Effect of KUJ preference on investment behavior: Survey based evidence

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ABSTRACT

Using data from a survey, this study tests the impact of "keeping up with the Joneses" (KUJ) preference on individuals' tendency to follow others in investment behavior Consistent with theoretical models in literature, the results show that KUJ preference has positive and significant effect on individuals' tendency to follow others in investment decision including asset allocation and stock selection. Further tests show that individuals' tendency to follow others' market perception and use of financial resources is significantly affected by their KUJ preference. Overall, this study presents new empirical evidence regarding the relationship between investor behavior and KUJ preference.

Keywords: Keeping up with the Joneses (KUJ), Investment behavior, Individual investor

INTRODUCTION

Since Shiller (1984), the social aspects of investment decisions have been catching more attention, especially during the past two decades. Among others, one important social aspect is individuals' preference to "keep up with the Joneses" (KUJ hereafter), i.e., the desire to emulate others' consumption. The effect of KUJ preference on investment and asset pricing has been proposed and documented in literature (e.g., Abel, 1990; Gali, 1994; Chan and Kogan, 2002; DeMarzo, Kaniel, and Kremer, 2007). However, the empirical evidence regarding the role of KUJ preference on individuals' investment behavior remains scant.

This study investigates the impact of KUJ preference on individuals' investment behavior. First, this study examines how KUJ preference affects individuals' asset allocation. In a theoretical model, Park (2009) derives conditions under which the existence of KUJ preference could result in the shift of individuals' portfolios into the same direction as others'.[1] In this study, a measure of KUJ preference is constructed and explored to determine if KUJ preference has significant effect on individual's tendency to switch asset allocation to follow others with equivalent financial status. Second, this study examines the influence of KUJ preference on individuals' stock selection. DeMarzo, Kaniel, and Kremer (2007) develop a model in which even rational and risk-averse agents may overinvest in a risky technology stock. With the model, the authors demonstrate that an indirect utility for wealth with KUJ properties can induce herding and hence promote investment bubbles. By the same token, it is the argument of this study that individuals' stock selection decisions can be derived from their KUJ tendency because of concerns regarding status relative to others in the future. Third, as further tests, this study also investigates the impact of KUJ preference on individuals' market perception and use of advisor and other financial resources.

In this analysis, data is employed from a survey conducted among residents in the New York state. The results indicate that individuals' investment behavior is significantly affected by KUJ preference. Specifically, this study finds that KUJ has positive and highly significant effect on individuals' tendency to shift asset allocation and to select stocks following others with currently equivalent financial status. Additionally shown is that with the increase in KUJ, individuals' tendency to follow others in market perception and in utilization of financial resources also increases. To deal with the possibility that our results could be driven by personal characteristics, this study makes use of the vast difference in personal characteristics of the two groups (paper survey and online survey) and run tests for each group separately. The conclusions remain the same for each group.

This study contributes to the literature in several aspects. First, using survey based tests, this study attempts to provide direct evidence regarding the effect of KUJ preference on individual investment behavior. Empirical research on KUJ in finance often times relies on publicly available stock return data (e.g., Gomez, Priestley, and Zapatero, 2009) or data contained in filing reports (e.g., Oehler, Rummer, and Wendt, 2008). This research extends the literature by conducting a survey, and the results are consistent with predictions in the theoretical

[1]Another study by Duflo and Saez (2002) provides empirical evidence showing that people's participation and investment decisions in a retirement plan are influenced by colleagues' choices. This study differs from Duflo and Saez (2002) in that the focus on the effect of KUJ and construct a measure of KUJ in the questionnaire while Duflo and Saze (2002) focus on peer effect and use a dummy for peer group as the main variable.

models in the literature regarding KUJ (e.g., DeMarzo, Kaniel, and Kremer, 2007). Second, the evidence of KUJ preference affecting individuals' perception of market directions and use of financial resources partly explains a possible mechanism through which KUJ preference may induce individuals' investment decisions. Third, in this research, this study attempts to build constructs in a survey for measuring variables of KUJ and investment behaviors.[2] Future study can be done using similar measurements to further explore research questions related to KUJ preference.

The remainder of the article proceeds as follows. The second section briefly discusses related literature and the hypotheses. The third section presents methodology including sample, survey design, reliability and face validity analysis, and respondents' profile. The fourth section provides results and the fifth section concludes.

RELATED LITERATURE AND HYPOTHESES

The research in this study is directly related to the literature on the effect of KUJ preference on investment and asset pricing. Although the traditional capital asset pricing model contends that individuals draw utility from their own consumption, economists are aware that individuals may be motivated in part by their relative position.[3] This behavior of comparing themselves with others around them, commonly called "keeping up with the Joneses" (KUJ), can be traced back to Adam Smith. Smith (1759) believes that sentiments arising from relative position drive people to pursue riches and avoid poverty. People desire the state of being relatively richer than others, not simply rich. However, the inclusion of KUJ preference in asset pricing only began to receive much attention in recent times, though KUJ aspect has been discussed in Shiller (1984).

Studies by Abel (1990) and Gali (1994) mark a foundation for incorporating KUJ preference into asset pricing models. Gali (1994) formalizes the presence of consumption externality into the standard Capital Asset Pricing Model (CAPM). In the model, an individual preference is derived by the person's own consumption as well as by average consumption per capita in the economy. His model specifies that an increase in average consumption will in turn either raise or reduce the marginal utility of an individual's own consumption. The former case represents the "keeping up with the Joneses" (KUJ), that is, the average consumption of other individuals makes any additional unit to one's current level of consumption become more valuable. One important conclusion from Gali's model is when the relative position is included in the CAPM, the presence of KUJ tends to increase the risky share in the optimal portfolio, a departure from the outcome of the standard CAPM. Abel (1990), in a similar vein, incorporates the consumption externalities in the standard CAPM, but uses lagged – not current – average consumption per capita to capture the KUJ behavior. Both Abel (1990) and Gali (1994) suggest that there is an association between agents' KUJ preference and investment behavior.

Recently, more theories on asset pricing with the inclusion of the KUJ preference have been developed (e.g., Chan and Kogan, 2002; DeMarzo, Kaniel, and Kremer, 2007). Gomez, Priestley, and Zapatero (2009) empirically examine the implications of KUJ for the cross section of stock returns in an international setting. The paper shows that their model considering agents with KUJ preference is better than alternative international asset pricing models in terms of

[2] The questionnaire is available upon request.
[3] See Gao and Ulrich (2005) for the review on the divergence of agent's utility maximization.

explaining the cross-section of stock returns and size of the pricing errors. Using data of German mutual fund, Oehler, Rummer, and Wendt (2008) empirically find that investors hold a higher than optimal portion of domestic assets and there is a significant bias towards equities from European countries. The finding is consistent with Lauterbach and Reisman (2004) who argue that investors prefer domestic assets to mimic the economic fortunes and welfare of their neighbors, countrymen, and social reference group.

The research conducted in this study examines the effect of KUJ preference on individuals' investment behavior, specifically concentrating on how KUJ preference affects individuals' tendency to switch asset allocation and stock selection to follow others with equivalent financial status. Previous studies (e.g., Park, 2002; DeMarzo, Kaniel, and Kremer, 2007) have theoretically shown that individuals with properties of KUJ preference may tend to follow others in investment decisions. This study attempts to provide direct empirical evidence by testing the following main hypotheses:

H1a: There is a positive relationship between one's KUJ preference and one's tendency to follow others in asset allocation decisions.
H1b: There is a positive relationship between one's KUJ preference and one's tendency to follow others in stock selection decisions.

A further question regarding the relationship between KUJ preference and investment decision is that there could be different channels through which KUJ preference may affect individuals' investment decisions. One potential channel is that people with KUJ preference may tend to change their perceptions about financial market conditions or market directions due to following others. Changing market perception may eventually lead people to follow others' investment decisions. Another consideration is that their use of financial resources, for example, selection of financial advisors, may tend to be affected by others. Studies have found that significant numbers of individual investors rely heavily on financial advisor to make their trades (e.g., Wood and Zaichkowsky, 2004). Accordingly, having tendency to appoint the same financial advisors as their peers may be one of the reasons for people with KUJ preference to follow other's investment decisions. Therefore, as an attempt to explore the mechanism through which KUJ preference affects investment decisions, the following hypotheses are posed for additional tests:

H2a: There is a positive relationship between one's KUJ preference and one's tendency to follow others in judging market conditions.
H2b: There is a positive relationship between one's KUJ preference and one's tendency to follow others in using financial consulting services and other financial resources.

METHODOLOGY

Sample

The sample for this survey is gathered from residents in the upper region of the state of New York. For this survey, participants are asked to fill out the questionnaire including their personal characteristics, measures of KUJ, and investment behaviors. The survey is distributed in two forms: a paper version and an online version. Participants are only permitted to take one

version of the survey, as both instruments are identical in structure and questions. Both distributions implement snowball sampling to gather responses. The paper survey was distributed to students enrolled in a training program at a carpentry school in Albany, NY and to local residents in the Albany area. Among the 100 copies of paper survey handed out, 65 responses were received, among which 56 finished the complete survey. As for the online version, the link to the survey website was posted on a social networking website and distributed via email contact lists. Among the 79 attempts to do the survey on the website, 58 completed the survey. In combination of the paper and online survey, the sample size is 114 for statistical analyses.[4]

Survey Design

The survey questionnaire is divided into six major parts.[5] Part One includes ten questions regarding personal information including age, gender, ethnicity, marital status, education, occupation and employment status, income level, use of financial advisor, use of media to access financial information, and willingness to take risks. Part Two is twenty questions regarding the construct of KUJ preference. The Likert scale is used in analyses with values from one to five (one representing strongly disagree and five representing strongly agree) for each question to indicate an individual's preference in each scenario. Once the total score based on individuals' responses from the twenty questions is calculated, each participant in the sample is assigned a score of KUJ with the range of 20 for the lowest KUJ preference and 100 for the highest KUJ preference.

Part Three contains five questions regarding the construct of tendency to follow others in asset allocation (TFAA). Similar to the construct of KUJ, the Likert scale with values from one to five (one representing strongly disagree and five representing strongly agree) is used for each question. Each participant in the sample has a score of TFAA with the range of 5 for the lowest to 25 for the highest. Parts Four, Five and Six comprise of the constructs of tendency to follow others in stock selection (TFSS), to follow others in market perception (TFMP), and to follow others in using financial resources (TFFR), respectively. Analogous to TFAA, the three variables including TFSS, TFMP, and TFFR are measured based on individuals' answers to five questions and the range is from 5 for the lowest to 25 for the highest. Sample questions for the measures of KUJ, TFAA, TFSS, TFMP, and TFFR are listed in Appendix A.

Reliability and Face Validity Analysis

To check the reliability of the questionnaire, Cronbach Alpha is calculated. As indicated in Table 1, the alpha values for each variable: KUJ, TFAA, TFSS, TFMP, and TFFR are 0.9193, 0.8605, 0.8273, 0.8252, and 0.8132, respectively. Clearly, the reliability of these measures as

[4] In the statistical tests, this study excludes the observations with missing information on personal characteristics including career, etc. The conclusions hold if those observations were kept in the tests.

[5] Prior to each of the major parts within the questionnaire, a statement is laid out as follows: "The function of this survey is to gather information with regards to a person's consumption and investment behavior. Participation in this questionnaire is strictly voluntary, anonymous, and confidential. All responses are used for research purposes only and no names, identities or personal information will be published."

gauged by Cronbach Alpha is well above the satisfactory threshold of 0.7 (Hatcher, 1994; Nunnally, 1978). See Table 1 in the Appendix.

The questionnaire was also validated by five academic experts in the fields of economics and finance. These individuals do not have issues regarding the face validity of the questionnaire. Therefore, the designed questionnaire was used with confidence.

Respondents' Profile

Table 2 provides the descriptive statistics for the profile of the respondents in the sample. About 45.61 percent of participants in the sample are of the age of 35 or above, 47.37 percent of them are female, 88.60 percent are Caucasian, 37.72 percent are married, 28.95 percent have education of bachelor degree or above, 65.79 percent are employed, 83.33 percent has annual income higher than $25,000, 25.44 percent of people use financial advisors for their investment decision, 44.74 percent use media to access to financial information at the frequency of 2-3 times a month or more. Only 3.51 percent are in accounting- or finance-related professionals. As for their willingness to take risks, the average of the sample is 5.614 (with 1 for lowest willingness to take risks and 10 for highest willingness to take risks). Definitions of variables used to describe personal characteristics are provided in Appendix B. Personal characteristics of respondents will enter the estimation models as control variables. See Table 2 in the Appendix.

Turning to the main variables of this study, the mean (standard deviation) of KUJ is 48.2368 (13.8917) and ranges are from 20 to 83. By this study's measurement, the bottom scale of KUJ is 20 and the top scale of KUJ is 100. The range of 20 to 83 reflects the fact that the participants are fairly varied in KUJ. With regard to investment decision variables, TFAA and TFSS have means (standard deviation) of 13.0614 (3.8450) and 13.1842 (3.6204), respectively. Considering the measures of TFAA and TFSS with the bottom scale of 5 and top scale of 25, participants in the sample of this research vary in terms of their tendency to follow others in investment decision.

As indicated before, this study also measures two additional variables, TFMP and TFFR, for additional tests. In the same way as TFAA and TFSS are assessed, the variables TFMP and TFFR are measured with the scale of 5 to 25. TFMP and TFFR have means (standard deviation) of 13.0439 (3.6516) and 13.6579 (3.7341), respectively.

RESULTS

In this section, first presented are findings of the main tests regarding the effects of KUJ preference on individuals' investment behavior including asset allocation and stock selection. Further tests regarding market perception and use of financial resources are reported next. Finally, to mitigate the possibility that the results could be driven by some personal characteristics, this study investigates the samples of online survey participants and paper survey participants separately and the results are reported.

Main Tests

Table 3 presents the results for the impact of KUJ preference on individuals' tendency to follow others in asset allocation (TFAA) and stock selection (TFSS). First regressions of the investment behavior on KUJ preference without controlling any personal characteristics are run,

as shown in Model 1. Then in Model 2, the study incorporates the control variables for personal characteristics into the regression. The control variables regarding participants' profile are discussed in the previous section. See Table 3 in the Appendix.

Examining the results for TFAA as shown in Panel A of Table 3, the coefficient on KUJ is positive and highly significant in Model 1. This indicates a positive effect of KUJ on individuals' tendency to follow others in asset allocation (TFAA). After controlling for personal characteristics in Model 2, the coefficient on KUJ remains positive and highly significant with p-value lower than .0001. Clearly, results from both models support our hypothesis H1a. As for control variables, one statistical significant factor in Model 2 is the variable indicating whether the participant has annual income higher than $25,000. The positive and significant coefficient indicates that participants in our sample with annual income of $25,000 or more show stronger tendency to follow others in asset allocation than those with less income. This could suggest that following others' asset allocations is getting more attainable as individuals have more resources and thus have an increased flexibility in allocating their investments. Another personal characteristic with a significant coefficient is the variable indicating the participant's job related to accounting or finance. The results indicate that one's tendency to follow others in asset allocation decreases if one's job is related to accounting or finance. All other variables are shown to have no significant effect on TFAA.

Panel B of Table 3 presents results for stock selection (TFSS). Consistent with the results for TFAA, it is continued to observe the positive and significant coefficient on KUJ in both with and without control variable models. The results of this test support hypothesis H1b. The only control variable with significant effect on TFSS is the income variable, indicating that participants in this sample with annual income of $25,000 or more show stronger tendency to follow others in investment decision.

Further Tests

Table 4 provides the results for the effect of KUJ preference on individuals' tendency to follow others in market perception (TFMP) and use of financial advisor and other financial resources (TFFR). See Table 4 in the Appendix.

For TFMP, the coefficients on KUJ in both models are positive and highly significant, as indicated in Panel A; thus hypothesis H2a is supported. Model 2 in Panel A also shows that the only control variable with significant effect on TFMP is the income variable. This indicates that participants in the sample with annual income of $25,000 or more show a stronger tendency to follow others in forming market perceptions.

Panel B of Table 4 shows that coefficients on KUJ remain positive and significant as expected. Hypothesis H2b for the positive relationship between KUJ and use of advisor and other financial services (TFFR) is also supported. None of the personal characteristics prove to be significant for TFFR.

Tests based on separate samples

As indicated in the main tests and further tests, this research shows that KUJ has positive effect on TFAA, TFSS, TFMP, and TFFR. However, there is a possibility that these results could be driven by personal characteristics in the sample. Looking into the personal characteristics of participants in paper survey and online survey, it can be seen that the two groups are quite

different in all of the dimensions including age, education, income, and other key features (see Appendix C). Tests using the two groups of participants with different characteristics separately will help to mitigate the concern that these results are driven by personal characteristics.

Results based on data from the paper survey are presented in Table 5. Regressions are conducted with control variables of personal characteristics that are present in Model 2 in Tables 3 and 4 with omission of the variable "accounting- or finance-related job."[6] For brevity, this study does not present coefficients on control variables. Coefficients on KUJ are positive and significant for all the four dependent variables including TFAA, TFSS, TFMP, and TFFR. See Table 5 in the Appendix.

Table 6 presents results based solely on online survey data. In Table 6, regression tests are run with all the control variables of personal characteristics that are included in Model 2 in Tables 3 and 4. Consistent with previous results, the results continue to indicate the positive and significant effect of KUJ preference on all of the four dependent variables. One main difference between results based on the paper survey and the online survey is that the magnitude of the coefficients on KUJ is larger for online survey results. See Table 6 in the Appendix.

In sum, the results of this study for the positive relationship between KUJ preference and investment behavior are robust to different groups of participants with different personal characteristics.

CONCLUSION

Traditional financial theories assume that individuals draw utility from their own consumption. However, many researchers are mindful that the behavior of comparing themselves with others around them, depicted as "keeping up with the Joneses (KUJ)," may drive individuals' investment decisions. This research investigates the impact of KUJ preference on investment behavior of individuals. This study conducted a survey among residents in the upper region of the New York state regarding their KUJ preference and investment behavior. The results show that the KUJ preference has positive and significant effect on individuals' tendency to follow others in investment decision. Further tests show that individuals' tendency to follow others' market perception and use of financial resources is significantly affected by their KUJ preference. Overall, this study presents new empirical evidence regarding the relationship between investor behavior and the KUJ preference. Results of this study are consistent with the theoretical models in the literature (e.g., DeMarzo, Kaniel, and Kremer, 2007).

While interpreting the findings, one has to keep two potential issues in mind. First, the results regarding the impact of KUJ preference could be sensitive to personal characteristics of participants in the survey. While this study investigates the two samples (online survey versus paper survey) separately to mitigate the concern, an experimental research in the future may help deal with the issue completely. Second, the research has the usual limitations of a survey study. It is well known that survey methodology may suffer from non-response bias. It should be added, however, that the good response rate in this study (e.g., 56 percent response rate for paper survey) should mitigate such bias, if there is any present. This work is to be viewed as a beginning step towards future research with more comprehensive analyses, which may

[6] None of participants in paper survey has accounting- or finance-related job.

eventually provide a quantitative estimate of the KUJ parameter in the asset pricing models incorporating social aspects of investment decision making.

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Appendix A: Sample questions for the measures of KUJ, TFAA, TFSS, TFMP, and TFFR.

Sample question for KUJ measure: "Currently you are using a cell phone that is functional but an older model. Your coworkers have recently purchased cell phones with the newest technology. You will feel pressure to buy a phone with the newest technology."
Sample question for TFAA measure: "Three close friends, whom you consider your financial equals, regularly share their investment decisions with you. All three have recently increased their stock holdings by 40% and decreased their bond and cash holdings by 20% each. Your current portfolio holds 55% cash, 25% stocks, and 15% bonds. You consider taking the same strategy as your close friends."
Sample question for TFSS measure: "Your coworkers, whom you consider your social equals, have been discussing their investment in stock M and its positive returns. Currently you hold stock T; stock of a rival corporation to the company which issues stock M. You contemplate changing your holding from stock T to stock M."
Sample question for TFMP measure: "Your neighbors recently discussed their investment in market KJG and their belief that the market is headed for a period of growth. You consider investment in market KJG."
Sample question for TFFR measure: "A group of coworkers discuss the recent growth they have seen in their portfolios. Each attributes the growth to the strategies they learned in their new investment class. You contemplate enrolling in this investment class."

Appendix B: Control Variable Definitions for Personal Characteristics

Age: Dummy variable, equal to 1 if participant indicated age to be 35 years or older; 0 otherwise.

Female: Dummy variable, equal to 1 if participant is female; 0 otherwise.

Caucasian: Dummy variable, equal to 1 if participant responded with a Caucasian race; 0 otherwise.

Married: Dummy variable, equal to 1 if participant reported marital status as married; 0 otherwise.

Bachelor: Dummy variable, equal to 1 if participant indicated an education level of a 4-year bachelor's degree or above; 0 otherwise.

Job: Dummy variable, equal to 1 if participant indicated as being employed; 0 otherwise.

Income higher than $25,000: Dummy variable, equal to 1 if participant identified an income level of $25,000 and above; 0 otherwise.

Advisor: Dummy variable, equal to 1 if the participant answered "yes" to using the services of a professional financial advisor; 0 otherwise.

Media: Dummy variable, equal to 1 if participant indicated reviewing financial media with a frequency of 2-3 times a month or more; 0 otherwise.

Willing to take risks: Score reported by participant regarding willingness to take risks with range from 1 to 10

Accounting or finance related job: Dummy variable, equal to 1 if participant identified as having or having had (retired from) an occupation related to finance or accounting; 0 otherwise.

Appendix C: Comparison of personal characteristics between paper and online group

Table C1: Age

Which range includes your age?				
Answer Options	Response Percent - Online	Response Count – Online	Response Percent - Paper	Response Count – Paper
Younger than 18	0.00%	0	0.00%	0
18 - 24	37.93%	22	23.21%	13
25 - 34	22.41%	13	25.00%	14
35 - 44	12.07%	7	7.14%	4
45 - 54	20.69%	12	16.07%	9
55 - 64	3.45%	2	7.14%	4
65 or older	3.45%	2	21.43%	12
Total Answered Question	100%	58	100%	56

Table C2: Gender

Please indicate your gender:				
Answer Options	Response Percent - Online	Response Count - Online	Response Percent - Paper	Response Count – Paper
Female	65.52%	38	28.57%	16
Male	32.76%	19	69.64%	39
Transgendered	1.72%	1	1.79%	1
Total Answered Question	100%	58	100%	56

Table C3: Race/Ethnicity

Please select your race/ethnicity:				
Answer Options	Response Percent - Online	Response Count - Online	Response Percent - Paper	Response Count – Paper
African American	3.45%	2	8.93%	5
Asian/Pacific Islander	0.00%	0	1.79%	1
Caucasian	91.38%	53	85.71%	48
Latin American	0.00%	0	3.57%	2
Native American	3.45%	2	0.00%	0
Other	1.72%	1	0.00%	0
Total Answered Question	100%	58	100%	56

Table C4: Marital Status

Please indicate your current marital status:				
Answer Options	Response Percent - Online	Response Count - Online	Response Percent - Paper	Response Count - Paper
Single	51.72%	30	51.79%	29
Married	41.38%	24	33.93%	19
Married, Separated	0.00%	0	3.57%	2
Divorced	1.72%	1	8.93%	5
Widowed	5.17%	3	1.79%	1
Total Answered Question	100%	58	100%	56

Table C5: Education Level

Please indicate your current level of education:				
Answer Options	Response Percent - Online	Response Count - Online	Response Percent - Paper	Response Count - Paper
Some Primary Education	0.00%	0	3.57%	2
High-School Diploma/GED Equivalent	10.34%	6	39.29%	22
Some College/Vocational School	31.03%	18	37.50%	21
2-yr Associate Degree	12.07%	7	8.93%	5
4-yr Bachelor's Degree	36.21%	21	7.14%	4
Master's Degree	8.62%	5	3.57%	2
Doctorate Degree	1.72%	1	0.00%	0
Total Answered Question	100%	58	100%	56

Table C6: Occupation

Please select the category that most includes your current occupation:				
Answer Options	Response Percent - Online	Response Count - Online	Response Percent - Paper	Response Count - Paper
Accounting Related	3.45%	2	0.00%	0
Computer Science and Mathematics	12.07%	7	0.00%	0
Finance Related	1.72%	1	0.00%	0
Office/Administrative	13.79%	8	0.00%	0
Retired, with accounting or finance background	1.72%	1	0.00%	0
Retired, without accounting or finance background	1.72%	1	21.43%	12
Sales and Marketing	10.34%	6	1.79%	1
Student	27.59%	16	0.00%	0
Unemployed	5.17%	3	10.71%	6
Other	22.41%	13	66.07%	37
Total Answered Question	100%	58	100%	56

Table C7: Income

Which range below best describes your current household income level?				
Answer Options	Response Percent – Online	Response Count – Online	Response Percent - Paper	Response Count – Paper
$0 - 25,000	17.24%	10	16.07%	9
$25,001 - 50,000	15.52%	9	57.14%	32
$50,001 - 75,000	25.86%	15	8.93%	5
$75,001 - 100,000	18.97%	11	16.07%	9
Above $100,000	22.41%	13	1.79%	1
Total Answered Question	100%	58	100%	56

Table C8: Use of Professional Financial Advisor

Do you use the services of a professional financial advisor?				
Answer Options	Response Percent - Online	Response Count - Online	Response Percent - Paper	Response Count – Paper
Yes	22.41%	13	28.57%	16
No	77.59%	45	71.43%	40
Total Answered Question	100%	58	100%	56

Table C9: Willingness to take risks

Please rate your current level of willingness to take risks on a scale from 1 to 10; 1 indicates no willingness to take risks and 10 represents the most willingness to take risks.				
Answer Options	Response Percent - Online	Response Count – Online	Response Percent - Paper	Response Count – Paper
1	0.00%	0	7.14%	4
2	1.72%	1	3.57%	2
3	20.69%	12	12.50%	7
4	10.34%	6	12.50%	7
5	13.79%	8	17.86%	10
6	20.69%	12	3.57%	2
7	13.79%	8	10.71%	6
8	15.52%	9	16.07%	9
9	1.72%	1	7.14%	4
10	1.72%	1	8.93%	5
Total Answered Question	100%	58	100%	56

Table C10: Use Media to Gather Financial Information

How often do you use media (newspapers, TV, internet sites, etc.) to gather financial information?				
Answer Options	Response Percent - Online	Response Count - Online	Response Percent - Paper	Response Count – Paper
Daily	34.48%	20	30.36%	17
2-3 times per week	12.07%	7	14.29%	8
Weekly	12.07%	7	7.14%	4
2-3 times per month	3.45%	2	5.36%	3
Monthly	15.52%	9	7.14%	4
Every 6 months	3.45%	2	5.36%	3
Never	18.97%	11	30.36%	17
Total Answered Question	100%	58	100%	56

Table 1: Cronbach Alpha

This table provides the values of Cronbach Alpha for measures of KUJ, TFAA, TFSS, TFMP, and TFFR for the verification of reliability.

	KUJ	TFAA	TFSS	TFMP	TFFR
Cronbach Alpha	0.9193	0.8605	0.8273	0.8252	0.8132

Table 2: Descriptive statistics

This table provides descriptive statistics for all the variables. The sample size for all variables is 114.

Variable	Mean	Std Dev	Minimum	Maximum
TFAA	13.0614	3.8450	5	22
TFSS	13.1842	3.6204	5	20
TFMP	13.0439	3.6516	5	22
TFFR	13.6579	3.7341	5	20
KUJ	48.2368	13.8917	20	83
Control Variables for Personal Characteristics				
Age above 35	0.4561	0.5003	0	1
Female	0.4737	0.5015	0	1
Caucasian	0.8860	0.3193	0	1
Married	0.3772	0.4868	0	1
Bachelor or above	0.2895	0.4555	0	1
Job	0.6579	0.4765	0	1
Income higher than $25,000	0.8333	0.3743	0	1
Use advisor	0.2544	0.4374	0	1
Use media	0.4474	0.4994	0	1
Willing to take risks	5.6140	2.3024	1	10
Accounting or finance related job	0.0351	0.1848	0	1

Table 3: This table provides regression results for effect of KUJ on investment behavior. In Panels A and B, dependent variables are TFAA and TFSS, respectively. *p*-values based on two-tailed test are presented.

Panel A: Dependent Variable-- TFAA

	Model 1		Model 2	
	Coefficient	P-Value	Coefficient	P-Value
Intercept	5.6327	<.0001	3.6454	0.1048
KUJ	0.1540	<.0001	0.1416	<.0001
Age above 35			0.0252	0.9747
Female			-0.0919	0.8915
Caucasian			-0.3235	0.7423
Married			0.8415	0.2700
Bachelor or above			0.2903	0.6915
Job			-0.7990	0.2448
Income higher than $25,000			2.1800	0.0104
Use advisor			0.3015	0.6908
Use media			-0.1254	0.8558
Willing to take risks			0.2337	0.1516
Accounting or finance related job			-3.4155	0.0458
Adj. R^2	0.3034		0.3381	
N	114		114	

Panel B: Dependent Variable -- TFSS

	Model 1		Model 2	
TFSS	Coefficient	P-Value	Coefficient	P-Value
Intercept	6.3247	<.0001	4.2751	0.0496
KUJ	0.1422	<.0001	0.1376	<.0001
Age above 35			0.6210	0.4194
Female			-0.1790	0.7832
Caucasian			-0.6029	0.5259
Married			-0.0298	0.9677
Bachelor or above			0.8304	0.2411
Job			0.3620	0.5842
Income higher than $25,000			1.9064	0.0200
Use advisor			-0.4484	0.5403
Use media			-0.2926	0.6606
Willing to take risks			0.1523	0.3319
Accounting or finance related job			-1.6085	0.3263
Adj. R^2	0.2915		0.3039	
N	114		114	

Table 4: This table provides regression results for effect of KUJ on market perception and use of financial resources-- the channel through which KJU may affect investment behavior. In Panels A and B, dependent variables are TFMP and TFFR, respectively. *p*-values based on two-tailed test are presented.

Panel A: Dependent Variable -- TFMP

	Model 1		Model 2	
TFMP	Coefficient	P-Value	Coefficient	P-Value
Intercept	5.3066	<.0001	3.2251	0.1107
KUJ	0.1604	<.0001	0.1622	<.0001
Age above 35			0.5442	0.4476
Female			-0.8888	0.1447
Caucasian			-0.2465	0.7806
Married			0.0552	0.9358
Bachelor or above			0.9734	0.1411
Job			-0.1596	0.7957
Income higher than $25,000			2.2875	0.0030
Use advisor			0.1309	0.8477
Use media			-0.1730	0.7806
Willing to take risks			0.0591	0.6856
Accounting or finance related job			-0.0852	0.9554
Adj. R^2	0.3667		0.4059	
N	114		114	

Panel B: Dependent Variable -- TFFR

	Model 1		Model 2	
Variable	Coefficient	P-Value	Coefficient	P-Value
Intercept	6.1232	<.0001	6.9130	0.0024
KUJ	0.1562	<.0001	0.1417	<.0001
Age above 35			-0.0240	0.9759
Female			-0.2262	0.7360
Caucasian			0.0258	0.9790
Married			-0.3545	0.6399
Bachelor or above			-0.3756	0.6061
Job			0.0983	0.8853
Income higher than $25,000			1.0185	0.2234
Use advisor			-0.3256	0.6661
Use media			-1.1042	0.1102
Willing to take risks			-0.0116	0.9426
Accounting or finance related job			-0.6105	0.7173
Adj. R^2	0.3318		0.3044	
N	114		114	

Table 5: This table provides regression results from paper survey sample only. Independent variables are same as those in full sample results except without the variable of "Accounting or finance related job." To save space, coefficients of the control variables are not reported. Dependent variables are TFAA, TFSS, TFMP, and TFFR, respectively. *p*-values based on two-tailed test are presented below the coefficients.

Variable	TFAA	TFSS	TFMP	TFFR
KUJ	0.1059 0.0080	0.1305 0.0010	0.1514 <0.0001	0.1299 0.0008
Adj. R^2	0.1538	0.1984	0.2438	0.2694
N	56	56	56	56

Table 6: This table provides regression results from online survey sample only. Independent variables are same as those in full sample results. To save space, coefficients of the control variables are not reported. Dependent variables are TFAA, TFSS, TFMP, and TFFR, respectively. *p*-values based on two-tailed test are presented below the coefficients.

Variable	TFAA	TFSS	TFMP	TFFR
KUJ	0.1785 <0.0001	0.1429 0.0001	0.1929 <0.0001	0.1314 0.0009
Adj. R^2	0.5373	0.4473	0.5009	0.4375
N	58	58	58	58