

THE USEFULNESS OF RISK PROFILE QUESTIONNAIRES

in financial advising

TOM VALENTINE, Visiting Professor, MGSM and UBSS Research Foundation

With research indicating that investors do not have consistent and rational attitudes to risk, this paper seeks to determine whether risk profile questionnaires lead to more rational investment decisions being made by clients. Analysis of the results of a risk profile questionnaire used by a financial planning practice suggests that investors are unwilling to bear short-term risk and, therefore, a more prescriptive approach may be necessary. An earlier version of this paper was presented to the 2012 Australian Centre for Financial Studies' Melbourne Money and Finance Conference.

It is generally accepted by the financial advising industry and its regulators that advisers should attempt to measure their clients' attitudes to risk bearing so that they can devise an investment plan which conforms to these attitudes. That is, a client should be comfortable with the amount of risk involved in the investment portfolio recommended. Some legal advice (for example, Bobbin (undated)) has suggested that advisers who do not attempt to measure clients' attitudes to risk may leave themselves open to legal action.

Valentine (2003) argues against this viewpoint. For example, it questions whether such a thing as a stable risk profile exists. It also cites extensive evidence that investors do not have consistent and rational attitudes to risk.

The purpose of this paper is to carry this discussion further by examining the results of an actual risk profile questionnaire used by an independently owned financial planning practice.

The analysis has two steps. First, the consistency of the risk category allocated to the responding client by the adviser and the answers to the questions is examined. Second, the study considers the question: do the answers to the questions in the risk profile questionnaire have an underlying common factor (a latent variable) which can be identified as the clients' attitude to risk?

The final section of the paper examines the questionnaire and the results from the general viewpoint of whether these questionnaires actually lead to more rational investment decisions being made by clients.

The data

The questionnaire used is shown in Table 1. The data used is a sample of 40 completed questionnaires obtained from one financial planner. Each question was coded as -1 for the answer indicating an unwillingness to take risk, +1 for an answer indicating a willingness to take risk and 0 for a neutral answer. The financial planner in question classified the latter group as 'balanced investors'. That is, a balanced (diversified) portfolio was recommended for them. A separate argument would be necessary to justify this identification of the appropriate portfolio for a neutral investor.

An examination of the correlation matrix for the answers to the 10 questions shows only one negative value — the correlation between the answers to questions 5 and 9. This negative value arises because a large number of respondents (many of whom had otherwise indicated an unwillingness to take risk) chose the alternative of taking a job with less job security and a big pay rise. This result suggests that clients' attitude to risk in investment differs from their attitude to risk in the job market. This difference could arise from the generally low rate of unemployment prevailing in Australia.

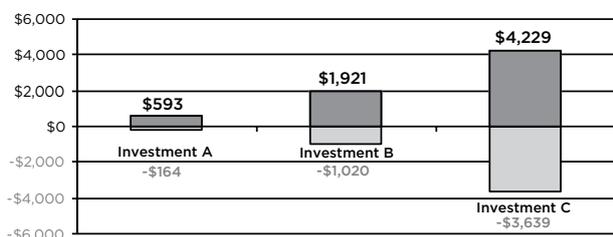
The rating of the client's attitude made by the adviser (SCORE) was coded as follows:

SCORE	= -1	conservative investor
	= 0	neutral (balanced) investor
	= +1	growth investor

TABLE 1: Risk profile questionnaire

1. How do you rate your willingness to take financial risks?	<input type="checkbox"/> Average	<input type="checkbox"/> Less willing	<input type="checkbox"/> More willing
2. When you think of 'risk' in a financial context, which comes to mind first?	<input type="checkbox"/> Possible gains	<input type="checkbox"/> Could gain or lose	<input type="checkbox"/> Possible loss
3. How easily do you adapt when things go wrong financially?	<input type="checkbox"/> With ease	<input type="checkbox"/> Can adapt	<input type="checkbox"/> With difficulty
4. How much confidence do you have in your ability to make good financial decisions?	<input type="checkbox"/> I am not very confident about financial decisions	<input type="checkbox"/> I am very confident in my financial decisions	<input type="checkbox"/> I am reasonably confident in my financial decisions
5. If you had to choose between more job security with a small pay rise, or less job security and a big pay rise, which would you pick?	<input type="checkbox"/> I am not sure	<input type="checkbox"/> I'd take more job security and a small pay rise	<input type="checkbox"/> I'd take less job security and a big pay rise
6. When faced with a major financial decision, do you concentrate more on possible gains or possible losses?	<input type="checkbox"/> Usually, if not always, the gains	<input type="checkbox"/> Usually, if not always, the losses	<input type="checkbox"/> Usually the gains, but sometimes the losses.
7. Would you borrow money to make an investment?	<input type="checkbox"/> Possibly	<input type="checkbox"/> Yes	<input type="checkbox"/> No
8. How much of your investment portfolio would you be willing to place in an investment that you thought had the potential for high returns but also had the potential for large losses?	<input type="checkbox"/> Less than 10%	<input type="checkbox"/> More than 50%	<input type="checkbox"/> 25% to 35%
9. How big a loss across all your investments would have to occur before you began to feel uncomfortable?	<input type="checkbox"/> I would be uncomfortable by the time my losses reached 10%	<input type="checkbox"/> I would get uncomfortable when my losses were between 10% to 20%	<input type="checkbox"/> It would take losses of at least 25% before I became uncomfortable
10. The chart below shows the highest one-year gain and the highest one-year loss on three different hypothetical investments of \$10,000. Which one would you see as your preferred investment?	<input type="checkbox"/> I would pick Investment A	<input type="checkbox"/> I would pick Investment B	<input type="checkbox"/> I would pick Investment C

Potential gains or losses



Analysis of the results

If we regress SCORE on the answers to the 10 questions, we obtain:

$$\begin{aligned}
 \text{SCORE} = & 0.095 + 0.132Q1 + 0.160Q2 + 0.028Q3 \\
 & 1.37 \quad (1.04) \quad (1.61) \quad (0.23) \\
 & + 0.049Q4 - 0.081Q5 + 0.192Q6 + 0.063Q7 \\
 & (0.48) \quad (1.14) \quad (1.74) \quad (1.06) \\
 & + 0.101Q8 - 0.217Q9 + 0.490Q10 \quad R^2 = 0.835 \\
 & (1.17) \quad (2.48^*) \quad (3.70^{**})
 \end{aligned}$$

where Q_i is the answer to question i . R^2 is the coefficient of determination and the figures under the coefficients are t -values. Asterisks indicate the degree of significance. One asterisk indicates significance at the 5 per cent level and two asterisks indicate significance at the 1 per cent level. All equations reported in this paper were estimated using the Eviews package.

The overall relationship is highly significant, but there are clearly some redundant variables. It would be useful to eliminate these questions because it is

desirable to present clients with the shortest possible questionnaire. A long questionnaire might not induce cooperation or may not receive adequate attention from the respondent.

Q5 has a negative coefficient for the reasons discussed above. It can be omitted from the analysis. Also, some of the very insignificant answers can be omitted without significantly reducing the explanatory power of the equation.

This process produces:

$$\begin{aligned}
 \text{SCORE} = & 0.121 + 0.140Q1 + 0.187Q2 + 0.170Q6 \\
 & (1.96) \quad (1.21) \quad (2.27^*) \quad (1.61) \\
 & + 0.060Q7 + 0.076Q8 + 0.255Q9 + 0.486Q10 \\
 & (1.09) \quad (0.98) \quad (3.24^{**}) \quad (3.77^{**}) \quad R^2 = 0.826
 \end{aligned}$$

The equation is highly significant and all of the coefficients are positive. The most significant individual questions are questions 2, 9 and 10.

Indeed, if we include only these questions in the regression:

$$\begin{aligned}
 \text{SCORE} = & 0.122 + 0.281Q2 + 0.295Q9 + 0.687Q10 \quad R^2 = 0.780 \\
 & (1.93) \quad (3.82^{**}) \quad (3.59^{**}) \quad (6.12^{**})
 \end{aligned}$$

That is, the adviser would have obtained very similar results if he/she had used a questionnaire including only three questions. It should be noted that these regressions test the consistency of the advisers' rating of the client's risk attitude with the answers to the questionnaire. It is clear that such a consistency exists.

In general the answers to the questions display an unwillingness of respondents to bear risk. Very few respondents could be classified as 'growth investors' i.e. as willing to take risk. Also, the answer to question 9 had very high numbers rated as -1. This outcome suggests that these respondents are subject to 'loss aversion' which means that they are reluctant to incur any loss. It is important for an adviser to identify the presence of such a characteristic, because such clients are likely to become very discontented in downturns even if the recommended portfolio has a good long-term performance.

The possibility of loss aversion raises doubts about the existence of a risk profile for investors. If it is present, investors will prefer investments with assured positive returns to those with even a small probability of negative returns even if the latter have much higher average returns. This would mean that there is a discontinuity in the risk-return profile.

Common factors in the data

A second question which can be asked about the questionnaire is: What are the questions measuring? Is there a common characteristic which affects the answers to the questions? One way of answering this question is to calculate the principal components of the answers. Principal components analysis (see Tabachnick and Fidell 2007, ch. 13) is based on the idea that there are latent variables underlying a set of variables and accounting for movements in the whole set.

Table 2 shows the weights in the first principal component (the one which explains the highest proportion of the total variance of the series for the sets of variables used in the regressions reported in the previous section).

		PC1	PC2	PC3
Variable	Q1	0.406	0.422	
	Q2	0.316	0.335	0.453
	Q3	0.286		
	Q4	0.324		
	Q5	0.167		
	Q6	0.312	0.388	
	Q7	0.296	0.32	
	Q8	0.355	0.377	
	Q9	0.282	0.346	0.619
	Q10	0.360	0.439	0.642
Proportion of variance		0.364	0.440	0.539

These results indicate that there is a latent variable implicit in the data, i.e. it is measuring something, but the question is: what? One possible answer is that it is related to the variable SCORE, the risk rating given to each respondent. In order to test this possibility, SCORE was regressed on each principal component.

$$\text{SCORE} = 0.45 + 0.422PC1 \quad R^2 = 0.671$$

(0.75) (8.81**)

$$\text{SCORE} = 0.110 + 0.490 PC2 \quad R^2 = 0.766$$

(2.09*) (11.17**)

$$\text{SCORE} = 0.189 + 0.700PC3 \quad R^2 = 0.747$$

(3.21**) (10.59**)

These results indicate that the adviser's classification of respondents is consistent with the major latent variable underlying the data. They also suggest that slightly better results are obtained from the questionnaire with seven questions. However, they also suggest that a smaller version of the questionnaire would have produced similar results to the original questionnaire.

An examination of the residuals from the equations reported in this subsection indicate that respondents 18 and 19 produced large errors. This result can be illustrated by including dummy variables for these observations in the equations. For example, if we do this for PC2:

$$\text{SCORE} = 0.052 + 0.425PC2 - 1.102D18 + 0.904D19$$

(1.09) (11.53*) (4.11**) (3.38**)

$R^2 = 0.819$

where D18(D19) = 1 for the 18th (19th) observation and zero otherwise. Clearly respondent 18 has been classified as too conservative and respondent 19 has been classified as too willing to bear risk.

An alternative view of the classification of investors according to SCORE is obtained by using, for example, PC3 to classify investors as conservative, neutral and growth investors. The (arbitrary) categories adopted are:

$$PC3 < -0.5 \quad \text{Conservative}$$

$$-0.5 < PC3 < + 0.5 \quad \text{Neutral}$$

$$PC3 > 0.5 \quad \text{Growth}$$

Using this classification as a benchmark, we find 23 conservative investors as against 11 for SCORE. The latter puts 12 respondents out of 40 in the wrong category. All of them are conservative investors who are classified as neutral. This outcome reinforces the comments made earlier about the inherent conservatism of the investors in the group.

However, it could also indicate that the adviser is following the process described in the following section. Indeed, some of these respondents were apparently investors in their superannuation funds.

Limitations of the questionnaire

Valentine (2003) cites a number of criticisms of risk profile questionnaires. One is that, usually, the questions do not present the respondent with a trade-off.

That is, there is no way of judging how much return a respondent is willing to sacrifice in order to achieve a given reduction in risk. Also, these questionnaires take no account of the likelihood that risk preferences are unstable. That is, that they shift over time, perhaps as a result of changing external conditions.

A major problem with the questionnaire is its very short-term nature. The choices posited are essentially short-term ones. In spite of this, the great majority of respondents showed an unwillingness to bear risk and, as noted above, there is some evidence of loss aversion. This suggests that advisers should put most of their clients into assets which are unlikely to produce large negative returns on even a one-year time horizon. The problem with this approach is that in later years the adviser is likely to receive complaints about the low average returns achieved.

Valentine (2011) argues that investors should take account of the time horizon appropriate to an investment. For example, investors in superannuation should have a very long time horizon. Clare (2005) and Malkiel (2005) have expressed the same view. Calculations reported in Valentine (2011) indicate that, over the period from 1950 to 2010, there were 23 negative one-year returns on shares but only one negative 10-year return on a rolling 10-year basis. Even 10 years is a short time horizon from the point of view of a superannuation investor. Long-term investors should invest in growth assets, such as shares and property, which have a high long-run return. They should not be disturbed by short-term fluctuations in returns.

Indeed, it is desirable to recognise that most investors have a number of components in their portfolios which are determined by the objectives for which the funds are being held. For example, investors may hold funds for:

- > short-term purposes such as an intended trip, a wedding, deposit on a house or a contingency fund;
- > personal savings which holders can use at their discretion; and
- > money in a superannuation fund which cannot be accessed for some time.

Advisers should treat these pockets of wealth separately, providing advice appropriate to their time horizon.

These considerations raise doubts about the need for investment advisers to attempt to measure clients' attitudes towards risk and to make recommendations which are consistent with these measurements. Instead, advisers should be required to establish the investor's objective position — age, employment, income, balance sheet, marital situation, age of children, investment objectives etc. — and to make investment recommendations based on these facts.

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This will require advisers to provide some education and, in particular, to convince investors that their time horizon should play an important role in the evaluation of potential risks. In particular, they should be brought to understand that short-term variability of returns is not relevant to judging the risk of an investment which is made with a long time horizon.

Of course, this is easier said than done. However, this does not represent an argument for the use of risk questionnaires based on the short-term risks of alternative investments. These instruments can actually lead investors into making investment decisions contrary to their best interests.

Investments in superannuation funds are an easier case. They are clearly long-term investments and should, therefore, be invested in growth assets. Valentine (2011) suggests that self-managed super funds (SMSFs) should be required to select from a set of portfolios based on such assets.

Conclusion

This paper discussed a sample of responses to a questionnaire designed to evaluate respondent's attitudes to short-term risk. It was concluded that:

- > the answers to the questions convey some overall information about respondents' attitudes as measured by the first principal component of the data; and
- > the adviser's ratings are consistent with this information.

However, this says little about the attitude of investors to risk on longer-term investments. It appears that investors are unwilling to bear short-term risk and, therefore, a more prescriptive approach may be necessary. Such an approach would encourage investors to make investment decisions in line with their long-term interests. ■

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