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ORIGINAL ARTICLE

The perils of overconfidence: Why many consumers fail to seek advice when they really should

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Abstract Consumers regularly make decisions. Some of these decisions are relatively simple, such as a selecting a jam or a coffee, where the choice is entirely subjective. Others, such as investment decision-making, are risky, complex, consequential, and there is a normatively optimal choice. Seeking advice from an expert is a reasonable solution in these circumstances, and yet a minority of investors turn to a professional for advice. As an alternative to human advisors, technology is increasingly being harnessed to provide effective and low-cost advice to assist consumers in making decisions. In a retail context, these are shop bots and search engines often used on a mobile phone while shopping. In an investment context, these are frequently referred to as "robo-advisors". Examining consumer intention to seek advice in an investment context, the current study demonstrates that, among numerous factors examined, unfounded confidence was the best indicator of consumer reluctance to seek advice. Robo-advisors, as artificial intelligence agents providing financial literacy instruction and impartial expert advice, may offer a solution.

Keywords Advice · Consumer financial decision-making · Objective knowledge · Subjective knowledge · Confidence

Reference Lewis (2018): This paper was developed from conference lecture notes and now containssubstantial new theoretical background, discussion, and implications regarding the role of subjectiveknowledge and objective knowledge.

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Introduction

Consumer decision-making regarding investments is an exemplary empirical context to study advice since investing is a complex, risky, and consequential decision. These types of decisions cause uncertainty (Markus and Schwartz 2010) and anxiety (Song and Schwarz 2009), and advice is a reasonable solution. An additional characteristic recommending investment decision-making as a context for studying advice is the fact that there is an objective and normatively optimal decision that maximizes investment returns for any given level of risk (Benartzi and Thaler 2007) in contrast with a low-risk inconsequential decision, (e.g. a subjective preference regarding jam or coffee) where it is difficult to argue that one decision is superior to another. With a normative ideal, the ability of an advisor to enhance decision-making outcomes can be evaluated objectively.

Investment decisions are clearly important since worries over money are the primary cause of stress in America (American Psychological Association 2014). Investing has become more relevant for a larger segment of society with accumulation of wealth in financial assets and increased participation in pension plans (Bernheim and Garrett 2003). At the same time, the proliferation of investment products and financial innovation make investment decision-making more difficult (Ryan et al. 2011). Seeking advice from an expert is one means of coping. When shopping, consumers often turn to store employees for assistance (Beatty et al. 1996) and subsequently feel increased loyalty and choice satisfaction (Reynolds and Arnold 2000). In an investment context, consumers enjoy benefits from expert advice by making more normatively optimal decisions that deliver superior investment returns with lower risk (Bhattacharya et al. 2012, Bluethgen et al.

2008b) and reduced stress (Financial Planning Standards Council 2013). Surprisingly, only 23% of working Americans and just 28% of retired Americans sought investment advice from a professional. Unfortunately, fewer still subsequently followed the advice (Helman et al. 2013). Those most in need of advice were also those least likely to seek advice (Bhattacharya et al. 2012). This pattern is puzzling. Despite the apparent benefits of advice in general and the curious hesitance to seek advice, understanding the decision to seek advice has not been studied and is an important gap in theory regarding consumer behaviour (Brooks et al. 2015).

A recent development in retail investment advisory services is robo-advisors as computer applications that offer investment advice through an impersonal but user-friendly computer interface. Whereas human financial advisors are perceived as being expensive and subject to conflict of interest since their advice is influenced by their own their compensation, robo-advisors are less expensive and less subject to conflict of interest since their compensation is product-neutral. As such, robo-advisors are likely to be very useful in assisting investors in making superior investment decisions (Kaya et al. 2017). Including the possibility that consumers may choose a robo-advisor over a human advisor in this research allows consideration of broader implications.

Given the importance of investment decision-making to consumers' emotional and financial well-being and given the reluctance of consumers to seek financial advice, the question arises as to how investors will respond to offers of advice. Understanding advice-seeking is important for theory-building while also addressing a serious risk to the wealth and happiness of large segments of society. The question of interest is: what factors influence consumer decisions to seek investment advice. Understanding these factors and how they might differ in the case of human advisors versus robo-advisors may yield insights revealing ways to nudge consumers towards seeking advice when they really should.

The next section examines the relevant literature on advice and consumer investment decision-making. Following that is a description of an experiment and analysis of results that establish the factors driving the decision on whether or not to seek investment advice. Additional analysis reveals the consequences of consumers refusing to seek advice when they really should. The findings and implications are discussed, and then limitations and suggestions for future research are considered to complete the paper.

Theoretical background

The general consensus within the behavioural finance literature is that investors are subject to numerous emotional and cognitive biases (e.g. overconfidence) as well as limitations in cognitive ability (Centre for Applied Research 2015). Professional financial advisors offer a solution to these challenges. When advice is sought and followed, the result is improved financial outcomes (Hilgert et al. 2003). In examining how advice improves outcomes, Bluethgen et al. (2008b) attribute the results to improved preference identification, enhanced information search, and correction of cognitive errors and biases by the expert advisor.

In consideration of the apparent benefits, consumer reluctance to seek advice needs to be understood. Milner and Rosenstreich (2013) identify a need for more research into financial decision-making and the factors affecting decisions regarding advice in particular. While research regarding the antecedents to advice-seeking is limited (Brooks et al. 2015), there are some indications of likely factors that may influence the decision. Bluethgen et al. (2008a) found that advice is associated with increased ability to identify preferences with those more able to identify preferences also more likely to seek advice. Grable and Joo (2001) found that those with higher levels of satisfaction with prior financial decisions are also more likely to seek advice. Morrin et al. (2012) observed that some decisions, such as investing, are inherently more difficult due to the consequential nature of the decision. Leonard-Chambers and Bogdan (2007) found that advice is perceived as a solution to the difficulty of the decision; therefore, perceived difficulty is likely a factor influencing the decision regarding advice. While advice assists choosers facing difficult decisions, there are also indications that advice can be seen as a loss of control and a threat to self-esteem (Usta and Häubl 2011). Countering this loss of personal agency, self-determination theory (Deci and Ryan 2008) suggests feelings of self-determination may not be compromised since individuals may recognize the positive benefits and choose to exercise their personal agency through a proxy (i.e. their advisor). Although there are conflicting perspectives, self-determination is likely to affect a decision regarding advice. Finally, Kimiyaghalam et al. (2016) found that risk tolerance is associated with advice-seeking.

Of particular interest in the current study on advice-seeking is the relationship between financial literacy, expertise, and confidence. Financial literacy is an objective measure of expertise and will be referred to as objective knowledge (OK). Self-assessed expertise, or what choosers think they know about a decision context, is a subjective measure of knowledge and will be referred to as subjective

knowledge (SK). Unfortunately, research on the effects of knowledge on financial decision-making is sparse (Kuusela et al. 2017) and possibly counterintuitive. Contrary to the tempting notion that only novices need advice, Robb et al. (2012) suggest that knowledge is associated with more rather than less advice-seeking. Similarly, a study by Holden (2013) suggests a role for confidence with more-confident rather than less-confident investors seeking advice. Findings of research on the relationship between OK and SK for financial decision-making have been mixed with some research showing a negative correlation (Kuusela et al. 2017) and other research showing a positive correlation (Mishra and Kumar 2011) between OK and SK. With investment decision-making being relatively infrequent, and since the results of investment decisions are only known at some future point, individuals have few opportunities to receive an objective measure of their self-assessed knowledge. It is therefore entirely possible that SK and OK may diverge leading to an inappropriate level of confidence in decision-making ability.

In what has been termed the Dunning–Kruger effect, Pennycook et al. (2017) demonstrate that individuals who score lowest on the cognitive reflection test tended to overestimate their performance in advance. Individuals who scored highest, tended to underestimate their performance in advance. The proposed explanation is that those individuals who hold overly favourable views of their decision-making ability also lack meta-cognitive awareness of their own limitations. In the context of investment decision-making, Lusardi and Mitchell (2014) found that individuals are likely to overestimate their level of financial knowledge. The implications for risky, complex, consequential decisions are that consumers may be ill-equipped to make these decisions and unaware of their own need for advice. Individuals with lower financial literacy would benefit most from advice (Bhattacharya et al. 2012) but may also be less likely to seek advice since they may overestimate their own expertise. We conceptualize the divergence between OK and SK as possible overconfidence or underconfidence.

As noted above, extant research suggests a number of factors that may affect the decision to seek investment advice. In addition to the ability to identify investment preferences, satisfaction with decision-making, perceived difficulty, self-determination, and perceived risk, the current study considers financial literacy (OK), subjectively self-assessed knowledge (SK), and overconfidence. It is hypothesized that overconfidence will make investors less likely to seek advice.

Method

Participants were tasked with allocating a hypothetical investment portfolio over a highly representative list of fifty equity and fixed income mutual funds drawn from the Morningstar mutual fund database. The one hundred and seventy-one participants who volunteered for a student research pool experiment on investment decision-making were enrolled in a four-year Bachelor of Commerce programme at a Canadian University. The respondents were not aware of the purpose of the study. Information regarding each of the fifty mutual fund investment choices included 1-, 3-, and 5-year returns for investment performance as well as standard deviation as a measure of risk. Fund names were disguised to avoid confounds resulting from brand awareness. Instead, fund names reflected the type of fund, for example “Global Equity Fund” or “Short Term Bond Fund”. The respondents considered the list of fifty funds and allocated their investment over the funds they selected by entering a percentage of their portfolio to invest in any combination of the 50 funds. After considering the investment options, respondents were then offered the opportunity to receive “professional investment advice” whereby an advisor would expertly choose funds on their behalf.

Following the investment allocation and the decision regarding advice, respondents were asked to answer questions regarding that experience. To disguise the nature of the study in considering their decision-making regarding advice, there were questions regarding the variety of choices available and the extent to which the mutual fund information was helpful. Of direct relevance to this study, they were also asked about the extent to which they felt able to make informed decisions, the level of satisfaction with the decisions, the level of difficulty in making decisions, their level of self-determination, their investment risk tolerance, the extent to which they subjectively believed they have expertise in making investment decisions (SK), and their level of confidence in choosing investments.

For the independent variables, existing measures which have demonstrated acceptable reliability were used to measure the focal constructs. Perceived risk ($\alpha = .71$) was measured with four items adapted from Cooper et al. (2014). Perceived decision difficulty ($\alpha = .75$) was measured with five items drawing on the work of Broniarczyk and Griffin (2014). Perceived choice ($\alpha = .80$) was measured by utilizing the sub-scale of the Intrinsic Needs Motivation Inventory (Deci and Ryan 2008). Finally, three items measuring self-assessed expertise ($\alpha = .81$), three items measuring confidence ($\alpha = .87$), three items measuring preference identification ($\alpha = .90$), and a single item

measuring choice satisfaction were all adapted from Lewis and Gill (2016). Following the collection of responses, a composite variable was created for each construct by averaging their measurement items. The dependent variable, acceptance of advice, was measured as a binary variable—with the response option of yes versus no—where respondents were asked whether they would accept advice. In addition to SK, respondents were also administered an objective test of their actual investment knowledge and financial literacy (OK). The measure consisted of 10 items which are typical of basic financial literacy questions from the Rand American Life panel (Hung et al. 2009) such as "Investments that are riskier tend to have lower returns over the long run". Respondents answered either "True", "False", or "I Don't Know"; the latter of which was considered an incorrect response. The construct OK was then formed by summing the number of correct answers out of 10.

Analysis and results

Preliminary assessment comparing Spearman's rank-order correlation coefficient shows a positive correlation between SK and confidence ($r_s = .62$, $p < .001$). OK shows no significant correlation to confidence ($r_s = .06$, $p = .452$). In turn, SK is only weakly correlated with OK ($r_s = .32$, $p < .001$). It is apparent that subjective assessment of one's own expertise regarding investment decision-making is positively correlated with confidence in one's ability to make investment decisions. In turn OK was only weakly related to both confidence and SK. These results suggest that, if respondents believed that they had expertise, they were confident even if the confidence was unfounded as indicated by low OK. The confidence index ($\alpha = .87$) noted above directly measured the extent of overconfidence. The index was created from the following questions, "I believe that I can earn above average returns compared to the overall market", "I believe that I can earn above average returns compared to the average financial advisor", and "I believe that I can earn above average returns compared to the average of my friends and family". Such belief in the ability to outperform the market is the very definition of overconfidence. Porter and Trifts (2012) find that even the best individual fund managers over the last 80 years were unable to maintain performance exceeding the overall market.

A mean split divided low (novice) and high (expert) SK as well as low (novice) and high (expert) OK. Cross-tabulation reveals the number of cases in one of two conditions: those whose SK is corroborated by their OK; and those whose SK is inconsistent with their OK. Table 1 shows the distribution of the sample among these cases.

Table 1 Distribution of objective and subjective knowledge ($N = 171$)

	Subjective novices	Subjective experts	Total
Objective experts	51	41	92
Objective novices	30	49	79
Total	81	90	171

Those whose subjective assessment of their own expertise is at odds with their actual financial literacy are perhaps the most interesting. Those who believe they know less than they actually do have low SK and high OK. Those who believe they know more than they actually do have high SK and low OK. For the latter group, this "failure to recognize incompetence" (Pennycook et al. 2017, p. 1) manifests as unfounded confidence. These results are not atypical. A 2015 study of financial literacy found that two-thirds of global investors considered themselves to have advanced investment expertise and yet their average score on a financial literacy test was just 61% (Centre for Applied Research 2015). Similarly, Lusardi and Mitchell (2011) found that only half of respondents were able to correctly answer simple financial literacy questions.

Hypothesizing that those with unfounded confidence will find advice unappealing, binomial logistic regression was performed using SPSS version 25 to assess the relationship between advice-seeking behaviour and confidence ($M = 3.20$, SD = 1.35, min = 1.00, max = 7.00) after controlling for a variety of other factors including preference identification ($M = 3.75$, SD = 1.25, min = 1.00, max = 7.00), choice satisfaction ($M = 4.60$, SD = 1.32, min = 1.00, max = 7.00), perceived difficulty ($M = 3.55$, SD = .95, min = 1.00, max = 6.20), self-determination ($M = 5.25$, SD = 1.14, min = 2.25, max = 7.00), perceived risk ($M = 3.92$, SD = 1.08, min = 1.00, max = 6.75), OK ($M = 5.40$, SD = 1.77, min = 1.00, max = 10.00), and SK ($M = 3.32$, SD = 1.36, min = 1.00, max = 6.33).

The Box–Tidwell (1962) procedure verified that the logit of the dependent variable (declining the offer of advice) is linearly related to each of the continuous independent variables. Using Bonferroni correction with testing at $p < .003$ (Tabachnick and Fidell 2012), all 17 variables were accepted in the model. The Hosmer–Lemeshow test of goodness of fit is significant ($p = .53$), thus indicating that the model is not a poor fit. The logistic regression model is statistically significant $\chi^2(9) = 27.509$, $p = .001$. The model explains 22.0% (Nagelkerke R^2) of the variance in accepting or refusing advice and correctly classifies 78.4% of cases. As shown in Table 2, of all of the model variables, only confidence predicts whether a respondent will accept or refuse advice (Exp(B) = 1.98, $p = .002$).

Table 2 Binomial logistic regression predicting the likelihood of refusing advice

	95% confidence							
	B	SE	Wald	*df*	Sig.	Odds	Lower	Upper
Preference identification	.00	.17	.00	1	.99	1.00	.72	1.39
Satisfaction	.30	.21	2.00	1	.16	1.34	.89	2.02
Difficulty	.00	.16	.00	1	.98	1.00	.74	1.36
Self-determination	.22	.20	1.27	1	.26	1.25	.85	1.83
Risk	− .08	.25	.12	1	.73	.92	.57	1.49
OK	.23	.13	3.16	1	.08	1.26	.98	1.61
SK	− .25	.21	1.39	1	.24	.78	.52	1.18
Confidence	.68	.22	9.92	1	< .01	1.98	1.29	3.02
Constant	− 6.14	1.86	10.91	1	< .01	.00		

Each unit increase in confidence makes a respondent 1.98 times more likely to refuse advice.

The fact that there is a normatively optimal choice when making investment decisions offers an opportunity to examine the implications of overconfidence and declining the offer of advice. Additional analysis considered the impact of refusing advice on the quality of decision-making as measured by the extent to which the resultant portfolio allocation between equities and fixed income is normatively optimal. With floodlight analysis (Spiller et al. 2013), regressing the ratio invested in equities on advice decision (accepted, refused), confidence, and their interaction reveals a significant effect for confidence ($t(171) = 1.98$, $p = .05$), and no significant interaction ($t(171) = -1.15$, $p = .25$). To decompose the results, the Johnson–Neyman technique identifies the range(s) of confidence for which the simple effect of refusing advice is significant. Figure 1 shows the results graphically.

This analysis reveals that there is a significant increase in the proportion invested in equities by those who refuse advice versus those who accept advice for levels of confidence above 2.60. Selecting the appropriate allocation between equities and fixed income is a critical determinant of long-term success when investing. Brinson et al. (1995) found that 93.6% of the differences in investment returns for individual investors can be explained by allocation between asset classes (i.e. equity, fixed income, and uninvested cash). As confidence increases, the proportion invested in equities by those refusing advice rises to 85.9%, thereby creating substantial excessive risk relative to the more optimal 58.9% mean ratio of equity to fixed income of the 100 top performing pension funds in the USA (Dyck, Lins and Pomorski 2013). Recall that SK is related to confidence but unrelated to OK. With confidence, individuals are more likely to refuse advice. Furthermore, as overconfidence increased, and respondents refuse advice, the result is increasingly sub-optimal investment decision-making. Overconfident investors are taking much more risk than prudent experts recommend.

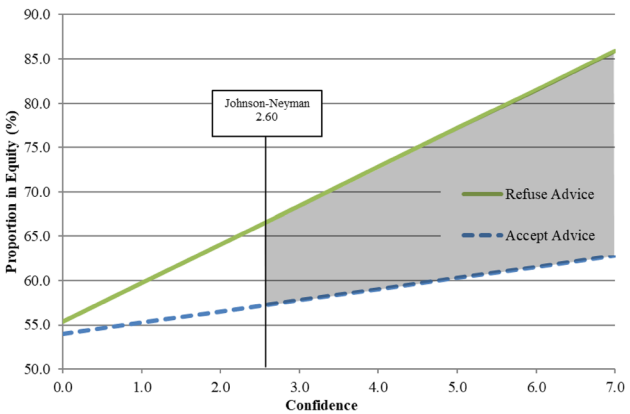

Fig. 1 Proportion invested in equity investments by confidence level

Discussion and implications

Using a realistic investment decision-making scenario, the current study investigates investor reactions to the offer of advice and considers factors associated with refusing advice. Whereas low OK and low SK should ideally be associated with accepting advice, confidence, often unfounded, was the only significant factor affecting the decision to seek advice. This study demonstrates that overconfidence significantly reduces the likelihood of consumers seeking investment advice and the result is normatively sub-optimal investment decision-making with real potential for a negative impact on their long-term financial well-being.

Another contribution of this research is in clarifying the effects of a divergence in OK and SK. The actual level of OK and SK and the relationship between them matter less in the decision regarding advice; what matters more is any resultant overconfidence. When SK significantly exceeds OK, the result may be unfounded confidence. Measuring overconfidence directly is a useful method for examining

the effects of divergent levels of subjective and objective knowledge on financial decision-making.

This research demonstrates the importance of confidence in affecting consumer decisions regarding investment advice. The impersonal nature of robo-advisors versus human advisors also introduces interesting implications. The implications are that positioning a robo-advisor as delivering enhanced decision-making with lower cost and reduced conflict of interest substantially misses the mark among the target population. Robo-advisors would be more appealing and more effective at supporting financial well-being if they first addressed overconfidence. Willis (2011) identifies the need for personalized financial literacy training to reduce overconfidence and improve financial decision-making but also describes the invasion of privacy in revealing details of "financial and emotional lives" (Willis 2011, p. 431). Colby et al. (2014) identified a link between financial literacy training and shame as well as negative affect. The private and impersonal interaction between a computer robo-advisor and a human client offers an opportunity for investors to realistically assess their level of financial literacy in a comfortable setting without the embarrassment of revealing details to a human advisor. In this respect, robo-advisors have an advantage over human advisors. The financial literacy training and advice can occur at a time when they are likely to be the most beneficial—the moment when consumers are making complex, risky, and consequential investment decisions. With overconfidence addressed, investors would be more likely to avail themselves of the expert advice offered.

There are likely implications for other risky, complex, consequential decisions where advice is offered as a service. These contexts might include small business advice, legal advice, other types of financial advice such as tax planning, or advice on major purchases such a home, an automobile, or any other high-cost item. In each of these cases, it is possible that overconfidence rather than more intuitively appealing factors such as decision difficulty, complexity, or difficulty of identifying preferences will determine the decision regarding advice.

Unfounded confidence is a key factor in the inability of consumers to see value in advice. As one philosopher stated, "A little knowledge is apt to puff up, and make men giddy, but a greater share of it will set them right, and bring them to low and humble thoughts of themselves" (A. B. 1698). Before touting expertise, computer-based advice should first offer financial literacy training to counteract overconfidence. In a private setting, after being given a better appreciation of their true level of expertise by a robo-advisor, consumers will be more willing to embrace computer-based advice and will then be more likely to make better decisions.

Limitations and future research

One limitation of this study results from the reliance on a student sample. While students are a more homogeneous sample than a consumer panel reflective of the general population and can therefore reduce spurious effects, the student sample (even though they are business students familiar with investing) may limit generalizability. Another potential limitation of this study is the reliance on a single respondent survey which introduces the potential for common method variance (Podsakoff et al. 2003). The study employs numerous procedural remedies to eliminate response cues and item context effects and also includes variation in response formats as a mitigant. It is also noted that refusing advice is a moderator of the effect of confidence on proportion invested in equites and common method variance would actually suppress any moderator effects (Siemsen et al. 2010), and therefore the effect reported is actually, if anything, understated.

This research demonstrates the need to correct overconfidence in investment decision-making. It is also apparent that admitting the need for advice may result in feelings of shame for many consumers. It is suggested that a robo-advisor, as an inanimate artificial intelligence, may have an advantage over human advisors in providing financial literacy training to reduce overconfidence without the associated shame and negative affect. This intriguing potential benefit of human–computer interaction is worthy of future research. A future study might directly measure differences in shame, negative affect, and other outcomes within subjects and between conditions of an artificial intelligence advisor and a human advisor to establish the significance and magnitude of effects.

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