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Increasing Tax Salience Alters Investment Behavior

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In a field experiment with an online investment advisor, we examine the effect of highlighting tax consequences of portfolio allocation changes before investors commit to the change. Allocation changes drop significantly when investors are notified of taxes owed. We provide evidence that this pattern is specific to taxes.

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Special Session Summaries

Financial Decisions in the Information Age

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Paper #1: Financial Education and Confidence in Financial Knowledge

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Paper #2: From Novice to Know-it-All: How Google-Based Financial Learning Affects Financial Confidence and Decisions

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Paper #3: Product Complexity as a Barrier to Consumer Financial Decision-Making

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Paper #4: Increasing Tax Salience Alters Investment Behavior

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and Lynch used eye-tracking to show that high complexity of the presentation of financial products detracts attention from key information about the options. Decreased complexity, on the other hand, increases time reviewing product information, which improves comprehension of the product and its attributes and positively predicts identification of the best option.

Lastly, Sussman, Egan, and Swift present an investigation of the use of online investment platforms, which can provide unique features to assist consumers in investment decisions. The authors examined the effects of a feature that allows investors to see real-time information on the tax impact of an action before they commit to this action. Results suggest that seeing this information on the investment platform reduces trading behavior, but there are nuances to this effect. Namely, levels of sensitivity to tax information in the platform are different for investors with different political affiliations and vary with tax popularity (inferred based on Google search popularity of the specific tax).

Together, these papers give a snapshot of how factors related to information technologies are shaping financial decisions in the Information Age. This session acknowledges that these factors are incipient and likely to be intensified in the near future. Thus, looking at them and their consequences now serves us as a glimpse of future issues in financial decision making.

SESSION OVERVIEW

Consumer research has kept a close watch on how personal and household financial decisions are made and their influence on consumer welfare. However, the landscape of financial decisions now changes faster than ever. A large part of these transformations revolves around the rise of forms of access to information never experienced before. The current papers are guided by the question of, “What do financial decisions look and feel like in the Information Age?”

A major hallmark of this age is the ready availability of information—including increased access to expert knowledge about investing through online platforms. Over the course of six months, Atlas, Porto, and Xiao monitored the effects of an online financial education intervention from one such platform on people’s financial knowledge, confidence in this knowledge, and intentions to adopt desirable financial behavior. Increases in confidence in one’s financial knowledge after the intervention were persistent over time, but effects on actual knowledge were negligible and on intentions were short-lived.

Ward, Grillo, and Fernbach focused on another, perhaps more common, approach to accessing knowledge in our time: online search. Using the Internet and tools like Google, many consumers now rely on online search to educate themselves about investing before making financial decisions. The authors explored how using Google to learn basic information related to the “world of investing” inflates financial self-confidence and leads consumers to reject expert financial advice while also adopting riskier investing behavior.

Although the Information Age offers consumers improved ease-of-access to financial information, processing this information is not always such an easy task. This is noteworthy when consumers deal with information about financial products that can be beneficial but, at the same time, are extremely complex. Dunn, Jhang, Fernbach,

Financial Education and Confidence in Financial Knowledge

EXTENDED ABSTRACT

Financial literacy is seen as an essential skill as young adults become financially independent and make major financial decisions, yet researchers have found that financial literacy is often low among young adults aged 19-29 (Lusardi et al. 2010; Shim et al. 2010). A recent meta-analysis has found that one challenge limiting efforts to improve consumer financial wellbeing is a short “shelf life” of financial education designed to improve financial literacy and foster beneficial financial behaviors (Fernandes et al. 2014). Consequently, the National Endowment for Financial Education and others have called for greater insight into how financial knowledge decays after financial education and what factors mitigate the decay.

Recent studies found that financial education has positive effects on consumer financial behavior and welfare, from improving financial capability (Xiao & O’Neill 2016; Xiao & Porto 2017) to better credit choices (Walstad et al. 2017), reducing outstanding debt (Brown et al 2016) and positive impacts on family members (Bruhn et al. 2016). A model of financial literacy predicts that consumers seek financial knowledge until marginal cost equals to marginal benefit (Lusardi & Mitchell, 2014). While more knowledge carries benefits by reducing uncertainty around financial choices (Stigler 1961) and promoting beneficial finance practices (Hilgert et al. 2003), recipients of financial education may also benefit from higher financial confidence as part of an overall ability to implement healthy financial behaviors.

This paper reports results from a randomized field experiment assigning young adults to an externally-validated financial education

curriculum, and tracking a cohort for 6 months. We find evidence that following financial education, financial confidence (i.e. subjective knowledge, or how much you think you know) persists longer than objective financial knowledge (how much you are assessed to know) and beneficial financial behavioral intentions.

A panel of 256 young adults enrolled in a northeastern research university completed five surveys over a 6-month period in 2017. 161 (63%) were randomly selected to complete a commonly used 2.5-hour online course providing financial education training. After the intake survey, we collect information from the participants at five other times: at baseline, immediately after financial education, one week post-intervention, three months post-intervention, and six months post-intervention. At each checkpoint, we measured (1) objective financial knowledge using a variety of questions used in previous research such as by Lusardi & Mitchell (2008); (2) financial confidence using five items measuring participants' perception of their financial knowledge; and (3) intentions to adopt desirable financial behaviors (Dew & Xiao, 2011).

We found little evidence that the financial education intervention increased financial knowledge despite slightly higher score results to the treatment group. Our measurement of knowledge was somewhat noisy and not specifically built to test the curriculum, which might help explain the lack of significant results. However, we found a strong and lasting effect of the curriculum to financial confidence. Financial confidence increased after 1 week ($p = 0.01$) and persisted through three months ($p < 0.01$). Even six months after the financial education intervention, those in the treatment group reported a level of financial confidence roughly a third of a standard deviation higher than the control group ($p = 0.01$).

Behavioral intentions are higher in the treatment group by half of a standard deviation after the curriculum ($p < 0.01$), which extended through the 1-week survey ($p < 0.01$), but showed no difference at 3-months ($p > 0.20$) or at the six-month mark. The results indicate that following financial education, subjective financial knowledge persisted longer than behavioral intentions. The initial effect of the intervention on financial behavioral intentions was robust in the very short run – one week after intervention - potentially hinting for the need of regular injections of financial knowledge to help consumer sustain healthy financial habits.

Financial knowledge, financial confidence, and behavioral intentions were all equivalent at baseline ($p > 0.3$). The financial education intervention was successful in increasing behavioral intentions and financial confidence, at the short and long run, respectively. Taken together, while financial knowledge and behavioral intentions returned to baseline levels one week after financial education, financial education has a positive effect on financial confidence, which extends six-months post-intervention. These results are robust when we review different student subgroups by gender, previous exposure to financial education, and being part of a disadvantaged population.

In a second study, we recruited 491 young adult (18-26) participants online in a study involving experimental manipulations of financial confidence and knowledge. We pretested 4 possible knowledge manipulations and 9 confidence manipulations adapted from Wan and Rucker (2012). The main study asked participants to recall 2 financial experiences that made them feel highly confident and certain (high confidence), happy and excited (neutral), or doubtful and uncertain (low confidence). Participants also either completed a financial education curriculum about emergency savings (a 6-minute video and some comprehension questions) or watched an unrelated video, prior to answering questions about intentions to save for emergencies (a 4-item scale). We expected that both the confidence and knowledge manipulations would together influence behavioral

intentions. We found that only confidence influenced behavioral intentions, in particular, that low confidence reduced intentions to save for emergencies, compared to neutral and high confidence conditions ($p = 0.05$). We further found that the education curriculum we expected would manipulate knowledge appeared to more strongly influence confidence, highlighting the practical relevance of considering confidence in the consumer knowledge acquisition process.

The present research provides insight into how financial confidence, knowledge and behavioral intentions evolve following education interventions. While the training had a negligible effect on our measurements of financial knowledge, financial confidence was the clear beneficiary of even a small dosage of financial education. Likewise, the manipulation of financial knowledge from our second study also revealed a positive effect on financial confidence. The impact of financial education on behavioral intentions appears to be more complex: the improvements in financial decision-making are short-lived and dependent upon financial confidence. Altogether, among contemporary young adults, there appears to be a lasting impact of financial education on financial confidence, which contributes to financial behavioral intentions.

From Novice to Know-it-All: How Google-Based Financial Learning Affects Financial Confidence and Decisions

EXTENDED ABSTRACT

Online search has become an automatic response to the experience of doubt (Sparrow & Chatman, 2013). Because of this, consumers often resort to Google when preparing for decisions in domains where they are not experts. This tendency is particularly notable in the context of financial decisions: since the early 2000s, the Internet is the most popular source of investing-related information, surpassing written material and financial planners (Federal Reserve, 2016). What has been largely overlooked in this context is that fundamental characteristics of Internet search influence memory and self-perceptions in ways that other forms of information access do not. This phenomenon may carry important implications for financial behaviors.

One such effect is Google-induced overconfidence: people misattribute knowledge found through Google to themselves, eliciting a false sense of already knowing information found online. This phenomenon inflates people's confidence in their own cognitive skills (Ward, 2013). We propose that using Google to access basic investing-related information engenders a false sense of mastery in the domain of finance, and demonstrate consequences of this illusory expertise when people make financial decisions. Experiment 1 establishes the phenomenon by revealing positive effects of Google-based financial learning on self-report (Financial Self-Confidence scale - FSC) and behavioral (bets on one's own financial performance) measures of confidence. Experiment 2 shows downstream consequences: Google-induced financial confidence reduces willingness to accept expert advice and increases preference for riskier investments. These effects are moderated by prior financial expertise.

Prior expertise was measured in the beginning of the experiments in an allegedly unrelated questionnaire. Then, participants (MTurk) were randomly assigned to either access financial information via Internet search (Online Search condition) or receive the same information without engaging in Internet search (No Search condition). All participants were prompted with the same investing-related questions (e.g., "What is a 'Bear Market'?"). The Online Search group were instructed to answer these questions using Google. The No Search group were provided with identical information (answers taken directly from Google's "Answer Box"), but without engaging

in search. Thus, both groups were exposed to the same information, but only those in the Online Search condition used Google.

In Experiment 1, after accessing/receiving the financial information, half of the participants ($N = 246$, $N_{\text{full sample}} = 521$) were randomly selected to complete the 5-item Financial Self-Confidence scale (FSC, sample item: "I am confident in my own ability to recognize a good financial investment," $\alpha = .91$). Next, all participants received instructions about an upcoming investment task for which they could receive a performance-based reward. Participants then bet on their own performance by balancing how much of the reward would be a fixed value and how much would be performance-based (Fox & Tversky, 1995). After completing the investment task and before knowing their reward, they could change their bet.

FSC was higher in the Online Search condition ($M = 3.86$) than in the No Search condition ($M = 3.45$), $F(1, 244) = 5.57$, $p = .019$. Online Search participants also bet more on their performance ($M = 37.38$) than No Search participants ($M = 34.11$), $F(1, 519) = 10.28$, $p = .001$. A follow-up analysis revealed that the effect of Online Search on betting was driven by participants with little prior financial expertise, $F(1, 516) = 4.53$, $p = .034$. For those with minimal prior investing experience, online search increased bet amounts ($M_{\text{No Search}} = 32.71$, $M_{\text{Online Search}} = 37.36$; $p < .001$); for those with more prior experience, it did not ($M_{\text{No Search}} = 37.39$, $M_{\text{Online Search}} = 37.43$; $p = .981$). Actual performance on the investing task did not differ as a result of search ($p = .169$), suggesting that these differences in betting behavior reflect artificially inflated confidence—not improved skill. This inflated confidence persisted after the investment task, as participants were unlikely to change their bets regardless of the experimental group ($p = .564$).

In Experiment 2, the investment task was a simulation in which participants ($N = 187$) opened a new retirement account in a system resembling services like Betterment. They had to allocate an initial amount of \$10,000 between stocks and bonds. The instructions explicitly said that more money on stocks (bonds) is considered a more aggressive (conservative) strategy, alluding to the idea that stocks are a riskier investment. Before choosing how to allocate the money, participants received from the system a recommendation of how much they should invest on stocks based on their age along with a range around the recommended percentage above which their allocation would be too aggressive and below which it would be too conservative.

Only the Online Search group significantly deviated from the recommended allocation, $F(1, 183) = 16.11$, $p < .001$. Importantly, this deviation gravitated towards more aggressive (riskier) allocation choices: on average, Online Search participants allocated 14.16% more on stocks than recommended. This allocation was not statistically different from the bound above which their allocation choice was considered aggressive. In contrast, the average allocation of the No Search group was not different from the recommended allocation. The online search effect on the difference between recommended and actual allocation was moderated by prior financial expertise. Significant deviations from recommendation towards an aggressive investment strategy in the Online Search group were driven by people with low prior expertise in investing, $F(1, 183) = 4.25$, $p = .041$.

The Internet makes knowledge more accessible, and accessibility certainly has good implications for financial literacy. For instance, people can now easily access basic training and expert guidance on specialized online platforms. However, too often consumers rely on quick access to target information through Google and this tendency might have less desirable implications for financial behavior. As this research suggests, the use of Google to self-educate oneself in the financial domain unleashes the shortcomings of overconfidence in

decision settings, including too much reliance on one's own performance (Campbell, Goodie, & Foster, 2004) and risky investment choices (Hadar, Sood, & Fox, 2013). Research on these effects can help understand how to benefit from the ubiquitous access to information while avoiding its cognitive traps.

Product Complexity as a Barrier to Consumer Financial Decision-Making

EXTENDED ABSTRACT

Economists recommend that most consumers should annuitize a substantial portion of their retirement savings, though purchase rates are very low (Benartzi, Previtro, and Thaler 2011). One potential cause of this "annuity paradox" may be the difficulty associated with attending to and comprehending the details of annuity products (Brown, Kapteyn, Luttmner, and Mitchell 2017). In the face of complexity, consumers may disengage without fully considering the beneficial attributes of annuity products. This problem may be exacerbated in today's information-rich environment, where consumers have many draws on their time and attention. In the present set of experiments, we investigate how the complexity of an annuity product affects cognitive and behavioral outcomes.

Experiment 1 uses eye-tracking to examine how attention to key information embedded in annuity brochures (e.g., payout information, disclosures about the financial health of the offering firm) is affected by increased complexity. It is well established that as information is more demanding to process (i.e., increased complexity), individuals will devote increased resources to processing to the extent that it is beneficial. Specifically, when cognitive demand gets to be too great, individuals are likely to shift resources to some secondary goal or task (Kurzban, Duckworth, Kable, & Myers, 2013). This shift would then likely lead to missing important information embedded in the complex material. To test this notion, we created a "distraction" paradigm in which individuals read financial products presented on the right side of a screen while distracting websites rotated on the left side of the screen. The paradigm was meant to mimic real decision-making where consumers often have the option to shift attention from a focal decision to some distraction. We manipulated the complexity of a real-world annuity brochure: a *complex* 21-page version, and a *simple* 14-page version which reduced complexity by removing and compressing information (e.g., footnotes, displaying fewer start date, etc.). Importantly, the *complex* version was the simplest real-world version of an annuity brochure that was openly available to consumers. Participants (aged 40-65 years) completed the distraction task with complexity manipulated between-subjects. We measured individuals' eye movements using a desktop eye-tracker. Results demonstrated a marginal effect of complexity on individuals' attention, $F(1, 27) = 3.76$, $p = .063$, where less attention was paid to the annuity material with increased complexity. Furthermore, greater attention was allocated to key areas of interest (e.g., the disclosure page) in the simple relative to complex version of the annuity brochure when the disclosure was presented early rather than late, $F(1, 27) = 10.88$, $p = .003$. Last, a "wear-out" effect was demonstrated via a within-subject regression analysis where individuals overall paid less attention over time to AOLs in the complex relative to simple versions, $b = -.02$, $t(30) = 2.07$, $p = .047$. Thus, as expected, an increase in complexity led to resources (i.e., attention) being shifted away from the annuity brochure.

Experiment 2 aimed to extend the general findings of Experiment 1 by examining the effects of complexity on behavioral outcomes. We hypothesized that increased complexity of the annuity brochures would lead individuals to spend less time reviewing. Consequently,

this would be expected to lead to missing beneficial attributes, worse comprehension of the material, increased perceived effort, and have negative effects on preferences when the complex material was associated with high financial benefits. We embedded three annuity attributes in the materials that recently have been shown to be judged as beneficial by consumers: high financial strength, period-certain guarantees, and inflation protection (Shu, Zeithammer, and Payne 2016). These attributes have been shown to be valued by consumers in a highly impoverished conjoint setting. We hypothesized that consumers' preference for these attributes would not always be realized when embedded in more realistic materials, but only when the materials were sufficiently simple.

We utilized the same materials as Experiment 1, as well as an added *minimal* 5-page brochure, and *1-page reference* annuity product. Importantly, all three positive attributes only occurred for one of the annuity products (e.g., the complex material was associated with the highly beneficial annuity whereas the 1-page document did not have the beneficial attributes). Complexity (*complex*, *simple*, and *minimal*) and the location of the beneficial attributes (*complex materials*, *1-page reference*) was manipulated between-subjects. All participants received the *1-page reference* in addition to one of the complexity conditions. Participants (aged 40-65 years) first read an overview of retirement products that outlined the three above attributes, followed by a self-paced review session of the annuity materials (e.g., the *complex* 21-page brochure and the *1-page reference*). Upon completion of the review portion, individuals then answered several questions regarding their preferences between the annuities, their perceived effort, and answered incentivized comprehension questions. Similar to Experiment 1, results demonstrated that decreasing complexity led to slightly more time spent reviewing the materials, $F(2, 251) = 2.71, p = .068$, and better performance on the comprehension questions, $F(2, 251) = 3.22, p = .042$. Furthermore, individuals expressed a preference for the more beneficial annuity only when the materials were less complex. However, this result only emerged in the minimal condition, $t(82) = 3.79, p < .001$, suggesting that large reduction in complexity are necessary to achieve any benefits on choice.

In conclusion, we demonstrate that complexity has a negative effect on consumers' behaviors when evaluating financial products. Importantly, even relatively large reductions of complexity had small effects on behaviors, causing many individuals to miss important attributes that would be beneficial if the product was purchased. These results have important implications for the design and marketing of financial product information. They suggest that companies should be dramatically reducing the complexity of their marketing materials, to the extent that they want consumers to seriously evaluate and comprehend the options. The results also contribute to our understanding of the annuity paradox and related suboptimal financial decisions where products are complex and hard to understand.

Increasing Tax Salience Alters Investment Behavior

EXTENDED ABSTRACT

The recent proliferation of online investment platforms allows for new opportunities to present information to investors in ways that lead to positive behavior change. In the current research, we examine the effect of providing online retail investors with real-time tax impact preview information. The tax impact preview allowed investors could see the tax impact of certain actions before committing to them, allowing them to moderate the change to avoid taxes. We find that highlighting tax consequences significantly changes investment behavior, suggesting that people were not previously incorporating

this tax information into their investment decisions. Furthermore, we provide evidence suggesting that the reaction is specific to taxes, rather than being a reaction to a generic cost. The current research contributes to literature on tax salience and tax aversion (Sussman & Olivola, 2011; see Olivola & Sussman, 2015 for a review and see Sussman & White, 2018 for a discussion of policy implications) as well as to literature examining how the display of information influences investment decisions (e.g., Bazley et al. 2017; Hartzmark & Solomon, 2017; Shaton, 2017).

Views about taxes and tax policy can influence decisions ranging from where to live and how to vote to which store to frequent and which products to purchase, and even whether and to what extent to comply with the law. Research has found that people will alter their behavior more in response to taxes than to equivalent costs, a phenomenon known as tax aversion (Sussman & Olivola, 2011).

Since taxes tend to elicit strong responses, strategically highlighting tax costs could encourage specific behaviors, even without any changes to the presence or amount of these costs. In the current research, we explore investing as a highly consequential setting in which increasing tax salience may be used as a nudge to counter suboptimal investor behaviors. Specifically, we target the behavior of excessive trading as an established bias that is correlated with significantly lower returns than the overall market (Barber & Odean, 2000; Odean, 1999).

We employ a unique data set of retail investors' behavior at Betterment, an online investment advisor, through a period when the availability of real-time tax impact preview (TiMP) information was tested and released. Through this feature, investors were encouraged to view the tax impact of certain actions before committing to them. Importantly, while this feature did not change the value of the taxes, it did make taxes salient and allowed customers to moderate their changes to reduce taxes. Our data combines a 20-day window in which TiMP was shown to a random subset of customers with a longer term analysis of investor behavior after the feature completed its full launch.

The experimental period allows us to test causally whether varying tax salience acts as an effective nudge. Data support the conclusion that simple provision of real-time, individualized tax information significantly reduced the likelihood of trading among retail investors. Customers in the TiMP condition performed 14.5% fewer allocation changes per customer than customers in the control group ($M_{\text{control}} = 0.329$, vs. $M_{\text{TiMP}} = 0.280$ changes during the experimental period; $t(12,290) = 2.875, d = .05, p = .004$).

Next, we examine more than two years of data from Betterment. This analysis allows us to explore whether reactions to salient taxes are consistent with a pure cost-based account or with a tax-specific account, and provides evidence consistent with the latter. We first leverage prior research showing differential sensitivity to taxes as a function of political affiliation (e.g., Hardisty, Johnson, & Weber, 2010; Sussman & Olivola, 2011). We use data on each customer's zip code to infer likely political affiliation based on presidential vote-share in their location from recent elections. We define tax sensitivity as the extent to which an increase in the value of taxes displayed corresponds to a decrease in the likelihood of completing a trade. We find that (1) Republicans are more sensitive to taxes than are Democrats (2) Making TiMP viewing mandatory (vs. optional) corresponds to a greater increase in sensitivity among Republicans than Democrats and (3) Sensitivity to tax amount changes (and subsidies) after Trump is elected and Republicans take control of the White House. Finally, moving beyond political affiliation to an unrelated correlate of tax aversion, we examine whether investors react more strongly to tax information when taxes are top of mind. We use

Google search popularity for the term “tax” as a proxy for investor consideration of tax-specific costs and find that sensitivity to taxes increases as a function of tax search popularity.

We propose that online investment platforms allow for new ways of presenting information to investors that can help them make better decisions. Our data provides evidence that tax reminders can be used to leverage one bias (tax aversion) and to assist in reducing others (e.g., overtrading and disposition effects).

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