidence of J. Wilson, Vol. 4, Appendix CXCV.

3 Ibid., Evidence of J. Wilson, q. 43904.

delaying the point at which they became an effective force on the volume of construction. Conversely the impact at the trough stage was greater than in industrial and geographically central burghs for in the rural towns reduced order books effected fewer bulk discounts and transport economies. Such a factor as the volume of construction work and thus the quantities ordered provided up to a 2% additional saving on building costs in semi-rural areas[1] and thus was an important influence on the level of house-building.

In the second type of burgh, those in which the number of smaller houses formed a more substantial proportion of all accommodation, the role of building costs possessed certain characteristics which rendered its effects on housebuilding fluctuations of a slightly different intensity. The Glasgow City Assessor was in no doubt that, 'one-room houses cost more proportionately to build',[2] a point which John Mann, Treasurer of the Kyrle Society[3] and the Glasgow Workmen's Dwellings Company amplified by also pointing out that certain fixed costs - street alignment, fittings, sanitary appliances - were the same regardless of whether they were for a small house or a larger one.[4] Once the decision to build had been taken, solicitors, architects and other fees incurred and building work contracted for the marginal cost of additional building declined as such fixed costs became further subdivided. Economies to scale were achieved if the project expanded from one to several houses. Similarly the additional marginal cost per cubic foot of accommodation declined as single items such as the roof, foundations, ceiling and floors could be shared by greater numbers. One-roomed houses required one sink; two-roomed houses also required one sink. This applied to cooking ranges, hearth grates and later, when the

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1 Ibid., q. 43905-12.
2 G.M.C., Evidence of Henry, p. 9, q. 159.
3 A Glasgow Society of the Octavia Hill variety in which Mann acted as a rent collector.
4 G.M.C., Evidence of Mann, p. 404, q. 8623-4.

frequency of shared water and water-closet facilities was less acceptable this too increased the average cost of smaller properties relative to more spacious accommodation.[1] Under such circumstances alterations to the level of building costs were most significant in burghs in which this smaller type of housing was prevalent. In Paisley, Dundee, Kilmarnock and Glasgow, with over 60% of accommodation of two rooms or less, upward movements in building costs stifled a greater volume of demand than in Aberdeen, Edinburgh or Perth, where the percentage was 30-40%.[2] In these latter burghs the elasticity of demand was not as high as in the former group, as by definition it was greatest at the lower end of the housing market, and the development of the 'ticketed tenement' system was designed to counteract the worst excesses of this elasticity, acute overcrowding.[3]

The impact of building costs on housebuilding was greatest in the Lanarkshire coal-iron-steel complex of burghs. Houses of two rooms or less formed 78.8% of the total stock of accommodation in Coatbridge, and in Wishaw it was 78.1%, while in Motherwell, Airdrie and Hamilton it was almost beyond the 70% mark.[4] Closer to Glasgow - Paisley, Port Glasgow, Johnstone and Glasgow itself - the proportion was between 65-70%. No cohesive pattern seems to have applied in the Dundee and surrounding burghs; 70% of Dundee housing was of the smaller variety, and Arbroath (65.4%), Forfar (63.1%) and Brechin (61.9%) were broadly in agreement, while nearby Monifeith (23.8%), Tayport (32.8%) and Stonehaven (35.4%) possessed a minority of small houses.[5]

Although these burghs of Tayside and Mearns are not entirely consistent some reconciliation is possible in terms of size and industrial involvement.

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1 Ibid., Evidence of J.H. Jones, q. 44272-3.
2 R.C. on the Housing of the Industrial Population of Scotland, 1917, op. cit., Evidence of A. Fraser, Vol. 4, Appendix XXXVI.
3 A.K. Chalmers, Public Health Administration in Glasgow, (Glasgow, 1905), Ch. VI.
4 R.C. on the Housing of the Industrial Population of Scotland, 1917, op. cit., Evidence of Keith, p. 93, q. 1249.
5 Ibid.

Thus in rural situations burghs such as Kelso, Lanark, Kirkudbright and Sanquhar registered proportions of less than 50%, and this applied to some important urban centres whose main employment interests were not dependent on heavy industry. Aberdeen, Edinburgh, Perth and Hawick followed this pattern. Where the preponderance of property was of the larger category building costs exerted a lesser influence at the height of the boom as the proportionate contribution to total costs was less than in those western industrial burghs where 60% or more of houses were of one or two rooms. In the trough of the housebuilding cycle burghs such as Rutherglen, Paisley and Glasgow building costs exerted a retarding influence on recovery in comparison to Ayr, Perth or Edinburgh where predominantly larger houses were less influenced by the level of building costs. Indeed using an overcrowding criterion of 1911, the percentage of inhabitants in burghs of over 2000 people accommodated more than three to a room,[1] a north-south line connecting Stirling and Dumfries effectively isolates a western and eastern section in which the role of building costs in house-building fluctuations was more and less intense.

X

On the overall importance of building costs some perspective is possible in the light of the magnitude of contributions from other factors in housebuilding fluctuations. For example in the quinquennium of greatest natural increase in the population of Edinburgh only a growth of 0.5% p.a. was abhieved.[2] Building costs on the other hand at the height of the boom rose by 4-6%. The rate of growth of marriages in Scotland in the decades preceding building booms was of the order of 2-3% p.a., and additions to the numbers of 20-44 year olds the household forming group rose by 1.2% in

1 S.L.E.C., op. cit., pp. 350-1.
2 Census of Scotland, 1861-1911.

1870s and 3.0% in the 1890s.[1] Thus in certain critical years the percentage change in building costs was double that of certain other factors. Moreover whereas they were influence on every single house under construction changes in the demographic component of demand did not always exert pressure on the building industry, a proportion of newlyweds continuing to reside in the parental home and many of the 20-44 age group never in fact forming distinct households.

Even with the view of a self-determining industry in which the role of empties is a 'sufficient explanation' of cyclical turning points Feinstein does not dismiss the contribution of building costs,[2] and with its varying impact according to locality and labour conent it was no doubt only a necessary precondition for building recovery although building costs delivered a more decisive blow at the upper turning point of housebuilding fluctuations, a role cryptically ascribed by Cairncross as 'the coup de grace'.[3]

XI

It was suggested in an earlier chapter that an expectations element existed in the eye of the builder and that this was not unimportant in determining his scale of operations. It is the intention at this stage to investigate this role more fully by employing bankruptcy information in relation to building trades as a proxy for expectations. As such it represents an effort to incorporate some concept such as self-realising expectations, a form of band wagon effect which approaches a psychological explanation of cyclical phenomena.

The expectations aspect of course figured in the quantitative assessment of Scottish building cycles which left some 20% of fluctuations

1 Ibid.
2 C.H. Feinstein, Cambridge, Ph.D. Thesis, 1959, p. 301.
3 A.K. Cairncross, 'The Glasgow Building Industry', op. cit., p. 11.

unexplained. Certain non-quantifiable factors were also accredited causative importance in housebuilding fluctuations. One of these, uncertainty, is a near relation to the expectations influence and some brief consideration is given to the uncertainty aspect prior to an examination of expectations through the medium of bankruptcies.

Uncertainty, like legal practices, institutional arrangements and shocks is treated as a non-quantifiable determinant of housebuilding activity. However uncertainty in the building industry was largely self-determined; it was, therefore, endogenous in contrast to the exogenous non-quantifiable impact of shocks such as the Glasgow Bank failure or such legal impositions as for example local taxation or land transference regulations.

To a degree the role of empty property previously suggested in itself as an important indicator for housebuilders impinged on their views of uncertainty too. Thomas Binnie explained the attitude of housebuilders in that 'They won't build a large number in anticipation of a future demand'[1] and suggested that the uncertainty was too great for builders to become heavily committed until 'they see the existing houses very well filled up'.[2]

Not a little uncertainty was generated by the actions of the municipality itself. Frequent protestations surrounded the Improvement Trust's efforts in many burghs as builders became increasingly concerned at the erosion of their interests. The disincentive effect of local authority involvement in the private enterprise field of operations was recognised in the 1860s when the Glasgow Improvement Trust encountered builders' opposition to their activities.[3] The basis of this opposition which continued throughout the 1870s and 1880s was that local authorities were 'giving a quite superior house at low rents.'[4] Consequently private

1 G.M.C., Evidence of Binnie, q. 6553.
2 Ibid.
3 C.M. Allan, 'The Genesis of British Urban Redevelopment', Economic History Review, 18, 1965, pp. 598-613.
4 R.C. on the Housing of the Working Classes, 1884-5, op. cit., Evidence of Turnbull, q. 20225.

enterprise could not 'compete with the local authority with that class of house.'[1] Although builders were not unduly concerned about public invasion of the poorest sector of the market it did represent a challenge and a considerable threat on three counts. Firstly, the principle would be breached and secondly, this created uncertainty as local authorities might extend their activities to the builders' more lucrative upper echelons of the market, and thirdly, it represented a considerable threat to existing property owners whose position in a depressed housing market with abundant accommodation would become extremely difficult as their proportion of untenanted property would exceed that of the local authorities due to the higher rents of the private sector.[2]

Subdued until the 1890s by the surfeit of accommodation and ratepayers' hostility to over-generous compensation schemes[3] the revived energies of local authorities in promoting their own housebuilding programmes in the nineties brought the issue to a head in the early years of the twentieth century. Vociferous and emphatic were many witnesses to the Municipal Enquiry into Housing[4] initiated in Glasgow and their views communicated the considerable creation of uncertainty due to local authority involvement in housebuilding.

The precognition of T.L. Watson appearing on behalf of the Glasgow Institute of Architects, whose position was not threatened in the way that that of housebuilders was, incorporated the view of the city's architects that, 'The action of the municipality has checked the natural production of small houses.'[5] The reason for this checked

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1 Ibid.
2 G.M.C., See for example evidence of Mann, q. 8488, 8830, 8972 and 9331; also Binnie, q. 7180.
3 R.C. on the Housing of the Working Classes, op. cit., Evidence of Turnbull, q. 20207-19.
4 Glasgow Municipal Commission, 1903, Evidence of Binnie, Eadie, Mann, etc
5 G.M.C., Evidence of T.L. Watson, p. 519.

production however was candidly expressed elsewhere in the terms that, 'builders are prevented from building cheap houses because of the uncertainty of the action of the Corporation,'[1] and backed up with examples in the Provanmill and other districts of the city.[2] The specific case of the builder George Eadie is illustrative of the uncertainty the Corporation had more generally stimulated.

> 'I have the pre-emptive right to a piece of ground where I purposed building 200 or 300 small houses but I have called a halt just simply to know what was to be done in the way of housing the poor by the Corporation.'[3]

It was not simply the municipal encroachment which was resented by housebuilders - it had of course already stayed Eadie's hand in his development project and property owners also looked unfavourably on this municipal invasion[4] - it was the uncertainty as to municipal intentions which had a subduing effect on the supply of new houses. Thus it was 'holding the 1900 Act over the builders,[5] and the disinclination of the Corporation to publish its intentions[6] which were combining to act as a deterrent to housebuilding in the Edwardian era.

The tentative proposals of the Glasgow burgh council to disburse £¾ million on Corporation housebuilding over the period of a few years from 1904, despite complaints that they were 'working with ratepayers money to erect houses for every section of the community'[7] may partially explain why the Glasgow housebuilding in the post-peak years of 1903-14 failed to sustain the buoyant building which it customarily had done in

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1 Ibid., Evidence of Binnie, q. 7171.
2 Ibid., q. 6744, 7183.
3 Ibid., Evidence of Eadie, q. 7213.
4 Ibid., q. 7341.
5 Ibid., Evidence of Binnie, q. 6458.
6 Ibid., Evidence of Eadie, q. 7341.
7 Ibid., Evidence of Paterson, q. 7812.

the 1870s and 1890s. It may also explain the severity of the downturn in 1903 at a time when the Municipal Housing Commission was receiving and publicising[1] views hostile to local authority building which caused an uncertainty sufficient to induce Glasgow builders to suspend their operations at a rate only exceeded by housebuilders in Motherwell, Perth and Wishaw.[2] Furthermore, the uncertainty surrounding house-building in Glasgow between 1903-14 may have contributed to greater contraction in the Glasgow building industry compared to the general Scottish urban experience - the Glasgow index was below that of the Scottish burghs on nine out of twelve occasions - although it must also be recalled that Glaswegian housebuilding had a tendency to overstate the existing Scottish trend. Whatever the exact magnitude, it is more than likely that the uncertainty as to municipal housebuilding policy exercised some depressive effect on the private sector. Even before the nineteenth century had been ushered out it was thought that though a period of prosperity for private enterprise had developed, culminating in the peak of 1898, it was of deflated proportions, or as R. McCallum, house-factor, expressed the situation to the Corporation enquiry,

> 'I believe that private builders would have built more had you not been building yourselves'.[3]

Of course it would be erroneous to suppose that the dampening influence of Corporation-inspired uncertainty affected the volume of residential construction in all burghs. Only where the deficiency of accommodation for poorer income groups was of sizeable proportions and where the municipality was of a disposition inclined to tackle the problem did the threat of public sector housebuilding create uncertainty in the minds of local builders. In Glasgow this was most obviously the case. From the inception of the Improvement Trust in 1866 the public

1 The Scotsman, an Edinburgh based newspaper also carried reports of the Commission's hearings.
2 D.G.C., Registers and Minute Books.
3 G.M.C., Evidence of McCallum, q. 8431.

provision of housing posed a potential threat and contributed a degree of uncertainty to private housebuilders was also observed in several burghs including Leith and Greenock but in no way did this disquiet develop into an influential determinant in builders' decisions until the last decade of the Victorian age. Indeed witnesses to the Royal Commission on the Housing of the Working Classes were to a man opposed to local authority housebuilding unless it was to 'serve as a model for builders to erect such houses upon.'[1] The view of J.K. Crawford, a solicitor and the Clerk of the Edinburgh Improvement Trust was not unrepresentative of the attitude to a more general local authority building programme,

> 'We do not want to erect houses; indeed private enterprise supplies more than the demand.'[2]

Thus it was only after the failure of a reliance on self-help by way of 'an increase in intelligence' through 'the influences of education and school board efforts'[3] that the onus fell upon municipal shoulders for the provision of working class housing. That this had not proceeded far between the mid-1890s and 1914 is unimportant; what was more significant was that Part III of the Housing of the Working Classes Act, 1890,[4] empowered local authorities on their own account to provide this type of accommodation and that the increasingly recognised failure of private builders to satisfy the demands of a certain section of the community provided an environment in which town councils mooted corporation housebuilding to discharge a civic responsibility. As a consequence, uncertainty as to the involvement of local authorities provided, from the mid-1890s, a supply constraint on housebuilders in those of Scotland's cities and large burghs most deficient in this

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1 R.C., on the Housing of the Working Classes, 1884-5, Evidence of Clark, q. 18822.
2 Ibid., Evidence of J.K. Crawford, q. 18728.
3 Ibid., Evidence of Morrison, q. 19830.
4 Housing of the Working Classes Act , 1890 (285), v. 377.

type of accommodation. Uncertainty was therefore a factor of some importance from about 1895 to housebuilders in Glasgow, Greenock, Dundee, Leith and various other burghs[1] inadequately supplied with working class housing, while in Perth, Ayr, Stirling and Falkirk the extent of overcrowding and related abuses was less acute[2] and with local authorities more preoccupied with other aspects of their obligations, uncertainty was a diminished factor in the operations of housebuilders in these locations.

XII

In an industry perhaps uniquely affected by speculation it is all the more appropriate to examine the role of builders' confidence and expectations. The details of speculative enterprises are ably recounted on both sides of the Tweed by Kellett[3] and Dyos[4] and are not investigated here where the main purpose is to relate the surges in confidence to the mechanics of fluctuations in housebuilding. Builders' expectations are to this end incorporated in a psychological theory of cyclical fluctuations.

The objective of some business cycle theorists in the 1920s was to provide, through the agency of psychological influences, an autonomously generated explanation of fluctuations in business activity. More modest are the aims in connection with Scottish housebuilding fluctuations. In this instance it is merely intended to solicit a

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1 W. Thompson, Housing Up-to-Date (London, 1907) p. 11 indicates Edinburgh was one of the burghs which though overcrowded was less affected by corporation housing policy.

2 R.C. on the Housing of the Industrial Population of Scotland, 1917, Evidence of A. Fraser, q. 14872, Appendix XXXVI.

3 J.R. Kellett, 'Property Speculators and the Building of Glasgow, 1780-1830' Scottish Journal of Political Economy, 8, 1961, pp. 211-32.

4 H.J. Dyos, Victorian Suburb, A Study of the Growth of Camberwell. (Leicester, 1966).

degree of contribution from this psychological interpretation to the composite explanation of variations in the level of housebuilding activity.

Expectations, over-reaction and then illiquidity and bankruptcy, stages noticed by Pigou,[1] and apposite to Scottish housebuilding expansion in the 1870s were variously described as 'over production'[2] and 'extravagant'.[3] These 'errors of optimism' produced 'solidified, instead of liquid, assets'[4] and housebuilding developed a cumulative contraction, or, as one Pigovian apostle described the process,

> '..... their rosy anticipations were unwarranted. A revulsion sets in and the psychological pendulum now swings to the opposite extreme.'[5]

In an early description of the trade cycle Lavington[6] employed vocabulary which was significant: cumulative, contagious, confidence, propagation by infection, overestimate were used to present a succinct psychological explanation which is in keeping with phases of over-reaction and maladjustment previously noted in the context of Scottish housebuilding fluctuations. Not surprisingly, therefore, the quantitative assessment of expectations as a causal element in the variations of housebuilding in Scottish burghs ascribed considerable importance to the 'product variables' - that mix of building industry characteristics, including expectations, which provided in itself a powerful endogenously determined view of cyclical fluctuations. Furthermore, a wider amplitude of Scottish housebuilding fluctuations

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1 A.C. Pigou, Industrial Fluctuations, (London, 1927), p. 89.
2 The Builder, Oct. 5, 1878, p. 1040.
3 W. Fraser, 'Fluctuations of the Building Trade and Glasgow's House Accommodation', Proc. of the Royal Phil. Soc. of Glasgow, 39, 1907-8.
4 A.C. Pigou, op. cit.
5 R.A. Gordon, Business Fluctuations, (New York, 1952), p. 312.
6 F. Lavington, The Trade Cycle, (London, 1922), p. 30.

compared to English regions and boroughs suggests that while sound economic reasons may explain this, so might the psychological contribution figure more prominently north of the border.

Bankruptcies have recently been employed to reflect relative degrees od depression in English farming.[1] More significantly it has been suggested that the frequency of bankruptcies in the building industry affected expectations adversely and produced a reluctance to recommence construction.[2] This inverse bankruptcy - housebuilding relationship noticed by Habakkuk - numerous bankruptcies consistent with reduced building - is of critical importance for the present purposes. From the views of Lavington, Pigou and others emerges a clear picture of the transformation of booms into troughs and troughs into booms. The ceilings and floors are explained therefore, but Habakkuk hints at how expectations for a number of years can be determined by the bankruptcies of just one or two key years. In the instance of Scottish building bankruptcies this 'legacy effect', a hangover from periods of very high or low bankruptcy, effectively explains the period intervening the major cyclical turning points, those crises of confidence and turnarounds in expectation so lucidly presented by the writers of the 1920s.

XIII

Asked whether the buoyancy of the building trades in 1902-3 might be expected to continue, Mr. John Paterson, a Glasgow builder of forty years standing was of the opinion that, 'It may not'.[3] The 'evils

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1 P. J. Perry, 'Where was the 'Great Agricultural Depression'? A Geography of Agricultural Bankruptcy in Late Victorian England and Wales', Agric. History Review, 20, 1972, pp. 30-45.
2 H.J. Habakkuk, 'Fluctuations in Housebuilding in Britain and the United States in the Nineteenth Century', Journal of Economic History, 22, 1962, p. 203.
3 G.M.C., Evidence of Paterson, q. 7849.

resulting from the building speculation'[1] of the 1870s inclined Sir James Watson, Lord Dean of Guild for Glasgow and thus something of an expert on building trends to the view that a revival in property construction was only likely with the recovery of trade generally. Another Lord Dean of Guild reviewing the building activities of 1901 in Edinburgh and anticipating those of 1902, 'expected that a number of buildings will be proceeded with during the ensuing year'[2], a note of optimism also expressed Ayr and Glasgow if not in Perth.[3]

Builders and building controllers were not alone in voicing their expectations. Trade Unionists were if anything more heavily involved in communicating future trends to their members. Thus the employment prospects for carpenters in 1884 did not seem at all bright to the General Secretary of the Associated Carpenters and Joiners of Scotland who intimated this to his members,

> 'There are now indications that this will be rather quieter for some months to come .....'[4]

This was a rather different picture to that presented by the Central Corresponding Secretary to the same union before the 1870s prosperity got underway, who expressed his expectations in the terms, 'we rejoice to see that the prospects in many of our districts are getting brighter'.[5] The expectation of active housebuilding was even more euphoric in north-eastern Scotland in 1902 as George Garden, Secretary to the Aberdeen Masons branch opened,

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1 The Builder, Oct. 5, 1878, p. 1040.
2 Ibid., Jan. 4, 1902, pp. 22-3.
3 Ibid.
4 A.C.J.S., 22nd Annual Report, 1883, p. 5.
5 Ibid., James Matson, 6th Annual Report, 1867, p. 3.

'I do not think that very many men will have to trudge the street in vain search for work at any period of the winter'.[1]

Expectations had however taken a turn for the worse two years later when 'the outlook', according to the same trade unionist was 'far from happy or bright'.[2]

Repeated comments on the 'outlook', the 'signs' and the 'hope for improvement' in trade were the terms and language of housebuilding expectations as voiced by trade union officials and builders. As such they express a continuous influence from this psychological viewpoint which permeated the years 1870 to 1914. An attempt to take account of expectations is shown in fig. 5 where the half-yearly number of building bankruptcies in Scotland is recorded.[3] The lower line, representing the burghs incorporated in the housebuilding index indicates a lowly level of bankruptcies in the ten or so years prior to the building upsurge, and most noticeably in the critical 1871-3 years. Bankruptcies in the building trades in these years and in the equivalent cyclical phase twenty years on, the 1893-97 period, were sufficiently infrequent to raise expectations. Although only one of a number of elements comprising the expectations variable, bankruptcies were not an inappropriate monitor of expectations. At least they were not a barrier to the mounting tide of housebuilding in these two periods.

From the latter part of 1873 building bankruptcies became more numerous. No doubt initially linked to more general economic difficulties in 1873 this rising trend of bankruptcy - five consecutive

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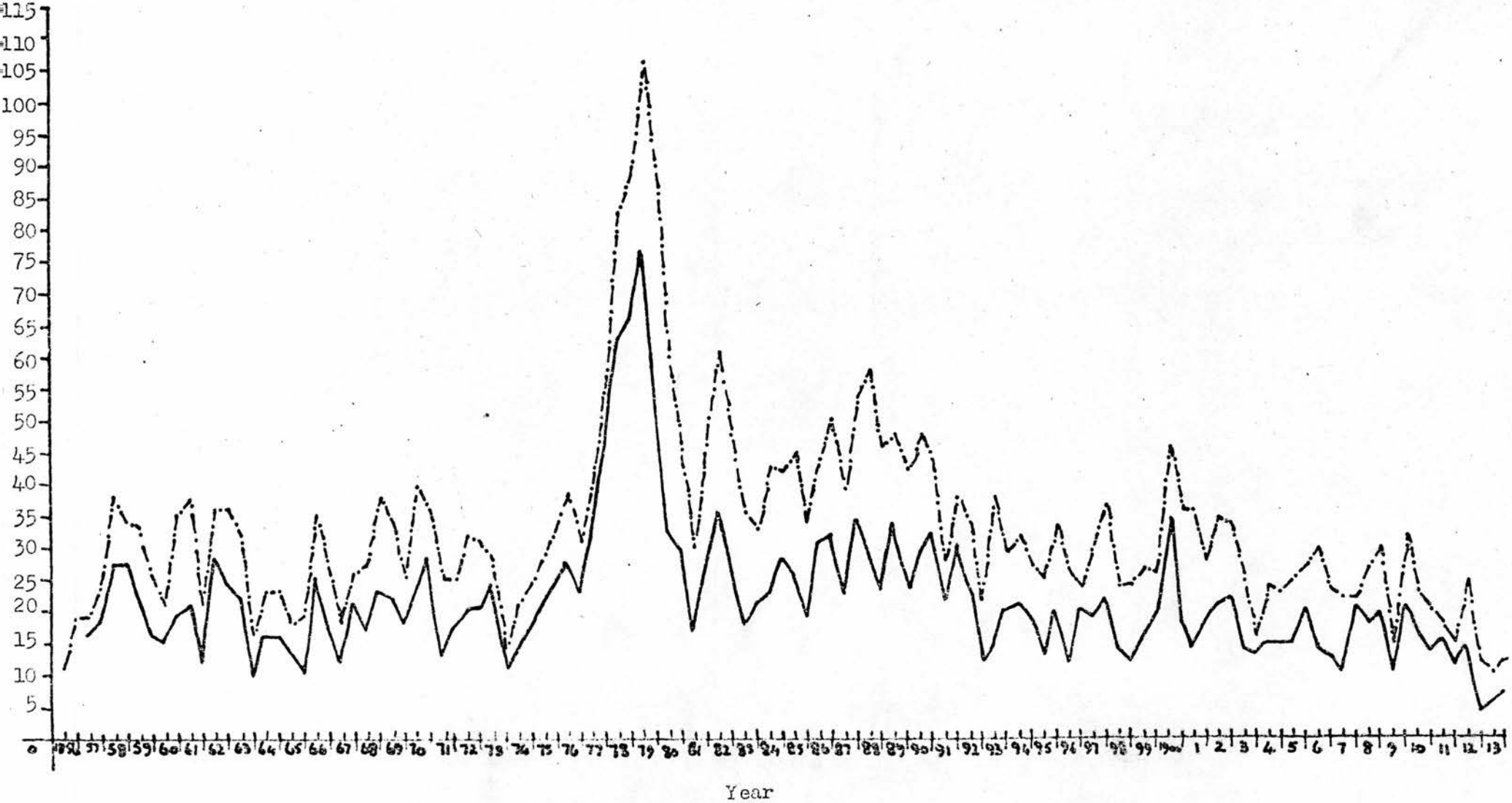
1 U.O.M.G.J., Dec., 1902, p. 5.
2 Ibid., Jan. 1905, p. 7.
3 The Edinburgh Gazette, 1856-1914 carried notices each week of declared bankrupts in Scotland as required by the terms of the Bankruptcy (Scotland) Act, 1856. It is upon this source that data on Scottish building bankruptcies is drawn.

Fig. 5.

Scottish Building Bankruptcies, 1856-1913 (Half-yearly)



half yearly increases between 1873 and 1876, only repeated in the catastrophe of 1877-9 - undermined confidence before the boom broke and contributed to the feeling that 'building ..... was overdone'.[1] Thus the rosy building expectations, connected in several Scottish burghs with both the demolition of property by the Improvement Trust in the late 1860s and . with brighter general trade prospects following the cessation of the Franco-Prussian war in 1870, were dampened by the increasing frequency of failures in the building industry, and finally expectations were decimated by the City of Glasgow Bank collapse in 1878.[2]

Before the City Bank failure, however, bankruptcies had already achieved monthly rates two to three times those of the preceding years. With a mechanism not unlike the level of empties, the bankruptcy rate during 1876-77 effectively disenchanted the many builders who did remain solvent. Their poor expectations in the building trade were further underscored not only by the Bank failure, which forced 67% of Glaswegian builders into liquidation,[3] but also by the subsequent reaction against housebuilding as a result of 'the revelations in the Bankruptcy Courts'[4] which laid bare many of the practices of speculative builders and thereby did little to encourage confidence in the building industry, a legacy which haunted it for many years and the memory of such a spectre did much to curtail the dimensions of the subsequent housebuilding boom which were thereby formed on a more 'legitimate' basis than mere speculation.[5]

It was, therefore, an important contributory influence which the

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1 G.M.C., Evidence of Binnie, q. 6549.
2 Ibid., q. 6548, 6572, 6960.
3 Ibid., q. 7011.
4 A.C.J.S., 16th Annual Report, 1877.
5 W. Fraser, op. cit., pp. 27-8.

substantial number of building bankruptcies exerted in the 1873-77 years, and, compounded by the difficulties of 1878-79, this produced 'a reluctance to recommence construction'[1] in the 1880s. Thus even though the number of failures in the first half of 1881 and between 1882-4 was not great there was a psychological hangover, alongside saturated demand and other factors, which offered little encouragement to Scottish housebuilders. The fact that the expectations role was only contributory is further demonstrated by the later years of the eighties. Between 1886-90 Scottish builders were going into liquidation at a rate approaching that of more difficult years, and yet this plateau of bankruptcies did not prevent an upsurge in housebuilding, the index successively registering 94 in 1886, then 106, 97, 96 during 1887-9 and 72 in 1890. Similarly in 1880 when the annual figure for bankruptcies was akin to 1886-90 and a temporary housebuilding spurt still transpired.

Thus the adverse expectations created in the mid- and late- 1870s pervaded the next decade but did not prohibit short-term upward developments. The expectations influence on housebuilding activities was over-ridden when other factors assumed greater importance. Nonetheless expectations coloured the general outlook over the short and medium term.

Expectations also provided a generally optimistic climate facilitating the housebuilding upswing of the 1890s. Over the years 1891-99 the average number of building bankruptcies in Scotland's urban centres declined by 32% over the 1880-90 years, the average annual figures standing at 54 in the 1880-90 years and 37 over the later period. Thus at an early stage the less ominous building expect-

1 H.J. Habakkuk, op. cit.

ations consorted with other influences to produce conditions ripe for housebuilding on a more active basis, the expectations variable becoming more favourable as the frequency of bankruptcies lurched downwards in the first quarter of 1891.

If the 1870s boom culminating in 1876, 'the year of great speculation'[1], was in some way a period of unwarranted optimistic expectations, then the 'periods of legitimate prosperity'[2] which incorporated the years from the mid-1890s to the early-1900s not surprisingly avoided the backlash of over-reaction evident in the previous recession. Thus with the 1898 housebuilding peak achieving a level only 68% of that of 1876 the level of bankruptcy and subsequent gloom was of diminished proportions also. Only in the first six months of 1900 did bankruptcies rise appreciably, achieving in that half year a number equivalent to a twelve month period in the 1891-99 years, but significantly this sharp increase in insolvency amongst Scottish building trades was merely an interruption to the generally low level of failures in the 1890s which continued for a further quinquennium, thereby removing a potential barrier to the lingering housebuilding buoyancy of 1901-6. Expectations as reflected by bankruptcies were as noticed earlier echoed by those involved in the industry to the effect that in 1901, 'The prospects for the winter are however comparatively good',[3] a sentiment broadly thought apposite for the next two or three winters.[4]

Expectations in the later Edwardian era were in urban Scotland rather poorer than at the opening of that reign, but by 1912-13 building bankruptcies were fewer than at any time for sixty years. No doubt

1 W. Fraser, op. cit., p. 27.
2 Ibid., pp. 27-8.
3 U.O.M.G.J., Nov. 1901, p. 7.
4 Ibid., Dec. 1903, p. 7, when 'trade could not be described as bad'.

partially the product of more restricted speculative building, which thereby limited the supply of cheap working class accommodation and provided the disquiet which provoked official Scottish enquiries in 1903, 1907 and 1911,[1] the fewness of building bankruptcies probably also reflected a degree of amalgamation and a reduction in the overall number of operators in building as well as a level of expectations which heralded a future housebuilding upswing.

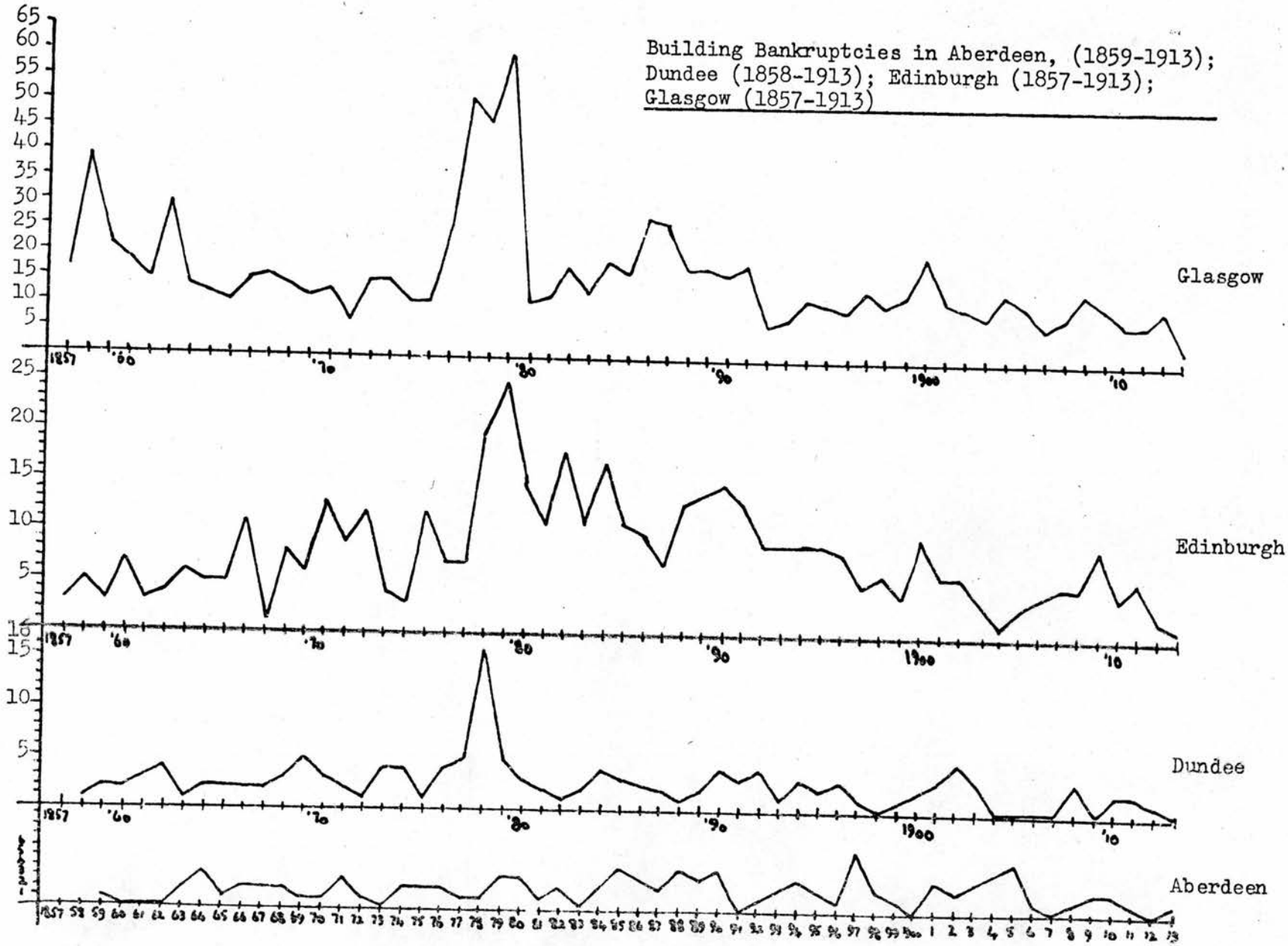
The general conclusion, then, on the role of expectations in housebuilding fluctuations is of a dual nature. Firstly, contemporaries with a varied vocabulary frequently expressed a view of future housebuilding and as these commentators were normally operating in the building industry it is more than likely that their expectations influenced their own scale of activity. As such this influence was ever-present but was more emphatic, and this is the second role of expectations, in the cumulative over-extension of the middle 1870s. Thus while relevant for the year to year housebuilding fluctuations the peak of 1876 was the only turning point in the housebuilding cycle substantially affected by the level of expectations. The psychological scar, or course, was a not too remote reminder to housebuilders for some years that expectations could not safely become unrelated to the housing market, a fact which even forty years on influenced the thinking of the industry and which bears the hallmark of an influential factor in housebuilding activity.[2]

The applicability and intensity of the expectations determinant of housebuilding varied from burgh to burgh (see fig. 6). It comes as no

1 These were respectively Glasgow Municipal Commission, the Departmental Committee on House-Letting in Scotland, and the Scottish Land Enquiry Committee.

2 See for example Departmental Committee on Increases in Rental of Small Dwelling Houses in Industrial Districts in Scotland, Cd. 8154 of 1916, Evidence of Gillies, q. 223-44, 279-80. The G.M.C. Glasgow Enquiry and the Royal Commission in 1917 also made reference to 'overspeculation' or 'overproduction' in the mid-1870s.

Fig. 6.


Building Bankruptcies in Aberdeen, (1859-1913);
Dundee (1858-1913); Edinburgh (1857-1913);
Glasgow (1857-1913)
No. of
Bankruptcies
Glasgow
Edinburgh
Dundee
Aberdeen
Years

surprise to find Glasgow which with 955 bankruptcies in the building trades between 1856 and 1913, 25.1% of the Scottish total of 3810 failures in these years, presented a carbon copy of the pattern outlined for the urban context as a whole. If anything the impact of expectations on the 1870s boom and its aftermath was more emphatic, a feature also relevant to a number of west of Scotland burghs. In these towns the predominant working class demand for one and two roomed houses was satisfied by pronounced speculative building at this time, the result of which was that the greater magnitudes of boom and retrenchment were all the more imprinted on builders expectations.

In Dundee the path of expectations again largely reiterated the urban trend (see fig. 6). Here, too, the mounting building insolvency of 1873-77 developed, 1875 excepted, and with the most disastrous year, 1878, produced a dejected interpretation of housebuilding prospects for some years to come which a subsequently low level of bankruptcy in the 1880s could do little to rectify. Other interesting points emerge in the role of expectations in relation to Dundee housebuilding. Minimal building failures in 1882-3 provided as favourable a climate for housebuilding expectations as was possible and as such did not prevent the development of a temporary construction surge triggered by better conditions in the jute industry and a spurt in the marriage rate during 1883.[1] Similarly low levels of bankruptcies in 1897-98 again provided no expectations barrier to the housebuilding prosperity of these years, but four successive years of building failures, 1899-1902, undermined confidence and limited the proportions of the secondary boom even before they had commenced.

In Aberdeen, by contrast, the impact of bankruptcy on expectations

1 Dundee Yearbooks, 1882-4.

in the 1870s and 1880s is ineffective. No explanation of a turning point is feasible in terms of the failure rate, which bobbled along with few clear peaks and troughs. That is not to say expectations were unimportant in the granite city. Indeed, quite the reverse, as the statements of officials of the Masons' Union, already quoted, confirm. It simply demonstrates the year to year importance of expectations in this city rather than the cumulative expansion and demise of confidence which contributes to the explanation of the 1876 turning point and subsequent years in other burghs.

In the Edinburgh building trades expectations fulfilled a role midway between those in Aberdeen and Glasgow. Planned housebuilding peaked much later in the capital than in other Scottish burghs and the fewness of building bankruptcies in 1876-77 demonstrates the circumspect nature of builders' expectations at this time. If anything, the shock to the Scottish banking structure caused by the Glasgow City Bank failure in 1878 was a more important influence on expectations. From 1878-91 bankruptcies in the Edinburgh building trades were more numerous than in the previous decade, and in the context of Edinburgh builders' active housing construction in these years it can only be assumed that the strength of other determinants of housebuilding outweighed the dismal contribution of bankruptcies to expectations. Subsequently expectations may have played a more pronounced role in the housebuilding fluctuations of Edinburgh. At least the lower level and declining frequency of bankruptcy from 1891 until 1899 did not produce adverse expectations for the developing housing boom, a facilitating role possibly extended for a few years after the Boer War. However the reverse applied from 1904. Commencing before the Edwardian boom broke in Edinburgh in 1907 rising expectations were no doubt in jeopardy as early as 1905, the first of five years of

mounting building failures.

The 'legacy effect', the extent to which the heavy incidence of building bankruptcies in the mid- and late-1870s influenced expectations in housebuilding for some years to come, has been seen to have a differential impact on the cities of Scotland. This is also the case elsewhere. Table 9 demonstrates those burghs in which building bankruptcies in the years 1875-80 were most numerous in relation to the overall frequency of failures in the period 1887-1913. Thus, other things being equal, a linear relationship of bankruptcies in each year would

Table 9

Relative Strengths of the 'Legacy Effect': Scottish Building Bankruptcies, 1857-1913

Burgh	Bankruptcies 1875-80 / Bankruptcies 1857-1913 %
Govan	35.4
Hamilton	35.1
Dundee	24.8
Leith	24.1
Airdrie	23.0
Partick	22.9
Glasgow	21.5
Edinburgh	18.8
Falkirk	17.4
Rutherglen	16.7
Hawick	15.4
Aberdeen	11.9
Kirkcaldy	11.4
Musselburgh	5.9
Perth	4.5
Ayr	4.3

Source: Edinburgh Gazette, 1856-1913.

produce 10.7% of all failures occurring in the 1875-80 period, this being the proportion of six years to the whole period. In Govan and Hamilton bankruptcies between 1875-80 were three times and in Dundee, Leith, Airdrie, Partick and Glasgow twice those statistically predicted for the six years. Furthermore there does appear to be some correlation between a heavy rate of building bankruptcies in 1875-80 and the depth

of housebuilding depression in the 1880s, the average indices for Partick, Glasgow and Govan falling below those of Kilmarnock, Perth, Kirkcaldy and Aberdeen - the burghs less subject to severe building bankruptcies during 1876-80. Futher and longer housebuilding indices would shed light on this expectations determinant of fluctuations, but it does seem tentatively possible to conclude that only in some burghs were expectations in the 1880s depressed as a result of bankruptcies whilst in many burghs other factors assumed more influential proportions.

In other situations the effect of frequent bankruptcies on the expectations of the building trades was mixed. The bankruptcies in Ayr of William Kennedy, a plumber, and the joiner David MacLean in 1902 coincided with a 24% reduction in planned housebuilding, but produced no long term disincentive, for the Ayr index of housebuilding was extremely buoyant during 1903-5,[1] In Coatbridge, the year 1904 saw three sizeable firms in the building trade go into liquidation and a smaller concern, W.A. Stewart, a slater, also sought a discharge from his creditors.[2] Too late in the year to have much effect on housebuilding in 1904, expectations in that burgh were no doubt shaken by four failures in the space of four months, the previous four bankruptcies occurring over a six year period, 1892-8. Thus the decline of expectations in the industry may be associated with a 28% decline in activity the following year and over the longer term with further reductions.

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1 Edinburgh Gazette, 7th Jan., 29th Aug., 1902.
Comparison of Tables 8.9 and 8.13 would indicate that while the severity of housebuilding fluctuations and the frequency bankruptcy as a measure of depressed expectations may be related in some burghs, the ratio of small to overall bankruptcies as an indication of market structure shows the amplitude of housebuilding fluctuations to be largely independent of the percentage of small operators in the building industry.

2 Ibid., 14th July, 1st Aug., and 3rd Oct., 1904.

The insolvency of Thomas P. Rough, joiner, James Fourney, builder, George Simpson and Co., timber merchants and Andrew Leith, a painter, all in Kirkcaldy in 1907[1] might be thought to have depressed building expectations in the burgh, all the more so since the two previous bankruptcies had been in 1905, and prior to that, a single failure in 1903. However the bankruptcies of 1907 were partly the product of an abrupt contraction in housebuilding in Kirkcaldy during 1905 and 1906, and no serious blow to expectations can have been registered, for the housebuilding achieved a minor upsurege between 1908-10.

A rather different pattern emerged in Hamilton. Between 1888 and 1900 eight building firms in the building trade failed, though never more than one such occurrence resulted in any given year. Nonetheless a boom developed even though the influence of expectations from bankruptcy levels was fairly constant throughout the 1890s.

In passing it is interesting to note from fig. 5 the variations in the area between the two curves. This in fact describes the path of rural building bankruptcies. The changing proportion of rural to urban building failures is shown below (Table 10). The higher proportion of rural bankruptcies from 1880 compared to the decades of the 1860s and 1870s shows that relative to urban builders expectations became considerably dampened at each phase of the housebuilding cycle. Thus regardless of their destinations - overseas in the eighties and 1900s or to urban Scotland in the nineties - the prospects of the rural housebuilder became increasingly forlorn as rural emigration proceeded, unabated.

The counties where rural builders' expectations may have been most affected by heavy bankruptcy rates during 1875-80 were Stirlingshire,

1 Ibid., 15th Feb., 10th May, 13th Aug. and 17th Dec., 1907.

Table 10

The Proportion of Rural to Urban Building Bankruptcies 1857-1913

	Sub-periods	Rural as an Annual Average % of Urban Bankruptcies
1.	1857-69	51
2.	1870-76	46
3.	1877-79	33
4.	1880-90	69
5.a	1890-1914	60

Note: a. This may be thought a lengthy period. However broken down into 1890-8, 1899-1901, 1902-5, 1906-13 the percentages vary little - 60, 64, 54, 63, respectively and do not alter the general argument.

Source: Edinburgh Gazette, 1856-1913.

Clackmannan, Lanarkshire and Dumbartonshire, but in the area now covered by the Highlands and Islands Development Board, along the Moray coast, in Ayrshire, Renfrewshire and West Lothian, bankruptcy in the building trades was much as would be expected. On a pro rata basis the proportion of rural bankruptcies in the six years 1875-80 should account for 10.7% of total insolvencies in the fifty-seven year period, 1856-1913. In fact this latter grouping ranged from 10.3% to 12.4%, about half the rate of the counties with the highest bankruptcy incidence in the middle and late seventies.

From the varied responses of builders to the frequency of bankruptcy amongst their brethren the influence of expectations on housebuilding fluctuations was apparently a subdued one overwhelmed by other factors. Contemporary awareness of trade prospects suggests that builders' expectations were no more than an expression of reigning economic factors, and as such were in most years to have no more than a reinforcing effect on the current trend of housebuilding fluctuations. However a distinction does exist between those intra-cyclical years when

only the reinforcement effect of buiders' expectations was operative and the cumulative psychological upswing of the 1870s with its legacy effects which were of more decisive importance to fluctuations at that time.

XIV

The nature of the building industry and the firms in it is thought by some writers to act as a supply influence on housebuilding.[1] The prevalence of small business units with the minimum of capital employed provided an unusual ease of entry and exit to the building industry which made the recommencement of operations all the more difficult or the accentuation of a boom easier.[2] The structure of the industry and the product in Scotland possessed distinctive characteristics. The products, predominantly tenements, were of substantial construction with a life expectancy of a hundred years whereas 'the English buildings are nothing like the permanent character that we have here.'[3] This solidity and durability which added to the capital cost to a significant degree,[4] produced a system of sub-contracting which in the 1919-39 period distinguished the tendering system for subsidised local authority housebuilding north of the border from that in England and Wales where companies tendered for the entire project.[5] Certain

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1 W.H. Newman, The Building Industry and Business Cycles, (Chicago, 1935); R.C.O. Matthews, The Trade Cycle (Cambridge, 1959); H.J. Dyos, 'The Suburban Development of Greater London, South of the Thames, 1836-1914', London, Ph.D. Thesis, 1952; H.W. Robinson, The Economics of Building, (London, 1939).

2 R.C.O. Matthews, op. cit., p. 102.

3 G.M.C. Evidence of A. McDonald, q. 3774.

4 Clydebank, D.G.C. Registers, 1903-9, 1912-14; Govan, D.G.C., H-Gov. 37, 1898-1912, and Partick D.G.C., H-Par. 39, 1899-1912, average of tenements was 174% greater than average cost of houses.

5 The Builder, 1919-29, carried weekly reports of tenders and contracts.

peculiar features of the structure of firms in the Scottish building industry merit further attention as regards the scale of business operations.

The objective at present is to discover the existence and extent of small building operations in Scotland before 1914 in an effort to assess their possible impact on housebuilding flucutations. This is attempted in three ways. Firstly the number of housebuilding contracts held by builders over a stated period ascertains how many large and small firms were involved. Secondly, by investigating the sequestration papers of bankrupts an indication of their capitalisation is obtained.[1] Thirdly, an inquiry into a particular bankruptcy facility in Scots Law, cessio bonorum , for firms insolvent up to a £100 limit, indicates the frequency of failure amongst small builders relative to total building bankruptcies.

Over a reasonably representative span of years, 1885-94, the name of every applicant to the Edinburgh Dean of Guild Court for housebuilding permission has been noted. In this first method of eliciting the scale of operations some interesting conclusions emerge. Many individuals, non-builders, applied in their own name. W.J.K. Anderson, for example, the founder of the present George Street tailoring company, was granted permission to build a villa in Lauder Road.[2] Three Coltbridge houses were approved for the Rev. J.C. Brown,[3] probably an investment project on his behalf,[4] as was Mrs. Janet Bell's intention to build and rent a tenement in St. Leonard's Lane.[5] Trustees, pursuing

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1 This procedure assumes all firms large and small have an equal chance of appearing in sequestration proceedings. The existence of a technique for dealing with smaller firms, cessis Bonorum, however suggests that the sequestration process includes rather larger than average firms.

2 Edinburgh, D.G.C., Registers, March 1885.

3 Ibid., June, 1894.

4 Edinburgh, P.O. Directories.

5 Edinburgh, D.G.C. Registers, May, 1889.

the interest of legatees, were involved for similar purposes in the derivation of rental income and thus secured the Dean of Guild Court's sanction to build property for the purpose. This was the rationale surrounding the proposed building of a tenement in the High Riggs by the Crerar Trustees in 1887[1] and the Chisholm Trustees in Montpelier Park five years later viewed tenement rentals equally favourably.[2] It is likely that James McKelvie's Trustees in their proposals for a double tenement in 1891[3] were not doing so out of deference to the deceased's wishes but rather because they realised the value of the six tenements he had owned since 1888-9.[4] Whether out of philanthropy or self-interest there were, too, numerous building associations such as the Polwarth,[5] the Norton Park Co-operative Society Ltd.,[6] the Assoication for the Improving the Dwellings of the Poor[7] and the Harrison Park Building Association[8] each of which built and rented several properties in the city. Commercial organisations including the Water Board,[9] the St. Cuthbert's Co-operative[10], the S.C.W.S.[11] and the National Bank of Scotland[12] bought properties as did Churches, presumably as company houses and manses.

While such examples demonstrate the extremely varied nature of the capital which sustained housebuilding activities, it does also indicate the widespread nature of single building projects, the scale of

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1 Ibid., June, 1887.
2 Ibid., July, 1892.
3 Ibid., April, 1891.
4 Ibid., Nov. and Dec., 1888, Feb., 1889.
5 Ibid., May, 1887.
6 Ibid., July, 1885.
7 Ibid., Oct., 1887.
8 Ibid., Nov., 1887.
9 Ibid., June, 1893.
10 Ibid., May, 1888.
11 Ibid., June, 1894.
12 Ibid., June, 1890.

which was amenable to subcontracting and jobbing work and was not thus part of substantial speculative building developments.[1] Indeed of the 321 different applicants to Edinburgh's Dean of Guild Court only 126 were identified as involved in the building trades. This represents 40% of the total applicants as builders, a figure which even if raised to 150 to counter the under-reporting of the Post Office directories is still less than half (46.7%) of all the individuals proposing to build housing accommodation. Furthermore, although, builders warrants formed 62% of all projected housebuilding in the capital, forty-seven of them applied for only one warrant between 1885-94 (Table 11). Amongst the building fraternity therefore 10%

Table 11

The Scale of Business Operations: Edinburgh Housebuilders, 1885-94

No. of Projects 1885-1894	No. of Builders	Total No. of Projects	% of Building Warrants	% of all Warrants
1	47	47	9.9	6.2
2	22	44	9.3	5.8
3	16	48	10.1	6.3
4	10	40	8.4	5.2
5-9	20	130	27.4	17.0
10-14	6	70	14.8	9.2
15+	5	95	20.0	12.5
Total	126	474	100.0	62.2

Source: Edinburgh D.G.C., Registers, 1885-94; Edinburgh P.O. Directories, 1885-94.

of the work was executed by builders who undertook just a single project over this decade. Builders and non-builders seeking one warrant over the ten year period accounted together for 59% of all applicants but only 25% of all warrants.

1 Glasgow City Archives, T-MJ91, Records of Mitchells Johnston & Co. show a similar picture through the operations of one of their clients in the 1890s.

If the implication of this might be thought to suggest that rather few builders constructed the remaining three-quarters of Edinburgh houses over these ten years then this would be incorrect. As Table 11 shows a small size of builder (2-4 warrants) was also responsible for the erection of 17.3% of all new residential property in Edinburgh between 1885 and 1894. Thus the construction of about three-fifths of Edinburgh houses in these years was undertaken by small builders,[1] either on their own account or on contract to the person or agency to whom Dean of Guild Court permission had been granted.[2] The remaining two-fifths (or more precisely 38.7%) were the product of a small coterie of middling and large building concerns.[3] The breakdown between medium scaled and large building firms was almost equal. Twenty middling-sized businesses[4] with 130 projects accounted for 17% of all housebuilding warrants; eleven businesses applying for over 1 warrant per year and incorporating 145 projects represented 21.7% of Edinburgh's new residential property between 1885 and 1894.

Some very substantial operations existed. A plumber by trade, James Anderson applied for fifteen warrants encompassing 30 houses and villas and 6 tenements.[5] These were mainly concentrated in the 1885-9 years but the nineteen permits for 32 houses and 30 tenements obtained by William Murray were more evenly distributed.[6] Another large business undertaking was that of John White, whose twenty Dean of Guild

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1 Applicants for fewer than 5 warrants in 10 years.
2 The breakdown was 23.5% on their own account, and 37.8% on behalf of somebody else.
3 Only 11 warrants, 1.4% of the total were executed by individuals James Campbell and James Turner, who were not identified as builders. Thus 40.1% of all warrants were in actual fact granted to firms applying for at least 5 warrants between 1885-1894. Edinburgh, Dean of Guild Court Registers, 1885-1894.
4 Applicants for between 5 and 9 warrants in 10 years.
5 Edinburgh, Dean of Guild Court Registers, 1885-9, 1894.
6 Ibid., 1885-91

applications were for 96 houses and 19 tenements.[1] Perhaps most significant in terms of the scale of operations was the firm of James Steel. Between 1886 and 1894 this ex-mason sought and obtained twenty-six permits for 11 houses and 57 tenements. The houses were mainly in Queensferry Road, but Steel's tenement construction although including the areas of Coltbridge, Muirieston Crescent, Dalry Road and Dean Park was most important for its development of the Comely Bank area, part of the Learmonth estates.[2] Indeed Steel's initiative also brought him fame and riches. A Lanarkshire farmer's son, James Steel achieved considerable prominence in Edinburgh both as a builder and town councillor, and eventually became Lord Provost of Edinburgh between 1900-03, acquiring a knighthood in the process.[3] His obituary recounted the acquisition of West End land from the Heriot Trust in 1877, eleven years after founding his Edinburgh building business, and how he 'build thereon the valuable house property known as Douglas, Eglinton, and Glencairn Crescent'.[4] In 1894 Steel embarked on 'his last big deal in land in the suburbs of Edinburgh when he purchased from the trustees of Colonel Learmonth about 80 acres in the Comely Bank neighbourhood, which since has been largely covered with tenements'.[5] Small wonder then that Steel 'reaped for himself a financial reward'[6] which the chronicler of past provosts of Edinburgh told of in the following terms:

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1 Ibid., 1885-93.
2 Ibid., See for example, the Comely Bank Warrants, for Comely Bank Place, Sept., 1890, Feb. and June 1891, July 1892, Oct., 1893; for Comely Bank Avenue, March and May 1893, Feb. 1894; Comely Bank Road, Feb. and May 1890 and Dec. 1892.
3 T.B. Whitson, The Lord Provosts of Edinburgh, 1896 to 1832. (Edinburgh, 1932).
4 The Scotsman, Sept. 15, 1904.
5 Ibid.
6 Ibid.

> 'As a result of these undertakings James Steel became exceedingly wealthy. It is told how, at an enquiry, he was asked his income and stated it to be about £80,000 p.a. He was informed that it was not his capital they wished to know, but he reiterated that this was his income'.[1]

Some very large enterprises therfore existed alongside the smaller building brethren.[2] The eleven largest Edinburgh builders in these years (3.4% of Dean of Guild applicants) accounted for 34.8% of permits issued to builders on their own initiative and for 21.7% of all projected housebuilding. However 60% of new accommodation was provided by builders operating on a very limited scale, executing plans perhaps only once and nor more than four times in the decade. Indeed, the 'one-off' or one warrant during the decade formed exactly 25% of all residential construction between 1885 and 1894. It was not, as Table 12 shows, a constant proportion over those years. Entering the housebuilding industry once only over the ten years and doing so in 1885 were 34 individuals, and of the 82 warrants that year this represented 41.4% of the total. The proportion of entrants on a 'once and for all basis' was rather greater in the more buoyant years of Edinburgh housebuilding, and was at a minimum in those years when the index reached its nadir. As most larger building firms were involved in new construction virtually every year, although this may have become more intense as the upswing proceeded, it is possible to tentatively suggest that it was the increasing entrance of small builders which partially encouraged booms and over-reactions to develop. Such a suggestion does not exonerate larger speculative builders; it merely indicates that small builders also acted speculatively.

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1 T.B. Whitson, op. cit.
2 H.J. Dyos, Victorian Suburb (Leicester, 1966), p. 125, Table 4 arrives at the same conclusion.

The existence of numerous large businesses in the building industry, referred to in Edinburgh, was neither confined to large burghs nor restricted by the type of trade plied according to the sequestration papers relating to builders' affairs. This second method of investigating the structure of firms in the building industry shows, for example, that Samuel Cathie, a Haddington slater, had liquid assets of £1436 which with other realisable assets was augmented to £1684, and with the book value of his debts standing at £1737, his creditors received a high proportion of the amounts owing to them.[1] In the case of John Thom of Uddingston, his own estimate of his liabilities when he declared himself bankrupt in 1886 was £1384,[2] and in Innellan, the joinery firm of A.H. Irvine was adjudged by an accountant to have debts of £642.[3] Only firms of some magnitude would have been permitted to amass trade debts on scales such as these. In the small Fife town of Newport, William Fenton accumulated more modest obligations in his painting business, to the tune of £282,[4] but in the Fife burgh of Dunfermline the joiner David Hulton acquired liabilities to the extent of £1554[5] and so the point can again be made that in all types of trades and towns sizeable building concerns were operating.

These cases, running to several hundreds of pounds, were far from exceptional. Many of the largest debtors were located in the cities and thousands of pounds would not have met their liabilities. Such was true of W.C. Mackinnon, a Glasgow plumbing firm whose debts amounted to £4043,[6] and another Glasgow firm that of the plasterer Alex Pirie possessed realisable assets of £425 and yet owed £3440.[7] The Edinburgh

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1 C.S. 318, 1869/79, S.R.O.
2 C.S. 318, 1888/344.
3 C.S. 318, 1899/128.
4 C.S. 318, 1874/119.
5 C.S. 318, 1884/189.
6 C.S. 318, 1904/237.
7 C.S. 318, 1907/258.

Table 12

The Proportion of Single Applications for Housebuilding Warrants

Edinburgh, 1885-1894

	Proportion of Applications for only 1 warrant in a year	Housebuilding Index Edinburgh (1900-09 = 100)
1885	41.5%	106
1886	31.4	94
1887	22.8	150
1888	24.5	135
1889	21.9	125
1890	25.4	94
1891	29.6	74
1892	19.0	63
1893	11.1	65
1894	32.5	110

Source: Edinburgh, D.G.C., Registers, 1880-

joinery business of Johnstone and Cairns owed £4401 in 1882, and another sizeable city failure was that of the Aberdeen painting concern of J.W. Forest, whose assets of £485 were thinly distributed over £1540 of debts.[2]

Perhaps most spectacular were the failures of some firms related to the building industry, such as the Ladyburn Sawmill Co. with debts of £8539,[3] and of the Eastern Saw Mill and Rivet Co., based, strangely in Greenock, whose 95 creditors were due £10274.[4] The glass merchants, John Currie of Glasgow were insolvent in 1886 to much the same extent as the Eastern Saw Mill firm, the liabilities in this case amounting to £10775 and assets of £3046.[5] In Elgin, Colin Mackenzie, a timber

1 C.S. 318, 1881/338.
2 C.S. 318, 1910/332.
3 C.S. 318, 1885/174.
4 C.S. 318, 1862/93.
5 C.S. 318, 1889/71.

merchant went bankrupt in 1863 with assets backing only 8% of his £4871 liabilities.[1] Though the failures of quarriers Michael Yates in 1882[2] and the Falkirk brickmaking business of D.H. Roberts in 1868[3] were more modest it does appear that the scale of operations for the producers of building materials, particularly in saw-milling and timber wholesaling, was generally in excess of that in the building trades themselves.

Substantial building firms did exist however as two interesting Edinburgh concerns indicate. The ability of Wm. Watson & Son, builders, to raise only £31,477 in answer to their liabilities of £43,267 produced insolvency in this firm in 1894.[4] Watson & Son had in fact applied for three warrants for 10 houses and 2 tenements between 1891-3, having previously abstained from new contracts during 1885-90.[5] Whether the initiation of those projects at a time when fellow Edinburgh builders were opting out of housebuilding was the immediate cause of failure is uncertain, although debts of such magnitudes would suggest more fundamental financial difficulties than contracts worth at the most £5-6000. What is also interesting is that another sizeable firm of Edinburgh builders, A.T. Blair, built a block of eleven villas in Craiglea Drive in 1888,[6] was deemed bankrupt in 1891, paying a dividend of only 3s. 6d. in the £ on his £3611 debts,[7] and yet by 1894 had received Dean of Guild approval for 4 tenements in Beaverhall Road.[8]

The firm of A.T. Blair was not alone in its exit and re-entry to the Edinburgh building industry. The firm of John Storrie, builder,

1 C.S. 318, 1870/253.
2 C.S. 318, 1893/366; liabilities, £1041, assets £10.
3 C.S. 318, 1870/299; liabilities, £964, assets £667.
4 C.S. 318, 1898/417.
5 Edinburgh, D.G.C., Registers, 1885-94.
6 Ibid., Aug. 1887.
7 C.S. 318, 1891/52.
8 Edinburgh, D.G.C. Registers, June and Oct. 1894.

of 6 Greenbank Road, went bankrupt twice, in 1891 and 1893[1] and Thos. Baird[2] and Robert Sharp[3] were two other Edinburgh builders who managed liquidation twice in the space of a few years. If successive sequestrations produced a destabilising influence on the building industry, it is likely that this was compounded by the inter-relatedness of several building firms. The failure of one firm therefore threatened the existence of others frequently because of common partnership links, often on a family basis. It was fortunate then that the Glasgow building firm of J. Peter Lyall maintained its liquidity for brothers John, in Glasgow, and James in Govan, had both obtained loans from Peter Lyall and his failure would have rebounded on them, putting their firms into difficulties.[4] Thus the insolvency of James Alexander Doull's joinery business brought pressure to bear on the firm of John Doull, also joiners, and ultimately the latter also appeared in the Bankruptcy Court.[5] William and Walter Dennis operated a builder's and a joiner's business respectively until the difficulties of one became transmitted to the other,[6] a source of weakness which, after the bankruptcy of John Hunter Dryden, an Edinburgh builder of 120 Dalkeith Road in March 1894, his brother Robert Dryden, in business nearby at 82 Findhorn Place as a joiner, soon became acquainted.[7]

The transmission of solvency crises, most easily traced between close blood relations - brothers or father and sons because of identical surnames - no doubt existed on a much wider basis. By marriage, friendship or blood relations, therfore, the interlocking credit arrange-

1 Edinburgh Gazette, July 31, 1891 and March 21, 1893.
2 Ibid., Oct. 20, 1885 and Aug. 7, 1891.
3 Ibid., Nov. 27, 1891, and Mar. 15. 1895.
4 Glasgow City Archives, T - MJ 199, Trust of J. Peter Lyall.
5 Ibid., Feb. 12 and Dec. 17, 1886.
6 Ibid., June 25 and Sept. 17, 1889.
7 Ibid., March 27 and April, 3, 1894.

ments of affiliated firms produced a vulnerability, which if not unique to the building industry, did little for the confidence of participants once certain individuals were known to be hard pressed to meet their liabilities. Rumours surrounding a doubtful building firm would not be appeased by the knowledge that the percentage of debts paid in dividend by the trusteeship of building bankruptcies was not great. In fact expenses incurred in the processes associated with sequestration immediately engulfed 20-30% of the gross receipts,[1] and although this was not out of tune with the winding up of other types of businesses,[2] quite frequently the composition payment was as little as 1s. 9½d in the £ as in the case of James Bruce, a builder,[3] and it was rarely in excess of the 4s. 6d paid to the creditors of another Glasgow building firm, John Inglis of Bellgrove Street, in the same year, 1860.[4] Such knowledge of the low percentage of debts retrieved probably induced many creditors to press more urgently for full settlement, and in so doing precipitated the demise of the building firm in question and hastened the contagious difficulties of other firms in the industry.

Sizeable concerns were widespread in the building industry of Scotland between 1860 and 1914. Nor were they immune to bankruptcy. The magnitude of their assets, the accumulation of liabilities, both suggest that the industry was accustomed to operations on a scale involving thousands of pounds.

Further enquiry into the scale of business operations in the building is also provided by an offshoot of bankruptcy proceedings, the

1 C.S. 318, S.R.O.
2 G.A. Esson,'Recent Statistics of Bankruptcy in Scotland', Trans. of the Royal Phil. Society of Glasgow, 1863, p. 196.
3 C.S. 318, 1860/46.
4 C.S. 318, 1860/147.

separate process of Cessio Bonorum. Originally designed to provide a debtor with a means of avoiding imprisonment if he gave up his whole estate,[1] the term ultimately became synonymous with the sequestration of small estates,[2] a fact explicitly recognised in the drafting of the 1856 statute which governed Bankruptcy Law in Scotland, substantially unamended, until 1913. In the words of the act of 1856,

> '.... if it shall appear ... that the Estate is not likely to yield free Funds for Division among ordinary Creditors, after Payment of Preferable Debts andExpenses, beyond One Hundred Pounds to resolve that the Bankrupt shall only be entitled to apply for and obtain a Decree of Cessio and shall have no right to a Discharge in the Sequestration.'[3]

The proportion of 'Decree of Cessio' to all bankruptcy proceedings is consequently taken here to represent the relative importance of the small building firms in each burgh.[4] High percentages of cessios are thus indicative of more numerous small building organisation whilst a low percentage displays the greater significance of larger firms in the building industry of a burgh. The relative reliance on small firms is shown in Table 13 alongside the degree of housebuilding instability in the same burgh. The contention of Matthews[5] that the predominantly small business structure of the industry produced a wider amplitude in housebuilding fluctuations is a generalisation apparently not always applicable to Scottish burghs. In Kilmarnock and Dunfermline the prevalence of small construction firms coincided

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1 A.D. Gibb, Glossary of Scottish Legal Terms, (Edinburgh, 1946), p.17.
2 Ibid.
3 Bankruptcy (Scotland) Act, 1856, C.79, 226, Section 168.
4 An assumption is made here that the probability of bankruptcy is unrelated to the scale of operations. This may at first appear to be a rather artificial assumption but further reflection on the large and medium size of firms previously cited as bankrupt certainly indicates they failed and thus this survey of bankruptcy is not likely to substantially over-represent small as opposed to large builders. In any event, it is comparative, inter-burgh ratios rather than the absolutes which are at issue.
5 R.C.O. Matthews, op. cit., p. 102.

Table 13

The Relative Reliance on Small Building Firms and Housebuilding Instability in Scottish Burghs, 1857-1913.

	Small Bankruptcy Estates (Cessios) as a % of all Bankruptcies Proceedings (Rankings in Brackets)	Average Annual Housebuilding Index Changes 1894-1914. (Rankings in Brackets)
Rutherglen	56 (1)	28.6 (10)
Stirling	55 (2)	30.9 (9)
Kilmarnock	55 (2)	43.6 (3)
Dunfermline[a]	52 (4)	38.1 (6)
Aberdeen	51 (5)	19.0 (23)
Falkirk	48 (6)	24.8 (15)
Irvine[a]	46 (7)	43.7 (2)
Motherwell	43 (8)	27.4 (12)
Ayr	43 (8)	19.6 (22)
Govan	40 (10)	23.5 (16)
Kirkcaldy	40 (10)	27.7 (11)
Perth	39 (11)	39.2 (4)
Hawick	38 (12)	44.8 (1)
Airdrie	38 (12)	25.5 (14)
Paisley	33 (14)	21.6 (20)
Partick	33 (14)	35.7 (7)
Coatbridge	33 (14)	27.7 (11)
Dundee	32 (17)	22.1 (18)
Port Glasgow	30 (18)	34.8 (8)
Glasgow	29 (19)	20.0 (21)
Edinburgh	27 (20)	22.1 (18)
Wishaw	24 (21)	22.8 (17)
Leith	23 (22)	38.3 (5)

Major Urban Burghs	- crude average	39
	- weighted average	33.39
Rural Counties	- crude average	44
	- weighted average	43.76

Note: a 1898-1914.

Sources: Edinburgh Gazette, 1856-1913; D.G.C., Registers.

with a volatile housebuilding performance and in Glasgow, Edinburgh and Wishaw greater dependence on a larger scale of building enterprise was also consistent with the Matthews' proposition. In some middling positions of Table 13, Kirkcaldy, Airdrie and Dundee displayed an instability position which approximated their degree of small business operations. But many exceptions to the relationship prevailed. One of the least volatile housebuilding performances, developed in Aberdeen, yet there existed a proliferation of small enterprises hardly surpassed elsewhere. By contrast, Leith one of the most destabilised in its housebuilding trends possessed a minimal ratio of small to large building concerns. In Perth, Hawick and Port Glasgow fluctuations of significant proportions were associated with an industry if not highly concentrated at least less disaggregated than in many urban centres.

The building industry in the principal burghs of Scotland was not therefore wholly or even substantially the preserve of the small business. Further evidence to this effect is presented in Table 14 where the monthly bankruptcy rate in each trade is observed. Small scale, low capitalisation building firms could be expected to fail more frequently at times of interrupted cash flow. Frost, the enemy of mortar, and inclement conditions historically brought Scottish housebuilding to a near standstill in winter. This was not always the season of most acute liquidity problems for housebuilders however. The suspension of operations altogether often minimised new obligations and their cash position was healthy, swelled by the house sales at the completion of the building season. If the winter months presented most difficulties to building workers, it was the end of that season and the early spring which brought housebuilders nearest to the Bankruptcy Courts. Incurring new obligations without the facility to

Table 14

Monthly Bankruptcy Rates in the Scottish Building Trades, 1857-1913

Trade	Bankruptcies No.	Bankruptcies %	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Builders	1045	27.43	9.09	8.04	8.80	6.99	9.38	7.85	8.13	8.42	6.89	8.23	8.61	9.57
Joiners	894	23.46	7.61	8.39	9.51	8.95	6.26	8.72	10.29	7.27	7.94	9.06	7.72	8.28
Plumbers	376	9.87	7.98	11.97	8.51	7.71	7.98	8.78	7.98	10.11	7.98	5.05	7.18	8.51
Painters	416	10.92	8.17	6.97	7.69	11.78	5.29	9.13	9.13	8.41	7.45	7.93	9.62	8.41
Timber Merchants	308	8.08	8.44	9.74	10.06	8.77	6.82	7.79	5.84	8.77	7.79	9.74	8.44	7.79
Plasterers	137	3.60	12.41	8.76	10.22	10.22	6.57	4.38	7.30	5.84	8.76	6.57	8.76	10.22
Masons	174	4.57	12.07	4.02	5.75	13.79	10.92	9.77	8.62	7.47	2.87	9.77	6.32	8.62
Quarriers	87	2.28	6.90	11.49	9.20	8.05	5.75	17.24	6.90	5.75	8.05	6.90	5.75	8.05
Brickmakers	54	1.42	3.70	5.56	11.11	14.81	12.96	7.41	7.41	3.70	9.26	7.41	3.70	12.96
Glass Merchants	64	1.68	10.94	9.38	7.81	14.06	7.81	7.81	9.38	4.69	4.69	6.25	7.81	9.38
Bricklayers	23	0.60	8.70	0.00	0.00	8.70	13.04	17.39	17.39	8.70	0.00	8.70	8.70	8.70
Slaters	232	6.09	9.05	9.48	9.48	7.33	7.76	9.91	8.62	8.19	7.76	8.62	6.90	6.90
TOTAL	3810	100.0	8.66	8.48	8.85	8.90	7.69	8.64	8.61	8.01	7.35	8.11	8.01	8.71

Source: Edinburgh Gazette, 1856-1913.

generate a cash flow due to the lag between commencement and completion of houses, small builders were most threatened during March and April.

If evenly distributed in each month building bankruptcies should be at the rate of 8.33% per month. In the four months between August and November the frequency of building failures was below this figure suggesting that liquidity was less precarious in the concluding months of the Scottish housebuilding year. The periods of greatest financial strain for building firms were the months of March and April, the highest bankruptcy rates, 8.85% and 8.90%, occurring in these months. While this broadly supports the view of the periods of minimum and maximum strains for small business certainly qualifications are necessary. For example, although March and April presented greatest insolvency threats, the brief respite of May was quickly followed by two months, ostensibly in the peak summer building period, when building firms failed at a rate not far short of the most difficult months and in numbers equivalent to the months of December and January. Furthermore in the categories of 'bricklayer' and 'painters' where the proportion of working capital was considerably below those in the plumbing and slating trades,[1] the month of March did not produce the numerous bankruptcies expected in labour-intensive trades with minimal employed capital. Indeed the summer months of June and July in both trades as well as April in painting and May in bricklaying were the seasonal peaks for failures in these trades. Conversely, the greater capital requirements of builders, plumbers and slaters offered little cushioning and the yearly cycle of easier conditions in the August to November

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1 R.C. on the Housing of the Industrial Population of Scotland, Rural and Urban, 1917, Vol. 4, Appendix CLIX, p. 182.

period with greater financial austerity during the winter and early spring which affected building trades as a whole was no less relevant in their cases. Even for the producers of builders' supplies, timber and glass merchants, quarriers and brickmakers, the generally larger capital requirements of these firms, more akin to manufacturing enterprises, provided no greater insurance against the periods of seasonal financial difficulty.

XV

The Censuses of Production in 1924 and 1930 divided employment in the building industry roughly in a ratio of 3 : 1 in favour of large firms.[1] The degree of concentration amongst Edinburgh house-builders, 1885-94, would indicate that 2 : 1 as more appropriate, a figure also consistent with the finding that in the thirty largest burghs of Scotland the average percentage of small building bankruptcies was 33%. With evidence on the yearly, rather than sporadic, involvement of large builders, with details of numerous substantial business operations as contained in sequestration papers, and with the indication that the amplitude of housebuilding fluctuations was not closely related to the frequency of failure in small building firms, it is possible to conclude that the volatility of the housebuilding index cannot simply be ascribed to the structure of the industry and ratio of small to large operators in it. The evidence is thin and too often contraditory to permit this traditional supply explanation in the Scottish context.

At the burgh level the prevalence of small scale business in towns such as Dunfermline, Rutherglen, Stirling and Irvine may have

1 Censuses of Production, 1924 and 1930, quoted in H.W. Robinson, The Economics of Building, (London, 1939), p. 11.

contributed to the atypical and destabilised housebuilding of these municipalities, though the position of small building enterprises was less important in the cities and larger towns, and if the structure of the industry was a force in these cases it was overwhelmed by other influences. It would appear then that large and small firms alike acted speculatively in the housebuilding market when the opportunity arose, and it was, therefore, more 'the slowness of the process by which a surplus or deficiency of houses made itself felt to builders'[1] that produced the reaction lag, the overshooting and the amplitude of flucutation rather than the structure of building industry firms. In other words, it was less the imperfection of the market in terms of the business size and more the imperfection of builders' knowledge of housebuilding trends and their diagnostic difficulties in relation to prevailing conditions which produced the inertia and the characteristic amplitude and periodicity of the housebuilding cycle.

XVI

Non-builders, it was earlier observed, who applied for Dean of Guild Court blessing to their housebuilding project represented a sizeable 40% slice of housebuilding work[2] and these private funds and initiatives provided a firm backbone of capital for the residential construction sector in urban Scotland. Indeed it was a stiffened backbone for typically of a more expensive and elaborate design these applicants in their piecemeal development of the suburbs - as for example in the southern approaches to Edinburgh, the Grange, Newington and Cluny areas - were governed less by trade cycle fluctuations and

1 R.C.O. Matthews, op. cit., pp. 102-3.
2 Edinburgh, D.G.C., Registers, 1885-94.

more by other influences. Obsolescence, replacement demand, enlarged family requirements, tastes and changing fashionable areas provided the varied motives for the drift of wealthier sections of the community to suburbia. Accumulated savings financed this relocation of shop-keepers, businessment and professional groups and external financial support was less frequently sought in these cases. From the builders' viewpoint such an element of demand which was both more predictable[1] and largely self-financing proved a boon. It placed a floor on the industry, a minimum of work which if not risk-free was certainly less hazardous than building operations financed by third parties.

Internally generated finance for housebuilding provides therefore a useful departure point in an examination of those supply variables in housebuilding fluctuations, the cost and availability of capital. As a by-product it also allows for some clarification of the role of investment and speculative motives in housebuilding.

Forty per cent of Victorian housebuilding in the Scottish capital emanated from the plans of private individuals and agencies. Not all of these non-builders, however, possessed sufficient personal funds to finance their proposals and resort was made to friends, relatives and moneylenders. Hence in 1873 John Kay obtained a £300 loan from the New Scottish Friendly Property Investment company, on security of the property at 15 Leopold Place and this advance, 80% of the property value, was modest by some standards, as for example those of George Rose and Richard Mackintosh were in excess of 100%.[2] The capital for a flat in 18 Livingston Place was forthcoming for Mrs. Helen Hodge

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1 Glasgow, Office of Public Works, Memorandum of Linings granted by the Dean of Guild Court; Edinburgh, D.G.C., Registers. See also Table 11 above.

2 Minute Books, New Scottish Friendly Property Investment Company, p. 23.

following her sisterly request to Edward Johnstone, who though residing at 1 Holyrood Street in Edinburgh already possessed a top floor flat at number 17.[1] Another instance of private borrowing occurred on the tenement at 43 Bryson Road. Ralph Henderson was able to pay the Edinburgh builder Peter Cruikshank as a result of raising finance to the extent of a £1600 bond, obtained from the trustees of a deceased leather merchant in Niddry Street, Andrew Aikman.[2] Thus if the 40% of private building applications is somewhat deflated by such approaches for external financial aid, it was augmented from amongst the ranks of builders themselves, many of whom employed accrued profits to finance building on their own account.[3] Such was the practice of the Glasgow mason and builder Andrew Brockett who deployed his £683.19s net rental income for 1884-5 obtained from 4 to 24 Stockwell Place and 76 to 86 Stockwell Street, partly against a loan (£305), in part against ground (£135) and used the remainder (£281) to further his building interests.[4]

In a more general corporate context certain companies provided working class housing either out of accrued profits or as a charge on costs. The Summerlee Iron Company, the Coltness Iron Company and various coal-mining firms shared the motives of Owen's New Lanark housing almost a century earlier; they attempted to secure labour supplies. Clearly for many companies it was not a viable economic proposition: Summerlee managed only a 2.8% return on its investment of £79,289,[5] exactly the same rate of return as the Arniston Coal

1 Title and Deeds, S.R.O. In fact Edward Johnstone, though providing some of the capital still left an amount outstanding.
2 Sasines Registers, Burgh of Edinburgh, (subsequently, S.R.E.). Bryson Road, S.R.O.
3 Departmental Committee on Increases in Rental of Small Dwelling Houses in Industrial Districts in Scotland, Evidence, Cd. 8154, 1916, S.C. Eadie, q. 1239-40.
4 T-MJ 276, Ledger folios, 159-61, Glasgow City Archives.
5 R.C. on the Housing of the Industrial Population of Scotland, 1917, Evidence of D.M. Mowat, Vol. 4, Appendix CVII, pp. 120-1.

Company derived from its 145 houses,[1] although several mining companies around Kirkcaldy and Dunfermline achieved returns on a par with the Scottish Garden Suburb Co. in Gourock, approximately 4.5%.[2] The smaller of these working class housing schemes contributed to a better return and it was on a smaller scale that the railway companies executed their statutory rehousing responsibilities. Only belatedly was the demolition of urban housing by railway companies remedied by reconstruction elsewhere and even as late as 1899 the Edinburgh Burgh Engineer commentating on the 'crisis' caused by the North British Railway Company's demolitionsfor its Waverley station, felt compelled to recommend that 'before proceeding with the demolition ..... new houses should have been provided.'[3] The railway view was that the abundance of alternative accommodation implied no rehousing obligation on their part, an interpretation shared by the Glasgow Improvement Trust manager, Baillie Morrison, who thought that the displacements had '.... not to any extent'[4] intensified overcrowding because accommodation 'was in existence in excess of the requirements of Glasgow.'[5]

The theoretical importance of internal funds for corporate investment decisions recently expounded[6] has received some support historically in the housebuilding policy of Levers at Port Sunlight, concentrated as it was upon years of better profits.[7] The same conclusion is broadly available in the case of Scottish corporate housebuilding which seems to have developed at times suitable to the company, years of improved retained profits and internally available finance.

1 Ibid., D.W. Robertson, vol. 4, Appendix XXVII, p. 46.
2 Ibid., J. Wilson, vol. 4, Appendix XIII, pp. 26-30.
3 Annual Report of the Burgh Engineer of the City of Edinburgh, 1899, pp. 1-2.
4 R.C. on the Housing of the Working Classes, 1884-5.
5 Ibid., q. 19804.
6 J.R. Meyer and E. Kuh, The Investment Decision (Harvard, 1957).
7 J.N. Tarn, Five Per Cent Philanthropy, (Cambridge, 1973).

Many building associations, terminating and continuing, relied heavily on subscriptions to provide working capital for materials and labour in work undertaken by their membership. The most successful of these associations in Scotland was undoubtedly the Edinburgh Co-operative Building Company Ltd., founded in May 1861. From 1870 a dual purchase scheme was operative. On evidence of a £5 deposit in the Savings Bank, Property Investment Companies and other money lending agencies were prepared to offer the remaining £125 of the pruchase price.[1] Contrasted to this external source of funds 'the privilege of proprietorship' was available when 'the Company itself introduced an "instalment scheme" ' with fixed monthly payments raning from 2s. 4d to £4.4s. 8d.[2] Over the next decade these monthly saving and externals funds methods jointly saw an expansion of the Building Company's business, so that since its inception it had erected 1261 houses valued at £238,575.[3]

Private savings, company profits, members subscriptions, each provided a supply of capital for the housebuilding industry divorced from money market sources. Local authority accommodation, normally of a lodging house variety though some tenement flats did exist in Edinburgh, Greenock and other large towns,[4] were provided from local rates, and this source of building finance was another instance of ready capital uncomplicated by loans, bonds or other ties on the property. Indeed the Corporation of Glasgow were statutorily able to exact an 'Improvement Trust' rate in a way similar to the present water rates.[5]

1 Sir Hugh Gilzean-Reid. Housing the People - An Example in Co-operation, (London).
2 The Scotsman, 10 Dec. 1880, p. 3.
3 Ibid.
4 W. Thompson, The Housing Handbook, (London, 1903), pp. 61-2.
5 C.M. Allan, 'The Genesis of British Urban Redevelopment with Special Reference to Glasgow', Economic History Review, 18, 1965, p. 604.

Charitable organisations, endowments, the Co-operative Building Union[1] and Model Building Associations such as that in Pilrig, and the Edinburgh Lodging Houses Improvement Association offered additional sources of ready capital.[2]

A very considerable volume of capital, perhaps as much as 40% for housebuilding[3] and more for jobbing work on alterations and additions, was not controlled by financial institutions. Scottish urban housebuilders as a consequence possessed an element in their work which was relatively unaffected by the opportunity cost of that capital. Whereas solicitors, trustees and banks were aware of alternative outlets and their relative attractiveness, middle class preferences and institutional ardour if not impervious to such influences placed a higher premium on suitable accommodation than on marginally better investment yields. Charitable organisations, local authorities and presbyteries tended to embark upon housebuilding in the form of lodging houses and manses when internal resources permitted, and thus a significant proportion of the finance for housebuilding was unrelated to the customary constraints of market movements in the cost

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1 W. Thompson, The Housing Handbook (London, 1903), p. 179 and Housing Up-to-Date (London, 1907), p. 152, demonstrates a rapid development of the Scottish section's involvement in housebuilding in early Edwardian years. Between 1902-6 the Co-operative Building Union increased its capital injection into Scottish housebuilding from £150,000 to over £600,000, half the increase being provided in the form of mortgages and the remainder largely financing the construction and ownership of houses by the Union.

2 H. Roberts, Examples of Efforts in Scotland to Provide Improved Dwellings for the Working Classes, (Edinburgh, 1860), pp. 779-87.

3 Departmental Committee on Increases in Rental of Small Dwelling-Houses in Industrial Districts in Scotland, Report, Cd. 8111 of 1915, Minutes of Evidence Cd. 8154, 1916, Evidence of Steel, Q. 1117 suggests 34% of Glasgow property covered by bonds and advances, leaving 34% on which the capital had been advanced through the amalgam of non-market sources.

and supply of capital.

Advances could be secured by builders from clients by the methods previously mentioned. Reliance was also placed on trade credit and the ability to run up substantial bills for goods and services received without paying for them seems to have been more prevalent amongst housebuilders than in other groups. But whereas non-market finance promoted a stabilising effect on housebuilding leaving cyclical turning points largely unexplained, dependence on trade credit contributed to the translation of a boom into a slump:

> '..... such credits were possibly less readily available in the later stages of a trade expansion; finance for building may have become more difficult before (or even without) a decline in the funds available for mortgages'.[1]

Another financial practice prevalent in the building industry, the step by step advance of capital to the builder, apparently also added to the amplitude of fluctuations, particularly the boom of 1876 and the subsequent trough. Under this system lenders

> '.... began to advance the money as soon as the first joists were on and continued to advance in proportion as the building proceeded'.[2]

This rather precarious arrangement left the builder exposed should finance not be forthcoming at some stage leaving him with an incomplete and unsaleable commodity. The availability of capital building of this type allowed the boom to develop in the 1870s, but it 'spelled ruin in very large letters', and not surprisingly 'has very much gone out of vogue'.[3] Such financial practices therefore contributed to the fluctuations of the 1870s and its aftermath in the eighties. But in respect of subsequent fluctuations the stage by stage advances of capital were only relevant insofar as the then defunct system limited the extent of the upswing and over-reaction when capital was not as

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1 H.J. Habakkuk, op. cit., p. 202.
2 G.M.C., Evidence of Binnie, q. 6631.
3 Ibid.

freely available to the small builder dependent on such advances, being less able to obtain capital from more recognised sources and the development of the 1890s building upswing was more closely related to real factors than based as in the previous cycle partly on speculative fantasy.

If some 30-40% of housebuilding finance was forthcoming from private individuals and building associations, some 60% of Scottish housebuilding capital was raised on the initiatives of builders. Two initiatives employed by the builder to raise the cash necessary for him to undertake his operations were loans based on mortgages and ground burdens.

Firstly, a mortgage in the form of a bond could be arranged using the customary intermediaries, banks and solicitors. This was raised on the security of the property, and default on the loan resulted in the mortgagor assuming the title deeds. Normally however the sale of the completed accommodation provided funds sufficient for the builder to repay the original loan, although the capital realised in the sale might also be employed for a subsequent enterprise. Generally the bonds were for a high though variable percentage of the total building cost but because they were granted for fixed periods of relatively short duration, often of five years, a considerable market in second and third mortgages developed, though the uptake in these cases was normally for a lesser proportion, frequently two-thirds, of the original property value.[1] After the first mortgage the term of subsequent loans was often only one year but the two-thirds borrowing rule 'seems to be .... their modus operandi'.[2]

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1 Departmental Committee on Increase in Rental, 1915. Evidence of Steel, q. 1117; R. Stewart, q. 1472.
2 Ibid., R. Stewart.

The original sources of funds for builders were 'widows, spinsters and orphans'[1] and thus it was 'people of comparatively moderate means'[2] who through accumulated saving or inheritance sought a relatively risk-free investment outlet. Asked just who the investors in property bonds were 'well-to-do or wealthy people?'[3] William Gillies, Dean of the Faculty of Procurators in Glasgow, a position of legal insight from which his information would be authoritative , replied,

> 'A great many are people living on very narrow means, requiring to study economy much more than many of the working men with their present-day wages'.[4]

The small investor seems to have funnelled a steady stream of funds into the housebuilding sector, negotiating with the builder, the lawyer acting as middleman. The solicitor, whose important role of financial intermediary has been investigated elsewhere,[5] played an important part in the disposition of funds through this position as trustee, executor and financial adviser to his clients. Whether as documentary draughtsman for the deeds of small investors, or in handling rich estates solicitors retained considerable influence but if this provided the resources, the handling of 'a number of trusts which have come into operation by the death of people of comparatively moderate capital'[6] provided the flexibility and freedom of action by which the legal profession exerted a powerful influence over the availability of capital for housebuilding. Indeed as informed and independent financial intermediaries solicitors tended to move in and

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1 E. Gauldie, op. cit., p. 182.
2 Departmental Committee on Increase in Rental, 1915, Evidence of Steel, q. 1093.
3 Ibid., Evidence of Gillies, q. 267.
4 Ibid.
5 J.D. Bailey, 'Australian Borrowing in Scotland in the Nineteenth Century', Economic History Review, 12, 1959-60, pp. 268-72.
6 Departmental Committee on Increase on Rental, 1915, Evidence of J. Steel, q. 1093.

out of property bonds according to their relative attractiveness, and in 1915 Gillies remarked on the tendency for trust funds to opt for housing investment in the upswing of the boom but, after it had broken and on the maturing of the bond, to move out elsewhere.[1]

As to what percentage of advances to the building industry passed through lawyers' hands it is impossible to say. The bond-building relationship also existed in the guise of property investment companies and banks. Both were contributors to the ample money supply conditions mainly confined in the geographical context to the larger conurbations of Scotland and in the historical context, to the speculative element of the housebuilding boom of 1870s. Bank advances also influenced the house-building activity of those years, according to Binnie's evidence on the heavy building representation amongst the City of Glasgow Banks unfortunate creditors in 1878,[2] and thus the whole process of the bond-building source of capital is well summarised by another Glasgow housing expert who agreed that,

> '... the overbuilding from 1870 to 1881 gave moneylenders such a lesson that it is not likely a similar state of things will take place in our time'.[3]

The stark conclusion from such an assessment is that which produced the active burgh housebuilding indices for the first quinquennium of the 1870s. The Property Companies, according to the Statist, were particularly helpful to speculative builders at this time in that 100% mortgages were available, but this 'notable craze' was somewhat cooled when the insufficiency of tenants led to defaults by builders and thus to empty property in the companies' hands,[4] leading ultimately to the winding up of these

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1 Ibid., Evidence of Gillies, q. 245.
2 G.M.C., Evidence of Binnie, q. 7011.
3 Ibid., Evidence of R. McCallum q. 8191.
4 The Statist, Jan. 10, 1885, p. 36.

'addled Property Companies in Glasgow, Edinburgh and Dundee'.[1] Although an important source of building capital, with paid up capital in fifteen companies in 1885 of £520,000,[2] the impact on the cyclical fluctuations in housebuilding was capital availability contributed significantly to the cyclical performance of the seventies, and with the 1890s boom only 70% of the 1876 peak and by 1904 all but a spent force, the more controlled money supply to builders had contributed to this subdued performance. As to why builders preferred to obtain advances from one rather than another of the three principal agencies - solicitors, banks, or property companies - had more to do with availability than cost in the 1870s, as the convention on property bonds was for the rate of interest to be 1% more above the yield on consols,[3] but greater stability of solicitors' advances, the earlier overextension of property companies and banks, solicitors ability to effectively dovetail first and second mortgages and their avoidance of the speculative stigma secured a relatively more important role for this source of capital supply to the building industry in the 1880s and 1890s.

The second method by which builders raised capital for their activities, the creation and sale of ground burdens, differed from the process just mentioned in that the right to levy feus and ground annuals was sold whereas the bank advance or property bond supplied a loan for a short period usually, one to five years, the remuneration for which was a fixed rate of interest. The transference of the right to ground burdens offered the builder ready cash and the lender received an asset from which an investment income was available in perpetuity. It was thus attractive to the small investor, trusts and larger institutions such as schools and universities, and the legal profession quite apart from its land and

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1 Ibid., Jan. 17, 1885, p. 64.
2 W.R. Lawson, Scottish Investors Manual, 1884.
3 Departmental Committee on Increase in Rental, 1915, Evidence of Gillies, q. 248.
4 S.L.E.C., p. 308.

property transference monopoly exercised considerable control in this investment field. On the possession of a plot of land, therefore, a builder was able not only to create sufficient sub-feus to enable him to cover his own feu payment to his superior, but could immediately create a second charge, the ground annual, with its marketability and fund-raising possibilities. Ground burdens were aptly explained by the Scottish Land Enquiry Committee,

> 'They are perpetual annual payments secured on the property and are not redeemable. As soon as they are created they can be sold. And this is precisely the explanation of their existence. The builder commonly disposes of them for cash as soon as they are created, and so finances his operations'.[1]

Small wonder, then, that land speculation and the controlled release of land proved so attractive, for even if the anticipated rental value was a factor inflating the purchase price of a site, it also provided ready access to capital for the development of that site.

Further advantages accrued to this method of raising capital. Compared to rental income or property bond yields with which certain difficulties in obtaining payment were associated, fewer problems were encountered with ground burdens. The maturity of a bond sometimes presented problems of a second mortgage; ground burdens were simple to collect, did not expire , offered duplicate payments in certain years, and initially could be sold for as many as 31 years' purchase of the annual payment, although as the century wore on more frequently this was reduced to 20-24 times the yearly payment.[2] Not surprisingly the sale of feu duty and ground annual rights provided the working capital for the erection of the property, but also on security of future income streams derived from these ground charges, builders could raise bonds usually on very favourable terms as the

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tendency was for first bonds or mortgages, which these by definition were, to occupy an esteemed position as authorised trustee investments and thus

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1 S.L.E.C., p. 308.
2 Ibid., pp. 307-10.

bore lower rates of interest.[1] Certainly the Glasgow builder Peter Lyall preferred to retain his ground burden income rather than sell it outright his yearly ground annual and feu-duty income for the five years 1882-7 was almost £40, but more significantly when it was necessary the sale of these rights reached £1007.15s. and represented 16.3% of his entire wealth.[2]

In another case the role of the ground burden and the lawyers' influence is explicit. Thus a plot of land in Wardlaw Place was feued in 1892 by John Galletly, S.S.C., to Duncan Ritchie, an Edinburgh builder wh immediately obtained a cash advance of £250 from solicitor, John Scott on the strength of future income flows, and was promptly discharged three months later when the original feuar, Galletly, took over the bond, this second mortgage being for the higher sum of £260.[3] Apart from Ritchie's ability to raise working capital these transactions facilitated the development of a site held by one of Galletly's clients and an investment for another, a brief but secure loan for a client of Scott's as well as fees for the two solicitors. Similar cases are frequent. For example, in 1876 David Bell, builder, developed the Albert Street feu he obtained from the Edinburgh architect William Beattie, selling it to the North British Property Investment Co. Ltd., who three years later sold it back to Bell. These were apparently cash transactions, but with the tenement again in his hands in 1879, Bell raised a considerable amount upon security of the property, partly from a trusteeship and partly from a property company, and it was this working capital he subsequently employed in building work.[4] Most famous of the feu developers, James Steel used annual income derived from his previous transactions, for example those in Livingston Place and Buckingham Terrace, to develop in the 1890s on his

1 Ibid., p. 308.
2 T-MJ 199, Ledger folio 72, Glasgow City Archives.
3 S.R.E., Wardlaw Place.
4 Ibid., Albert Street.

own building initiative the sizeable estate obtained from Colonel Learmonth.[1]

XVII

Some preliminary remarks on the ebb and flow of sources of building capital have already been made - the greater constancy of private savings and more variability in institutional sources - further treatment of this aspect is now due. In respect of the cost of capital the oft quoted report from the Journal of the Master Builders' Association provides a key to its impact on housebuilding.

> '..... a very serious building crisis has arisen ... the collapse has been brought about principally by the dearness of money and the disposition of the banks to restrict advances over this class of security.'[2]

At the time of this contemporary assessment Scottish housebuilding had in 1899 diminished by 17.7% and in 1900 continued its downward trend. In Edinburgh, the source of the report, the index had by late 1900 fallen by 54% over two years and in the twin city, Aberdeen, the reduction was 50% in three years. The higher cost of capital between 1899 and 1901 contributed in no small measure to reduced margins on house-building, with repayments on loans occupying a larger part of net receipts and as such housebuilding became in these years a less profitable investment.[3] By extension, therefore, the affirmative answer from a Dundonian on whether in part there was 'a boom before the South African War in consequence of the cheapening of money'[4] is unsurprising, though more emphatically conveyed by the Glasgow builder and factor, Binnie,

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1 The Scotsman, Sept. 15, 1904.
2 Master Builders' Association Journal, Feb. 1900, p. 15, also quoted in C.H. Feinstein, 1959 Cambridge Ph.D. Thesis, p. 279 and S.B. Saul, op. cit., p. 133.
3 Departmental Committee on Increase in Rental, 1915, Evidence of Gillies, q. 239-40.
4 Ibid., Evidence of Scrimgeour, q. 1681.

in that during the 1890s 'money was exceptionally cheap.'[1] Before the Boer War the cost of capital for the building industry was normally around 3%.[2] The war pushed this upwards by at least 1%, normally more, and a certain amount of support for the post-war housebuilding expansion emanated from the cut in money rates, so that by 1903, 3½% was operative. The upward drift in the cost of capital continued subsequently so that by 1908 a rate of 3¾% was normal and by 1912 the cost was again at least 4%.[3]

In much the same way, if not to the same degree, as a 2% cheap money rate from 1932[4] uncomplicated by artificial support for gold represented an equilibrium price for loanable funds to the housebuilding sector, so the low cost of capital in the 1890s provided a spur to the house construction industry. Indeed contemporary comments would bear out the proposition that building is 'sensitive to the rate of interest'.[5] If the role of interest rates was of importance to the housebuilding decision of the 1890s and 1900s, inflating and deflating the prevailing trend of construction, it was critical in the turning point of 1899-1901, when the boom broke. By contrast, during the eighties, the latterday liquidity trap existed, whereby even a minimal cost of capital could do nothing to reverse the prevailing market conditions with demand extremely slack.

Although comments on the relevance of interest rates to housebuilding activity have been mainly drawn from the four principal cities of Scotland, some differential impact could be expected according to the proportion of house construction financed as a result of access to

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1 Ibid., Evidence of Binnie, q. 128.
2 Ibid., Evidence of Gillies, q. 238.
3 Ibid., Evidence of Binnie, q. 193.
4 E. Nevin, The Mechanism of Cheap Money (Cardiff, 1955).
5 R.C.O. Matthews, The Trade Cycle, (Cambridge, 1959), pp. 110-11. See also H.J. Habakkuk, op. cit., p. 202.

external funds. That is, where a larger proportion of building was financed by private savings, the correspondingly diminished externally financed sector had less overall effect on housebuilding fluctuations in those burghs. The proportionately greater concentration on larger houses in Edinburgh, Perth, Inverness and Aberdeen[1] exemplifies the stability induced by a middle-class group or an element with a highly developed thrift ethic, and thus it is in towns with greatest working class concentrations where the bulk of housebuilding was constructed by rapid building development in a period of prosperity and was financed by obtaining capital from financial institutions of one kind or another, that the rate of interest contributed to a greater extent to housebuilding fluctuations. Thus in Airdrie and Falkirk rather than in Ayr and Forfar the cost of capital was a more significant factor in the level of construction.

XVIII

An easily obtainable supply of capital in the 1870s was one of the most important influences on the height and duration of the housebuilding upswing which saw the overall Scottish index comfortably surpass the 200 mark. The situation of the seventies boom was well summed up by Binnie.

> '... building societies advanced money to an enormous extent, and on the most reckless terms, to builders who were absolutely penniless, or very nearly so. I have known a man starting a building which would cost him £5000, and all he had in the world was £70, and yet he managed to build and finish it .... because of the advances.'[2]

A vehement reaction to the unfortunate consequences of accessible

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1 R.C. on the Housing of the Industrial Population, 1917, Evidence of A. Fraser, Vol. 4, Appendix XXXVI, p. 50.
2 G.M.C., Evidence of Binnie, q. 6962.

capital supplies 'gave moneylenders such a lesson'[1] that it was thought that funds for housebuilders would not in the future be as easily available. A repeated outburst based on the supply of capital was not then thought likely to reappear.

Yet between 1891 and 1904 'houses were quite a favourable subject for investment'[2] and in making this observation Alexander Ledingham had seen in his native Aberdeen housebuilding activity expand from an index of 85 in 1891 to over 200 in the years 1896-99 and indeed achieving a level on a par with the previous inflated boom, with the index for 1900-04 still remaining in excess of 120.[3] This upswing of the 1890s, quite apart from previously mentioned demand influences, proceeded because the rate of return to investment in housebuilding was attractive, and thus it was 'the disposition of the bank to restrict advances over this class of security'[4] which with the increased cost of borrowing brought a temporary lull in the work of the building industry between 1899 and 1901.

Apart from the private sector still relatively innocent of the opportunity cost of the capital they supplied to the building industry for their owner-occupier properties, the supply of funds from other sources was heavily dependent on relative rates of return, risk adjusted. Over the period 1890-1914 the relationship between building industry capital and alternative outlets can be best investigated, this being the period of wealthiest information. Certainly until the South African war few builders experienced difficulties in obtaining

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1 Ibid., Evidence of B. McCallum, q. 8191.
2 Departmental Committee on Increase in Rental, 1915, Evidence of Ledingham, q. 1828.
3 Aberdeen, Town Planning Registers.
4 Master Builders Association Journal, op. cit.

adequate funds. One reason advanced was the failure of the Australian banks and the switch to domestic investment opportunities.[1] More subtly this implied that the rate of return on such foreign securities taking account of the risk involved did not match the return from housebuilding and ownership. The balance of advantage began to alter however during the Boer War as already noticed, and from 1905 house-building investment became quite definitely unattractive in most burghs.

As indicated in fig. 7 the building performance of the 1890s was in part facilitated by a growth in the money supply which continued from 1887 and was only checked, significantly, in 1899, and in the more specific though quantitatively less important area of Building Society deposits the stagnation of the mid-1880s was transformed into greater activity in the mid-1890s (fig. 7). At the same time, starting in 1892, the yield on consols began to decline, and by 1894-5 this was quite appreciable. Interestingly the advance in the national industrial security index which had added 50% to its 1891 level by 1897 slowed its rate of growth in that and the subsequent year[2] and may have allowed capital to move into the housebuilding sector to boost the boom years of 1897-8. Although the consols and industrial securities data relates to a national capital market, to a certain extent Scottish housebuilding was competing at that level, and with the housebuilding index moving from 76.8 in 1891 to 87.6 in 1892 and 107.3 the following year is indicative of a switch of capital into housebuilding investment which was forthcoming at an early date.

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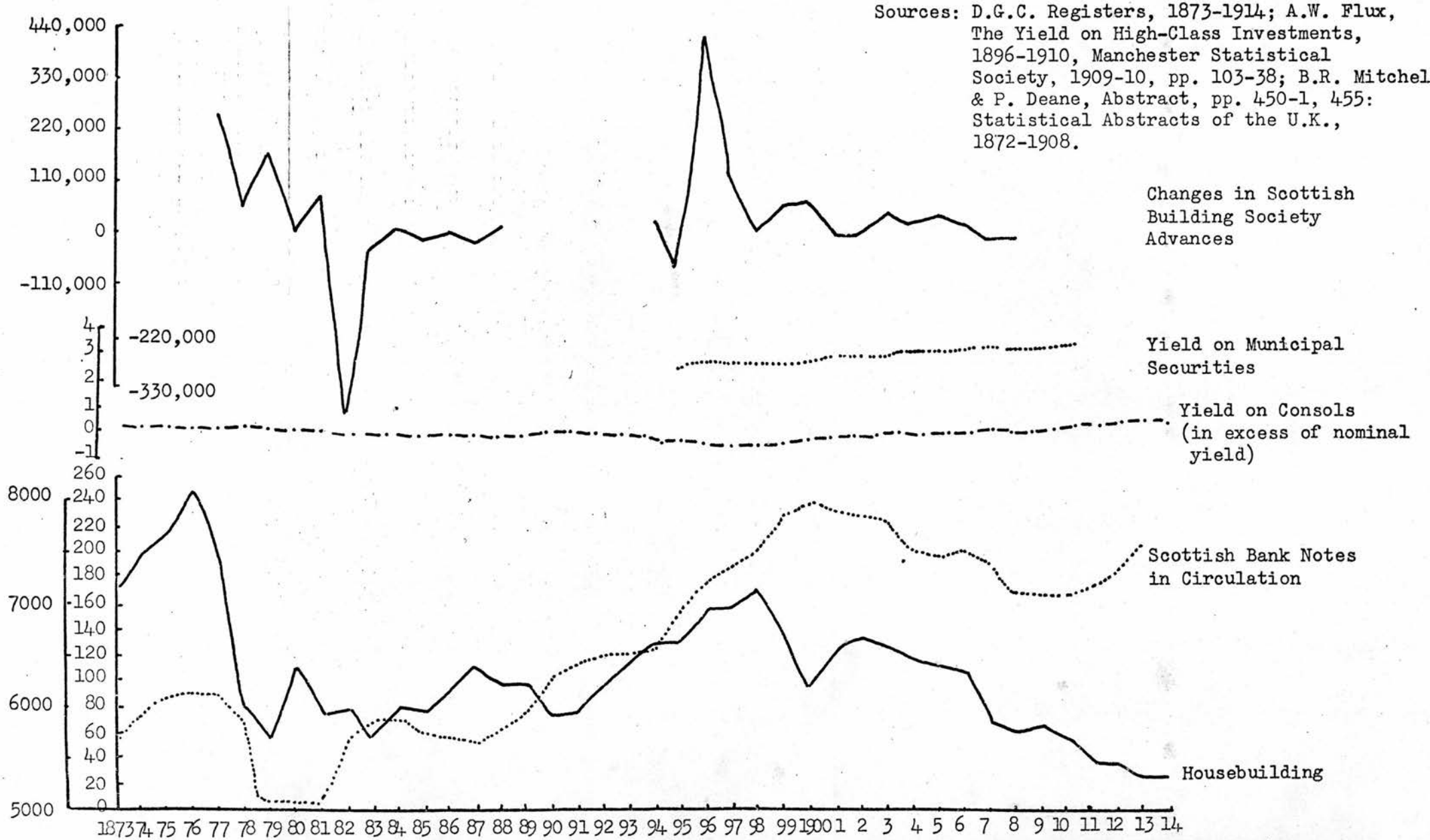
1 Report of the Departmental Committee on Increases in Rental of Small Dwelling Houses in Industrial Districts in Scotland, 1914-16, Cd. xxxv, para. 3.

2 K.C. Smith and G.F. Horne, 'An Index Number of Securities, 1867-1914', London and Cambridge Economic Service, Special Memorandum, No. 37, p. 4.

Fig. 7. The Supply of Capital and Alternative Yields, 1873-1914



If the constriction of supplies of capital and their higher price restrained the housebuilding activity of 1899 and opposite trends encouraged it in 1902, by 1905 the signs for the future were becoming clouded. 'Trade', according to one building union, 'seems to be getting worse instead of improving' in 1905[1] and this was apparently the case in Aberdeen, Glasgow and indeed in 'most places.'[2] In Rutherglen the ex-provost and important house factor Kirkwood reported 'serious losses' during the 'slack period' of 1905-10 and housebuilding lingered on more actively than in most Scottish burghs and no doubt contributed to the losses sustained through the abundance of empty property. Few property owners in Rutherglen managed a 4% return in 1910-15, with many achieving nothing at all. One block of 10 tenements with 200 dwellings had produced no return for quinquennium.[3] Another house factor, Robert Lickley of Dundee, recalled from his thirty years of experience that 4-5% was the customary rate of return on property, but in the years before the Great War, there was nothing yielding over 5% and most properties were down to 4%.[4] From 1904 in Aberdeen housebuilding had become relatively unattractive and had enjoyed no revival in the next decade[5] and so by 1907 a witness to the Royal Commission on Housing could report that the 'plentiful supply of cheap capital'[6] which had stoked the cyclical upturn and peak had terminated and that the tightness and dearness of money had effectively, as in England,[7] constricted housebuilding.

In the early years of the twentieth century the importance of

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1 U.O.M.G.J., Jan. 1905, p. 7.
2 Ibid., May 1905, p. 7.
3 Department Committee on Increases in Rental, 1915, Evidence of Kirkwood, q. 1274-6.
4 Ibid., Evidence of Lickley, q. 1661.
5 Ibid., Evidence of Ledingham, q. 1828.
6 R.C. on the Housing of the Industrial Population of Scotland, 1917, Evidence of W. Fraser, q. 38132.
7 S.B. Saul, op. cit., p. 133.

capital availability can be most comprehensively investigated , particularly with reference to other investment outlets. Hence the comment on the years 1909 or 1910 to 1915 is instructive,

> 'It has been very, very difficult in the past five years to get lenders to lend money on heritable property. In the case of trustees they absolutely won't do it ....'[1]

But the weak competitive pull of housebuilding investment was laid bare by this witness' subsequent remarks,

> 'Further, in Dundee, situated as we are, we have these investment companies who are paying 4 per cent and 4½ per cent for debenture money.'[2]

Solicitors were therefore able to channel clients' resources away from previously solid bricks and mortar into investment trusts, local bonds and consols. With the price of gilt-edged securities declining from 111 to 71½ between 1898 and 1913,[3] the yield on government stocks pursued an upward path and the customary 1% differential between yields on property bonds and consols[4] was cut considerably as the two rates of return converged. In consols the actual yield in 1900 was in excess of the nominal yield for the first time since the origins of the nineties upswing in housebuilding and by 1903 consols were providing yields higher than at any time for 30 years previously and continued to improve their return, particularly from 1907.[5] Similarly with railway debentures and municipal stocks the yield per cent improved as the twentieth century developed. Home municipal securities for example had provided a medium return between 1895-98 of £2.17s or £2.18s per cent. By 1900 this type of investment offered £3.2s 6d and rose to £3.10s-12s between 1907-10.[6]

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1 Departmental Committee on Increases in Rental, 1915, Evidence of Petrie, q. 1598.
2 Ibid.
3 H.J. Dyos, 'The Suburban Development of London, South of the Thames, 1836-1914', London Ph.D. Thesis, 1952, Ch. V.
4 Departmental Committee on Increases in Rentals, 1915. Evidence of Gillies, q. 248.
5 B.R. Mitchell and P. Deane, Abstract of British Historical (Cambridge, 1971), p. 455.
6 A.W. Flux, 'The Yield of High Class Investments, 1896-1910' Transactions of the Manchester Statistical Society, 1910-11, p. 109.

However disenchantment with property investments was not simply the product of less attractive yields. On debentures and gild-edged securities,

> 'The interest is sent direct to the lender every half-year. He has no trouble and he has absolute security because they cannot borrow beyond a certain proportion of their capital.'[1]

Not surprisingly solicitors interpreted the financial climate in such a way as to deprive the housebuilding industry of capital required to satisfy such unextinguished demand as remained. But with a proportion of tenement accommodation standing untenanted, with the purchase of feus and ground annuals providing a less certain income given more numerous vacancies and the problems of collection, with defaults on bonds likely under such circumstances and inclined to enforce illiquidity upon the investor, it was with commonsense that solicitors advised against involvement in property ownership or advances. William Gillies summed up the feeling of his fellow lawyers,

> ' I speak as representing my bodies of trustees who won't invest in heritable property now. Trust estates used to be the common source from which money was borrowed.'[2]

Any drying up of the supply of capital to the building industry was doubly difficult. Quite apart from the effect of suspending new building operations because advances and bonds, secured on the basis of property rental incomes or ground burdens were not forthcoming, a problem also developed with bonds already in existence. Given initially for a five year period, they could upon maturity be re-registered on an annual basis.[3] However these year to year advances became increasingly common as the percentage of new, five year bonds dwindled, and thus the lenders' right to call up his bond at any time under this annual

1 Departmental Committee on Increases in Rentals, 1915, Evidence of Petrie, q. 1598.
2 Ibid., Evidence of Gillies, q. 245.
3 Ibid., Evidence of Scrimgeour, q. 1698-1700 and Petrie, q. 1597-8.

arrangement placed enormous burdens on the borrower who might therefore have 'to repay at any time.'[1] In addition to the risk and uncertainty introduced into housebuilding more onerous terms which whittled away the builders' and owners' margins were often exacted on such loans negotiated under pressure and at short notice. The vulnerability of this system of mortgages therefore imposed burdens when the building industry could least bear them and often provoked failures and further contraction in the volume of construction.

The extent to which capital availability affected burghs differently is arguable. A priori the more sophisticated capital markets based on local stock exchanges might imply that Glasgow, Aberdeen, Edinburgh, Dundee and Greenock were burghs where the most highly developed and subtle views of alternative rates of return would minimise trusteeships' rigidity in favouring property investment. A lesser propensity to switch a capital supply accustomed to property outlets would perhaps in part account for the tendency of housebuilding in those semi-rural county towns of Ayr, Perth and Stirling to be sustained beyond the general downturn in urban construction.[2] Such an influence cannot however be pressed too strongly. House factors and solicitors in various parts of Scotland bought property or advaned bonds in the larger burghs, as for example did an Argyllshire schoolteacher in Graham Street, Edinburgh,[3] and many Free Church ministers relied on private incomes derived from the involvement in property markets in several burghs.[4]

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1 Ibid.

2 The overall Scottish housebuilding indices for 1906 and 1907 were 106 and 70. In Ayr these were 136 and 86; in Perth 109 and 78, and in Stirling, 154 and 101. Ayr, Perth, Stirling, D.G.C. Registers.

3 S.R.E., Graham Street.

4 A.A. Maclaren, Religion and Social Class: The Disruption Years in Aberdeen, (London, 1974), pp. 50-53, p. 62.

XIX

The shifting emphasis of domestic investment which favoured house-building in the last Victorian decade but in the war loans at the turn of the century re-opened the attractiveness of gilt-edged securities which, if temporarily less popular between 1902-5, became increasingly sought after from that date. Until the war loans of 1914 forced builders to offer 5% - a full 2% above the cost of capital twenty years before - for advances to service their existing mortgage obligations the balance of advantage was domestically moving against housebuilders when yield and risk were compared to alternative outlets. Trust funds operated by solicitors on behalf of widows, orphans and spinsters therefore restricted their involvement in the building industry and pursued a similar type of return elsewhere. This was in the field of municipal bonds, consols, railway and other local debentures, with a smattering of more adventurous stocks only obtained by limited entry into investment trusts. Industrial stocks and foreign securities of the mining or ranching variety therefore were not substitutes for property investment. Home and foreign investment outlets were not substitutes for one another in the eyes of trusteeships and thus alternating flows of capital as far as housebuilding was concerned were more in terms of switches between gilt-edged and housebuilding, that is, between different types of domestic investment with secure and steady income streams.

XX

In extolling the virtues of an index of average rentals, derived from the annual value and number of houses contained in Inland Revenue Reports, Weber cited the long run of years and the absence of any

rating element in the valuations as the major advantages of the data source.[1] These advantages and the fact that 'In Scotland the system in question amounted in practice to an annual reassessment and no lag inhibits the figures'[2] commend the adoption of the same Inland Revenue sources as indicators of rent movements in Scotland.

The breakdown of rent components according to whether they were assessed or not assessed to duty allows a distinction between larger (£20 p.a. or over) and smaller house (less than £20 p.a.) rentals to be made (Table 15). Although unadjusted for the varying level of accommodation purchased by a given rent over time, Table 15 provides an indication of the advance in rents over the period 1875-1911. Larger, more substantial properties suffered a 10% reduction in the rents they produced in comparison to a 45% advance in rents of working class and other smaller dwellings and so a general proposition that the same accommodation cost in 1911 about 34% more than the same space in 1875 (col. 3, Table 15) would probably not be far wide of the mark.

Quantitatively less significant and in any event more likely to be owner occupied, larger properties were not as important as smaller houses in influencing housebuilding through movements in the rent variable. Such larger properties as were rented did not experience a rate of rent increase equivalent to that in smaller properties, a point often referred to in evidence submitted to the Committee on Rentals in 1915,[3] and this was another factor producing a more stabilised level of construction at the better-off end of the housing

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1 B. Weber, 'A New Index of House Rents for Great Britain, 1874-1913,' Scottish Journal of Political Economy, 7, 1960, pp. 232-7.
2 Ibid., p. 233.
3 Departmental Committee on Increases in Rentals, 1915.

Table 15

Rent Indices, 1875-1911

	Larger houses i.e. Assessed to duty. Value £20 p.a. (1)	Smaller Houses i.e. not assessed Value £20 p.a. (2)	Total (3)
1875	97.6	101.2	98.1
76	100.0	100.0	100.0
77	100.3	105.4	103.8
78	99.4	108.0	105.8
79	100.7	110.0	108.8
1880	100.2	111.7	109.4
81	100.3	112.1	109.6
82	100.6	112.4	110.0
83	101.0	112.2	109.8
84	100.9	112.1	109.4
85	101.1	112.2	109.5
86	97.9	112.2	108.9
87	100.0	113.8	109.6
88	99.6	114.3	110.0
89	99.3	114.9	110.2
1890	98.8	115.4	110.4
91	98.6	119.4	111.5
92	n.a.	n.a.	n.a.
93	97.7	119.0	113.7
94	97.0	120.5	114.7
95	96.7	121.4	115.5
96	95.8	125.0	116.0
97	n.a.	122.9	n.a.
98	95.0	125.8	120.2
99	94.1	126.8	121.2
1900	94.2	129.5	122.9
1	93.9	130.7	123.7
2	93.3	132.3	124.8
3	93.2	135.3	127.3
4	92.6	138.0	128.9
5	92.2	138.7	129.2
6	92.1	141.1	130.8
7	91.7	141.4	131.0
8	91.0	143.3	132.4
9	91.0	143.3	132.4
1910	91.6	144.7	133.6
11	90.1	145.8	134.0

Source: IR 16, 1-135, P.R.O.

market. Some weight is attached to this element of rented accommodation by using column 3 as a reflection of rent changes, a practice which may if anything understate the upward movement by assuming all larger properties were available for rental.

After the boom of the 1870s, rents continued to increase, and in 1880 were almost 10% above those of the year of peak construction, 1876. Thus whereas urban housebuilding had plummeted to 20% of its 1876 level by 1879, Scottish house rents stood 10% above the 1876 level in that year. In some ways this apparent imperfection in the housing market demonstrates exactly how it worked. Faced with the inevitability of reduced rental incomes as the 'economic pull'[1] swung in the tenants' favour, landlords preferred to maintain rent levels, suffering their rent losses in the form of a rising proportion of empty property as and when these vacancies came about. Their revenue formula thus held price constant and allowed quantity to fluctuate and this may have encouraged a further rigidity in the market - a reluctance to re-enter housebuilding when it was most advantageous to do so. The fact that only slightly lower rentals on Glasgow Corporation properties were expected, when the downturn came, to ensure a much higher occupancy rate and many fewer defaults and losses compared to private sector housing[2] suggests that total revenue would indeed have been improved had landlords and factors been less inclined to cling on to higher rents at times when oversupply inevitably moved the terms of trade in the occupiers' favour.[3] Thus greater flexibility in rents

1 Ibid., Evidence of Fraser, q. 558-60.
2 G.M.C., Evidence of Binnie, q. 6567.
3 Ibid., Evidence of Mann, q. 8488, also noted other effects of lower council house rents which amounted to local authority price cutting. In addition to encouraging 'the rush from the country' and discouraging private enterprise construction, low rents were seen as a 'rate-in-aid' which subsidised employers enabling them to obtain labour below cost price at the expense of the community, and thus also acted as 'an insidious form' of poor relief.

would have avoided the crippling losses of empty property.

The high level of empties, and the preference for maintained rent levels is well demonstrated in the rent index of the 1880s. The stagnation of rents is particularly noticeable between 1879 and 1887 and thereafter there was some slight improvement. This however transpired after housebuilding had, along with industrial activity, experienced an upturn, and thus in the resurrection of housebuilding the role of rents was negligible. Over the period when Aberdeen housebuilding, in keeping with most other Scottish burghs, was most active, 1891-1904,[1] the contribution of rent increases may have been more positive. Passive at first therefore but with a decisive role later when rent increases during 1896, 1900 and 1903 in each year were respectively 3.0%, 2.1% and 2.3%, housebuilding for rental and investment incomes no doubt received a fillip from the rising level of rents. From 1905 when housebuilding in Scottish burghs began to fall off quite sharply, the pace of rent increases also slackened, but with the number of vacant properties many fewer, proportionately, than in the 1880s, landlords managed in a less saturated market to obtain very small increases after 1905 until wartime controls on new building and rent levels terminated the more rapid rises of 1914-15.

Indeed it was only with those rising rents of 1914-15 that a halt was put to the declining rate of return obtained from housing. After 1900, the tenement at 147 Thomson Street in the Glasgow Eastern District yielded respectively 5½%, 4¾% and 3⅝% and 3⅞% in the years 1900, 1905, 1910 and 1915 on the £2000 invested[2] and the same pattern was repeated in two tenements at 708 and 716 Springfield Road, where

1 Departmental Committee on Increases in Rentals, 1915, Evidence of Ledingham, q. 1828-30 and 1849-51.
2 Ibid., Evidence of Faulds, Appendix XII.

in 1905, 1910 and 1915 the rates of return were successively 4⅓%, 3¼% and 4½% on the £2735 invested.[1] While these and other cases in various districts of Glasgow showed some arrest and even reversal to the declining rate of return on property investments just before the outbreak of hostilities in Europe, the slowing rate of rent increase in other burghs, urban districts and indeed rural areas between 1900-10 can be more generally seen from the rent indices for these parts (Table 16).

The advance in urban house rents was greatest in Dunbarton,[2] Ayr and Renfrew counties with Fife, Forfar, Stirling and Aberdeen occupying the middle tier with rents rising about 10-12%. The counties containing 40% of the entire Scottish population,[3] Lanarkshire and Edinburgh were virtually stagnant in their average rent levels after small initial increases between 1898 and 1903. With 1904 Lanarkshire rents 99.24% of their 1912 level it is hardly surprising that the rate of housebuilding decline from 1905 was faster than in most Scottish burghs. It was particularly noticeable in Glasgow, Hamilton and Coatbridge, and a similar decaying construction industry was in evidence in Edinburgh. However the fact that urban house rents did not stagnate completely as in the 1880s contributed to a more controlled reduction in building activity during the Edwardian era.

It is interesting to note in passing the path of house rents in a rural setting. In Kircardine and Kinross, in Orkney and in Zetland the price of rented accommodation rose by almost 20% between 1898 and 1912, and in several other counties Banff, Berwick, Kirkcudbright,

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1 Ibid., Evidence of Spiers, Appendix XVIII.
2 The years 1910-12 are complicated by boundary changes.
3 Census of Scotland, 1911.

Table 16. Indices of Scottish House Rents, 1898-1912 (1898-99 = 100)

	1898-9	1899-1900	1900-1	1901-2	1902-3	1903-4	1904-5	1905-6	1906-7	1907-8	1908-9	1909-10	1910-11	1911-12
Argyll	100	100.7	101.7	101.6	101.9	103.7	103.5	103.9	105.9	104.8	108.2	110.3	107.0	105.3
Banff	100	101.9	102.3	103.3	104.3	107.4	108.0	108.1	109.0	109.0	110.3	112.5	110.0	110.8
Berwick	100	104.7	106.5	107.9	106.7	105.6	106.8	106.1	111.4	108.5	109.7	110.6	110.6	111.2
Bute	100	100.0	100.7	101.1	101.7	102.4	102.9	103.2	103.3	103.1	102.9	102.6	102.6	102.6
Caithness	100	99.8	100.0	100.5	100.5	104.0	105.1	105.5	106.8	107.1	108.4	109.9	112.6	114.4
Dumfries	100	101.7	101.6	99.9	96.8	100.0	100.8	101.2	102.8	101.8	102.3	102.3	96.6	97.0
Elgin	100	102.8	103.7	104.8	105.9	99.8	100.2	100.6	102.2	101.9	102.4	102.3	99.9	100.4
Haddington	100	107.3	109.4	113.4	117.3	n.a.	n.a.	n.a.	n.a.	n.a.	115.7	116.6	112.8	117.5
Inverness	100	101.2	101.4	102.1	102.3	103.1	103.1	103.5	104.0	102.8	103.1	103.3	103.8	102.8
Kincardine	100	101.5	102.9	104.5	107.2	110.0	110.3	111.1	114.5	113.5	115.8	118.3	118.2	117.8
Kinross	100	105.6	105.3	105.4	111.3	104.5	107.9	109.0	110.3	111.5	115.0	114.8	114.1	116.6
Kirkcudbright	100	97.3	97.7	96.7	92.8	116.4	120.1	121.3	122.2	122.4	124.1	124.6	111.3	111.8
Nairn	100	103.2	103.2	104.8	105.2	105.0	106.2	107.0	107.9	107.9	107.6	108.4	109.0	109.9
Orkney	100	102.8	104.3	106.2	108.2	108.7	110.1	111.0	111.0	111.1	114.4	116.3	116.4	117.2
Peebles	100	99.4	99.1	100.5	100.8	102.7	103.8	102.1	104.6	107.2	108.2	108.0	108.1	108.5
Perth	100	103.1	103.9	103.8	103.6	104.6	105.9	106.4	107.6	107.0	109.3	111.9	112.1	112.0
Ross & Cromarty	100	100.1	101.2	102.2	102.6	106.0	107.2	108.0	108.9	108.5	108.3	108.3	108.1	108.6
Roxburgh	100	100.0	100:9	101.6	102.6	103.0	105.0	104.5	107.6	106.1	106.5	107.0	107.0	107.3
Selkirk	100	97.1	97.3	96.0	96.2	96.2	96.3	96.9	101.3	100.3	100.8	100.7	101.0	101.5
Sutherland	100	103.1	103.6	104.3	109.1	107.6	108.8	108.3	109.0	108.0	102.2	103.4	103.9	106.0
Wigtown	100	101.5	105.0	103.6	103.7	106.8	108.5	109.1	110.3	110.1	111.5	112.3	112.2	112.6
Zetland	100	99.4	100.1	100.1	99.1	104.4	105.7	106.0	108.5	109.0	120.9	121.7	119.4	119.1
Rural Counties	100	101.5	102.0	102.7	102.8	101.5	104.8	105.3	103.2	105.7	109.5	110.5	108.9	100.1
Aberdeen	100	101.9	102.8	103.6	104.5	108.8	110.0	110.4	111.1	111.0	110.9	110.7	110.8	110.9
Ayr	100	102.0	103.0	105.0	106.5	108.6	109.4	112.4	112.1	112.9	114.6	115.0	116.0	116.7
Clackmannan	100	103.9	101.8	103.4	103.1	107.2	109.4	109.2	109.8	109.8	111.6	105.2	105.8	103.4
Dunbarton	100	100.0	99.9	100.1	100.9	114.9	116.9	117.8	118.8	119.1	122.0	121.1	99.5	97.2
Edinburgh	100	100.6	101.4	102.2	104.9	103.4	103.9	103.6	106.6	103.3	106.3	105.9	105.9	105.6
Fife	100	100.3	100.0	100.2	100.3	107.4	108.4	109.1	109.2	110.0	110.3	111.3	113.4	112.9
Forfar	100	101.3	102.3	102.1	102.7	105.2	105.4	106.0	106.2	105.5	107.7	108.9	109.2	110.3
Lanark	100	100.2	102.8	104.4	105.0	104.1	104.3	104.4	105.4	105.2	105.5	105.0	104.6	105.1
Linlithgow	100	102.1	102.9	97.5	97.3	82.7	88.1	87.2	89.3	86.2	103.7	101.6	100.3	103.0
Renfrew	100	101.4	102.4	104.5	105.5	109.9	110.9	110.9	112.1	113.1	113.2	113.4	114.3	114.7
Stirling	100	103.9	102.8	103.9	105.5	106.0	106.2	108.3	109.6	109.9	111.3	112.3	110.9	111.3
Urban Counties	100	100.9	102.2	103.3	104.3	105.4	106.1	106.4	107.7	106.9	108.2	108.1	108.1	108.4
Scotland	100	101.1	102.3	103.4	104.3	105.0	106.2	106.6						

Notes: b = boundary change; n.a. = not available.
Source: IR 16, 1-135, P.R.O.

Perth and Wigtown amongst them, the rate of rent increase was on a par with that in urban Scotland. True, in the cases of the two northernmost island counties and Kinross and Kincardine the increase was from a small absolute level, but while this is also the case elsewhere, such as in Wigtown, it is inapplicable in Elgin and Sutherland where from a low base no such sizeable rent rises resulted. A case might be made out in the counties of Renfrew and Dumbarton in the west and Haddington in eastern Scotland for dormitory and commuter pressure to be one of the factors behind the rising rent indices in these counties, but it would be difficult to ascribe much importance in Bute to holiday resort developments, although in Ayrshire this and the preference for retirement in a coastal zone might have played some part in the rent increases.

Another interesting rural-urban rent comparison is the overall rate of rent increases. In Table 16 the growth rate of rents in the years 1898-1912 was much the same for both types of counties, about 8-9% over the period, but while in the rural context this was mainly concentrated in the years after 1906, urban house rents rose more quickly in the earlier years of 1899-1904.

Some mention has already been made of the absolute rent levels and this is another surprising aspect of rural-urban Scottish comparison (Table 17). Apart from the conclusion that thirteen Scottish counties are 40-60% below the average Lanarkshire house rent, Table 17 demonstrates that in rich and poor farming lands in Haddington and Inverness and remote rural areas such as Argyll dwelling house rents were above those in ostensibly urban regions such as Dunbarton or

Table 17

Relative Rent Levels in Scotland 1898-1912

(Lanarkshire average 1898-1912 = 100)

		Index
Urban Counties	Edinburgh	135.6
	Lanark	100.0
	Renfrew	95.2
	Dunbarton	87.4
	Clackmannan	77.5
	Forfar	76.3
	Aberdeen	74.5
	Stirling	72.1
	Ayr	70.4
	Fife	64.8
	Linlithgow	62.0
Rural Counties	Bute	93.2
	Argyll	85.9
	Peebles	84.9
	Inverness	84.1
	Haddington	82.9
	Selkirk	79.6
	Roxburgh	78.8
	Perth	78.2
	Dumfries	69.8
	Nairn	60.4
	Kincardine	58.7
	Kirkcudbright	57.7
	Sutherland	56.7
	Berwick	56.6
	Wigtown	55.4
	Kinross	54.6
	Ross & Cromarty	53.9
	Elgin	53.2
	Caithness	43.3
	Zetland	39.0
	Banff	38.6
	Orkney	36.5

Source: IR 16, 1-135, P.R.O. and Table 16.

Renfrew, and were in excess of those counties containing the third and fourth largest conurbations in Scotland, Forfar and Aberdeen. Thus the contention of one witness to the Glasgow Municipal Commission that urban rents were well in excess of rural house rents while appropriate for Glasgow would not be valid as a general proposition.[1]

If Table 17 provides the league positions of rents by counties Table 18 relates these at the burgh level to floor space and amenities available. Thus while in the county of Edinburgh in terms of rents

Table 18

Average Tenement Floor Space Rent in Various Burghs

	Rent per sq. ft. of Floor Space (d)
Glasgow	11.29
Paisley	11.22
Govan	11.00
Partick	10.49
Dundee	10.18
Edinburgh	9.99
Leith	9.26
Aberdeen	8.20

(Average = 10.20)

Source: R.C. on Housing of the Industrial Population of Scotland, Rural and Urban, Evidence (H.M.S.O. 1921), Vol. 4, Appendix, CLXVIIIA.

paid accommodation was a third more expensive than in Lanarkshire and considerably more than in other urban counties, rents in the city of Edinburgh were by no means high in relation to the accommodation bought elsewhere in the major population centres of Scotland. In Edinburgh, Leith and Aberdeen therefore, better value for money was obtained from expenditure on rent than in the Clydeside burghs although this does not disturb the conclusion the top two lines of Table 17 that in

1 G.M.C., Evidence of Carson, q. 12213.

absolute amounts residents in east central Scotland spent rather more on accommodation than their western counterparts.

XXI

Rents and rent movements are to a certain extent the key to the entire issue. They are, as the price of the product, at once a demand and a supply factor. This common point of contact should, for the housebuilder have provided a conglomerate indicator to which his supply response was geared. The fact is that they are a poor indicator. The rigidity of rents and the nature of the product and the building firm combined to force housebuilders to seek alternative signals as to their level of future operations. To a great extent rents have been elsewhere incorporated:

> 'When we come to 3, 4 and 5 per cent., (empties) we find that rents have gone up very much and probably the pull has been with the landlord, until overbuilding has resulted.'[1]

The importance of changing income and employment conditions and the varying price movements affecting the purchasing power of various categories of demand were factors which were related to existing rent levels by contemporaries in an effort to elucidate future trade prospects.[2] Furthermore with a typical rent frequently broken down into its constituent elements, as seen in Table 19, it becomes apparent that most of the parts making up the rent have been examined in earlier discussions of the supply influences.

This is not to completely deny the role of rents. Indeed to the extent to which rents did reflect a disequilibrium in the market

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1 Departmental Committee on Increases in Rentals, 1915, Evidence of Fraser, q. 573, brackets mine.

2 See for example, R.C. on the Housing of the Industrial Population of Scotland, 1917, op. cit., Evidence of Mann, Appendix LXXX; Motion, Appendix LXXXIV; Barclay, Appendix IX. Also, G.M.C., Evidence of Binnie, q. 6542-4.

Table 19

Components of Weekly Rents

	Type of House		
	3350 cu. ft. 1 Room and kitchen	1750 cu. ft. 1 Room and kitchen (ticketed tenement)	Workman's Dwelling Company House (2 Rooms)
Ground Rent	5½d	1/4d	2¾d
Interest and Repayment at 5% on Capital Cost	2/9d		1/4¼d
Taxes	5d	3d	3d
Management + Collection	2½d	2d	3d
Repairs	5d	5d	3¾d
Caretaker			3d
Lost rents		3d	
Rent =	4/3d	2/5d	2/6¼d

Source: W. Fraser, 'Rents and Ground Rents', Proceedings of the Royal Philosophical Society of Glasgow, 33, 1901-2, pp. 124-43.

housebuilders responded. However the make-up of rents, as demonstrated above, ensured that this influence was mainly a description of the underlying trend as the rigidity of this indicator, like moving averages, provided a longer term interpretation of housebuilding, whereas builders in an effort to solicit clues as to shorter-term fluctuations employed more transient indicators, such as empty houses or general trade and industrial prospects, most of which have already been considered.

Even in cases where betterment caused by the creation of public parks such as the Phoenix Park in Glasgow on the resiting of the Royal Botanical Gardens in Inverleith, Edinburgh, or when magistrates' wisdom to restrict licensed premises in certain areas endowed some accommodation with additional amenity, this was subsequently reflected in an upwards valuation and an increased rental.[1] However, even this might be treated as part of the legislative component of the unexplained variations in housebuilding activity.

Rent, however, played a different role on the Scottish side of the border. Compared to England, Scottish urban rents were normally rather higher[2] and, in conjunction with the prevailing Scottish income levels, conspired to constrict the extent of the elasticity of demand for housing. Fluctuations were accordingly affected. But whereas for equivalent accommodation and amenity the Scot had to pay more, a large number preferred where possible to reduce their rental payments and thus opted for more restricted accommodation and deficient amenity. And this decision was vividly reflected in the overcrowding statistics

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1 G.M.C., Evidence of Ross, q. 12671.
2 Ibid., Evidence of Hodder, q. 11658; Burgess q. 5343, 5556.

in Scottish burghs.[1] Quality adjustment was therefore often the means by which Scottish households reacted to changed economic circumstances, and this took the form of accepting lodgers and extending family links in difficult years when the relatively unchanging rent was split more ways, or, in better times, the contraction of the family into its original identity, divested of its blood and more distant relations left an enlarged living space for those remaining. Again income levels, business and trade conditions, the proportion of empties were more sensitive indicators of these subtle pressures on housebuilders and thus rents were of lesser importance to their decision making process. In the case of investors, too, where rents featured as gross revenue rather than a simple price of accommodation, the supply of capital forthcoming to housebuilders was not solely determined by receipts but by the wider concept of returns to capital where issues such as comparative returns were evaluated and which have also been assessed at an earlier stage.

XXII

It has been the intention of this chapter to highlight a variety of factors of graduated importance to the housebuilding decision. Certain

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1 S.L.E.C., op. cit., pp. 350-1; drawing on 1911 Census data showed that in the Scottish burghs of 2000 population or more, considerably below the 10179 registered by the smallest burgh, Irvine, in the present study, 53% of the inhabitants lived in either a 1- or a 2-roomed house and 47.6% of the population resided at a density in excess of 2 per room whilst in Clydebank, Bathgate, Barrhead, Cowdenbeath, Dundee, Glasgow, Govan, Greenock, Hamilton, Johnstone, Kilmarnock, Motherwell, Paisley, Pollockshaws, Port Glasgow, Renfrew, Rutherglen and Wishaw at at least 60% of the population dwelt in 1 and 2-roomed houses and at densities in excess of most urban burghs. M. Bowley, Housing and the State (London 1944) p. 261 showed that English overcrowding in 1919 was well below the levels tolerated in Scotland.

factors such as available stocks of empty properties and the quantity and price of capital accessible to builders have been shown to be of considerable importance throughout but like other influences, including building costs, were of varying intensity according to the cyclical phase underway in housebuilding. One supply variable, expectations, effective throughout the cycle, was observed to be most to the fore either in the mounting upswing or as a legacy effect following the trough of the cycle. Capital costs and overall building costs were seen to be most effective nearing the climax of the boom, while empty property, at a minimum in depression, served little useful purpose in explaining the downswing as housebuilding continued to proceed in the face of accumulating empties. No array of supply variables can therefore be presented without some indication of their unique local and cyclical impact and it is to this theme that much of the current chapter has been aimed.

CHAPTER IX

Scottish Housebuilding and the Scottish Economy, 1870-1914 [1]

The Scottish economic climate between 1870 and the world war was set fair. It was not universally the case, for there were forebodings regarding the narrow industrial base and the increasing dependence on external developments, notably foreign iron ore importations, the new marine engineering growth points of turbines and diesels based on English and German technology, and the as yet small but increasing number of non-Scottish companies operating in the industrial heartland. However the problems of depleted natural resources, industrial specialisation and a geographical remoteness which denied linkages with English growth centres were but squalls on the horizon and were only recognised as a vulnerability in the Scottish economy.

If the prospects for the Scottish economy were fairly bright in 1870 it was because the mantle of leading sector, initially in late eighteenth and early nineteenth century the preserve of cotton textiles and in mid-century assumed by the iron industry, now devolved upon the steel-shipbuilding-marine engineering complex. Certainly this was the simplified panorama of industrial development in nineteenth century west central Scotland. The diminution of high quality iron ore deposits and of first-rate coal seams raised pit-head costs for coal and brought short-falls in ore supplies which required increasing volumes of imports and

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1 R.H. Campbell, Scotland since 1707, (Oxford, 1965); T.J. Byres, Glasgow, B.Litt. Thesis, 1963; H. Hamilton, The Industrial Revolution in Scotland. (Oxford, 1932) and A. Slaven, The Development of the West of Scotland, 1750-1960, (London, 1975) each contain accounts of the Scottish industrial base between 1870 and 1914, to which reference should be made.

so the entire basis of the pig and malleable iron dominated economy of western Scotland was threatened by 1870. The enterprise and initiative of chemical manufacturers and subsequently malleable iron producers in commencing bulk steel production - there had for some time been high-cost low volume quality steel for springs, watches and instruments - at Hallside, Cambuslang, in 1871 paid dividends.[1] Perhaps the late start for Scottish steel production was advantageous, the pitfalls of early Bessemer steel avoided, but whatever the reason within 15 years output had expanded manifold, so that by 1889, 97% of Clyde shipbuilding tonnage was of steel construction.[2] The experimentation with steel in the 1870s and its total dominance by the completion of the next decade rescued the buoyancy of the west of Scotland economy. Even by 1890 Scottish steel costs exceeded Cleveland and Welsh costs and by 1900 the Ruhr steel plate prices undercut Scottish prices. Thus the backbond of steel demand, the shipbuilding yards, were encouraged to continue purchasing Scottish steel by discounts, and later with collusive agreements on rebates which developed in a haphazard way from 1890 and then in a more co-ordinated form under the Scottish Steel Makers Association from 1897 to 1914.

Adeptly, shipbuilders switched their emphasis from iron to steel construction. In so doing not only did they demonstrate perceptiveness in technical and managerial matters and thus maintain Clydeside's dominance as the most important shipbuilding estuary in the world, they provided a growing market for the infant industry prodigy, steel. The recognition by shipbuilders of the advantageous properties of steel encouraged its adoption. Allied to accumulated expertise in design and engineering these forty years down to the Great War represented the zenith of ship-

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1 M.L. Simpson, 'Steel Works - a Twenty-One Years Review', Journal of the West of Scotland Iron and Steel Institute, 21, 1913-14, p. 45.

2 A. Slaven, op. cit., p. 179.

building achievement on Clydeside. It accounted for a third of British tonnage launched and also for about 15-20% of world tonnage, produced 756,976 tons in the peak year 1913, built passenger, cargo, fishing, naval and other types of vessels, and was accredited with engine, propulsion and hull developments individually unrivalled elsewhere.[1]

If this changing sectoral surge was the economic background in which housebuilding in the west of Scotland burghs operated growth points developed elsewhere at various times. Linoleum manufacture in Kirkcaldy, herring fishing and curing in Aberdeen, the border woollen trades of Galashiels and Hawick until 1890 and coal exports from the Forth ports from the late 1880s and the transition of Renfrewshire cotton textiles to cotton thread production based oligopolistically in Paisley from the late 1870's[2] provided prosperity at the local level to which housebuilding, locally, responded.

In the small colliery towns of Fife and the Lothians, in the burgeoning shale-producing towns of Bathgate, Broxburn, Calder and the Stevenston district,[3] in Lanarkshire steel and Clydeside shipbuilding burghs optimism was the prevailing industrial mood between 1870 and 1914. But in this expansive industrial phase, based on factors markedly different to those of the mid-Victorian boom, the building industry did not join. Industrial construction declined quite dramatically after 1900; it suffered acutely during the 1880s and the stifled cyclical upturns in trade during 1881-3 and 1887-9 did little to rescue the position. Admittedly the booms of the early 1870s, culminating in the peak of 1873, and the progressive resumption of industrial building in the 1890s were in accord with general economic activity but whereas industrial fluctuations

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1 W.S. Cormack, 'An Economic History of Shipbuilding and Marine Engineering', Glasgow, Ph.D., 1930.

2 M. Blair, The Paisley Thread (Paisley, 1907), and, The Paisley Shawl, (Paisley, 1904).

3 T.J. Byres, op. cit., p. 109 notes that Scottish shale oil production expanded from 794,000 tons in 1880 to 2.5 million tons in 1896.

were on a broadly rising trend in late nineteenth century Scotland, this was not the case in industrial construction.

By contrast public building, if oscillating rather arbitrarily, did pursue a roughly upward path from 1880. A growing mixture of public consciousness and increasing administrative responsibility for the provision of various services was no doubt the underlying factor in mounting public building and in the climate of the mooted and later approved welfare legislation after 1908 this form of construction assumed sizeable and stable proportions in Scotland.

Economic expansion, magnet-like, attracted immigration which was both inter- and intra regional. Indeed considerable proportions in 1911 - 46% in Edinburgh, 38% in Glasgow, and 63% and 53% respectively in Govan and Hamilton - were born outside their towns of residence.[1] Prospects of high and steady wages attracted the migrants and with an age structure skewed towards the younger element marriages and births achieved higher rates in the economically prosperous burghs, thereby imposing further strains on the quantity of accommodation as household formation proceeded more rapidly than elsewhere. Pressure on housing space was intensified by the continuing influx of Irish, highlanders, and agriculture workers, accustomed even in 1917 to accommodation of deplorably low standards and not infrequently shared with animals,[2] and thus urban dwellings, overcrowded and deficient of amenity though they were, were acceptable to a large percentage of working people so long as they could be obtained at minimal rents. For the housebuilder, excess of potential demand there was: excess of effective demand there was not. It was only in periods of more pronounced economic prosperity that bulk demand was effective, and then it

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1 Census of Scotland, 1911, Vols. 1 and 2, Parts 1-37. In 14 of the 25 largest Scottish burghs at least a third of the 1911 residents were born outside the country in which the burgh stood.

2 R.C. on the Housing of the Industrial Population of Scotland, Rural and Urban, Report, pp. 13-14, and R.C. on the Housing of the Working Classes, 1884-5, Evidence of Mackenzie, MacIver and Napier.

was only partially solved by the activities of speculative builders.

The course of Scottish housebuilding fluctuations therefore, between 1870 and 1914, did not follow the path of general economic activity. Although industrial performance was a significant and sometimes uniquely important determinant, housebuilding retained an idiosyncratic nature throughout the period, the mixture of supply factors and the peculiarities of product durability combining to stamp a course which for building differed from the general economic climate. But while at the aggregate Scottish level the housebuilding-industry link was not always too close, and at times, as in 1873-7 and 1904-14 appeared counter-cyclical, at the local level the connection was more strongly forged. This was quite clearly the case in many burghs, including Dundee, Hamilton, Galashiels, Hawick, Clydebank and other larger burghs but perhaps was nowhere so closely connected as in the smaller towns based on a single specialised activity such as coal or shale mining, cotton spinning or linoleum production.

At times housebuilding reduced the severity of trade cycle downturns, as in the 1873-7 and the 1904-7 years, but in general, despite the countercyclical nature of jobbing work on alterations and small additions and the public building buoyancy from 1900, the housebuilding sector was a large and destabilising influence on the remainder of the economy. Industrial and trade fluctuations were mostly on a rising long run trend; housebuilding by contrast oscillated more than any other industry and suffered real and prolonged troughs rather than the stagnation or briefly interrupted growth of other industries. Just how important then was housebuilding and the building industry as a whole for the Scottish economy?

II

Employment in 'Building and Works of Construction', according to the Scottish census of occupations in 1901, numbered 136,374 male workers, the

fourth largest group behind transport, agricultural, and metal and machine workers. Counting the 265 female employees in the entire Scottish building industry that year it was still the seventh largest employer of labour in Scotland and was only relegated to this position by the substantial female participation in textiles, domestic work and the food, drink and tobacco industries.[1] In crude employment terms, therefore, the building industry was as important as all types of mining (132,183 persons) and approached the contribution of transport employment (163,202).[2]

In the major burghs with population exceeding 30,000 employment in order XII, Building and Works of Construction, accounted for about a tenth of all male employment (Table 1). When orders XIII and XIV are also included to take account of allied building trades such as timber merchants, house and shop fitters, brick, cement and glass employment[3] then the building industry accounted for almost a sixth of urban employment. In Edinburgh and Kirkcaldy in fact building workers represented a fifth of the entire male work force, though more commonly in Scottish burgh 12-16% earned their living from this activity. However the Lanarkshire heavy industry towns of Hamilton, Coatbridge and Motherwell possessed proportionately fewer building workers than other Scottish burghs and there were, too, noticeably fewer in allied building employment. Indeed in neighbouring Airdrie and Wishaw, but also in most west of Scotland burghs including Dumbarton, Port Glasgow and the nascent Clydebank, building employment represented 5.7% less of total male employment than in Scottish burghs generally. Thus although there was greater volatility in the volume of construction in these burghs compared to most others this was due more to factors such as capital availability, building costs and adjustments to the level of empties and less to the level of demand

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1 Census of Scotland, 1901, Vol. 3, p. 697.
2 Ibid.
3 The exact breakdown by trades is given in the Census of Scotland, 1901, vol. 3, pp. 316-6.

Table 1

The Proportion of Male Employment[a] Attributable to Building and Allied Trades in the Largest Scottish and Selected English Cities, 1901

	Building and Construction XII	Woodworking and Timber XIII	Brick, Cement and Glass Industry XIV	Total
Scottish Burghs				
Kirkcaldy	11.64	5.17	2.72	19.53
Edinburgh	14.55	3.72	0.98	19.25
Paisley	12.89	4.51	1.25	18.65
Perth	13.37	2.48	1.10	16.95
Aberdeen	12.20	4.32	0.26	16.78
Kilmarnock	11.60	2.10	2.16	15.86
Partick	12.18	2.29	0.12	14.59
Glasgow	10.20	3.84	1.09	14.04
Leith	9.75	4.11	0.15	14.02
Dundee	9.48	3.21	0.05	12.75
Govan	10.31	2.21	0.15	12.67
Greenock	9.12	2.58	0.50	12.21
Hamilton	8.13	0.56	0.08	8.77
Coatbridge	6.87	0.52	0.41	7.80
Motherwell	6.80	0.70	0.06	7.56
Scottish Burghs (pop. of 30,000+)	10.98	3.47	0.81	15.26
English Boroughs				
Halifax	8.58	2.99	1.13	12.70
Newcastle	9.86	2.68	0.14	12.68
London	8.95	3.70	0.03	12.68
Leeds	9.23	2.26	1.16	12.65
Manchester	8.60	3.38	0.25	12.23
Birmingham	8.37	3.42	0.20	11.99
Gateshead	9.96	1.52	0.39	11.87
Liverpool	8.44	3.15	0.08	11.67
Sunderland	8.60	1.84	0.16	10.60
Barrow	8.20	1.44	0.47	10.11
Bootle	6.88	2.51	0.12	9.51
West Bromwich	6.35	1.18	1.95	9.48
Coventry	7.75	1.25	0.25	9.25
Burnley	6.47	1.65	0.55	8.67
Wigan	7.00	1.38	0.17	8.55

Note: a The percentage of males aged 10 and over in employment.

Sources: Censuses of England and Wales, and Scotland, 1901.

generated from amongst building workers themselves.

In some ways housebuilding activity contained a self-determining element: increasing construction provided incomes to building workers which enabled them to subsequently contribute to demand for housebuilding. Certainly contemporaries were well aware of the magnitude of building employment. In evidence submitted during the Great War housebuilding workers in Inverness numbered 564 and with associated trades neared the 1000 mark achieved by both railways and retailing in the burghs.[1] Half a century before the size of the building sector did not escape the notice of the Medical Officer for Edinburgh, Littlejohn, who in 1863 recorded building workers as forming 18.5% of the entire labour force of the capital.[2] However the significant point is that a greater element of Scottish incomes derived from the building industry than was the case in England and Wales and consequently a larger proportion of housebuilding demand was subject to wide oscillations whereas in London and Liverpool the volatility of the endogenously determined housing demand was more effectively offset by other forms of employment. This can be seen in Table 1 where English housebuilding employment of 8-9% was fully 2% below the proportion of male employment in Scotland and in the wider definition of the building industry the 12-13% of the highest placed borough work forces occupied in these activities compared with lowest positions in the Scottish industry (Table 1).

The use of 1901 data with a census point in proximity to a house-building peak fixes an upper limit on the contribution of the building sector to Scottish employment. Although 1901 was a high-water mark for building employment the previous thirty years saw only small variations around the 8.5% mark (Table 2), this being the proportion of the male work force represented by the more prominent building trades.[3] Some

1 R.C. on Housing of the Industrial Population of Scotland, Rural and Urban, Evidence (H.M.S.O., 1921) of A. Fraser, Vol. 4, Appendix XXXVII.

2 H.D. Littlejohn, Report on the Sanitary Condition of the City of Edinburgh, 1865.

3 Certain difficulties of classification exist in various censuses and thus this subset of building occupations is used as indicative of changing employment trends in the housebuilding sector.

Some shedding of labour did occur during the rather depressed conditions of the eighties, and this recurred between about 1905-11 on a more decisive scale.

Table 2

Male Employment in the Principal Building Trades of Scotland, 1871-1911

	1871	1881	1891	1901	1911
Builder	1224	1896 +55%	1870 - 1%	2646 +41%	2184 -17%
Carpenter/ Joiner	30354	35344 +16	31402 -11	41355 +32	24399 -41
Bricklayer	1402	1828 +30	2267 +24	4333 +91	2475 -43
Mason	23423	24953 + 7	17301 -31	24386 +41	12292 -50
Slater/ Tiler	3841	4821 +26	4901 + 2	6315 +29	5218 -17
Plasterer	3021	3811 +26	2902 -24	4937 +70	3602 -27
Plasterer's Labourer	a	585 na	714 +22	1340 +88	824 -39
Plumber	3838	6680 +74	8027 +20	11141 +39	9450 -15
Painter/ Decorator/ Glazier	7341	10373 +41	11595 +12	15806 +36	14760 - 7
Mason/ Brick. Labourer	5914[a]	5751 na	6082 + 6	10704 +76	6471 -40
	80178	96042	87061	122963	81675
% of all male employment	8.20	8.66	7.23	8.84	5.54

Notes: a: not disaggregated
na: not available

Sources: Censuses of Scotland, 1871-1911.

A comparison of employment trends in Scottish building trades between 1871 and 1811 (Table 2) demonstrates that the skilled carpenters, slaters and painters, and to a lesser extent plumbers and masons, were less susceptible to trade fluctuations than were the unskilled building workers such as the various labourers' categories. Although at this level of aggregation the evidence is not wholly decisive

it does provide some corroboration for the earlier observation regarding the reduced amplitude of fluctuations to alterations and additions work where skilled building workers were able to offset cyclical downswings with more specialised work, thus forcing more of the adjustment on the unskilled sector.

The building industry work force therefore accounted for approximately 15% of male employment and more specifically, about 10-11% were employed in the housebuilding sector. In the censuses of this period male and female employed were, numerically, approximately similar and thus about 5%, one worker in twenty, derived a livelihood from housebuilding and about 7.5% from types of building work.

Approximately 18-20% was the consistent contribution of investment in housing to gross domestic fixed capital formation between 1856-1910 in Britain as a whole,[1] and when other forms of building are included the average annual contribution to gross fixed capital formation was 57.7%.[2] In Scotland this may have been rather lower where if dwellings did represent 18-20% of capital formation and taking account of the fact that this sector formed 45% of all building work, then something in the order of 40-44% of Scottish capital formation stemmed from the building sector. The absolute level of capital formation attributable to Scottish housebuilding can be estimated, with caution from anticipated building expenditure available from the Deam of Guild records of certain burghs.[3] In 1901 the £1,008,974 for housebuilding in these important burghs constituted 21.6% of total Scottish demand for accommodation and by interpolation, £4.65 million was the approximate level of capital formation attributable to Scottish housebuilding in

1 C.H. Feinstein, National Income, Expenditure and Output of the United Kingdom, 1855-1965, (Cambridge, 1972), Tables T91-2.
2 Ibid., T. 88-9.
3 D.G.C. Registers, Glasgow, Govan, Paisley, Partick, Dunfermline, Dumfries, Coatbridge, 1901

that year. A rough check on this magnitude can be evolved by assessing the proportion of Scottish to British capital formation and scaling down the Feinstein estimate of £37 million[1] to give the Scottish element. Employing the ratio of Scottish to British population offers a criterion and a proportion which a priori might also be thought relevant in the realm of capital formation. The Scottish proportion of British is thus 12.08% in 1901,[2] and applied to capital formation the Scottish contribution is estimated to be £4.47 million. Applied to other forms of building work, Scottish capital formation in 1901 amounted to £10.39 million, and the gross domestic fixed capital formation of the Scottish building sector totalled £14.86 million. Annual capital formation in dwellings varied from about £2 million in periods of recession such as the 1880s, approached £5 million during the peaks of 1898 and 1902-3 and in conjunction with the average £6 million p.a. on other forms of building work generally occupied a prominent position in Scottish investment during the half century down to 1914.

III

There were several other ways in which Scottish housebuilding during the years 1870 to 1914 made an impact on the economy as a whole. One contribution of some importance stemmed from more complex building regulations.

The tide of urban immigration and the reluctance of housebuilders to undertake housing construction for low income groups except under certain circumstances produced living conditions so squalid in the

1 C.H. Feinstein, op. cit., T. 88.
2 B.R. Mitchell and P. Deane, Abstract of British Historical Statistics (Cambridge, 1971), pp. 12-13.

second-half of the nineteenth century that as by-products of the age sanitary reform groups, statistical enquiries and records, and the administrative responsibilities of medical officers of health and sanitary inspectors were spawned.[1] So, too, were tighter building controls, and as the nineteenth century advanced these began to effectively reduce overcrowding and thus the death toll of such infectious diseases as tubercular conditions and waterborn endemic diseases such as typhus and cholera. Not that the rising housing stock - 350,000, 400,000, 500,000 and 574,000 in the successive censuses of 1881 to 1911[2] - or the reduction in the density of occupation[3] were wholly attributable to building regulations. Rising real incomes over the period allowed for the purchase of better accommodation and nutrition also contributed to improvements in mortality rates. However it was only from the late 1870s that real incomes improved nationally[4] and if Scotland followed the pattern the interval of time until mortality rates turned down in the early 1880s[5] was at most ten years. Such a rapid translation of income improvements into significant long-run demographic shifts would appear to place the emphasis with other factors such as the fruition of legislation concerned with the control of building, undertaken 15-20 years previously.[6] Thus the increase in life expectancy which was of considerable importance

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1 A.K. Chalmers, Public Health Administration in Glasgow, (Glasgow, 1905), Chapters I and II, and 'Vital Statistics', pp. 494-501.

2 Censuses of Scotland, 1881-1911. The figures represent to the nearest thousand the changing housing stock of the 34 major Scottish burghs in this study.

3 Report of the R.C. on the Housing of the Industrial Population of Scotland, Rural and Urban, 1917, pp. 97-8.

4 C.H. Feinstein, op. cit., p. 19.

5 Annual Reports of the Registrar General for Scotland, 1855-1914. In fact death rates turned down in the late 1870s in Scotland (five northerly counties excluded and this further underlines the argument.

6 The decade of the 1860s, quite apart from the appointment of many medical officers of health and sanitary inspectors also saw the passage of The Burgh Police (Scotland) Act, 1862, the Public Health (Scotland) Act, 1867, Improvement Trust Acts, notably in Glasgow and Edinburgh but elsewhere too, and the adoption of Police Acts by many municipalities.

to the Scottish economy as an addition to productive capacity owed much to the amalgam of regulations concerned with improving the housing environment.

It was therefore as a precursor to modern cost-benefit analyses that actuarial assessments of the value of human life were undertaken.[1] The saving of life was calculated on the basis of additional capacity in the labour force, savings of public relief for families otherwise deprived of their breadwinner, and by deducting the capital of costs for the increased housing, sanitary and other requirements. The saving of 3750 lives was evaluated as an addition of £15 million to national income over a twenty-five year period - a net gain of £3834 per capita and to a large extent this was attributable to tighter building regulations.[2] On the assumption that the saving in Scottish life from reduced mortality in the second half of the nineteenth century was 3085 per million of population as it was in England,[3] and with an average Scottish population of 3.92 million people,[4] the saving amounted to 12083 people, which over 50 years added approximately £97 million to the wealth of the Scottish nation between 1861 and 1911.

Another realm in which housebuilding held some significance was in the extension of municipal trading operations. Some further provision of gas, water and electricity was to be expected in the context of population growth. This was not on a pro rata basis however. The spatial development of Scottish burghs was of different dimensions from about 1870. Previously accommodated by more intensive occupation in established districts population growth had required disproportionately low additions to

1 D.S.I.R., The London-Birmingham Motorway (H.M.S.O., 1964), p. 57 was one of the first published works to put values on human lives.
2 The Builder, 8 Aug. 1862.
3 T. McKeown and R.G. Record, 'Reasons for the Decline of Mortality in England and Wales in the Nineteenth Century', Population Studies, 16, 1963, pp. 94-122.
4 Censuses of Scotland, 1861-1911.

capital investment for street lighting, gas mains or piped water. In the last third of the century urban sprawl extended municipal activities both in terms of capital investment and in operating expenditure. Gross municipal expenditure per capita approximately tripled in the thirty years after 1884; trading account expenditure on gas advanced from 1.8 shillings to 3.8 shillings, water, from 0.6 shilling to 2.0 shillings and electricity from negligible amounts in 1884 to 1.5 shillings per capita in 1914.[1]

Alleged to have modest and narrow linkage effects with other industries the housebuilding surge from 1932 has sometimes been belittled in its contribution to general economic recovery.[2] Whatever the merits of this argument, in the late nineteenth century and down to 1914 housebuilding and building more generally were of major significance in absolute terms to the economy of Scotland. Not only did housebuilding form a sizeable slice of total employment and investment, it affected Scottish national income through its associated industries, of which the municipal function was an important and rapidly proliferating one. Another area was the field of suburban transport.

The initiation of housebuilding fluctuations due to waves of railway construction may as suggested be significant for certain cross-continental staging posts and termini as for example in Chicago[3] and there may be some English evidence in Crewe and Swindon, but the normal line of causality was for transport developments which did stimulate building activity to have themselves been determined by an earlier phase of building.[4] The dependent role of suburban transport was voiced by the manager of the

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1 G. Gibbon, 'The Expenditure and Revenue of Local Authorities', Journal of the Royal Statistical Society, 99, 1936, pp. 457-515.

2 H.W. Richardson, Economic Recovery in Britain, 1932-39 (London, 1967), p. 178, states that, 'The housing boom, therefore, probably had only limited direct repercussionary effects on investment in the economy as a whole.'

3 W. Isard, (Transport Development and Building Cycles', Quarterly Journal of Economics, 57, 1942-3, pp. 90-112.

4 R.C.O. Matthews, The Trade Cycle, (Cambridge, 1959), p. 107.

Edinburgh Street Tramway Company:

> 'If tramways were to succeed (in financial terms) feuing must precede, and he hoped that their tramways would not precede in order that feuing might succeed'.[1]

Although on certain occasions this company was blackmailed into branch line developments which anticipated residential development[2] and on other occasions the Merchant Company representatives in the Town Council attempted to initiate certain lines to benefit their land development in Merchiston,[3] the normal pattern was for the Tramway Company directors to develop the populous and business routes initially.[4] Subsequently householders began to request tramway extensions as in Morningside in 1881[5] and in Glasgow by residents of Shawlands, Strathbungo and Shettleston.[6]

If the tramway and other forms of suburban travel usually arrived too late to affect the decision to build, they certainly affected the subsequent filling in of estates. Specific instances exist in Morningside and also in the housebuilding undertaken in Inverleith Place, Kinnear and Arboretum Roads, North Park Terrace and Comely Bank Road, Place, Avenue and Terrace all built shortly after the passage of the Edinburgh Northern Tramways Act, 1884.[7] The desirability, saleability and value of property was enhanced.[8] Rentals were raised, purchase prices inflated and as a

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1 Edinburgh Town Council Minutes, 20 Dec. 1881, brackets mine.
2 A.D. Ochojna, Edinburgh Ph.D. Thesis, 1974, pp. 171-2. The Fairmilehead extension was a particular case of pressure from the Town Council. As contemporary postgraduate researchers I benefited greatly from discussions on, and subsequently a reading of chapters 5 and 6 of this thesis.
3 Ibid., pp. 171-2.
4 Ibid., p. 160 and p. 181.
5 Edinburgh Town Council Minutes, 20 Dec. 1881.
6 A.D. Ochojna, op. cit., pp. 227-8.
7 Edinburgh Post Office Directories and Dean of Guild Court Registers, 1880-90.
8 The Scotsman, 21st July 1883, carried an advertisement for the sale of a 3 apartment house in Bowhill Terrace, Goldenacre, in which 'Bus passes door' was offered as an inducement, whilst on the same day a house in the Merchiston was offered, ambiguously, as 'on Tram Line'. The agents, Wm. Veitch and Son, for a Merchiston Grove house were more careful in phrasing their property as 'quite near the Merchiston Station of the Caledonian Railway'. Frequent references to travel facilities in connection with house sale are reported in the newspapers in 1883 and other years.

consequence encouragement to investment in housebuilding with these more attractive returns in both annual income and land sales.[1] Additional land therefore reached the market though normally so appreciated in value as to be beyond development for poorer income groups.[2] Indeed the house-building - land supply - transport development is well encapsulated in the jealousy of north Edinburgh estate owners towards their southern counterparts in the city which initiated the cable tramway system as a first step to advancing the feuing prospects in their own neighbourhood.[3] Suburban transport in the major Scottish burghs tended to follow building developments. Certainly in their infancy tramway companies could only be financially viable along the high density routes of established housing[4] and although routes were operated beyond the housing frontier suburban transport, as the Edinburgh manager wished, tended to succeed building development.

The contribution of housebuilding to the aggregate level of economic activity in Scotland is thus increased by the impact this sector made on transport employment and investment which was at its greatest in those burghs with the longest route mileage. Occasionally the relationship was reversed, with transport innovations acting as an exogenous shock on housebuilding activity.[5] A suitable cable traction system approved by the Board of Trade provided a stimulus to construction in the northern suburbs of Edinburgh and electrification fulfilled the same purpose in

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1 Glasgow Municipal Commission, Evidence of McGillivray, pp. 595-6, q. 13189, q. 13214; Menzies, p. 153, q. 3470 and p. 144, q. 3178.
2 W. Thompson, op. cit., pp. 221-2.
3 Edinburgh Courant, 30 Aug. 1886 and The Scotsman 19 Jan. 1884, quoted in Ochojna, op. cit., p. 176.
4 D.L.G. Hunter, Edinburgh's Transport, (Huddersfield, 1964), p. 15. Horse-drawn omnibuses, too, confined their activities to well populated areas, and thus services, 1, 9, 26 and the 11, 13, 14, 15 and 31 services ran from the High Street to Leith; Princes Street-Grange-Morningside; Mound - Newhaven; Waverley-Strathearn Road were other densely populated routes. Similarly with tramways, Hunter, p. 18, identifies the early routes, the bulk of which were also high density areas, e.g. West End - Churchill; St. Andrew Street - Picardy Place; Earl Grey Street - Tollcross - Lauriston Place - Chambers Street - South Bridge.
5 R.C.O. Matthews, op. cit.

Glasgow from 1898, in Leith from 1905 but only after the war in Edinburgh.

IV

Important as it was for the Scottish economy at the macroeconomic levels of income, employment and investment the building industry must also be considered in the context of other more specific themes and issues in the period 1870 to 1914. The performance of the building industry with reference to its technical development, educational and vocational requirements, the size of firms and their entrepreneurial achievement are aspects of the retardation debate[1] to which the survey of housebuilding in Scotland can contribute.

Mechanisation of the building process and the application of new techniques were ideas which did percolate through the Scottish building industry. But if some consideration was given to the adoption of mild steel for building,[2] or the use of incombustible materials[3] or if notes on saw milling machinery and on mortar[4] were read their impact was reduced by limited exposure. And even this exposure was geared more for the consideration of engineers, architects or surveyors than for builders and far less for workmen. Certain pieces of equipment were adopted and each week The Builder carried diagrams of designs for scaffolding, hods and similar items. In quarrying steam powered lifting machinery developed quite rapidly after the invention of the Scotch Derrick in 1867 by Fyfe and Barclay in the

1 D.H. Aldcroft and H.W. Richardson, The British Economy, 1870-1939, (London, 1969), p. 143. Section D, pp. 305-35 also contains a bibliography of material on this issue, as does P.L. Payne, British Entrepreneurship in the Nineteenth Century (London, 1974), pp. 62-75.
2 The Builder, 8 May, 1880.
3 Ibid., 4 Feb. 1882.
4 Ibid., 27 Mar. 1880, and 15 Mar. 1880.

Kemnay quarries and 'blondins', a type of pulley system for lifting which supplanted cranes, were also developed in Aberdeenshire.[1] Steam powered machinery was probably most effectively employed in saw-milling enterprises, as in the Glasgow firm of Gilmour and Aitken where one steam engine drove three reciprocating saws.[2]

It was in building materials therefore that the scope for mechanisation was greatest. In housebuilding manual dexterity, particularly in the masonry work for the largely stone-built structures which were a feature of Scottish housing, was still required. Indeed the incapacity of post-1919 housing schemes to deal effectively with the problems posed by the large scale contracts and the attendant equipment and organisational requirements demonstrates the housebuilders' unfamiliarity with these types of developments before the war.[3] Furthermore the government sponsored competitions for methods alternative to the conventional bricks and mortar technique further indicates the restricted nature of technical advances pre-war.[4] Thus the bemoaning of falling standards of workmanship in the nineteenth century was induced by 'the system'.[5] It was not principally due to mechanisation, different techniques, or the influence of trade unions. It was primarily due to the actions of the speculative builders where 'quantity is better appreciated than quality' and where unlimited competition urged the keen commercial instincts of ignorant authorities

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1 T. Donnelly, 'The Granite Industry: Its Problems and its Records, 1750-1939', Business Archives Council of Scotland, Newsletter, 5, 1970, pp. 7-12.

2 Anon., 100 Years in the Timber Trade: Gilmour and Aitken, (Glasgow, 1952).

3 S. Marriner, 'Homes for Heroes - Some Practical Problems', Seminar, Manchester, 1975 showed this to be the case in Liverpool and probably elsewhere too.

4 The Builder, 15 Feb., 1918. The Journal Concrete and Constructional Engineering also carried details of the competitions.

5 Ibid., 23 Dec. 1883.

to accept the lowest tender and thus ensure 'shoddy and scamping'.[1]

To a degree the limited technical advancement of the housebuilding sector before 1914 was probably the consequence of low educational attainment amongst its practitioners. In related parts of the building industry technical colleges and universities provided an engineering background, which if not wholly appropriate to the brick- or glass-making or saw-milling industries at least provided an open-mindedness regarding technical development in certain cases. One such was A.C. Aitken, who, prior to entering his father's partnership obtained an engineering degree from Glasgow University.[2] But in the building trades themselves formal instruction was zero. As 'Jack Plane' a correspondent to The Builder on 'The Technical Education of Workmen' described it,

> 'I have before .... alluded to the want of systematic instruction of the workmen. No advice or instruction is given him as to the qualities necessary to be successful .... . If he becomes a good workman, it is an accident'.[3]

If, as Jack Plane portrayed it, 'the workmen are left to grope in the dark'[4] then it is not surprising that it was personal effort, application and business acumen which provided the basis of success for Scottish builders. Thus for perhaps the most successful Edinburgh builder, James Steel, it was certainly not educational achievement which provided the cornerstone of success. It was, initially, safe, secure and small scale middle-class housebuilding combined later with skilful property purchase.[5] No formal instruction in building skills either in his original trade, joinery, or his subsequent apprenticeship

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1 Ibid.
2 Anon., 100 Years in the Timber Trade, op. cit., p. 4.
3 The Builder, 4 Mar. 1871.
4 Ibid.
5 The Scotsman, 15 Sept. 1904.

to the Airdrie mason John Miller was given to the prominent Glaswegian builder Thomas Binnie.[1] His 'on-the-job' training was also said to be deficient and his success, therefore, was founded on obtaining jobbing contracts during depression and an ability to borrow capital from a variety of sources to finance his operations, notably by contracting a further debt to repay an existing commitment.[2]

It is arguable as to whether improved general elementary education from 1872 in Scotland contributed much to the efficiency of the work force, just as it is a matter for surmise whether the absence of technical training for the building trades impeded their operations. In an industry where by his own energy and skill an operative could become a master and where the frequency of small firms relative to manufacturing industry brought disproportionately low returns for embarking on new methods[3] and given the increasingly strict building regulations which further encouraged risk-aversion, little incentive was offered for an individual enterprise to strike out with different materials or methods. In such an institutional climate the absence of rapid technical progress cannot be too harshly criticised though in an organisational and business sphere, and perhaps indicative of educational failing at some stage, better book-keeping and financial control[4] might have avoided the frequent appearances of building firms

1 T. Binnie, Memoir of Thomas Binnie, Builder in Glasgow, 1792-1867), (Glasgow, 1882).
2 Ibid.
3 T.C. Barker, 'The Glass Industry', p. 324, in D.H. Aldcroft, The Development of British Industry and Foreign Competition, 1875-1914, (London, 1968), makes this point forcibly.
4 C.S. 318, S.R.O., Sequestration Papers indicate professional assessment by accountants of assets and debts to diverge considerably from the bankrupts' calculations. For example, C.S. 318, 1866/306, John Thomson overstated his debts by 30%; C.S. 318, 1904/237, W.C. Mackinnon understated his debts by 22%, and John Thom, 1888/344, by estimating his liabilities to be £1384, 235% above the actual debts of £589, was only marginally insolvent and might have attempted to rescue his business had he known the exact position.

in the bankruptcy courts.

The complementary remarks of Marshall regarding the 'high standard of education' in Scotland[1] which was widely based and took into account 'the abilities of children of the working classes'[2] was presumably of only minor significance in an industry long accustomed both before and after the 1870 to 1914 period to manual rather than mechanical skills, and thus the alliance of science and industry more recently viewed as a significant factor in the differential industrial growth rates of Britain and Germany[3] was of lesser importance to activities such as housebuilding which were based less on the sophisticated scientific research such as in the chemical, metallurgical and electrical industries.

In any event it may be more appropriate to evaluate the builders' performance as businessmen on the third of Coleman's entrepreneurial criteria - 'the continuous adaptation of the technical and/or organisational structure of an existing business to small changes in the market both for factors and for final products.'[4] The substitution by Scottish builders, quite general by 1900, of concrete for stone in lintels, steps, window sills, landings, floors, mullions, rybats, and pavements[5] was part of this continuing adaptation. Entire block concrete houses were rare but slab concrete houses were more generally accepted and a large number were built in Hamilton and Clydebank;[6]

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1 A. Marshall, Principles of Economics, 8th edn. (London, 1969), p. 159.
2 Ibid., p. 176.
3 D.H. Aldcroft and H.W. Richardson, op. cit., p. 149.
4 D.C. Coleman , 'Gentlemen and Players', Economic History Review, 26, 1973, p. 112.
5 G.M.C., Evidence of Mann, q. 8488, 8509; Watson, q. 11178, 11218; McGillivray, q. 13175, 13203; Binnie, q. 6624.
6 Ibid., Evidence of Binnie, q. 6623.

combinations of concrete and brick houses were sufficiently acceptable to even encourage widespread adoption by the Edinburgh Town Council[1] and brick construction for back and side walls increasingly replaced stone throughout Scotland.[2] In response to market changes where drainage or other sanitary requirements dictated new designs and standards[3] of occupancy encouraged a growing trend to more substantial levels of minimum accommodation in urban Scotland, builders acceded to this. The responsiveness of builders to variations in demand is evident from the following comment:

> 'A few years ago the great demand was for very superior houses of two rooms and kitchen, and an immense number of these were put up in the city and beyond the city boundaries. Quite recently there has been a demand for a still larger class of house, and a great many have been put up. Another time you have a great demand for the room and kitchen and single-apartment houses. They don't all go on regularly'.4

Housebuilders showed 'continuous adaptation' in other spheres. The downturn of the cycle saw them turning more to jobbing work on alterations or additions or tendering for work on public projects. Where possible, masons turned to monumental sculpting or gravestone engraving and polishing;[5] more successfully, joiners sought work in shipyards and the union's general secretary, William Paterson, pointed out that with joiners very much underpaid in the yards compared to other skilled trades,

> '.... shipbuilders have been profiting to a great extent from the depression that still exists to a large extent in housebuilding throughout the country'.[6]

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1 Annual Report of the Burgh Engineer of the City of Edinburgh, 1902, p. 41.
2 Ibid., and G.M.C., Evidence of Mann, q. 8518; Binnie, q. 6621.
3 G.M.C., Evidence of Mann, q. 8507, 8509, 8510, new designs included balconies, dust-shoots and brickwork.
4 G.M.C., Evidence of Binnie, q. 6572.
5 U.O.M.G.J., Jan. 1903, p. 2 and Apr. 1909, p. 8.
6 A.C.J.S., 20th Annual Report, 1881, p. 3.

A certain amount of industrial construction was undertaken to overcome housebuilding recession, and one item, railway buildings, increasingly entailed the use of concrete.[1] Cyclical fluctuations also provided the basis of successful property speculation by builders sufficiently liquid to purchase acreages at depression prices which, feued and developed in the upswing provided the maximum capital gain. The upswing also showed the successful entrepreneurship of many building firms in their ability to secure advances far in excess of their capitalisation and worth. The ingenuity in creating secondary ground burdens - ground annuals - and raising cash on this basis, the facility with which several lenders were placated simply by repaying one debt with a loan from another, the network of inter-related firms providing, intermittently, funds and materials to avoid insolvency or aid building completion, these were some of the methods by which buildings were financed and constructed quite apart from more conventional capital sources.

Two of the criticisms frequently levelled at entrepreneurs in this period were their poor salesmanship and their slowness to amalgamate in order to extract monopoly profits.[2] The allegations regarding salesmanship in the building industry are valid, but then it must be remembered that this was an industry in which, unlike manufacturing a very large volume of the output was contracted for prior to commencement. Despite the fact that some builders did advertise, promote their firms through post office and trade directories and present their product in the local newspaper as convenient to tram or omnibus routes there is reason to surmise that more vigorously pursued

1 G.M.C., Evidence of Binnie, q. 6572.

2 D.H. Aldcroft, 'The Entrepreneur and the British Economy, 1870-1914', Economic History Review, 17, 1964, pp. 113-34, and a synopsis of this view in D.N. McCloskey and L.G. Sandberg, 'From Damnation to Redemption: Judgments on the Late Victorian Entrepreneur', Explorations in Economic History, 9, 1971, pp. 89-108.

housebuilders might have so altered tastes and contemporary thinking on housing to shift the demand schedule to the right, rather than relying as they did on movements along its length. Such a complete shift if unlikely to eradicate fluctuations might have produced a more acceptable absolute level of activity in the recession.

Amalgamations were few; vertical integrations virtually non-existent. Such amalgamations as there were tended to be of the small partnership type. Complementary trades were often involved, as with James Duncan, a joiner, with Donald Henderson, a mason, in Edinburgh during the 1880s.[1] Gibb and Taylor, Drysdale and Gilmour, Henry and Cowper were typical small Edinburgh partnerships, with only a few projects to occupy themselves with during the 1885-94 period,[2] and in the saw-milling business of Gilmour and Aitken in Glasgow[3] another example can be found. In fact the most effective agency for amalgamations was bankruptcy. The incidence of building insolvencies was such that a process of natural selection had been arrived at by the end of the nineteenth century, and between 1901-11 a rapid reduction of building labour was matched by a sharp fall in Scottish building bankruptcies.[4] Thus the decline of housebuilding from 1905 did not produce a high frequency of failure and to an extent it is possible to conclude that the industry no longer attracted the same number of what might called temporary operators, leaving it more concentrated by default rather than by intention.

Thus on all three of Coleman's entrepreneurial criteria,[5]

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1 Edinburgh, D.G.C., Registers, and Post Office Directories, 1885-94.
2 Ibid.
3 Anon., 100 Years in the Timber Trade, op. cit.
4 The Builder, 1856-1913.
5 D.C. Coleman , op. cit.

exploitation of innovations by new and existing businesses and continuous adaptation to changing factor and final product markets, the Scottish builders showed initiative. As with the English cotton industry's preference for mules[1] or the late American adoption of the by-product coke oven[2] the fact that before 1914 Scottish housebuilders did not move over to forms of constructions such as the concrete building, steel-framed and system building which were to become prevalent in the inter-war period is not an argument for entrepreneurial failure. Indeed the retention of a stone-based building industry in conjunction with some brick and concrete work provides some evidence of economic rationality. Only in inland highland districts was sand in short supply and local stone was nearly always available in the Scottish burghs themselves.[3] In Aberdeen, of course, granite was plentiful, but in Dundee and the Lanarkshire burghs stone was also quite easily obtained.[4] The outskirts of Edinburgh provided not only sand and stone but lime too, at Burdiehouse and Middleton, and the Lothians and the Campsie district were sufficiently well endowed with lime to provide adequate quantities to most of the builders in the central belt.[5] Only in the north and west were roofing materials abundant; the major Scottish burghs had to transport slates from the highlands or from Wales.[6] With most materials adequately supplied locally there was only minimal gain to be obtained from the adoption of concrete construction which was at least 40% more expensive than stone or brick.[7]

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1 L.G. Sandberg, 'American Rings and English Mules: The Role of Economic Rationality', Quarterly Journal of Economics, 83, 1969, pp. 25-43.
2 D.N. McCloskey and L.G. Sandberg, op. cit., pp. 100-1.
3 R.C. on the Housing of the Industrial Population of Scotland, Rural and Urban, Vol. 4, Evidence of J. Wilson, Appendix CXCIV.
4 Ibid.
5 Ibid.
6 Ibid.
7 G.M.C., Evidence of Watson, q. 11171.

Where the advantage of concrete did exist in the provision of vermin-proof flooring or in labour-saving pavement laying or where sanitary considerations were uppermost as in drainage and sewer construction, the Scottish builders were not slow to use the new material. Furthermore, given the considerable problems of concrete quality control[1] and the prohibitive cost entailed by building regulations in that concrete walls were to be of the same thickness as stone walls[2] when the whole principle of concrete construction was to use its greater strength to reduce the wall thickness, then the rationality of builders in retaining the more conventional methods is undoubted. Only the changed inter-war world of materials shortages, skilled building labour shortages, the suitability of standardised units for unskilled workers and the altered relative prices of various materials made a transition to different construction methods economically viable.

In the sense that housebuilders in Scottish burghs relied on low-cost local materials, espoused such machines as stone-cutters and dressers, hired and fired labour with little difficulty, provided an ongoing reservoir of skilled labour through the apprenticeship system, and adopted new methods and designs where they were suitable entrepreneurial ability was of the 'players' variety. However in slack financial control, generous trade credit, a preference for individual control rather than amalgamation and the advantages of scale, and a reluctance to market the product effectively, builders displayed characteristics more in keeping with 'gentlemen' entrepreneurs. Economic rationality and economic conservatism were, thus, not mutually exclusive. But by the approach they adopted Scottish builders managed in a large number of cases to combine long- and short-time horizons with some degree of success.

1 Ibid., Evidence of Binnie, q. 6620.
2 Ibid., Evidence of Watson, q. 11168.

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A common pool of resources, alternately drawn on by Britain and America and only available to one country at the expense of the other is the core of the 'Atlantic Economy' theory of economic growth in the late nineteenth century.[1] However the issue more appropriately is one of reciprocating flows of home and foreign investment, the world economy being the more relevant stage for aggregate flows of migrants and capital.[2] The United States thus was but one area of factor movements which affected both hemispheres. Housebuilding is taken here and elsewhere as a form of investment where the issues can be examined. Scottish housebuilding and Scottish foreign investment therefore represent a microcosm of the wider forum of alternation.

It is critical to this study of housebuilding to decide whether fluctuations were internally self-generating or whether they were determined as part of a world-wide economic system and, further, if such a systematic relationship of home and foreign investment existed by what mechanism it operated. Concentrating on either the labour or capital factor of production is immaterial: although linked, the argument is valid for both individually.

In a perfect competition world disequilibrium as represented by excess remuneration to factors of production in one situation would attract further supplies of labour and capital from another, and ultimately an equalisation in factor prices would result. Perfect knowledge and ease of transference would thus harmonise the two situations over time. It is perhaps just such a theoretical position which forms the basis of alternating factor flow models as postulated by Thomas and Cairncross. The validity of such a theory requires active housebuilding to be

1 B. Thomas, Migration and Economic Growth (Cambridge, 1954).
2 A.K. Cairncross, Home and Foreign Investment, (Cambridge, 1953).

phased with above normal population growth. The real world situation however diverged from this model. The fact that a heavy net loss of population in Edinburgh of 17600 people between 1901 and 1910 was concurrent with a rising volume of home construction consecutively over the years 1901-6 might be dismissed as an exception. In Hamilton during the same decade the curtailment of a previously heavy outflow of population was not matched by more vigorous housebuilding. In fact a plateau developed in 1901-4 followed by a decline in construction during 1905-10. In Glasgow, Hawick, Stirling and many other burghs the timing of housebuilding and population are at variance.

Alternating factor flow explanations of housebuilding fluctuations relate of course to a dynamic theory of the phenomenon. That is, the equalisation of labour flows between countries over time. Thus emigration is the appropriate demographic indicator and this has been found wanting in terms of both timing and magnitude in several Scottish burghs. Even a broadening of the theory of alternation so as to internalise local migration in the concept would still result in the migration variable being at odds with the housebuilding index.

Prime importance is attached to the synchronisation of factor movements and housebuilding fluctuations by alternating investment proponents. Scottish evidence would relegate the crucial migratory movements, preferring to stress the natural increase aspect which gradually overtook a surfeit of houses in depression and thus put housebuilding in a more favourable light. In terms of the common labour pool and alternating access to it, the comment of a senior Glasgow lawyer, William Gillies, speaking on behalf of his professional colleagues who dealt with a very large proportion of housebuilding and financing in the city summed up the situation. It was, he said:

'.... a slackness in trade which caused emigration and caused a good many people to leave the city, and there was again competition for tenants'.[1]

Gillies viewed housebuilding fluctuations as the products of trade cycles. The study of housebuilding fluctuations in Scottish burghs would also indicate that several complex factors determined building levels and that concentrating on a world pool of labour is unhelpful in explaining building activity variations in Kilmarnock or Kirkcaldy.

If demographic changes did not always provide the specific explanation of turning points in urban housebuilding trends they did produce an undercurrent of demand pressure which builders could only neglect in the short term. Over the long swing therefore the rate of population growth and its changing structure conditioned the housing market. Builders accepted this underlying situation but preferred to be guided in the short term by prevailing economic circumstances such as the levels of income and employment or, were sufficiently cautious in the downswing to remember the abrupt cessation of prosperity and thus were reluctant to respond to what might prove to be only transient demographic trends.

Most persuasive of the short term demographic influences were the number of marriages and the proportion of 20-44 year olds in the population, these being the most sensitive indicators of new household formation.[2] Urban immigration was also important, especially in the pre-1876 boom years.[3] However, given the diminishing intensity of the push factors underlying the highland clearances and Irish depopulation it is evident that the pull influence of urban Scotland was dependent largely on economic circumstances in the central burghs of Scotland.

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1 Departmental Committee on Increases in Rental of Small Dwelling Houses in Industrial Districts in Scotland, Cd. 8154, 1916, Evidence of Gillies, q. 241.
2 See Ch. 7, Table 18.
3 Ibid.

Local prosperity, so critical to the volume of housebuilding investment therefore important in determining marriage and urban immigration rates. Thus domestic demographic changes provided the background conditions for housebuilding but were not mechanistically involved in a systematic way with America or indee other parts of the world; migratory flows and other demographic changes were consequently largely endogenously determined solutions to local conditions.

Nor do capital supplies appear to fit the general model of a world pool of resources into which Scotland and her housebuilders dipped. Certainly Scottish foreign investment was substantial. As one recent account described it in relation to American and Australian development, Scottish capital abroad formed,

> '.... a contribution out of all proportion to Scotland's relative share of population and resources of the United Kingdom'.[1]

Scottish development companies were legion; they took the variegated form of land mortgage companies, investment trusts and investment companies.[2] Their interest ranged widely; Texan ranching, Australian pastoral farming, Canadian lumber and innumerable land companies in New Zealand, Argentina, America and elsewhere. Apart from such companies formed and directed in Scotland scores of foreign mercantile interests sought through an agency system in Scotland to channel funds in their particular direction.[3] It was in this arena that the Scottish

1 P.L. Cottrell, British Overseas Investment in the Nineteenth Century (forthcoming publication).

2 W.T. Jackson, The Enterprising Scot: Investors in the American West after 1873, (Edinburgh, 1968); J.D. Bailey, A Hundred Years of Pastoral Banking, (Oxford, 1966); R. Graham, 'The Investment Boom in British-Texan Cattle Companies, 1880-85', Business History Review, 34, 1960, pp. 421-45, D. Macmillan, 'Scottish Investment and Enterprise in Texas' both in P.L. Payne (ed), Studies in Scottish Business History, (London, 1967), pp. 319-44, and 367-86. These cite a number of companies involved in Scottish investment overseas.

3 J.D. Bailey, 'Australia Borrowing in Scotland in the Nineteenth Century', Economic History Review, 12, 1959-60, pp. 268-79.

solicitor played a crucial role in mobilising small savings in clients hands and deploying them either through his own commissioned agency or on his own initiative to suitable outlets. Between them two Glasgow firms of solicitors and four in Edinburgh held borrowing positions for thirty-one overseas companies in Australasia and south-east Asia.[1] Often there were sole agencies for Scotland designated by the foreign borrower. But this was the formal structure with informal professional contacts providing the same kind of network as the Scottish banks who, holding the agency for a particular firm, 'frequently chose the local solicitor as agent.'[2]

It is in the Scottish solicitors' role that the theme of alternating investment flows can be best examined. The solicitors' function was the funnelling of funds into appropriate lucrative investments, risk-adjusted. Thus the solicitor was a common point of contact, undertaking a function important to both housebuilders and foreign borrowers and doing so out of a common pool of resources, those accumulated savings of widows, trusts, private clients, small and large businesses with no further need as they saw it to expand working capital. Consequently whether it was a minor laird in Perthshire or an Edinburgh legatee the financial intermediary, the solicitor, was aware either himself or through personal contacts of investment outlets in property, gilts and foreign companies.

How far then were building fluctuations conditioned by the flow of funds and how far was overseas investment responsible for reversals in housebuilding trends? A financial journal noted in 1882 the withdrawal of funds from property interests at the close of the 1870s decade.[3] Housebuilding had however turned down by then, 1876 being the critical

1 Ibid., p. 272, n. 3-7.
2 Ibid., p. 268.
3 Scottish Banking and Insurance Magazine, 1882, p. 82.

year. In this instance the switch to foreign investments in the late 1870s was more a reflection of deflated domestic business confidence due to the failure and revelations regarding the City of Glasgow Bank. Housebuilding turned down in 1876 due to the realisation amongst builders that the volume of unlet property was extremely high.[1] True, excess housing stock came about in part as a result of available finance for the speculative outburst of 1872-5, but that finance did not end abruptly nor did it provoke the downturn.[2] Even after the peak had been reached, finance was available and continued to be so until the announcement of the City of Glasgow Bank failure, the weak position of many builders associated directly or indirectly with it and the general economic depression of 1878-9 gave foreign investment openings encouragement. The initiation of a period of foreign investment by Scottish companies, trusts and solicitors was thus in part a product of the building recession which set in after 1877.

Nor can the mild housebuilding surges of 1880-2 and 1886-9 be explained in terms of an interruption to foreign investment flows. The mechanistic and periodic trade cycle explanation cannot be ruled out in these cases and housebuilding in these years owed some allegiance to overall economic resurgency, albeit of curtailed dimensions.[3] Thus the alternating flow of factors would appear to be a masterplan postulating explanations for significant turning points only and leaving intra-cyclical variations unexplained. Even with the next major turning point, the upswing leading through the nineties to the 1898 peak, the alternating mechanism is out of gear with historical reality. The Baring Crisis, 1890, made little impression on the continuing out-

1 G.M.C., Evidence of Binnie, q. 6458.
2 Ibid.
3 S.B. Saul, The Myth of the Great Depression, (London, 1968), p. 20.

flow of Scottish capital.[1] In other parts of the kingdom it may well have been responsible for a switch from foreign to domestic investment, but between then and 1893

> 'Scotland was very much the dominant source of loanable funds and the Scottish situation provided the key to the continued flow of British capital to the Australian colonies.'[2]

That is, Scottish capital continued to seek foreign outlets at the very time housebuilding in burghs such as Glasgow, Kilmarnock, Leith, Kirkcaldy, Paisley and others had turned depression into upswing. At this critical point of the cycle housebuilding managed to round the corner despite the outflow of funds. The common pool of capital was either irrelevant to housebuilding, or, large enough to accommodate both sectors, home and foreign, in which case competition for funds, varying attractiveness and alternating flows did not operate in the systematic fashion as suggested.

When the interruption to the flow of capital destined overseas did come, that is with the Australian financial crisis of 1893,[3] the upswing was well underway, the general Scottish urban housebuilding index having shown five consecutive years of improvement by that stage. Individually Scottish burghs, by a ratio of 2 : 1, registered more vigorous housebuilding in 1894 over the previous year and although the proportion was slightly lower in 1893 compared to 1892 it demonstrates the general state of improvement prior to the Australian collapse. Capital availability for housebuilding vitally important to the under-

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1 J.C. Gilbert, A History of Investment Trusts in Dundee, 1873-1938, (London, 1939), p. 29. Evidence to the Glasgow Municipal Commission and the Departmental Committee investigations of 1915-16 revealed no references to the Baring crisis. The Australian difficulties were easily and often recalled and dated.

2 J.D. Bailey, op. cit., p. 269.

3 Departmental Committee on Increases in Rental, op. cit., Evidence of Binnie, q. 213.

taking of any construction project was not wholly conditioned by the juxtaposition of home and foreign investment. The housing boom of the nineties was therefore stoked by switching capital from foreign outlets to domestic ones; it was not fired by such a switch however. This came from other sources.

The subsequent turning point offers, perhaps, the clearest monetary explanation. The onset of the South African war pushed the cost of capital upwards. Thus cost and availability acted together but were particularly effective as the building industry was near to a peak in any event. Perhaps hypersensitive at such a cyclical stage housebuilding turned down at the onset of war, somewhat prematurely, as capital was attracted into gilt-edged securities offering attractive rates and minimal risk. The slackening of rates of interest and improving capital availability after 1902[1] were very largely the cause of renewed activity in house construction, although again other factors were present, such as unfulfilled demand and a low level of empty properties. Subsequently, too, the export of British capital reached substantial proportions[2] and from the housebuilding downturn of 1906 it is difficult to imagine such a diminution of the financial pool as not influencing the course of housebuilding. Here again however the issue is not clear cut. Scottish housebuilding held up in most burghs until 1906; capital exports by Britain which had averaged £39.1 million during 1895-1904,[3] rose to £81.5 million in 1905[4] when the index stood at 113.0 and in 1906 a further appreciable jump in foreign investment to £117.5 million found the Scottish housebuilding index at fairly much the same level, 106.0. Only in 1907 with another upward lurch in

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1 R.G. Hawtrey, A Century of Bank Rate (London, 1938).
2 A. Imlah, Economic Elements in the Pay Britannia, (Cambridge, Mass., 1958).
3 Ibid.
4 Ibid.

capital exports did housebuilding in Scotland follow the accepted theoretical path - downwards. Thus even at the point of substantial and rapidly increasing foreign capital outflows during 1904-6 the reciprocating housebuilding fluctuation was not activated and only with the reinforcement of repeated heavy foreign investment did Scottish housebuilding succum from 1907.

A further qualification must be made in connection with the formation of Scottish companies apparently bleeding local savings for foreign investment. In some cases the formation of an investment company merely represented the reformulation of existing debts. Thus for example one of the Dundee trusts, the Oregon and Washington, formed in fact during the building boom in 1873 was created out of civil war debts to the jute industry and was simply a transference of balances already held abroad into a land mortgage company.[1] Similar defaults in the Peruvian Corporation and also in the Paraguayan Corporation led bondholders into the position of landholders without occasioning further Scottish capital outflows.[2]

Furthermore the appearance of a large number of new firms transacting investment business is misleading. In part the growing number of such companies was a financial device designed to relieve certain companies which 'became so "lumbered up" with unsaleable stock or shares' and thereby remove the unproductive capital of the parent company.[3] The Second and the Third Scottish American Trust Co., Ltd., both registered on the 24th March 1879 in Dundee, the Second British Assets Trusts Ltd. 1878 and the Second Scottish Investment Trust Co. Ltd., 1889 were all partially geared

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1 J.C. Gilbert, op. cit., p. 33. Land mortgages had been accepted on security of payment of jute debts.

2 I am indebted to M.H.J. Finch, Department of Economics and Latin American Centre, University of Liverpool for information on this point.

3 The Bankers Magazine, 'On Modern Trust Companies', 1893, p. 165, quoted in H. Burton and D.C. Corner, Investment and Unit Trusts in Britain and America, (London, 1968), pp. 33-4.

to this end.[1] Other financial expedients which apparently proliferated the number of Scottish investment companies were the reversionary companies such as The Reversionary Association Ltd., and the Realising and Debenture Corporation of Scotland which was a 'finance company carrying the balance of profit on the realisation of investments to profits.'[2] The birth of new companies was also the product of amalgamations, such as between the Dundee Mortgage and the Dundee Investment Companies in 1889 to become the Alliance Trust Co. Ltd.,[3] or quite simply the result of changes in company names, as in the case of The Straits to The Scottish Mortgage and Trust Co. Ltd., in 1909.[4] Another cause of the growing number of Scottish investment companies was the availability of directorates and the source of income they provided.[5] Thus 43, exactly half, of the 86 directors in the 36 Scottish investment companies which survived the world war possessed board positions in at least two trusts, with T.J. Carlyle Gifford holding a record eight directorships.[6]

Reinvestment of foreign investment income was another method by which Scots extended their world financial involvement without necessarily withdrawing funds from the Scottish economy,[7] and thus in a variety of ways foreign and domestic investment were not always in competition for the same funds. New investment company promotion did not always imply capital exports and in any event domestic competition for capital, as with gilts after 1905 presented an effective constraint on housebuilding in Scotland.[8]

The most serious criticism of the idea of a common pool of capital

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1 G. Glasgow, The Scottish Investment Trust Companies, (London, 1832).
2 Ibid., p. 50 and p. 56.
3 Ibid., p. 38.
4 Ibid., p. 104.
5 H. Burton and D.C. Corner, op. cit.
6 G. Glasgow, op. cit.,pp. 38-121.
7 B. Lenman and K. Donaldson, 'Partners' Incomes, Investment and Diversification in the Scottish Linen Area, 1850-1921' Business History, 13, 1971, p. 9.
8 Departmental Committee on Increases in Rentals, 1915, Evidence of Petrie, q. 1598. The point is also made in S.B. Saul, 'Housebuilding in England, 1890-1914', Economic History Review, 15, 1962, p.

drawn on in turn by housebuilders and foreign investment stems from the actual structure of Scottish housebuilding finance. The alternating theory assumes that the common point of contact for home and foreign investment, the Scottish solicitor, and other formal financial intermediaries, the banks, were the subject of complete competition for both builders and overseas investors. The overlap was incomplete however. Housebuilders obtained capital from other sources. Thus in Edinburgh, for example, 38% of warrants for housebuilding between 1885 and 1894 were from individuals not recognised as builders and who in most cases put up their own capital to finance the construction.[1] With another 10% of house warrants undertaken by builders who tackled only a single project in the decade[2] and self-financed to extent as were some of the larger developments - James Steel for example generated sufficient annual profits to allow building to be financed out of reserves[3] - recourse to the various outside sources of capital in competition with foreign investments was not so great as might be supposed. In other forms of building outside finance was also frequently superfluous; churches, hall, school and council buildings were financed by legacies, endowments or the rates, industrial and commercial undertakings were still largely self-reliant although new flotations suffidently supplemented daily stock transfers to occupy several local stock exchanges, and at the jobbing end of the building trade the small scale of operations reduced the need for external finance even supposing the financial institutions were willing to make such advances. Furthermore, extensive use of trade credit and builders' facility for delaying payments and appeasing creditors with partial payments minimised their borrowing requirements and further reduced the contact with foreign companies or Scottish trusts touting for domestic savings.

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1 Edinburgh, D.G.C. Registers and Post Office Directories, 1885-94.
2 Ibid.
3 The Scotsman, 5 September 1904.

Scottish housebuilders, therefore, did not always need access to the pool of capital. Their independent sources of finance ensured an independent course for the building cycle. This is not to deny the significant contribution of solicitors acting for their clients in the provision of housebuilding capital. Their contribution was not only in the finance of new construction but also in the renegotiation of maturing mortgages which in avoiding defaults maintained the builder and investor confidence. The stress placed on internal sources of capital serves to illustrate how the financial independence of builders was preserved, how the building cycle could pursue idiosyncratic fluctuations and how the overlap with competing interests for capital was only partial. The resource pool was a sufficiently large one. Where the overlap between housebuilding and foreign investment did come about, the alternating mechanism was historically deficient. Not only was the Scottish common pool of resources large enough to accommodate one interest without jeopardising the other it was shallow in reality.

If Scottish housebuilding fluctuations were not hostage to the rhythmic flow of the Atlantic Economy they were conditioned by the pulses of other factors. It has been the theme of recent chapters that it was the irregular beat of several influences which in their accumulative and off-setting impact on the building decision brought about a concensus pattern of recovery and relapse. The composite approach, therefore, stressed not only the plurality of housebuilding determinants, but also the variable contribution of each determinant to the crests and abysses of the waves of construction.

Empty property was a more effective constraint at the trough of the cycle rather than at its apex; building costs, including the rate of interest, were more appropriate in affecting construction at the peak; the supply of capital was apparently critical at the climax rather than in the doldrums of the cycle and the expectations element was seemingly relevant at both upper and lower turning points. A composite explanation of the revival of housebuilding in the 1890s was presented by Thomas Binnie some quarter of a century later. Asked what produced the housebuilding recovery, Binnie replied:

> '... there was a trade revival, and ... for a good many years there were not extra houses provided; the natural increase of the population filled up the empty houses and created a new demand. Material and labour were moderate in price; money was exceptionally cheap.'[1]

The marriage of demand and supply factors in Binnie's composite reply raises the question of which was uppermost over the longer period. On a year to year basis individual components of demand or supply could and did attain ascendancy but over the long term a two-thirds majority of Scottish burghs experienced housebuilding fluctuations decisively the product of an array of supply variables - empties, costs, expectations, size of firm - which impinged directly on the builder. In only four Scottish burghs did demand variations contribute significantly to an explanation of housebuilding fluctuations.[2] Thus

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1 Departmental Committee on Increases in Rental, op. cit., Evidence of Binnie, q. 126-8.

2 An analysis similar to that in 'The Quantitative Approach ...' described above, but emphasising local burgh data for each series at suitable opportunities was undertaken. Supply and demand groups of variables were in turn omitted. The correlation coefficient in eighteen of twenty-seven burghs was substantially increased when the demand factors were excluded, denoting the strength of the supply group. Such a method provides a general indication of the relative contributions of both supply and demand groupings but it must be remembered that the unexplained variation, often 20-25% could upset such conclusions.

in Dundee, Falkirk, Hawick and Stirling population and income determinants accounted most successfully for building activity levels. In five others, Edinburgh, Govan, Musselburgh, Paisley and Rutherglen the supply and demand groupings were approximately equivalent in their explanatory contributions. However in eighteen Scottish burghs, that is in two-thirds of the cases, supply-based factors were conspicuously more effective in explaining housebuilding fluctuations.

Such an emphasis on the nature of the industry and its product places the Scottish housebuilding experience within the overall British framework. Increasing financial stability and the avoidance of serious commercial panics and liquidity crises in the economy as a whole, Habakkuk argued,[1] divorced the business and building cycles after 1870. The contribution of the demand factors - demographic and income - were undeniably important and at the individual burgh level have been observed in Hamilton, Hawick and elsewhere to be critical. On the wider horizon and with particular relevance to the Scottish economy the weakening of the link between the business cycle and its mid-Victorian corollary, the building cycle, provided latterly greater self-determination. The upperhand of the supply factors in Scottish urban housebuilding after 1870, therefore, emphasises exactly the point made by Habakkuk regarding the emerging longswing of building cycles.

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1 H.J. Habakkuk, 'Fluctuations in Housebuilding in Britain and the United States in the Nineteenth Century', Journal of Economic History, 22, 1962, pp. 202-10, examines at some length the changing form of migration, its relationship to urbanisation, the less abrupt contraction of incomes, the greater interconnection of local economies which produced fewer offsetting influences and concludes that trade and building cycles diverged for reasons of this kind.

The greater autonomy of the housebuilding sector was not wholly unrelated to the Scottish economy. The continuing housebuilding upswing beyond the 1873 peak of the Scottish economy illustrates the self-generating force which a few decades previously would have been uncharacteristic. Self-sustaining housebuilding growth produced by 1876 a saturated market for housing and in only a few Scottish burghs was the trade cycle expansion of the early eighties greeted with a positive response. The high volume of empty properties in 1881 effectively blocked a housebuilding recovery. The amalgamation of such overstocking with the trade cycle downswing further depressed housebuilders' expectations and it was in the subsequent marked trade upswing at the end of the decade, as Binnie noticed,[1] that the balance was sufficiently redressed for housebuilders to respond, if only temporarily. Only with the next upswing did trade and building cycles synchronise. An approximately similar pattern was underway in the years following the 1902-3 peak and there is some evidence, despite the restricted number of cycles available, to suggest that it was only every third trade cycle that housebuilding was appropriately positioned to take full advantage of the burgeoning prosperity in the economy at large. On the basis of three 7-10 year trade cycles housebuilding fluctuations might be expected to be of 21-30 years duration. Scottish housebuilding peaks were in fact 22-26 years apart; troughs were separated by approximately 28 years. The long swing thus became longer. However if the timing changed the amplitude of the cycle was less so. The lesser reliance on the trade cycle provided an opportunity for self-induced overshooting which in amplitude was entirely equal to the more frequent panics of earlier

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1 Departmental Committee on Increases in Rental, op. cit.

decades.

It was, therefore, the growing independence of the late-Victorian housebuilding industry which, unchecked by the periodic industrial and commercial crises, allowed builders' responses to the level of housing stocks and their analyses of market trends, coupled with the gestation period of housebuilding investment, to assume exaggerated and unwarranted proportions. The reaction inevitably became over-reaction and the builders' mechanistic response on a stock-adjustment basis was a more appropriate model for their late Victorian operations than the mechanism of alternating factor flows between Britain and the world.

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