

Appendix D

Full analysis of the characteristics for each of the types of risks in questions 50-57

Question 51 refers to the most important, i.e. ranked 1, type of risk specified in question 50. Question 52 to the second most important, i.e. ranked 2, and so on to question 56 referring to the least most important. All the questions from 51 to 56 are exactly the same. In order to avoid this process being laborious for the respondent, the questionnaire only asks for the top three ranked types of risks to be filled in, with the option of completing the bottom three ranked types if they so wished.

For these questions, two types of analyses ensue. Both types involve likert scale diagrams with the 14 contrasting characteristics being the x-axis at either end of the diagram. The first type, which involves Figures D1 to D6 and the associated Tables D1 to D6 in this appendix, is understanding more about the six different types of risk, e.g. environmental, operational etc. Each Figure, D1 to D6, takes one type of risk and illustrates the varying mean replies depending upon which rank, in terms of importance, the respondents has graded that particular type of risk in question 50.

For example, let's take 'financial' risk. The proportions who felt that this is the most important type of risk, i.e. graded 'rank 1', was given in section 4.8.2, as well as those who thought it was the second (rank 2), third (rank 3)...least important type of risk (rank 6). The replies of those who thought financial risk was rank 1 are averaged. This makes one of the six lines in Figure D1 with the remaining five lines being the averaged replies of those respondents who believed financial risk to be the second, third....least most important type of risk. This is done to ascertain the contrariety, if any, in attitudes towards a risk, depending on the value of importance given.

The second type of analysis, see Figure E1 in Appendix E and Figure F1 in Appendix F and their respective tables, is that rather than the type of risk being the variable, the variable for Figure E1 are the construction and oil industries, and for Figure F1 the variable is the 'overall' perspective. The likert scale contained within these figures is

the average of those replies from the industry or overall perspectives, of the six different types of risk, irrespective of their graded rank from question 50. This is done to determine any variations in attitudes between the two industries towards the different types of risks, and also between the six types of risk, as a whole. There is one problem with this entire analysis of questions 51 to 56, which is the limited amount of replies to some of the types of risk. This can disturb the arguments for each type of analysis and ultimately the outlook of Figures E1 and F1 quite dramatically, as can be seen. This is because the mean values are only attained from a limited sample. The exact sample sizes are given next to the relevant Figures in Appendices D to F. Therefore, it is assumed that any sample sizes of under ten are ignored from the analysis, as there is simply not enough replies to produce an unbiased mean value. These lines are inputted but are specified.

Any lines between 10 and 20 replies are argued from with caution, and any above 20 is the specified amount to draw reliable conclusions from (Kanji, 1990). From these analyses, one is endeavouring to attain the extreme characteristics of the risks, and if there is a mean value of 3 or near three, then no reference is made to it as it lies between the two extremes, but if it is located towards an extreme then that characteristic is specified. With all of the above in mind, it is now possible to analyse and identify the characteristics, starting with the most important type of risk, 'financial'.

The first thing to do is to eliminate all those lines for which the sample size does not reach above 10. Therefore, the lines denoting ranks 4, 5 and 6 are ignored as their maximum sample sizes are 6, 1 and 1 respectively. Obviously, the majority of replies are from rank 1 as financial risk topped the risk charts, in term of importance. Therefore, concentrating on the lines pertaining to ranks 1, 2 and 3, certain conclusions about financial risk are obtainable. Firstly, the lines for these three ranks follow very similar paths, concluding that the mean results for these characteristics are independent of which importance rank the respondents gave, under question 50. Most of the characteristics lie along the average rank 3 mark, but deviations are

noticeable. Most notable are the deviations heading towards the following factors: Observable; Risk known to science; Controllable; Consequences not fatal; and Low risk to future generations.

These factors are self explanatory, but one can see that financial risks are foreseen risks which very rarely cause any major losses or future problems, and with careful analysis and management of these risks, one can combat them.

The replies to the second of the six types of risk, 'technical', were better than expected, with between 87 and 99 respondents responding. The reason why there is a range of respondents for these questions is because there are some characteristics which the respondents find difficult to apply a relevant definition to them, whilst there are others which are self explanatory, hence all the respondents retort an answer to the self explanatory characteristics, and leave the ranking system blank for the ones they cannot attain a definition. The lines denoting ranks 5 and 6 in Figure D2 are ignored as the maximum sample sizes are 6 and 3 respectively. The paths of the top four ranks follow closely with each other, suggesting that the mean replies are again independent of the importance rank given to 'technical' in question 50. Analysing these remaining four lines, ones finds a distribution almost identical to that of 'financial', with the characteristics deviating away from the averaged rank 3 being: Observable; Known to those exposed; Risk known to science; Controllable; Not globally catastrophic; and Low risk to future generations; with a slight deviation towards Risk decreasing.

The responses again seem to suggest that these risks tend to be understood and under control, with very few of these types of risks being unforeseen. There is also a suggestion to be in a position to be able to decrease these types of risks, as the graph dips towards rank 2 on Figure D2 for that characteristic, although only the respondents from rank 1 feel this way, with the remainder of the respondents feeling less optimistic. Also, technical risk only affects the project locally and not globally.

The total number of respondents to ‘operational’ risks were between 82 and 93. Of those numbers, only the line representing rank 6 is under a sample size of 10 with only 4 replies. Of the remaining five lines, four of them, from importance ranks 2 to 5, follow similar paths, but the results from the respondents who felt that operational risks were *the* most important risks, i.e. rank 1, did not agree on a couple of characteristics. However, the sample size is only 12, so the mean values are less reliable. Nevertheless, the respondents in rank 1 perceive that ‘operational’ risk are very ‘well known to science’, ‘not at all globally catastrophic’ and they believe, more than the rest of the respondents who answered to this risk, that the ‘consequences of these risks were semi-fatal’. Otherwise, the respondents agree that ‘operational’ risks are more: Observable; Known to science; Controllable; Effective immediately; Old risk; Known to those exposed; Risk decreasing and less: Risky to future generations; Globally catastrophic.

Time risks is the fourth on the list of six. Again, the response to this risk, as has been the case for all so far, has been very encouraging. The total replies to the ‘time’ risk were between 84 and 95. The lines denoting ranks 1 and 6 in Figure D4 are disregarded with replies only totalling 6 and 5 respectively. The lines representing ranks 2 to 5, inclusive, resemble each other very closely indeed, apart from the first three characteristics in the sequence where they differ. All perceive ‘time’ risks as being ‘observable’, but the respondents who grade time in rank 4 believe it stronger than the others. Similarly, with the characteristics ‘known to science’ and the risks being ‘effective immediately’, except with the respondents who ranked time as third most important. Otherwise, the only other deviation from these four lines was with rank 2, where the respondents in this category felt that ‘time’ is to be feared more (‘dread’) than the other three categories. Again, just like the other risks before, hardly any means extended beyond an average of 3, and most are around 2.5. The most notable of them are ‘controllable’, ‘consequences not fatal’ and ‘low risk to future generations’, which are the most common amongst all the risks summarised thus far. Also, another common phenomenon is that no matter which rank the respondents have put the risks, this does not influence the grades they give to the characteristics,

therefore, the mean values of the characteristics are independent of the importance rank given to that particular type of risk.

Environmental risk received totals of between 81 and 94 responses with the lines, in Figure E5, indicating ranks 1 and 6 being ignored as their sample sizes were below 10. The results of the remaining four lines, however, do differ. The shape of the paths are similar, but the strength of the feelings are stronger for some of the categories. Ranks 3, 4 and 5, however, are similar, but the answers pertaining to rank 2 are distinct. The mean replies for rank 2, whose sample sizes are only 14 or 15, imply a tendency for the risks to be 'known to those exposed', 'known to science', 'controllable', 'not dreaded', 'a low risk to future generations' and to be 'decreasing'. Conversely, the answers from the three ranks, 3 to 5, suggest otherwise.

They insinuate that 'environmental' risks are 'new', 'dreaded', 'not equitable', 'not easily reduced', 'involuntary' and are 'increasing'. Seeing that the maximum replies to rank 2 is only 15, the tendency is to draw inferences from the second batch of replies, i.e. ranks 3 to 5, as they are more agreed in their replies, as well as possessing a larger sample size. The feelings of this group of respondents does also make sense, as environmental risks are involuntary, or unintentional, and once these risks have occurred they are almost impossible to contain, and with the ever growing environmentally aware political forum these risks are dreaded as the resultant consequences could be extremely damaging.

Finally, one is left with 'political', where responses ranged from 75 to 83, with the majority of replies ranking 'political' risk as rank 6, i.e. the least most important type of risk. Therefore, this left very few respondents in the remaining five categories. In fact, only one other rank, rank 5, had 10 replies or over. Thus, the lines pertaining to ranks 1, 2, 3 and 4 are to be disregarded. Even rank 5 had only exactly 10, so the conclusions from this line must be approached with caution. However, the line denoting respondents replying in rank 6 had over 60 responses, which should provide a satisfactory picture of the characteristics of 'political' risk. This line suggests that

political risks are: Not observable; Not known to those exposed; Not known to science; Not effective immediately, i.e. they are delayed; Uncontrollable; Not globally catastrophic; Not easily reduced; Not consequently fatal; and Increasing.

Some of the characteristics of the political risks are opposite to those mentioned, thus far for the previous five. The mean replies for the respondents who ranked political risks as the least most important inflected towards the unknown characteristics. The types of risks so far have been foreseeable risks with the possibility of being controlled. Political risks, on the other hand, are beyond the companies control, and are unforeseen and unpredictable, and tend to be increasing. However, the consequences are not fatal and are not globally catastrophic. These are the perspectives of respondents in a nation where the Government is relatively stable, and the replies imply a feeling of uncertainty. It would make interesting reading to ascertain the mean replies of the same question in a country of political instability.

Generally speaking, the trends suggest that the replies are not dependent upon which 'importance' rank the respondent gave to each risk in question 50. As a result, it is necessary to examine the six types of risk from an industrial perspective. Figure E1 in Appendix E collates the information from this appendix into the two industries. Figure E1 then combines the two industries to present an 'overall' viewpoint, of the 14 characteristics, to the six types of risk, see Figure F1 in Appendix F. The total replies from the construction ranged from 52 to 74, whereas the oil industry figured at between 22 and 31. Both these values are enough to produce reliable conclusions. Firstly it must be understood that on the y-axis there are two scales both denoting 'mean ranks', one for the construction industry and one for oil, and both scales have been depressed to show only the relevant areas of interest. Both are on the same diagram for direct comparisons to be easily made between the two industries.

Firstly, the averaged replies from the oil industry are more diverse than construction. Certainly, by analysing the individual risk types and comparing them between the two industries the attitudes, shown by the paths taken, about them are very similar

indeed, but perhaps the enthusiasm, or the distinct feelings, of the oil industry is evident by the larger ‘sword teeth’ appearance, i.e. the distinctions between the characteristics are more apparent. Basically, scrutinising Figure E1 microscopically, one finds very little differences between the two industries. Summarising the replies from the construction industry first. All risks, apart from ‘political’, where they tend to head towards the other end of the scale, are ‘known to science’, ‘observable’, ‘controllable’ and ‘easily reduced’. Additionally, these risks, except ‘environmental’, are ‘not globally catastrophic’, with the ‘consequences not being fatal’ and ‘future generations not being at risk’. ‘Time’ and ‘operational’ risks are ‘effective immediately’, unlike ‘political’ and ‘environmental’ where there is a delay. Finally, all risks, except ‘environmental’ and ‘political’, are ‘known to those exposed’.

The conclusions made for the construction industry are similar to those for the oil industry, except some of the attitudes are more emphasised. There are, however, some differences between the two industries. The first is that the oil industry feel more responsibility towards the ‘environmental’ risks by force majeure, understandably as they are dealing directly with substances which if leak, escape or otherwise discharged can affect the wildlife, as well as public image and if burn can influence other environmental issues of global warming etc. The second and the third again involve the ‘environmental’ risks. The second is that the oil industry feel that ‘environmental’ risks are effective more immediately than the construction industry. The third being that these risks are perceived to be more involuntary in the oil industry than in construction. The final difference is that the consequences from technical risks are believed to be more fatal by the oil industry than the construction. This is the area which is within the scope of this doctoral thesis, whereby improvements are made to the analysis of technical risks within a real-life offshore installation and project, using the techniques identified from section 4.7.3, see Chapters 5 and 6.

Finally, Figure F1, as referred to above, gives the entire ‘overall’ picture of the replies to questions 51 to 56, by illustrating the mean values of all the replies for each

type of risk for all 14 characteristics listed in these questions. It is presented for observational purposes as the conclusions made for the individual industries are pertinent for the overall distribution also.

Table D1: The means and sample sizes for the characteristics of **Financial** risks (for questions 50-57)

FINANCIAL		Characteristics (** see below)													
MEANS		a)	b)	c)	d)	e)	f)	g)	h)	i)	j)	k)	l)	m)	n)
Rank 1		1.88	2.00	2.96	2.81	2.44	2.30	3.20	2.39	2.40	2.91	2.57	3.25	3.03	3.06
Rank 2		3.06	2.82	3.44	3.25	2.47	2.53	2.82	2.41	2.24	2.58	1.94	3.35	3.41	2.93
Rank 3		2.07	2.14	3.00	2.36	2.07	2.57	3.07	2.50	1.79	2.57	2.00	3.50	3.14	2.85
Rank 4		2.17	2.50	2.50	3.17	1.67	2.17	2.00	1.50	1.33	2.67	1.33	3.33	2.50	3.17
Rank 5		2.00	2.00	4.00	3.00	3.00	4.00	4.00	2.00	4.00	3.00	3.00	4.00	4.00	2.00
Rank 6		2.00	2.00	4.00	2.00	1.00	1.00	4.00	1.00	2.00	3.00	4.00	4.00	3.00	3.00
Construction		1.99	2.19	3.07	2.70	2.46	2.16	3.18	2.43	2.27	2.82	2.49	3.19	3.19	3.10
Oil		2.07	2.03	3.07	3.15	2.00	2.45	2.60	2.00	1.93	2.96	2.04	3.36	2.68	3.00
Overall		2.01	2.14	3.07	2.82	2.33	2.25	3.02	2.31	2.17	2.86	2.36	3.24	3.05	3.07
SAMPLE SIZES															
Rank 1		73	73	71	67	66	71	64	69	72	64	69	69	69	65
Rank 2		17	17	16	16	15	17	11	17	17	12	17	17	17	15
Rank 3		14	14	14	14	14	14	14	14	14	14	14	14	14	13
Rank 4		6	6	6	6	6	6	6	6	6	6	6	6	6	6
Rank 5		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Rank 6		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Construction		75	75	73	71	70	73	66	72	74	67	72	72	72	70
Oil		29	29	28	26	27	29	25	28	29	25	28	28	28	25
Overall		104	104	101	97	97	102	91	100	103	92	100	100	100	95

For the characteristics mentioned below the first named one of each pair is rank, or number, 1 on the ranking system and the second is at rank 5

- ** Characteristics: a) Observable - Not observable b) Known to those exposed - Not known to those exposed c) Effective immediately - Effective delayed
d) Old risk - New risk e) Risk known to science - Risk not known to science f) Controllable - Uncontrollable
g) Not dread - Dread h) Not globally catastrophic - Globally catastrophic i) Consequences not fatal - Consequences fatal
j) Equitable - Not equitable k) Low risk to future generations - High risk to future generations
l) Easily reduced - Not easily reduced m) Risk decreasing - Risk increasing n) Voluntary - Involuntary.

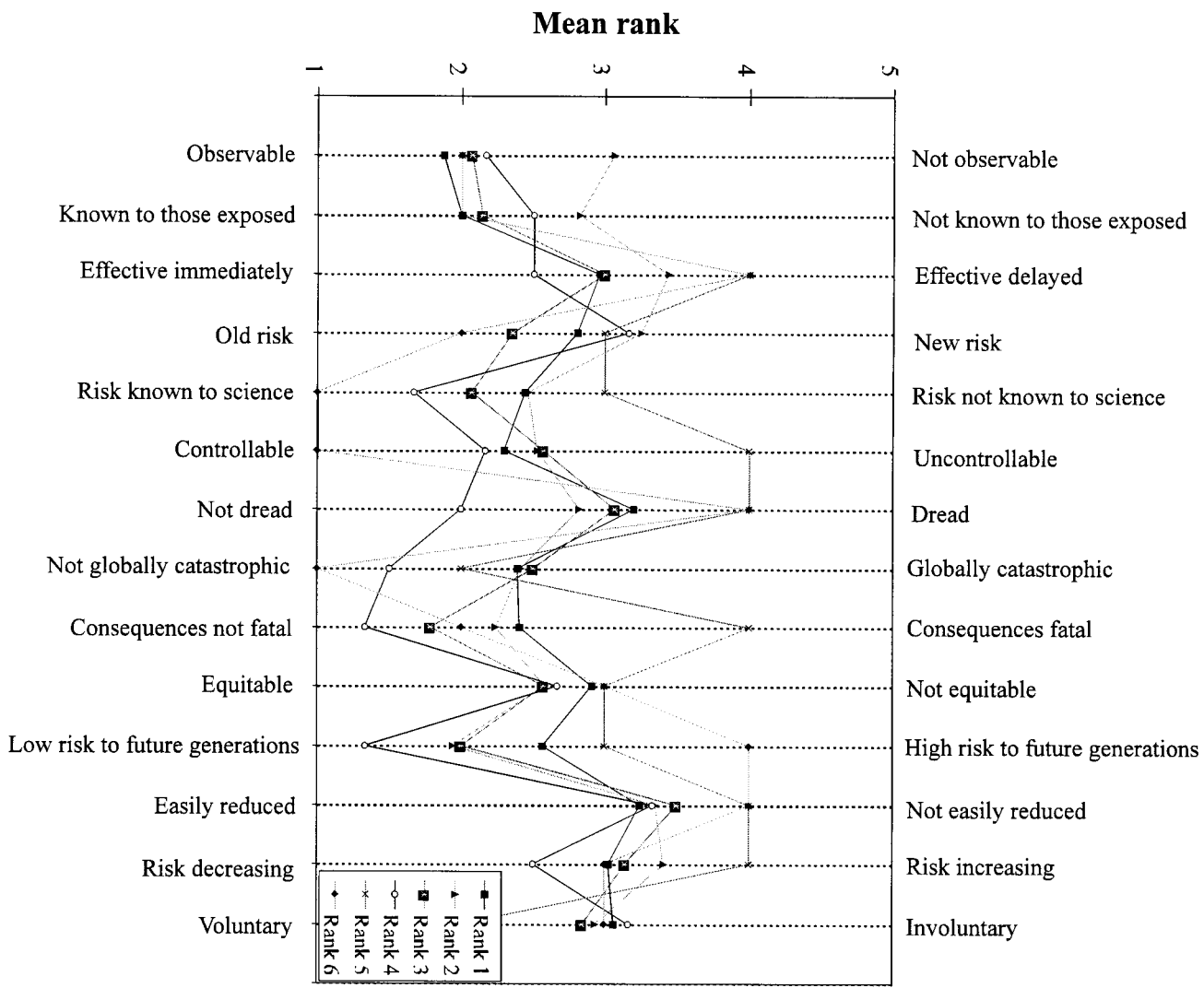


Figure D1 *A summary of the FINANCIAL risk's characteristics*

Table D2: The means and sample sizes for the characteristics of **Technical** risks (for questions 50-57)

TECHNICAL		Characteristics (** see below)													
MEANS	a)	b)	c)	d)	e)	f)	g)	h)	i)	j)	k)	l)	m)	n)	
Rank 1	1.86	2.36	2.68	3.05	2.27	2.14	2.90	2.18	3.32	2.63	2.19	2.95	2.41	3.14	
Rank 2	1.97	2.26	2.91	2.91	2.38	2.32	2.72	2.03	2.68	2.71	2.71	3.03	3.00	2.94	
Rank 3	2.19	2.62	2.77	3.42	2.32	2.73	3.04	2.38	3.24	3.08	2.72	3.04	2.92	3.09	
Rank 4	2.54	2.46	3.23	3.00	2.38	2.46	2.82	2.08	2.69	3.00	2.38	2.62	3.31	3.46	
Rank 5	2.83	2.83	2.83	3.00	2.17	2.33	4.33	3.00	3.17	3.00	1.80	2.50	2.33	2.75	
Rank 6	2.33	4.00	2.67	3.00	3.00	3.00	4.00	2.33	3.00	3.67	2.33	4.00	3.00	3.33	
Construction	2.17	2.51	2.97	3.11	2.48	2.47	2.90	2.35	2.86	2.98	2.74	3.01	3.00	3.20	
Oil	2.17	2.38	2.69	3.25	2.21	2.07	2.82	2.07	3.45	2.81	2.07	2.62	2.55	3.00	
Overall	2.17	2.47	2.89	3.15	2.40	2.35	2.88	2.26	3.03	2.93	2.54	2.90	2.87	3.14	
SAMPLE SIZES															
Rank 1	22	22	22	22	22	22	21	22	22	19	21	22	22	21	
Rank 2	34	34	34	33	34	34	32	34	34	31	34	34	34	34	
Rank 3	26	26	26	24	25	26	24	24	25	24	25	26	25	22	
Rank 4	13	13	13	13	13	13	11	13	13	11	13	13	13	13	
Rank 5	6	6	6	4	6	6	3	4	6	4	5	6	6	4	
Rank 6	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
Construction	70	70	70	66	69	70	61	66	69	61	68	70	69	64	
Oil	29	29	29	28	29	29	28	29	29	26	28	29	29	28	
Overall	99	99	99	94	98	99	89	95	98	87	96	99	98	92	

For the characteristics mentioned below the first named one of each pair is rank, or number, 1 on the ranking system and the second is at rank 5

- ** Characteristics: a) Observable - Not observable b) Known to those exposed - Not known to those exposed c) Effective immediately - Effective delayed
d) Old risk - New risk e) Risk known to science - Risk not known to science f) Controllable - Uncontrollable
g) Not dread - Dread h) Not globally catastrophic - Globally catastrophic i) Consequences not fatal - Consequences fatal
j) Equitable - Not equitable k) Low risk to future generations - High risk to future generations
l) Easily reduced - Not easily reduced m) Risk decreasing - Risk increasing n) Voluntary - Involuntary.

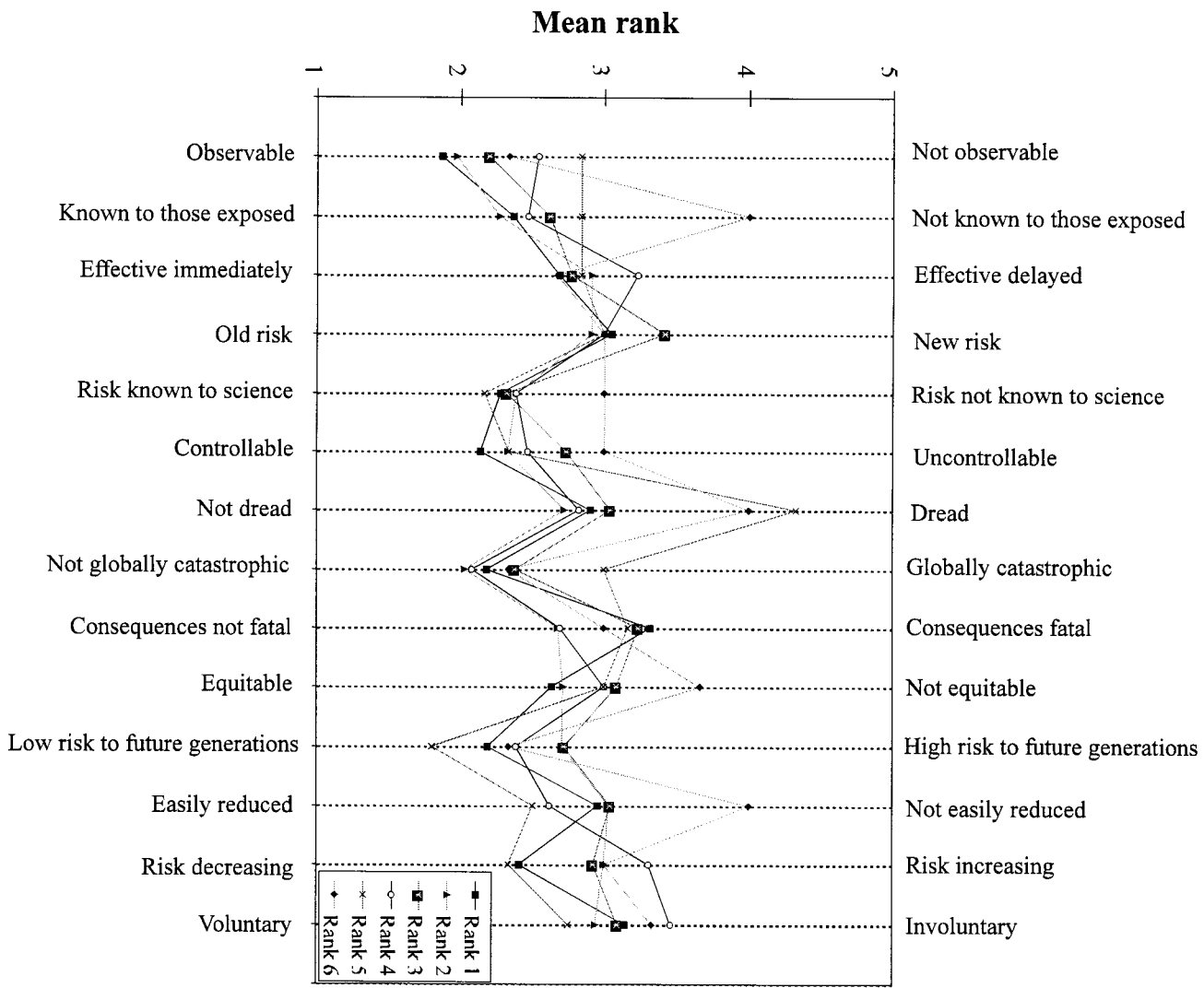


Figure D2 A summary of the **TECHNICAL** risk's characteristics

Table D3: The means and sample sizes for the characteristics of **Operational** risks (for questions 50-57)

OPERATIONAL	Characteristics (** see below)													
MEANS	a)	b)	c)	d)	e)	f)	g)	h)	i)	j)	k)	l)	m)	n)
Rank 1	1.83	2.42	2.25	2.58	1.50	2.17	2.90	1.08	3.58	2.70	1.92	2.83	2.58	3.25
Rank 2	2.00	2.09	2.50	2.86	2.23	2.14	2.84	2.48	2.33	2.75	2.45	2.82	2.73	2.95
Rank 3	2.04	2.21	2.46	2.71	1.96	2.25	2.77	2.04	2.38	2.91	2.33	2.96	2.91	3.00
Rank 4	1.89	2.18	2.46	2.88	2.39	2.14	2.79	2.33	2.50	3.17	1.96	2.79	2.81	3.15
Rank 5	2.40	2.90	2.70	2.70	2.20	2.40	3.25	2.10	2.30	3.30	2.40	3.20	3.10	3.50
Rank 6	2.50	2.50	3.00	3.00	2.00	2.50	2.50	2.50	2.75	3.00	2.75	3.50	3.25	3.00
Construction	2.00	2.18	2.57	2.89	2.19	2.21	2.68	2.36	2.51	2.92	2.38	2.87	2.90	3.11
Oil	2.20	2.40	2.24	2.72	2.04	1.92	2.92	1.72	2.76	3.32	1.84	2.80	2.75	3.30
Overall	2.05	2.24	2.48	2.85	2.15	2.13	2.75	2.19	2.58	3.02	2.23	2.85	2.86	3.16
SAMPLE SIZES														
Rank 1	12	12	12	12	12	12	10	12	12	10	12	12	12	12
Rank 2	22	22	22	22	22	22	19	21	21	20	20	22	22	19
Rank 3	24	24	24	24	24	24	22	24	24	22	24	24	23	23
Rank 4	28	28	28	26	28	28	28	27	28	24	28	28	27	26
Rank 5	10	10	10	10	10	10	8	10	10	10	10	10	10	10
Rank 6	4	4	4	4	4	4	4	4	4	3	4	4	4	3
Construction	68	68	68	66	68	68	60	66	67	60	66	68	67	63
Oil	25	25	25	25	25	25	24	25	25	22	25	25	24	23
Overall	93	93	93	91	93	93	84	91	92	82	91	93	91	86

For the characteristics mentioned below the first named one of each pair is rank, or number, 1 on the ranking system and the second is at rank 5

- ** Characteristics: a) Observable - Not observable b) Known to those exposed - Not known to those exposed c) Effective immediately - Effective delayed
d) Old risk - New risk e) Risk known to science - Risk not known to science f) Controllable - Uncontrollable
g) Not dread - Dread h) Not globally catastrophic - Globally catastrophic i) Consequences not fatal - Consequences fatal
j) Equitable - Not equitable k) Low risk to future generations - High risk to future generations
l) Easily reduced - Not easily reduced m) Risk decreasing - Risk increasing n) Voluntary - Involuntary.

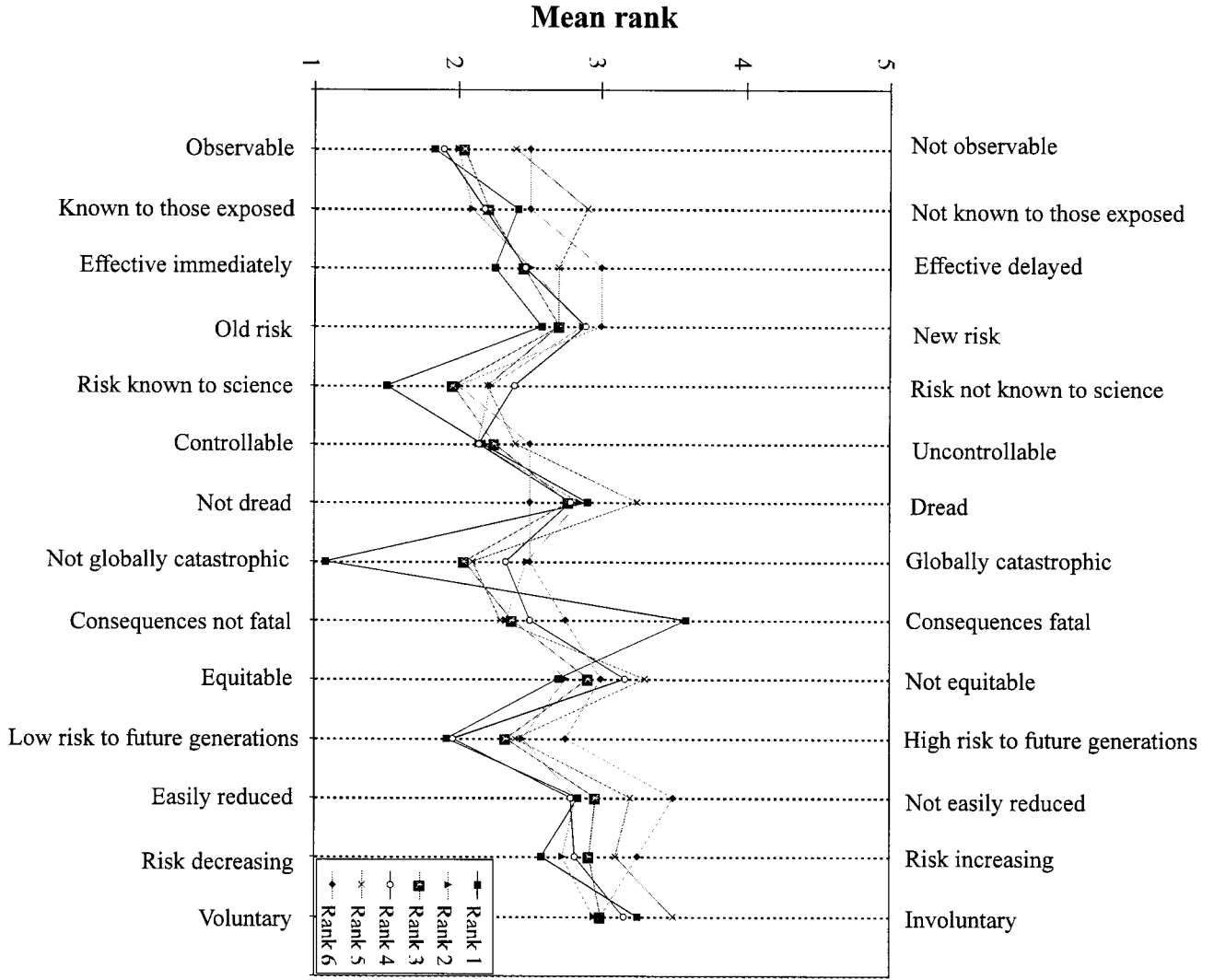


Figure D3 A summary of the OPERATIONAL risk's characteristics

Table D4: *The means and sample sizes for the characteristics of Time risks (for questions 50-57)*

TIME	Characteristics (** see below)													
MEANS	a)	b)	c)	d)	e)	f)	g)	h)	i)	j)	k)	l)	m)	n)
Rank 1	2.17	3.00	3.00	3.67	2.33	2.83	2.67	2.67	3.00	2.67	2.83	3.17	3.33	3.50
Rank 2	2.04	2.15	2.71	2.78	2.32	2.27	3.30	2.12	1.88	2.86	1.88	3.24	3.29	3.18
Rank 3	1.90	1.97	1.93	2.50	2.14	2.17	2.62	2.07	2.07	3.00	1.90	2.97	3.20	3.11
Rank 4	1.44	1.88	2.25	2.75	2.44	2.19	2.69	2.13	2.13	2.88	2.40	3.13	3.00	3.00
Rank 5	2.30	2.15	3.00	2.55	2.32	2.15	2.63	2.00	2.15	3.06	2.10	3.35	3.11	3.28
Rank 6	2.00	2.40	2.40	2.40	2.60	2.20	2.80	1.60	1.80	2.60	2.20	1.80	2.80	3.00
Construction	1.96	1.99	2.36	2.83	2.39	2.22	2.78	2.28	2.20	2.80	2.17	3.19	3.26	3.15
Oil	1.64	1.82	2.44	2.22	1.96	2.11	2.84	1.61	1.39	3.08	1.50	2.70	2.85	3.12
Overall	1.86	1.94	2.39	2.64	2.26	2.19	2.80	2.08	1.96	2.88	1.97	3.05	3.14	3.14
SAMPLE SIZES														
Rank 1	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Rank 2	26	26	24	23	25	26	23	25	26	22	26	25	24	22
Rank 3	30	30	30	28	28	30	26	30	30	26	30	30	30	28
Rank 4	16	16	16	16	16	16	13	15	15	16	15	16	16	15
Rank 5	20	20	20	20	19	20	19	20	20	18	20	20	19	18
Rank 6	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Construction	67	67	66	63	64	67	59	65	66	60	66	67	66	61
Oil	28	28	27	27	27	28	25	28	28	25	28	27	26	25
Overall	95	95	93	90	91	95	84	93	94	85	94	94	92	86

For the characteristics mentioned below the first named one of each pair is rank, or number, 1 on the ranking system and the second is at rank 5

- ** Characteristics: a) Observable - Not observable b) Known to those exposed - Not known to those exposed c) Effective immediately - Effective delayed
d) Old risk - New risk e) Risk known to science - Risk not known to science f) Controllable - Uncontrollable
g) Not dread - Dread h) Not globally catastrophic - Globally catastrophic i) Consequences not fatal - Consequences fatal
j) Equitable - Not equitable k) Low risk to future generations - High risk to future generations
l) Easily reduced - Not easily reduced m) Risk decreasing - Risk increasing n) Voluntary - Involuntary.

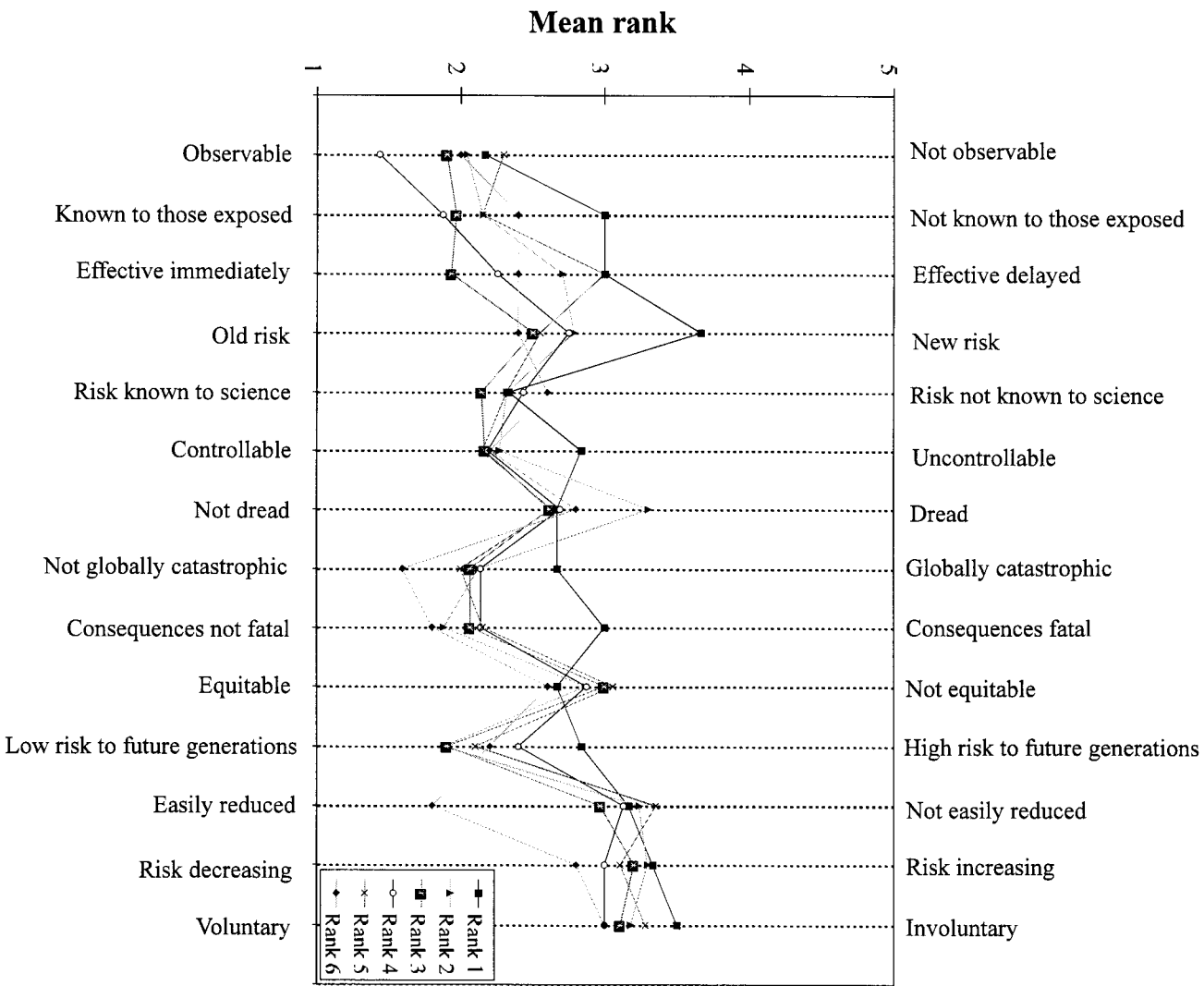


Figure D4 *A summary of the **TIME** risk's characteristics*

Table D5: The means and sample sizes for the characteristics of **Environmental** risks (for questions 50-57)

ENVIRONMENTAL	Characteristics (** see below)														
	MEANS	a)	b)	c)	d)	e)	f)	g)	h)	i)	j)	k)	l)	m)	n)
Rank 1	3.25	2.75	3.50	3.25	2.67	2.50	2.00	2.75	4.00	3.00	2.25	3.33	3.00	3.00	
Rank 2	2.40	2.60	2.87	3.29	1.79	2.00	2.64	2.67	2.80	3.57	2.60	3.00	2.53	3.15	
Rank 3	3.14	3.50	3.43	3.21	2.50	2.54	3.82	2.50	2.93	3.45	3.14	3.31	3.31	3.69	
Rank 4	2.71	2.88	3.47	2.87	2.76	2.47	3.64	3.27	3.29	3.53	3.41	3.41	2.94	3.27	
Rank 5	2.63	2.93	3.38	3.49	2.53	2.68	3.53	3.15	3.38	3.46	3.30	3.46	3.64	3.42	
Rank 6	2.63	3.00	3.88	3.75	3.25	2.88	4.00	3.25	3.13	3.43	4.13	3.63	3.71	3.43	
Construction	2.84	3.27	3.63	3.38	2.73	2.76	3.44	3.03	3.33	3.49	3.29	3.38	3.40	3.28	
Oil	2.10	2.20	2.80	3.10	1.93	1.90	3.50	2.77	2.73	3.50	3.13	3.28	2.89	3.63	
Overall	2.60	2.92	3.37	3.29	2.47	2.49	3.46	2.94	3.14	3.49	3.24	3.34	3.24	3.39	
SAMPLE SIZES															
Rank 1	4	4	4	4	3	4	2	4	4	2	4	3	4	3	
Rank 2	15	15	15	14	14	15	14	15	15	14	15	15	15	13	
Rank 3	14	14	14	14	14	13	11	14	14	11	14	13	13	13	
Rank 4	17	17	17	15	17	17	14	15	17	15	17	17	17	15	
Rank 5	40	40	40	39	40	40	38	39	40	35	40	39	39	36	
Rank 6	8	8	8	8	8	8	7	8	8	7	8	8	7	7	
Construction	63	63	63	60	63	63	55	60	63	53	63	61	62	57	
Oil	31	31	31	30	30	30	28	31	31	28	31	30	29	27	
Overall	94	94	94	90	93	93	83	91	94	81	94	91	91	84	

For the characteristics mentioned below the first named one of each pair is rank, or number, 1 on the ranking system and the second is at rank 5

- ** Characteristics: a) Observable - Not observable b) Known to those exposed - Not known to those exposed c) Effective immediately - Effective delayed
d) Old risk - New risk e) Risk known to science - Risk not known to science f) Controllable - Uncontrollable
g) Not dread - Dread h) Not globally catastrophic - Globally catastrophic i) Consequences not fatal - Consequences fatal
j) Equitable - Not equitable k) Low risk to future generations - High risk to future generations
l) Easily reduced - Not easily reduced m) Risk decreasing - Risk increasing n) Voluntary - Involuntary.

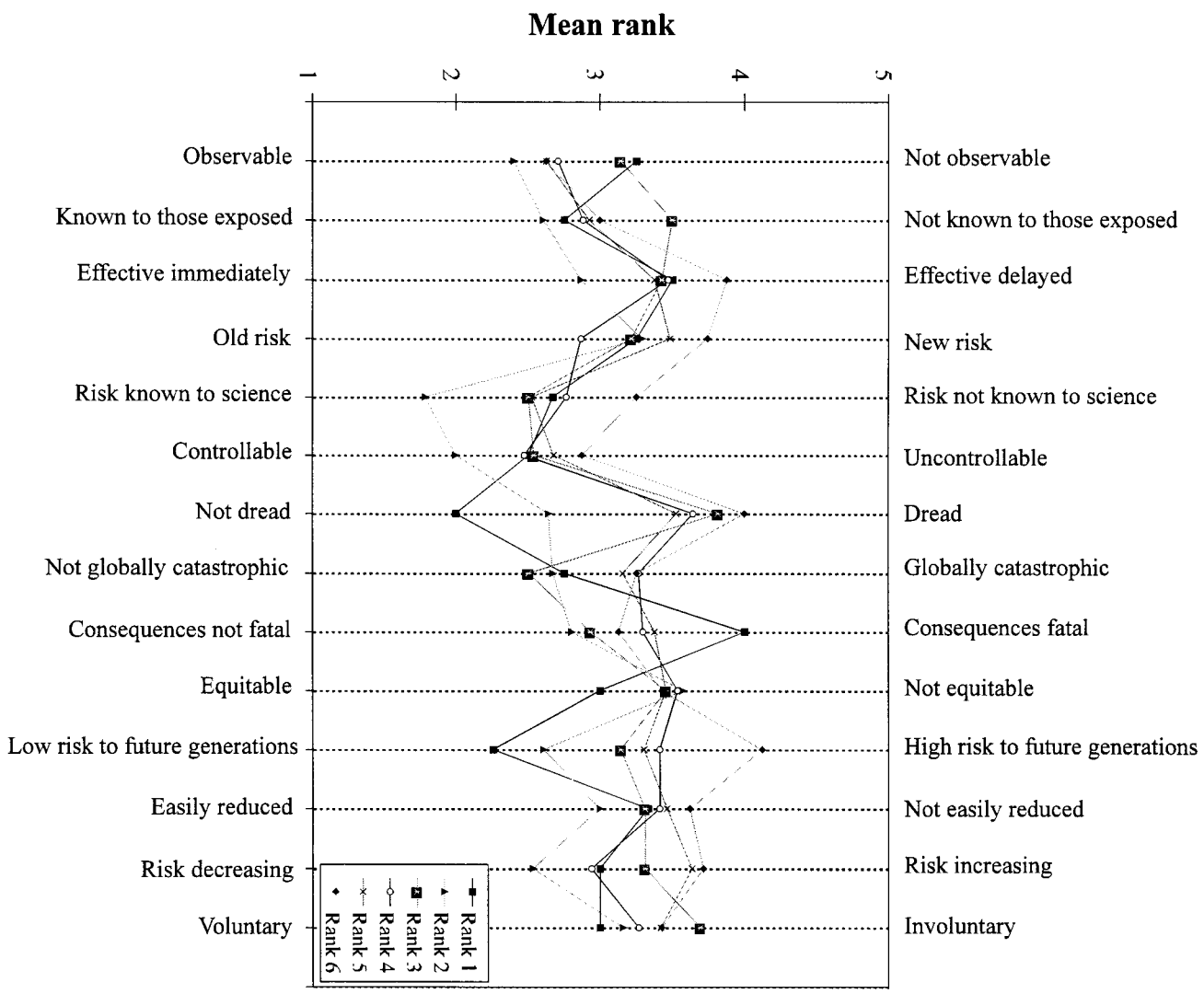


Figure D5 A summary of the **ENVIRONMENTAL** risk's characteristics .

Table D6: The means and sample sizes for the characteristics of **Political** risks (for questions 50-57)

POLITICAL		Characteristics (** see below)													
MEANS	a)	b)	c)	d)	e)	f)	g)	h)	i)	j)	k)	l)	m)	n)	
Rank 1	3.00	4.50	3.00	3.00	2.00	1.50	4.00	1.00	1.00	4.00	1.00	4.00	3.00	4.00	
Rank 2	2.00	2.00	4.00	3.00	4.00	5.00	3.00	3.00	3.00	4.00	4.00	4.00	4.00	5.00	
Rank 3	5.00	3.50	4.50	3.00	5.00	4.00	4.50	1.50	1.00	4.00	1.00	4.50	4.00	2.00	
Rank 4	3.57	3.43	3.86	2.71	2.71	3.57	3.29	2.57	1.86	3.60	2.67	3.67	2.83	3.20	
Rank 5	2.80	3.10	3.30	3.30	2.70	3.90	3.30	2.00	2.10	3.33	2.80	3.40	3.30	3.50	
Rank 6	3.32	3.29	3.43	3.07	3.48	3.84	3.35	2.42	2.27	3.21	2.79	3.86	3.44	3.51	
Construction	3.41	3.36	3.43	3.13	3.58	3.80	3.46	2.47	2.36	3.34	2.90	3.81	3.50	3.52	
Oil	3.04	3.16	3.44	2.76	2.96	3.80	3.32	2.04	1.72	3.23	2.17	3.79	3.17	3.43	
Overall	3.30	3.30	3.43	3.01	3.39	3.80	3.42	2.34	2.17	3.31	2.68	3.80	3.40	3.49	
SAMPLE SIZES															
Rank 1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Rank 2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Rank 3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Rank 4	7	7	7	7	7	7	7	7	7	5	6	6	6	5	
Rank 5	10	10	10	10	10	10	10	10	10	9	10	10	10	10	
Rank 6	63	63	63	60	60	61	57	60	63	58	63	63	63	59	
Construction	58	58	58	55	55	56	52	55	58	53	58	58	58	54	
Oil	25	25	25	25	25	25	25	25	25	22	24	24	24	23	
Overall	83	83	83	80	80	81	77	80	83	75	82	82	82	77	

For the characteristics mentioned below the first named one of each pair is rank, or number, 1 on the ranking system and the second is at rank 5

- ** Characteristics: a) Observable - Not observable b) Known to those exposed - Not known to those exposed c) Effective immediately - Effective delayed
d) Old risk - New risk e) Risk known to science - Risk not known to science f) Controllable - Uncontrollable
g) Not dread - Dread h) Not globally catastrophic - Globally catastrophic i) Consequences not fatal - Consequences fatal
j) Equitable - Not equitable k) Low risk to future generations - High risk to future generations
l) Easily reduced - Not easily reduced m) Risk decreasing - Risk increasing n) Voluntary - Involuntary.

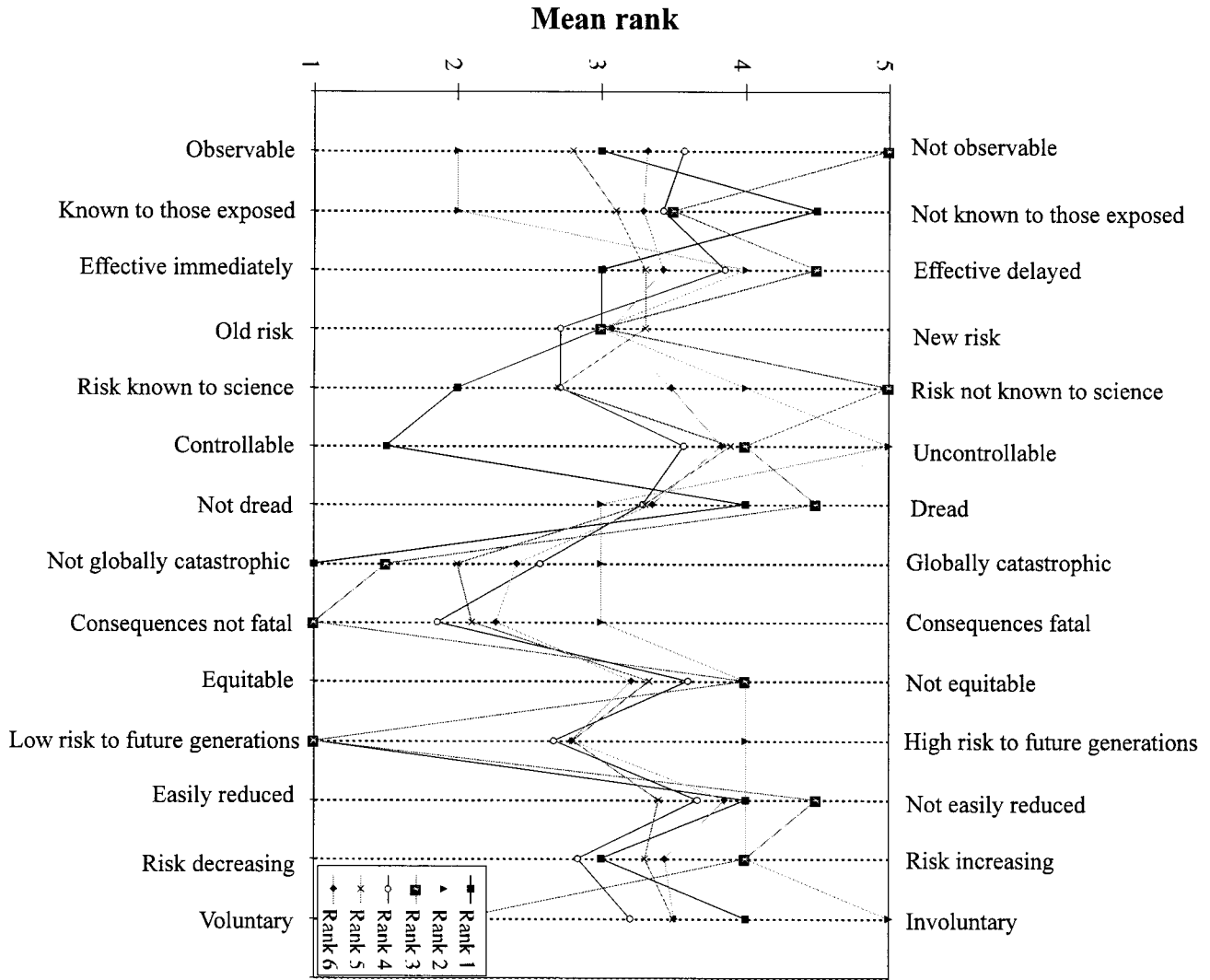


Figure D6 *A summary of the **POLITICAL** risk's characteristics*

Appendix E

Mean values and sample size tables for the two industries in questions 50-57

Table E1: The means and sample sizes for the characteristics of the six risk types for the **Construction** Industry (for questions 50-57)

CONSTRUCTION		Characteristics (** see below)													
MEANS	a)	b)	c)	d)	e)	f)	g)	h)	i)	j)	k)	l)	m)	n)	
Environmental	2.84	3.27	3.63	3.38	2.73	2.76	3.44	3.03	3.33	3.49	3.29	3.38	3.40	3.28	
Financial	1.99	2.19	3.07	2.70	2.46	2.16	3.18	2.43	2.27	2.82	2.49	3.19	3.19	3.10	
Operational	2.00	2.18	2.57	2.89	2.19	2.21	2.68	2.36	2.51	2.92	2.38	2.87	2.90	3.11	
Political	3.41	3.36	3.43	3.13	3.58	3.80	3.46	2.47	2.36	3.34	2.90	3.81	3.50	3.52	
Technical	2.17	2.51	2.97	3.11	2.48	2.47	2.90	2.35	2.86	2.98	2.74	3.01	3.00	3.20	
Time	1.96	1.99	2.36	2.83	2.39	2.22	2.78	2.28	2.20	2.80	2.17	3.19	3.26	3.15	
SAMPLE SIZES															
Environmental	63	63	63	60	63	63	55	60	63	53	63	61	62	57	
Financial	75	75	73	71	70	73	66	72	74	67	72	72	72	70	
Operational	68	68	68	66	68	68	60	66	67	60	66	68	67	63	
Political	58	58	58	55	55	56	52	55	58	53	58	58	58	54	
Technical	70	70	70	66	69	70	61	66	69	61	68	70	69	64	
Time	67	67	66	63	64	67	59	65	66	60	66	67	66	61	

For the characteristics mentioned below the first named one of each pair is rank, or number, 1 on the ranking system and the second is at rank 5

- ** Characteristics: a) Observable - Not observable b) Known to those exposed - Not known to those exposed c) Effective immediately - Effective delayed
d) Old risk - New risk e) Risk known to science - Risk not known to science f) Controllable - Uncontrollable
g) Not dread - Dread h) Not globally catastrophic - Globally catastrophic i) Consequences not fatal - Consequences fatal
j) Equitable - Not equitable k) Low risk to future generations - High risk to future generations
l) Easily reduced - Not easily reduced m) Risk decreasing - Risk increasing n) Voluntary - Involuntary.

Table E2: *The means and sample sizes for the characteristics of the six risk types for the Oil Industry (for questions 50-57)*

OIL	Characteristics (** see below)													
MEANS	a)	b)	c)	d)	e)	f)	g)	h)	i)	j)	k)	l)	m)	n)
Environmental	2.10	2.20	2.80	3.10	1.93	1.90	3.50	2.77	2.73	3.50	3.13	3.28	2.89	3.63
Financial	2.07	2.03	3.07	3.15	2.00	2.45	2.60	2.00	1.93	2.96	2.04	3.36	2.68	3.00
Operational	2.20	2.40	2.24	2.72	2.04	1.92	2.92	1.72	2.76	3.32	1.84	2.80	2.75	3.30
Political	3.04	3.16	3.44	2.76	2.96	3.80	3.32	2.04	1.72	3.23	2.17	3.79	3.17	3.43
Technical	2.17	2.38	2.69	3.25	2.21	2.07	2.82	2.07	3.45	2.81	2.07	2.62	2.55	3.00
Time	1.64	1.82	2.44	2.22	1.96	2.11	2.84	1.61	1.39	3.08	1.50	2.70	2.85	3.12
SAMPLE SIZES														
Environmental	31	31	31	30	30	30	28	31	31	28	31	30	29	27
Financial	29	29	28	26	27	29	25	28	29	25	28	28	28	25
Operational	25	25	25	25	25	25	24	25	25	22	25	25	24	23
Political	25	25	25	25	25	25	25	25	25	22	24	24	24	23
Technical	29	29	29	28	29	29	28	29	29	26	28	29	29	28
Time	28	28	27	27	27	28	25	28	28	25	28	27	26	25

For the characteristics mentioned below the first named one of each pair is rank, 1 on the ranking system and the second is at rank 5

- ** Characteristics: a) Observable - Not observable b) Known to those exposed - Not known to those exposed c) Effective immediately - Effective delayed
d) Old risk - New risk e) Risk known to science - Risk not known to science f) Controllable - Uncontrollable
g) Not dread - Dread h) Not globally catastrophic - Globally catastrophic i) Consequences not fatal - Consequences fatal
j) Equitable - Not equitable k) Low risk to future generations - High risk to future generations
l) Easily reduced - Not easily reduced m) Risk decreasing - Risk increasing n) Voluntary - Involuntary.

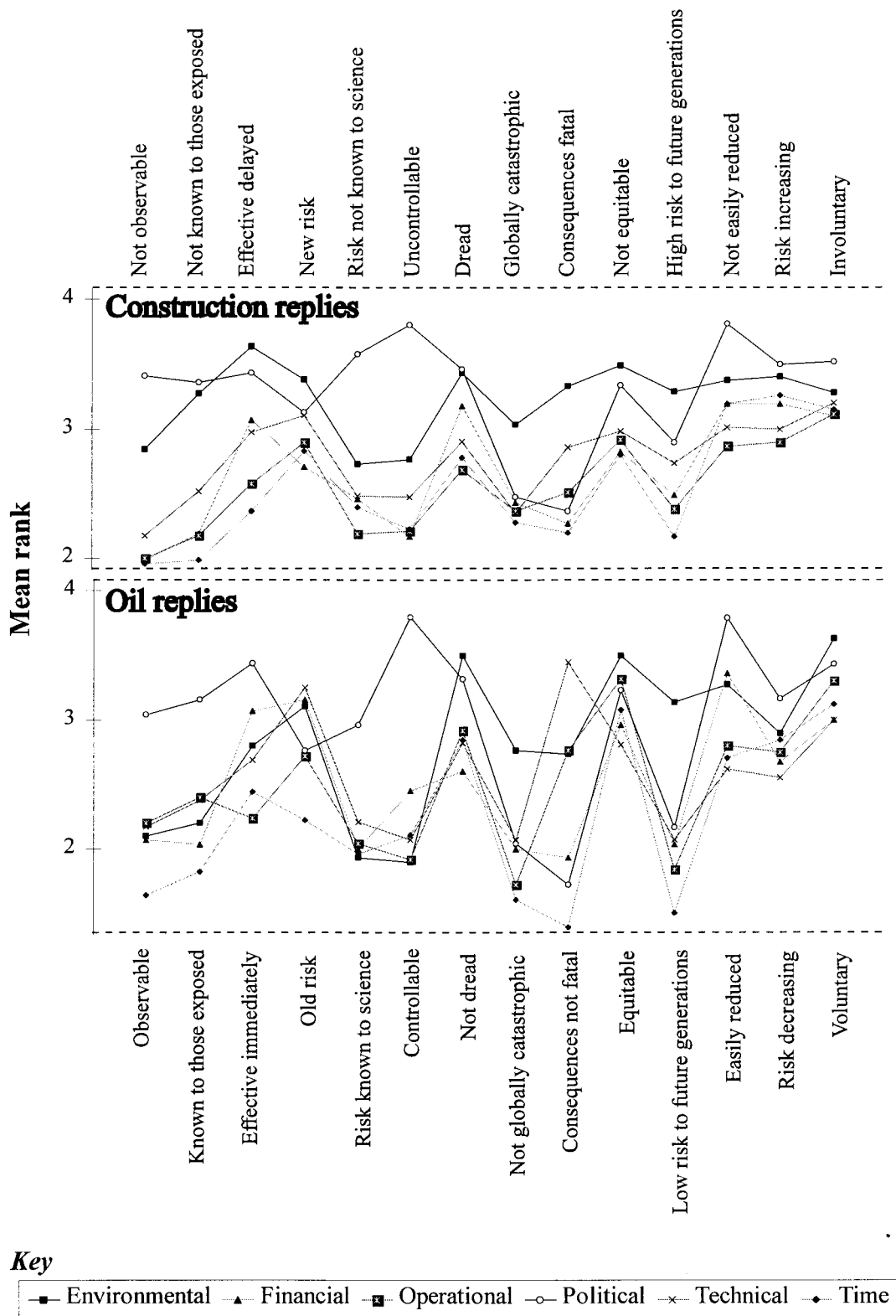


Figure E1 *A summary of the mean characteristics of the six types of risk within the CONSTRUCTION and the OIL industries*

Appendix F

'Overall' mean values and sample size table for questions 50-57

Table F1: The means and sample sizes for the characteristics of the six risk types from an 'Overall' perspective (for questions 50-57)

OVERALL	Characteristics (** see below)													
MEANS	a)	b)	c)	d)	e)	f)	g)	h)	i)	j)	k)	l)	m)	n)
Environmental	2.60	2.92	3.37	3.29	2.47	2.49	3.46	2.94	3.14	3.49	3.24	3.34	3.24	3.39
Financial	2.01	2.14	3.07	2.82	2.33	2.25	3.02	2.31	2.17	2.86	2.36	3.24	3.05	3.07
Operational	2.05	2.24	2.48	2.85	2.15	2.13	2.75	2.19	2.58	3.02	2.23	2.85	2.86	3.16
Political	3.30	3.30	3.43	3.01	3.39	3.80	3.42	2.34	2.17	3.31	2.68	3.80	3.40	3.49
Technical	2.17	2.47	2.89	3.15	2.40	2.35	2.88	2.26	3.03	2.93	2.54	2.90	2.87	3.14
Time	1.86	1.94	2.39	2.64	2.26	2.19	2.80	2.08	1.96	2.88	1.97	3.05	3.14	3.14
SAMPLE SIZES														
Environmental	94	94	94	90	93	93	83	91	94	81	94	91	91	84
Financial	104	104	101	97	97	102	91	100	103	92	100	100	100	95
Operational	93	93	93	91	93	93	84	91	92	82	91	93	91	86
Political	83	83	83	80	80	81	77	80	83	75	82	82	82	77
Technical	99	99	99	94	98	99	89	95	98	87	96	99	98	92
Time	95	95	93	90	91	95	84	93	94	85	94	94	92	86

For the characteristics mentioned below the first named one of each pair is rank, or number, 1 on the ranking system and the second is at rank 5

- ** Characteristics: a) Observable - Not observable b) Known to those exposed - Not known to those exposed c) Effective immediately - Effective delayed
d) Old risk - New risk e) Risk known to science - Risk not known to science f) Controllable - Uncontrollable
g) Not dread - Dread h) Not globally catastrophic - Globally catastrophic i) Consequences not fatal - Consequences fatal
j) Equitable - Not equitable k) Low risk to future generations - High risk to future generations
l) Easily reduced - Not easily reduced m) Risk decreasing - Risk increasing n) Voluntary - Involuntary.

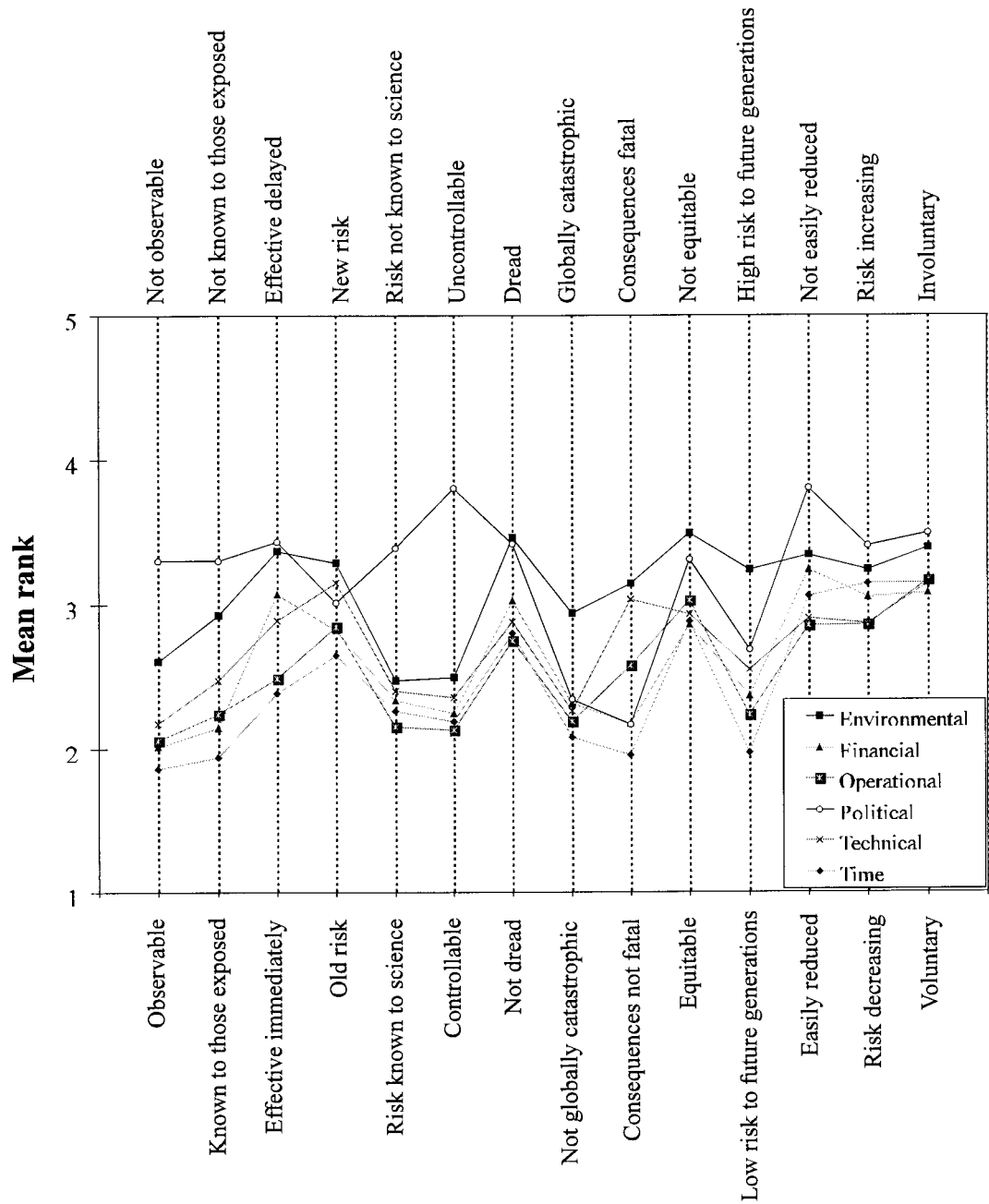


Figure F1 *A summary of the mean characteristics of the six types of risk looking from an **'OVERALL'** perspective*