Financial Advice, Gender and Wealth: Risk Tolerance, Knowledge and Confidence in Advised and Self-Directed Investors

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Abstract: We use a sample of advised and self-directed wealthy individuals to examine gender differences in the self-perceived investment risk tolerance, knowledge and confidence, and portfolio allocations made to the risk free asset, cash. The results reveal that investors who engage financial advisors judge themselves to have higher levels of risk tolerance and hold 15% points less cash in their portfolios than those who manage their own investments. Controlling for investor characteristics, we show that women perceive themselves to have lower risk tolerance than men and demonstrate this by holding 5% points more cash in their portfolios. However, we do not replicate lower levels of investment knowledge and confidence among this sample of wealthy women. Furthermore, we show that the gender of the advisor matters, but only for female investors. Women who select male advisors increase their cash holdings by on average 14% points and feel significantly less knowledgeable and confident about their investment decisions. This paper makes a broad contribution to practices that involve advice within financial domains with findings that challenge the blanket assumption that women are more conservative investors than men. The results suggest that more attention should be paid to the interaction between advisors and investors as a driver of gender bias in investor attitudes and behaviour in the wealth management industry.

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1 Introduction

This paper examines the interplay between investors and their financial advisors. We investigate the potential for stereotyped beliefs and unconscious bias in the financial wealth industry as these relate to the gender of both investors and financial advisors. Our research contributes to the literature which shows that gender stereotypes exist in eye of financial advisors and that gender based perceptual judgements may result in biased advice (Baeckström, Silvester, and Pownall, 2018). We extend our understanding by exploring whether financial advice and gender are linked to the self-perceptions of wealthy investors by investigating the judgements that they make about their investment risk tolerance, knowledge and confidence, and to the cash allocation decisions that they make in their investment portfolios. We consider evidence from wealthy and millionaire individuals who are much more financially prosperous than the mass affluent investors typically examined in extant studies[1] (Bhattacharya, Hackethal, Kaesler, Loos, and Meyer, 2012; Foerster, Linnainmaa, Melzer, and Previtero, 2017; Hoechle, Ruenzi, Schaub, and Schmid, 2017). The gender analysis presented in this paper makes a specific contribution to the financial investment advice literature, with broad relevance to other practices which involve professionals providing advice of a financial nature to individuals, such as accounting and audit. In particular, this research is relevant to such quantitative domains that are often male dominated, but which at the same time involve advice to both male and female clients.

We make three important contributions to the literature about advice in financial domains.

First, we contribute to the literature that finds that women investors are persistently more risk averse (Eckel and Füllbrunn, 2015), have lower levels of financial literacy (Bucher-

[1] Mass affluent investors can be defined as having less than USD100,000 in investable assets. See, for example, Europe Economics (2014) "Retail Distribution Review Post Implementation Review." http://www.fca.org.uk/static/documents/research/rdr-post-implementation-review-europe-economics.pdf.

Koenen, Lusardi, Alessie, and Van Rooij, 2017) and are less confident when making investment decisions (Croson and Gneezy, 2009) compared to male investors. We demonstrate that gender differences are more complicated that previously assumed. Other factors, e.g., wealth and financial advice matter more for gender differences in risk tolerance and cash allocation decisions. A simple means comparison suggests that the risk tolerance, knowledge and confidence of female investors are on average lower than those of male investors, but not statistically significantly so. Still female investors hold significantly more cash, i.e., 5% points, than males. When Including other investor variables, i.e., wealth, age and the presence of a financial advisor in the analysis, we do not replicate lower levels of investment knowledge or confidence among this sample of wealthy male and female investors. Furthermore, although overall women have a lower risk tolerance than men, we also demonstrate that the group of women who have female financial advisors report the highest average risk tolerance level and have the lowest average cash holdings of any subgroup, including male investors with male advisors.

Second, we contribute to the literature about financial advice which concerns mass affluent investors, usually with less than US$100,000 to invest (Bhattacharya et al., 2012; Foerster et al., 2017; Hoechle et al., 2017). Extant studies demonstrate that advisors deviate from rational decision making which results in biased, suboptimal portfolio recommendations (Glaser, Langer, and Weber, 2005). Our contribution here is twofold: We introduce a sample of investors with up to GBP2.5 million to invest and who are therefore much wealthier than those in extant studies. Furthermore, by comparing the perceptual judgements that investors who engage financial advisors make about themselves with those made by individuals who manage their own investments, we consider how individual investors' risk tolerance, knowledge, confidence and cash allocation decisions relate to the financial advice treatment from the perspective of the investors themselves. Our results show that financial advice matters. Advised investors both believe that they have a higher risk tolerance and

hold almost 15% points less cash in their portfolios compared to self-directed investors. They also report higher levels of investment knowledge and confidence. Our matching analysis, which addresses the shortage of studies within the advice literature that investigate causal inference (Gassen, 2014), indicates that the reduced level of conservatism is the result of the decision to take financial advice. Advisors therefore encourage reluctant individuals to increase their future wealth position by investing more, supporting the theoretical model of Gennaioli, Shleifer, and Vishny (2015).

Finally, we contribute to the small body of literature that investigates how the perceptual judgements that financial advisors make of male and female investors relate to the gender combination of financial advisors and investors and which may result in biased advice (Baeckström et al., 2018) and the literature that the social support benefits that female mentees in accounting firms receive vary depending on the gender of the mentor (Scandura and Viator, 1994). That the gender combination of investors and advisors is relevant for female, but not male, investors is perhaps our most revealing finding. That the investor-advisor gender mix could be important for how investors perceive themselves, and for the investment decisions that they make, has previously been overlooked in the finance literature. Researchers have instead focused on gender differences in investor preferences without considering how this may be linked to financial advice or indeed the gender of the advisor. Our results provide evidence that the group of women who have male advisors have, on average, a lower risk tolerance, and feel both less knowledgeable and less confident about their investment decisions relative to all other groups of advised investors. This group of women hold 14%-points more cash in their investment portfolios compared to women advised by female advisors. Our matching analysis suggests that this very conservative allocation to risk free assets appears to be caused by the decision to hire male advisors, in line with Scandura and Viator (1994) who demonstrate that women who have female, rather than male, mentors gain higher levels of social support and therefore have a higher chance to succeed.

We conduct our analyses by exploring the self-perceptions of and the portfolio allocations made by 500 male and female British investors with between GBP50,000 and GBP2.5 million to invest (approx. USD65k-3.2mill). The vast majority, 316 of the respondents receive investment advice from a professional financial advisor ('advised' investors) and 184 manage their own investments ('self-directed' investors). Our research considers the perceptual judgements that the investors make of their own investment risk tolerance, knowledge and confidence and by inquiring about the proportion of the risk-free asset, cash they hold in their investment portfolios.

Left to their own devices, self-directed individuals often make suboptimal decisions due to their own biased behavior (Benartzi and Thaler, 2001). Unlike self-directed investment decisions, wealth managed through financial advisors involves joint decision-making. When engaged by individuals, advisors impart information and financial advice and thus contribute to the portfolio decisions made by the individual (Bhattacharya et al., 2012). Advisors, therefore, can influence the investment decisions that the investor would otherwise have made in isolation. It is problematic that, akin to investors, advisors are seen to deviate from rational decision-making which results in biased, suboptimal portfolio recommendations (Glaser et al., 2005). Instead of focusing solely on the needs of their clients, recommendations are influenced by other factors such as how much commission advisors can earn (Inderst and Ottaviani, 2012), making it unclear whether advised portfolios generate higher returns net of fees compared to self-directed portfolios (Hoechle et al., 2017). However, since the extant literature on financial advice typically does not extend beyond mass affluent investors (Bhattacharya et al., 2012; Foerster et al., 2017; Hoechle et al., 2017), little is known about financial advice to the wealthy investors who control the vast majority of global wealth.[2]

[2]Individuals with household wealth which exceed US$100,000 control 86.9% of global wealth and the UK is of interest due to hosting a high proportion of the world's millionaires (7%), who control 24% of UK household wealth and its prominence in the global wealth management sector (Credit Suisse Global Wealth Databook, 2016, https://www.credit-suisse.com/uk/en/about-us/ research/research-institute/news-andvideos/articles/news-and-expertise/2016/12/en/the-global-wealth-pyramid-2016.html).

Additionally, with women becoming a growing proportion of this demographic, the gap is more prominent for research which focuses on gender differences.[3] The paper therefore addresses the gap in the literature concerning financial advice to wealthy individual male and female investors.

A substantial body of research demonstrates that men are more likely to take risks than women in a wide range of activities, with female conservative behaviour more pronounced in traditionally masculine domains (Byrnes, Miller, and Schafer, 1999; Beyer and Bowden, 1997). Despite the continued increase in wealth owned by women, and increasing prevalence of female entrepreneurs and women in senior positions, financial investing remains a traditionally male domain. It is a domain in which men are expected to be more confident, have superior knowledge and a higher risk tolerance than women (Gustafson, 1998). Indeed, evidence suggests that women are persistently under-invested compared to men and are more likely to hold a smaller allocation to risky assets (Charness and Gneezy, 2012; Eckel and Füllbrunn, 2015). These gender differences have been attributed to a variety of different factors, but most imply that the cause lies, at least in part, with the women themselves. For example, women are described as being more risk averse (Charness and Gneezy, 2012; Grable, 2000), less financially literate (Bucher-Koenen et al., 2017; Lusardi and Mitchell, 2007), and less confident when making investment decisions (Barber and Odean, 2001, 2002; Croson and Gneezy, 2009). It is therefore widely believed that women both judge themselves to be more risk averse and make more conservative investment choices than men (Eckel and Grossman, 2008). Yet, most extant studies of gender differences focus on hypothetical investment decisions using student samples in laboratory simulations, made by individuals who are not investing their own wealth (Agnew, Anderson, Gerlach, and Szykman, 2008; Jianakoplos and Bernasek, 1998). Likewise, research that has examined actual investment patterns of

[3] As noted in The Telegraph on August 28, 2015, women between 22-29 earn more than men, and it is thought that by 2020 women will make up 53% of all the millionaires in the UK (Centre for Economics and Business Research 2013).

male and female investors has generally overlooked whether they are advised by others (Sunden and Surette, 1998), and notably few studies have investigated self-reported investment risk tolerance, knowledge and confidence among investors with substantial investable assets, like those in the present research. Further, researchers have not considered how the social interactions between investors and advisors impact on individual preferences and investment choices. This is important because the social psychology literature demonstrates that people feel differently about themselves and vary their decision making behaviour depending on who they interact with (Martinko and Thomson, 1998). More specifically, the gender combination of the people involved in an interaction can affect the attributions and behaviour of both. For example, observers may differ in how they explain the success of others (Martinko, Harvey, and Douglas, 2007) and have been shown to underestimate women's abilities relative to men (Heilman and Haynes, 2005). Although economic theory does not postulate that financial advisor gender matters for the investment preferences of individuals, it is possible that this extends also to financial advice.

Previously unexplored in the finance literature, this paper therefore draws on concepts from social psychology to investigate whether this is also true for investors and financial advisors. Our findings suggest that more attention should be paid to the interactions between financial advisors and investors to identify and better understand what shapes variations in the self-perceptions and investment behaviour of individual investors in the wealth management industry. Importantly, our results also challenge the blanket assumption of a lower risk tolerance amongst women relative to men by demonstrating that such differences are situational rather than universal. Institutions that struggle to attract female clients should note both the fact that a higher proportion of female than male millionaire investors do not engage financial advisors at all and instead opt to manage their own portfolios, and the clearly revealed preference by both male and female investors for advisors of the same gender, (i.e., 42% women who engage female advisors and 86% of men who engage male advisors). With

currently 77% of certified advisors male,[4] to attract more female clients, particularly those who are wealthy, institutions need to address the under-representation of female financial advisors in the marketplace today. We discuss the literatures on investor gender, the role of financial advice, and the impact of gender combinations in the next section, using these to generate our testable hypotheses. We describe our data in Section 3. Section 4 contains our empirical results which we summarise and discuss in Section 5. We present conclusions in Section 6.

2 Literature Review and Hypotheses

2.1 Investor Gender, Investment Attitudes and Behaviour

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 in classical financial models. Nonetheless, the literature documents lower risk tolerance (Charness and Gneezy, 2012; Grable, 2000), financial literacy (Bucher-Koenen et al., 2017; Dwyer, Gilkeson, and List, 2002; Lusardi and Mitchell, 2007), and confidence (Barber and Odean, 2001; Croson and Gneezy, 2009; Estes and Hosseini, 1988) among female relative to male investors. These gender differences extend to the perceptual judgements that women make of themselves, test score results (Agnew et al., 2008), and investment behaviour (Eckel and Füllbrunn, 2015) whereby women, for example, make more conservative asset allocation decisions and thus hold more cash in their retirement portfolios (Sunden and Surette, 1998). Nonetheless, it is problematic that few studies have considered the investment decisions that women make for themselves and thus far have excluded a wealthier demographic of investors.

[4]See https://www.ft.com/content/7cd84b28-cb43-11e5-a8ef-ea66e967dd44.

Individuals with more than USD100,000 in investable assets form an influential demographic that controls over 86% of the world's personal wealth and their investment decisions therefore have substantial economic impact.[5] With large sums to invest, they frequently engage financial advisors who assist with managing their estates.[6] Thefore, the results of previous studies of financial advice are not necessarily generalisable to this wealthier set of individuals who may not have the same concerns about securing their financial future. Indeed we show below that increases in wealth significantly contributes to increases in how confident and risk tolerant investors perceive themselves to be. Investors who have more than £250K also allocate significantly more to risky assets in their portfolios. Thus confidence may be a situational trait linked to the ownership of financial assets and not necessarily personal characteristics such as gender (Saccardo, Pietrasz, and Gneezy, 2017).

Our first testable hypothesis is then:

Hypothesis 1: Male and female investors in our sample of wealthier investors self-report similar levels of risk tolerance, knowledge and confidence and hold the same proportions of cash in their portfolios.

However, given the robust previous findings regarding gender differences in less affluent samples we expect evidence in favour of the alternative hypothesis that wealthy women are likely to self-report lower levels of investment risk tolerance, knowledge and confidence and hold a higher proportion of cash than male investors.

[5]See https://www.bloomberg.com/news/articles/2018-06-14/ millionaires-now-control-half-of-world-s-personal-wealth.

[6]Studies show that 60% of US households with over USD500,000 in investable assets engage financial advisors (Winchester and Huston 2014), compared to 28% of US households overall (Blackrock 2016).

2.2 Advised and Self-Directed Investors

Although many wealthy investors engage financial advisors ('advised' investors) to assist them with investment recommendations, others prefer to manage their own investments ('self-directed' investors). Investors who engage financial advisors may do so with the expectation that the advisor will possess expertise, experience and information to help enhance their investment decisions (Feng and Seasholes, 2005; List, 2011). The recommendations made by advisors contribute to variations in portfolio choice and composition (Rosen and Wu, 2004) and are designed, for example, to ensure that individuals have sufficient funds for their retirement (Samuelson, 1989). In theory, advisors make rational investment recommendations which meet their clients' financial goals and suggest optimised investment portfolios that combine different assets into portfolios aimed at maximising return for a given level of risk, a method which satisfies the Financial Conduct Authority ('FCA') that regulates the activities of financial advisors in the UK and which adheres to classical financial models. Yet, studies which analyse the trading records of investors document that financial advice may be subjectively influenced by factors outside their clients' needs (e.g., Foerster et al. (2017); Kramer (2012). Despite being better diversified, advised portfolios often have lower returns and higher transaction costs (Gaudecker, 2015; Hoechle et al., 2017), suggesting that advisors may be conflicted between providing suitable recommendations and seeking to maximise their own economic utility.

A small body of literature on financial advice suggests that self-directed investors have different characteristics to those who seek advice. Self-directed investors tend to be male, younger, more confident, and have a higher income relative to advised investors (Karabulut, 2013; Kramer, 2012; Dorn and Huberman, 2005). Less financially literate, more risk averse, older and female investors have a greater likelihood of seeking professional investment advice (Bluethgen, Gintschel, Hackethal, and Mueller, 2008; Hackethal, Haliassos, and Jappelli, 2012; Karabulut, 2013; Lusardi and Mitchell, 2007). Such gender differences are 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). However, as most studies focus on investors with less than USD50,000 to invest (Dorn and Huberman, 2005; Hackethal et al., 2012; Karabulut, 2013; Kramer, 2012), little is known about potential variations in the preferences and investment behaviour between self-directed and advised investors who are wealthy. Nevertheless, these findings suggest that establishing causal effects on any of our variables from the decision to engage a financial advisor will need some care and attention.

Our second null hypothesis is that:

Hypothesis 2: Wealthy investors who engage financial advisors are likely to have similar levels of risk tolerance, knowledge and confidence and hold the same proportions of cash in their portfolios compared to self-directed investors.

However, drawing on the extant literature which documents a higher level of conservatism among advised investors we expect evidence in favour of the alternative hypothesis that wealthy investors who engage financial advisors are likely to have lower investment risk tolerance, knowledge and confidence and hold a higher proportion of cash compared to self-directed investors.

2.3 Investors and Financial Advisors: Gender Combinations

Although the assumption is that financial advisors adhere to rational metrics and provide a neutral perspective for clients making investment decisions, it is possible that stereotypical gender assumptions about client characteristics influence the advice provided, and that these assumptions may vary depending on the gender characteristics of the investor-advisor dyad. With little extant research in the financial advice literature we draw from related literature. For example, studies of workplace mentorship have found that women mentees do better with

a male mentor (Ragins, 1989; Scandura and Viator, 1994). Furthermore, female students are more likely to be successful than male students if their supervisor is male (Hilmer and Hilmer, 2007). Dennehy and Dasgupta (2017) show that female engineering students with female mentors are more likely to pursue a career in engineering than those with male mentors. In the finance sector, businesses run by women borrow less than businesses run by men, yet no evidence of bias is found among the loan officers who evaluate applications made by either gender (Wilson, Carter, Tagg, Shaw, and Lam, 2007). Instead it is prospective female business borrowers who are deterred from making loan applications because of their own expectation that the application will be turned down (Moro, Wisniewski, and Mantovani, 2017). This indicates a mismatch between how women expect to be perceived by others and how they are actually perceived by others.

Although wealthy investors are more likely to have the choice of selecting which advisor to engage, with perhaps several wealth management institutions 'pitching' for their business, the financial advisor profession is, nevertheless, male dominated. On average, only 23% of certified advisors are female, and only 34 of the 400 top ranked US advisors are women[7] Thus, while industry studies have shown that women generally prefer a female advisor, they may have difficulty finding one.[8] With the exception of Baeckström et al. (2018), who document that financial advisors vary the judgements that they make about how much in control and knowledgeable millionaire investors are depending on both their own and the investor's gender, and despite related literature indicating that the gender combinations in advice situations are important, very little consideration has been paid to the gender combination of investors and financial advisors or indeed if it might be relevant for how investors perceive themselves or the portfolio asset allocation choices that they make. Nor is it known if financial advisors contribute to potential differences in investment attitudes and behaviour among a population of male and female investors who are wealthier than

[7]See https://www.ft.com/content/7cd84b28-cb43-11e5-a8ef-ea66e967dd44.

[8]See https://www.fa-mag.com/news/why-the-shortage-of-female-advisors-32244.html.

those in previous studies. However, according to classical economic theory the gender of the advisors ought not to contribute to differences in the attributions that investors have about themselves or their investment decisions and therefore we hypothesise:

Hypothesis 3: Wealthy male and female advised investors are likely to self-report equal levels of investment risk tolerance, knowledge and confidence and hold equal proportions of cash in their investment portfolios regardless of the gender of their advisor.

3 Participants and Measures

Our data are from a sample of 500 British men and women who completed an anonymous online survey of investors' attitudes towards financial advice undertaken by a wealth management research firm.[9] In order to participate respondents had to have investable assets of at least £50,000.[10] Participants were incentivised by collecting points that could be used to purchase products or give as charity donations. After consenting to their anonymised data being used for research purposes, each participant was asked to indicate their gender and age.

To assess their wealth, respondents were asked 'What is the value of your investable assets?', and to choose one of five categories: (1) GBP50-100k, (2) GBP100-250k, (3) GBP250-500k, (4) GBP500k-1m, and (5) GBP1m-2.5m.[11]

Investors were categorised as 'advised' if they indicated that they receive financial advice from one or more sources (e.g., wealth manager, private bank, professional financial adviser) and 'self-directed' if they indicated that they received no financial advice. When a participant

[9]The 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.

[10]The 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).

[11]No respondents selected the sixth category of investible assets in excess of GBP2.5m.

was identified as 'advised' they were asked for the gender of their financial advisor.

Participants' self-perceptions about investment risk tolerance, knowledge and confidence were assessed. In each case, they were asked to compare themselves to the general population and indicate on a 5-point Likert-type scale whether they agreed or disagreed with three statements (where 1 = 'strongly disagree', 5 = 'strongly agree'):

(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, to obtain a proxy measure of risk, respondents were asked 'Of your investable assets what is the percentage allocation to cash savings?'[12] Therefore, although we do not have the exact portfolio asset class breakdown, we are able to evaluate if participants' stated level of risk tolerance corresponds to their allocations to the risk-free asset, with the balance held in investments which carry higher levels of risk.

Subsequently, we use the respondents' assessments of their risk tolerance, knowledge and control, together with their percentage portfolio cash allocations as dependent variables.

4 Results

4.1 Respondent Profiles and Summary Statistics

Of the 500 investors who completed the online questionnaire, 288 are men and 212 women. In total, 316 respondents identify themselves as 'advised' (182 men, 134 women), and 184 as 'self-directed' (106 men, 78 women). Female respondents are slightly younger than male

[12] Including current accounts and cash ISAs, a tax-efficient individual savings account widely used in the UK.

respondents (mean ages of 50.2 and 54.4 years, respectively), and self-directed investors are slightly older than advised investors (mean ages 53.7 and 51.9 years). Further information about the sample is provided in Tables 1 and 2.

Male and female investors are equally likely to receive financial advice (both = 63.2%).[13] Of the 'advised' group, 235 (74.4%) indicate that their main advisor is male, and 81 (25.6%) say their main advisor is female, broadly consistent with the gender breakdown of the U.K. financial advisor population as a whole. Female investors are more likely to have a female advisor (42%) than male investors (14%); a difference that is statistically significant (Chi-square = 16.4 $p < .001$), indicating that choice of advisor is not independent and the preference for male or female advisor is contingent on the gender of participating investors.

Distributions for self-rated risk tolerance, knowledge and confidence (see Figures 1 to 3) show that regardless of investor gender there is considerable variation in ratings, with each question yielding responses on the full scale from 1 to 5. Cash holdings also span the full range (Figure 4). Table 3 provides descriptive information for the dependent variables and explanatory investor variables, estimated using Spearman's rank correlation to account for the ordinal nature of three of the four. Self-rated risk tolerance, knowledge and confidence are positively correlated; the strongest relationship being between confidence and knowledge (rho = 0.72). The dependent variable, cash holdings, is strongly negatively related to risk tolerance and, to a lesser extent, with knowledge and confidence.

Table 4 contains a summary of means (and standard deviations) for the dependent variables broken down into various subgroups. The first vertical pools all respondents, the second panel splits the sample into self-directed and advised respondents, while the third panel splits the advised respondents according to the gender of their advisors. We report statistics for all respondents, and then separately for male and female respondents.

[13]This 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.

We perform t-test of the equivalence of means in two directions. First, we test for the equivalence of mean responses by male and female respondents within each group or subgroup. For example, we compare the mean cash holdings of all female investors (39.45%) with the mean cash holdings of all male investors (34.49%) and find a significant difference. We denote this with subscript daggers on the female mean at the foot of the first column of means. Second, we test for the equivalence of means across subgroups. For example, we compare the mean self-rating for risk tolerance of all investors with a female advisor (3.17) with the mean rating for risk tolerance of all respondents with a male advisor (2.81). We find a significant difference and this is denoted with superscript asterisks on the mean for female advisors in the first row of the final column of means.

Some key themes emerge from Table 4. From panel (1) which reports results based on the full sample of all investors, we note that while the means for risk tolerance, knowledge and confidence are all lower for women than men, none of the differences are statistically significant. However, women do behave more conservatively and hold significantly more cash in their portfolios relative to men.

Panel (2) shows that advised investors rate themselves to be more risk tolerant and hold significantly less cash in their portfolios than self-directed investors.[14] This holds for the full sample and both male and female investors. Splitting the data into self-directed and advised subgroups also reveals that the significantly higher mean cash holdings of female investors is primarily driven by those who are advised. Advised women hold 34.49% in cash, significantly more than advised males (28.59%). While self-directed women hold more cash than self-directed men (47.97% versus 44.62%), this difference is not significant. These findings suggest that inference on the effects of gender differences on investment actions is influenced by the presence of financial advisors.

[14] Advised investors rate themselves, on average, more knowledgeable and more confident but the differences are not statistically significant.

From panel (3) we note that advised investors as a group rate themselves as significantly more risk tolerant, more knowledgeable and more confident if they have a female advisor rather than a male one. These differences are entirely driven by female investors, who also hold significantly less cash in their portfolios if their advisor is female (26.43%) rather than male (40.28%). While only 25 male investors have female advisors, and hence statistical inference is difficult, we note that this group is, on average, less risk tolerant, less knowledgeable, less confident and holds more cash than the much larger group of male investors who have male advisors.

However, these t-tests do not control for other factors that drive responses such as age and wealth levels, and nor do they speak to causality. In the next subsection we use regressions and matching methods to control for these factors and to address our key hypotheses in more depth.

4.2 Self-Perception and Cash Allocations: Regression Analyses

We apply regression models to examine how explanatory variables contribute to the dependent variables. We estimate ordered probit models for the first three dependent variables, recognising that these are discrete and ordered variables. The continuous cash allocation variable is modelled using ordinary least squares. These regressions will provide measures of association between explanatory and dependent variables. We address issues of causality in the next subsection.

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

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

The dependent variables (Y_i) are self-rated investment risk tolerance, knowledge and con-

fidence (all rated from 1 [lowest] to 5 [highest]) and in the final specification cash, 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), 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 £50-100k, *i=2* if £100-250k, *i=3* if £250-500k, *i=4* if £500k-1m and *i=5* if £1-2.5million). Indicators 2 to 5 are included in the regression with indicator 1 the excluded baseline category. Regression results are presented in Table 5.

The first column of Table 5 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, and cash allocations increases cash by 1.7 percentage points.[15] Investable wealth is positively associated with investor risk tolerance. Investors with more than GBP500k in investable wealth report risk tolerance ratings more than half a unit higher than less wealthy respondents. This increases to almost 0.8 units for millionaires.

Female investors self-rate their risk tolerance significantly lower than male investors, controling for other factors, consistent with the extant literature. Having an advisor is associated with significantly higher risk tolerance, and the regression coefficient is economically large.

Columns (2) and (3) are somewhat less successful, with lower R-squared values and fewer statistically significant explanatory variables. Age broadly retains its importance, and the coefficients are negative for both knoweldge and confidence measures. However, both coefficients are of much smaller magnitudes than that reported for risk tolerance. High levels of investable assets are associated with higher levels of knowledge and confidence, but neither

[15]The 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.

gender nor the indicator variable for having an advisor are significant.

Comfortingly, column (4) reports OLS coefficients for regressions explaining cash holdings that are very comparable to the risk tolerance ratings in column (1). Cash holdings rise as a proportion of the portfolio with age, and fall very strongly as wealth increases. Women hold 5.4% more cash than men, controlling for other factors, and the presence of a financial advisor is associated with 10.5% lower cash holdings.

In terms of our first testable hypothesis, gender effects are relatively straightforward to explain. We cannot reject the null hypothesis that gender has no effect on knowledge or confidence in our sample of wealthy investors. However, female investors self-report significantly lower risk tolerance than male investors and hold significantly more cash in their portfolios. Column (5) of Table 5 nuances this result slightly. Adding self-ratings regarding risk tolerance, knowledge and confidence to the regression explaining cash holdings, we see that the coefficient on gender loses significance (as does the coefficient on age) with the risk tolerance variable now strongly negatively associated with cash holdings. Being female (or older) per se does not reduce cash holdings, but rather the lower risk tolerance reported by women (and older investors) is associated with more conservative investment portfolios.

Our second null hypothesis cannot be rejected for either knowledge or confidence. Advised investors report similar ratings to self-directed investors for both of these variables. However, we note significantly higher risk tolerance ratings and lower cash holdings for advised investors to self-directed investors. 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 and advisor and lower cash holdings remains.

4.3 Financial Advice Treatment

The results in Table 5 show that, relative to self-directed investors, those with financial advisors both perceive themselves to have a higher relative risk tolerance and display more risk tolerant investment behaviour. Furthermore, a conditional relationship between age, wealth and gender, and self-perceived risk tolerance is confirmed. Whilst enabling analysis for how investor variables contribute to the understanding of the degree of risk tolerance investors consider themselves to have, the regressions in Table 5 do not establish the causal relationship between having a financial advisor and the personal risk tolerance rating or investment behaviour.

In this section we establish causal inference through the application of statistical matching techniques to supplement the regression models. This is possible since the data contain both advised and self-directed participants, who share observable variables, such as age, gender. Whilst mindful that matching makes substantial underlying assumptions, this technique allows us to model the advisor (and gender) choice made by participants and thus establish the financial advice treatment effect to statistically address the endogenous nature of the data and make a contribution to the lacuna of studies which identify causality in business-related disciplines(Gassen, 2014). Therefore, our method compares observably similar treated (advised) and untreated (self-directed) individuals to establish the effect of the financial advice treatment on our four dependent variables. Matching is used to determine the causality of the outcomes made by advised and self-directed investors, and to assess whether these are attributable to the treatment effect of having an advisor, or to investors' innate preferences (Imbens, 2004). In this analysis, the treatment group is investors with financial advisors, and the untreated control group is self-directed investors, and investors are first matched on their observable personal characteristics, i.e., gender, age and wealth. We use nearest neighbor (NN) matching methods and report the average treatment effect (ATE).

The first rows of Table 6 report the coefficients and t-statistics on the advisor indicator variables from the first four columns of Table 5 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 avalable in terms of age (with replacement).

These results suggest that the causal effects of choosing to take financial advice on risk tolerance and cash holdings are larger than those given through the regression analysis. This implies that the selection bias is in the opposite direction to the treatment effect. 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 perceived risk tolerance by more than one-half of a unit (on the five point Likert scale) and to reduce cash holdings by more than twelve percentage points, on average. Both treatment effects are highly statistically significant. This indicates that the higher self-rated risk tolerance and lower allocations to cash in the portfolios of advised investors can be attributed to the financial advice treatment, rather than these preferences being independent or innate. However, even after correcting for selection biases we find no evidence of a causal impact of advisors on knowledge or confidence, suggesting that financial advice does not increase investors' financial literacy or confidence, results which corresponds to the the regression results presented in Table 5.

A primary concern with all matching analyses is that the matching is imperfect and that important characteristics - either observable or unobservable - that drive the dependent variables have been excluded and that these vary systematically across treated and untreated groups. One such characteristic in our application might be education. Whilst not collected in this survey, 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). We therefore test whether failing to match on education is likely to

bias our findings using a placebo test and use the results of another question contained in the survey regarding the UK's European Union ('EU') Membership Referendum in June 2016 ('Brexit').

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 older voters were more likely to vote For Brexit, and that women and individuals in better financial situations were more likely to vote to remain in the EU. Each of these is captured by the age, gender and wealth characteristics used to perform matching in our analysis.

However, education level, a characteristic strongly related to the decision, is not captured by our analysis. Voters with a university degree had a 16% lower probability of voting to leave the EU.[16] If matching on age, gender and wealth results in imbalances in education across the treatment and control groups, we should detect a (spurious) treatment effect on the referendum vote of our panel of investors. We therefore report the Brexit placebo test in the final column of Table 6. The results suggest that there is no statistically significant imbalance between education levels (or ethnicity) across matched treated and untreated groups in our analysis. While the statistical significance of our placebo test is low, the point estimate is a material 6.5% point difference. As a further robustness test we then add the referendum vote reported by our participants as a fourth variable in the NN matching. 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 6 give the treatment effect estimates based on this expanded

[16]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.

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). The effect of advisors on knowledge and confidence remain insignificant in this new specification.

We can therefore conclude that advisors have large causal effects on the self-rated risk tolerance and cash holdings for our panel of wealthy investors. Advisors have smaller and statistically less robust effects on investor knowledge and confidence ratings. Null hypothesis 2 is therefore both convincingly rejected by the data for risk tolerance and cash holdings, though we find no evidence of advisor effects for knowledge and confidence ratings.

4.4 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 hypothesis. Regressions of the following form are performed:

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

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 estimated using ordered probit methods, and the cash holdings regression uses OLS. The results are reported in Table 7.

Advisor gender does not contribute 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 show no statistically significant differences from the benchmark male-male combination (or from the male-female combination). Conversely, women with male advisors ($Fem - Male_i$) report large and generally statistically significant differences. This particular gender mix appears problematic for the female investor. Having a male advisor corresponds with women feeling less risk tolerant, less knowledgable, having less confidence and holding substantially more cash in their portfolios (10.6% points).

This does not imply that these outcomes are caused by the (male) advisors, however, and as before matching is performed to estimate the advisor gender treatment effect. We define the 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 (ATEs) from nearest neighbour matching in the first two rows of Table 8. 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 4 and 7 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 8. All conditional treatment effects are in-

significant for male investors, with the self-perceptions 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 an effect of advisor gender on the self-reported risk aversion of female investors, male advisors cause female investors to report significantly lower self-ratings of knowledge (and weakly significantly lower confidence ratings). More noticeably, male advisors cause female investors to hold 13.4% points more in cash. The large and significant regression-based differences in knowledge and cash holdings appear due to causal advisor gender effects, but these are only observed for female investors.

5 Discussion

In summary, our results from simple comparison of means, regressions and matching analyses suggest that: Firstly, gender differences are more complicated that previously assumed. Other factors such as wealth and financial advice matter more for gender differences in risk tolerance and cash allocation decisions. The simple means comparison shows that the risk tolerance, knowledge and confidence of female investors are on average lower than those of male investors, but not statistically significantly so. However female investors hold significantly more cash than males. When controlling for age, wealth, gender and the presence of a financial advisor in the regression analysis, women's risk tolerance ratings are seen to be significantly lower than those made by men. We can therefore conclude that, in line with previous researchers, overall women consider themselves to have a lower risk tolerance than men and make higher allocations to the risk-free asset in their investment portfolios than men (Charness and Gneezy, 2012; Eckel and Füllbrunn, 2015; Eckel and Grossman, 2008). But importantly we also show that other factors such as age, wealth and receiving financial advice also matter. We further do not replicate previous findings of lower investment knowl-

edge or confidence relative to men (Bucher-Koenen et al., 2017; Lusardi and Mitchell, 2007; Barber and Odean, 2001, 2002; Croson and Gneezy, 2009) for this population of wealthy female investors. Instead we show that increases in personal wealth significantly contribute to increases in self-perceived knowledge and confidence. When controlling for the gender of the financial advisors we also demonstrate that the group of women who have female financial advisors report the highest average risk tolerance level and have the lowest average cash holdings of any subgroup, including male investors with male advisors.

Contributing to the literature about gender differences in investment decision making, these results challenge the previously held assumption that all women are more conservative investors than men and that they possess lower levels of financial literacy and confidence in the investment decisions that they make. We demonstrate that such differences are situational rather than universally true for all women. It is therefore important that future researchers consider characteristics other than gender when conducting their studies and drawing their conclusions.

Secondly, we demonstrate that having a financial advisor matters. Introducing a sample of investors that is wealthier than those in previous studies we show that advised investors both perceive themselves to have a higher risk tolerance and hold almost 15% points less cash in their portfolios compared to self-directed investors. They also report higher levels of investment knowledge and confidence, results which hold for the simple means comparison and when controlling for the full set of variables in the regression. Our matching analysis, including the placebo test for Brexit, addresses the underrepresentation of studies that investigate causal inference (Gassen, 2014), evidence that financial advice has a causal impact on investors' self-perception, rather than these qualities predating the decision to engage a financial advisor. We show that it is having a financial advisor that increases the risk tolerance among and reduces the allocation to cash in the portfolios held by advised investors relative to the investors in the control group who do not received financial advice. Despite

findings that suggest that it is unclear whether advised portfolios generate higher returns net of fees compared to self-directed portfolios we can conclude that financial advisors successfully fulfil their role to encourage reluctant individuals to increase their future wealth position by investing more (Gennaioli et al., 2015). Advised investors, it seems, gain the opportunity for a higher return than possible had they maintained more of their wealth in risk free assets, possibly achieved by advisors reducing their clients' perception of uncertainty and increasing their likelihood to follow their advice (Bhattacharya et al., 2012) to increase their allocation to risky assets.

Finally, we show that the gender combination of investors and advisors is impactful for female, but not male, investors. That the gender of the person providing financial advice contributes to variations in the self-perceptions of their clients has not previously been considered in the finance literature and is perhaps our most revealing finding. Nonetheless, our analysis speaks to previous findings that the social support benefits that female mentees in accounting firms receive vary depending on the gender of the mentor (Scandura and Viator, 1994), and that financial advisors make different perceptual judgements about their clients depending on their gender (Baeckström et al., 2018). Our results show that engaging an advisor of the same gender is associated with having higher risk tolerance, knowledge and confidence, and holding less cash for both male and female investors, though such differences are statistically significant only for female investors.[17] We have no evidence that the advisor's gender has any impact for male investors. However, advisor gender matters in extremely economically important ways for female investors. Risk tolerance therefore appears more stable (Dohmen, Falk, Huffman, Sunde, Schupp, and Wagner, 2011) and independent on advisor gender for male participants, pointing to how, despite the continued increase in wealth owned by women, female entrepreneurship and women in senior positions, financial investing remains a traditionally male domain in which men are expected to be more confident, have

[17]We interpret our results here with caution as we have very few male investors with female advisors.

superior knowledge and a higher risk tolerance than women (Gustafson, 1998).

Female investors with male advisors report significantly lower risk tolerance, knowledge and confidence and hold more cash than any other investor-advisor gender mix. These results are evident both in the simple means comparison and when controlling for other factors in the regression computations. This group of women hold 14%-points more cash in their investment portfolios compared to women advised by female advisors. We find that the conservative cash allocations made by this group of women can be causally inferred to the decision to hire male advisors. Being advised by a man, instead of a woman also contributes to women investors feeling less knowledgeable and less confident about their investment decisions. For women, financial advice when the gender of the advisor is male, appears to be negatively, instead positively correlated with financial literacy (Gaudecker, 2015).

That female investors with male advisors feel significantly less knowledgeable about investing and hold much more cash than they would have with female advisors combined with their clear preference for same gender advisors, whereby 42% of women select a female advisor, double that of the availability of female advisors in the marketplace, suggest that women who hire a relatively scarce female advisor have dedicated considerable effort to their selection process. This group of women may be more competitive and risk tolerant than women who engage male advisors or women in general (Saccardo et al., 2017), explaining the non-causal impact of the male advisor gender on the self-perceived risk tolerance ratings made by female participants. Hypothesis 3 is then strongly rejected, but only for female investors.

Similar to the evidence presented in Kornberger, Carter, and Ross-Smith (2010) when 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 as financial advising, akin to insolvency practice (Joyce and Walker, 2015), is culturally male gendered, 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.[18]

The wealth management industry's attempts to increase their appeal to the growing market of wealthy women have thus far have fallen short of their aims.[19] Therefore in this context, addressing the underrepresentation of female advisors in the marketplace represents an opportunity which increases the potential for wealth management institutions to attract more of the growing proportion of wealthy females as clients. Our findings suggest that institutions and researchers need to focus on a new dimension to the gender diversity within organisations, one which has relevance not only to the organisational structure and equality between the genders, but one which reframes the strategy to also meets the demand in the marketplace.

Furthermore, this paper highlights the need for institutions and regulators to place greater emphasis on understanding the motivations of financial advisors and indeed for advisors to gain clarity over their unconsciously biased behaviour. Although successfully boosting both self-perceived risk tolerance and actual investment behaviour of their clients, this is not true for all groups of investors and advisors, with gender one personal characteristic that contributes to divergence.

6 Summary and Conclusion

This paper makes a specific contribution to the financial investment advice literature, with broad relevance to practices which involve advice of a financial nature and therefore in a

[18]See, for example, Friedland, Lilli (2013) "The Women's Economy Has Arrived.".

[19]See Barclays Wealth (2007) "Barclays Wealth Insight: A question of gender" and Merrill Lynch (2015) "Women and Investing: A Behavioral Finance Perspective".

traditionally male dominated field which is trying to adapt to a growing population of female clients. We provide insight into interactions between investors and advisors by examining the self-perceptions and cash allocation decisions of advised and self-directed male and female investors for an under-researched wealthy demographic of investors.

The results, although demonstrating that women allocate 5% points more cash in their portfolios than men, challenge the previously held assumptions that women are universally more risk averse investors. Neither do we replicate lower investment knowledge or confidence among the wealthy female investors. Investors who seek financial advice become more risk tolerant and reduce their portfolio cash holdings by more than 15% points. We also show that the gender of the advisor matters, but only for female investors. Women advised by men feel significantly less knowledgeable about their investment decisions and hold more than 14% points more cash in their portfolios compared to women with female advisors. The results highlight the need to further examine interactions between investors and their advisors.

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Table 1
Overview of Male and Female Investors

	Male investors				Female investors			
	Advised		Self-directed		Advised		Self-directed	
Assets	N	Mean Age	N	Mean Age	N	Mean Age	N	Mean Age
£50-100k	36	55.8	30	64.6	28	52.	25	60.0
£100-250k	30	58.6	31	63.0	23	51.8	20	54.5
£250-500k	63	48.5	28	55.2	40	45.0	19	56.5
£500k-1m	31	50.3	13	53.8	30	43.7	9	50.1
£1m-2.5m	22	41.1	4	59.8	13	37.7	5	50.0
All	182	51	106	60	134	46	78	56

Table 2
Overview of Male and Female Advised Investors

	Male Investors				Female Investors			
	Male Advisor		Female Advisor		Male Advisor		Female Advisor	
Assets	N	Mean Age	N	Mean Age	N	Mean Age	N	Mean Age
£50-100k	29	56.3	7	53.4	20	56.6	8	43.4
£100-250k	26	59.3	4	54.5	17	57.1	6	36.7
£250-500k	58	49.2	5	41.2	19	50.2	21	40.3
£500k-1m	26	50.9	5	47.2	16	47.5	14	39.4
£1m-2.5m	18	39.1	4	50	6	42.7	7	33.4
All	157	51	25	49	78	53	56	40

Note: Pearson χ^2 (2) = 16.14, p = 0.00 (Male Investors), Pearson χ^2 (2) = 14.38, p = 0.01 (Female Investors).

Table 3
Correlation Matrix: Dependent and Explanatory Variables

	Dependent Variables			Explanatory 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

Table 4
Summary of Means

	(1)		(2)				(3)			
	All Investors		Self-Directed		Advised		Male Advisors		Female Advisors	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Risk										
All	2.67	1.17	2.26	1.04	2.90***	1.17	2.81	1.20	3.17**	1.07
Male	2.73	1.17	2.34	1.04	2.96***	1.18	2.96	1.20	2.92	1.08
Female	2.58	1.16	2.15	1.05	2.83***	1.16	2.50$_{\dagger\dagger\dagger}$	1.13	3.29***	1.06
Knowledge										
All	3.31	0.99	3.23	0.89	3.36	1.04	3.28	1.04	3.59**	1.01
Male	3.34	0.98	3.27	0.89	3.38	1.03	3.40	1.04	3.24	0.97
Female	3.27	1.00	3.17	0.89	3.34	1.05	3.04$_{\dagger\dagger}$	1.00	3.75$^{***}_{\dagger\dagger}$	1.00
Confidence										
All	3.34	0.93	3.27	0.93	3.38	0.94	3.32	0.94	3.54*	0.92
Male	3.38	0.88	3.36	0.89	3.40	0.88	3.41	0.88	3.32	0.90
Female	3.27	1.00	3.14	0.98	3.35	1.01	3.14$_{\dagger}$	1.03	3.64***	0.92
Cash (%)										
All	36.60	1.34	46.04	2.60	31.09***	1.40	32.15	1.71	28.04	2.30
Male	34.49	1.67	44.62	3.36	28.59***	1.64	28.11	1.75	31.64	4.61
Female	39.45$_{\dagger\dagger\dagger}$	2.20	47.97	4.12	34.49$^{***}_{\dagger\dagger}$	2.43	40.28$_{\dagger\dagger\dagger}$	3.61	26.43***	2.62

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.*** denotes 1% significance; **5% significance; *10% significance.

Table 5
Risk Tolerance, Knowledge, Confidence and Cash Holdings: All Respondents

	(1) Risk	(2) Knowledge	(3) Confidence	(4) Cash holdings	(5) Cash holdings
Female	-0.236	-0.127	-0.140	5.426	4.047
	(-2.380)	(-1.293)	(-1.409)	(2.075)	(1.577)
Advisor	0.381	0.019	0.002	-10.558	-7.782
	(3.586)	(0.192)	(0.021)	(-3.484)	(-2.570)
Age	-0.018	-0.012	-0.006	0.167	0.060
	(-5.166)	(-3.433)	(-1.889)	(2.183)	(0.784)
£100-250k	0.175	0.152	0.124	-8.991	-8.344
	(1.319)	(1.185)	(0.980)	(-2.078)	(-2.017)
£250-500k	0.189	0.095	0.215	-17.629	-16.644
	(1.422)	(0.743)	(1.723)	(-4.621)	(-4.697)
£500k-1m	0.548	0.410	0.425	-19.402	-16.461
	(3.366)	(2.700)	(2.694)	(-4.617)	(-4.018)
£1m-£2.5m	0.792	0.427	0.685	-19.070	-14.549
	(3.541)	(1.837)	(3.044)	(-4.172)	(-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		

Robust z-statistics in parentheses

Notes:

Table 6
Causal Effects of Advisors: All Respondents

	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: Observation in regressions and NNM for risk, Knowledge, Confidence and Cass: 500.
Observations for NNM for Brexit: 450.
Observations for NNM(Brexit): 441.

Table 7
Risk Tolerance, Knowledge, Confidence and Cash: Advised Respondents

	(1) Risk	(2) Knowledge	(3) Confidence	(4) Cash
Male/Fem	-0.132	-0.264	-0.174	1.972
	(-0.613)	(-1.269)	(-0.783)	(0.412)
Fem/Male	-0.451	-0.411	-0.286	10.597
	(-3.118)	(-2.772)	(-1.800)	(2.746)
Fem/Fem	0.025	0.187	0.144	-0.328
	(0.148)	(1.029)	(0.813)	(-0.102)
Age	-0.020	-0.016	-0.009	-0.006
	(-4.693)	(-3.910)	(-2.192)	(-0.071)
£100-250k	0.115	0.090	0.095	-8.395
	(0.635)	(0.483)	(0.543)	(-1.549)
£250-500k	0.152	-0.141	0.085	-17.235
	(0.888)	(-0.864)	(0.533)	(-3.851)
£500k-1m	0.592	0.348	0.490	-19.482
	(3.217)	(2.048)	(2.826)	(-4.167)
£1-2.5m	0.832	0.217	0.671	-16.513
	(3.206)	(0.807)	(2.603)	(-3.588)
Observations	316	316	316	316
Pseudo R-squared	0.075	0.049	0.039	
R-squared				0.130

Robust t-statistics in parentheses

Notes:

Table 8
Causal Effects of Advisor Gender: Advised Respondents

	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:

Figure 1. Risk Tolerance

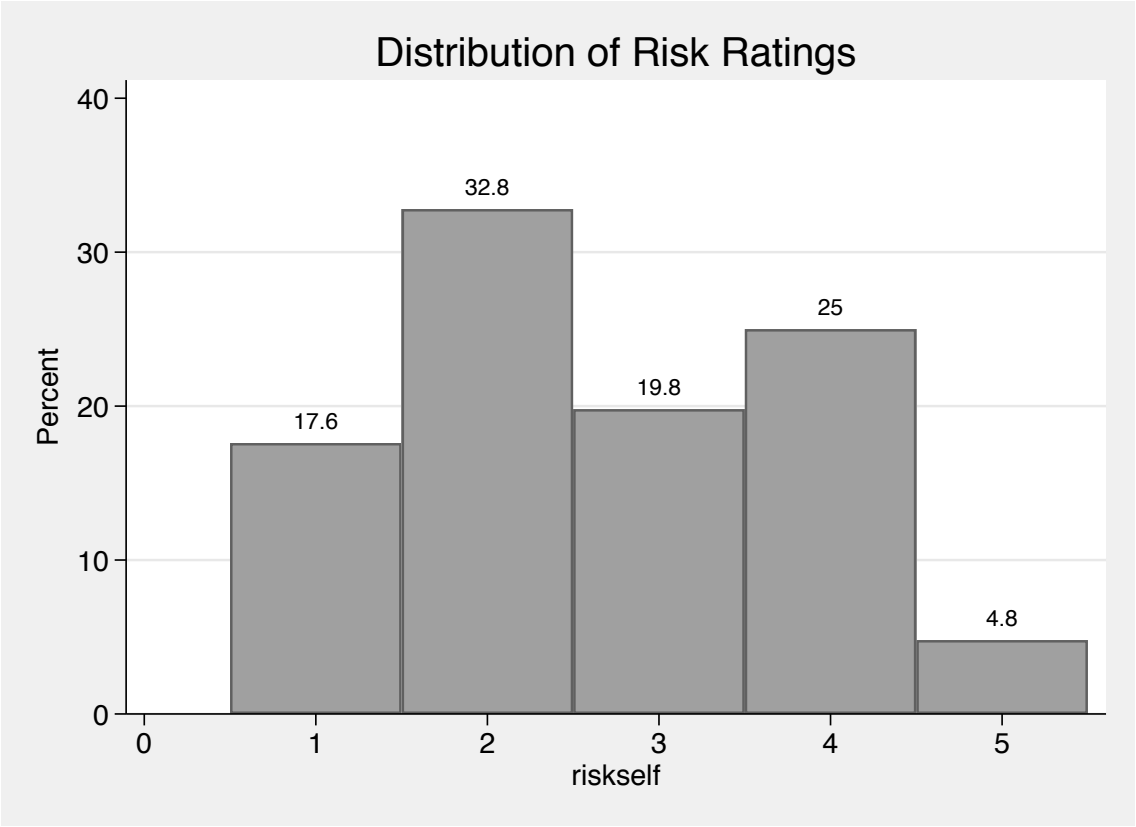

Figure 2. Knowledge

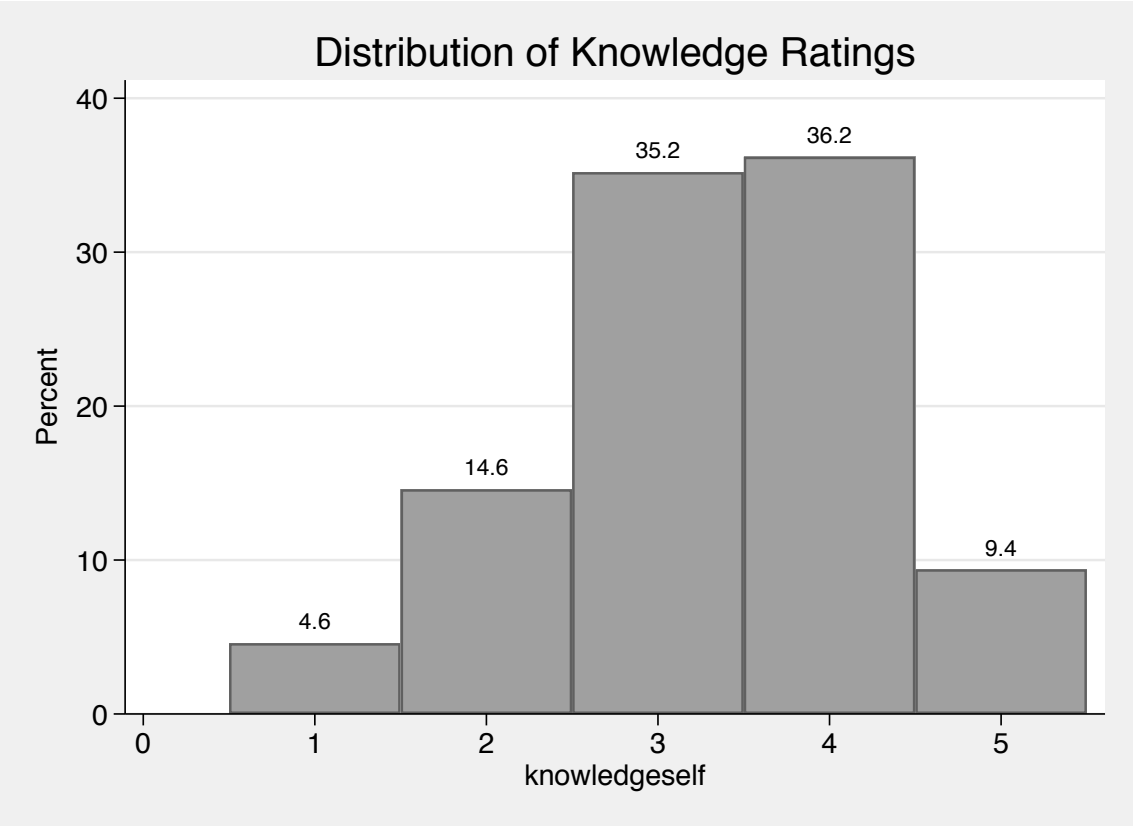

Figure 3. Confidence

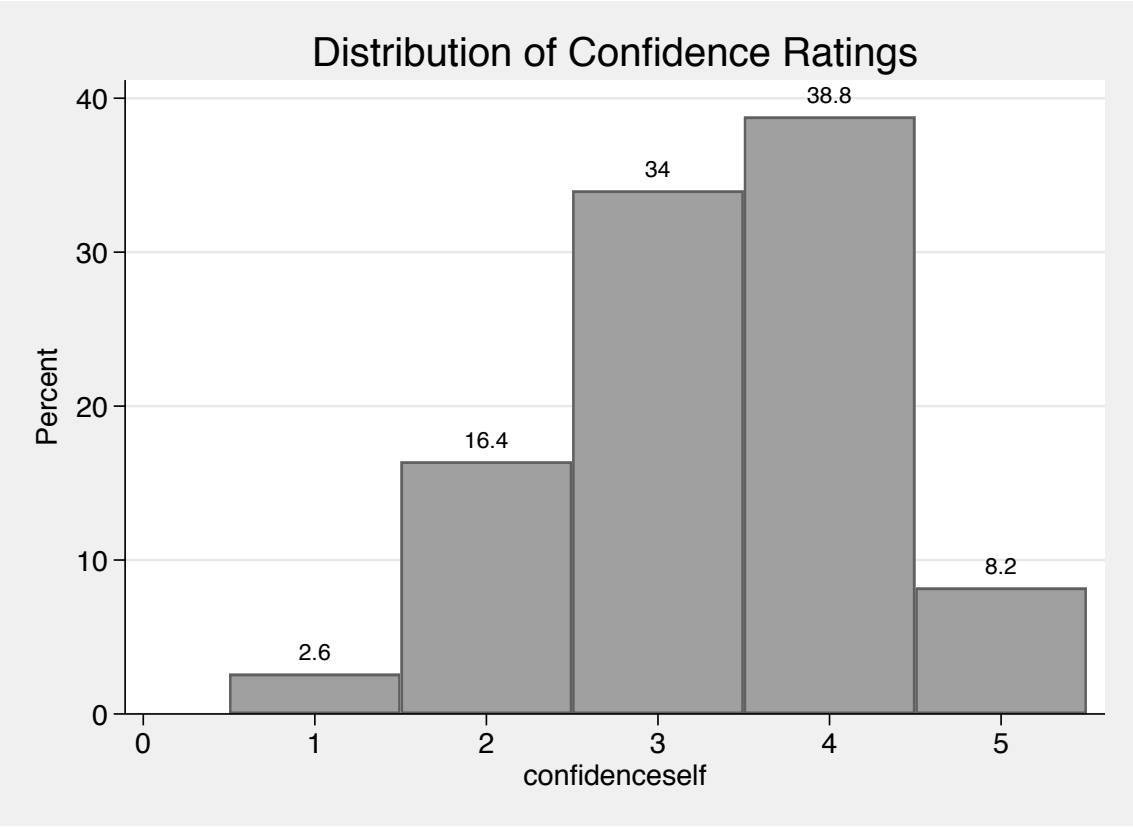
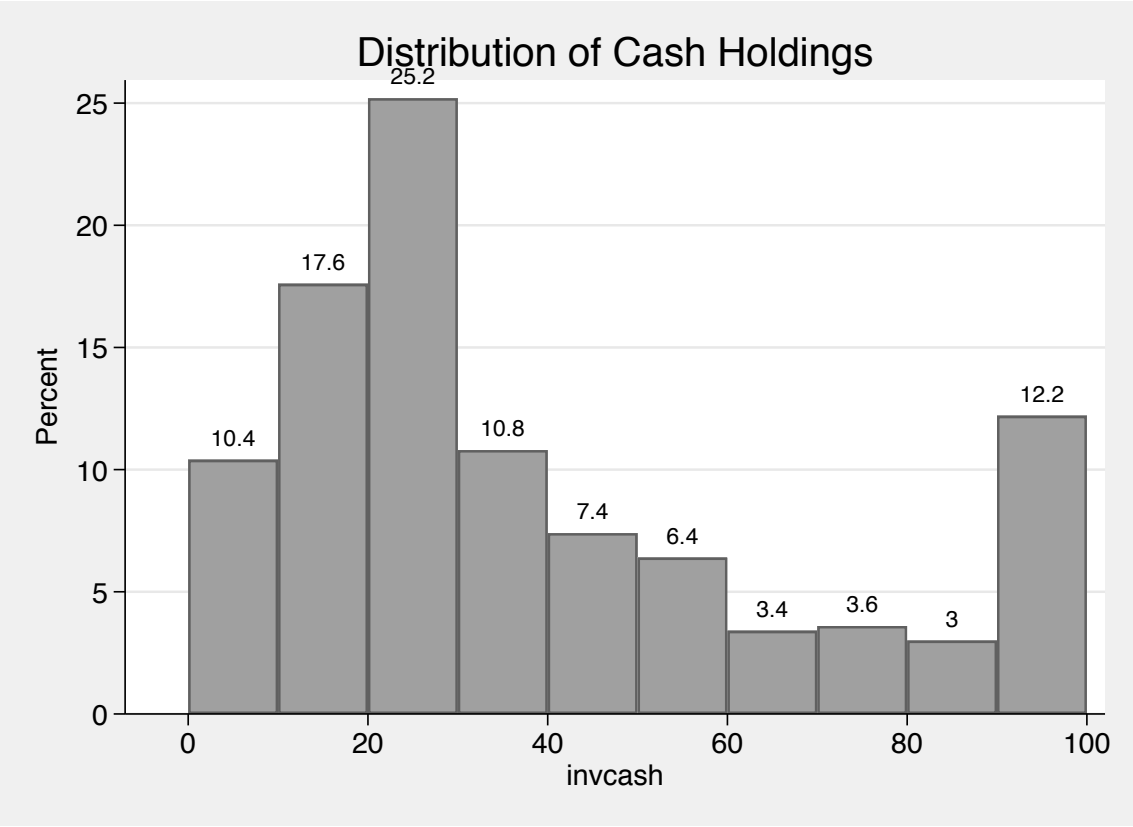
Figure 4. Cash Holdings