An Investigation of Four Investor Risk Preference Rules-of-Thumb

Financial planners and consumer finance educators often use investor risk preference rules-of-thumb when assisting individuals and families make financial decisions to allocate resources. The purpose of this paper is to review four of these widely used rules-of-thumb. Based on the results of an exploratory risk preference survey (N = 68) there appears to be no relationship between investor risk preference and four demographic variables: gender, age, marital status, and income.

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Identification and understanding of the degree of investment volatility an investor prefers (i.e., investor risk preference) is necessary when creating investment allocation strategies (Leimberg, Satinsky, LeClair, & Doyle, 1988). Because risk preference is difficult to measure, it is not uncommon for financial planners to use risk preference rules-of-thumb to assess someone's risk preference. Examples of risk preference rules-of-thumb include the following: a) men take more risks than women, b) older people prefer less risk than do younger persons, c) single individuals take more risks than marrieds, and d) people with high incomes take more risks than others (Roszkowski, Snelbecker, & Leimberg, 1988).

The purpose of this paper is to review these four widely used rules-of-thumb, and to test the hypotheses which underlie these rules. The conclusions of this paper are intended to enhance the ongoing discussion regarding the use of rules-of-thumb in personal financial management and consumer education.

Literature Review & Background

The subject of risk taking has received a great deal of attention from both psychologists and economists (Leimberg et al., 1988). Attempts to measure determinants of investor risk preference include studies conducted by Cutler (1995), Droms (1988), Gehrels (1991), Kahneman (1979), Lee and Hanna (1991), Lux (1995), MacCrimmon and Wehrung (1986), Masters (1989), Okun, Stock, and Ceurvorst (1980), Riley and Chow (1992), Shefrin and Statman (1993), Snelbecker et al. (1990), Sung and Hanna (1996), Weagley and Gannon (1991), and Yoo (1994). Results from past research have tended to be contradictory when determining the efficacy of certain demographic characteristics in predicting investor risk preference (i.e., demographics used as the basis of investor risk preference rules-of-thumb).

Methodology

Statistical Analysis

This study was undertaken to investigate the relationship between investor risk preference (dependent variable) and four demographic variables: gender, age, marital status, and income. Specifically, the research questions were as follows: a) whether risk preference was significantly different between men and women, b) whether risk preference decreased with age, c) whether singles had higher risk preferences than marrieds, and d) whether risk preference increased with increases in income. As an approach of assessing the statistical significance of these relationships Analysis of Variance (ANOVA) procedures and t-tests were undertaken. The null hypotheses for this study included:

H1: $\underline{M}_{Men} = \underline{M}_{Women}$
H2: $\underline{M}_{Young} = \underline{M}_{Middle-Aged} = \underline{M}_{Older}$
H3: $\underline{M}_{Single} = \underline{M}_{Married}$
H4: $\underline{M}_{Low\ Inc.} = \underline{M}_{Mid-Inc.} = \underline{M}_{High\ Inc.}$

Survey Instrument

A risk preference questionnaire consisting of 21 questions obtained from previous research was developed to obtain data for this study. Fifteen of the questions dealt specifically with risk preferences, while six questions queried demographic variables. The questionnaire was created using four criteria developed by MacCrimmon and Wehrung (1986). Specifically, the questionnaire contained some central concept of risk, allowed the derivation of a risk measure, appeared relevant to respondents, and allowed easy administration. Questions were chosen for inclusion if they satisfied several criteria also developed by MacCrimmon and Wehrung. Collectively the questions a) covered a variety of risky

situations in which to assess risk propensity in a multidimensional manner, b) avoided redundancy and inconsistency, c) were interesting to complete, and d) took a short amount of time to finish.

The questionnaire was self-administered. Instructions specified that there were no 'correct' answers to the questions, and that the aim of the study was to find out how people choose among risky choices. Hypothetical choices emerged as the simplest procedure to conduct such an investigation, because the method relies on the assumption that people know how they would behave in actual situations, and that subjects have no special reason to disguise their true preferences (Kahneman & Tversky; Shefrin & Statman, 1993).

Each question offered a number of hypothetical answers. Answers were given a weight according to the riskiness of the response. Higher weightings indicated a riskier choice, while lower weightings indicated a less risky choice. Responses from individual questionnaires were then combined into an index. The index was constructed by summing the weights corresponding to each response. Respondents were categorized into either low, moderate, or high risk preferences based on each individual's risk index score. The validity of the instrument was measured using operations suggested by Babbie (1983). The reliability of the instrument (.69) was confirmed using procedures as outlined by Pedhazur and Schmelkin (1991).

Sample

The total number of participants in this study was 68. The response rate was 90%. Survey participants were chosen from a proprietary financial planning data base. Names appearing on the data base consisted of individuals who at one time indicated an interest in receiving financial planning, investment management, or portfolio consulting services. Due to the exploratory nature of this study only subjects indicating interest in financial services after December 1994 were included.

The sample was demographically diverse. A majority of respondents (57%) were females, while 43% of respondents were male. Respondents indicated ages ranging from 21 years to 87 years, with 51% reporting ages of 40 or less, 31% indicating ages between 41 and 60, and 18% indicating an age of 61 or older. Fifty percent of respondents described their occupation as an executive, business owner, professional, or business manager. Other employment classifications included administrative personnel (16%), retired (9%), skilled manual labor (5%), and other (20%). Twenty percent of respondents declared incomes over $70,000, with a full 17% of respondents indicating income greater than $80,000. Fifty-one percent of respondents classified their household incomes in the range of $30,000 to $69,999, and 29% of respondents indicated having incomes of $29,999 or less.

The majority of respondents were married (62%), while the remainder classified themselves as never married (22%), divorced (9%), and other including widowed and separated (7%). When asked to describe their investment knowledge, a full 67% of respondents described themselves as beginner, while 33% described themselves as possessing intermediate or expert knowledge of investments.

Statistical Results

Variables were recoded to represent the demographic characteristics. Men were coded as 1, and women were coded as 0. Respondents indicating an age of 40 or less were coded 1 (young), while those with ages falling between 41 and 60 were coded 2 (middle-aged), and those with ages of 61 or older were coded as 3 (older). Married respondents were coded as 1, while all others (single) were coded as 0. Respondents with incomes less than $29,999 were coded as 1, while those with incomes between $30,000 and $69,999 were coded 2, and respondents with incomes above $70,000 were coded as 3. Risk preference scores were categorized as follows. Individuals scoring less than 21 were classified as having low investment risk preference, while individuals with index scores between 22 and 27 were considered to have a moderate investment risk preference. A score of 28 or above was categorized as high investment risk preference.

Gender differences. It was hypothesized that the mean index scores of male ($M = 23.72$, $SD = 4.58$) and female ($M = 24.31$, $SD = 3.91$) respondents should differ significantly, with men having higher mean scores than women. The hypothesis was tested using a pooled variance t-test. The null hypothesis, H1: $\underline{M}_{Men} = \underline{M}_{Women}$, stated that there were no differences in mean risk preference scores between men and women. The results of the t-test (Table 1) revealed no statistically significant differences in mean scores of respondents, $t(66) = -.55$, $p > .05$. The null hypothesis was not rejected.

Age differences. According to the most commonly used risk preference rule-of-thumb, mean index scores of young ($M = 23.686$, $SD = 4.497$), middle-aged ($M = 24.095$, $SD = 3.285$), and older ($M = 25.0.83$, $SD = 4.814$) respondents should differ

significantly, with older adults having lower mean scores than younger individuals. As an approach of assessing the statistical significance of the relationship between investor age and risk preference an ANOVA procedure was undertaken.

The null hypothesis, H2: $M_{Young} = M_{Middle-Aged} = M_{Older}$, stated that there were no mean differences based on age. The results of the one-way ANOVA (Table 2) revealed no statistically significant differences in mean scores of respondents, $F(2, 65) = .49, p > .05$. Furthermore, older respondents not only didn't have lower index scores when compared to younger respondents, on average their scores were higher than younger and middle-aged respondent scores. The pattern of means was consistent with the null hypothesis, thus, the results suggested no reason to reject the null hypothesis.

Marital status differences. Based on another rule-of-thumb, it was hypothesized that non-married individuals (M = 25.19, SD = 4.53) would have higher risk index scores than married respondents (M = 23.72, SD = 4.58). A pooled variance t-test was used to investigate this proposition. The null hypothesis, H3: $M_{Single} = M_{Married}$, suggested that there was no difference in mean risk scores between singles and married. T-test results (Table 1) revealed no statistically significant differences, $t(66) = -1.72, p > .05$. The null hypothesis was not rejected.

Table 1

Pooled variance t-test results of risk preference by gender and marital status.

Group	N	Mean	SD	t
Gender difference				
Males	29	23.72	4.58	-.55 (n.s.)
Females	39	24.31	3.91	
Marital difference				
Singles	26	25.19	4.53	-1.72 (n.s.)
Married	42	23.36	3.86	

Income differences. A widely held financial planning rule-of-thumb assumes that individuals with higher incomes prefer more risk than those with lower incomes. An ANOVA procedure was undertaken to determine if lower income respondents (M = 23.700, SD = 4.378), middle-income respondents (M = 24.457, SD = 4.421), and high income respondents (M =

23.538, SD = 3.357) in fact had significantly different risk preferences. The null hypothesis, H4: $M_{Low Income} = M_{Mid-Income} = M_{High Income}$, stated that there were no differences in mean risk preference index scores based on income. ANOVA results (Table 2) revealed that income and investor risk preference were independent of each other, $F(2,65) = .33, p > .05$. The null hypothesis was not rejected.

Table 2

Analysis of variance of risk preference by age and income.

Source	df	SS	MS	F	p
Age difference (N =68)					
Between	2	17.5	8.7	.49	.614
Within	65	1158.3	17.8		
Total	67	1175.8			
Income difference (N = 68)					
Between	2	11.6	5.8	.33	.724
Within	65	1164.1	17.9		
Total	45	1175.8			

*p<.05

Results and Discussion

The results of this study suggest that commonly held investor risk preference rules-of-thumb may not accurately predict investor risk preference. There appears to be no relationship between gender and risk preference, age and risk preference, marital status and risk preference, or income and risk preference. In the words of Cutler (1995), risk preference rules-of-thumb based on these variables may be little more than myth.

The results further suggest that caution be employed before using risk preference rules-of-thumb based on gender, age, marital status, and income in personal financial management decisions. Instead, researchers and practitioners should look to other factors such as liquidity needs, net worth, stability of employment, tax status, and income variability when allocating financial resources (Cutler, 1995; Droms, 1988; Yoo, 1994).

The need for more risk preference research using survey instruments, and larger samples than the

one used here, is crucial. Survey methods offer a way to directly compare individuals by allowing the standardization of situations that can be presented to anyone (MacCrimmon & Wehrung, 1986). Furthermore, surveys allow examination of the relationship and relevance between risk preference and other factors like inheritances received, life-style changes, fads, generational experiences, inertia, ignorance, and sociological or psychological mechanisms (Cutler, 1995; Hirsch, 1996; Lux, 1995).

As financial planners, consumer finance educators, and family financial management researchers endeavor to assist individuals and families understand their unique investment situations the results of this study, and others like it, will be useful in establishing appropriate risk preference guidelines. In summary, the further development of guidelines, and the continued testing of existing investor risk preference rules-of-thumb, is needed in order to assure that the aging baby boomer generation receives reliable and valid resource allocation advice.

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