

Consumer Perceptions of Financial Risk

by Stephen Diacon and Christine Ennew*

1. Introduction

Risk perceptions are important in an environment where individual actors have limited information and are rational only to a certain extent, and where there is no universally agreed understanding of how risk should be conceptualized or measured. The market for personal financial services provides a prime example of such an environment. This paper presents the results of a detailed investigation of the factors that characterize the perceived risk in various personal financial services, pensions, life insurance and banking products currently available to individual savers in the United Kingdom.

This analysis of financial risk perceptions is based on the well-known psychometric paradigm and uses psychometric scaling methods to produce quantitative measures of perceived risk and benefit.¹ The results reported here make a contribution to the burgeoning literature in behavioural finance, and show that individual perceptions of risk in personal financial services can be grouped into five main dimensions. These can be interpreted as: distrust of the product and/or provider; the seriousness of adverse consequences; volatility of return; poor knowledge and/or observability; and failure of regulation. Measures of perceived risk are then used to explore differences between various personal investment products available in the U.K., and to analyse the relationship between perceived risk and return.

2. Background

Most financial theories which try to explain the pricing and return on assets within financial markets use the representative investor paradigm which assumes rational, fully-informed and fully-diversified investors. The paradigm is popular because it is analytically convenient even though its explanatory power is questionable (Brennan, 1995). However, as the number of shares held by financial institutions increases, it becomes important to look at the ultimate beneficiaries of the institutional portfolios – the individual investor. The behaviour of many of these individual investors would be considered irrational for the representative investor on which such theory is based.

Conventional theory often assumes that financial risk is objective and measured by the volatility of yields, and that individuals trade off this risk with investment return in deciding

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¹ For a comprehensive review see Slovic (2000).

whether to purchase the product. However, Capon *et al.* (1996) in their analysis of how individuals make investment decisions for unit trusts (mutual funds) found that return and risk comprise only part of the decision process for individuals and that attributes other than return and risk are actively considered and weighed by investors. Similar results were obtained by MacGregor *et al.* (1999) in a study of financial advisers. The findings suggest that individuals may respond to perceived risk, rather than objective risk.

This analysis of financial risk perceptions uses the so-called psychometric paradigm pioneered by the Decision Research Group in Oregon (Slovic, 1972; Slovic *et al.* 1985). The research attempts to map the “personality” of financial hazards, and identify the pattern of perceived qualities that characterize particular hazards, and through this identify the relation between these characteristics and the perception of risk.

The paper proceeds as follows. The next section provides a brief review of literature on financial risk perceptions. The fourth section discusses the research methodology and sample characteristics, while the fifth provides a description of the various characteristics of financial risk perceptions emerging from such data. Section 6 then proceeds to explore the relationship between perceived risk and perceived return. The last section provides a brief discussion of the implications of these results.

3. Perceived risk for financial services

Definitions of perceived risk share one common feature: it is the characteristics of hazards, rather than some simple abstract concept such as risk, that people seem to evaluate. Pidgeon *et al.* (1992) state that risk perception involves people’s beliefs, attitudes, judgments and feelings, as well as the wider social or cultural values and dispositions. Risk perception is highly subjective and affected by societal influences and cognitive biases: thus a particular hazard will mean different things to different people and in different contexts. Risk perception is an idiosyncratic process of interpretation, a process of making sense of a complex world in order to plan, choose and act in that world.

MacGregor *et al.* (1999) comment that a number of qualitative factors can influence risk perceptions including the potential for large catastrophic losses, the unpredictability of outcomes, knowledge or familiarity and affective or emotional reactions. Many authors have followed the pioneering work of Fischhoff *et al.* (1978) in arguing that risk perceptions arise from a combination of uncertainty (i.e. lack of knowledge) and the seriousness of consequences.

There is little doubt that many of the potential consumers of financial services have little knowledge or understanding of the investment products on offer. Mitchell and Greatorex (1993) argue that the intangibility of such services increases the uncertainty consumers feel when considering purchase, so that the performance of services is often difficult or impossible to evaluate until after purchase (experience goods) or even at all (credence goods). This is highly apparent for financial services where it is impossible to judge the quality of financial services products before purchase. Even after purchasing and consuming the service, it is still difficult to assess the quality of the investment. The performance of financial products is also affected by external economic factors such as inflation, which affects the real return but is not within the control of the investment company. These problems increase the perceived riskiness of purchase for individual investors.

In a recent survey by the financial services regulator in the U.K., many respondents claimed to be confused by financial services products, particularly ones involving some

element of equity investment with individual discretion² (FSA, 2000). Similarly in a survey of 3386 individual U.S. mutual fund investors, Capon *et al.* (1996) classified barely 4 per cent as knowledgeable. The problem is not a lack of information – in general, quite the opposite: the financial services market is often characterized by too much information of a complex nature. The problem of information overload is compounded by a general apathy towards financial services: in a recent U.K. survey, the Association of Unit Trusts and Investment Funds found that almost two-thirds of individuals questioned were not interested in learning anything about financial subjects (AUTIF, 2000). Similarly, in the FSA (Financial Services Authority) survey, only one in ten respondents said that they would have liked more information, in spite of admitting their ignorance of many financial services products (FSA, 2000).

Thus many financial services contracts between the individual consumer and financial intermediary are characterized by a lack of knowledge, information or interest on the part of the individual. Under such circumstances, a key feature of a successful exchange between contracting parties is an element of trust, being the confidence that one party to an exchange will not exploit the other's vulnerabilities (Korczynski, 2000). Because consumers have an aversion to relationships with someone they distrust, Singh and Sirdeshmukh (2000) argue that trust (in the form of provider competence and benevolence) is a necessary condition for relational exchanges. Slovic (1993) suggests that pervasive distrust is strongly linked to the perception of risk in a particular activity: risk perceptions are exaggerated when vulnerable consumers believe that their lack of knowledge will be used against them. In such cases, distrust is vested not only in the firm or institution providing the product or service, but also in the experts, regulators and government officials who monitor the activity or market. Furthermore trust is difficult to gain, and is easily lost. In a questionnaire study of consumer trust, Kennedy *et al.* (2001) report that the level of trust vested by vulnerable buyers in opportunistic sellers depends on the competence of the salesperson, the use of low-pressure sales tactics, service quality, and the reputation of the seller.

The other key aspect of risk perceptions in financial services focuses on the adverse nature of consequences. Studies of behavioural finance and investor psychology (for example, see Bernstein, 1996; Kahneman and Riepe, 1998; Shefrin, 2000; Shiller, 2000) note that an individual's distaste for losses is more broadly based than a mere dislike of volatility (which is the key feature of classical risk-averse behaviour). Instead individual behaviour is frequently characterized by an aversion to losses relative to a reference point. Kahneman and Tversky (1979) define this as loss aversion, so that the "aggravation that one experiences in losing a sum of money appears to be greater than the pleasure associated with gaining the same amount".

4. Data collection and sample characteristics

In order to assess the characteristics of perceived risk and the extent of risk perceptions, the research uses data from a detailed questionnaire administered to a convenience sample of U.K. individual savers in 1997 and 1998 (using a sampling methodology similar to that adopted by Slovic *et al.*, 1985). Each respondent completed a series of questionnaires

² Out of 1081 respondents, the percentage of people finding financial services products "complicated" was as follows: savings accounts (9%), life assurance (22%), sickness insurance (25%), TESSA Tax Exempt Special Savings Account (30%), mortgage (31%), endowment (32%), cash ISA (37%), unit trust (41%), personal pension (41%), equity ISA (42%), investment bond (42%), gilts (43%), stocks and shares (48%).

covering a range of conventional personal financial services products such as individual personal pensions, equities, bank savings accounts, unit trusts (mutual funds), investment trusts, life insurance, personal equity plans, tax-exempt special savings accounts, etc.

Data on the perceptions of risk for savings products was obtained by circulating a questionnaire to members of six organizations based in different parts of England.³ Questionnaires and a covering letter were distributed to group members at meetings, and taken away to be completed at home. Individual questionnaires were then returned to the researchers by post after two to three weeks, and a donation was made to the relevant organization for each completed questionnaire. A total of 941 person/product responses was obtained from 123 individual investors.

For each of the personal financial services products, respondents were asked to scale the degree of risk associated with holding wealth in that particular form using 25 different seven-point semantic differential scales. As usual in such studies, a definition of "risk" was not provided in order to elicit people's own understandings of the concept. Respondents were asked about a variety of different aspects of financial risk (such as severity, immediacy of effect, degree of control, knowledge, etc.) and aspects of the products (such as importance of trust, tangibility, and quality). Respondents were also asked to scale products in terms of expected return, so that the perceived risk/return trade-off might be investigated. A copy of the relevant part of the questionnaire is included in Appendix 1.

The sample selection methodology, questions and analysis were based on the existing literature (particularly Slovic *et al.*, 1985, with additional questions from Greatorex and Mitchell, 1994). Questions were adapted for personal financial services products using feedback from a series of interviews with individuals who were asked "How would you describe the term 'risk' in connection with financial or savings products?" A trial version of the questionnaire was then piloted on a number of senior managers in the insurance and financial services industry.

Finally, respondents' personal characteristics such as age, status, lifestage, education, knowledge, proxies for income and personal wealth, and ownership of financial services products were recorded in order to investigate their correlation with risk perceptions. Almost 60 per cent of the participants were male and almost 80 per cent were married. The overall average age was 50.2 years. The fact that almost 60 per cent of respondents described their most recent job as either "high managerial" or "intermediate managerial" suggests that much of the sample is drawn from middle or higher social sectors of the community (which corresponds closely to those sectors which are most likely to purchase financial services products). An indication of the financial sophistication of respondents can be gleaned from their ownership of various savings products: all but one person owned a bank cheque account, two-thirds possessed a life insurance policy, 61 per cent had individual stocks and shares, and 22 per cent unit trust (mutual fund) units.⁴ A summary of the respondent characteristics is provided in Table 1.

Although the research covered a total of 20 personal savings products (including both

³ These groups included parents in a Leeds school PTA or Parent/Teacher Association ($n = 20$), members of a Leeds-based international exchange programme ($n = 17$), helpers in a local charity in Leicester ($n = 10$), workers at a Leicester junior school ($n = 13$), members of a Nottingham church ($n = 28$), and members of a South London choral society ($n = 35$).

⁴ The profile ownership of investment products matches quite closely that reported by the AB social grades in the 1999 survey conducted by the Financial Services Authority (FSA, 2000), where 33% had taken out a PEP Personal Equity Plan in the preceding five years, 28% a TESSA, and 13% a unit trust.

*Table 1:
Respondent Characteristics,
n = 123*

	Mean	Std Dev
Age (years)	50.2030	14.9009
Gender (Male = 1)	0.5919	0.4917
Children? (No = 1)	0.1658	0.3721
Own house (Yes = 1)	0.9245	0.2643
Marital status (Yes = 1)		
Single	9.883E-02	0.2986
Married	0.7970	0.4024
Divorced	7.333E-02	0.2608
Widowed	3.082E-02	0.1729
What is your current employment status? (Yes = 1)		
In paid employment	0.6100	0.4880
Not in paid employment	0.1073	0.3097
Retired	0.2827	0.4505
How would you describe your most recent job? (Yes = 1)		
High managerial	0.1541	0.3612
Intermediate managerial	0.4400	0.4966
Supervisory	0.2540	0.4355
Skilled manual	5.845E-02	0.2347
Unskilled manual	1.382E-02	0.1168
Do you hold any of these investment products? (Yes = 1)		
Bank cheque account	0.9915	9.186E-02
Building society deposit account	0.7556	0.4300
Life insurance policy	0.6695	0.4706
PEP	0.3868	0.4873
Personal pension	0.5037	0.5003
Individual stocks and shares	0.6100	0.4880
TESSA	0.4421	0.4969
Unit trust units	0.2210	0.4152

debt and equity investments), each individual respondent was asked to consider a randomly selected group of between seven and nine products. This is consistent with the approach of Slovic *et al.* (1985) and MacGregor *et al.* (1999), where each person performed only a subset of the whole task. The order of products, and the products given to members of each group, were randomized. A full listing of investment products utilized, along with a brief description, is provided in Appendix 2.

It is important to note that there was widespread media discussion of personal financial services in the U.K. before and during the data-collection period. Adverse criticisms of the financial services sector had abounded as a result of mis-selling scandals (particularly of personal pensions) and the principal regulator (then the Securities and Investments Board) had levied substantial fines on many of the leading financial services providers.

5. Investment product perceived risk and return

In an attempt to reduce the number of risk perception variables to a smaller set of independent factors (dealing with their intercorrelations) and to throw new light on the perception of financial risk, we undertake a factor analysis of the 25 risk-related items in the questionnaire.⁵ In order for factor analysis to be justified there must be a sufficient degree of inter-relatedness between the 25 variables.⁶ The factor analysis utilizes principal component analysis with the varimax rotation to derive five uncorrelated factors that together explain 59.5 per cent of the cumulative variance of the variables under analysis.⁷

Table 2 reports the loadings for the five factors on each of the 22 included risk perception variables. The loadings can be regarded as weights that reflect the unique variance each factor contributes to the original variables, and are the key to understanding the meaning of each factor. The factors can then be interpreted and given meaning by observing those variables (questions) that they are most closely related to. A detailed description of the five factors, and the variables with which they are most closely associated, is provided in Table 3.

The results suggest that individual perceptions of risk in personal financial services can be grouped into five orthogonal categories, which can be interpreted as: distrust of products and/or providers and salespersons; aversion to adverse consequences; aversion to volatility of investment returns; poor knowledge and/or observability; and failure of regulation.⁸ The greatest contribution to the rotated variance in the factor analysis is provided by Factor 1 which loads on many of those aspects identified by Singh and Sirdeshmukh (2000) and Kennedy *et al.* (2001) as epitomizing consumer distrust of products and providers. Factor 2 essentially measures the degree of loss aversion (Kahneman and Tversky, 1979), focusing as it does on the fear of markedly adverse consequences.

Table 4 demonstrates the perceived risk of the various investment products by reporting the factor scores for each of the five factors, averaged across the 20 product types. In all cases,

⁵ Omitting Question 1, which relates to ownership, and Question 22, which asks about benefit/return.

⁶ This is confirmed by Bartlett's test of sphericity (approx. chi-square 8122 with 231 degrees of freedom), which rejects the null hypothesis of no inter-correlations, and by a Kaiser-Meyer-Ohlin Measure of Sampling Adequacy figure of 0.908.

⁷ During the data reduction, the variables corresponding to Question 4 (risks are voluntary) and Question 21 (risks differ between brands) were omitted because of low communality, while Question 8 was omitted because of difficulties in interpreting its factor loadings.

⁸ The analysis was repeated for a split sample according to whether or not the survey respondent owned the investment product, and the same five factors were observed in both instances.

Table 2:
Factor analysis: rotated component matrix

	Component				
	1	2	3	4	5
Q2 Uncertainty	0.1287	0.2052	0.6631	0.1459	0.0637
Q3 Seriousness	0.4642	0.5351	0.1544	0.1785	-0.0836
Q5 Losses delayed	0.6452	-0.0513	0.1366	0.3520	-0.1006
Q6 Not known to investors	0.4677	-0.1023	0.0274	0.6483	0.0736
Q7 Not known to experts	0.0098	0.1667	0.0200	0.8051	0.1288
Q9 Lose all money	0.2524	0.4712	0.3921	0.3075	0.1794
Q10 Adverse effect on economy	0.0738	0.4736	0.0678	0.1533	-0.4670
Q11 Losses unobservable	0.4326	-0.1466	0.0498	0.5264	-0.2568
Q12 Complex to understand	0.5607	0.2923	0.3775	0.2926	0.0421
Q13 Unacceptable sales pressure	0.7356	0.2787	0.1174	0.0682	0.1668
Q14 Unsound advice	0.7120	0.2886	0.2153	0.0751	0.1905
Q15 Cash-in penalty	0.6859	0.3418	0.1240	0.0377	-0.0003
Q16 Hidden charges	0.7002	-0.0203	0.2020	0.1211	0.1381
Q17 Poor investor protection	0.2769	0.1164	0.1847	-0.0164	0.6626
Q18 No regulation	0.0526	0.2397	0.2360	0.2775	0.6585
Q19 Less than inflation	0.1307	-0.0033	0.7789	-0.0344	0.0575
Q20 Unethical	0.5154	0.2702	0.2724	-0.0408	0.2763
Q23 Monitoring time	0.0171	0.7059	0.2170	-0.0451	0.1539
Q24 Information prior to purchase	0.1866	0.7119	0.0116	-0.1949	0.1578
Q25 Ruin	0.2876	0.5880	0.2780	0.2465	0.0412
Q26 Return below expectations	0.2543	0.1296	0.7974	0.0019	0.0882
Q27 Value goes down	0.2098	0.3251	0.6030	0.0110	0.2459

Extraction method: Principal Component Analysis. Rotation method: Varimax with Kaiser Normalization. Rotation converged in 16 iterations.

a high positive score denotes a high level of perceived risk. In the case of Factor 1, the low-risk high-trust investment products include the accounts of banks and building societies, and also shares in blue-chip companies and privatized utilities, and most notably government premium bonds (national savings lottery tickets). In contrast, the high-risk low-trust products are personal pensions and endowment policies – emphasizing the public distrust and low reputation of life insurance and pensions companies and their commission-motivated salesforces.

Factor 2 focuses on the fear of adverse consequences. The products with a low level of loss aversion include premium bonds, bank and building-society accounts and endowment policies, while the high-risk ones include shares in blue-chip companies, property and venture capital trusts.

Table 3:
A description of the risk perception factor space

Factor 1: distrust of products/producers

Accounts for 18.3% of the cumulative (rotation) variance, and loads most heavily on those questions dealing with distrust of products and providers. The largest loadings relate to:

- Question 13 (Would you experience unacceptable sales pressure if you were considering this investment?)
- Question 14 (Is there a risk of receiving unsound and biased advice from those who sell or recommend this product?)
- Question 16 (How easy is it to observe the charges levied by the investment provider?)
- Question 15 (Is there a risk that you will be unable to cash in your investment at short notice without a substantial penalty?)
- Question 5 (To what extent are any losses from this product known immediately?)
- Question 12 (Do you think this investment product is easy or complex to understand?)
- Question 20 (Is there a risk that the company providing this product may behave unethically?)

Factor 2: adverse consequences

Accounts for 12.8% of the cumulative variance, and loads most heavily on those questions which highlight the extent of monitoring effort and the serious consequences of adverse investment performance:

- Question 24 (To what extent do individuals assess information on the product prior to purchase?)
- Question 23 (Do individual investors spend a lot of time monitoring this investment?)
- Question 25 (How great is the risk that you will be ruined as a result of this investment?)
- Question 3 (How serious could the consequences of owning this product be, should it prove unsatisfactory?)
- Question 10 (Could large losses or failure of this product have effects for the U.K. economy?)
- Question 9 (How great is the risk of losing all the money you put into this investment product?)

Factor 3: volatility of returns

(12.7% of cumulative variance) loads on those questions that highlight the “traditional” measure of financial risk associated with the volatility of the investment return:

- Question 26 (How great is the risk that the return from this investment might fall below expectations?)
- Question 19 (Is there a risk of losing money because the value of the investment may not rise in line with inflation?)
- Question 2 (How much uncertainty is there in terms of the expected return for this product?)
- Question 27 (How great is the risk that the return from this investment will go down as well as up?)

continued overleaf

*Table 3:
(continued)*

Factor 4: poor knowledge or information

(8.8% of cumulative variance) loads on those questions relating to information, that is, the knowledge of the investor and the observability of product performance:

- Question 7 (Are the risks from this investment product known to financial experts?)
- Question 6 (Would a typical investor know about the risks involved in this investment?)
- Question 11 (To what extent can any losses from this product be observed by individual investors?)

Factor 5: regulatory failure

Contributes 6.9% of the cumulative rotated variance, loads on the two questions concerned with the effectiveness of financial services regulation:

- Question 17 (To what extent will the government protect investors if something goes wrong with the investment?)
 - Question 18 (To what extent is the investment provider regulated to protect the individual's investments?)
-

The third main factor reflected the traditional concerns with volatility of returns: the high-risk investments are premium bonds and equity-based investments (such as shares in privatized utilities and investment trusts, and mutual funds). While investments with low perceived levels of volatility include national savings, guaranteed bonds, and bank and building-society accounts.

Factor 4 picks up those variables that focus on the degree of consumer understanding (although not necessarily of the respondent) about the quality and performance of financial services products. High-risk poorly understood products include personal pensions, endowment policies, investment bonds and individual savings accounts (ISAs). In general, these are non-transparent "packaged" products where the investment performance may depend on the (unobservable) decisions of company management. To a certain extent, this measure confirms the results of the survey conducted by the Financial Services Authority (FSA, 2000), although the respondents to our survey are rather more hesitant about endowments and ISAs.⁹

Finally Factor 5 deals with the failure of the government and the financial services regulator to protect investors. In general, investors perceive government savings products and the contracts issued by regulated financial institutions as involving a low risk of regulatory failure. On the other hand, equity investments such as shares and mutual funds (unit trusts) involve a higher risk.

Another aspect of interest is the perceived risk/return characteristics of the investment products. Table 5 reports the average perceived return for the twenty investment products

⁹ The comparatively high scoring for ISAs (in relation to FSA, 2000) is probably because individual savings accounts were only just being introduced at the time of our survey. The high scoring for endowments is almost certainly justified in view of the later reservations expressed by the Director General of the Financial Services Authority about with-profits endowments (Davies, 2001).

Table 4:
Mean factor scores for the perceived risk of investment products
(A high score denotes high perceived risk)

Factor 1: distrust of products and/or providers

Factor 2: adverse consequences

Factor 3: volatility of return

Factor 4: poor knowledge or information

Factor 5: regulatory failure

Product	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
1. Personal Equity Plan (PEP)	0.36	0.15	0.18	-0.02	0.30
2. Tax Exempt Special Savings Account (TESSA)	0.41	-0.23	-0.62	0.00	0.00
3. Bank Current Account	-0.58	-0.63	-0.80	-0.02	-0.23
4. Bank Deposit Account	-0.64	-0.56	-0.50	-0.17	0.05
5. Building Society Current Account	-0.65	-0.47	-0.40	-0.26	-0.02
6. Building Society Deposit Account	-0.56	-0.27	-0.51	-0.31	0.03
7. Premium Bonds	-1.16	-1.09	0.84	-0.19	-0.59
8. Personal Pension	1.13	0.13	0.05	0.31	-0.28
9. Shares in Blue Chip Company	-0.46	0.92	0.46	-0.08	0.07
10. Property	0.09	0.99	0.11	-0.10	0.45
11. Shares in Privatized Utilities	-0.45	0.57	0.61	-0.16	0.06
12. Endowment Policy	1.18	-0.47	0.04	0.36	0.03
13. National Savings	-0.32	0.09	-0.69	-0.06	-1.15
14. Investment Bonds	0.27	0.31	-0.09	0.13	0.12
15. Unit Trust Units	0.53	0.13	0.41	0.05	0.38
16. Building Society Share Account	-0.44	-0.21	-0.10	-0.14	-0.24
17. Guaranteed Bonds	0.38	0.10	-0.87	-0.30	0.00
18. Venture Capital Trust	0.33	0.74	0.85	0.21	0.42
19. Individual Savings Account (ISA)	-0.02	-0.31	0.18	0.45	-0.35
20. Investment Trust Shares	0.19	0.20	0.61	0.15	0.51

where the RETURN variable ranges from 6 (high) to 0 (low).¹⁰ The products with the highest perceived return are venture capital trusts (Product 18), tax-exempt special savings accounts (Product 2), and venture capital trusts (18), while the lowest are the bank and building-society current accounts (3 and 5) and premium bonds (7).

¹⁰ The RETURN variable is based on Question 22 ("How do you perceive the benefit/return on this product, relative to the return on a building-society current account?"), but was rescaled (on a 0-6 scale) so that a high value denotes a high perceived return (i.e. RETURN = 7 - Question 22).

*Table 5:
Mean perceived RETURN scores and excess return to volatility rankings for personal investment products*

Product	RETURN	RETURN rank	“Sharpe” rank
1. Personal Equity Plan (PEP)	4.077	7	8
2. Tax Exempt Special Savings Account	4.404	2	1
3. Bank Current Account	1.311	20	20
4. Bank Deposit Account	2.518	18	18
5. Building Society Current Account	2.944	17	17
6. Building Society Deposit Account	3.966	8=	3
7. Premium Bonds	1.736	19	19
8. Personal Pension	3.852	12	13
9. Shares in Blue Chip Company	4.298	6	4
10. Property	3.966	8=	12
11. Shares in Privatized Utilities	3.882	11	10
12. Endowment Policy	3.764	14	14
13. National Savings	3.357	16	16
14. Investment Bonds	3.900	10	11
15. Unit Trust Units	4.302	5	7
16. Building Society Share Account	3.792	13	9
17. Guaranteed Bonds	4.394	3	2
18. Venture Capital Trust	4.571	1	5
19. Individual Savings Account (ISA)	3.447	15	15
20. Investment Trust Shares	4.361	4	6

Notes:

- (1) The RETURN rank shows the ordering of investment products in terms of the average perceived return.
- (2) The “Sharpe” rank shows the ordering based on the excess return to volatility. This excess return was computed by dividing (average perceived return *less* the average perceived return on building society current account) by the weighted average of the normalized factor scores of Table 4, where the weights were proportional to the percentage of cumulative rotation variance of each factor in Table 3. Factor scores were normalized to the same mean and standard deviation (sd) as RETURN.

Figure 1 plots perceived return (RETURN) against a conglomerate perceived risk variable (RISK) computed as the weighted average normalized¹¹ factor scores of Table 4, where the weights were proportional to the percentage of cumulative rotation variance for each factor in Table 3. The scatter plot shows a clear upward-sloping but non-linear relationship between perceived risk and return. The investment products on the frontier in risk-return space, in terms of yielding the highest level of perceived return for any level of risk, would appear to be¹² premium bonds (7), building-society deposit accounts (6), tax-

¹¹ Factor scores were normalized to the same mean and sd as RETURN.

¹² In ascending order to return and risk.

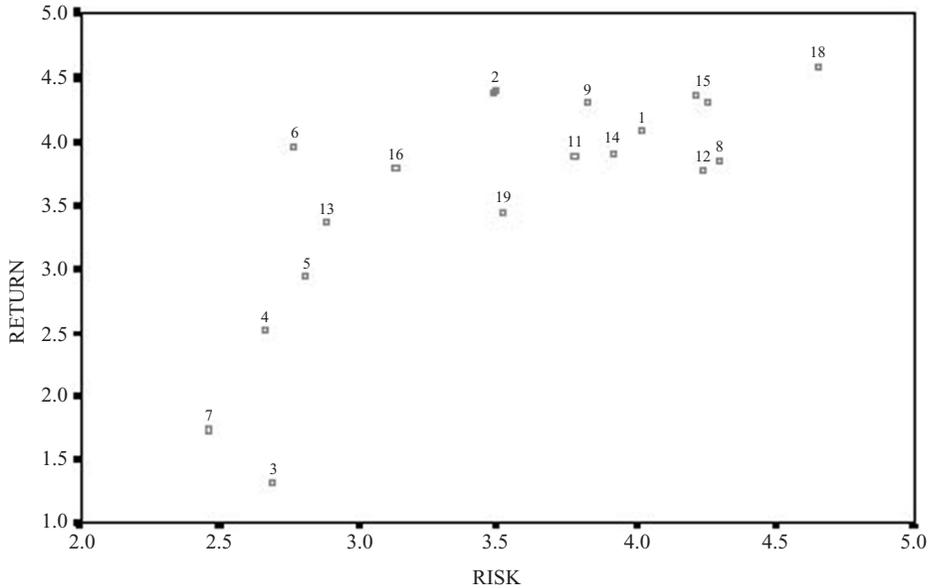


Figure 1: Perceived risk and return

exempt special savings accounts (2), and venture capital trusts (18). Although it may be inappropriate to borrow ideas from portfolio theory, Figure 1 suggests that individual investors might be able to construct any desired perceived return/risk profile by holding a portfolio of just these four investment products.

Table 5 also includes an indication of the rankings based on the RETURN variable and on a measure of the perceived excess return to volatility (termed the “Sharpe” ranking, after the well-known Sharpe Measure).¹³ The “Sharpe” rankings provide a comparison of perceived return after adjusting for perceived risk. The RETURN and Sharpe rankings are very similar, with four main exceptions. Two products move to significantly better rankings after adjusting for risk (building-society deposit accounts and building-society share accounts). Investors obviously perceive that building-society savings accounts offer good low-risk value for money. Conversely, two products fall in the rankings after adjusting for risk (venture capital trusts and property), indicating an element of consumer wariness about these equity investments.

6. Investors’ relationship between perceived risk and return

Several studies have looked specifically at the association between perceived risk and perceived benefits. Vlek and Stallen (1981) investigated the relationship between risk and

¹³ The excess return was computed by dividing (average perceived return less the average perceived return on building society current account) by the conglomerate RISK variable of Figure 1.

benefits by using personal interviews and showed that “acceptability” of activities was related more to benefits than risk, and that greater risk was accepted when there was greater benefit. Alhakami and Slovic (1994) used the results of a questionnaire survey to look at correlations between risk and benefit for 40 different items and found evidence for a robust inverse relationship between risk and benefits: if people perceived the benefits to be high, then they perceived the risk to be low. Alhakami and Slovic are unclear whether this relationship is a true relationship of people’s beliefs, or whether it is due to a confounding of risk and benefits in peoples’ minds. Experiments reported by Finucane *et al.* (2000) showed that the inverse relationship was likely to be due to a confounding due to a prior affective evaluation of items or products which had an impact on both perceived risk and return.

Alhakami and Slovic (1994) posited that the relationship between perceived risk and perceived benefits may depend on the individual’s general affective evaluation of the product. They argue that items or products towards which people had positive attitudes were viewed as having high benefit and low risk, whereas items towards which people had negative attitudes were viewed as having low benefits and high risks. In a survey of financial advisers and planners, MacGregor *et al.* (1999) suggest that investments with a high perceived return might be evaluated with a different conceptualization of risk than were investments with a low return.

The nature of the individuals’ risk/return relationship can be explored by investigating the association between the individual respondents’ perceived benefit (RETURN) and the various dimensions of perceived risk. Table 6 shows the results of an ordered probit regression¹⁴ of the return variable against the perceived risk factor scores (and their squares to allow for possible non-linear relationships) for the full sample of 941 person/products responses. Product dummy variables are included to pick up product-specific effects, omitting Product 5 (Building Society Current Account) to avoid perfect collinearity. The chi-squared [29] coefficient of 401.0 demonstrates an extremely high level of significance for the model as a whole.

The nature of the perceived risk/return relationship depends on the marginal impact of the risk variable. A positive coefficient implies that an increase in perceived risk is associated with a reduction in the probability of the lowest level of (perceived) return along with an increase in the probability of the highest level.

Table 6 shows that the risk/return relationship differs according to the nature of perceived risk. In the case of Factor 1 (“Distrust of Products and/or Providers”) the significantly positive coefficient on the squared term indicates a strong U-shaped function centred on a factor score of zero¹⁵ (which is also the mean for Factor 1). Factor 1 is the only aspect of risk perceptions to demonstrate this non-linear relationship. Thus for investments with below-average levels of consumer distrust (such as bank and building-society accounts, see Table 4), a decrease in risk/distrust is associated with an increase in perceived return,¹⁶ and this is consistent with the findings of Alhakami and Slovic (1994). However for investments with higher-than-average distrust levels, such as an endowment policy or personal pension, risk/distrust is positively associated with perceived return/benefit.

¹⁴ An ordered probit model is preferred to ordinary least squares because of the ordinal, non-spherical nature of the dependent variable.

¹⁵ Since the coefficient on the linear term Factor 1 was insignificant.

¹⁶ Singh and Sirdeshmukh (2000) also suggest that trusted providers are expected to deliver higher performance.

Table 6:
Ordered probit regression on RETURN

N = 941

Log likelihood -1429.9

Restricted likelihood -1630.4

Chi-squared [29] 401.0

Variable	Coefficient	S. E.	z	Signif.
Constant	1.228435	0.238374	5.153	0
<i>Perceived Risk Factor Scores</i>				
Factor 1	3.01E-03	4.65E-02	0.065	0.9483
Factor 2	0.16575	4.45E-02	3.723	0.0002
Factor 3	-6.28E-02	4.25E-02	-1.478	0.1395
Factor 4	-0.16441	3.75E-02	-4.382	0
Factor 5	-1.04E-02	3.73E-02	-0.278	0.7806
(Factor 1) ²	0.108361	2.59E-02	4.183	0
(Factor 2) ²	-3.20E-02	2.82E-02	-1.134	0.257
(Factor 3) ²	-1.79E-02	2.65E-02	-0.674	0.5
(Factor 4) ²	-1.69E-02	2.41E-02	-0.701	0.4832
(Factor 5) ²	-3.24E-03	2.15E-02	-0.151	0.8802
Product dummies as in Table 4 (Yes = 1)				
1	1.003346	0.286044	3.508	0.0005
2	1.350255	0.257653	5.241	0
3	-1.01472	0.240211	-4.224	0
4	-0.13685	0.246309	-0.556	0.5785
6	0.902801	0.287352	3.142	0.0017
7	-0.58063	0.25115	-2.312	0.0208
8	0.74102	0.272526	2.719	0.0065
9	1.130176	0.268585	4.208	0
10	0.826546	0.264828	3.121	0.0018
11	0.771219	0.301372	2.559	0.0105
12	0.768042	0.292051	2.63	0.0085
13	0.308399	0.360566	0.855	0.3924
14	0.833803	0.27196	3.066	0.0022
15	1.223594	0.281368	4.349	0
16	0.741548	0.332117	2.233	0.0256
17	1.228014	0.284852	4.311	0
18	1.534588	0.286552	5.355	0
19	0.630435	0.28816	2.188	0.0287
20	1.331139	0.315586	4.218	0

continued overleaf

Table 6:
continued

Variable	Coefficient	S. E.	z	Signif.
Threshold parameters for index				
Mu(1)	0.376518	5.86E-02	6.428	0
Mu(2)	0.714516	7.38E-02	9.688	0
Mu(3)	1.823348	9.02E-02	20.219	0
Mu(4)	2.569463	9.28E-02	27.696	0
Mu(5)	3.5248	0.100608	35.035	0

Further analysis confirms the findings of MacGregor *et al.* (1999) who find an inverse U-relationship between a conglomerate measure of perceived risk and a “return/risk” variable which is essentially a risk-adjusted return¹⁷ analogous to our Sharpe measure of Table 5. In a regression of our “Sharpe” measure against the factor scores and their squares, Factor 1 was the only squared score to have a significant (and negative) coefficient.¹⁸ In other words, our results suggest that any non-linear relationship between perceived risk and return arises from elements of consumer distrust in products and/or providers (which is embedded in conglomerate measures of perceived risk).

In the case of Factor 2 (“Adverse Consequences”) the relationship appears to be significantly positive and linear: a rise in risk is associated with an increase in perceived return. The position for Factor 3 (“Volatility of Return”) is interesting in that there does not appear to be any strong relationship between perceived benefit and risk, so that consumers do not associate higher variability with the need for a higher return. Indeed the coefficient of Factor 3 in Table 6 is negative¹⁹ indicating a mild degree of volatility preference. This is, of course, in complete contrast to the risk–return trade-off in the standard finance literature. These results suggest that the risk-taking behaviour identified in this survey conforms more closely with the precepts of Kahneman and Tversky’s Prospect Theory (*viz.* loss aversion and risk preference in the domain of losses) than with conventional expected utility theory.

For Factor 4 (“Poor Knowledge or Information”), the relationship between risk and return is linear and negative: in cases where little is known about the investment risk (*i.e.* high informational risk), individuals perceive the return to be poor. This result is consistent with the consumer’s distrust of investment providers, as risk perceptions are exaggerated when consumers believe that their lack of knowledge might be used against them. Finally there is no apparent relationship between perceived return and Factor 5 (“Regulatory Failure”).

¹⁷ The actual wording is “How good is the return ... relative to the degree of risk” (MacGregor *et al.*, 1999, table 2).

¹⁸ After omitting the other squared terms, the fitted model is $\text{Sharpe} = 28.8^* + 47.4^*(F1) - 33.7^*(F1)^2 + 4.9(F2) + 19.6(F3) - 75.4^*(F4) - 15.3(F5)$ where $R^2 = 0.71$ and * denotes significance at the 5% level ($n = 20$).

¹⁹ Although only significant with 14% significance.

7. Discussion and conclusion

This paper reports the results of a detailed investigation of the factors that characterize the perceived risk in various personal financial services, pensions, life insurance and banking products currently available to individual savers in the United Kingdom. Risk perception has a range of definitions which all share one common feature: people seem to evaluate the (multidimensional) characteristics of hazards, rather than some simple abstract concept such as variability. In order to assess the characteristics of perceived risk and the extent of risk perceptions, the research uses the methodology of the well-known “psychometric paradigm” pioneered by psychologists such as Paul Slovic.

The analysis of a detailed questionnaire circulated to individual investors in the U.K. seems to show that individual perceptions of risk in personal financial services can be grouped into five orthogonal categories or dimensions. These can be interpreted (in order of their importance in contributing to the rotated factor variance) as: distrust of the product and/or provider; the seriousness of adverse consequences; volatility of return; poor knowledge and/or observability; and failure of regulation.

The role of distrust in products and their providers (and salesforces) is an element of perceived risk that has not been much discussed in relation to financial services and investment products. However, Slovic (1993) analyses the parallel problems that can arise when there is public distrust of industry (in its role in creating societal risk) and in scientists (in their role as advisers and risk managers). Although expert investors may be able to construct their own portfolios of underlying assets, individuals usually need to rely on the financial services industry to produce investment products (whose performance then depends on the skill and efficiency of those producers). Furthermore, since many of those investment products are difficult to understand, individual investors are often reliant on expert financial advice to make the appropriate choice. Clearly investors will perceive high levels of risk if providers and/or financial advisers do not have a trustworthy reputation.

There are efficiency grounds for wishing to understand perceived risk in relation to financial and pensions products. One of the main arguments for the regulation of the marketing of financial products relates to the degree of risk and the vulnerability of the individual investor. It is desirable to ensure that the higher-risk products are subject to the most extensive regulation. However evidence from other industries suggests that regulators respond to perceived risk rather than actual risk. An understanding of the issues and problems relating to the regulation of personal financial services therefore requires improved knowledge of the perceived risks associated with financial products. The results of our analysis suggest a crucial role for the regulators of the personal financial services market in taking measures which can improve consumer trust in products and providers, and in ensuring some protection from serious adverse financial consequences.

Similarly, it is important for those who offer financial planning advice to have an accurate understanding of those factors that influence perceived risk. In the U.K., financial advisers are required to complete a detailed “fact find” questionnaire on behalf of their customers which usually contains questions which purport to measure the client’s tolerance to risk-taking.²⁰ Clearly it is vitally important that such questionnaires cover all possible dimensions of risk perception rather than simply focusing on aversion to volatility, for example.

²⁰ MacGregor *et al.* (1999) make the same point in relation to financial planning in the U.S.

An analysis of perceived risk and return also enables a comparison of the different types of personal financial services products. Our results suggest that consumers reveal an upward, but non-linear relationship between return and a conglomerate risk measure. Some investment products appear to be efficient in the sense that they produce the highest perceived return for any given level of risk (premium bonds, building-society deposit accounts, tax-exempt special savings accounts, and venture capital trusts). Many other products are clearly dominated by these “frontier” investments, and their providers (indeed industries) will need to take steps to increase perceived returns (or reduce perceived risks) if they are to be attractive to ordinary individual investors.

Finally, our results provide some insight into the continuing debate about the relationship between an individual’s perceived risk and perceived return. Although investors need to be compensated for some aspects of perceived risk (such as the possibility of adverse consequences and poor information) this does not apply to all dimensions of perceived risk. In particular there is little evidence that individual investors want compensation for volatility of returns.

Other authors have suggested that the perceived risk/return relationship does not increase monotonically, and we come to the same conclusion. Consumer distrust seems to play the key role in creating a non-linear relationship between perceived risk and return. Our results indicate that a (positive) risk—return trade-off is only revealed amongst those products with high levels of mistrust: such products need to yield a higher level of perceived return in order to compensate investors for the risk involved in entrusting their savings. On the other hand, products with low levels of mistrust appear to have a negative risk—return relationship: the more consumers trust a particular product, the higher the perceived return.

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Appendix 1: Questionnaire

Investment product: **Personal Equity Plan (PEP)**

Please answer *all* the following questions. Your opinions are valuable whether or not you own this product (and even if you know little or nothing about it). Please circle one of the numbers on the 1-to-7 scale to indicate your response.

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- | | | | |
|----|---|---------------|-----------------------------------|
| 1. | Do you own/have owned this product? | Yes [] | No [] |
| 2. | How much uncertainty is there in terms of the expected return for this product?
(No uncertainty) | 1 2 3 4 5 6 7 | (Very high uncertainty) |
| 3. | How serious could the consequences of owning this product be, should it prove unsatisfactory?
(Not at all serious) | 1 2 3 4 5 6 7 | (Very serious) |
| 4. | Do people using this investment product face the risks voluntarily?
(Risks are voluntary) | 1 2 3 4 5 6 7 | (Risks are involuntary) |
| 5. | To what extent are any losses from this product known immediately?
(Losses known immediately) | 1 2 3 4 5 6 7 | (Knowledge delayed substantially) |
| 6. | Would a typical investor know about the risks involved in this investment?
(Risks known precisely) | 1 2 3 4 5 6 7 | (Risks not known at all) |
| 7. | Are the risks from this investment product known to financial experts?
(Risks known precisely) | 1 2 3 4 5 6 7 | (Risks not known at all) |
| 8. | Could a typical investor control the risks involved in this investment?
(Full control) | 1 2 3 4 5 6 7 | (No control) |

- 9. How great is the risk of losing all the money you put into this investment product?
(No risk) 1 2 3 4 5 6 7 (Substantial risk)
- 10. Could large losses or failure of this product have effects for the UK economy?
(No effects on economy) 1 2 3 4 5 6 7 (Big effects on economy)
- 11. To what extent can any losses from this product be observed by individual investors?
(Losses observable) 1 2 3 4 5 6 7 (Losses not observable)
- 12. Do you think this investment product is easy or complex to understand?
(Very easy) 1 2 3 4 5 6 7 (Very complex)
- 13. Would you experience unacceptable sales pressure if you were considering this investment?
(No risk of pressure) 1 2 3 4 5 6 7 (High risk of Pressure)
- 14. Is there a risk of receiving unsound and biased advice from those who sell or recommend this product?
(No risk) 1 2 3 4 5 6 7 (High risk)
- 15. Is there a risk that you will be unable to cash in your investment at short notice without a substantial penalty?
(No risk) 1 2 3 4 5 6 7 (High risk)
- 16. How easy is it to observe the charges levied by the investment provider?
(Charges are clear) 1 2 3 4 5 6 7 (Charges are hidden)
- 17. To what extent will the government protect investors if something goes wrong with the investment?
(Full protection) 1 2 3 4 5 6 7 (No protection)
- 18. To what extent is the investment provider regulated to protect individuals' investments?
(High regulation) 1 2 3 4 5 6 7 (No regulation)
- 19. Is there a risk of losing money because the value of the investment may not rise in line with inflation?
(No risk) 1 2 3 4 5 6 7 (High risk)
- 20. Is there a risk that the company providing this product may behave unethically?
(No risk) 1 2 3 4 5 6 7 (High risk)
- 21. To what extent do you think there are differences in the risks of this product between different brands?
(No difference) 1 2 3 4 5 6 7 (Substantial differences)
- 22. How do you perceive the benefit/return on this product, relative to the return on a building-society current account?
(Much higher than building society) 1 2 3 4 5 6 7 (Much lower than building society)
- 23. Do individual investors spend a lot of time monitoring this investment?
(No time) 1 2 3 4 5 6 7 (A lot of time)
- 24. To what extent do individuals assess information on the product prior to purchase?
(No information used) 1 2 3 4 5 6 7 (Much information used)

25. How great is the risk that you will be ruined as a result of this investment?
 (No risk) 1 2 3 4 5 6 7 (Substantial risk)
26. How great is the risk that the return from this investment might fall below expectations?
 (No risk of lower return) 1 2 3 4 5 6 7 (High risk of lower than expected return)
27. How great is the risk that the value of this investment will go down as well as up?
 (No risk) 1 2 3 4 5 6 7 (Substantial risk)

Appendix 2: Investment products

Product	Explanation
1. Personal Equity Plan (PEP)	1. Equity investment scheme with annual limits and tax advantages. Offered by most types of financial firm
2. Tax Exempt Special Savings Account (TESSA)	2. Five-year savings account offered by banks and building societies with maximum limit and tax advantages
3. Bank Current Account	3. Cheque account, paying little or no interest
4. Bank Deposit Account	4. Bank savings account
5. Building Society Current Account	5. Cheque account offered by mutual savings society. Does not confer membership
6. Building Society Deposit Account	6. Savings account offered by mutual savings society. Does not confer membership
7. Premium Bonds	7. Government lottery tickets for monthly "draw". Tickets are permanent
8. Personal Pension	8. Private individual pension, purchased by the self-employed or by those who have opted out of either the higher tier of the State scheme or of their employer's scheme
9. Shares in Blue Chip Company	9. Equity of largest, most established public companies
10. Property	10. Equity investment in physical property, most commonly via home ownership

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|--------------------------------------|--|
| 11. Shares in Privatized Utilities | 11. Equity investment in former State-owned utility companies (gas, electricity, water, telecoms) |
| 12. Endowment Policy | 12. Life insurance policy, paying benefits either on survival for a fixed period or on earlier death |
| 13. National Savings | 13. Government savings schemes |
| 14. Investment Bonds | 14. Medium-term single premium life insurance contracts with benefits linked to equity values |
| 15. Unit Trust Units | 15. Mutual funds. Closed-end fund in form of trust invested principally in equities. Operated by most types of financial firm. |
| 16. Building Society Share Account | 16. Savings account offered by mutual savings society, giving membership |
| 17. Guaranteed Bonds | 17. Medium-term single premium life insurance contracts with guaranteed minimum return |
| 18. Venture Capital Trust | 18. Investment trust specializing in shares of unquoted companies, with special tax advantages |
| 19. Individual Savings Account (ISA) | 19. Special savings accounts offering tax advantages to small savers proposed in November 1997 Budget |
| 20. Investment Trust Shares | 20. Public open-end investment company with assets invested principally in equity |
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