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Financial Advice and Gender: Wealthy Individual Investors in the UK

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Abstract: We examine how gender differences in investment risk tolerance, knowledge, confidence and portfolio cash allocations relate to the gender mix of investors and financial advisors among a sample of wealthy individuals in the UK. Our results demonstrate that gender effects are more nuanced than previously assumed. First, while even wealthy women consider themselves more conservative and allocate a higher proportion of their investable assets to cash than men, previous findings of lower investment knowledge and confidence do not extend to our sample. Second, having an advisor matters. Advised investors perceive themselves to have a higher risk tolerance and invest 10.6%-points more than self-directed investors. Finally, the investor-advisor gender combination matters, but only for female investors. Women with male advisors are more risk averse, feel less knowledgeable and less confident about their investment decisions. They also invest 11%-points less than women with female advisors. Indeed, female investors advised by women report the highest risk tolerance and make the lowest portfolio allocation to risk-free assets across the full sample, including men.

Keywords: financial advice; investors; risk tolerance; financial advisors; gender

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1 Introduction

Are gender and financial advice related to differences in the investment attitudes and behaviour of wealthy investors? This is an important consideration because individuals with USD100,000 or more in investable assets control 87% of global, privately owned financial wealth (CreditSuisse, 2019b), and as such the investment decisions made by members of this wealthy demographic have powerful economic and societal consequences. Most hire financial advisors to assist with their investment decision making and, in doing so, become clients of the wealth management industry. The UK has a large and reputable wealth management industry for offshore and onshore privately owned assets.¹ Financial advice in the UK, like other countries, is heavily skewed towards the rich; 73% of UK millionaires engage financial advisors to assist in managing assets compared to approximately 9% of adults overall (CreditSuisse, 2019a; FinancialConductAuthority, 2018).²

Notwithstanding the significance of such prosperous clients for the wealth management industry, surprisingly little research has explored the investment attitudes and decisions of investors in this demographic, nor how these might be influenced by financial advisors. Indeed, most extant research focuses on interactions between financial advisors and less affluent private investors. For example, Foerster, Linnainmaa, Melzer, and Previtero (2017) and Stolper and Walter (2018) cite USD58,000 and USD91,000 as the account value of investors at the 75th percentile of their respective samples.³ As such there is still a dearth of research

¹The UK wealth management industry manages privately owned offshore and onshore financial assets of USD1.79 trillion, equivalent to 46% of the country's GDP. In size, the offshore wealth management industry ranks second behind Switzerland and ahead of the US. See: https://www2.deloitte.com/content/dam/Deloitte/ch/Documents/financial-services/ch-fs-1800914_Deloitte-wealth-managemnet-Ranking-2018.pdf and <https://www.theglobalcity.uk/PositiveWebsite/media/Research-reports/CoL-Global-City-Factsheets-Wealth-management-digital.pdf>

²US statistics show that 60% of households with investable assets in excess of USD500,000 engage advisors compared to less than a third of households overall (Winchester and Huston, 2014).

³Foerster et al. (2017) use Canadian data and the wealth of the investor at the 75th percentile is CAD75,000. Stolper and Walter (2018) use German data and the 75th percentile in this data set is

into the attitudes and behaviour of wealthy investors.

Moreover, even though women are estimated to control one-third of this privately-owned financial wealth (BostonConsultingGroup, 2019), few studies have examined gender effects in the investment attitudes and behaviour of wealthy investors, nor whether the gender of their advisor plays a meaningful role. Consequently, the industry lacks evidence to inform practical action when advising wealthy women clients, and, potentially, respond to calls for greater gender awareness and diversity within this male-dominated industry where only 15% of financial advisors are female.

In response to these gaps in extant literature, the present study investigates if gender and financial advice are related to differences in the investment attitudes and behaviour of wealthy investors. We investigate the self-reported investment attitudes, and the proportion of cash held in personal portfolios, of 500 wealthy UK investors with between GBP50,000 and GBP2.5 million in investable assets (i.e. approximately USD67,000 to USD3.2 million).

We focus, in particular, on potential gender differences both among investors and between investors and advisors. Moreover, by separating ‘self-directed’ investors (i.e. investors who manage their own investment portfolios) and ‘advised’ investors (i.e. those who engage professional financial advisors for information and investment recommendations), we compare the attitudes and behaviour of men and women in these two groups. Within this context our data allow us to examine three discrete questions: (i) do wealthy women differ from wealthy men in terms of their investment risk preferences, and levels of knowledge and confidence about investing?; (ii) do advised investors demonstrate different investment risk preferences, and levels of knowledge and confidence about investing? and; (iii) do investor risk preferences, and levels of knowledge and confidence about investing vary according to the gender combination of investor and advisor?

EUR77,000.

We present three main findings. First, our data show that, irrespective of whether they engage an advisor or are self-directed, wealthy women consider themselves to have lower risk tolerance and report allocating 5%-points more of their investable assets to cash (i.e. a risk-free asset), than their male counterparts. Thus, we add to existing studies documenting similar gender differences in risk tolerance, both in the broader population of non-wealthy investors and in experimental studies (Agnew, Balduzzi, and Sunden, 2003; Charness and Gneezy, 2012; Grable, 2000). However, contrary to existing research (Lusardi and Mitchell, 2007; Croson and Gneezy, 2009), we find no evidence that wealthy women self-report lower investment knowledge or confidence compared to wealthy men.

Second, we demonstrate that, relative to self-directed investors, investors with financial advisors report higher risk tolerance scores and invest 10.6%-points more in risky assets. No significant variations in knowledge and confidence are observed.

Third, we show that the gender of the financial advisor relates to self-reported attitudes and cash holdings among advised female, but not male, investors in this wealthy demographic. Specifically, compared to women with female advisors, those with male advisors self-report lower risk tolerance, knowledge and confidence, and allocate 11%-points more of their investable assets to cash. Moreover, women with female advisors report the highest average self-reported risk tolerance, investment knowledge and confidence (and the lowest cash allocations) compared to all other subsamples, including male investors. These findings suggest that for women the investor-advisor gender combination matters, with wealthy women investing more if their advisor is female.

Motivated by a lack of studies that attempt causal investigations we use statistical matching techniques to investigate potential effects of financial advice and advisor gender on investor self-ratings and cash holdings. Whilst statistical matching does not prove causality, our results provide some indication that financial advice may contribute to increased risk tolerance and decreased cash holdings, and that advisors fulfil a role of encouraging reluctant

individuals to invest more (Gennaioli, Shleifer, and Vishny, 2015). Furthermore, our matching results strengthen the regression findings to suggest that advisor gender is important for female but not male investors. More specifically, for women, having a male advisor is associated with significantly lower self-rated investment knowledge and more conservative investment behaviour, including holding 13.4%-points more in cash.

This paper extends the literature in three important ways. First, our results challenge the blanket assumption that women are always more conservative investors than men, and that they also possess lower levels of financial literacy and confidence when making investment decisions. We find that observed gender differences are likely to be influenced by situational factors like financial advice and wealth.

Second our findings contribute to the small but growing number of studies investigating financial advice within the wealth management industry (Bellofatto, D'Hondt, and De Winne, 2018; Foerster et al., 2017; Hackethal, Haliassos, and Jappelli, 2012; Stolper, 2018), by identifying differences in attitudes and behaviour of self-directed compared with advised investors. We find that advised investors hold less cash relative to assets that are considered higher risk but have potential to produce higher returns. In many societies a majority of the adult population report insufficient understanding of pension investing and do not invest enough to fund their retirement with pronounced gender inequality. Although an international challenge, women in the UK are found to have retirement savings that are up to 40% smaller than those of men.⁴ Our findings are therefore pertinent for understanding how the wealth management industry can help to increase retirement savings.⁵

Third, drawing parallels with research from other sectors (Scandura and Viator, 1994), we suggest that gender effects in investor-advisor dyads may be more nuanced than previously

⁴See: <https://www.pensions-expert.com/DB-Derisking/Pensions-gender-pay-gap-reaches-40-per-cent>

⁵In the UK, 55% of working age adults do not feel that they understand enough about pensions to make investment decisions and the majority of people do not invest enough to fund their retirement. See: <https://www.fca.org.uk/publications/research/financial-advice-market-review-famr-baseline-report>.

thought, as we find that the gender of the financial advisor is important for female but not male investors. The impact of the investor-advisor gender combination on financial advice, investor attitudes and behaviour is not widely researched, and this is perhaps our most revealing finding. We thus provide insight into potential sources of gender bias in the advice process.

Our research speaks directly to those in the wealth management industry, policy makers and regulators who are seeking to attract and retain an increasing proportion of women both as clients and as employees. Alongside the women themselves, these stakeholders stand to gain from ensuring that women receive good financial advice, by encouraging them to invest more, and from the introduction of strategies to attract and recruit women financial advisors, and train existing advisors. Our paper provides a first step in this important research area, by identifying directions for future research investigating causal relationships between gender, advice and investor behaviour, along with practical interventions to improve diversity within the industry. While this paper makes a specific contribution to the financial advice literature, it also has broad relevance to practices involving advice in traditionally male dominated fields that are adapting to a growing population of female clients.

The remainder of the paper is structured as follows. We discuss the literature on investor gender, the role of financial advice, and the impact of investor-advisor gender combinations in Section 2, using these to motivate our research questions and hypotheses. We describe our data in Section 3 and report our empirical results in Section 4. We summarize our conclusions in Section 5.

2 Literature Review and Research Questions

2.1 Gender and differences in investment preferences

According to classical financial models, and unlike age and the amount of investable assets an individual owns, gender is not a characteristic that, in isolation, should contribute to variation in the risk and return profile of investors. Yet, the finance literature indicates that, compared to men, women have lower risk tolerance (Charness and Gneezy, 2012; Grable, 2000), lower levels of financial literacy (Dwyer, Gilkeson, and List, 2002; Lusardi and Mitchell, 2007), and less financial confidence (Barber and Odean, 2001; Croson and Gneezy, 2009).

These financial attitudes are important, because research has linked them to less effective investment strategies and behaviour. For example, in a survey of the experimental literature on gender and risk aversion Croson and Gneezy (2009) draw a causal link between a lack of confidence among women and their lower risk tolerance. Underconfidence is related to women not investing enough (Pikulina, Renneboog, and Tobler, 2017) and women who consider themselves to have low levels of financial literacy are less likely to hold sophisticated instruments (Bannier and Neubert, 2016). There is also evidence that women are more likely to make conservative asset allocation decisions in their retirement portfolios and hold more cash (Agnew, Anderson, Gerlach, and Szykman, 2008; Charness and Gneezy, 2012; Eckel and Füllbrunn, 2015; Sunden and Surette, 1998). The female gender gap in risk tolerance has been shown to account for women accruing ten percent less financial wealth compared to men (Neelakantan, 2010).

There are notable exceptions to the broad conclusion that low risk tolerance among women leads to less effective investment strategies. For example, Fuertes, Muradoglu, and Ozturkkal (2014) document an absence of gender differences in risk taking among individual brokerage

clients in Turkey. Similarly, [Dorn and Huberman \(2005\)](#) argue that investor characteristics other than gender may be more important in determining risk tolerance. Nevertheless, there is a persistent and widely held belief that women are more risk averse, and therefore make more conservative investment choices than men.

However, most evidence relating to gender differences in investment attitudes and behaviour is derived from national surveys of the general public, less affluent investors, and experimental studies, often involving games performed by students. Thus far, research investigating gender differences and financial attitudes has not considered the wealthier demographic of investors, nor has it taken into account the influence of financial advisors. As such, little is known about the attitudes and behaviour of the wealthy men and women investors who control the majority of the world's personal wealth nor the potential influence of financial advisors. Furthermore, despite significant growth in the proportion of wealthy women investors, and an increased likelihood that they will be the marginal investor making price relevant investment decisions, very little research has investigated this important demographic. Consequently, the dearth of research involving wealthy women investors means that financial advisors can lack evidence to inform advice pertinent to this important group. We therefore begin by analysing our data to investigate whether previous findings relating to gender differences in self-reported attitudes and investment behaviour also extend to wealthy women by asking:

(1) Do wealthy women differ from wealthy men in terms of their investment risk preferences, and levels of knowledge and confidence about investing?

Building on the extant research discussed above on gender differences in less affluent investors we formulate the following hypotheses: wealthy women investors will rate themselves less risk tolerant (H1a), less knowledgeable about financial investing (H1b), and less confident about financial investing than wealthy male investors (H1c).

2.2 Financial advice

Instead of managing their own investments, individuals can engage financial advisors. Financial advice exists to help investors achieve an optimal balance of investment risk and return and, ultimately, a higher return on their investments. Financial advisors, whose activities in the UK are regulated by the Financial Conduct Authority, help investors navigate a complex investment and pensions landscape, typically by providing information, encouragement and support enabling more reluctant clients to accept additional risk and thereby increase the potential for growth in their future wealth position.

Many individual investors can and do make investment decisions without input from professional advisors. These self-directed investors tend to be male, younger and demonstrate higher levels of confidence compared to investors who seek professional advice (Bluethgen, Gintschel, Hackethal, and Mueller, 2008; Hackethal et al., 2012).⁶ By making biased investment decisions, they are also generally less likely to select portfolios that optimally balance risk and reward (Benartzi and Thaler, 2001; Kahneman, 2003).

In a sample of non-wealthy investors, Kramer (2016) shows how individuals who are less confident about their investment abilities are more likely to seek financial advice compared to those who consider themselves highly competent. By providing financial information, advisors can increase the investment knowledge of their clients (Grinblatt, Keloharju, and Linnainmaa, 2011; Van Rooij, Lusardi, and Alessie, 2011) that can lead to improved portfolio decisions (Bhattacharya, Hackethal, Kaesler, Loos, and Meyer, 2012; Gaudecker, 2015). In addition to this technical support, however, the level of social interaction and trust between financial advisors and their clients has been shown to benefit investor decision making (Guiso, Sapienza, and Zingales, 2008; Hong, Kubik, and Stein, 2004; Lu and Tang, 2019) by increasing stock market participation and encouraging investment in new asset classes (Hong

⁶This is consistent with other domains such as business decisions, where research shows that female board directors are more likely to seek outside counsel than their male peers (Levi, Li, and Zhang, 2015).

et al., 2004). The investor-advisor relationship therefore has the potential to act as container for managing difficult feelings such as anxiety and feelings of being understood, as shown in relation to fund managers and investors by Taffler, Spence, and Eshraghi (2017).

Advice is commonly charged for as an initial and ongoing percentage fee based on the amount invested. Product specific fees vary but are usually higher for mutual funds and sophisticated products compared to lower risk products such as fixed income, money market instruments and cash. Therefore, the economic utility of advisors is correlated with how much their clients invest and the riskiness of the investment products they hold in their portfolios. Conflicted advisors are seen to vary their recommendations to maximise their fee income (Inderst and Ottaviani, 2012; Sappington, 1991), recommend investment products with which they have high levels of familiarity (Foerster et al., 2017), and pander to their client's own biased convictions to gain their trust (Gennaioli et al., 2015). This has been linked to the lack of clear evidence that advised portfolios have higher returns than self-directed portfolios (Hoechle, Ruenzi, Schaub, and Schmid, 2017). Therefore, the benefits of financial advice may be limited to increasing portfolio diversification (Gaudecker, 2015) and encouraging risk averse individuals to invest at all (Gennaioli et al., 2015).

Given the contradictory findings of those few studies focusing on advised and self-directed investors, together with the lack of research on the attitudes and behaviour of wealthy investors and their advisors, our second research question remains exploratory, namely:

(2) Do advised investors demonstrate different investment risk preferences, and levels of knowledge and confidence about investing?

2.3 Investors and financial advisors: Gender combinations

The FCA financial advisor regulatory process ensures that regulated advisors receive training on providing suitable investment recommendations, treating clients fairly as well as providing

guidance on ethical standards. These build on evidence drawn from existing research and practice. Yet despite the evident gender gap in holding risky assets or in seeking financial advice and the possibility that unconscious bias about client characteristics influence the advice provided, the regulator does not specifically include gender as a focus area.

An emerging literature documents how social cognitive bias plays a role in how the successful performance of female finance professionals is underestimated by others. [Gu \(2020\)](#) describe how the market reacts slower to female analysts in China despite their forecasting abilities exceeding those of male analysts. [Niessen-Ruenzi and Ruenzi \(2018\)](#) find that female mutual fund managers in the US adopt more stable investment strategies and produce similar returns to male fund managers, yet receive lower investment inflows from clients. While these studies record that there may be a gender bias in how women in the financial domain are judged by others, few studies have considered the gender of the non-professional or the gender combinations of the actors involved. An exception is [Baeckström, Silvester, and Pownall \(2018\)](#), who document that financial advisors judge female millionaire investors to have less control over their portfolios than men, and that female advisors judge women less knowledgeable about investments than men. However, there has been no investigation of whether financial advisor gender is linked to the financial attitudes of male and female investors.

Drawing on the extensive social psychology literature, there is substantial evidence that people feel differently about themselves and vary their decision-making behaviour depending on with whom they interact ([Martinko and Thomson, 1998](#)). Likewise, we know that the gender combination of the people involved in an interaction can affect the perceptual judgements and behaviour of both parties ([Heilman and Haynes, 2005](#)). For example, studies of workplace mentorships document that, since male managers possess more influential roles within organisations, women mentees progress faster with male than female mentors ([Ragins, 1989](#); [Scandura and Viator, 1994](#)) and male mentorship is linked to performance improvement

among female students (Hilmer and Hilmer, 2007). However, there is also evidence that mixed-gender pairings can be disadvantageous. Dennehy and Dasgupta (2017) document that female engineering students who have female mentors are more likely to pursue engineering careers compared to women with male mentors, and within the financial literature, De Andrés, Gimeno, and de Cabo (2020) relate the lower likelihood of female entrepreneurs to apply for credit to implicit gender discrimination in the credit scoring methods applied by (male-dominated) financial institutions.

Thus, although economic theory does not postulate that financial advisor gender matters for the investment preferences or behaviour of individuals, it is possible that stereotypical assumptions about gender influence how investors feel about themselves and the success in the investment decisions that they make, and that these assumptions vary depending on the gender characteristics of the investor-advisor dyad. Given the novelty of our research, and the dearth of research investigating self-perceptions and differences in the gender configuration of investor-advisor dyads in the financial domain, our third research question asks:

(3) Do investor risk preferences, and levels of knowledge and confidence about investing vary according to the gender combination of investor and advisor?

3 Participants and Methodology

3.1 Participants and measures

Data for the present study were provided by 500 UK-based men and women who completed an anonymous, one-off, online survey of investors' attitudes towards financial advice conducted by a UK-based wealth management research firm in November 2016.⁷ To be eligible

⁷The survey was carried out by Compeer, a benchmark and research specialist in the UK. The survey was closed to further participants once the desired number of respondents (500) was achieved.

to participate, respondents had to possess investable assets of at least GBP50,000 (approx. USD67,000) and incentivised by collecting points that could be used as a financial donation to a charity or to purchase products.⁸

Our UK research context is both relevant and comparable with other jurisdictions for studying the self-reported attitudes and behaviour of wealthy men and women in relation to investment decision making. The UK is home to 5% of the world’s millionaires, and more than half of national household wealth is owned by individuals with over GBP100,000 (approximately USD132,000) in investable assets (CreditSuisse, 2019b). With its large offshore wealth management industry, the UK has an established and internationally acclaimed industry governed by the Financial Conduct Authority. In the UK, whilst less than 10% of adults engage financial advisors, the majority of those who do have investable assets above GBP50,000.⁹

The survey was distributed via an online link, which guaranteed confidentiality and the anonymity of participants. This commercial survey provided a rare opportunity to research the attitudes of a wealthy demographic of investors that is typically hard to access. One of the authors was invited to design a limited number of questions that were included in the survey in order to investigate investor demographics, financial attitudes to risk and investment behaviour. These questions are detailed below and in the Appendix.

After first consenting to their anonymised data being used for research purposes, each participant was asked to indicate their gender and age. Next, each respondent was asked to indicate ‘What is the value of your investable assets?’ and to choose one of five categories: (1) GBP50-99k, (2) GBP100-249k, (3) GBP250-499k, (4) GBP500k-999k, and (5) GBP1m-2.5m.¹⁰ Investors who indicated receiving financial advice from a professional advisor were

⁸The measure ‘investable assets’ in this survey includes investments such as stocks, bonds, mutual funds, retirement portfolio, secondary properties (excluding the value of their main residence).

⁹See: <https://www.fca.org.uk/publications/research/financial-advice-market-review-famr-baseline-report>

¹⁰No respondents selected the sixth category of investible assets in excess of GBP2.5m.

categorised as ‘advised’, and ‘self-directed’ if they reported receiving no financial advice. Participants who identified as ‘advised’ were also asked to indicate the gender of their financial advisor.

As a ‘hard-to-reach’ population, opportunities to assess risk tolerance and other attitudes to financial decision-making among wealthy investors are very limited. Not only do they constitute a very small group compared to less affluent investors, accessing them can be particularly difficult as their privacy and identities are, generally, fiercely protected by the wealth management industry. Consequently, accessing and persuading wealthy investors to participate in traditional research involving experiments, risk-based scenarios, or longitudinal repeated measures designed to assess financial attitudes and behaviours, can be extremely challenging. Thus, in our study we utilise self-reported measures of risk, knowledge and confidence. Although these methods are relatively uncommon in finance research, they are used extensively in other research domains, including psychology, health, management and political science research (Manderbacka, Lundberg, and Martikainen, 1999; Machida, Murakami, Takebayashi, Kumagai, and Yamaguchi, 2020; Liñeira and Henderson, 2019). Researchers have also begun to explore their relevance for assessing attitudes, cognitive bias and behavioural preferences in finance contexts (Dohmen, Falk, Huffman, Sunde, Schupp, and Wagner, 2011).

In our study, self-perceptions about personal investment risk tolerance, knowledge, and confidence were assessed by asking participants to compare themselves to the general population, and then to indicate on a 5-point Likert-type scale (where 1 = ‘strongly disagree’ and 5 = ‘strongly agree’) whether they agreed or disagreed with three statements: (1) ‘The amount of investment risk I am willing to take is above average,’ (2) ‘My knowledge about the investment decisions I make is above average,’ and (3) ‘My confidence in the investment decisions I make is above average.’ Finally, respondents were asked to report the percentage allocation of their total investable assets across four categories: (i) Investments in stocks, bonds

and mutual funds (outside of a pension), (ii) Invested in a pension, (iii) Cash savings, (iv) Additional property.

Our design relies on being able to trust respondents' self-ratings and reported risk tolerances. These scores would be biased should, for example, overconfident men exaggerate their scores, whilst less confident women underestimate their preferences. We do not think this is an issue in our setting for three reasons. First, while there is literature suggesting that men are more overconfident than women, this is largely based on experimental studies of students or field studies of less affluent investors. One of the key assumptions in our paper is that conclusions based on such evidence may not necessarily apply to the specific demographic of wealthy investors. Anticipating one of our findings discussed below, we find no significant differences between the self-reported confidence (or knowledge) ratings of male and female respondents to our survey. It does not seem plausible that overconfident men report higher levels of risk tolerance than less confident women, and yet do not report elevated levels of confidence and knowledge. Second, by following [Hong et al. \(2004\)](#) and using the percentage cash allocation in portfolios as a proxy for risk-avoiding behaviour, we are able to show that respondents' stated portfolio allocations to the risk free asset as a proportion of their total investable assets corresponds with their risk self-ratings. The consistency of our results suggests that, in line with previous research ([Dohmen et al., 2011](#); [Hermansson, 2018](#); [Merkle and Weber, 2014](#)), a subjective risk measure *can* be a reliable prediction of actual risk taking behaviour. Third, the majority of our analysis goes beyond a simple comparison of male responses versus female responses. Our research questions compare, for example, self-directed male (female) investors with advised male (female) investors. If the bias is a simple function of gender, then such within-group comparisons are unaffected. If they are more complicated than a simple function of gender, then this is exactly what we aim to test for.

3.2 Respondent profiles and summary statistics

Of the 500 investors who completed the online questionnaire 288 are men and 212 are women; 316 of these investors (182 men, 134 women) described themselves as advised, and 184 as self-directed (106 men, 78 women). Women investors are slightly younger than male respondents (mean ages 50.2 and 54.4 years, respectively), and self-directed investors slightly older than advised investors (mean ages 53.7 and 51.9 years). Further information about the sample is provided in Table 1. Male and female investors are equally likely to receive financial advice (both = 63.2%).¹¹ This figure is comparable to other research which found that approximately 60% of US households with more than USD500,000 to invest seek advice ([Winchester and Huston, 2014](#)). Of the advised group, 235 (74.4%) had a male financial advisor, and 81 (25.6%) a female advisor: this is broadly consistent with the gender composition of the UK financial advisor population as a whole (80-85% of financial advisors in the UK wealth management industry are male).¹² However, female investors are more likely to report having a female advisor (42%) than male investors (14%), a difference that is highly statistically significant (Chi square = 16.4 $p < 0.001$). This statistic suggests gender homophily among female investors with women, for whatever reason, preferring advice provided by someone similar to themselves ([Stolper and Walter, 2018](#)).

Distributions for self-rated risk tolerance, knowledge and confidence, provided in panels a-c of Figure 1, show that regardless of investor gender there is considerable variation in ratings. Each question yielded responses on the full scale from 1 to 5. Similarly, cash holdings vary from 0% to 100% of total investable assets held by respondents (panel d). Cash holdings are given at a finer detail than the responses on Likert scales and this allows us to

¹¹This was the outcome of the survey and was not pre-determined by the survey design. The only constraints in the survey design are the minimum value of investable assets and the total number of respondents. All respondents completed all of the relevant questions used in this paper with one exception, discussed below, regarding how they voted in the UK's EU referendum.

¹²<https://www.investmentnews.com/what-firms-can-do-to-attract-women-advisers-170712>

observe the relatively large proportion of respondents with cash holdings in excess of 90% of their investable assets. While these respondents are following an extremely conservative investment strategy, this does correlate with their self-rated risk tolerance. The average risk tolerance of investors with less than 90% of their portfolios invested in cash is 2.8, but this falls to just 1.7 for respondents holding more than 90% in cash.

Table 2 reports correlations between the dependent and investor variables. Where appropriate we report Spearman's rank correlation to account for the ordinal nature of Likert-scale responses. Self-rated risk tolerance, knowledge and confidence are positively correlated; the strongest relationship being between confidence and knowledge ($\rho = 0.72$). Cash holdings are strongly negatively correlated with risk tolerance and, to a lesser extent, with knowledge and confidence.

It is notable that gender (where male=0, female=1) is not significantly correlated with any of the dependent variables used in this study. This is an early indication that our sample of wealthy investors may well provide different results from those found in samples of less affluent investors, where female investors would typically be less risk tolerant, less knowledgeable about investing and less confident in their investing. Anticipating our results somewhat, we do find categories of wealthy female investors who act in line with less affluent female investors, but we also identify categories where wealthy male and female investors are indistinguishable. Indeed, in some instances, our point estimates suggest wealthy female investors can be more risk tolerant, knowledgeable and confident than their male counterparts.

Table 3 contains a summary of means for the dependent variables broken down into subgroups. Panel A reports data for all respondents, Panel B reports data for self-directed and advised investors separately, and Panel C reports data for advised respondents only, separated according to gender of their financial advisor. We report statistics for all respondents, and then separately for male and female respondents. In addition, t-tests of the equivalence of means are performed in two directions. First, we test for the equivalence of mean re-

sponses by male and female respondents within each group or subgroup. For example, the mean risk tolerance of all female investors (2.58) is compared with the mean risk tolerance of all male investors (2.73), and the resultant non-significant p-value of 0.159 is shown in the row denoted ‘M vs F’ (i.e. male versus female) in Panel A under the heading ‘Risk’. Second, equivalence of means is tested across subgroups: self-directed and advised investors in panel (B), and male advisors and female advisors in panel C. For example, mean self-rated risk tolerance for all investors with a female advisor (3.17) is compared with the mean rating for risk tolerance for all investors with a male advisor (2.81). We find a significant difference as the associated p-value from this test is 0.011 reported in the column headed ‘Diff’ in Panel C for Risk.

Several key themes emerge from Table 3. From Panel A, which contains the full sample of advised and self-directed investors, we see that while women self report lower risk tolerance, less investment knowledge, and lower confidence relative to men, none of these differences are statistically significant. Women do hold 5% more cash in their portfolios, and this gap is weakly statistically significant. However, there is little clear empirical evidence that wealthy female investors assess themselves to be markedly different from wealthy male investors. These preliminary findings do not appear to support any of the hypotheses relating to our first research question.

Then comparing advised and self-directed investors, Panel B shows that advised investors rate themselves more risk tolerant and hold significantly less cash in their portfolios than self-directed investors.¹³ This holds for the full sample and both male and female investors. Advised women hold significantly more in cash than advised males (34.5% versus 28.6%) and while self-directed women on average hold more cash than self-directed men (48.0% versus 44.6%) this difference is not statistically significant. These findings suggest that effects

¹³Advised investors also rate themselves as more knowledgeable than self-directed investors, but this difference is not statistically significant.

of gender differences in investment activity may be influenced by the presence of financial advisors. Specifically, and anticipating a result we continue to observe in later analysis, the gap between cash held by women and men comes primarily from the higher cash holdings of advised women versus advised men (even though self-directed investors of both gender hold more cash than advised investors).

From Panel C we note that advised investors rate themselves significantly more risk tolerant, more knowledgeable and more confident if they have a female, rather than a male, advisor. These differences are entirely driven by female investors, who also hold significantly less cash in their portfolios if they have a female advisor rather than a male advisor (26.4% versus 40.3%). While only 25 male investors in our sample have female advisors, and statistical inference must be treated with caution, we note that on average members of this group are less risk tolerant, knowledgeable and confident, and also hold more cash than the larger group of male investors with male advisors.

4 Results

4.1 Regression Analyses

Although comparisons of means are informative, they do not control for other factors that may drive responses, such as age and wealth levels. Therefore, in this sub section we use regressions to control for these factors and interrogate our research questions. We estimate ordered probit models for the first three dependent variables, recognising that these are discrete and ordered variables (Liddell and Kruschke, 2018). The continuous cash allocation variable is modelled using ordinary least squares.

We estimate regressions of the following form using the full sample of 500 respondents:

$$Y_i = \alpha + \beta_1 Gender_i + \beta_2 Age_i + \beta_3 Advisor_i + \sum_{j=2}^{j=5} \beta_j Wealth_i + \epsilon_i \quad (1)$$

The dependent variables (Y_i) are self-rated investment risk tolerance, knowledge and confidence (all rated from 1 [lowest] to 5 [highest]) and, in the final specification, cash expressed as a proportion (%) of the total amount of investable assets held by participants. The explanatory variables are the investor’s gender ($Gender_i$) equal to 1 if the investor is female and zero otherwise, the investor’s age (Age_i),¹⁴ an indicator variable ($Advisor_i$) equal to 1 if the investor is advised and zero if self-directed, plus five mutually exclusive indicator variables taking the value 1 if investable assets falls into the noted category and zero otherwise ($Wealth_i$: $i=1$ if investable assets lie in the range GBP50-99k, $i=2$ if GBP100-249k, $i=3$ if GBP250-499k, $i=4$ if GBP500-999k and $i=5$ if GBP1-2.5million).¹⁵ Indicators 2 to 5 are included in the regression with indicator 1 the excluded baseline category. These regressions provide measures of association between the explanatory and dependent variables with specific focus on the first two research questions and associated hypotheses.

4.1.1 Risk tolerance, knowledge, confidence and cash holdings

The first column of Table 4 shows that self-rated risk tolerance falls with age and increases with wealth. Risk tolerance decreases by one fifth of a unit for every 10 years increase in age. Investable wealth is also positively associated with investor risk tolerance. Specifically, investors with more than GBP500k in investable wealth report risk tolerance ratings more than half a unit higher than less affluent respondents, increasing to almost 0.8 units for

¹⁴The age-related findings are robust to alternative specifications such as using the logarithm of age, age-squared or using indicator dummies capturing ‘younger’, ‘middle-age’ and ‘older’ investors.

¹⁵We recognise that an individual’s wealth and investable assets may be very different but simply for convenience use them interchangeably in the paper.

millionaires. More relevant to hypothesis 1a, female investors have lower levels of risk tolerance. Unlike the simple comparisons of means discussed above, once we control for the other factors driving responses this lower level of risk tolerance by women becomes statistically significant. Consistent with the comparison of means tests, having an advisor significantly increases self-rated risk tolerance.

Columns (2) and (3) of Table 4 which consider knowledge and confidence are somewhat less successful, with lower R-squared values and fewer statistically significant explanatory variables. Age broadly retains its importance: Self-reported investment knowledge decreases with age, as does confidence (though less significantly so). High levels of investable assets are associated with increased levels of knowledge and confidence. These results indicate that confidence is a situational trait (Saccardo, Pietrasz, and Gneezy, 2017), linked to the ownership of financial assets. Indeed, the wealthy can afford to feel more confident because they own more assets than most people acquire during their lifetime, and they do not have the same financial concerns such as securing sufficient savings to fund their retirement as less financially fortunate individuals. However, neither gender nor the indicator variable for having an advisor are associated with variations in how knowledgeable or confident investors feel.

Column (4) reports OLS coefficients for regressions explaining cash holdings that are reassuringly comparable to the risk tolerance ratings in column (1). Cash holdings as a proportion of overall portfolio holdings rise with age and fall strongly as wealth increases. Women hold 5.4%-points more cash than men, controlling for other factors, and the presence of a financial advisor is associated with 10.6%-points lower cash holdings. This naturally indicates that advised investors allocate significantly more to risky assets in their portfolios compared to self-directed investors.

In terms of our first research question ‘Do wealthy women differ from wealthy men in terms of their investment risk preferences, and levels of knowledge and confidence about investing?’ we

find that wealthy female investors self-report significantly lower risk tolerance than wealthy male investors, and hold significantly more cash in their portfolios, but investor gender is not linked to variations in knowledge or confidence. We therefore find support for hypothesis H1a, but not for hypotheses H1b or H1c. Column (5) of Table 4 nuances these findings slightly: by adding self-ratings of risk tolerance, knowledge and confidence to the regression explaining cash holdings, the coefficient on gender loses significance (as does the coefficient on age) and the risk tolerance variable is now strongly negatively associated with cash holdings. This suggests that being female (or older) per se does not reduce cash holdings, but rather the lower risk tolerance reported by wealthy women (and older investors) is associated with more conservative investment portfolios.

Regarding our second research question: ‘Do advised investors demonstrate different investment risk preferences, and levels of knowledge and confidence about investing?’, we find that advised investors report similar ratings to self-directed investors for both knowledge and confidence but significantly higher risk tolerance ratings and lower cash holdings. The latter finding survives expanding the regression to include the self-rated variables. The higher risk tolerance associated with having an advisor reduces cash holdings, but a direct association between having an advisor and lower cash holdings remains.

While the data we have on the non-cash portfolio holdings is too coarse to make reliable inference about the exact nature of the risks or likely returns of the investors’ portfolios, we can examine which of the three categories - stocks/bonds/funds, pensions or additional properties - receive larger allocations from advised investors.¹⁶ In Table 5 we report results of OLS regressions with the portfolio share of each asset class as dependent variable. Column (1) repeats the results for cash holdings from column (4) of Table 4 for convenience. Columns (2)-(4) use the percentage allocation to stocks/bonds/funds, pensions and additional properties,

¹⁶We thank an anonymous referee for encouraging us to examine this issue.

respectively, as the dependent variable.¹⁷

We find that women hold 7.5%-points less in stocks/bonds/funds than men and that having an advisor is associated with a statistically insignificant 3%-point larger share in this asset class. While there is a small and statistically insignificant gender effect on pensions, the presence of an advisor is associated with a highly statistically and economically significant 9.74%-points higher allocation to pensions (t-stat is 4.79). Finally, from column (4) we see that women hold a 4.5%-points larger share of their portfolios in property (t-stat 2.17) and the advisor effect is also insignificant here (2%-point lower share with a t-stat of 0.91).

Overall, our results suggest that wealthy female investors hold more cash and property and invest less in stocks/bonds/funds than wealthy men. Similarly, advised investors hold over 10%-points less cash and invest this share in pensions instead, results which suggest that financial advice is linked to investors taking responsibility for securing the funding of their retirement.

We conclude that, in this sample, advised investors have a higher risk tolerance and allocate more funds to risky investments (in particular into pension funds) than self-directed investors. This finding is in line with previous research which demonstrates a link between social interactions and stock market participation (Hong et al., 2004), and which is perhaps made possible through being further removed from the decision making process (Bhattacharya and Pfleiderer, 1985). However, unlike those reported by Kramer (2012), our results do not indicate a relationship between financial advice and self-perceived knowledge or confidence. For wealthy investors, financial advice may not be a substitute for investment knowledge. If financial advice increases investor risk tolerance - a tentative causal interpretation that we explore in section 4.2 below - then financially literate individuals may benefit simply by increasing the allocations they make to risky assets in their portfolios, rather than by

¹⁷Mean percentages allocated to each class, with standard deviations in parentheses, are as follows: Cash 36.6% (30.0), Stocks/bonds/funds 30.3% (26.2), Pensions 19.4% (21.3) and Additional property 13.8% (23.0).

feeling more knowledgeable or confident about their investment opportunities (Allgood and Walstad, 2016). Our results suggest potentially fruitful areas for future research to investigate the benefits of financial advice in more detail, including analysis that links the portfolio performance to the presence of a financial advisor.

4.1.2 Investor and advisor gender combinations

Self-directed investors are now removed from the data to examine whether ratings vary according to the gender combinations of investors and financial advisors, with particular focus on the third research question: ‘Do investor risk preferences, and levels of knowledge and confidence about investing vary according to the gender combination of investor and advisor?’.

We run regressions of the following form:

$$Y_i = \alpha + \beta_1 Male/Fem_i + \beta_2 Fem/Male_i + \beta_3 Fem/Fem_i + \beta_4 Age_i + \beta_5 Wealth_i + \epsilon_i \quad (2)$$

The dependent variables (Y_i) are risk tolerance, knowledge and confidence ratings plus cash holdings, as before. The explanatory variables are augmented with three dummy indicator variables to test the impact of the gender combinations of investors and advisors. $Male/Fem_i$ takes the value of one for male respondents with female advisors and zero otherwise. $Fem/Male_i$ takes the value one for female respondents with male advisors and zero otherwise, and Fem/Fem_i takes the value one if both respondent and advisor are female, zero otherwise. The omitted benchmark category is therefore the male respondent-male advisor combination. We also include age and wealth indicators in the regressions. Regressions with rating variables as dependent variables are again estimated using ordered probit methods, and the cash holdings regression uses OLS. The results are reported in Table 6.

Advisor gender is not linked to variations in how risk tolerant, knowledgeable or confident the 182 advised male respondents consider themselves to be, nor does advisor gender relate to the proportion of cash that they hold in their portfolios. However, the same is not true for the 134 advised women. Female investors with female advisors (denoted ‘Fem/Fem’ in the table) show no statistically significant differences from the benchmark male investor-male advisor combination (or from the male-female combination).¹⁸ Conversely, women with male advisors (‘Fem/Male’) report large and generally statistically significant differences. Having a male advisor corresponds with women feeling less risk tolerant, less knowledgeable, having less confidence and holding a substantial and statistically significant 10.6%-points more cash in their portfolios. Repeating the regressions with other asset class holdings as dependent variables suggests this extra cash comes at the cost of 6.6%-points less invested in stocks/bonds/funds (t-stat 1.95) and 4.5%-points less invested in a pension (though this has a t-stat of just 1.47). There is no material change in property holdings.¹⁹ The final row in Table 6 gives the p-values of tests that the coefficients on the Fem/Fem and Fem/Male indicator variables are equal. In each case, the equality restriction can be rejected.

Our finding that the gender pairing of investor and advisor is associated with all four dependent variables for female but not for male investors is novel to the finance literature. Previous research has found that advisors vary their perceptual judgements of their clients depending on client gender (Baeckström et al., 2018), and that female investors are more likely to follow advice when it is given by a female, instead of a male, advisor (Söderberg,

¹⁸We may be concerned that our relatively small sample of female investors with female advisors means we do not have the statistical power necessary to distinguish their behaviour from the male-male combination. However, the coefficients on the Fem/Fem indicator are very small suggesting differences from the Male/Male benchmark are of limited economic significance. The even smaller group of male investors with female advisors do seem to have larger economic significance but here our statistical power is very limited. This is one reason why we do not emphasise these particular findings. Conversely, the results for female investors with female advisors suggest economically and statistically significant differences from the benchmark.

¹⁹In a sample of over 9,000 investors with exclusively male advisors, Reifler and Baekstrom (2020) find that advisors recommend their female clients to invest in portfolios with lower risk assets and that produce lower annual returns than the portfolios recommended to male investors.

2013). Here, we extend the analysis to consider how the gender pairing is related to self-rated risk tolerance, knowledge, confidence, and cash holdings. In our sample, the investors who engage an advisor of the same gender score higher on all three ratings and keep less cash in their investment portfolios, and advisor gender appears to matter in economically important ways but only for female investors. These results are evident both in the simple means comparison and when controlling for other factors in the regression computations.

We have been careful to avoid using causal statements in our analysis so far. If advisors are randomly assigned to investors our setting would be a quasi-natural experiment and the regression results would not suffer from endogeneity issues. However, we have already noted that female investors pair with female advisors more often than chance would suggest and so our results potentially suffer from selection bias. We investigate this in two ways.²⁰ First, we consider the sub-sample of investors with smaller amounts of investable funds, on the grounds that less affluent investors have less possibility to choose the gender of their financial advisors. Panel A of Table 7 reports the estimated coefficients on the gender combination indicator dummies using the sub-sample of 220 investors with investable wealth of less than GBP500,000 (the other variables are included in the regression but their coefficients not reported for brevity). If endogeneity issues plagued our full-sample results we would expect this set of sub-sample results not to show significant difference between Fem/Male and Fem/Fem combinations. However, the final row of Panel A shows that significant differences remain for risk tolerance, knowledge and cash holdings. In fact, the results from the risk tolerance and knowledge regressions are little changed from those given for the corresponding regressions based on the full sample. From column (4) we note that in this sub-sample of relatively less affluent investors, the female investors with male advisors hold 16.1%-points less cash, *up* from the 10.6%-points seen for the full sample.

Second, we suggest that investors have more power to select the gender of their advisor when

²⁰We thank an anonymous referee for suggesting these two tests.

engaging a professional financial advisor than, for example, when taking advice from a wealth manager or private banker. In the latter cases, the investor contracts with the institution and is allocated an advisor whereas with the former, the investor contracts directly with the advisor. We therefore consider the subsample of advised investors who do not have a professional financial advisor. This too is a restrictive condition and our sample size reduces from 316 to just 126. Results are reported in Panel B of Table 7. Again, only coefficients on the gender combinations are reported for brevity. The p-values given in the final row suggest that risk tolerance, knowledge and cash holdings are significantly different for female investors depending on the gender of their advisor, even when professional financial advisors are excluded from the analysis. Once more, the coefficient on the Fem/Male indicator in the cash holdings regression is larger than found in the full sample (and is little changed in the risk tolerance regression).

We tentatively explore causal effects using matching techniques in the following sub-section. However, analyses of two sub-samples where we expect selection bias to be reduced compared to the full sample regressions²¹ - perhaps surprisingly - suggest that endogeneity may not in fact be a large problem and that the investor-advisor gender combination is important, especially for female investors.

Increased financial literacy is known to reduce biased investment behaviour (Allgood and Walstad, 2016) and the gender gap in the allocation to risky assets, at least among the less affluent investor demographic (Almenberg and Dreber, 2015; Hibbert, Lawrence, and Prakash, 2013). How and by whom financial advice is provided might then be of particular importance to underinvested women. Our findings indicate that women benefit from advice which augments women's self-perceived risk tolerance, knowledge as well as confidence, but only if their advisor is female. It seems that financial advice works as a social interaction

²¹It is unlikely that selection bias is eradicated in the smaller samples since female investors still have female advisors more often than random allocations would suggest, albeit less so than in the full sample.

contributing to increased levels of investment participation among wealthy female investors, but only where the interactions are with female advisors.

Considering that financial investing has long been considered a male domain, it is perhaps not surprising that we find that preferences such as self-assessed risk tolerance remain unchanged among the men in our sample, regardless of investor-advisor gender combinations (Heilman and Haynes, 2005; Swim and Sanna, 1996). Similar to the evidence presented in Kornberger, Carter, and Ross-Smith (2010), who investigate flexible working programs in accounting firms, gender in banking is often framed as a problem that needs addressing rather than (female) gender presenting a social relational opportunity which enables organisations to prosper. But akin to insolvency practice examined by Joyce and Walker (2015), financial advising is culturally male gendered and there is a potential conflict between the cultural expectations of female clients and the communication style of the organisations and, perhaps in particular, its male advisors. Indeed, female investors have been found to experience financial advising as male dominated and to feel misunderstood by their (male) advisors (Friedland, 2013). Women, who Hibbert, Lawrence, and Prakash (2016) show are more likely than men to avoid investing in stocks after incurring losses, may feel more comfortable and able to trust female advisors. We note, however, that we are unable to capture the duration and depth of the relationship between investor and advisor for our sample. A deep long-term relationship could reduce information asymmetry between the two parties irrespective of the gender combination, and has been shown to be linked to customer loyalty and increased trust in the banking context (Howcroft, Hewer, and Durkin, 2003). Examining whether the differences we see between gender combinations are eradicated in the long-run is a potential avenue for future research.

4.2 Preliminary exploration of treatment effects

The regressions reported above demonstrate how investor and advisor variables contribute to investor self-reported attitudes to investment risk, but they cannot establish causal relationships. In this supplementary analysis section we utilise statistical matching techniques in an exploratory analysis of potential causality effects regarding (1) having a financial advisor, and (2) the investor-advisor gender combination on investor attitudes and behaviour. Although statistical matching does not provide conclusive evidence of causality, it can provide evidence that our preliminary findings are robust and worthy of further investigation.

Inference based on statistical matching approaches is subject to several important assumptions, some of which are discussed more below (Imbens, 2004). Whilst mindful that matching makes substantial underlying assumptions and cannot account for time-varying unobservable investor variables which might contribute to explaining advisor selection, we adopt this technique and first model the advisor choice made by participants. We apply matching techniques in the knowledge that wealthy investors tend to have the choice of selecting which advisor to engage, with perhaps several advisors pitching for their business. The advisor that the investors in our sample select to engage is therefore an informed choice.

4.2.1 Advised versus self-directed investors

In this analysis, the treatment group is the set of investors with financial advisors, and the untreated control group is the set of self-directed investors. Investors are initially matched on their observable personal characteristics: gender, age and wealth. We use nearest neighbour matching methods and report average treatment effects (ATEs). Later, we turn to modelling the advisor gender choice made by investors.

The first rows of Table 8 report the coefficients and z-statistics on the advisor indicator

variables from the first four columns of Table 4 for convenience. The middle two rows report the results of nearest neighbour matching for the treatment effect of having a financial advisor. The matching approach forces an exact match between treated and untreated in terms of gender and wealth category, and the nearest match available in terms of age (with replacement).

The results indicate that the effects of choosing to take financial advice on risk tolerance and cash holdings are of larger magnitude than those given by regression analysis. If the matching technique has adequately controlled for endogeneity, this would imply that the selection bias is in the opposite direction to the treatment effect, consistent with the results reported by [Gerhardt and Hackethal \(2009\)](#). These treatment effects are economically large. For those investors who choose to take financial advice, the effect of hiring an advisor is to raise self-reported risk tolerance by more than one-half of a unit (on the five point Likert scale) and to reduce cash holdings by more than 12%-points, on average. Both treatment effects are highly statistically significant. However, even after attempting to correct for selection biases we find no evidence of an impact of advisors on knowledge or confidence, suggesting that financial advice does not increase investors' financial literacy or confidence, results which correspond to the regression results presented in Table 4.

A primary concern with all matching analyses is that the matching is imperfect. The estimated effect is biased if important characteristics - either observable or unobservable - that drive the dependent variables have been excluded from the match and vary systematically across treated and untreated groups ([Imbens, 2004](#)). In our application, one such observable characteristic might be education. Education is known to relate to self-assessed risk tolerance and could reasonably be expected to relate to self-reported knowledge about investment decisions ([Hallahan, Faff, and McKenzie, 2004](#)). Unfortunately, the education levels of our respondents were not collected in the survey. Our concern is that matching advised and self-directed investors based only on age, gender and wealth may result in systematic differences

in education across treated and control groups, and that it is this heterogeneity that drives differences in, say, risk tolerance rather than the decision to hire an investment advisor.

We therefore make use of a question in the survey regarding the UK's European Union (EU) Membership Referendum held in June 2016, just months before the data were collected in November 2016. Respondents were asked how they voted in the Referendum: For the UK to leave the European Union ('For Brexit'), for the UK to remain in the European Union ('Against Brexit'), or 'Did not vote'. Analyses of the vote by [Liberini, Oswald, Proto, and Redoano \(2017\)](#) and [Alabrese, Becker, Fetzer, and Novy \(2018\)](#) show that education level is a characteristic strongly related to the vote, and voters with a university degree had a 16% lower probability of voting to leave the EU.²²

If matching on age, gender and wealth levels leaves systematic differences in education levels across treated and untreated groups (in our case, those with advisors and those without) then we should also detect a (spurious) treatment effect of having an advisor when using the Brexit vote as dependent variable. For example, suppose education is an important determinant of engaging an advisor such that more educated investors are more likely to be advised. Then, since more educated people are also less likely to vote for Brexit we should see a negative treatment effect of being advised on whether our sample of investors voted for Brexit. Of course, having a financial advisor ought to have little direct effect on such voting patterns and instead this placebo test would actually reflect the difference in education levels between advised and self-directed groups. However, should education levels not differ across the two groups (because education levels do not affect the likelihood of engaging an advisor), we would not expect Brexit voting patterns to differ either.

²²Gender, age and wealth are also important for the vote. For comparison purposes, based on Table 4 in [Liberini et al. \(2017\)](#), women were 6.8% less likely to vote For Brexit than males, white British voters were 5.6% more likely to vote For Brexit than voters of other ethnicities, a one-step worsening of personal financial conditions on a four point Likert scale resulted in a 3.4% increase in the probability of a For Brexit vote, and compared to voters aged 18-24, older voters were 24% more likely to vote For Brexit.

The result of this Brexit placebo test is reported in the final column of Table 8 and shows that there is no significant difference in the Brexit vote of matched treatment and control groups. This suggests that there is no statistically significant imbalance between education levels across matched groups in our analysis, increasing our confidence that the estimated treatment effect is driven by the decision to hire an advisor.²³

Nevertheless, while the statistical significance of our Brexit-based placebo test is low, the point estimate suggests a material 6.5%-point difference with advised investors more likely to vote Against Brexit (consistent with advised investors having higher education levels). As a further robustness test we add the referendum vote reported by our participants as a fourth variable in the nearest neighbour matching. We thus match advised and self-directed investors by age, gender, wealth level and Brexit vote, with the final term acting as a proxy for education level. This reduces our sample size from 500 to 441, mostly because some respondents did not vote, but also because perfect matches by gender, wealth category and Brexit vote are not always possible. The final two rows of Table 8 give the treatment effect estimates based on this expanded match. The ATE result of having a financial advisor on risk tolerance and cash holdings are slightly smaller than the initial matching approach suggested but remain economically and statistically significant (and larger than estimated through regressions), while the effect of advisors on knowledge and confidence remain insignificant.

²³We cannot be sure that the treatment effects we estimate are true causal effects. Unobserved characteristics, or other observable but unmeasured characteristics, could still differ systematically between treated and control groups and drive our results. However, such characteristics must have very particular effects if they are to explain our results. Wealthy investors choosing to engage an advisor would have to differ from wealthy investors that choose to remain self-directed due to characteristics that make them more risk tolerant (and less willing to hold cash) but at the same time not make them feel more knowledgeable or more confident.

4.2.2 Investor-advisor gender combinations

Next we consider the choice of advisor gender, again using matching to estimate the advisor gender treatment effect. We note that the advisor gender choice by the women in our sample exceeds the proportional availability of female advisors in the marketplace but mirrors findings in industry studies that indicate that women prefer to work with female advisors. Here, we define the treated group to be the set of investors with male financial advisors and hence the untreated (control) group is the set of investors with female financial advisors. We report female advisor treatment effect results from nearest neighbour matching in the first two rows of Table 9. The matching approach forces an exact match between treated and untreated groups in terms of gender and investable wealth category, and the nearest match available in terms of age (with replacement). The results for all four outcome variables reveal no causal impact from the gender of the advisor.

However, both Tables 3 and 6 suggest heterogeneity across investor-advisor gender combinations. In an attempt to capture potentially heterogeneous treatment effects, we therefore compute conditional average treatment effects (CATEs) for male and female investors. These are reported in the bottom four rows of Table 9. All conditional treatment effects are insignificant for male investors, with the self-ratings and cash allocation decisions made by men stable regardless of advisor gender. Conversely, treatment effects are larger and more significant for female investors. While we do not find a significant effect of advisor gender on the self-reported risk aversion of female investors, male advisors contribute to female investors reporting significantly lower self-ratings of knowledge (and weakly significantly lower confidence ratings). More noticeably, having male advisors relates to female investors holding 13.4%-points more in cash. The large and significant differences in knowledge and cash holdings are only observed for female investors.

There are well-known limitations to using matching techniques. We have controlled for

gender, age and wealth, and attempted to control for education. This is unlikely to be a complete set of variables driving the choice to hire an advisor or the gender of that advisor. Further research should investigate the causal effects of advisor choice since the non-causal evidence from t-tests and regressions suggest such effects are large, and in some cases increase according to our initial attempts to establish causal effects.

Causality is important for policy recommendations. If the effects are not causal, then our results suggest that wealthy women who select female advisors have characteristics that also lead them to participate as actively in investment markets and to consider themselves as knowledgeable and confident as male advised investors (and more active, more confident and more knowledgeable than self-directed investors of either gender). However, those women who engage a male advisor have characteristics that lead them to hold much more cash and to be significantly less confident and knowledgeable. Conversely, if the effects we document are caused by the advisor or the gender of that advisor, then an intervention that encourages wealthy female investors to engage female advisors will help to increase their participation in investment markets, reduce their cash holdings, increase their self-rated investment risk tolerance, knowledge and confidence. The large heterogeneity that we identify among wealthy women (but not wealthy men) is therefore meaningful regardless of whether our results are causal or not and so worthy of further examination.

5 Summary and conclusion

In response to dearth of research about financial advice to the wealthy and to provide insights into the interactions between investors and financial advisors, this study investigates if gender and financial advice are related to differences in the investment attitudes and behaviour of wealthy investors.

Within our full sample of self-directed and advised investors, we document that women have lower levels of investment risk tolerance and hold 5%-points more cash in their portfolios than men. However, our wealthy women do not consider themselves to be less knowledgeable or confident about investing compared wealthy men.

We find that advised investors self-report higher risk tolerance levels and allocate a higher proportion of their portfolios to risky assets compared to those who manage their own investments. In supplementary matching analysis we find indications that these differences are linked to having a financial advisor.

Our results from examining the investor-advisor gender combinations challenge the previously held assumption that women are universally more risk averse. First, we document clear and important gender homophily. Though only 15-20% of advisors in the marketplace are female, 42% of wealthy women in our survey engage female advisors. Then we show that the women who instead engage male advisors report significantly lower risk tolerance, knowledge and confidence and invest 11%-points less than women with female advisors. Our matching analysis suggests that the more conservative risk tolerance ratings and cash allocations made by this group of women are related to them engaging male advisors. We document the highest risk tolerance and lowest cash allocations in the portfolios held by the subsample of women with female advisors, levels which exceed those by male investors. Advisor gender is not related to any difference in investment attitudes or behaviour among wealthy men.

In line with economic theory, even among a sample of extremely wealthy investors, higher levels of wealth contribute to higher levels of risk tolerance and raised allocations to risky assets, whilst age decreases risk tolerance among both male and female investors. We therefore argue that investor gender on its own is not sufficient to characterise the investment risk tolerance attitudes or behaviour of wealthy investors and needs to be considered in concert with other factors including the characteristics of the advisors they hire.

Our study has wide ranging implications for the wealth management industry and the financial markets regulator. Institutions that seek to address the underrepresentation of female financial advisors in their workforce and that wish to engage with the growing market of wealthy female clients need to pay attention to the gender pairing of investors and advisors. Should the demand for female advisors among women outstrip supply, there are significant economic benefits for institutions to develop strategies that focus on hiring and retaining women advisors since women invest less if paired with male advisors. Such strategies are also economically meaningful to wealthy women who stand to gain from investing more.

Institutions therefore need to map out gender bias in the financial advice process. This process needs to deduce the underlying reasons for women's preference for female advisors and for their disadvantageous investment attitudes and behaviour when paired with male advisors. Moreover, attention needs to be paid to how the investor-advisor gender combination can instil the right level of confidence that ensures appropriate risk taking for all clients. Financial markets regulators need to consider the investor-advisor gender combination when evaluating the suitability of portfolio recommendations made by the financial advisors and institutions they monitor.

With little extant research that investigates the links between financial advice and the attitudes and behaviour of investors, our study is embryonic and paves the way for future research into investor-advisor interactions. This is important because, combined with a lower employment income, the detrimental impact that more conservative investing has on women's retirement income make it difficult to argue for simply accepting these gender differences. It calls for further research that investigates the causal relationships between gender, advice and investor behaviour and that can contribute to solutions to this societal problem. Future studies can therefore explore whether our findings can be extrapolated to the wider population of investors.

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Table 1
Overview of Male and Female Investors

	Male investors				Female investors			
Panel A:	Advised		Self-directed		Advised		Self-directed	
Assets	N	Mean Age	N	Mean Age	N	Mean Age	N	Mean Age
GBP50-99k	36	55.8	30	64.6	28	52.	25	60.0
GBP100-249k	30	58.6	31	63.0	23	51.8	20	54.5
GBP250-499k	63	48.5	28	55.2	40	45.0	19	56.5
GBP500-999k	31	50.3	13	53.8	30	43.7	9	50.1
GBP1m-2.5m	22	41.1	4	59.8	13	37.7	5	50.0
All	182	51	106	60	134	46	78	56
Panel B:	Male Advisor		Female Advisor		Male Advisor		Female Advisor	
Assets	N	Mean Age	N	Mean Age	N	Mean Age	N	Mean Age
GBP50-99k	29	56.3	7	53.4	20	55.6	8	43.4
GBP100-249k	26	59.3	4	54.5	17	57.1	6	36.7
GBP250-499k	58	49.2	5	41.2	19	50.2	21	40.3
GBP500-999k	26	50.9	5	47.2	16	47.5	14	39.4
GBP1-2.5m	18	39.1	4	50.0	6	42.7	7	33.4
All	157	51	25	49	78	53	56	40

Notes: This table gives the number (N) and mean age of survey respondents, broken down by row into wealth categories and by column according to investor gender. Panel A considers male and female investors who are either advised or self-directed. Panel B considers male and female investors who have either male or female advisors.

Table 2
Correlations

	Dependent Variables				Investor Variables			
	Risk Tolerance	Knowledge	Confidence	Cash	Gender	Advisor	Age	
Knowledge	0.479***							
Confidence	0.499***	0.720***						
Cash	-0.268***	-0.095**	-0.117***					
Gender	-0.063	-0.040	-0.052	0.057				
Advisor	0.265***	0.069	0.056	-0.172**	0.000			
Age	-0.333***	-0.194***	-0.139***	0.123***	-0.146***	-0.255***		
Wealth	0.286***	0.176***	0.195***	-0.256***	-0.004	0.194***	-0.274***	

Notes: This column gives correlations between the main variables used in the analysis. In constructing the *gender* variable Male = 0, Female = 1. The *Advisor* variable = 1 if the investor has an advisor, 0 otherwise. ***, **, * denote significance at 1%, 5% and 10% levels respectively.

Table 3
Summary of Means

	Panel A	Panel B			Panel C		
	All Investors	Self Directed	Advised	Diff.	Male Adv.	Female Adv.	Diff.
Risk							
All	2.67	2.26	2.90	0.000	2.81	3.17	0.011
Male	2.73	2.34	2.96	0.000	2.96	2.92	0.860
Female	2.58	2.15	2.83	0.000	2.50	3.29	0.000
M vs F	0.159	0.234	0.339		0.004	0.163	
Knowledge							
All	3.31	3.23	3.36	0.132	3.28	3.59	0.019
Male	3.34	3.27	3.38	0.360	3.40	3.24	0.450
Female	3.27	3.17	3.34	0.214	3.04	3.75	0.000
M vs F	0.457	0.421	0.716		0.011	0.035	
Confidence							
All	3.34	3.27	3.38	0.202	3.32	3.54	0.063
Male	3.38	3.36	3.40	0.731	3.41	3.32	0.653
Female	3.27	3.14	3.35	0.139	3.14	3.64	0.004
M vs F	0.209	0.123	0.681		0.052	0.146	
Cash (%)							
All	36.60	46.04	31.09	0.000	32.15	28.04	0.154
Male	34.49	44.62	28.59	0.000	28.11	31.64	0.479
Female	39.45	47.97	34.49	0.006	40.28	26.43	0.002
M vs F	0.073	0.529	0.045		0.003	0.332	

Notes: This table summarises the mean ratings for Risk Tolerance, Knowledge and Confidence on the 1 to 5 rating scale, and the means for Cash holdings as % of total portfolio. Observations as follows: Advised men = 182, Self-Directed men = 106, Advised women = 134, Self-Directed women = 78, Men with male advisor = 157, Men with female advisor = 25, Women with male advisor = 78, Women with female advisor 56.

Rows denoted "M vs F" give p-values of the test that the mean value for male investors equals the mean value for female investors in that column. The column denoted "Diff." in Panel B gives the p-value of the test that the mean value for self-directed investors equals the mean value for advised investors in that row. The column headed "Diff." in Panel C gives the p-value of the test that the mean value for investors with male advisors equals the mean value for investors with female advisors in that row.

Table 4
Risk Tolerance, Knowledge, Confidence and Cash Holdings: All Investors

	(1) Risk	(2) Knowledge	(3) Confidence	(4) Cash holdings	(5) Cash holdings
Female	-0.236** (-2.380)	-0.127 (-1.293)	-0.140 (-1.409)	5.426** (2.075)	4.047 (1.577)
Advisor	0.381*** (3.586)	0.019 (0.192)	0.002 (0.021)	-10.558*** (-3.484)	-7.782*** (-2.570)
Age	-0.018*** (-5.166)	-0.012*** (-3.433)	-0.006* (-1.889)	0.167** (2.183)	0.060 (0.784)
GBP100-249k	0.175 (1.319)	0.152 (1.185)	0.124 (0.980)	-8.991** (-2.078)	-8.344** (-2.017)
GBP250-499k	0.189 (1.422)	0.095 (0.743)	0.215* (1.723)	-17.629*** (-4.621)	-16.644*** (-4.697)
GBP500-999k	0.548*** (3.366)	0.410** (2.700)	0.425*** (2.694)	-19.402*** (-4.617)	-16.461*** (-4.018)
GBP1-2.5m	0.792*** (3.541)	0.427* (1.837)	0.685*** (3.044)	-19.070*** (-4.172)	-14.549*** (-3.067)
Risk					-7.118*** (-4.832)
Confidence					0.033 (0.018)
Knowledge					2.340 (1.407)
Observations	500	500	500	500	500
R-squared				0.146	0.196
Pseudo R-squared	0.0702	0.0234	0.0209		

Notes: This table presents regression results for the four dependent variables. Columns (1)-(3) report ordered probit regression results with robust z-statistics in parentheses below coefficient estimates. Regressions using cash holdings as dependent variable in columns (4)-(5) are OLS regressions. Robust t-statistics are given in parentheses below coefficient estimates. ***,**,* denote significance at 1%, 5% and 10% levels respectively.

Table 5
Asset Class Allocations: All Investors

	(1)	(2)	(3)	(4)
	Cash holdings	Stocks/bonds/funds	Pensions	Property
Female	5.426** (2.075)	-7.494*** (-3.200)	-2.454 (-1.336)	4.522** (2.170)
Advisor	-10.558*** (-3.484)	2.982 (1.090)	9.742*** (4.788)	-2.166 (-0.912)
Age	0.1676** (2.183)	0.206*** (2.802)	-0.157*** (-2.736)	-0.215*** (-3.435)
GBP100-249k	-8.991** (-2.078)	5.569 (1.510)	1.624 (0.601)	1.798 (0.688)
GBP250-499k	-17.629*** (-4.621)	4.120 (1.212)	6.987*** (2.707)	6.523*** (2.450)
GBP500-999k	-19.402*** (-4.617)	3.469 (0.939)	7.355*** (2.593)	8.579*** (2.630)
GBP1-2.5m	-19.070*** (-4.172)	3.206 (0.796)	2.015 (0.747)	13.849*** (2.852)
Observations	500	500	500	500
R-squared	0.146	0.045	0.119	0.082

Notes: This table presents OLS regression results for allocations to alternative asset classes. Robust t-statistics are given in parentheses below coefficient estimates. ***,**,* denote significance at 1%, 5% and 10% levels respectively.

Table 6
Risk Tolerance, Knowledge, Confidence and Cash: Advised Investors

	(1) Risk	(2) Knowledge	(3) Confidence	(4) Cash
Male/Fem	-0.132 (-0.613)	-0.264 (-1.269)	-0.174 (-0.783)	1.972 (0.412)
Fem/Male	-0.451*** (-3.118)	-0.411*** (-2.772)	-0.286 (-1.800)	10.597*** (2.746)
Fem/Fem	0.025 (0.148)	0.187 (1.029)	0.144 (0.813)	-0.328 (-0.102)
Age	-0.020*** (-4.693)	-0.016*** (-3.910)	-0.009** (-2.192)	-0.006 (-0.071)
GBP100-249k	0.115 (0.635)	0.090 (0.483)	0.095 (0.543)	-8.395 (-1.549)
GBP250-499k	0.152 (0.888)	-0.141 (-0.864)	0.085 (0.533)	-17.235*** (-3.851)
GBP500-999k	0.592*** (3.217)	0.348** (2.048)	0.490*** (2.826)	-19.482*** (-4.167)
GBP1-2.5m	0.832*** (3.206)	0.217 (0.807)	0.671*** (2.603)	-16.513*** (-3.588)
Observations	316	316	316	316
Pseudo R-squared	0.075	0.049	0.039	
R-squared				0.130
Fem/Male=Fem/Fem	0.006	0.003	0.040	0.012

Notes: This table presents regression results for the four dependent variables using the sample of investors with advisors. Columns (1)-(3) report ordered probit regression results with robust z-statistics in parentheses below coefficient estimates. Column (4) is an OLS regression. Robust t-statistics are given in parentheses below coefficient estimates. ***,**,* denote significance at 1%, 5% and 10% levels respectively. Gender combinations are given as *Investorgender/Advisorgender*. The final row reports the p-values of a test that the coefficients on Fem/Male and Fem/Fem are equal.

Table 7
Risk Tolerance, Knowledge, Confidence and Cash: Robustness

Panel A: Investable assets below GBP500k				
	(1)	(2)	(3)	(4)
	Risk	Knowledge	Confidence	Cash
Male/Fem	0.135 (0.467)	0.090 (0.323)	0.090 (0.314)	1.971 (0.303)
Fem/Male	-0.436** (-2.556)	-0.312* (-1.838)	-0.110 (-0.593)	16.140*** (3.237)
Fem/Fem	0.130 (0.605)	0.240 (1.049)	0.205 (0.915)	-2.773 (-0.648)
Observations	220	220	220	220
R-squared				0.155
Pseudo R-squared	0.0362	0.0293	0.0102	
Fem/Male=Fem/Fem	0.013	0.024	0.230	0.001
Panel B: Excluding professional financial advisors				
	(1)	(2)	(3)	(4)
	Risk	Knowledge	Confidence	Cash
Male/Fem	-0.240 (-0.769)	-0.360 (-1.301)	0.027 (0.070)	5.751 (0.665)
Fem/Male	-0.397* (-1.915)	-0.246 (-1.093)	-0.119 (-0.472)	16.247** (2.535)
Fem/Fem	0.139 (0.507)	0.461 (1.611)	0.296 (1.354)	-0.412 (-0.062)
Observations	126	126	126	126
R-squared				0.200
Pseudo R-squared	0.0745	0.0359	0.0203	
Fem/Male=Fem/Fem	0.054	0.026	0.140	0.041

Notes: Panel A uses the sample of advised investors with less than GBP500k in investable assets. Panel B excludes respondents with professional financial advisors. Columns (1)-(3) report ordered probit regression results with robust z-statistics in parentheses below coefficient estimates. Column (4) is an OLS regression. Robust t-statistics are given in parentheses below coefficient estimates. ***,**,* denote significance at 1%, 5% and 10% levels respectively. Gender combinations are given as *Investorgender/Advisorgender*. The final row in each panel reports the p-values of a test that the coefficients on Fem/Male and Fem/Fem are equal.

Table 8
Causal Effects of Advisors: All Investors

	Risk	Knowledge	Confidence	Cash	Brexit
Regression	0.381***	0.019	0.002	-10.558***	
z/t-stat	(3.59)	(0.19)	(0.02)	(3.48)	
ATE	0.581***	0.134	0.187	-12.238***	-0.065
z-stat	(4.41)	(1.19)	(1.55)	(3.22)	(1.11)
ATE (Brexit)	0.472***	0.121	0.118	-11.967***	
z-stat	(3.53)	(0.99)	(0.94)	(3.25)	

Notes: This table presents estimates of the average treatment effects (ATEs) of having a financial advisor on each of the outcome variables given in the column heading using nearest neighbour matching techniques. The final column reports placebo tests of the ATE of having a financial advisor on voting for Brexit. The first row of results replicates regression results for reference. The middle row of results gives ATEs using nearest neighbour matching techniques with an exact match between advised (treated) and self-directed (control) investors in terms of gender and wealth category and a nearest neighbour match in age. In the final row of results we also force an exact match in terms of Brexit voting. ***,**,* denote significance at 1%, 5% and 10% levels respectively.

Observations in regressions and nearest neighbour matching for Risk Tolerance, Knowledge, Confidence and Cash Holdings: 500.

Observations for nearest neighbour matching for Brexit as outcome variable: 450.

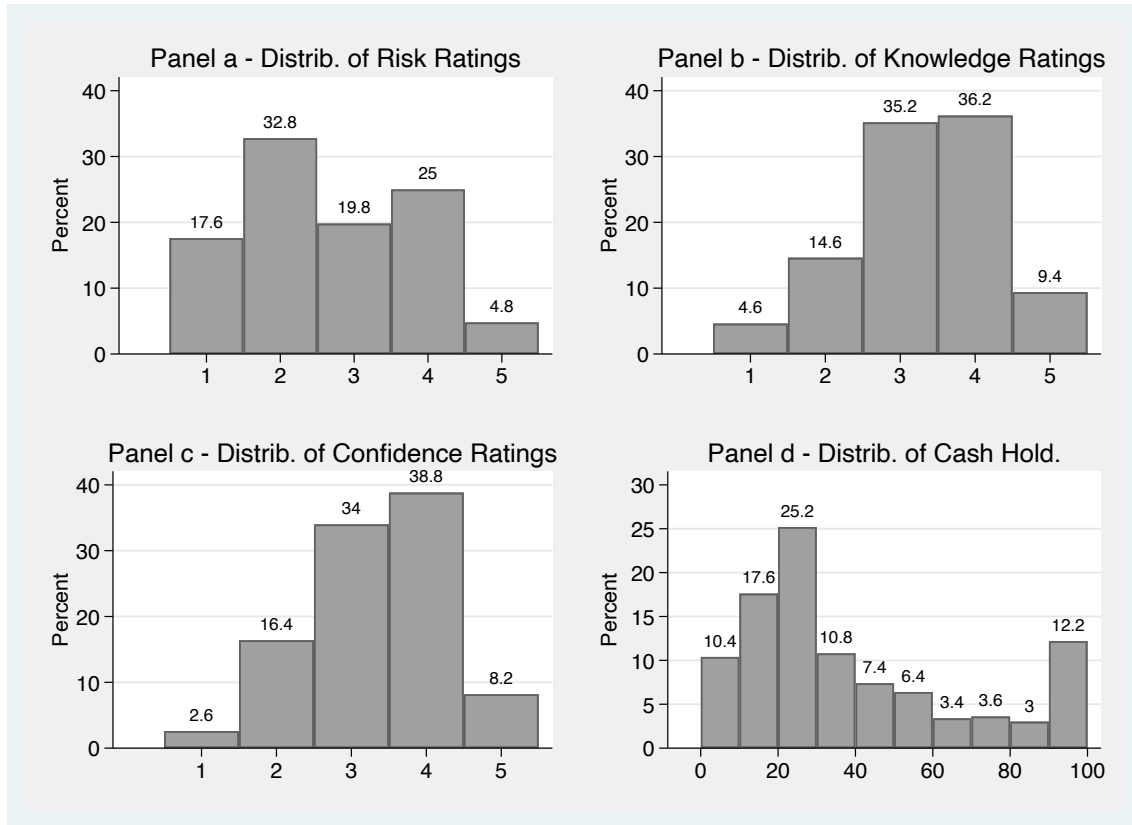
Observations for nearest neighbour matching (Brexit): 441.

Table 9
Causal Effects of Advisor Gender: Advised Investors

	Risk	Knowledge	Confidence	Cash
ATE	-0.032	-0.104	-0.092	4.212
z-stat	(0.16)	(0.76)	(0.62)	(1.05)
CATE(male)	0.228	0.178	0.077	-2.520
z-stat	(0.75)	(1.04)	(0.36)	(0.43)
CATE(female)	-0.233	-0.486**	-0.321*	13.357***
z-stat	(0.93)	(2.22)	(1.67)	(2.65)

Notes: This table presents estimates of the treatment effects of having a male financial advisor on outcome variables given in the column headings using nearest neighbour matching techniques. We report average treatment effects (ATE) or conditional average treatment effects (CATE), depending on respondent gender. The nearest neighbour matching techniques force an exact match between male advisor (treated) and female advisor (control) investors in terms of gender and wealth category and a nearest neighbour match in age. The first row of results gives the average treatment effect. The second and third row of results gives the average treatment effects conditional on the investor being male or female, respectively. ***,**,* denote significance at 1%, 5% and 10% levels respectively.

Figure 1. Distributions of responses



Notes: These graphs plot the distribution of responses to the main survey questions. Panels a-c give the percentage of responses at each value on the five-point Likert scale (where 1 = ‘strongly disagree’ and 5 = ‘strongly agree’) when asked whether they agreed or disagreed with three statements:

Panel a: ‘The amount of investment risk I am willing to take is above average,’

Panel b: ‘My knowledge about the investment decisions I make is above average,’

Panel c: ‘My confidence in the investment decisions I make is above average.’

Panel d gives the distribution of responses when asked to report the percentage allocation of their total investable assets held in cash.

6 Appendix

Survey Questions used in the paper.

This study was commissioned by a wealth management research firm to which the researcher added questions. The questions detailed below are the ones included in the analysis.

1. Are you?

- Male
- Female

2. How old are you?

3. What is the value of your investable assets?

Please include investments such as stocks, bonds, mutual funds, and mature pension investments, investment or secondary properties, but do not include the value of your main residence.

1. GBP50,000 - 99,000
2. GBP100,000- 249,000
3. GBP250,000 - 499,000
4. GBP500,000 - 999,000
5. GBP1 million - 2.5 million
6. Over GBP2.5 million

4. Of your investable assets (i.e. excluding the value of your main residence) please approximate how this is spread across the categories below:

1. Investments in stocks, bonds and mutual funds (outside of a pension)
2. Invested in a pension
3. Cash savings (current accounts and cash ISAs)
4. Additional property
5. Which of the following do you use / go to for financial advice?
 1. Wealth Manager
 2. Private Bank
 3. Professional Financial Adviser
 4. Accountant
 5. Friends and Family
 6. Other (please specify)
 7. I do not receive financial advice

Note: Respondents who selected either 5 or 7 were deemed to be self-directed.

6. What is the gender of your adviser?

- Male
- Female

Three statements to measure investment confidence, knowledge and risk tolerance were included as follows.

Compared to the general population:

7. My confidence in the investment decisions I make is above average.

1. Strongly disagree
 2. Disagree
 3. Neither agree nor disagree
 4. Agree
 5. Strongly agree
8. My knowledge about the investment decisions I make is above average.
1. Strongly disagree
 2. Disagree
 3. Neither agree nor disagree
 4. Agree
 5. Strongly agree
9. The amount of investment risk I am willing to take is above average.
1. Strongly disagree
 2. Disagree
 3. Neither agree nor disagree
 4. Agree
 5. Strongly agree