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Do Risk Disclosures Affect Investment Choice?

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Abstract

The aim of this study was to understand the potential effects of different information disclosures regarding risk on retirement investing behavior. We developed and tested two modifications to the section on investment performance on the prototype DOL Model Comparative Chart, providing additional risk and return information in a clear graphical manner. One modification provided summary risk ratings, while the other provided a visual representation of actual returns series over 10 years. We conducted an experiment using a nationally representative internet survey. All participants were asked to perform the same hypothetical task allocating retirement investments over a range of six possible typical investment fund options. Treatment groups were randomly allocated to receive different representations of the same risk/return information. We also investigated order effects by randomizing the presentation order of the six investment options. Alternative representations of the risk/return information had a statistically significant effect on allocation decisions, but the practical significance is difficult to determine: although different treatment groups chose different allocations across the six investment options, the risk/return characteristics of the resulting portfolios were very similar. Perhaps surprisingly, the effects of the alternative disclosure forms do not seem to vary across individuals with different levels of financial literacy, or across individuals with different levels of risk aversion. Order effects were stronger than the disclosure form effects, but were independent of the risk characteristics of the investment options: the first and last investment options presented tend to receive larger allocations. Furthermore, the order effects do not appear to be offset by providing additional risk/return information. Our results are consistent with findings that summary disclosure forms are popular with consumers and help them feel more confident about their decisions; our results go further in showing that alternative forms do lead to different choices, but that those different choices may not result in practically significant differences in investment outcomes.

1. Introduction

As an increasing number of Americans come to rely on defined contribution (DC) retirement plans for their long-term support in retirement, their investment decisions become more and more significant. However, many individuals may not understand the tradeoffs between risks and rewards implicit in their decision making, and may be not be able or motivated to make full use of such information even when it is provided. Considerable academic and policy debate has taken place over the role of investment disclosures (as opposed to other, more paternalistic interventions), particularly since the evidence on their ability to change actual behavior remains thin. Our study contributes to this debate by evaluating versions of the Department of Labor (DOL)'s proposed Model Comparative Chart, which provides a standard simplified disclosure format for investment information.

In this study, we developed and tested two modifications to the section on investment performance on the prototype DOL Model Comparative Chart. The current prototype requires disclosure of the 1-year, 5-year, 10-year and 'since inception' average annual returns for each investment fund option provided, and the 1-year, 5-year and 10-year average annual returns for a benchmark or index fund for each option. Our modifications were designed to provide the investor with risk and return information in a clear and concise manner. One proposed modification adds a third party risk/reward rating for each option, with a numeric scale from 1 (lowest risk and reward) to 5 (highest risk and reward), graphically represented with the shading of five circles. An alternative modification replaces the risk/reward rating with a miniature bar chart representing the previous ten years of annual returns for each option.

In order to understand the potential effects of these different information disclosures on retirement investing behavior, we conducted an experiment using a nationally representative internet survey. All respondents were asked to allocate a hypothetical $10,000 retirement savings portfolio between six different investment options (small cap stock index, stock market index, global equity, bond market index, money market and balanced index). Respondents were randomly assigned to receive one of three types of disclosure form (the model form or one of the two modified forms). The order in which the investment options appeared within the tables of options was also randomized between two possible orders, to investigate any effect of the presentation order, independently or in conjunction with the differences in risk information provided.

We find significant effects of alternative risk information on investment allocation behavior: across the experimentally randomized information groups, specific asset classes receive significantly different allocations. However, these changes in allocation may represent distinction without much difference: there is little effect on aggregate equity holdings, aggregate risky asset holdings, or the weighted average risk rating in portfolios, suggesting that additional information causes people to choose different options that have similar risk characteristics, rather than systematically choosing riskier or less risky allocations when they have different information presented. Other possible outcomes of interest – such as individuals avoiding equity altogether, or allocating 100% of their

portfolio to a single asset class – also see no strong effects from the alternative risk information. It should also be noted that order effects are stronger than the disclosure form effects, but are independent of the risk characteristics of the investment options: the first and last investment options presented tend to receive larger allocations. Interactions between the order effects and the information effects are statistically significant, but with no discernible pattern.

Perhaps surprisingly, the effects of the alternative disclosure forms do not seem to vary across individuals with different levels of financial literacy. Furthermore, results utilizing measures of risk aversion show no statistically significant variation in information effect across different levels of risk aversion.

2. Background and related literature

Without risk information, people may fail to consider volatility or make systematic incorrect inferences about risk. Risks and benefits tend to be positively correlated in actuality, but people often perceive that the opposite relationship exists (Fischhoff et al., 1978). Using experimental methods, Alkhami and Slovic (1994) found that when people are told there are high benefits of an activity, they expect it will have low risks and when told there are high risks, they expect low benefits. Similar findings were obtained in the realm of financial investments by Ganzach (2000). People tended to judge unfamiliar assets as either globally "good," low risk and high return, or as globally "bad," with high risk and low return. Only in the case of stocks with which they were already familiar did the judgments of study participants more accurately mirror the positive association between risk and return found in real-world financial markets.

The format of risk and return information provided to investors needs to be carefully considered. The way in which risk information is presented can be especially impactful because people tend to have a poor intuitive understanding of risk. Without carefully designed information formats, people may make systematically incorrect or biased inferences.

The DOL Model Comparative Chart is intended to provide information to retirement plan investors who do not already possess a nuanced understanding of their investment options. Such investors are likely to make incorrect inferences about risk, return, and the relationship between the two that are based on global assessment of the "goodness" or "badness" of a particular asset. Therefore, it is important that an investment disclosure form provide information in a format that highlights both sides of the risk/return coin and does not assume that investors intuit or know this relationship on their own. Perceived risk has been found to predict investment decision making (e.g. Weber et al., 2005) and distorted risk perception could lead to poor financial outcomes.

Experimental evidence from the economics literature suggests that key initiatives to improve and/or standardize disclosure across various domains of financial decisionmaking have ultimately not been effective at changing consumer behavior. For

instance, Beshears et al. (2009) compare the Securities and Exchange Commission's new and significantly simplified Summary Prospectus to their Full Prospectus, and find that the Summary was more popular with consumers and reduced time spent searching for information, but that final decisionmaking was not improved. In the context of consumer credit, Braunsberger, Lucas and Roach (2004) find that college students' ability to correctly choose appropriate credit cards was not significantly affected by whether or not disclosures complied with the Truth-in-Lending format.

Research in this vein has prompted arguments about whether financial disclosure matters at all, and whether policy initiatives aimed at financial information and education for consumers should be deprioritized in favor of more paternalistic interventions. However, evidence shows that consumers are in fact sensitive when fees are salient, such as front-end loads and brokerage commissions (Barber, Odean, and Zheng 2005), suggesting that the design, formatting, and presentation of specific disclosure forms can critically affect user outcomes. In many cases, the mandated disclosure formats tested did not conform to common usability and readability best practices. For instance, the GAO (2006) found that disclosures by most major issuers were often written well above the eighth-grade level at which about half of U.S. adults read; buried important information in text; failed to group and label related material; and used small typefaces. As a result, studies based on existing disclosure statements lack the capacity to inform policymakers of the potential benefits of financial information disclosure. Although forms that are poorly-designed by objective industry standards have been found unsuccessful, there remains a significant opportunity to build an evidence base regarding the disclosure of information in a variety of formats that may be more readily interpretable, in particular risk information.

Given people's limited understanding of risk and return, in principle, information should be presented to investors in a format that makes the relationship between risk and return salient and allows for easy comparison across investments. However, it is also important not to provide too much information in a too complicated way, as that can produce information overload. Vulnerable investors may be particularly susceptible to negative effects of too much information or too much complexity. For example, research has shown that the less-financially literate may be more prone to limited attention and information overload: uninformed consumers tend to search less before making choices (Bettman and Park,1980) and are significantly more likely to report information overload when presented with asset allocation decisions similar to one faced by 401(k) investors (Agnew and Szykman, 2005). Simplification and increased salience of information most crucial for investment decisions could help investors, especially those with little experience or low financial literacy.

Summary information and visual representations can help provide clear risk information to support improved investment decision making. Well-designed graphs and other graphics take advantage of visual perception to make the most critical information easier to evaluate (Lipkus, 2007). People focus attention on visually salient information, which is considered first and weighted more heavily (Hogarth & Einhorn, 1992). Graphics can draw attention to key information. Visual representations can reduce cognitive load (Lohse, 1997), allow people to process more information, and improve decisions (e.g.

Tegarden, 1999). They can also help people detect trends, compare patterns, and interpolate values (Lurie & Mason, 2007). Moreover, the use of visual information can aid comprehension of low-numerate people and increase their motivation to use the information (Hibbard, Peters et al., 2007)

However, as graph design influences the relative salience of different aspects of the information (Jarvenpaa, 1990), choosing the right graphical design for a specific choice environment can be critical to achieving desirable outcomes. For instance, graphical formats can bias decisions by increasing the salience and evaluability of information that is not normatively important (Lurie & Mason, 2007). Line graphs (as compared to bar graphs) increase "adjacent difference bias," inferring correlations from adjacent values (Hutchinson, Alba, & Einstein, 2004). When risk information is presented graphically without background/contextual information, risk salience and avoidance are increased (Stone et al, 1997). Accurate scaling of representations is important too, as visual salience can influence perceptions of real-world magnitude. When designing a visual representation, decisions must also be made about the range of data to include in the graphic. In the case of a graph displaying historical returns of an investment, the time frame represented can influence risk preferences (Benartzi & Thaler, 1999). Investors tend towards myopic loss aversion, in which they demonstrate very high levels of risk aversion over short time horizons but decreased risk aversion for long time horizons. Workers select less risk-averse retirement investments when shown graphs of long term, rather than short returns (Benartzi & Thaler, 1999).

3. Embedding Risk Information In Part I of the DOL Model Comparative Chart

In this study, we developed and tested two modifications to Part I of the current draft DOL Model Comparative Chart (these forms are available in the Appendix). Part I of the current draft chart gives performance information on investments. It includes information about variable return investments in a tabular format. One column lists names and websites of fund options, the next column lists numerical values of average annual total returns (1 year, 5 year, 10 year, since inception), and the final column lists returns of appropriate benchmarks or index funds (1 year, 5 year, 10 year). While the returns information provides some implicit indication of historical volatility, the form does not include any explicit measures of risk. For purposes of experiment, we generated a version of Part I of the Comparative Chart with an illustrative set of assets. Returns were based on actual performance for mutual funds (either explicitly index funds or broadly representative of the asset class) from a large financial services provider.

Two alternative versions of the Comparative Chart Part I with additional risk information but different presentation formats were developed:

Version 1: Performance Information With Summary Ratings

In Version 1, we added a summary risk and return rating for each investment to the table, as well as a visual representation of this rating. The summary ratings were calculated by ranking the assets by the standard deviation of historical returns. Each investment option was then given a numerical risk rating on a Likert-type scale ranging from 1 to 5, with 1 representing lowest risk and return while 5 represented highest risk and return. The numerical rating was accompanied by a simple graphic consisting of five equally-sized circles. The number of circles shaded in (as opposed to represented only in outline) corresponded to the risk rating, to draw attention and increase the salience of the rating, as well as to ease comparison across options by way of visual scanning.

This approach emphasizes clarity and saliency with respect to risk information. The summary ratings approach reduces the amount of cognitive effort and financial knowledge required to accurately assess and compare riskiness of investment options, and is adopted in practice by financial providers such as Vanguard and Morningstar.

Version 2: Performance Information With Historical Time Series Bar Graph

Version 2 included a different type of visual representation of risk and return. Instead of providing summary ratings, this version provided a miniature bar graph representing past returns for each investment option. Each small graph represented annual total returns for a single option for each year of the previous 10-year period. The 10-year period was used rather than a shorter time frame so as to reduce myopic loss aversion, which occurs when focusing on short time periods (Benartzi & Thaler, 1999).

Based on the fact that graphs can help people see patterns in data (Lurie & Mason, 2007), the hypothesis is that graphs of returns would help people better understand the relationship between risk and returns. Also, it was expected that the graphs would facilitate easier comparison of patterns across the different investments. Graph content was described at the top of the column as well as more extensively in a footnote provided outside of the table. To reduce visual clutter and information overload, each individual bar graph did not include axis labeling although the axes were standardized across all assets. As in the case of the first version we designed, the graphic was expected to be salient while at the same time not requiring a very high degree of cognitive effort or financial knowledge to interpret effectively.

4. Qualitative Response to Alternative Performance Information Tables: Focus Group Discussions

In January 2010, we conducted two focus groups in Alexandria, VA. The total sample comprised eight men and ten women who participate in defined contribution pension plans; four were younger than 35 years old, nine were between 35 and 50 years old, and five were older than 50. We divided the groups based on investment experience: ten individuals were classified as "experienced" if they held investments outside of retirement accounts, or had formal training in finance or investing, or demonstrated

significant financial understanding in their answers to other screening questions.[2] The other eight individuals were placed in the "inexperienced" group.

Participants in the experienced focus group tended to be more likely to have a college degree, more likely to work in large firms and less likely to be in service occupations than participants in the inexperienced focus group. Experienced investors had spent more time thinking about retirement and were more likely to have attempted to figure out how much the household would need to save for retirement. Experienced investors were much more likely to own their home, were more likely to own stocks or mutual funds, and were more likely to have pension plans additional to their current employer sponsored plan. Experienced investors tended to have been in their current defined contribution plan for longer, were more likely to have made contributions in the last two years, checked balances more regularly and rebalanced their allocation more regularly.[3]

Both groups identified risk as the second most important type of information for making investment decisions (behind some kind of 'return' metric). Experienced investors were more likely to express low risk tolerance, and tended to conduct their own research using a variety of sources; inexperienced investors were more reliant on information from their plan administrators, and were unwilling to commit time to seeking out additional information that they felt they had little chance of understanding.

After the initial focus group discussions, participants were asked to answer three questions based on the Performance Information table of the DOL Model Comparative Chart, Version 1 of the Comparative Chart and Version 2 of the Comparative Chart[4]. After each table was presented, individuals were asked to indicate which investment option was riskiest, which had the potential for highest return, and how they would choose to allocate $10,000 across these options if offered as part of their retirement plan.

The majority of participants changed their answers as more information was provided, with only three individuals (all from the experienced group) keeping the same responses throughout. The choices of the riskiest asset fluctuated more with new information than the choice of asset with highest return, and demonstrated less agreement within (and between) the groups.

In focus group discussions, we found that participants in the experienced group understood the information presented in each table, and that each successive table was more helpful to them. Among the inexperienced group, five participants did not understand the information in the first table, found the additional risk/reward rating of the

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[2] These included questions about the nature and causes of increases in their investments; past experience seeking out information about their investments; and knowledge of the different investment options available to them.

[3] However, even in the "experienced" group, the majority of participants "almost never" rebalanced their portfolio

[4] In the focus groups, Version 2 of the Comparative Chart was slightly different from the Version 2 chart that was used in the experiments. In the focus groups, Version 2 included both the summary risk rating and the historical time series bar chart. In the experiments, Version 2 included only the historical time series bar chart.

second table helpful, and did not find the annual returns bar charts helpful. The other three individuals in the inexperienced group, who understood the information in the first table, found the risk/reward rating only marginally helpful but found the annual returns bar charts to be more helpful.

5. Experimental Design

Building on the qualitative guidance from the focus groups, our experiment is designed to test the effect of adding additional risk information to the Performance Information section of the DOL Model Comparative Chart on portfolio allocation. While we are restricted to the analysis of hypothetical outcomes, there are two key advantages: the additional information provided is uniform and reverse causality does not arise.

We designed a 3x2 randomized experiment in which participants were presented with a hypothetical portfolio allocation task. All participants were presented with six investment options: a money market fund, a bond market index fund, an S&P 500 index fund, a small cap value index fund, a balanced fund, and a global equity index fund. Participants were asked to allocate a hypothetical retirement savings portfolio of $10,000 among the funds.

We randomized both the risk information as well as the order of the assets being presented:

- In the first randomization, participants were allocated into 3 treatment groups. A control group received information about their choices in the format of the current DOL Model Comparative Chart, with no additional risk information. The second group received the Comparative Chart with additional summary rating and the third group received the Comparative Chart with the additional historical bar graph, as described previously.

- In an orthogonal randomization, participants were allocated into two groups, independent of the form. While the same information was given, half the participants were presented with the assets in the order given in the current Comparative Chart, which places broadly riskier asset classes at the top. The other half were presented with the least risky asset classes first (see Appendix).

Figure 1 shows a sample screenshot. In this example, the respondent received the DOL Model Comparative Chart without additional risk information, with the least risky assets presented first. Figure 2 shows the bottom of the screen, where respondents were requested to allocate their hypothetical portfolio among the investment choices.

The goal of the experiment is first to test the effects of each type of form on asset allocation, to understand whether order effects are induced by the default ordering of risky assets in the current Model Chart, and to see if such effects interact with or are mitigated by the provision of additional salient risk information. Figure 3 shows the schematic for the whole experiment.

6. Data Description and Summary Statistics

The experiment was conducted using the RAND American Life Panel, an ongoing nationally representative Internet survey covering the US population aged 18 and older. ALP panel members are interviewed about twice a month on a wide range of issues, including in-depth questions about personal and household economics, demographics, and social relations and behaviors. Respondents in the panel either use their own computer to log on to the Internet or a Web TV (http://www.webtv.com/pc/), which allows them to access the Internet using their television and a telephone line. The technology allows respondents who did not have previous Internet access to participate in the panel and furthermore use the Web TVs for browsing the Internet or use email.

It should be noted that the ALP population as a whole tend to have more education and income than the broader U. S. population. There are two main reasons for this sample selection. First, the Michigan respondents tend to have more education than the population at large, as described by Census data. Second, the great majority of ALP members have their own Internet access. Americans with Internet access tend to have more education and income than the broader population. For experimental analysis with randomized treatment groups, we do not apply weights but for survey data analysis, appropriate weights are applied so that the results are more representative of the US population at large.

Retirement Investment Behavior

The experiment was administered to 2058 respondents in wave MS136 of the ALP from July, 2010 through August, 2010. The survey instrument also asked respondents about their current job status and participation in a defined contribution pension plan. In particular, respondents were asked to rate the level of risk of their pension portfolio on a five-point scale, from "very high" to "very low." Respondents were also asked, "How well do you understand the risk level of investment options in your plan, based on the disclosures provided?"

For 115 observations, respondents completed the survey but refused to or were unable to complete the investment task. These individuals are retained in the sample, and their missing response is treated as an outcome. Participants in the ALP typically supply demographic and background information such as gender, family income, education, and race. Five respondents did not have complete demographic information and were dropped. Table 4 shows the final count of observations in wave MS136 and the summary statistics for individuals in this wave.

Risk Preferences

In addition to the survey and experiment on retirement investment behavior, we also elicited risk preferences from respondents. Because we did not want the risk preference elicitation questions to influence experiment behavior, or vice versa, we asked those

questions at an earlier date. Of the respondents who completed MS136, 1960 respondents also completed MS118 from April 2010 through August 17th, 2010.

The risk elicitation survey items were derived from Barsky et al (1997) [BJKS]. The BJKS measure is related to willingness to gamble over lifetime income.

Respondents are presented with a hypothetical situation: they are the sole earner for their household, but have to leave their job due to allergies, and have a choice of two new jobs with different income characteristics. In the first scenario, the respondent is asked to choose between a job that guarantees lifetime income at its current level, and a job that has a 50/50 chance of doubling the current income level but also has a 50/50 chance of cutting income by 1/3. The scenarios are then repeated with the same potential doubling of income, but different potential losses (depending on the initial response), in order to elicit risk parameters. If the safe option is chosen in the first case, the scenario is repeated with a potential loss of 1/5 of income instead of 1/3, and repeated again with a potential loss of 1/10 if the safe option is chosen a second time. If the risky option is chosen in the first case, the scenario is repeated with a potential loss of 1/2 of income, and repeated again with a potential loss of 3/4 if the risky option is chosen a second time. The series of answers divides survey respondents into six ordered categories of risk aversion, depending on how favorable the terms must be for the individual to be willing to take the income gamble instead of the safe income: the most risk averse individuals refuse to take the income gamble even when the potential loss is only 1/10 of income; the least risk averse are willing to gamble even when the potential loss is 3/4 of income.[5]

Financial Literacy

Lastly, Hung et al (2009) developed and fielded a financial literacy measure in MS64 of the ALP. They designed a new measure of financial literacy that allows for two separate, but complementary types of questions: questions that measure a respondent's financial knowledge and questions that ask the respondent to report on his assessment of his own financial decision-making abilities. For the purposes of analysis in this paper, we use the general measure of financial knowledge. The financial knowledge questions in our measure include the 13-item scale from Lusardi and Mitchell (2006). Five items cover basic financial concepts such as numeracy, compound interest, and inflation, and eight items focus on investing and topics such as the stock market, stocks, bonds, mutual funds, and diversification. In addition to these questions, the financial knowledge measure includes further questions about investing, life insurance, and annuities. The six additional investing questions ask respondents about the definitions of stock, bond, and mutual fund. Furthermore, respondents are asked about fees and risks associated with mutual funds. The four questions on life insurance and annuity items ask respondents about the difference between whole and term life insurance, the definition of the cash value of a life insurance policy, and the definition of an annuity. For a detailed discussion of the general financial literacy measure please see Hung et al (2009).

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[5] If a functional form is assumed, it is straightforward to calculate bounds on the coefficient of relative risk aversion for people in each category; but for our purpose the ordered rank is sufficient.

6.4 Summary Statistics

Data from MS136 were merged with data from MS118 (Subsample I), and data from from MS64 (Subsample II). Table 1 also shows the final count of individuals present for each final merged dataset, and the summary statistics for such individuals. For our main analysis, we will use the full sample from MS136 but in further exploration will rely on the smaller appropriate dataset.

As a check on the randomization, in Table 2 we tabulate the number of individuals and summary demographic statistics for the sample across all treatment groups, to identify any remaining differences across groups that need to be acknowledged and accounted for in later analysis. The data suggest that the randomization achieved a reasonable balance across the treatment groups in terms of observables, but that controlling for differences in demographic characteristics may still be important. In addition, the lower panel of Table 4 suggests that the subsample of individuals merged with MS64 may tend to be older, which suggests that for comparability across subsamples it is important to examine specifications with demographic controls.

7. Main Findings

In Table 3, we show some summary results related to portfolio choices in tabulation form[6]. Form-level effects are not strikingly obvious from the raw means data. However, order effects seem to be apparent, with in a larger allocation for both the first and last asset class shown to respondents. In the following analyses, we more rigorously estimate treatment effects for each of the two interventions and their interaction.

Risk Disclosure Formats

To estimate treatment effects from the different form types, we rely on the randomization. In a regression context, we consider the specification

$$Y_i = \alpha + \delta^1 Form1_i + \delta^2 Form2_i + X_i{}'\beta + error \text{ (1)}$$

where Y is the outcome of interest, and the explanatory variables include dummies for the type of form shown as well as a vector of demographic controls. Estimates of the treatment effects for each form, δ^1 and δ^2, can then be obtained and tested for statistical significance.

In Table 4, we investigate the impact of both forms on some key portfolio characteristics, obtained using ordinary least squares (OLS) regression to estimate Equation 1. In this instance, as well as all others, we used probit regression for binary outcomes and tobit regressions for portfolio allocations using a lower-limit of 0 percent and an upper limit of 100 percent, but the estimated effects are qualitatively and quantitatively similar, so for ease of interpretation, we rely on OLS.

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[6] In 49 cases, the respondent's allocation did not sum to exactly 100 (for instance, respondents who wanted to split the total evenly across 6 assets put 16 percent for each value). In these cases responses were reexpressed as percentages of whatever total was indicated.

First, we consider failing to complete the experiment itself as an outcome to test the hypothesis that burdensome or complex forms may deter individuals from participating at all. We find from Table 7, Column 1, that there is no significant evidence for this effect. Columns 2 and 3 suggest that the effect of the forms on aggregate equity holdings or aggregate risky assets (including bonds) is not strongly significant, although there is some evidence. Similarly, there appear to be no strongly significant effects on equity avoidance, the tendency to concentrate the portfolio in one asset or the weighted average risk rating for the portfolio (based on the ratings shown in the form).

Based on simply the above, one might conclude (with much of the literature) that risk information disclosure does not impact portfolio choice. However, in Table 5, we also examine the effects on different asset classes. The results show that there is indeed some significant change across individual asset classes (although the magnitudes are quite small). In this particular case, Form 2 appears to shift individuals away from stock index and balanced index funds towards global equity, and Form 1 has a less significant impact on allocations. Increasing risk information does indeed appear to change behaviors (albeit not in an entirely consistent way).

Order Effects

To estimate the impact of the change in order on choices, we estimate a new specification with the same outcome variables, using only a dummy for the second ordering of assets (starting high risk assets first):

$$Y_i = \alpha + \delta^b \, OrderB_i + X_i{}' \beta + error \text{ (2)}$$

Tables 6 and 7 show that in contrast to the risk disclosure format treatments, there are much stronger and more significant order effects. Looking at the portfolio outcomes in Table 6 gives an initially puzzling picture: the change in order appears to increase total equity-linked assets but reduce total risky assets, while also increasing the weighted average risk rating. Table 7 however, provides one explanation: we see a positive order effect for both the first and last asset in the table (small cap growth fund and balanced index fund in the initial treatment, and then money markets and global equity in the second treatment).

Treatment interactions

Potentially, these two interventions may interact with one another. Specifically, an individuals may interpret ordering as implicitly giving information about riskiness. As a result, they may respond differently to additional risk-information in different choice. One hypothesis may be that explicit risk information may offset the order effects, and therefore individuals given Form 1 and Form 2 may be less likely to be affected by the order treatments. We therefore estimate the following specification

$$Y_i = \alpha + \delta^1 \, Form1_i + \delta^2 \, Form2_i + \delta^b \, OrderB_i + \delta^{b1} \, OrderB_i \, Form1_i + \delta^{b2} \, OrderB_i \, Form2_i + X_i{}' \beta + error \text{ (3)}$$

In Table 8, we see that indeed a number of the interaction terms are statistically significant. However, the effects are not fully consistent. For four out of six asset classes, the estimated effect of the risk information is in a direction and magnitude that tends to offset the independent order effect. But in the other two cases, risk information appears to exacerbate it.

8. Further Results

The main analysis shows that indeed, the presentation of risk information can indeed shift investor *behavior* (i.e. allocation choices), although this may or may not ultimately have a significant impact on portfolio *outcomes*. We also note that giving more risk information does not necessarily imply that investors will a priori respond by taking more or less risk nor does it imply that all investors will have the skills or interest to respond.

Risk preferences

Table 9 shows that (as expected) individuals' understanding of risk is in fact affected by the format – in particular, the explicit ranking in the risk ratings. When asked to pick the safest and riskiest assets, significantly more individuals indicated money market funds as safest when provided with the risk rating (relative to both the control form as well as the bar graph form). Similarly, significantly more individuals indicated global and small cap equity funds as riskiest when shown the risk rating.

To understand if this improved understanding translates into behavioral change, we examine whether providing additional risk information leads to portfolio allocations that are more in line with risk preferences.

For this analysis, we rely on SubSample I, the sample of individuals for whom the measure of risk preference is available. We categorize individuals as risk averse if their willingness to gamble lies below the median for the sample. Using this measure, we want to explore the hypothesis that increased risk information may help individuals to make decisions that are more consistent with their expressed risk preferences. If risk aversion is exacerbated by ambiguity aversion (see Yoong(forthcoming)), we should expect to see that giving individuals more information about risk will reduce the sensitivity of behavior to risk. On the other hand, if individuals are already well-informed about the riskiness of the assets and format simply enhances the saliency of the information, we should expect the opposite: more information about risk will increase their sensitivity.

Column 1 and 2 of Table 10 shows that our measure of risk aversion is significantly predictive of individuals' self-reported savings behavior: individuals who are more risk averse report holding retirement portfolios with a lower-level of investment risk (self-assessed on an increasing scale of 1 to 5) and a lower level of equity participation.

However, in the hypothetical task, the relationship is not as strong. In Column 3 and 4, we use as outcome measures the total equity participation as well as holding in risky assets including bonds. Our specification includes risk aversion, treatment dummies for format type and their interaction with risk aversion. The results show that risk aversion is negatively correlated with holding risky assets, consistent with the self-reported actual allocations, but the statistical significance is weak. Furthermore, if format type allows individuals to be more responsive to risk information, we would expect to see strong significant interactions between risk aversion and format type, but we do not find this to be the case. However, in line with an ambiguity aversion explanation, the positive sign on the estimated coefficients suggests that the effect of risk-aversion is offset in treatment groups where additional risk-information is given (although the effects are not statistically significant). This is consistent with the implication from the previous results that individuals do actually receive new risk information from Form 1 and Form 2. (We note that these results are qualitatively the same whether a binary indicator or the continuous measure of risk aversion are used)

Financial Literacy

Based on the results from the focus groups, we anticipated that the forms may have differential effects on individuals with different pre-existing levels of financial literacy. Using the financial literacy measure from MS64, we construct a general index of financial literacy that captures knowledge across multiple dimensions of financial capability. Based on the model in Hung et al, (2009), we consider a theoretical model in which each individual's categorical response to any question (correct, incorrect or don't know) is modelled as multinomial logit, with the individual's unobserved financial literacy as the common key explanatory factor across all their responses. Using the answers to the 23 financial literacy questions (i.e. the complete answering pattern) for all individuals, we obtain estimates for the financial literacy index using maximizing simulated pseudo-likelihood methods (intuitively, obtaining the estimated values of financial literacy that best predict the actual answering patterns for our entire sample). For a more rigorous discussion of the index and how it was constructed, please see Hung et al, 2009). For this analysis, we rely on SubSample II, noting as in the previous discussion that the sample size is smaller and somewhat older.

Analogous to our treatment of risk aversion, we divide our sample into more or less financially literate, based on a median split, and see if asset allocation responses to the forms vary by financial literacy by estimating Equation (1) interacted with financial literacy. Perhaps surprisingly, Columns 1-6 of Table 11 shows that there are no significant differences in responses to either type of form by high or low financial literacy. However, independent of actual allocations, Table 11 also shows that, while the behavioral changes themselves may not be extremely, large, individuals who receive Form I (the risk ratings) report being significantly more confident about their decisions, relative to both those who receive the model form as well as the bar graph. Interestingly, this effect is not significantly different between high and low-literacy populations, as might have been speculated.

9. Discussion

The results of the experiment suggest that the provision of risk information has an impact on individuals' confidence and their perception of risk, but the relationship between these and ultimate behavioral change is not overwhelmingly strong. Furthermore, there seems to be little evidence that provision of this information differentially helps or hurts the less financially literate. Overall this aspect of our work is somewhat consistent with the work by Beshears et al. (2009), who find that summary disclosures are more popular and help consumers to process information, but lead to no actual differences in allocation behavior.

Our results go somewhat further, however, in that they do suggest that there are some effects of risk disclosure on actual outcomes, and that resolving the ambiguity for consumers of information has some actual value.

The results also show that (as previously found by others in the literature) order effects can be large. Importantly, this may not be mitigated by providing additional offsetting information. Consideration of which assets to place first and/or last should be an important part of form design. As the final layout of the form is likely to follow some implicit risk ordering, it will be an important decision whether to start from riskier or less risky asset classes.

It is important to note that the results also suggest an important tradeoff: while summary risk-ratings are most appealing for consumers, they may also be the least straightforward to provide, requiring an explicit formula or an independent provider of ratings to be determined by DOL.

Appendix: Disclosure Forms

Current DOL Model Comparative Chart (Part I)
(No Explicit Risk Information)

Performance Information

This table describes investment options that provide variable rates of return. This table shows each option's performance over several time periods and compares the performance with a recognized benchmark. For options with returns that vary over time, past performance does not guarantee how your investment in the option will perform in the future; your investment in these options could lose money.

Table --Variable Return Investments					
Name/ Type of Option	Average Annual Total Return as of 06/30/2010				Benchmark/Index as of 06/30/2010
	1yr.	**5yr.**	**10yr.**	**Since Inception**	1yr. 5yr. 10yr.
Stock Funds					
Small Cap Growth Fund A	22.7%	2.2%	3.7%	5.0% 05/21/98	22.9% 2.2% 3.6% Spliced Small Cap Stock Index
Stock Market Index Fund B	14.3%	-0.9%	-1.7%	10.1% 08/31/76	14.4% -0.8% -1.6% S&P 500 Index
Global Equity Fund C	14.5 %	0.2%	4.8%	7.3% 08/14/95	11.8% 1.3% 0.0% Spliced Global Equity Index
Bond Funds					
Bond Market Index Fund D	9.3%	5.5%	6.2%	6.9% 12/11/86	9.5% 5.5% 6.5% Barclays US Aggregate Bond Index
Other					
Money Market Fund E	0.00%	2.7%	2.6%	3.5% 12/14/92	0.0% 2.0% 2.1% Avg. Money Market Treasury Fund
Balanced Index Fund F	13.6%	2.4%	2.4%	7.3% 11/9/92	13.8% 2.4% 2.5% Balanced Composite Index

Modified Comparative Chart , Version 1
(Risk Rating)

Performance Information

This table describes investment options that provide variable rates of return. This table shows each option's performance over several time periods and compares the performance with a recognized benchmark. For options with returns that vary over time, past performance does not guarantee how your investment in the option will perform in the future; your investment in these options could lose money.
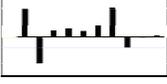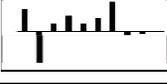
Table--Variable Return Investments						
Name/ Type of Option	Risk and Return Rating* ●●●●● 1 2 3 4 5 Lower Higher	Average Annual Total Return as of 06/30/2010				Benchmark/Index as of 06/30/2010
		1yr.	5yr.	10yr.	Since Inception	1yr. 5yr. 10yr.
Stock Funds						
Small Cap Stock Index Fund A	5 ●●●●●	22.7%	2.2%	3.7%	5.0% 05/21/98	22.9% 2.2% 3.6% Spliced Small Cap Stock Index
Stock Market Index Fund B	4 ●●●●○	14.3%	-0.9%	-1.7%	10.1% 08/31/76	14.4% -0.8% -1.6% S&P 500 Index
Global Equity Fund C	5 ●●●●●	14.5 %	0.2%	4.8%	7.3% 08/14/95	11.8% 1.3% 0.0% Spliced Global Equity Index
Bond Funds						
Bond Market Index Fund D	2 ●●○○○	9.3%	5.5%	6.2%	6.9% 12/11/86	9.5% 5.5% 6.5% Barclays US Aggregate Bond Index
Other						
Money Market Fund E	1 ●○○○○	0.00%	2.7%	2.6%	3.5% 12/14/92	0.0% 2.0% 2.1% Avg. Money Market Treasury Fund
Balanced Index Fund F	3 ●●●○○	13.6%	2.4%	2.4%	7.3% 11/9/92	13.8% 2.4% 2.5% Balanced Composite Index

* Risk and return rating is determined by a reputable third party based on the variability of the historical annual returns of each option. On a scale from 1-5, lower ratings indicate less change in the fund's performance over time (i.e. lower risk and reward).

Modified Comparative Chart, Version 2
(Bar Chart of Annual Total Returns)

Performance Information

This table describes investment options that provide variable rates of return. This table shows each option's performance over several time periods and compares the performance with a recognized benchmark. For options with returns that vary over time, past performance does not guarantee how your investment in the option will perform in the future; your investment in these options could lose money.
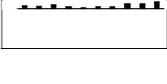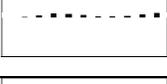
Name/ Type of Option	Graph: 2000-2009 Year-End Total Returns*	Average Annual Total Return as of 06/30/2010				Benchmark/Index as of 06/30/2010		
		1yr.	**5yr.**	**10yr.**	**Since Inception**	1yr.	5yr.	10yr.
Stock Funds								
Small Cap Stock Index Fund A		22.7%	2.2%	3.7%	5.0% 05/21/98	22.9% 2.2% 3.6% Spliced Small Cap Stock Index		
Stock Market Index Fund B		14.3%	-0.9%	-1.7%	10.1% 08/31/76	14.4% -0.8% -1.6% S&P 500 Index		
Global Equity Fund C		14.5 %	0.2%	4.8%	7.3% 08/14/95	11.8% 1.3% 0.0% Spliced Global Equity Index		
Bond Funds								
Bond Market Index Fund D		9.3%	5.5%	6.2%	6.9% 12/11/86	9.5% 5.5% 6.5% Barclays US Aggregate Bond Index		
Other								
Money Market Fund E		0.00%	2.7%	2.6%	3.5% 12/14/92	0.0% 2.0% 2.1% Avg. Money Market Treasury Fund		
Balanced Index Fund F		13.6%	2.4%	2.4%	7.3% 11/9/92	13.8% 2.4% 2.5% Balanced Composite Index		

Table--Variable Return Investments

* The bar charts show the changes in each fund's performance from year to year.

Modified Comparative Chart, Low to High Risk Ordering

Performance Information

This table describes investment options that provide variable rates of return. This table shows each option's performance over several time periods and compares the performance with a recognized benchmark. For options with returns that vary over time, past performance does not guarantee how your investment in the option will perform in the future; your investment in these options could lose money.

Name/ Type of Option	Average Annual Total Return as of 06/30/2010				Benchmark/Index as of 06/30/2010		
	1yr.	**5yr.**	**10yr.**	**Since Inception**	1yr.	5yr.	10yr.
Money Market Fund A	0.00%	2.7%	2.6%	3.5% 12/14/92	0.0% 2.0% 2.1% Avg. Money Market Treasury Fund		
Balanced Index Fund B	13.6%	2.4%	2.4%	7.3% 11/9/92	13.8% 2.4% 2.5% Balanced Composite Index		
Bond Funds							
Bond Market Index Fund C	9.3%	5.5%	6.2%	6.9% 12/11/86	9.5% 5.5% 6.5% Barclays US Aggregate Bond Index		
Stock Funds							
Small Cap Growth Fund D	22.7%	2.2%	3.7%	5.0% 05/21/98	22.9% 2.2% 3.6% Spliced Small Cap Stock Index		
Stock Market Index Fund E	14.3%	-0.9%	-1.7%	10.1% 08/31/76	14.4% -0.8% -1.6% S&P 500 Index		
Global Equity Fund F	14.5 %	0.2%	4.8%	7.3% 08/14/95	11.8% 1.3% 0.0% Spliced Global Equity Index		

Table 1--Variable Return Investments

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Figure 1: Sample Screenshot

Figure 2: Sample Screenshot

Figure 3 : Experimental Design
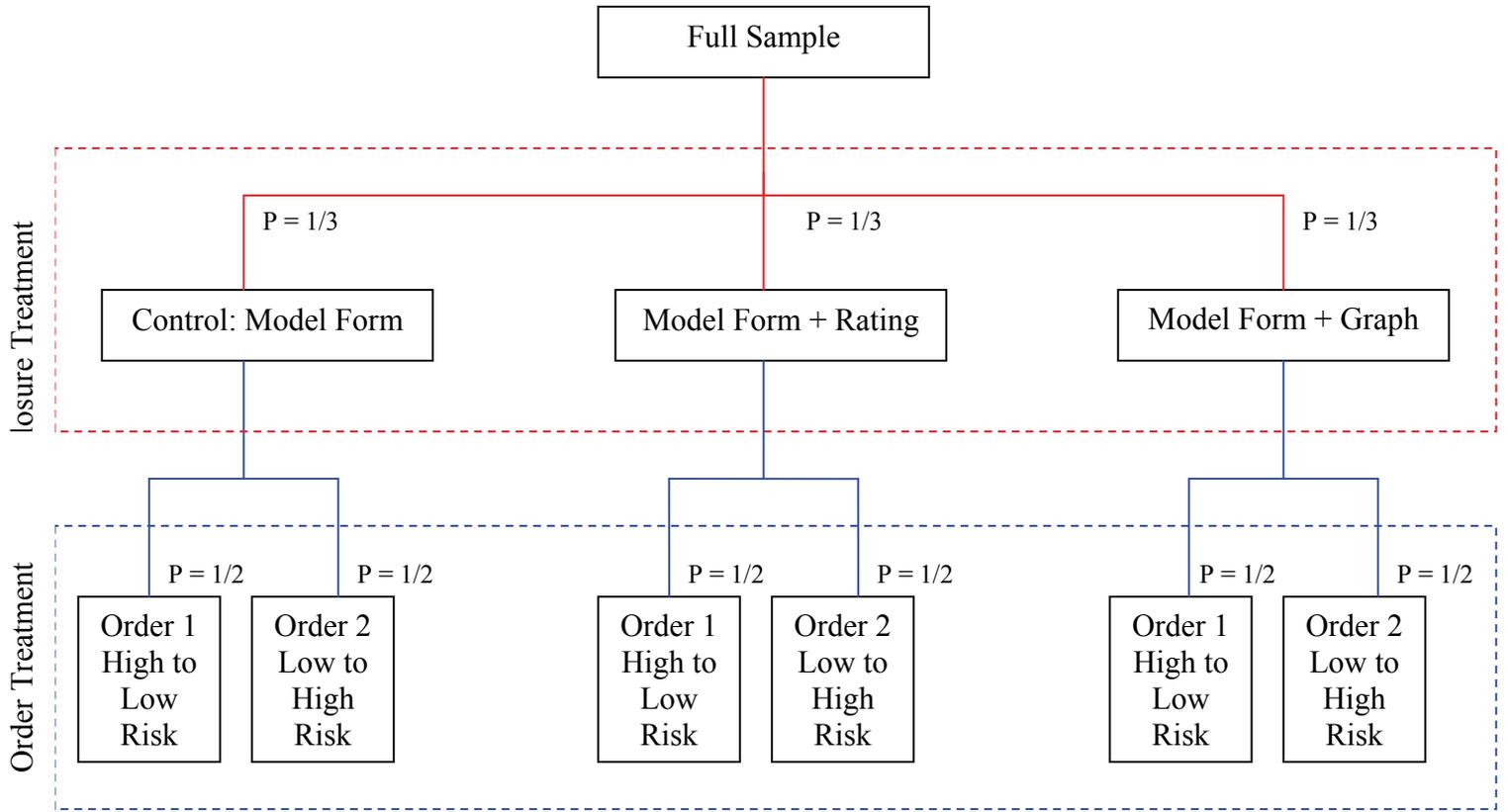
Table 1: Experimental Data Summary Statistics

	Number of Responses
Total MS 136 Survey Sample	2058
Missing demographic or other background information	5
Main Analysis MS 136	
All data	2053
Without incomplete or missing outcomes for experiment	1938
Subsample I: Merged with Risk Information	
All data	1960
Without incomplete or missing outcomes for experiment	1873
Subsample II: Merged with Financial Literacy Information	
All data	1073
Without incomplete or missing outcomes for experiment	1024

	Full	Subsample I	Subsample II
N	*2053*	*1960*	*1073*
Married	66%	67%	67%
Female	59%	59%	54%
Age <45	32%	32%	19%
Annual family income (AFI) <$50,000	44%	44%	38%
Nonwhite	11%	11%	10%
College-degree or higher education	41%	42%	51%
Retired	19%	19%	24%

Table 2: Randomization Check Across All Treatments in MS 136 Main Sample

	Order A : High to Low Risk			Order B : Low to High Risk		
	Control : Model Form	Model Form + Ratings	Model Form + Bar Graph	Control : Model Form	Model Form + Ratings	Model Form + Bar Graph
N	*370*	*339*	*316*	*327*	*349*	*352*
Married	63%	68%	65%	67%	65%	68%
Female	62%	57%	62%	57%	60%	58%
Age < 45	32%	30%	34%	36%	30%	32%
AFI <$50,000	45%	42%	46%	42%	45%	47%
Nonwhite	10%	13%	13%	13%	9%	9%
College or higher ed.	40%	45%	44%	42%	38%	38%
Retired	15%	22%	20%	19%	18%	20%

Note: Means are not significantly different across any groups.

Table 3: Mean Allocations By Treatment Groups, Nonmissing Observations

| | | Order A : High to Low Risk | | | | Order B : Low to High Risk Categories | | |
		Control : Model Form	Model Form + Ratings	Model Form + Bar Graph		Control : Model Form	Model Form + Ratings	Model Form + Bar Graph
Fund	*Order*	*N=335*	*N=322*	*N=302*	*Order*	*N=320*	*N=329*	*N=330*
Small Cap Growth	*1*	21%	19%	19%	*4*	13%	16%	13%
Stock Market Index	*2*	14%	15%	14%	*5*	18%	19%	15%
Global Equity	*3*	13%	13%	14%	*6*	25%	23%	30%
Bond Market	*4*	23%	23%	27%	*3*	17%	15%	15%
Money Market	*5*	9%	12%	11%	*1*	14%	14%	13%
Balanced	*6*	18%	18%	15%	*2*	13%	13%	13%

Table 4: Outcomes By Risk Information Treatment Groups (OLS Regressions)

	(1)	(2)	(3)	(4)	(5)	(6)
	Fail to complete experiment	Total equity-linked assets	Total risky assets	No equity	All one asset	Weighted average risk rating
Form 1	-0.005	0.179	-1.456+	-0.011	-0.025+	-0.016
	(0.012)	(1.217)	(0.828)	(0.009)	(0.013)	(0.041)
Form 2	-0.006	-0.977	-0.441	0.007	-0.011	0.015
	(0.012)	(1.227)	(0.834)	(0.009)	(0.013)	(0.041)
Married	-0.012	1.032	0.648	-0.004	-0.025*	0.023
	(0.011)	(1.130)	(0.768)	(0.008)	(0.012)	(0.038)
Female	0.031*	1.826+	0.340	-0.007	-0.021+	0.055
	(0.011)	(1.033)	(0.703)	(0.008)	(0.011)	(0.035)
Under 45 yrs	0.006	0.732	-0.132	-0.013	-0.034*	0.018
	(0.012)	(1.145)	(0.779)	(0.008)	(0.012)	(0.039)
AFI < USD 50K	0.003	1.096	-0.180	0.006	0.008	0.050
	(0.011)	(1.119)	(0.761)	(0.008)	(0.012)	(0.038)
Nonwhite	0.014	-2.352	-0.665	0.010	-0.005	-0.083
	(0.016)	(1.627)	(1.106)	(0.012)	(0.017)	(0.055)
College or more	-0.026*	2.354*	2.266*	-0.017*	-0.015	0.069+
	(0.011)	(1.062)	(0.722)	(0.008)	(0.011)	(0.036)
Retired	-0.003	-1.779	-0.376	0.013	0.009	-0.050
	(0.014)	(1.369)	(0.931)	(0.010)	(0.015)	(0.046)
Constant	0.056*	65.146*	87.026*	0.040*	0.112*	3.365*
	(0.017)	(1.667)	(1.133)	(0.012)	(0.018)	(0.056)
R-squared	0.007	0.003	0.004	0.005	0.009	0.001
N	2053	1938	1938	1938	1938	1938

+ $p<0.10$, * $p<0.05$. Omitted category for randomized treatment is current format without risk information

Table 5: Outcomes By Risk Information Treatment Groups (OLS)

	(1)	(2)	(3)	(4)	(5)	(6)
	Small cap growth fund	Stock Market index fund	Global equity fund	Bond fund	Money market fund	Balanced index fund
Form 1: Rating	0.188	0.820	-0.764	-1.635	1.456+	-0.065
	(1.040)	(0.844)	(1.028)	(1.011)	(0.828)	(0.811)
Form 2: Graph	-0.949	-1.551*	3.164*	0.536	0.441	-1.642*
	(1.049)	(0.850)	(1.036)	(1.019)	(0.834)	(0.818)
Married	-0.494	-0.316	0.938	-0.383	-0.648	0.904
	(0.966)	(0.783)	(0.955)	(0.939)	(0.768)	(0.753)
Female	1.859*	0.654	-0.533	-1.486+	-0.340	-0.155
	(0.883)	(0.716)	(0.873)	(0.858)	(0.703)	(0.689)
Under 45 yrs	-1.281	0.194	1.769+	-0.863	0.132	0.050
	(0.979)	(0.794)	(0.968)	(0.951)	(0.779)	(0.763)
AFI < USD 50K	1.891*	-1.019	0.673	-1.277	0.180	-0.449
	(0.957)	(0.776)	(0.946)	(0.930)	(0.761)	(0.746)
Nonwhite	1.045	-0.745	-3.303*	1.687	0.665	0.651
	(1.390)	(1.127)	(1.374)	(1.351)	(1.106)	(1.084)
College or more	0.217	0.977	0.432	-0.088	-2.266*	0.728
	(0.908)	(0.736)	(0.897)	(0.882)	(0.722)	(0.708)
Retired	-1.411	-0.576	0.291	1.403	0.376	-0.083
	(1.170)	(0.949)	(1.156)	(1.137)	(0.931)	(0.912)
Constant	16.003*	16.184*	18.067*	21.880*	12.974*	14.892*
	(1.425)	(1.155)	(1.408)	(1.385)	(1.133)	(1.111)
R-squared	0.003	0.003	0.010	0.003	0.004	0.000
N	1938	1938	1938	1938	1938	1938

+ $p<0.10$, * $p<0.05$. Omitted category for randomized treatment is current format without risk information

Table 6: Outcomes By Order Treatment Groups (OLS Regressions)

	(1)	(2)	(3)	(4)	(5)	(6)
	Fail to complete experiment	Total equity-linked assets	Total risky assets	No equity	All one asset	Weighted average risk rating
Order B	-0.017+	5.475*	-2.846*	-0.023*	0.006	0.188*
	(0.010)	(0.992)	(0.677)	(0.007)	(0.011)	(0.033)
Married	-0.012	0.899	0.690	-0.003	-0.025*	0.020
	(0.011)	(1.120)	(0.765)	(0.008)	(0.012)	(0.038)
Female	0.031*	1.939+	0.272	-0.007	-0.021+	0.059+
	(0.011)	(1.025)	(0.700)	(0.008)	(0.011)	(0.034)
Under 45 yrs	0.006	0.560	-0.020	-0.012	-0.033*	0.014
	(0.012)	(1.136)	(0.775)	(0.008)	(0.012)	(0.038)
AFI < USD 50K	0.003	1.071	-0.186	0.006	0.008	0.052
	(0.011)	(1.110)	(0.757)	(0.008)	(0.012)	(0.037)
Nonwhite	0.014	-2.121	-0.793	0.008	-0.005	-0.076
	(0.016)	(1.614)	(1.102)	(0.012)	(0.017)	(0.054)
College or more	-0.026*	2.574*	2.136*	-0.018*	-0.015	0.077*
	(0.011)	(1.055)	(0.720)	(0.008)	(0.011)	(0.035)
Retired	-0.003	-1.857	-0.381	0.013	0.008	-0.052
	(0.014)	(1.357)	(0.926)	(0.010)	(0.015)	(0.046)
Constant	0.061*	62.108*	87.878*	0.049*	0.097*	3.266*
	(0.016)	(1.608)	(1.098)	(0.012)	(0.017)	(0.054)
R-squared	0.008	0.018	0.012	0.008	0.007	0.018
N	2053	1938	1938	1938	1938	1938

+ $p<0.10$, * $p<0.05$. Omitted category for randomized treatment is current format with ordering risky asset classes first.

Table 7: Outcomes By Order Treatment Groups (OLS)

	(1)	(2)	(3)	(4)	(5)	(6)
	Small cap growth fund	Stock Market index fund	Global equity fund	Bond market fund	Money market fund	Balanced index fund
Order B	-5.781*	3.018*	12.343*	-8.321*	2.846*	-4.105*
	(0.844)	(0.691)	(0.800)	(0.809)	(0.677)	(0.661)
Married	-0.433	-0.433	0.854	-0.209	-0.690	0.911
	(0.954)	(0.780)	(0.904)	(0.914)	(0.765)	(0.746)
Female	1.723*	0.708	-0.232	-1.667*	-0.272	-0.260
	(0.873)	(0.714)	(0.827)	(0.837)	(0.700)	(0.683)
Under 45 yrs	-1.159	0.052	1.547+	-0.581	0.020	0.120
	(0.967)	(0.791)	(0.916)	(0.927)	(0.775)	(0.756)
AFI < USD 50K	1.834+	-1.084	0.845	-1.256	0.186	-0.525
	(0.945)	(0.773)	(0.895)	(0.906)	(0.757)	(0.739)
Nonwhite	0.828	-0.596	-2.859*	1.328	0.793	0.506
	(1.374)	(1.124)	(1.302)	(1.317)	(1.102)	(1.075)
College or more	-0.041	1.087	0.997	-0.439	-2.136*	0.532
	(0.898)	(0.735)	(0.850)	(0.861)	(0.720)	(0.702)
Retired	-1.362	-0.627	0.205	1.477	0.381	-0.073
	(1.155)	(0.945)	(1.094)	(1.107)	(0.926)	(0.904)
Constant	18.824*	14.497*	12.214*	25.770*	12.122*	16.572*
	(1.369)	(1.120)	(1.297)	(1.312)	(1.098)	(1.071)
R-squared	0.027	0.009	0.112	0.053	0.012	0.018
N	1938	1938	1938	1938	1938	1938

+ $p<0.10$, * $p<0.05$. Omitted category for randomized treatment is current format with ordering risky asset classes first.

Table 8: Outcomes By All Treatment Groups (OLS)

	(1)	(2)	(3)	(4)	(5)	(6)
	Small cap growth fund	Stock Market index fund	Global equity fund	Bond market fund	Money market fund	Balanced index fund
Form 1: Rating	-2.274	0.102	0.073	-0.386	3.046*	-0.561
	(1.451)	(1.184)	(1.368)	(1.388)	(1.163)	(1.133)
Form 2: Graph	-2.162	0.029	0.918	3.721*	1.329	-3.835*
	(1.474)	(1.204)	(1.391)	(1.411)	(1.182)	(1.152)
Order B	-8.427*	3.680*	11.825*	-5.710*	4.593*	-5.961*
	(1.453)	(1.186)	(1.370)	(1.390)	(1.165)	(1.135)
Form 1 * Order B	5.159*	1.291	-2.070	-2.264	-3.302*	1.186
	(2.059)	(1.681)	(1.942)	(1.971)	(1.651)	(1.608)
Form 2 * Order B	2.854	-3.262+	3.554+	-5.738*	-1.989	4.580*
	(2.074)	(1.693)	(1.957)	(1.985)	(1.663)	(1.620)
Married	-0.377	-0.323	0.690	-0.221	-0.708	0.939
	(0.954)	(0.779)	(0.900)	(0.913)	(0.765)	(0.745)
Female	1.699+	0.687	-0.210	-1.693*	-0.258	-0.225
	(0.872)	(0.712)	(0.823)	(0.835)	(0.700)	(0.681)
Under 45 yrs	-1.040	0.090	1.473	-0.745	-0.003	0.225
	(0.968)	(0.790)	(0.913)	(0.926)	(0.776)	(0.756)
AFI < USD 50K	1.825+	-0.991	0.708	-1.260	0.221	-0.501
	(0.945)	(0.771)	(0.891)	(0.904)	(0.758)	(0.738)
Nonwhite	0.973	-0.672	-2.777*	1.190	0.674	0.612
	(1.375)	(1.122)	(1.297)	(1.316)	(1.102)	(1.074)
College or more	0.033	1.110	0.951	-0.491	-2.185*	0.582
	(0.898)	(0.733)	(0.847)	(0.859)	(0.720)	(0.701)
Retired	-1.210	-0.619	0.166	1.371	0.255	0.038
	(1.156)	(0.944)	(1.091)	(1.107)	(0.927)	(0.903)
Constant	20.135*	14.339*	12.097*	24.863*	10.735*	17.831*
	(1.568)	(1.280)	(1.479)	(1.500)	(1.257)	(1.225)
R-squared	0.029	0.015	0.121	0.058	0.013	0.023
N	1938	1938	1938	1938	1938	1938

+ $p<0.10$, * $p<0.05$

Table 9: Risk Awareness By Form Type (OLS)

	(1)	(2)	(3)
	Self-Assessed Understanding of riskiness of assets (0=Not at all, 3 = Completely)	Safest asset = Money market	Riskiest asset = Global equity or Small Cap
Form 1: Risk Rating	0.251*	0.101*	0.096*
	(0.047)	(0.020)	(0.024)
Form 2: Bar Graph	0.095*	0.011	0.005
	(0.047)	(0.020)	(0.024)
Married	0.006	0.046*	-0.013
	(0.043)	(0.018)	(0.022)
Female	-0.338*	-0.027	-0.052*
	(0.040)	(0.017)	(0.020)
Under 45 yrs	-0.191*	-0.012	-0.024
	(0.044)	(0.019)	(0.022)
AFI < USD 50K	-0.238*	-0.035+	-0.060*
	(0.043)	(0.018)	(0.022)
Nonwhite	-0.146*	-0.009	-0.007
	(0.063)	(0.027)	(0.032)
College or more	0.282*	0.053*	0.050*
	(0.041)	(0.017)	(0.021)
Retired	0.070	0.017	0.012
	(0.052)	(0.022)	(0.027)
Constant	1.662*	0.100*	0.264*
	(0.064)	(0.027)	(0.032)
R-squared	0.133	0.031	0.023
N	1935	1938	1938

+ $p<0.10$, * $p<0.05$

Table 10: Risk Aversion And Behavior (OLS)

	(1)	(2)	(3)	(4)
	Riskiness of actual retirement savings portfolio (1- Lowest, 5- Highest)	Percentage equity in actual retirements savings portfolio	Percentage equity allocation in investment task	Percentage risky asset allocation in investment task
Risk Averse = 1	-0.093+	-8.328*	-0.113	-0.506
	(0.048)	(3.418)	(1.847)	(1.256)
Form 1: Rating			0.235	-1.688
			(1.537)	(1.045)
Form 2: Graph			-1.300	-1.359
			(1.529)	(1.039)
Form 1 * Risk Averse			0.464	1.101
			(2.586)	(1.757)
Form 2 * Risk Averse			0.628	2.563
			(2.617)	(1.779)
Married	-0.013	3.688	1.009	0.613
	(0.053)	(3.655)	(1.149)	(0.781)
Female	-0.052	-2.782	1.882+	0.274
	(0.047)	(3.339)	(1.050)	(0.714)
Under 45 yrs	0.032	-6.281+	0.943	0.039
	(0.054)	(3.663)	(1.164)	(0.791)
AFI < USD 50K	-0.173*	-13.130*	1.064	-0.152
	(0.052)	(3.609)	(1.137)	(0.772)
Nonwhite	-0.037	-9.922+	-2.415	-0.703
	(0.080)	(5.268)	(1.664)	(1.131)
College or more	0.160*	4.118	2.430*	2.284*
	(0.048)	(3.414)	(1.079)	(0.733)
Retired	-0.181*	-4.842	-1.853	-0.493
	(0.060)	(4.467)	(1.393)	(0.946)
Constant	2.773*	49.544*	65.050*	87.154*
	(0.072)	(5.081)	(1.794)	(1.219)
R-squared	0.029	0.021	0.002	0.003
N	1606	1708	1901	1901

+ $p<0.10$, * $p<0.05$

Table 11: Financial Literacy and Form Response (OLS)

	(1) Small cap growth fund	(2) Stock Market index fund	(3) Global equity fund	(4) Bond market fund	(5) Money market fund	(6) Balanced index fund	(7) Confidence (1=Lowest, 4= Highest)
Form 1: Rating	1.390	1.643	-2.289	-3.275	1.763	0.768	0.111+
	(2.218)	(1.673)	(2.087)	(2.098)	(1.668)	(1.776)	(0.062)
Form 2: Graph	-1.678	-2.139	1.096	1.955	0.623	0.143	0.072
	(2.247)	(1.695)	(2.115)	(2.125)	(1.691)	(1.800)	(0.062)
High fin. literacy	-2.882	1.638	-1.355	-2.814	1.608	3.806*	0.287*
	(2.292)	(1.728)	(2.157)	(2.168)	(1.724)	(1.835)	(0.064)
Form 1 * High fin lit	-1.912	-0.105	1.789	3.515	-1.702	-1.585	0.003
	(3.104)	(2.341)	(2.921)	(2.936)	(2.335)	(2.486)	(0.086)
Form 2 * High fin lit	-0.954	0.616	3.384	0.007	-0.913	-2.140	-0.054
	(3.165)	(2.387)	(2.978)	(2.993)	(2.381)	(2.535)	(0.088)
Married	-0.702	-0.866	1.796	0.214	-1.382	0.942	0.022
	(1.496)	(1.128)	(1.408)	(1.415)	(1.126)	(1.198)	(0.042)
Female	1.116	1.245	0.325	-2.751*	-0.437	0.501	-0.100*
	(1.377)	(1.039)	(1.296)	(1.302)	(1.036)	(1.103)	(0.038)
Under 45 yrs	-1.245	0.092	3.517*	-1.221	-1.449	0.304	-0.021
	(1.734)	(1.308)	(1.631)	(1.640)	(1.304)	(1.388)	(0.048)
AFI < USD 50K	1.440	-1.205	2.915*	-1.948	-0.129	-1.074	0.009
	(1.535)	(1.158)	(1.445)	(1.452)	(1.155)	(1.229)	(0.043)
Nonwhite	0.458	-2.645	-3.335	2.832	1.039	1.651	0.033
	(2.224)	(1.677)	(2.093)	(2.103)	(1.673)	(1.781)	(0.062)
College or more	-0.074	1.245	1.323	0.063	-1.884+	-0.674	0.016
	(1.393)	(1.051)	(1.311)	(1.318)	(1.048)	(1.116)	(0.039)
Retired	-0.676	-1.828	0.762	1.844	-0.415	0.312	-0.052
	(1.586)	(1.196)	(1.492)	(1.500)	(1.193)	(1.270)	(0.044)
Constant	18.756*	15.362*	16.797*	22.936*	12.956*	13.193*	1.550*
	(2.483)	(1.873)	(2.337)	(2.348)	(1.868)	(1.988)	(0.069)
R-squared	0.008	0.011	0.011	0.005	-0.004	-0.001	0.071
N	1024	1024	1024	1024	1024	1024	1023

+ p<0.10, * p<0.05