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A longitudinal study of financial risk tolerance

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ABSTRACT

Academics are divided as to whether financial risk tolerance is an enduring psychological trait and as a consequence is less likely to change over the life of an individual, or a variable psychological state which varies readily in response to internal and external influences. In this study we report the findings of a longitudinal study that investigates the annual change in financial risk tolerance scores of individuals over a 5 year period and the factors that influence such change. Our results indicate a relatively small annual change in individuals' financial risk tolerance. Although our regression model is ineffective in providing a clarification for a change in the financial risk tolerance scores of individual respondents, we find a slight decrease in financial risk tolerance associated with a decrease in household size and an increase in financial risk tolerance after terminating the services of a financial planner. From our results we propose that financial risk tolerance is a stable personality trait and is unlikely to change substantially over the life of an individual.

1. Introduction

Since the development of various financial risk tolerance assessment methodologies, academics have attempted to determine the extent to which a range of demographic, socio-economic and psychological factors are related to the financial risk tolerance of individuals. There appears to be significant agreement among research studies that financial risk tolerance is statistically related to a number of factors such as gender, age, income, wealth, education, and occupation. However, one of the major unanswered questions in financial risk tolerance studies is: Does an individual's financial risk tolerance change over time and which factors influence this change?

According to Hanna and Chen (1997), financial risk tolerance is a subjective attribute and as such it is generally believed to be a genetic predisposition. A number of recent behavior genetic studies have also concluded that risk tolerance has a strong genetic predisposition. For example, in a study of Swedish twins, Cesarini, Dawes, Johannesson, Lichtenstein, and Wallace (2009) found that approximately 20% of the observed differences in individuals' preference for risk taking can be attributed to heritable differences.

A distinction can be made between subjective (risk that an individual prefers to accept) and objective (risk that an individual is actually capable of taking) financial risk tolerance. Economists tend to view financial risk tolerance traditionally as

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an objective function of the risk that an individual is actually capable of taking. Consequently they regard it possible to deduce an individual's risk tolerance from the specific amount of risky assets held relative to the individual's total wealth. However, using an objective measure has several critical drawbacks including the fact that it refers to an individual's behavior and does not necessarily reflect their personal preference.

It is one of the critical fiduciary obligations of financial advisors when providing appropriate investment advice that they are aware of the circumstances and preferences of their clients, including their investment objectives and preferred risk tolerance levels. In fact, since 2002, Australian financial planners are required under the Financial Services Reform Act to assess the risk profile of their clients (Commonwealth of Australia, 2002). Financial advisors are encouraged to use a psychometric based assessment instrument that measures subjective risk tolerance attitudes through multidimensional financial scenarios and situations.

As an attitude towards risk it refers to the level of financial risk that an individual *prefers* to accept, in other words a feeling towards financial risk. As is the case with other enduring personality traits such as intelligence, values and personality it is thus less likely to change over the life of an individual. Other academics, including Cordell (2001) have challenged this outlook by contending that, as with emotions and personal attitudes, an individual's financial risk tolerance most likely can vary over time as it is influenced by exogenous factors such as major life experiences.

Alternatively, both arguments seem reasonable and even reconcilable as a number of personality and psychological traits appears to be influenced by both nature (genetics) and nurture (life experience). To address this issue this paper analyzes survey data completed by individuals over a 5 year period and, through a longitudinal analysis, determines if individual respondents' financial risk tolerance changes annually and which factors influence a change in financial risk tolerance.

2. Literature review

Although academic studies have illustrated the relationship between financial risk tolerance and a substantial number of factors, the following literature review provides an overview of the independent factors limited to the longitudinal surveys used in this study. Additionally, a number of factors such as gender and race which, although most likely significantly related to financial risk tolerance, are not addressed in this study as they have no to little likelihood of changing over the lifetime of an individual. Finally, the literature review only contains questionnaire-based survey studies[1] which consequently relates to attitudes towards financial risk.

A common heuristic belief is that financial risk tolerance decreases with age and as such it is the most investigated factor, with a large number of studies reporting significantly higher financial risk tolerance for younger individuals (Chaulk, Johnson, & Bulcroft, 2003; Donkers & Van Soest, 1999; Faff, Hallahan, & McKenzie, 2009; Fan & Xiao, 2006; Hallahan, Faff, & McKenzie, 2004; Sung & Hanna, 1996a; Xiao, Alhabeeb, Hong, & Haynes, 2000; Yao, Hanna, & Lindamood, 2004).

Financial risk tolerance also appears to be higher for single individuals who are hypothesized to have fewer responsibilities and less to lose by accepting greater financial risks (Fan & Xiao, 2006; Grable & Joo, 2004; Hallahan et al., 2004; Hawley & Fujii, 1993; Yao et al., 2004). Through their family development theory, Chaulk et al. (2003) theorize that once individuals marry, their financial risk tolerance decreases due to a greater need for protection of wealth for future consumption such as children or housing accommodation. Related to this theory, several studies furthermore report a negative relationship between financial risk tolerance and number of dependants (Chaulk et al., 2003; Faff et al., 2009; Grable & Joo, 1999; Hallahan et al., 2004).

A significant number of studies report high financial risk tolerance for individuals in high income and wealth categories (Chang, DeVaney, & Chiremba, 2004; Chaulk et al., 2003; Fan & Xiao, 2006; Grable, 2000; Grable & Joo, 1999, 2004; Grable, Lytton & O'Neill, 2004; Hallahan et al., 2004; Sung & Hanna, 1996a; Sung & Hanna, 1996b; Yao et al., 2004; Yook & Everett, 2003). However, there is some evidence to suggest that the relationship between wealth and income and financial risk tolerance may be non-linear (Hallahan et al., 2004).

Several studies report a general positive relationship between financial risk tolerance and education (Chang et al., 2004; Fan & Xiao, 2006; Grable, 2000; Grable & Joo, 1999, 2004; Hallahan et al., 2004; Hawley & Fujii, 1993; Sung & Hanna, 1996a, 1996b; Yao et al., 2004). Furthermore, some studies differentiate between specific education levels. For example, Hallahan et al. (2004) report that at least a trade or tertiary diploma level of education is required before a statistically significant increase in financial risk tolerance scores are observed. The authors also find a high positive correlation between income, wealth and education. For example, they report that half of all the millionaires in their study have a university education. In contrast, 35% of respondents in the lowest wealth category of their survey did not complete high school. These strong correlations might suggest that financial risk tolerance is actually a function of income and wealth rather than education.

However, an argument of causality can be applied to factors such as income. While it appears that an individual's increased willingness to accept financial risk could possibly be driven by a greater ability or capacity to take more risk due to a higher level of disposable income, it may also be that the level of an individual's financial risk tolerance influences their earnings potential. Less risk tolerant individuals might seek safer employment opportunities, with the consequence of lower earnings.

[1] Grable and Lytton (1999) suggest that the most widely accepted method of gauging an individual's financial risk tolerance level is to use a psychometric based assessment instrument that measures subjective risk tolerance attitudes through 'multidimensional financial scenarios and situations'.