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Updated Estimates for Coalitional Manipulation According to Scoring Regulations

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Abstract

This study aimed to examine the accuracy of risk tolerance estimates made by financial advisors and their clients using a sample of 386 advisors and 458 clients. It also aimed to determine the reliability of these estimates by comparing demographic information with test items and finding a "paramorphic representation" of the decision-making process. The advisor's evaluation of the client and the customer's self-evaluation were correlated with a Pearson correlation of.40. Also, the client's risk tolerance score and the advisor's assessment were almost identical (r=.41). Additionally, the data demonstrated that customers outperform advisers in the job of calculating their own risk tolerance. The estimations might be paramorphically expressed using a small number of variables. When trying to gauge their clients' comfort level with risk, advisers tend to put too much emphasis on certain demographic factors.

Keywords: *Risk tolerance, paramorphic representation, financial advisors*

Introduction

Remarkably, there is a dearth of literature on the efficacy of financial advisers in making crucial decisions relevant to their work. Slovic (1969), Torngren and Montgomery (2004), Tyszka and Zielonka (2002), and Zielonka (2002) are among the few research that have investigated the reliability of financial services professionals' decision-making. Rather, most efforts to assess the efficacy of financial adviser recommendations have zeroed in on complaints about financial planning and investment management models (e.g., Kautt, 2002). However, financial advisers cannot gauge their own skill level relative to others in the field or the general public's perception of their abilities in making decisions without this data. Finding out if the financial services industry's holistic decision-making procedures deliver as promised will be of paramount importance as the industry keeps expanding.

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Vol 15, Issuse.4 Oct 2021

One crucial decision that financial advisers must make early on with each client—estimating the client's financial risk tolerance—regarding which empirical evidence is few. Because a person's risk tolerance affects a wide range of financial decisions—including portfolio management, mortgage type, insurance deductibles, emergency fund amounts, and more—it is an essential part of financial planning to accurately assess a client's risk tolerance. mediation in divorce cases, savings plans, and estate administration (Bottom, Holloway, McClurg, & Miller, 2000; Callan & Johnson, 2002; Cicchetti & Dubin, 1994; Dreze, 1981; Finke & Huston, 2003; Hallahan, Faff, & McKenzie, 2004; Hanna & Chen, 1997; Harris, 2004); also Much more so in 2004.

There are many goals that this research aims to achieve. Finding out how well customers and financial advisers estimate risk tolerance is the first objective. Second, we want to investigate if we can create a "paramorphic representation" of the decision-making process by using demographic data and risk tolerance test items in multiple regression models. To be more precise, this study was guided by the following research questions:

a) How well does a financial advisor's estimate of a client's risk tolerance correlate with the client's own estimate of his/her own risk tolerance?
b) How well do financial advisors estimate the risk tolerance of their clients as measured by a valid test?
c) How well do clients and advisors estimate their own risk tolerances as measured by a test?
d) Are advisors any better than clients at estimating their own level of risk tolerance relative to whatthe risk-tolerance test indicates?
e) Using questions from a risk-tolerance test, to what extent can both an advisor's and a client's judgmental process in estimating risk tolerance be represented paramorphically?

Review of the Literature

How Should Risk Tolerance be Measured?

Although a number of authors have called for the application of formal procedures and tests to the financial risk tolerance assessment process, there is no consensus on how to best conduct it (Bouchey, 2004; Callan & Johnson, 2003; Grable & Lytton, 1999a, 1999b, 2001, 2003; Hanna & Chen, 1997; Hanna & Gutter, 1998; Hanna, Gutter, & Fan, 2001; Hanna & Lindamood, 2004; Roszkowski, 1992; Roszkowski, Davey, & Grable, 2005; Yook & Evverett, 2003). Techniques for measuring risk tolerance have been devised by economists, psychologists, and decision scientists, but as Grable and Joo (2000) observed, the recommended procedures differ, depending in part on the academic or professional background of the assessor.

The formal assessment of risk tolerance can take many forms. The commonly-used techniques have been classified in a variety of ways (see Callan & Johnson, 2003; Hallahan, Faff, & McKenzie, 2004; Hanna & Chen, 1977; Hanna, Gutter & Fan, 1998; MacCrimmon, Wehrung, & Stanbury, 1986; Roszkowski, 1992). At the broadest grouping, one can differentiate between actual behavior and performance on tests, simulations, and questionnaires of various sorts. At a more detailed level, Hanna et al. (1998, p. 53) note that there are at least four methods: "asking about investment choices, asking a combination of investment measures and subjective questions, assessing actual behavior, and asking hypothetical questions with carefully specified scenarios." Slicing the pie into even thinner slices, Roszkowski (1992) lists the following approaches to gauging financial risk tolerance: proxy measures (such as demographic characteristics, investment objectives, and returns expected from investments), preferences for different investment vehicles, reactions to sample portfolios, life-style characteristics, self-classification; self-ratings of more specific aspects of risk-taking, and probability and payoff preferences.

The type of questions posed in expected utility theory–based questionnaires would be classified by Roszkowski (1992) as the "probability and payoff preferences" approach. Other names used in the literature to identify the probability and payoff approach are "gambles" and "prospects." Besides Utility Theory (von Neumann & Morgenstern, 2005), a number of different theories have been proposed on the basis of trade-offs to explain human behavior under risk, including Subjective Expected Utility Theory

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Vol 15, Issuse.4 Oct 2021

(Savage 1954), Rank Dependent Utility Theory (Quiggin, 1982), Cumulative Prospect Theory (Tversky & Kahneman 1992), and Reference-Dependent Subjective Expected Utility Theory (Sugden, 2003).

Each approach has its proponents and detractors. Academics trained in economics generally favor approaches based on expected utility theory and its variants (e.g., Hanna, Gutter & Fan, 1998; Hanna & Lindawood, 2004), whereas psychologists and other professionals with a behavioral science bent are willing to also include attitudinal items in the test, provided that these questions can be shown to be valid. Thus, Callan and Johnson (2003) maintain that a variety of "attitudes," such as spoken and unspoken beliefs, regarding financial risk tolerance need to be considered in the assessment, while Hanna et al. (1998, p. 54) are extremely skeptical about any attitudinal questions that "…are not rigorously linked to the concept of risk tolerance in economic theory."

Roszkowski et al. (2005) are also critical of many of today's risk tolerance questionnaires, but for different reasons than Hanna and his colleagues (1998). They contend that many questionnaires billed as financial risk tolerance tests ask questions that, while relevant for giving sound financial advice, are not really part of the psychological construct of risk tolerance per se (e.g., investment time horizon, financial capacity to absorb a loss, etc.). However, they would accept any question type, even ones not rooted in expected utility theory, as a basis for a sound assessment provided that such questions can stand up to commonly accepted psychometric standards. Also, they believe that questionnaires in use today are generally too short to be valid for assessing individual clients.

There is a growing and persuasive body of evidence to suggest that risk tolerance is more than just cognitive in nature and that feelings need to be considered in understanding people's reactions to risk (Magnan & Hinsz, 2005). Loewenstein, Weber, Hsee, and Welch (2001) review such evidence and propose the "Risk-as-Feelings" theory, summarizing the rationale for their position as follows in the abstract of their article:

> Virtually all current theories of choice under risk or uncertainty are cognitive and consequentialist. They assume that people assess the desirability and likelihood of possible outcomes of choice alternatives and integrate this information through some type of expectation-based calculus to arrive at a decision. The authors propose an alternative theoretical perspective, the risk-as-feelings hypothesis, that highlights the role of affect experienced at the moment of decision making. Drawing on research from clinical, physiological, and other subfields of psychology, they show that emotional reactions to risky situations often diverge from cognitive assessments of those risks. When such divergence occurs, emotional reactions often drive behavior. The risk-as-feelings hypothesis is shown to explain a wide range of phenomena that have resisted interpretation in cognitive-consequentialist terms. (p. 267).

In the body of the article (p. 271), they elaborate on this position as follows:

> … people's emotional reactions to risks depend on a variety of factors that influence cognitive evaluations of risk only weakly or not at all. These include the vividness with which consequences can be imagined, personal exposure to or experience with outcomes, and past history of conditioning. Cognitive assessments of risk, on the other hand, tend to depend on more objective features of the risky situation, such as probabilities of outcomes and assessments of outcome severity. Even when feelings about risk are influenced by these objective features, the functional form of such dependence is different. For example, it has been demonstrated that feelings about risk are largely insensitive to changes in probability, whereas cognitive evaluations do take probability into account. As a result, feelings about risk and cognitive risk perceptions often diverge, sometimes strikingly.

Roszkowski (1992), who is of the opinion that no approach works perfectly with each and every client, identifies the advantages and shortcomings of methods currently used by advisors. He concludes that it is perhaps most prudent to "diversify" and use a varietyof methods:

> In collecting the information on risk tolerance, you can best understand a client by diversifying the approaches used and comparing the impressions of the client that emerge from one approach with the impressions from another approach. If all indicators point to the same conclusion, the job of assessment is easy. Quite frequently, however, you will obtain discrepant images of the client. Attention should be paid not only to the client's answer on each type of question , but also to the potential reasons why a client may be inconsistent in his her answers from

> one approach to another. You should discuss with the client why he or she answered a given question a certain way, because the client's stated rationale can provide valuable insights into which type of measurement approach may be the best indicator of the client's level of risktolerance. Probe and clarify until you are satisfied that you have identified the causes forthe discrepancies (p. 10).

Roszkowski (1992) recommends that in the absence of any information regarding which technique is best for a particular client, averaging the answers from different techniques should prove to be the most valid approach because "(s)ome approaches may overestimate the true level of risk tolerance whereas others may underestimate it. By averaging the results, you may be able to cancel out these two errors and arrive at the most accurate impression possible, given the circumstances" (p.10).

Can Personality in General and Risk Tolerance inParticular Be Judged without a Test?

The body of literature devoted to better understanding the determinants of a person's risk tolerance isexpansive, but there is very little evidence available to document how well people in general and financial services professionals in particular actually estimate someone else's, or even their own, level of risk tolerance (Hsee & Weber, 1997). When advisors work with clients they need to estimate two aspects of risk tolerance. The one estimate requires advisors to determine how the client perceives himself or herself with respect to propensity for risk. The second and probably more critical appraisal involves classifyingthe client into a true level of risk tolerance. Since risk tolerance is a personality characteristic, albeit one that may be somewhat elastic (see Grable, Lytton, & O'Neill, 2004; Magnan & Hinsz, 2005; Yao, Hanna, & Lindamood, 2004; Yip, 2000), some guidance can be gleaned from the literature that compares people's estimates of personality characteristics relative to actual scores on standardized tests.

Most of the studies dealing with self-knowledge of one's own personality have been concerned with the operations that people use to understand themselves rather than the accuracy of their self-perceptions (Vogt & Colvin, 2005). The research conducted by Furnham and his colleagues is an exception to this statement. In a provocatively-titled article, "Can people accurately estimate their own personality test scores?" Furnham (1990) suggests that the answer depends on the particular personality characteristic. His results with undergraduate students showed significant positive correlations between the students' estimated and their actual scores on 10 of the 15 personality dimensions he studied. In addition, the undergraduates in Furnham's (1990) research were able to estimate other students' scores on eight of these 15 personality characteristics, but as one might suspect, these approximations were not as accurate as the ones of their own scores on these tests. Chamorro-Premuzic, Furnham, and Moutafi (2004) concluded that certain characteristics are easier to estimate than others. Correlations between one's estimated and one's actual test scores ranged from a low of r =.27 for Agreeableness to a high of r =.58 for Conscientiousness. In a related study, Furnham and Chamorro-Premuzic (2004) determined that people are best at estimating their own degree of depression (r =
.58), anxiety (r =.54), hostility (r =.52), assertiveness (r =.51), activity (r =.51), and need for achievement (r =.45). Among the least predictable personality characteristics were impulsivity (r =.06), straight forwardness (r =.12), vulnerability (r =.16), and excitement seeking (r =.26). Although risk tolerance was not one of the characteristics under study, it is noteworthy that constructs related to it (e.g., impulsivity, excitement seeking) were not self-estimated very well. It may well be that risk tolerance is a characteristic that is difficult to gauge, but very few studies have addressed either the lay public's or professionals' ability to estimate risk tolerance in themselves or others.

entry is determined by which variable has the highest partial correlation with the dependent variable considering all variables already in the model. Only if a variable increases the *F*-value of the equation by some specified threshold value will it enter the model (called "the *F*-to-enter criterion"). A common misunderstanding is that order of entry shows the importance of the independent variables (Gordon, 2001). Because a number of steps are involved in stepwise regression, experiment-wise (at least one) Type I error rates can be rather high.

Some statisticians would argue that stepwise regressions are therefore never appropriate, but a more moderate position would allow for its use when sifting through large numbers of potential predictors (van Belle, 2002). It has been said that the objectives of the study should determine the method for selecting the predictors. As Armstrong (1971, p. 512) pointed out, "… the exploratory end of the continuum asks for as little input from the researcher as possible and the theory-based end asks for as much as possible." Osborne (2000) commented that "(c)urrent practice clearly favors analyst controlled entry, and discourages entry based on the statistical properties of the variables as it is atheoretical." (pp. 1-2) , but at the same time he acknowledged the value of atheoretical analyses in some circumstances

ISSN: 2454-9940www.ijsem.org
Vol 15, Issuse.4 Oct 2021

when he wrote: "And while theory is useful for identifying what variables should be in a prediction equation, the variables do not necessarily need to make conceptual sense. If the single greatest predictor of future achievement scores was the number of hamburgers a student eats, it should be in the prediction equation regardless of whether it makes sense…" (p. 1). As noted earlier, for paramorphic representation purposes, it is unimportant whether the variables are causally related or for the model to even be realistic (Doherty & Brehmer, 1997).

Methodology

The paramorphic representation technique relies on step-wise regression as a methodology. Readers need to be aware that the use of stepwise procedures has been questioned (see Thompson, 1995). The major concern is that the technique capitalizes on chance relationships in the data, and thus may produce results that are over-fitted and difficult to replicate. For instance, a Monte Carlo simulation by Derksen and Keselman (1992) found that 20% to 74% of the variables entering into stepwise multiple regression were noise. The data driven process inherent in stepwise procedures may not lead to the best set of predictors if the predictors are highly redundant (i.e., correlated). The variable that enters the equation on the first step in stepwise regression is the one in the set of predictors that has the highest simple correlation with the criterion. At each stage after the first one, order of

Discussion

A number of issues pertaining to the estimation of risk tolerance were addressed in this paper. First, an advisor's estimate of a client's financial risk tolerance and the client's own estimate of his or her financial risk tolerance were compared. It was shown that the client's and advisor's estimates of the client's risk tolerance were only moderately correlated (r =.40). One could excuse these disappointing results by arguing that the criterion against which the advisor's accuracy was assessed, namely the client's opinion, is less than ideal. A more disturbing finding, however, was that the advisors were no more accurate in their estimates relative to the score from a financial risk-tolerance test (r =.41), a reliable and valid standard. In an absolute sense, then, advisors' ability to predict actual risk tolerance is rather faulty, accounting for only about 17% of the variation in the clients' actual risk tolerance. Correcting the criterion measure (SOFRT) for unreliability only raised the correlation slightly (.46). The problem more likely resides with the advisor's rating rather than the criterion.

Notably, the magnitude of the correlation observed here between actual risk tolerance and the judge's estimate of it was quite similar to the one found in the Australian sample of financial planners (r =.38) studiedby Elsayed and Martin (1998) and almost of the same magnitude as produced by Eckel & Grossman's (2002) undergraduates (r =.42) who relied on visual cues, such as sex, to form their judgments. Considered together, the findings suggest that financial advisors are not particularly accurate when estimating their client's true level of risk tolerance, despite their training and experience. It would not be prudent to rely solely on a financial advisor's judgment to establish a client's levelof risk tolerance. The need for the use of a valid test is indicated by the results of the study.

Furthermore, given the moderate magnitude of the correlation between the client's tested and advisor's estimate of client risk tolerance, it is also quite probable that in estimating risk tolerance advisors are influenced by variables that are either spurious or irrelevant. Experts have a tendency to develop and use heuristic shortcuts to arrive at a judgment. More than likely, the advisors were using "rules of thumb" to form their judgments, but these only work some of the time, if at all. Unless a heuristic rule is based on statistically valid inferences, it is likely that the rule itself will be flawed. One flawed mechanism that advisors thankfully do not seem to be using is the "same as me" attribution discussed by Hsee and Weber (1997). The near zero correlations between the client's self assessed risk tolerance and the advisor's self assessed risk tolerance indicates that advisors were not projecting their own level of risk tolerance unto their clients. However, what other flawed heuristics they may be applying is undetermined. Other research existsto support the contention that experts may assign too much diagnostic value to often meaningless information. For instance, Zielonka (2002) studied the degree of agreement among Polish financial analysts about the impact a particular event is considered to have on the movement of stock prices, and found considerable inter-judge consistency in the assumed importance of various signals, but the agreement was due in large part to the use of heuristics-and-biases so that even useless indicators were viewed to be important indicators.

Even when heuristics are correct, they may not be applied consistently or may be overused. For instance, while sex and wealth are predictive to some extent of risk tolerance because they are correlated with risk tolerance and can thus serve as proxies for risk tolerance, the advisors in this study assigned too much diagnostic value to these variables, as evident from the multiple regressions. Sex and wealth remained predictive of advisor's estimates of risk tolerance even after the variance that these two variables have in common with actual risk tolerance

ISSN: 2454-9940www.ijsem.org
Vol 15, Issuse.4 Oct 2021

was removed. Stereotyping appears to be a factor in the attribution of a professional advisor makes to a client, contrary to what Hsee and Weber (1997) observed with undergraduates rating strangers, but in line with the findings from Eckel and Grossman (2002), Martin (1987), and Siegrist et al. (2002).

Although some judges may use the correct factors to form their estimate of risk tolerance, they may be unable to do it consistently. Computer programs are therefore able to outperform human judges even when the human judge's decision making process is used to create the program (known as bootstrapping) because factors such as fatigue, headaches, boredom, and work interruptions can distract an expert's ability to arrive at a valid judgment (Dawes, 1971; Grove & Meehl, 1996). If there is no feedback about the accuracy of one's judgments, the process is especially prone to error. It is likely that neither advisors nor clients ever receive feedback about the accuracy of their risk- tolerance judgments. As Dawes et al. (1989, *p*. 1671) noted, "Lacking sufficient or clear information about judgmental accuracy, it is problematic to determine the actual validity, if any, of the variables on which one relies." The practical implication again is the need to use standardized measures, such as risk tolerance questionnaires.

It would not be surprising to find that the advisors in the current study were confident of their ability to accurately peg risk tolerance, despite their questionable performance. We did not address the confidence that the advisors had in their judgments of risk tolerance, but only those advisors who felt they were in a good position to do so gave their opinions regarding their clients' degree of risk tolerance. That is, the advisors provided risk-tolerance estimates on only 63% of the clients. Compared to other occupations, financial services professionals may be overly confident in their abilities, given research comparing Polish financial analysts and weather forecasters (Tyszka & Zielonka, 2002).

The magnitude of the correlations between self-estimated and actual risk tolerance were quite high for both clients and advisors relative to the observed level of accuracy reported in studies examining lay people's ability to estimate all sorts of personality characteristics in themselves (e.g., Chamorro-Premuzic et al.., 2004; Furnham, 1990; Furnham & Chamorro-Premuzic, 2004), where the most predictable characteristics showed correlations in the upper .50 range. Not surprisingly, and in line with Furnham's (1990) findings, the results of the present study show that people are better able to estimate their own level of risk tolerance than to estimate it in others. Thus, the advisors' estimates of client risk tolerance were less accurate than the clients' own estimates. However, a rather puzzling finding was that when it came to estimating one's own level of risk tolerance, clients were better at the task than the advisors. One could achieve a better paramorphic representation of the self estimate for the clients than for the advisors on the basis of the items from the risk tolerance test. From a practical standpoint, taken together, these results suggest that if the choice is between client's and advisor's estimate as the basis for a decision, it might be better to rely on the client's opinion of himself or herself.

The poorer ability of advisors to judge their own risk tolerance may be due to the benchmarks they use. The advisors were generally more risk-taking than their clients. An analysis showed that the greater inaccuracy among advisors occurred primarily because advisors with low to moderate levels of risk tolerance were underestimating their degree of risk tolerance, perhaps because they were using other advisors as their comparison group. The advisors with high levels of risk tolerance were relatively more accurate in their self-judgments, and similar in their degree of accurately to high risk-taking clients' estimates of themselves.

The overriding finding in the various paramorphic representation regressions performed in this study is that relatively few variables were necessary to capture both the advisors' and the client's opinions about their own and others' risk tolerance. Their estimates, of course, were far from perfect. The results on advisors estimating clients could be due to the advisors not having all the necessary information to form a better judgment, but one must wonder whether advisors would use all the information even if presented with the answers to all 56 questions in the risk tolerance survey. Slovic's (1969) seminal study demonstrated that even though stockbrokers had access to a wide variety of specific client data, when making judgments about a client's situation, they relied only six to seven factors, on average, to arrive at a conclusion. It appears that decision makers who use a holistic approach rely only a few cues. Shanteau (1999), who commented on this finding, concluded that "experts make important decisions without adequate attention to all the relevant information" (p. 113).

Conclusion

In more than one way, the study's findings are notable. Financial advisers do a poor job of gauging their customers' comfort levels with financial risk, according to the first finding. This strongly implies that before offering financial advice and assistance, advisers should

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Vol 15, Issuse.4 Oct 2021

employ a genuine risk tolerance assessment. Especially considering the new regulations imposed by the SEC, which require financial advising companies to follow certain protocols when determining their clients' risk tolerance (McGinnis, 2004). Researchers concluded that, in light of increasingly stringent regulations governing investment management, it is not adequate nor appropriate to depend only on subjective assessments of clients' risk tolerance.

Those advisers who value their own subjective assessments more highly than quantitative evaluations may find the second outcome particularly intriguing. If advisors do not have access to a reliable risk tolerance test, they would do well to have clients self-evaluate their risk tolerance rather than relying on the advisor's best guess. People are usually better at gauging their own risk tolerance than someone else's, which is why this piece of advise is given. Even when comparing their customers' risk tolerance to their own, financial advisers in this research were shown to be substantially less accurate.

When making decisions, advisers seem to use heuristic shortcuts that don't take external factors into consideration.
opinions of their customers. Amazingly, with few input variables and a basic regression model (a paramorphic representation), one can mimic a financial advisor's assessment of a client's risk tolerance.

To conclude, more study into the role of paramorphic representation in financial advisers' decision-making processes is strongly encouraged. After this study is complete, researchers should look into financial advisers' decision-making processes to see how holistic models affect their work. There is a significant void in the current research about the effectiveness of financial advisers in assessing their customers' attitudes and preferences; filling this void will require establishing the reliability and validity of assessments based on a mix of knowledge, temperament, and experience.

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