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Financial Advice and Household Financial Portfolios*

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Abstract

We explore the demand for financial advice and the role of such advice in shaping household financial portfolios. Since taking financial advice may not be randomly allocated among households, understanding the drivers behind receiving financial advice is important before exploring the role of financial advice in shaping the composition of household portfolios. A number of specification tests are undertaken, including exploring the sensitivity of the results to selection as well matching estimation techniques. The analysis reveals that financial advice is inversely (positively) associated with the share of wealth held in real estate (bonds and stocks).

I. Introduction

We explore the demand for financial advice and the role of such advice in shaping household financial portfolios. In the context of our analysis financial advice can be either regulated or unregulated and also incorporates advice for debt management as well as investments. To date, there is little evidence for Great Britain on the individual and household characteristics associated with seeking financial advice. As financial services and products have become increasingly complex over time, the role of the financial advisor in assisting households to navigate financial markets and aid their financial decision-making has attracted growing interest among both academics and policymakers. Furthermore, the existing literature has identified positive and negative effects associated with such advice, where negative effects may arise due to conflicts of interest between the client and the advisor.

JEL Classification numbers: D81, G11, D14.

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Specifically, after exploring the determinants of receiving financial advice and the reasons for seeking such advice, we compare household financial portfolios comprising financial assets (i.e. bonds, stocks and pensions) with portfolios, which include non-financial assets (such as real estate and business), and we focus on exploring to what extent such portfolios are influenced by financial advice. The relatively recent changes to financial regulation with the establishment of the Financial Conduct Authority in 2013 make Great Britain a particularly interesting country to study. Moreover, the Financial Advice Market Review (FARM) Interim Consumer Research Report (see Farr *et al.*, 2018) states that in 2018 around one in ten UK adults (4.5 million people) received regulated financial advice related to investments, saving into a pension or retirement planning in the last 12 months, compared to 3.2 million people in 2017. Furthermore, of the 46.5 million people who have not received regulated financial advice in the last 12 months, 18.2 million are estimated to have £10,000 or more in savings and/or investments, suggesting that there are many UK households, which may benefit from financial advice. We investigate the socio-economic household characteristics associated with the demand for financial advice and the effects of a comprehensive range of facets of financial advice on the composition of portfolio shares. Our empirical analysis uses waves 4 and 5 (covering the period 2012–16) of the *Wealth and Assets Survey*, a large-scale nationally representative survey of the British households. The survey collects detailed information about assets, debt, savings, planning for retirement and related attitudes and attributes, as well as detailed socio-economic demographic characteristics.

We contribute to the extant literature in several ways. First, we explore the demand for financial advice in Great Britain, where to date the literature is relatively small, with existing studies only for: the Netherlands, Kramer (2016); Italy, Calcagno and Monticone (2015); and the USA, Collins (2012). Secondly, there is also a scarcity of evidence on the relationship between financial advice and household portfolios for Great Britain, hence our study is of relevance due to the existence of different regulatory frameworks across countries. Studies to date have typically used US (e.g. Shum and Faig, 2006), German (e.g. Stolper, 2018), Dutch (e.g. Von Gaudecker, 2015; Kramer, 2016) or Italian data (e.g. Calcagno and Monticone, 2015). Importantly, the majority of the empirical evidence is not based on large representative sample surveys of the population; rather, much of the existing analysis of financial advice relies on administrative data, for example from a single brokerage or bank (such as Bhattacharya *et al.*, 2012, Hackethal, Haliassos, and Jappelli, 2012, Shapira and Venezia, 2001 and Chalmers and Reutter, 2020), without having specific in-depth information on the broader population and on the overall financial condition of the household (other than details such as those included in the application to open an account).

For Great Britain, there is limited knowledge regarding which households receive financial advice and how such financial advice influences their financial decisions. Moreover, Great Britain is a particularly interesting country to study given the relatively low levels of risky asset holding combined with low levels of financial literacy (e.g. Bhutoria, Jerrim, and Vignoles, 2018). In addition, there have been a number of changes in the UK regulatory framework, as described above, following numerous mis-selling scandals in the UK financial services industry from the 1980s onwards, 'where consumers were sold unsuitable products deliberately, recklessly, or negligently', p. 8, Burke and

Hung (2015). Our third contribution relates to the fact that much of the previous literature has focused on comparing the returns from 'advised' and 'non-advised' portfolios. Our emphasis lies instead on how financial advice shapes the composition of the portfolio, given that ultimately the composition of the portfolio determines the associated return. Fourth, we compare financial portfolios and total asset portfolios, which include real estate, business and pension assets. Importantly, in contrast to much of the existing literature, which focuses on advice relating to investments and pensions, we are also able to account for the type of financial advice received, that is, whether advice relates to areas such as investments, savings, pensions or debt. This is an important contribution given that it is clear that financial advice extends beyond investments and pensions and that households are frequently faced with decisions regarding a range of asset types.

In the first empirical section, we explore the determinants of seeking financial advice. We look at whether the respondent received financial advice and, if so, the main reasons for seeking advice. Our results suggest that wealthy homeowners and household heads aged 60–69 are more likely than those aged 70 and over to receive financial advice (the age effect is large driven by advice for pensions). The level of education is also positively associated with financial advice. In the second empirical section, we explore the relationship between financial advice and household portfolios. In addition to whether and which type of financial advice was searched for, we look at different types of advice received (from banks, financial advisors, stockbrokers or others) and products purchased (no product, one product or more), as well as different types of payment methods for the consultation (free advice, one-off fee, commission, fee and commission, ongoing charge or others). We start the analysis by establishing statistical associations via Ordinary Least Squares (OLS) analysis. Given the potential issue of endogeneity, we undertake a series of robustness tests to explore the sensitivity of the OLS analysis. The key concern here is selection bias, since selection into financial advice may be driven by unobservables. We then complement the analysis by estimating average treatment effects via a number of statistical matching techniques as well as inverse probability weighted regression adjustment.

Our results suggest that financial advice has an important role in shaping the portfolios of households in Great Britain. Importantly, we cannot reject the hypothesis that wealth in real estate is negatively associated with receiving financial advice, while the share of bonds and equities is positively associated with receiving financial advice. Furthermore, we find that having a consultation with a financial advisor generally increases the probability of holding shares and bonds in the portfolio. The results are in line with much of the wealth in Great Britain being tied into real estate, which may reflect it being perceived as low-risk, but that the use of a financial advisor increases portfolio diversification. Finally, our results suggest that households make use of financial advice for managing pension wealth. In the next section, we present a brief review of the literature followed by an introduction to the data.

II. Literature review on financial advice

A growing body of literature has investigated the role of financial advisors and their influence on the returns received by investors, although, as stated by Kramer (2016), it

remains a relatively understudied area of research. Both positive and negative effects have been highlighted and, consequently, a final verdict on the role of financial advice has not yet been reached. As succinctly stated by Inderst and Ottaviani (2012), p. 494, who develop a theoretical framework for modelling financial consumer protection in markets with advice: 'Financial advice could play an essential role in well-functioning markets for retail financial products, given that many consumers find it difficult to evaluate the complex products on offer. However, conflicts of interest, which are pervasive in some parts of the industry, can turn advice into a curse rather than a blessing for consumers, especially when consumers are not sufficiently wary'.[1]

There are various reasons why financial advisors can have a positive influence on household finances. Firstly, financial advisors are generally better educated (at least in financial matters) than the average investors and have acquired more financial experience as well as having better knowledge of the various products available to potential investors. As reported by Kaustia, Alho, and Puttonen (2008), there could still be some behavioural biases, but these should be lower than those reported for the average investor. Moreover, their experience in financial markets should make them better prepared for possible financial shocks and should make them more financially rational even if they do not possess superior information. Secondly, financial advisors can take advantage of economies of scale, which may lower costs related to the acquisition of information, as suggested by Hackethal *et al.* (2012).

Given the discussion above, it is natural to think that financial advisors should improve the layperson's financial position, in particular in terms of returns and portfolio risk. As shown in many studies, less-sophisticated investors tend to hold portfolios that are not well diversified and would be defined as sub-optimal. The behavioural finance literature has revealed that individuals are prone to investment biases resulting in portfolio decisions that are at odds with standard portfolio theory (e.g. Barber and Odean, 2000; Benartzi and Thaler, 2007).

Notwithstanding the potential positive benefits for investors outlined above, the literature has also reported negative effects. For instance, Bergstresser, Chalmers, and Tufano (2009) document a negative relationship between advisor involvement and investor performance in US mutual funds. Hackethal *et al.* (2012) show that relying on a financial advisor may lower the risk-adjusted returns once the advisor's fee has been taken into account. Moreover, in an audit study, Mullainathan, Noeth, and Schoar (2012) find that advisors are unable to correct the client biases that make their portfolios sub-optimal. Recent work by Chang and Szydlowski (2020) seeks to reconcile the conflicting empirical evidence in the literature on the benefits of financial advice from a theoretical perspective. In their model conflicted financial advice can still yield lower investment returns, but it is rational for customers to choose to receive financial advice.[2]

[1]Consequently, it is important to take into account the suitability of complex financial products available to household investors, for example Chang, Tang, and Zhang (2015).

[2]This is due to: firstly, investment returns not fully reflecting the customer's value from participating in the market for advice (since the outside option is not taken into consideration); and secondly a selection effect, whereby those individuals, who receive no financial advice, have higher returns regardless as only the most informed investors forgo advice in equilibrium, which is consistent with the importance of the selection effect found in the empirical literature, for example, Chalmers and Reutter (2020).

Interestingly, Bhattacharya *et al.* (2012) explore the demand side of financial advice by analysing the response of approximately 8,000 retail customers to a large brokerage's offer of unbiased investment advice and find that those investors who are least likely to obtain the advice are those who need it the most. Furthermore, the small number of investors who do obtain the advice tend not to follow it, with only limited improvements in their portfolio efficiency observed. Similarly, Hackethal *et al.* (2012) find that the less financially sophisticated investors are the least likely to use a financial advisor. In the context of Italy, Calcagno and Monticone (2015) also find that the demand for financial advice is the lowest for those with the lowest levels of financial literacy and that a high level of financial literacy is inversely associated with the probability of delegating the portfolio choice. Hence, such findings suggest that there may be demand side as well as supply side issues at play in the provision of financial advice, see Gomes, Haliassos, and Ramadorai (2021) for further discussion of the provision and consumption of financial advice.

III. Data

Our empirical analysis is based on data from the *Wealth and Assets Survey* (WAS), which is a biennial longitudinal household survey for Great Britain measuring the personal and economic well-being of individuals and households by assessing levels of assets, debt, savings and planning for retirement.[3] The WAS also provides information on a host of socio-demographic factors that we control for in our analysis, as detailed below. The survey started in 2006 (with wave 1 collected over the period 2006–08 and the latest wave, wave 7, covering the period 2018–20) and covers Great Britain: England; Wales; and Scotland.[4] We analyse information from waves 4 and 5 (collected between 2012–14 and 2014–16), which yield a sample of 25,172 observations, observed over time, t, either once or twice (7,100 heads of household are observed in both waves).[5] In these two waves, a specific section of the questionnaire asks respondents a detailed set of questions about financial advice, the focus of our analysis. In the following subsections, we introduce firstly the outcomes of interest, the measures of financial advice and the portfolio shares, and, secondly, we describe the covariates used in the analysis.

Dependent variables

We initially model receipt of financial advice followed by two sets of dependent variables, specifically: (1) total wealth; and (2) portfolio shares relative to total wealth, which are

[3]It should be acknowledged that the WAS over-samples wealthier households compared to other postal addresses. The reason for this is that, in general, other household surveys do not adequately capture the top part of the wealth distribution, see ONS (2012).

[4]The WAS has been used to study a number of different areas related to household finance, including: the distribution of wealth, Crawford, Innes, and O'Dea (2016) and Vermeulen (2018); housing equity withdrawal, French, McKillop, and Sharma (2018); whether households exhibit constant or time-varying relative risk aversion when considering portfolio allocation, Paya and Wang (2016); the role of monetary policy on income and wealth inequality, Bunn, Pugh, and Yeates (2018); and the value of financial advice, Brancati, Franklin, and Beach (2017).

[5]We use the corrected version of the WAS wave 5 data as the original wave 5 sample contained some incorrect population estimates. We also drop outliers to ensure that asset shares are bounded between 0 and 1.

made up of bonds plus stocks, pension wealth and non-financial (i.e. real estate and business) components.

Financial advice

As noted above, in waves 4 and 5 of the WAS, detailed information is available on financial advice. Specifically, respondents are asked: *'Can I just check, have you received any expert financial advice in the last two years?'*, where across the two waves, 16.21% reported that they have received advice from an expert, see Table 1. Finally, in a follow-up question, respondents are asked about the specific type of advice received: *'Thinking about the time you received expert financial advice, what was the main financial reason for seeking the advice?'*, where the responses are as follows (the figures in parenthesis are for those households who received financial advice): investments 6.78% (41.50%); savings 1.86% (11.36%); pensions 2.55% (15.62%); debt 2.27% (13.89%) and other reasons, such as changes in life circumstances 2.88% (17.64%). Hence, we initially control for financial advice, F_{it}, in two ways: a binary indicator denoting whether financial advice has been received; and, finally, a set of binary variables denoting the reason financial advice was received.

Total wealth and portfolio shares

We construct five total portfolio metrics. Firstly, we start by calculating the value of the total (or complete) wealth, TW_{it}, for household i at time t, which is defined as follows:

$$\mathrm{TW}_{it} = \mathrm{FW}_{it} + \mathrm{RealEstate}_{it} + \mathrm{Business}_{it} + \mathrm{Pensions}_{it}, \tag{1}$$

where the first term in equation (1) FW_{it} is financial wealth. This is defined as the sum of deposits net of loans, bonds and stocks. Deposits are the sum of: current accounts; savings accounts; and cash ISAs. Loans are defined as the sum of: outstanding credit card balances; outstanding store card balances; outstanding mail order accounts; hire purchase agreements; formal loans excluding loans from a student loan company; and students loans from a student loan company. In equation (1), the second term, real estate wealth, is the sum of the total value of: the main residence; other houses excluding the main residence; buy to let houses; buildings; UK land; overseas land; other property; and collectables. From this, we deduct the value of mortgages on primary and other residences as well as equity release.[6] Business wealth is defined as the sum of main business wealth and other business wealth net of debt minus main business debts. The last component is the total value of the household's pension.

We then construct four total asset share variables (bounded between zero and unity) defined as the value of bonds plus stocks, business wealth, real estate and pension wealth, each as a proportion of the value of the total portfolio, TW_{it}.

Table 1 provides an overview of the dependent variables. Given there are negative values of total wealth when modelling this as a dependent variable we use an inverse

[6]We return to the incorporation of mortgage debt in the measure of total wealth below as acquiring such debt generally entails obtaining advice from a mortgage advisor.

TABLE 1
Summary statistics

			Whether received financial advice				
	Mean	*SD*	*Min*	*Max*	$F_{it} = 1$	$F_{it} = 0$	$H_0 : \Delta\overline{X} = 0$
Dependent variables							
Financial advice received, F_{it}	0.1621	0.387	0	1			
Total wealth (IHS transformation), y_{it}	12.4080	4.189	−12.21	20.28	13.9347	12.1101	$P = 0.000$
(Stocks+Bonds)/TW, y_{it}	0.4251	0.300	0	1	0.4901	0.4124	$P = 0.000$
Real estate/TW, y_{it}	0.3887	0.302	0	1	0.3968	0.3872	$P = 0.062$
Business/TW, y_{it}	0.0120	0.076	0	1	0.0185	0.0107	$P = 0.000$
Pension/TW, y_{it}	0.2866	0.240	0	1	0.3047	0.2831	$P = 0.000$
Covariates, X_{it}							
High risk tolerance	0.0932	0.291	0	1	0.0992	0.0921	$P = 0.147$
Mid risk tolerance	0.1617	0.368	0	1	0.1571	0.1626	$P = 0.384$
Male	0.6127	0.487	0	1	0.6449	0.6064	$P = 0.000$
Single	0.4903	0.498	0	1	0.5371	0.4812	$P = 0.000$
Whether children in household	0.1498	0.357	0	1	0.1238	0.1548	$P = 0.000$
Number of adults in household	1.7649	0.764	0	5	1.7589	1.7660	$P = 0.585$
Whether in very good health	0.2686	0.443	0	1	0.3170	0.2592	$P = 0.000$
Some qualifications below degree	0.5054	0.499	0	1	0.4678	0.5127	$P = 0.000$
Degree level qualifications	0.2817	0.449	0	1	0.4490	0.2490	$P = 0.000$
Employee	0.4065	0.491	0	1	0.4194	0.4041	$P = 0.068$
Self employed	0.0599	0.237	0	1	0.0929	0.0534	$P = 0.000$
Natural logarithm of labour income	4.2253	5.141	0	1	4.8191	4.1094	$P = 0.000$
Natural logarithm of non-labour income	7.3344	4.006	0	1	6.7438	7.4497	$P = 0.000$
Natural logarithm of financial wealth	9.2114	5.616	0	1	11.0073	8.8609	$P = 0.000$
Whether home owner	0.7648	0.424	0	1	0.9081	0.7369	$P = 0.000$
Whether expectations optimistic	0.1965	0.397	0	1	0.2240	0.1911	$P = 0.000$
Whether save for a rainy day	0.5190	0.500	0	1	0.6692	0.4897	$P = 0.000$
Whether trust banks	0.1846	0.388	0	1	0.1698	0.1874	$P = 0.008$
Aged < 30	0.0274	0.164	0	1	0.0170	0.0294	$P = 0.000$
Aged 30–39	0.0684	0.253	0	1	0.0613	0.0698	$P = 0.047$
Aged 40–59	0.1295	0.336	0	1	0.1048	0.1343	$P = 0.000$
Aged 50–59	0.1660	0.372	0	1	0.1719	0.1645	$P = 0.244$
Aged 60–69	0.2481	0.432	0	1	0.3291	0.2324	$P = 0.000$
North East	0.0437	0.205	0	1	0.0260	0.0471	$P = 0.000$
North West	0.1105	0.314	0	1	0.0988	0.1128	$P = 0.008$
Yorkshire and Humber	0.0918	0.289	0	1	0.0876	0.0927	$P = 0.300$
East Midlands	0.0831	0.276	0	1	0.0861	0.0827	$P = 0.438$
West Midlands	0.0909	0.288	0	1	0.0812	0.0928	$P = 0.018$
East of England	0.1067	0.309	0	1	0.1077	0.1014	$P = 0.236$
South East	0.1449	0.352	0	1	0.1919	0.1358	$P = 0.000$
South West	0.0927	0.290	0	1	0.1111	0.0891	$P = 0.000$
Wales	0.0533	0.225	0	1	0.0472	0.0545	$P = 0.056$
Scotland	0.0963	0.295	0	1	0.0839	0.0987	$P = 0.003$
Households (*NT*)		18,075			3,589	15,923	
Observations (*NT*)		25,172			4,111	21,061	

hyperbolic sine (IHS) transformation.[7] In terms of the portfolio composition of British households (each asset type as a proportion of the monetary value of total wealth), as expected, the largest share of the total portfolio is allocated shares and bonds at 43%, followed by real estate (39%). Business wealth is the smallest portfolio share at 1.2%, while the allocation to pension wealth is 29%. Turning to the difference in portfolio composition between households that received financial advice and those that did not, it is apparent that the former exhibits higher wealth and total portfolio shares across all asset categories. The final column in Table 1 provides the *P*-value from a *t*-test that the difference in the mean of a variable between the receipt of financial advice and not receiving financial advice is equal to zero. This is rejected for all portfolio shares at the 5% level with the exception of real estate.[8]

Covariates

Following the existing literature on household portfolios, we control for a wide range of head of household characteristics including: male; marital status; being in very good health;[9] and highest level of educational attainment defined as degree level or above, other qualifications (where no qualifications form the omitted category). In addition, we also condition on the labour market status of the head of household, specifically whether they are employed or self-employed (all other categories form the omitted category). We also control for whether respondents save for unexpected expenditures, that is, saving for a rainy day, and whether the respondent would trust a bank for advice about saving for retirement. All models also include the head of household's age measured in 10-year ranges (below 30, 30–39, 40–49, 50–59, 60–69. The excluded category is 70 or over). With respect to household characteristics, controls are included for: whether there are any children in the household (dummy variable); the number of adults in the household; and whether the house is owned outright or via a mortgage (dummy variable). The latter variable is set to zero for renters. In terms of monetary controls, we include the natural logarithm of household income from employment (i.e. labour income) and benefits (i.e. non-labour income), as well as financial wealth (as defined above).[10]

The WAS also includes information on attitudes towards risk, which has attracted considerable attention in the existing literature. Respondents are asked the following *'Here are some things some people have said about savings and stock market investments. Please tell me to what extent you agree or disagree with each. It is better to play it safe with your savings even if investing in higher risk investments could make you more money?'*, where responses are on scale from 1 (strongly agree) to 5 (strongly disagree). The most

[7]A dependent variable with an IHS transformation behaves similarly to one with a logarithmic transformation, but has the added advantage of retaining zero and negative values (this is important given that TW_{it} is a net value). Moreover, parameter estimates can generally be interpreted in the same way as with a standard logarithmic outcome.

[8]The raw correlation coefficients between whether the household received financial advice and each of the dependent variables are statistically significant at the 1% level and are given as follows: TW = 0.1610; (Stocks+Bonds)/TW = 0.0958; Real Estate/TW = 0.0118; Business/TW = 0.0379; Pension/TW = 0.0333.

[9]This variable originates from the WAS question *'How is your health in general?'* with five possible answers: 'Very good', 'Good', 'Fair', 'Bad' and 'Very bad'. We created a dummy variable equal to one when the answer is 'Very good'. With this variable we then capture self-reported very good health conditions.

[10]Financial wealth is excluded as a control when modelling total wealth.

risk tolerant, labelled as 'high risk tolerance', are defined as those who either disagree or strongly disagree with the above statement, comprising 9.3% of responses. Secondly, we define 'mid risk tolerance' as those respondents who neither agree nor disagree with the statement, comprising 16.2% of responses. The omitted risk attitudes category consists of respondents who agree (42.59%) or strongly agree (31.81%). Finally, we also control for the year of interview fixed effects (with 2013 as the reference group,[11] i.e. prior to the regulatory changes in the UK financial market) and the region of residence,[12] with London as the reference category. Finally, we control for the head of household's financial expectations about the future, specifically whether they are optimistic (i.e. expect income to increase).

Table 1 provides summary statistics for the key variables used in our analysis, where: 61% of heads of household are male; 28% have a degree; and 41% are in paid employment. The two penultimate columns of Table 1 show the averages for all variables according to whether financial advice was received or not, while the final column shows the *P*-value from testing the null hypothesis that the difference in the average is equal to zero. Among the control variables, noticeably labour income and wealth are higher for those who have received financial advice, whereas, conversely, non-labour income is lower. Furthermore, the associated differences are statistically significant.

IV. The determinants of financial advice

To date, there is a lack of empirical evidence based on nationally representative household sample surveys that explores the demand for financial advice. Furthermore, given that financial advice may not be randomly allocated among households, that is, households seek financial advice based on their needs or preferences, before investigating the relationship between financial advice and portfolios, it is important to consider selection into receiving advice and its association with demographic characteristics. Hence, we start by modelling financial advice to ascertain the socio-economic characteristics associated with receiving financial advice and the reason financial advice was taken. Our empirical approach is as follows:

$$F_{it} = \alpha + \mathbf{X}_{it}\boldsymbol{\gamma} + \zeta_{it}, \tag{2}$$

where the probability of receiving financial advice $F_{it} \in (0, 1)$ is modelled via a binary logit specification as a function of the explanatory variables $\mathbf{X}_{it}$, which include the covariates listed in Table 1. The reason financial advice was undertaken (i.e. for investments, savings, pensions, debt, and other reasons) is estimated as a multinomial logit model $F_{it} \in (0, 1, \ldots, 5)$, where not having received financial advice, $F_{it} = 0$, is the base category. For all estimates, the WAS cross-sectional sample weights are used and the SEs

[11]The number of observations per year are as follows: 2013 = 9,945; 2014 = 6,311; 2015 = 6,082, and; 2016 = 2,834.

[12]WAS splits the sample into eleven regions corresponding to the ITL1 classification, which mimics the NUTS1 classification for the UK, (North East, North West, Yorkshire & Humber, East Midlands, West Midlands, East of England, London, South East, South West, Wales, Scotland), with the exclusion of Northern Ireland that is not surveyed. Including regional fixed effects is potentially important due to the relatively high value of net property wealth for households in London compared with other regions. In addition regional fixed effects control for local level macro-economic shocks.

are clustered at the household level. The results are shown in Table 2, where the first column reports the average marginal effects (AMEs) associated with whether financial advice was taken, and the second column shows the AMEs from modelling the reason financial advice was taken.[13]

Focusing on the receipt of financial advice (column 1), having optimistic expectations about the future, saving for a rainy day and trusting banks are positively associated with a higher probability of having received financial advice, while there is no statistically significant association with risk attitudes. Wealthier households, whether proxied by home ownership or the level of wealth, are more likely to receive financial advice, where the latter is consistent with the findings of Kramer (2016).[14] There are no clear life-cycle effects, where the only statistical significance stems from heads of household aged 60–69. Self-employed heads of household are 3.1 percentage points more likely to receive financial advice, which may reflect that they have to deal with more income uncertainty and so might benefit from prudent financial planning.

Turning to the reason financial advice was undertaken (column 2), again there is no role for risk attitudes and life cycle effects are clearly evident for having taken advice for debt, where, relative to the over 70s, all age groups are more likely to seek financial advice for debt. For example, having a head of household aged under 30 or aged 30–39 is associated with around a 6 percentage points higher probability of seeking advice for debts. Where statistically significant, households with a male head are less likely to take advice, with the exception of financial advice for pensions, which is consistent with evidence of Lusardi and Mitchell (2007) and Kramer (2016), but contrary to the findings of Bhattacharya *et al.* (2012). In line with the findings of Collins (2012) for the USA, unmarried heads of household are less likely to receive financial advice (for both investments and savings), although this is counter to the results of Hackethal *et al.* (2012) based on administrative information from a large German brokerage firm.

It is noticeable that the likelihood of receiving financial advice and also the reason for seeking advice are both positively and statistically significantly associated with the educational attainment of the head of household. This is unsurprising given that financial literacy is likely to be correlated with education, and the literature has unequivocally found that financial literacy is linked to the propensity of seeking financial advice, for example, Calcagno and Monticone (2015), as well as investing in assets, for example, Christelis, Jappelli, and Padula (2010) and van Rooij, Lusardi, and Alessie (2011).

Seeking financial advice for investments or savings is positively related to both the precautionary saving motive and trust in banks. There is little evidence of any regional differences in the likelihood of receiving financial advice, although those household heads

[13]It is important to note that the AMEs are associations, that is, correlations, not causal estimates.

[14]It is possible that reverse causality exists between advice and monetary covariates such as wealth. To explore this, we exploit the longitudinal nature of the data, where 7,100 heads of household are observed twice in the WAS and we re-estimate the model using lagged values of labour, non-labour income and wealth. The respective AMEs (SEs) are: 0.006 (0.002); −0.002 (0.002) and 0.011 (0.003), and hence are consistent with the contemporaneous analysis.

TABLE 2
Modelling the receipt of financial advice

	(1)	*(2)*				
	Financial advice	*Reason for financial advice*				
	received	*Investments*	*Savings*	*Pensions*	*Debts*	*Other*
Mid risk tolerance	0.010	0.005	−0.002	0.004	0.001	0.002
	(0.007)	(0.004)	(0.003)	(0.003)	(0.004)	(0.003)
High risk tolerance	0.014	0.005	−0.004	0.005	0.005	0.001
	(0.009)	(0.005)	(0.003)	(0.004)	(0.005)	(0.004)
Male	−0.003	−0.006**	−0.004**	0.011***	−0.002	−0.008***
	(0.006)	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)
Single	−0.005	−0.008**	−0.004*	0.002	−0.001	−0.002
	(0.007)	(0.004)	(0.002)	(0.003)	(0.004)	(0.004)
Whether children in household	0.011	−0.014	−0.009	−0.0002	0.009**	0.005
	(0.01)	(0.008)	(0.005)	(0.004)	(0.004)	(0.004)
Number of adults in household	−0.014***	−0.008**	0.001	−0.001	−0.009	0.0001
	(0.005)	(0.004)	(0.002)	(0.002)	(0.002)	(0.002)
Whether in very good health	0.007	0.003	−0.004	0.003	0.002	0
	(0.006)	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)
Some qualifications	0.126***	0.031***	0.008***	0.014***	0.020***	0.025***
	(0.008)	(0.005)	(0.003)	(0.003)	(0.005)	(0.004)
Degree qualifications	0.068***	0.017***	0.006***	0.01***	0.012***	0.013***
	(0.006)	(0.004)	(0.002)	(0.003)	(0.004)	(0.002)
Employee	−0.005	0.003	0.0002	−0.003	−0.003	−0.004
	(0.011)	(0.006)	(0.004)	(0.005)	(0.01)	(0.005)
Self employed	0.031***	0.011	0.0002	0.003	−0.006	0.014
	(0.013)	(0.007)	(0.0053)	(0.0056)	(0.011)	(0.006)
Natural log of labour income	0.002**	−0.001**	−0.001	0.001***	0.003***	0.001
	(0.001)	(0.001)	(0.001)	(0.0004)	(0.001)	(0.001)
Natural log of non-labour income	−0.002**	0.001	−0.001	−0.001	−0.001	−0.000
	(0.001)	(0.001)	(0)	(0.0003)	(0.001)	(0.000)
Natural log of wealth	0.003***	0.023***	0.0021**	−0.001***	−0.001***	−0.001**
	(0.001)	(0.002)	(0.001)	(0.0002)	(0.0001)	(0.0003)
Whether home owner	0.081***	0.010	−0.0002	0.014***	0.020***	0.007**
	(0.008)	(0.006)	(0.003)	(0.004)	(0.004)	(0.003)
Whether expectations optimistic	0.021***	0.005	−0.001	−0.001	0.007**	0.005*
	(0.006)	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)
Whether save for a rainy day	0.037***	0.007*	0.008**	0.004	−0.002	0.006
	(0.005)	(0.004)	(0.002)	(0.002)	(0.003)	(0.003)
Whether trust banks	0.016**	0.011***	0.009***	−0.006	0.002	0.001
	(0.007)	(0.004)	(0.002)	(0.003)	(0.003)	(0.003)
Aged < 30	−0.014	−0.019	−0.007	0.002	0.062***	−0.007
	(0.02)	(0.022)	(0.007)	(0.011)	(0.012)	(0.008)
Aged 30–39	−0.007	−0.043***	−0.016***	0.01	0.065***	−0.003
	(0.014)	(0.013)	(0.006)	(0.007)	(0.011)	(0.007)
Aged 40–49	−0.032	−0.025***	−0.009	0.012**	0.053***	−0.008
	(0.013)	(0.009)	(0.005)	(0.006)	(0.011)	(0.006)
Aged 50–59	−0.005	−0.005	−0.0072**	0.028***	0.035***	−0.0024
	(0.011)	(0.006)	(0.004)	(0.005)	(0.011)	(0.005)
Aged 60–69	0.034***	0.002	0.0002	0.035***	0.030***	0.00004
	(0.007)	(0.003)	(0.002)	(0.004)	(0.009)	(0.003)

(*Continued*)

TABLE 2
(Continued)

	(1)	*(2)*				
	Financial advice	*Reason for financial advice*				
	received	*Investments*	*Savings*	*Pensions*	*Debts*	*Other*
North East	−0.036***	−0.002	0.004	−0.014**	−0.011*	−0.007
	(0.013)	(0.009)	(0.005)	(0.005)	(0.006)	(0.005)
North West	0.005	0.007	0.001	−0.002	−0.001	0.002
	(0.011)	(0.006)	(0.004)	(0.005)	(0.006)	(0.005)
Yorkshire and Humber	0.009	0.012	−0.002	−0.0003	0.003	−0.001
	(0.012)	(0.007)	(0.003)	(0.005)	(0.006)	(0.005)
East Midlands	0.017	0.008	−0.001	−0.002	0.004	0.011*
	(0.013)	(0.007)	(0.004)	(0.005)	(0.007)	(0.006)
West Midlands	0.007	0.012	0.006	−0.005	−0.001	0.001
	(0.012)	(0.007)	(0.004)	(0.005)	(0.006)	(0.006)
East of England	0.002	0.007	0.001	−0.001	−0.004	0.001
	(0.011)	(0.006)	(0.003)	(0.005)	(0.006)	(0.005)
South East	0.042***	0.004	0.006*	0.008	0.013**	0.009*
	(0.011)	(0.005)	(0.004)	(0.005)	(0.006)	(0.005)
South West	0.022	0.006	0.004	0.003	0.008	0.004
	(0.012)	(0.006)	(0.004)	(0.006)	(0.006)	(0.005)
Wales	0.014	0.014*	0.015**	−0.010**	0.002	−0.010**
	(0.013)	(0.008)	(0.006)	(0.005)	(0.007)	(0.005)
Scotland	0.003	0.011**	0.009**	−0.007	−0.005	0.002
	(0.012)	(0.007)	(0.003)	(0.005)	(0.006)	(0.005)
2014	0.077***	0.031***	0.007***	0.012***	0.017***	0.010***
	(0.006)	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)
2015	0.072***	0.032***	0.004	0.012***	0.017***	0.008***
	(0.006)	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)
2016	0.076***	0.030***	0.001	0.016***	0.017***	0.012***
	(0.009)	(0.005)	(0.003)	(0.004)	(0.005)	(0.004)
Wald $\chi^2(36)$	1097.81; *p=0.000*					
Wald $\chi^2(175)$					2323.70; *p=0.000*	
Pseudo R-squared	0.0977				0.1581	
Observations (*NT*)	25,172				25,172	

Notes: The probability of whether the household has received financial advice is modelled via a logit estimator with the results shown in column (1), and the reason for seeking financial advice is modelled via a multinomial logit estimator with the results shown in column (2). Average marginal effects are reported and SEs are clustered by the household which are shown in parentheses. * $P < 0.1$, ** $P < 0.05$, *** $P < 0.01$.

residing in two of the least affluent areas, Wales and Scotland, have a higher probability of receiving advice for investments and savings purposes.

Interestingly, after the regulatory change with respect to financial adviser compensation in 2013 (the base year in our analysis), the yearly fixed effects are positive with respect to both receiving financial advice (column 1) and the reason for why advice was sought (column 2). This might reflect greater trust in financial markets following the set-up of the FCA in 2013 as well as, more generally, favourable macro-economic conditions.

Understanding the characteristics of the households who seek financial advice is potentially important from a policy perspective as it may help to reveal barriers to seeking such advice. This is especially pertinent if financial advice is associated with different

types of household portfolio composition, which is what we investigate in the rest of the paper.[15]

V. Financial advice and household portfolios

Having firstly contributed to the small literature which has examined who receives financial advice, we now explore the association between financial advice and household portfolios. Total wealth (given as an IHS transformation) and each of the asset share dependent variables defined above are denoted as y_{it}, where we initially model equation (3) by OLS using the WAS cross-sectional sample weights and clustering the SEs at the household level:

$$y_{it} = \phi + \mathbf{X}_{it}\boldsymbol{\theta} + \beta F_{it} + \epsilon_{it}. \tag{3}$$

We condition each outcome on a range of controls given in vector $\mathbf{X}_{it}$ (as defined above in section III), where the multiple regression analysis identifies conditional correlations. Under the assumption of conditional mean independence, that is, $E[\epsilon_{it}|F_{it}, \mathbf{X}_{it}] = E[\epsilon_{it}|\mathbf{X}_{it}]$, β can be causally interpreted. When modelling total wealth we do not include the natural logarithm of financial wealth as a covariate. Our primary focus is on whether financial advice (denoted as F_{it}) has a statistically significant effect. Moreover, we are interested in the direction of any effect given the mixed findings on the role of financial advice in the existing literature, and the economic magnitude of any effects compared to those of other key covariates. Specifically, our interest is in the sign, statistical significance and magnitude of β.

The results from estimating equation (3) are summarized in Table 3, where we present the findings for the receipt of financial advice (Panels A and B) in a contemporaneous setting. In Panel A, there are no control variables in the model apart from financial advice. Then, in Panel B, all controls are incorporated and we also present the results relating to our risk tolerance measure for purposes of comparison. Hence, for brevity, we only report the estimates of the key parameters of interest, namely: financial advice, that is, β; and the estimates associated with risk tolerance (full results are shown in the Table A1). In Table 3 column one, we present the effects on the IHS of total wealth, followed by each of the four total portfolio shares as described in the previous section. If using a financial advisor affects financial behaviour then it may affect wealth, making the causal chain here non-trivial. To explore this further, in Panels C and D, we re-estimate equation (3) focusing upon the 7,100 heads of household present in both waves of the data using lagged values of financial advice (Panels C, with no controls, and D all covariates) and lagged monetary controls (Panel D).

[15]We have also considered specifications with nonlinear effects for continuous monetary covariates, specifically including polynomial functions in: labour income; non-labour income and financial wealth. Considering the receipt of financial advice, the only significant effect was a quadratic in financial wealth, where the likelihood of financial advice decreases at an increasing rate as wealth increases. Turning to the reason for why advice was sought, nonlinear financial wealth effects are apparent at the 10% level for each reason, However, the only outcome where non-linearity is apparent for all continuous monetary covariates is where advice was sought for investment purposes, where for each monetary covariate the likelihood of receiving financial advice for investment increases at an increasing rate. Similar effects are revealed if nonlinearity in continuous covariates is accounted for by adopting binary indicators denoting monetary quartiles.

TABLE 3
Portfolios and financial advice

	Wealth	*(Stocks+ Bonds)/TW*	*Real estate/TW*	*Business/TW*	*Pension/TW*
Panel A: Financial advice received – no controls					
Financial advice	2.002***	0.080***	0.035***	0.008***	0.035***
	(0.089)	(0.006)	(0.007)	(0.002)	(0.005)
R-squared	0.0207	0.0077	0.0014	0.0014	0.0023
Observations (*NT*)			25,172		
Panel B: Financial advice received – full controls					
Financial advice	0.125**	0.053***	−0.040***	0.004**	0.008**
	(0.066)	(0.006)	(0.005)	(0.002)	(0.004)
Mid risk tolerance	−0.240***	−0.014**	0.008*	−0.000	−0.016***
	(0.076)	(0.006)	(0.004)	(0.001)	(0.005)
High risk tolerance	−0.025	−0.003	0.018***	0.001	−0.011*
	(0.093)	(0.008)	(0.006)	(0.002)	(0.006)
R-squared	0.6293	0.1602	0.5544	0.1002	0.1480
Observations (*NT*)			25,172		
Panel C: Financial advice received (lagged) – no controls					
Financial advice$_{t-1}$	1.822***	0.094***	0.019	0.005*	0.043***
	(0.130)	(0.012)	(0.012)	(0.003)	(0.010)
R-squared	0.0185	0.0095	0.0004	0.0980	0.0032
Observations (*N*)			7,100		
Panel D: Financial advice received (lagged) – full controls with lagged monetary variables					
Financial advice$_{t-1}$	−0.0400	0.057***	−0.027***	0.002	0.006
	(0.106)	(0.012)	(0.010)	(0.003)	(0.010)
Mid risk tolerance	−0.273*	0.012	−0.002	−0.002	0.0008
	(0.140)	(0.013)	(0.008)	(0.002)	(0.010)
High-risk tolerance	0.148	−0.005	0.018*	0.000	−0.015
	(0.136)	(0.015)	(0.010)	(0.004)	(0.012)
R-squared	0.6562	0.1714	0.5717	0.0932	0.1662
Observations (*N*)			7,100		

Notes: All models are estimated via OLS. In additional to financial advice and risk tolerance, controls in Panels B and D also include: gender; marital status; household composition; health status; highest educational attainment; labour market status; age; region of residence, and; year of interview. The natural logarithm of monetary controls are also included in Panels B (contemporaneously) and D (lagged), specifically: labour income; non-labour income, and; financial wealth (except when total wealth is the outcome, column 1). Table A1 in the Appendix provides the full corresponding estimates for Panel B. SEs are clustered by the household in Panels A and B, and are shown in parentheses throughout. *** $P < 0.01$, ** $P < 0.05$, * $P < 0.1$.

It is apparent that receipt of financial advice is positively associated with total wealth as well as all asset shares. While the magnitude of the association is generally larger in Panel A in the absence of the control variables, the sign and statistical significance of the estimates remain when conditioning on the **X**'s, see Panel B, with the exception of real estate assets, where the financial advice effect switches sign being inversely associated with the value of the real estate assets as a share of total wealth when all covariates are incorporated. The effects of financial advice are highly statistically significant across all asset types. We can see that the magnitude of the effect in absolute terms is highest for total wealth, which is closely followed by the share of stocks and bonds. Given that we have controlled for outstanding loans, the inverse association between the share of real estate and financial advice may reflect the fact that financial advice is generally received in the context of mortgage debt, which will be lower or even zero for those holding a high

degree or 100% of equity in their housing assets.[16] The effect of financial advice on the share of business assets is in contrast relatively small, although the effect is positive and statistically significant.

In terms of the economic magnitude of the impact of financial advice, considering the share of stocks plus bonds (0.053) this corresponds to an average increase in the proportion of combined stock and bond holdings of 2.02%.[17] Finally, if we compare these effects with those of risk tolerance, it is apparent that mid risk tolerance is negatively associated with the proportion of pension wealth as well as the proportion of stocks and bond holdings. The effect stemming from high risk tolerance (where statistically significant) is smaller in magnitude than that of financial advice for all household portfolio outcomes with the exception of pension wealth.

To investigate the issue of reverse causality, we condition portfolio composition shares on lagged values of financial advice and monetary controls. The results shown in Table 3 Panels C and D reveal similar findings to those in Panels A and B. For example, comparing Panel A to Panel C using lagged values, where in both specifications there are no control variables, in terms of direction of impact and magnitude of the association, the effects are very similar. The same is generally also apparent when comparing the contemporaneous specification with full controls (Panel B) to the lagged specification with all covariates (Panel D), although the level of statistical significance is reduced.

We also explore the effects of the reason why financial advice is sought by the household, which is presented in Table 4. In Panel A, all controls are incorporated contemporaneously, while in Panel B in order to attempt to account for potential reverse causality, we use lagged values of the reason for why financial advice was received and monetary controls. Again, for brevity, we only report the estimates of the key parameters of interest, namely: the reason for financial advice. In Table 4, we firstly present the effects on total wealth followed by total portfolio shares (columns 2– 5).

The data allows us to distinguish between five categories: financial advice for investments, savings, pensions, debt and other reasons. With respect to advice for investments, savings and pensions, in the contemporaneous specification shown in Panel A, we find that two categories (investment and savings) have a negative effect on total wealth, whiles advice for pensions, debt and other reasons are positive and statistically significant. Among these categories of financial advice, the largest coefficient, in absolute value, is found for advice for debt (0.442). As expected, all advice categories (with the exception of debt), have a positive effect on the proportion of stocks and bonds held; while they are negative for real estate.[18]

[16]Given that households typically take advice from a mortgage advisor when acquiring a mortgage, it is unsurprising that financial advice and Real Estate/TW are correlated. We have also estimated our model for those households without a mortgage in order to explore whether our findings are driven by recent mortgage applications or refinancing. The estimated coefficient for financial advice is −0.0448 and is significant at the 1% level, suggesting that this is not the case.

[17]This is calculated from the elasticity: $\left(\frac{\partial y}{\partial F} \times \frac{\overline{F}}{\overline{y}}\right) \times 100\%$. The mean values of portfolio composition and financial advice (as reported in Table 1) are denoted by $\overline{y}$ and $\overline{F}$, respectively, and $\frac{\partial y}{\partial F}$ is given by the estimate of β from equation (3).

[18]In arguably more stringent linear specifications than OLS, making use of the longitudinal nature of the WAS, albeit only two waves (4 and 5), we also employ panel fixed effects (FE) estimators, in order to take account of time

TABLE 4
Portfolios and reason for financial advice

	Wealth	*(Stocks+ Bonds)/TW*	*Real Estate/TW*	*Business/TW*	*Pension/TW*
Panel A: Reason why financial advice sought – full controls					
Advice for investments	−0.151**	0.104***	−0.089***	0.0002	−0.002
	(0.063)	(0.007)	(0.007)	(0.002)	(0.006)
Advice for savings	−0.163**	0.037**	−0.048***	0.004	0.010
	(0.119)	(0.015)	(0.012)	(0.005)	(0.012)
Advice for pensions	0.257*	0.045***	−0.037***	0.006	0.024**
	(0.135)	(0.011)	(0.010)	(0.005)	(0.010)
Advice for debt	0.442**	0.014	0.012	−0.004	0.022*
	(0.200)	(0.014)	(0.014)	(0.005)	(0.012)
Advice for other reasons	0.316**	0.026*	−0.017*	0.0212***	−0.003
	(0.147)	(0.014)	(0.011)	(0.006)	(0.011)
R-squared	0.6297	0.1630	0.5455	0.1020	0.1483
Observations (*NT*)			25,172		
Panel B: Reason why financial advice sought (lagged) – full controls with lagged monetary variables					
Advice for investments$_{t-1}$	−0.287***	0.089***	−0.075***	−0.001	−0.015
	(0.090)	(0.015)	(0.012)	(0.005)	(0.011)
Advice for savings$_{t-1}$	−0.120	0.037	−0.017	0.003	0.023
	(0.134)	(0.024)	(0.020)	(0.006)	(0.020)
Advice for pensions$_{t-1}$	−0.146	0.084***	−0.043**	−0.005	0.041*
	(0.162)	(0.027)	(0.020)	(0.003)	(0.024)
Advice for debt$_{t-1}$	0.291	0.004	0.017	0.003	0.0017
	(0.425)	(0.024)	(0.029)	(0.010)	(0.036)
Advice for other reasons$_{t-1}$	0.304	0.032	0.030	0.012	−0.002
	(0.258)	(0.029)	(0.027)	(0.010)	(0.023)
R-squared	0.6566	0.1727	0.5737	0.0939	0.1670
Observations (*N*)			7,100		

Notes: All models are estimated via OLS. SEs are clustered by the household in Panel A and are shown in parentheses throughout. * $P < 0.1$, ** $P < 0.05$, *** $P < 0.01$.

In Panel B, using lagged values of the key controls (which could be pertinent given that discount brokers may only start reaching out to customers to give higher levels of service and financial advice once their wealth reaches a certain threshold), the results (where statistically significant) generally concur with those found in Panel A, noticeably for each outcome advice for savings and debt is driven to statistical insignificance in this specification based upon a reduced sample size. We have explored the issue of reverse causality between portfolio shares, financial advice and monetary controls, and we return to this later on when we adopt matching techniques (see section V).[19]

invariant unobserved effects, that is, in equation (3) a household specific effect $\phi = \phi_i$ is included. The FE analysis generally concurs with the OLS results shown in Tables 3 and 4. However, the level of statistical significance falls marginally, which might indicate endogeneity, whereby households are more likely to seek financial advice if they wish to restructure their portfolios. Because of this issue and the fact that the longitudinal dimension of the data is limited, in the sensitivity analysis below, we revert to OLS specifications with clustered standard errors in order to account for selection and obtain average treatment effects.

[19]The results shown in Tables 3 and 4 regarding financial advice and the type of advice taken are robust in terms of the estimate of β if monetary controls are excluded from the analysis.

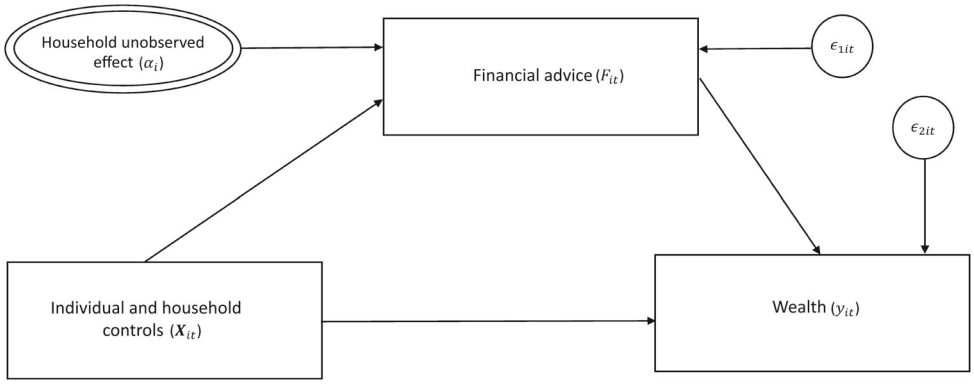

Figure 1. Structural equation model

Joint determination of the demand for financial advice and household portfolios: structural equation modelling

In the analysis so far, we have modelled the two research questions independently, specifically: (i) the determinants of the demand for financial advice, and; (ii) the determinants of total wealth and portfolio shares with financial advice as an explanatory variable. As the two models share the same covariates, one possible specification is where wealth is determined through the covariates but mediated through financial advice. In this section, we jointly model both wealth (total wealth and portfolio shares) and financial advice. In order to do so, we employ a structural equation model (SEM). Compared to the OLS regression performed earlier, SEM analysis allows us to simultaneously estimate multiple equations and explicitly state a pattern of relationships among the variables. In this context a causal interpretation of the coefficients is possible provided that the equations and the relationships among variables are correctly specified *a priori*, see Pearl (2009). In our application this is captured by Figure 1, which shows the direction of association among the different components of the structural equation. In our mediation model, individual (i.e. head of household) and household controls determine both the amount of total wealth and financial advice. After this first step, we can capture the effect of financial advice on total wealth. We also allow for unobservable household effects in the financial advice equation (i.e. α_i).

Table 5 presents the results of the four specifications.[20] In Panel A, we show that financial advice has a large and statistically significant effect (0.369) on total wealth. This result supports the analysis in Table 3. Looking at the different types of financial advice received (Panel B), they all, with the exception of advice for pensions and other reasons, have a negative and statistically significant effect on total wealth (consistent with the findings reported in Table 4).

In Panel C, we repeat the analysis, but we substitute total wealth with the four asset classes used previously. We find that financial advice as a positive effect on the sum of stocks and bonds as a share of total wealth and on the business asset class, even though

[20]For brevity and clarity of presentation, we only report the coefficient of financial advice or the type of financial advice on total wealth and the four asset classes.

TABLE 5
Joint determination of financial advice and household portfolios

	Total wealth	*(Stocks+ Bonds)/TW*	*Real estate/TW*	*Business/TW*	*Pension/TW*
Panel A: effect of financial advice on total wealth					
Financial advice	0.3690***				
	(0.037)				
Panel B: effect of reason for why financial advice sought on total wealth					
Advice for investments	−0.4530***				
	(0.038)				
Advice for savings	−0.3300***				
	(0.077)				
Advice for pensions	0.3670***				
	(0.063)				
Advice for debt	−0.040				
	(0.150)				
Advice for others	0.5340***				
	(0.081)				
Panel C: effect of financial advice on portfolio shares					
Financial advice		0.0501***	−0.0410***	0.0040***	0.0031
		(0.004)	(0.002)	(0.001)	(0.003)
Panel D: effect of reason for financial advice sought on portfolio shares					
Advice for investments		0.0890***	−0.0741***	0.0010	−0.0050
		(0.006)	(0.005)	(0.001)	(0.004)
Advice for savings		0.0341***	−0.0482***	0.0020	0.0130
		(0.011)	(0.009)	(0.002)	(0.009)
Advice for pensions		0.0181*	−0.0200**	0.0111**	0.0040
		(0.009)	(0.008)	(0.004)	(0.007)
Advice for debt		0.0236*	0.0070	−0.0070***	0.0290***
		(0.012)	(0.011)	(0.002)	(0.010)
Advice for others		0.0228**	−0.0220	0.0201***	−0.0070
		(0.010)	(0.008)	(0.004)	(0.008)

Notes: Observations (NT) = 25,172. The results shown are from estimating a Structural Equation Model (SEM). Each panel reports the coefficient on advice (reason why financial advice sought) on total wealth and individual asset classes. Each panel correspond to one SEM specification. Standard errors are clustered by the household are shown in parentheses throughout. * $P < 0.1$, ** $P < 0.05$, *** $P < 0.01$.

the coefficient on the latter is rather small in magnitude. The coefficient on the real estate is negative and statistically significant, while we find that financial advice does not have an effect on the share of pension wealth held.

Finally, in Panel D, we combine the reason for financial advice and the four asset classes. There are four clear results from the analysis. Firstly, the share of stocks and bonds is positively affected by all types of financial advice. Second, advice for investment, savings and pensions has a negative effect on the share of real estate. Third, the share of business wealth held in the portfolio is positively affected by advice for pensions and other reasons, but it is negatively impacted by advice for debt. Finally, the share of pension wealth over total wealth is positively related to advice for debt. Overall, the results from using the SEM approach to jointly model the demand for financial advice and its association with the household portfolio are generally consistent with those reported in section V.

Sensitivity analysis

In this section, we undertake a number of robustness checks in order to: firstly, examine how sensitive the coefficients are to selection effects; and secondly, establish average treatment effects.

Sensitivity of the results to selection on unobservables

In this section, we assess the robustness of our results using the approach developed by Oster (2019). The model in equation (3) could generate biased coefficient estimates because there are omitted variables correlated with the key explanatory variable financial advice which would then induce endogeneity. The role of omitted variables is assessed by adopting a residualization approach which relaxes the assumption that omitted variables are uncorrelated with the controls. Oster (2019) calculates treatment effects and the relative degree of selection under proportional selection of observables and unobservables. This approach gives an indication of the degree to which the estimate of β in equation (3) (assumed to be causal) is sensitive to selection on unobservables by inferring from selection on observables, providing bounds for the treatment under which the unconfoundedness assumption or conditional independence apply. The approach builds on the theory of Altonji, Elder, and Taber (2005), which estimates the omitted variable bias by observing coefficient changes after the inclusion of unobserved variables.

The method takes into account the R-squared obtained from OLS to establish a range from a controlled treatment effect to an unbiased treatment effect. Suppose that $R_{\max}$ indicates the R-squared value of a theoretical specification that includes all observed and unobserved variables both time-variant and time-invariant, and $\tilde{R}$ denotes the R-squared value of a fully controlled specification. Oster (2019) suggests that a bias-adjusted treatment effect is equal to $R_{\max} = \Pi\tilde{R}$ and bounds can be obtained by using a values of $\Pi = 1.3$ and $\Pi = 2.2$ (hence, $R_{\max} = 1.3\tilde{R}$ and $R_{\max} = 2.2\tilde{R}$). The two values of Π stem from Oster's empirical survey of randomized studies, where $\Pi = 1.3$ would allow at least 90% of randomized results to survive in terms of coefficient stability when the bounds on $R_{\max}$ change. The calculation of the bias-adjusted estimator is as follows:

$$\beta^* \approx \tilde{\beta} - \delta[\dot{\beta} - \tilde{\beta}]\frac{R_{max} - \tilde{R}}{\tilde{R} - \dot{R}}, \tag{4}$$

where (i) δ is the degree of unobserved selection relative to observed selection, that is, the coefficient of proportionality;[21] (ii) parameters (R-squared) $\dot{\beta}$ ($\dot{R}$) relate to a bivariate OLS regression of the outcome, y_{it}, regressed against the treatment financial advice, F_{it}, only (as in Table 3 Panel A); and (iii) parameters (R-squared) $\tilde{\beta}$ ($\tilde{R}$) correspond to an OLS regression with observable characteristics, $\mathbf{X}_{it}$, incorporated in the model (as in Table 3 Panel B). Table 6 shows the results of the analysis.

[21] $\delta = \frac{\text{cov}(F,W_2)}{\text{var}(W_2)} / \frac{\text{cov}(F,W_1)}{\text{var}(W_1)}$ where F is the treatment (financial advice), W_1 is a vector of observed covariates and W_2 is an unobserved vector. The numerator in the fraction is a measure of selection on unobservables while the denominator is a measure of selection on observables. Oster (2019) incorporates potentially endogeneity in the δ metric, by allowing $\text{cov}(W_1, W_2) \neq 0$.

TABLE 6
The role of selection on unobservables

	Wealth	*(Stocks+ Bonds)/TW*	*Real estate/TW*	*Business/TW*	*Pension/TW*
Panel A: Oster delta (δ) values to drive the effect of financial advice to zero ($\beta = 0$)					
$R_{\max} = 1.3\tilde{R}$, δ	0.2081	4.8170	−2.6835	3.7432	1.9524
$R_{\max} = 2.2\tilde{R}$, δ	0.1060	2.2835	−0.6073	1.9469	1.2387
Panel B: Oster bias adjusted treatment:$\delta = 0.5$					
OLS β	0.0125**	0.0537***	−0.0402***	0.0047**	0.0085**
	(0.065)	(0.006)	(0.005)	(0.002)	(0.004)
$R_{\max} = 1.3\tilde{R}$, β^*	−0.1764***	0.0491***	−0.0523***	0.0037*	0.0041*
	(0.068)	(0.006)	(0.005)	(0.002)	(0.002)
$R_{\max} = 2.2\tilde{R}$, β^*	−0.4682***	0.0335***	−0.0747***	0.0023	0.0096**
	(0.075)	(0.007)	(0.006)	(0.002)	(0.004)
Panel C: Oster bias adjusted treatment:$\delta = 1$					
OLS β	0.0125**	0.0537***	−0.0402***	0.0047**	0.0085**
	(0.065)	(0.006)	(0.005)	(0.002)	(0.004)
$R_{\max} = 1.3\tilde{R}$, β^*	−0.4836***	0.0443***	−0.0647***	0.0041*	0.0004
	(0.077)	(0.006)	(0.006)	(0.002)	(0.005)
$R_{\max} = 2.2\tilde{R}$, β^*	−1.0823***	0.0133*	−0.1115***	−0.0003	0.0295**
	(0.004)	(0.007)	(0.007)	(0.003)	(0.007)
Panel D: Oster bias adjusted treatment:$\delta = 1.5$					
OLS β	0.0125***	0.0537***	−0.0402***	0.0047**	0.0085**
	(0.065)	(0.006)	(0.005)	(0.002)	(0.004)
$R_{\max} = 1.3\tilde{R}$, β^*	−0.8030***	0.0394***	−0.0776***	0.0029	0.0051
	(0.087)	(0.007)	(0.006)	(0.002)	(0.005)
$R_{\max} = 2.2\tilde{R}$, β^*	−1.7468***	−0.0109	−0.1516***	−0.0032	0.0522***
	(0.117)	(0.011)	(0.010)	(0.003)	(0.009)

Notes: Observations (NT)=25,172. In Panel A, Oster test of δ's based upon regressions from Table 3 Panel B. In Panel B, $\delta = 0.5$, so selection in unobservables is smaller than selection on observables, in Panel C, $\delta = 1$, so selection in unobservables is equal to selection on observables, and in Panel D, $\delta = 1.5$, so selection in unobservables is larger than selection on observables. In Panels B–D SEs obtained by 1,000 bootstrap replications. In each panel SEs are clustered by the household and are shown in parentheses throughout. * $P < 0.1$, ** $P < 0.05$, *** $P < 0.01$.

The estimated values of δ across each dependent variable required to drive the effect of financial advice, β, reported in Table 3 to zero are shown in Panel A of Table 6. It is apparent for each outcome, with the exception of total wealth and the proportion of wealth held in real estate, that given a value of $R_{\max} = 1.3\tilde{R}$, the proportion of the variation explained by unobservables would need to be between two and five times as large as that of the share of variation explained by observable variables for the coefficient on financial advice to be driven to zero. These are clearly implausible degrees of variation to attribute to the unobservables and, consequently, selection bias is not likely to be sufficient to explain the results in Table 3 Panel B. Considering the share of real estate in the total portfolio, the δ's are all negative, $\delta \in (-0.6, -2.7)$, meaning that if the observables are positively correlated with the treatment (financial advice), the unobservables would need to be negatively correlated with financial advice. This would be equivalent to incorporating more controls and strengthening the size of the financial advice coefficient, β, on the real estate share in total wealth outcome. Hence, it is unlikely that this result is driven by unobservables.

In the remainder of Table 6, we explore the sensitivity of the estimate of financial advice by reporting Oster bounds, that is, the bias adjusted treatment effect β^*, where the first row in each table shows the OLS estimate for comparison. This is undertaken for alternative values of δ, where in: Panel B, $\delta = 0.5$, so selection in unobservables is smaller than selection on observables; in Panel C, $\delta = 1$, so selection in unobservables is equal to selection on observables, and; in Panel D, $\delta = 1.5$, where selection in unobservables is larger than selection on observables.

The results in Table 6 show that for each outcome, with the exception of total wealth, regardless of the values of δ (Panels B–D) and Π (which determines $R_{\max}$), the bias-adjusted treatment effect β^* is in line with the estimates of financial advice reported in Table 3 Panel B. Moreover, the identified effect of financial advice on each outcome, where statistically significant, generally shows that the baseline result lies between a minimum and maximum, which does not include zero (i.e. for each outcome $[\beta^*_{\min}, \beta^*_{\max}] \notin 0$). In general, the effect of financial advice on household portfolios is arguably very robust to different assumptions regarding selection bias (i.e. alternative values of δ), where the bias-adjusted estimates are quite close and reveal a consistent story. Specifically, the Oster bias-adjusted treatment effects reveals that the OLS associations reported in Table 3 Panel B is robust to such stringent sensitivity tests.[22]

Matching estimators and inverse probability weighted regression adjustment

In this section, we assess the robustness of our results using matching techniques as well as inverse probability weighted regression adjustment (IPWRA). The model in equation (3) could generate biased coefficient estimates because the treatment and control groups are intrinsically different. If these differences are not taken into account, they enter in the error term, cause correlation with the explanatory variables, that is, financial advice, which culminates in endogeneity bias. The required assumptions for matching are: (i) conditional independence, which restricts the dependence between the treatment and outcomes; (ii) balance of the baseline characteristics between the two treatment arms, where a covariate is balanced when its distribution does not vary over treatment levels; (iii) overlap which ensures that each individual could receive any treatment, and; (iv) independent and identically distributed sampling, where the outcomes and treatment status of each individual is unrelated to the outcomes and treatment statuses of other individuals in the population.

We match on observable characteristics, where, as above, the treatment group comprises those households who receive financial advice. Using both propensity score (PS) and nearest neighbor (NN) matching methods, this enables the ATEs of financial advice on the household portfolio to be estimated, as defined in Imbens (2003). The IPWRA is an alternative approach to estimate unbiased treatment effects in the presence of confounding. This approach magnifies the treatment of households, who otherwise look like they would not have selected treatment, and, conversely, magnifies control households, who otherwise look like they would have selected treatment. Therefore, the

[22]The exception is total wealth where the Oster analysis suggests that under OLS selectivity may be an issue. As an alternative sensitivity check to that of Oster (2019), we consider generalized sensitivity analysis (GSA) for unobserved confounders following Imbens (2003) and Harada (2013). Again with exception of total wealth the GSA analysis endorses the Oster tests and OLS results (full results are available from the authors upon request).

TABLE 7
Average treatment effects: Financial advice received

	Wealth	*(Stocks+ Bonds)/TW*	*Real estate/TW*	*Business/ TW*	*Pension/ TW*
Panel A: Matching based upon contemporaneous analysis					
1. Propensity score	0.4471***	0.0650***	−0.0243***	0.0056***	0.0273***
	(0.136)	(0.007)	(0.006)	(0.002)	(0.006)
2. Nearest neighbor	0.6296***	0.0446***	0.0036	0.0013	0.0175***
	(0.0478)	(0.006)	(0.006)	(0.001)	(0.005)
3. IPWRA	0.3614***	0.0642***	−0.0226***	0.0050**	0.0187***
	(0.139)	(0.009)	(0.006)	(0.002)	(0.007)
H_0 : covariates are balanced $\chi^2(19)$			22.09; $P = 0.279$		
Observations (*NT*)			25,172		
Panel B: Matching based upon lagged treatment and monetary covariates					
4. Propensity score	0.6300***	0.0547***	−0.0353***	0.0048**	0.0062
	(0.130)	(0.014)	(0.012)	(0.002)	(0.0102)
5. Nearest neighbor	0.4182***	0.0480***	−0.0093	0.0004	0.0214**
	(0.0782)	(0.011)	(0.0101)	(0.002)	(0.009)
6. IPWRA	−0.0629	0.0814***	−0.0254**	0.0005	0.0414***
	(0.350)	(0.018)	(0.006)	(0.003)	(0.015)
H_0 : covariates are balanced $\chi^2(19)$			12.45; $P = 0.823$		
Observations (*N*)			7,100		

Notes: In Panel A the models are contemporaneous and in Panel B lagged values of financial advice and monetary controls are used. IPWRA denotes the inverse probability weighted regression adjustment estimator. In the IPWRA model the treatment is estimated as a binary logit while the outcome is a linear model. SEs clustered by the household in Panel A and are shown in parentheses throughout. * $P < 0.1$, ** $P < 0.05$, *** $P < 0.01$.

IPWRA is arguably more strigent than the OLS estimator as it accounts for two levels of selection – in both the treatment and outcome.[23]

Let $y(F)$, for $F \in (0, 1)$, denote the outcome for total wealth or a given household portfolio share dependent variable when the treatment financial advice is applied. For a given set of covariates, $\mathbf{X}$ the exogeneity assumption, or unconfoundedness, is given by:

$$y(0), y(1) \perp F | \mathbf{X}. \tag{5}$$

The average effect of the treatment average over the distribution of covariates can then be defined as:

$$\tau \equiv E[y(1) - y(0)] = E[\tau(\mathbf{X})]. \tag{6}$$

Table 7 reports the ATEs, τ, corresponding to the effects of whether financial advice was received on total wealth and portfolio shares. In Panel A, the specifications are based upon contemporaneous analysis, with the results shown in row 1 based on PS matching, row 2 on NN matching and row 3 on the IPWRA estimator. Figure 2 produces a box plot, which checks for balance in matched samples after PS and NN matching and reveals that the matching balanced all the covariates based on the plot of the estimated PS. Similarly, for the IPWRA estimates reported in Table 7 row 3, the null hypothesis that the

[23] An additional important feature of IPWRA is that of double robustness, where the estimator is still consistent if either the treatment equation or the outcome equation is misspecified.

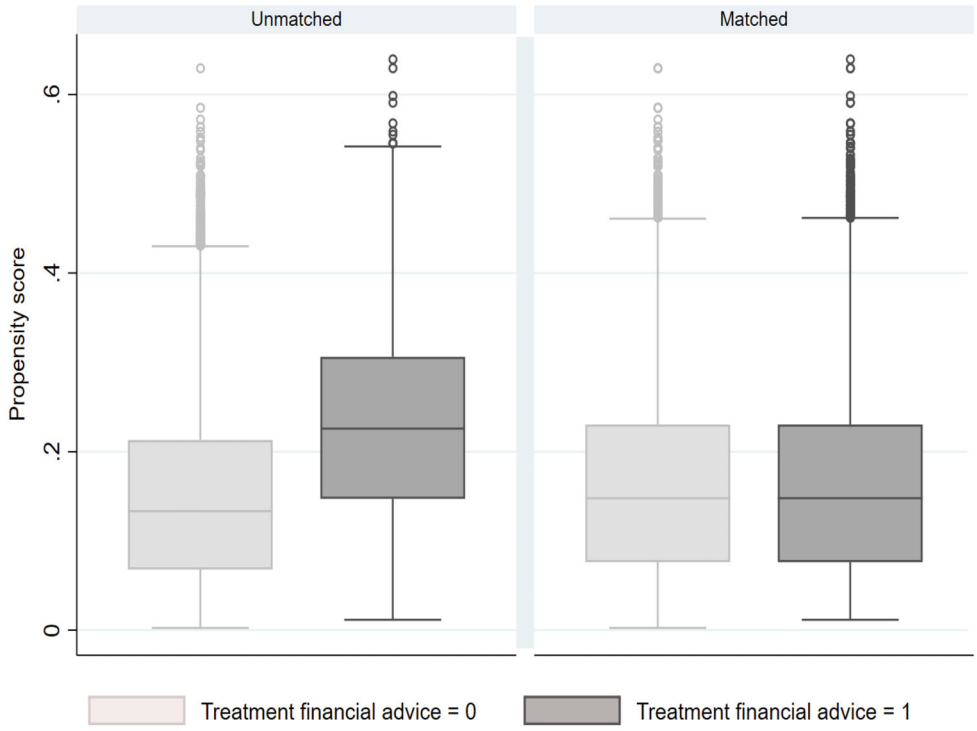

Figure 2. Balance plot of covariates [Colour figure can be viewed at wileyonlinelibrary.com]

covariates are balanced cannot be rejected at conventional levels of statistical significance. Comparing the ATEs across each panel with the OLS estimates reported in Table 3 Panel B, they are equivalent in terms of sign, magnitude and statistical significance to the β_{OLS} estimates.

Again due to concerns over reverse causality between portfolio shares, financial advice and wealth controls, we re-estimate the ATEs making using of the longitudinal nature of the WAS based upon the matching approaches used in Panel A but now incorporating a lagged treatment (financial advice) and monetary values from the previous wave. Across each matching estimator, the results shown in Table 7 Panel B rows 4–6 generally support those based upon contemporaneous matching in terms of direction of impact and magnitude, where statistically significant.

The advantage of the IPWRA approach is that it can accommodate a multivalued treatment, such as the reason for receiving financial advice. In this case, Imbens (2003) is extended to define the ATE of giving each household treatment z, where $z \in (1, 2, \ldots, q)$, instead of no treatment, so the ATE can be defined as:

$$\tau(z) \equiv E[y(z) - y(0)]. \tag{7}$$

Table 8 presents the IPWRA results of the reasons for receiving financial advice, where there are five treatment outcomes ($q = 5$). In Panel A, the analysis is based upon contemporaneous matching and, in Panel B, the treatment and monetary values are

TABLE 8
Average treatment effects: Reason for financial advice

	Wealth	*(Stocks+ Bonds)/TW*	*Real estate/TW*	*Business/TW*	*Pension/TW*
Panel A: Matching based upon contemporaneous analysis					
Investment	1.6187***	0.0930***	0.0306	0.0083	0.061**
	(0.169)	(0.031)	(0.021)	(0.008)	(0.032)
Savings	−0.0268	−0.0054	−0.0128	0.0151*	0.0076
	(0.447)	(0.030)	(0.021)	(0.009)	(0.023)
Pensions	1.551***	0.1022***	−0.0269	0.0151	0.0843***
	(0.104)	(0.024)	(0.019)	(0.010)	(0.018)
Debt	−0.4074	0.0153	0.0111	−0.0017	0.0182
	(0.321)	(0.026)	(0.021)	(0.004)	(0.022)
Other	0.4678**	0.0333*	−0.0052	0.0150***	0.0038
	(0.213)	(0.017)	(0.012)	(0.005)	(0.015)
Observations (*NT*)			25,172		
Panel B: Matching based upon lagged treatment and monetary covariates					
Investment	1.3917***	0.0722***	−0.0274	−0.0012	−0.0116
	(0.133)	(0.021)	(0.020)	(0.004)	(0.018)
Savings	1.0493***	0.0165	−0.0148	0.0004	0.0398
	(0.142)	(0.032)	(0.022)	(0.007)	(0.026)
Pensions	1.2426***	0.2271***	−0.1186***	−0.0086**	0.1698***
	(0.117)	(0.016)	(0.025)	(0.003)	(0.030)
Debt	−0.7867	−0.0996**	0.0975***	0.0117	−0.0472
	(0.749)	(0.049)	(0.032)	(0.007)	(0.035)
Other	0.8895	0.0744***	−0.0001	0.0146*	0.0297
	(0.219)	(0.028)	(0.023)	(0.009)	(0.023)
Observations (*NT*)			7,100		

Notes: In Panel A the models are contemporaneous and in Panel B lagged values of financial advice and monetary controls are used. Estimates obtained via IPWRA where the treatment model is estimated as a multinomial logit whilst the outcome is a linear model. Standard errors clustered by the household in Panel A and are shown in parentheses throughout. * $P < 0.1$, ** $P < 0.05$, *** $P < 0.01$.

lagged. In general, the reported ATEs correspond to the OLS results presented in Table 4 Panel A, although, with the exception of advice for investments and pensions, statistical significance is often lower. As with the OLS analysis, the largest ATEs are typically found for advice for investments and pensions. Focusing on Panel A, receiving financial advice for investments is associated with a 9.3 percentage point increase in the share of stock and bonds in the total portfolio share, compared to the corresponding OLS estimate shown in Table 4 Panel A of 10 percentage points. Similarly, receiving financial advice for pensions is associated with an increase in the share of stocks and bonds in the total portfolio by 10.2 percentage points compared to 4.3 percentage points based on the OLS estimates.

VI. Other dimensions of financial advice

A key advantage of the WAS for our analysis is that it contains more detailed information on financial advice than has typically been available in the literature in the context of a nationally representative dataset. This allows us to undertake comprehensive analysis of the effects of a wide range of characteristics of the financial advice received by

households. In what follows, we consider the effects of: (i) the type of advisor providing the financial advice; (ii) whether products were purchased following the advice; and (iii) how the financial advice was paid for.[24]

Those respondents who received expert financial advice were asked whether this involved a consultation with a financial advisor. Only 9.27% of those who received financial advice did not have such a consultation.[25] If the provision of financial advice did involve a consultation, the respondent was asked *'Thinking about this financial advisor, what type of organisation did they work for?'*. We distinguish between: financial advisors who work for a bank or building society; those who are a sole financial advisor or work for a firm of financial advisors; those who work for a stockbroker or wealth manager; and, finally, an 'other' category, which includes financial advisors who work for insurance companies, accountants, solicitors, charity or another type of agency. Out of those receiving financial advice, a consultation with a sole financial advisor or an advisor working for a firm of advisors is the most prevalent at 51.23%, while consulting a stockbroker is the least common form of consultation at 3.49%.

Respondents were also asked about product recommendations and product purchase associated with the consultation, where we control for whether: no products were recommended; products were recommended but none were purchased; one product was purchased; and finally, a selection of products were purchased. Respondents were then asked: *'How was the advisor paid for their services?'*, where for those who purchased a product, we control for: a one-off fee; by commission; a combination of fees and commission; as part of an on-going charge; the advice and other services were free; and, finally, 'other' which includes a combination of the previous categories. Receiving free advice (20.1%) and paying on commission (20.9%) are the most populated categories, followed by a one-off-fee (13.6%).

To investigate each of these facets of financial advice and the effect on the household portfolio, we estimate IPWRA models with a multi-valued treatment. The outcome equation is linear, as in equation (3), where F_{it} contains a vector of binary indicators and, in each regression, the reference category is having not received financial advice, and the treatment is a multinomial logit. Tables 9–11 present the results for total wealth and the total portfolio shares.

Table 9 presents the ATEs relating to the type of consultation that households had in order to obtain financial advice. Interestingly, even having received financial advice but without a formal consultation is positively associated with total wealth, the shares of stocks plus bonds and pensions in the total portfolio and inversely associated with the share of real estate. Clearly, having a consultation with a stockbroker has a particularly large effect on total wealth and the share of pension wealth in the total portfolio. Having had a consultation with an independent (or firm of) financial advisor(s) has a larger effect on the

[24]In the analysis which follows based upon a multivalued treatment, for brevity, all the matching is contemporaneous. Results based upon lagged treatment and monetary controls are available upon request.

[25]The additional information about the nature of financial advice stems from routing off the following question: '*I'd now like to ask you a few questions about any expert financial advice that you may have received in the last two years. By expert financial advice we mean advice from a professional person who advises people looking to make financial decisions. This could include a face-to-face, telephone or an internet consultation where you may have been asked detailed questions about your needs and circumstances, including full details of your income and outgoings*'. Hence, it is possible to receive financial advice but without such a rigorous consultation.

TABLE 9
Average treatment effects: Type of financial advice

	Wealth	*(Stocks+ Bonds)/TW*	*Real estate/TW*	*Business/TW*	*Pension/TW*
No formal consultation	0.4479*	0.0652***	−0.0346**	−0.0034	0.0281*
	(0.258)	(0.025)	(0.016)	(0.004)	(0.019)
Bank/building society	0.6818***	0.0778***	−0.0157	−0.0001	0.0389***
	(0.237)	(0.014)	(0.011)	(0.004)	(0.013)
Financial advisor	1.3289***	0.1027***	−0.0143	0.0096	0.0480***
	(0.169)	(0.016)	(0.011)	(0.008)	(0.013)
Stockbroker	1.3286***	−0.0788	0.2069***	0.0305	0.0840*
	(0.168)	(0.056)	(0.049)	(0.031)	(0.046)
Other	−0.1853	0.0078	−0.0129	0.0221**	−0.0224
	(0.205)	(0.018)	(0.014)	(0.009)	(0.014)

Notes: Observations (NT) = 25,172. Estimates obtained via IPWRA where the treatment model is estimated as a multinomial logit while the outcome is a linear model. SEs clustered by the household are shown in parentheses. * $P < 0.1$, ** $P < 0.05$, *** $P < 0.01$.

TABLE 10
Average treatment effects: Whether products were purchased

	Wealth	*(Stocks+ Bonds)/TW*	*Real estate/TW*	*Business/TW*	*Pension/TW*
No formal consultation	0.4012	0.0544**	−0.0296*	−0.0003	0.0245
	(0.274)	(0.025)	(0.017)	(0.005)	(0.020)
No products recommended	0.0164	0.0440***	−0.0165*	0.0088*	0.0054
	(0.184)	(0.014)	(0.009)	(0.005)	(0.011)
No products purchased	1.0413***	0.0509***	−0.0053	0.0125*	0.0399**
	(0.245)	(0.019)	(0.019)	(0.007)	(0.017)
One product purchased	0.9490***	0.0918***	−0.0218*	0.0072	0.0371***
	(0.235)	(0.016)	(0.012)	(0.005)	(0.013)
Selection purchased	1.5145***	0.1127***	−0.0128	0.0051	0.0541**
	(0.290)	(0.024)	(0.020)	(0.008)	(0.022)

Notes: Observations (NT) = 25,172. Estimates obtained via IPWRA where the treatment model is estimated as a multinomial logit while the outcome is a linear model. SEs clustered by the household are shown in parentheses. * $P < 0.1$, ** $P < 0.05$, *** $P < 0.01$.

investment (stocks plus bonds) component of the total portfolio as compared to that of a building society. The finding that advice received through independent financial advisors has the dominant effect on portfolio allocation in terms of stocks and bonds is consistent with economies of scale with lower costs related to the acquisition of information for those with expertise in financial markets, as well as better knowledge of available products and training than investors. The results are also consistent with the interpretation that the changes to the UK regularity framework following various historical mis-selling scandals, see Burke and Hung (2015), have been influential, given that professional advice, that is, that provided through financial advisor, has positive effects on portfolio composition.

We now consider the effects of whether any products were purchased following the consultation with a financial advisor, see Table 10. Interestingly, even if no products were recommended during the consultation, there are positive effects on the shares of stocks and bonds held in the total portfolio. This suggests that imparting knowledge through

TABLE 11
Average treatment effects: How the consultation was paid for

	Wealth	*(Stocks+ Bonds)/TW*	*Real estate/TW*	*Business/TW*	*Pension/TW*
No formal consultation	0.6625***	0.0857***	−0.0422***	−0.0011	0.0471**
	(0.229)	(0.023)	(0.014)	(0.004)	(0.019)
Did not buy product	0.1758	−0.0033	−0.0131	0.0051	−0.0152
	(0.259)	(0.018)	(0.015)	(0.008)	(0.015)
Free advice	0.5525***	0.0663***	−0.0061	0.0006	0.0414***
	(0.180)	(0.014)	(0.012)	(0.003)	(0.012)
One-off fee	0.3689	0.0390	0.0129	0.0113	−0.0009
	(0.428)	(0.027)	(0.021)	(0.009)	(0.021)
Commission	0.6696	0.0919***	−0.0145	0.0006	0.0100
	(0.426)	(0.025)	(0.020)	(0.005)	(0.023)
Fee and commission	1.2132***	0.1088***	−0.0817***	0.0475***	0.0266
	(0.389)	(0.031)	(0.021)	(0.015)	(0.033)
Ongoing charge	0.9713*	0.0542	−0.0520***	0.0481***	−0.0013
	(0.509)	(0.038)	(0.020)	(0.016)	(0.024)
Other type of payment	0.0689	0.1246***	−0.0640***	−0.0046	0.0557*
	(0.517)	(0.033)	(0.021)	(0.008)	(0.029)

Notes: Observations (NT) = 25,172. Estimates obtained via IPWRA where the treatment model is estimated as a multinomial logit while the outcome is a linear model. SEs clustered by the household are shown in parentheses. * $P < 0.1$, ** $P < 0.05$, *** $P < 0.01$.

a consultation is influential even if products were not recommended. A similar result is also apparent if no products were purchased (but they were recommended) following the consultation. This result is also evident for total wealth and the share of business wealth and pension wealth in the total portfolio. The largest effects stem from whether a selection of products were purchased with an ATE of 1.51 and 0.11 for total wealth and the investment (stocks plus bonds) share, respectively.

Finally, in Table 11 we investigate the effects of how the consultation was paid for. It is noticeable that, compared to having no financial advice, even free financial advice has a positive association with the share of stocks and bonds held. The ATE on obtaining free advice, or not having a formal consultation, is also positive for pensions in the total portfolio increasing the pension share by around 4 percentage points. Focusing on the share of stocks and bonds in the portfolio, it is apparent that, financial advice paid for by a one-off-fee is statistically insignificant. Conversely, financial advice received through a consultation paid via commission, or by a fee and commission, has a positive and large ATE increasing the investment share by around 10 percentage points. Again, this is consistent with the arguments of Hackethal *et al.* (2012) and Inderst and Ottaviani (2012) and suggests that the portfolios of household investors, who are less attached to the market (as captured by paying a one-off-fee), are affected the least.

The results in Table 11 also provide some insight into whether professional advisors actually sell their clients the most suitable products when incentives may exist to push investors towards particular products, that is, when commission is at stake. The existing literature has found that financial advice is typically biased towards high-commission products, for example, Mullainathan *et al.* (2012), Beyer, de Meza, and Reyniers (2013) and Anagol, Cole, and Sarkar (2017). To investigate this, we explore whether the share

of stocks and bonds in the total portfolio is significantly different between financial advice paid for by commission compared to receiving advice but without a formal consultation. Given the existing findings in the literature, *a priori*, one might expect to see significant differences in portfolio shares when financial advice is obtained via commission. Interestingly, considering the share of investments (stocks plus bonds) held in the total portfolio, there is no statistically significant difference at the 5% level between advice sought on commission compared to no formal consultation (the P-value $= 0.5781$). One tentative interpretation of this result is that advisors are not pushing investors towards the most profitable deals in terms of high-commission products, which may be a result of the recent changes to the UK regulatory framework.[26]

To consider this further, we re-estimate the analysis of Table 11 before/after the change in the UK framework to see whether the new regulations affected financial advisors' behaviour. The results of this analysis reveal that, in terms of advice paid for on commission compared to no formal consultation, the difference is statistically significant pre-regulatory change and becomes insignificant post-regulatory change (P-values of 0.046 and 0.803, respectively). The equivalent result is also apparent for advice paid on an ongoing charge compared to no formal consultation (P-values of 0.031 and 0.418 pre/post change in regulation, respectively). Hence, this is consistent with the above interpretation of the impact of the changes to the UK regulatory framework, where, prior to the 2013 amendments to the financial market regulation, advisors may have pushed their clients towards high commission products.

VII. Conclusion

We have explored a large range of factors, which may be associated with determining the demand for financial advice, including income, wealth and behavioural aspects (such as risk tolerance, saving for a rainy day and trust).[27] Using a number of statistical approaches, we then investigated the effect of financial advice on household portfolios.

Our findings have shown that financial advice plays an important role in shaping the composition of household financial portfolios in Great Britain. Moreover, this finding is remarkably robust to a number of sensitivity tests. Specifically, our results, which are based on a nationally representative survey of the population, suggest that financial advice is negatively (positively) associated with the share(s) of wealth held in real estate (bonds and stocks). The inverse association found between the share held in real estate and financial advice may reflect the fact that financial advice is received in the context of applying for mortgage debt. In addition, financial advice is found to be important for retirement planning given that it is positively related to the share of pension wealth in the total portfolio.

[26] Although this does not mean that financial advisors who have been paid commission have steered their clients towards efficient portfolios in terms of risk and return.

[27] A caveat with our analysis is that we are unable to control for financial literacy, which has been found in the existing literature to be an important driver of the demand for financial advice, in particular advice for debt, as well as for financial outcomes. Although financial literacy is likely to be highly correlated with educational attainment, as discussed above, in future research being able to control for this important characteristic would be useful in order to see whether financial advice still impacts upon the household portfolio.

Exploring the various reasons why households seek financial advice, we find that 'advice for investments' consistently has the largest effect, with this type of advice primarily affecting the share of the portfolio held in stocks and bonds (positively) and the share held in real estate (negatively). With respect to the type of financial advisor, the results show that having a consultation with a financial advisor has a particularly large effect on the share of stocks and bonds held in the portfolio. In addition, even free financial advice has a positive effect on the share of these investments held in the portfolio compared to not receiving financial advice.[28]

From a policy perspective, in the UK, there have been changes to the financial regulatory body with the establishment of the Financial Conduct Authority (FCA) in 2013, with the overall aim to 'make markets work well – for individuals, for business, large and small, and for the economy as a whole'. The regulation of financial promotions to ensure that consumers do not receive misleading information falls under this remit. Indeed, the UK Money and Pensions Service (formerly the Money Advice Service, established with cross government part support), which provides 'free and impartial advice on money and financial decisions to people', covers areas such as whether individuals need a financial advisor. Furthermore, the Financial Advice Market Review (FAMR) was launched in 2015 by the FCA and HM Treasury to develop affordable and accessible financial advice and guidance for customers. A further review was launched in 2019 to explore the impact of the FAMR on improving the outcomes of customers from financial advice and guidance.

Such actions by policymakers are a clear signal that the provision of financial advice in the UK is under a certain degree of scrutiny and that there is a commitment to considering ways to improve the working of the market for financial advice from the consumer's perspective. Hence, our findings shed further light on the effects of financial advice on the finances of British households, which we hope will stimulate further academic interest in this highly policy-relevant area.

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[28]Unfortunately, the WAS data do not contain information on the quality of the financial advice received, reasons for not seeking advice (for those households who reported not doing so), or appropriate measures of time preferences which could potentially influence the composition of the household portfolio.

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Appendix A:

TABLE A1

Full estimates of Table 3 Panel B

	Wealth	*(Stocks+Bonds)/TW*	*Real estate/TW*	*Business/TW*	*Pension/TW*
Financial advice	0.1254**	0.0537***	−0.0402***	0.0047**	0.0085**
	(0.066)	(0.006)	(0.005)	(0.002)	(0.004)
Mid risk tolerance	−0.2401***	−0.0145**	0.0076*	−0.0002	−0.0165***
	(0.077)	(0.007)	(0.005)	(0.001)	(0.005)
High risk tolerance	−0.0253	−0.0039	0.0181***	0.0010	−0.0116*
	(0.094)	(0.008)	(0.006)	(0.002)	(0.007)
Male	0.0834	0.0239***	−0.0171***	0.0028**	0.0174***
	(0.063)	(0.006)	(0.004)	(0.001)	(0.005)
Single	0.2246***	0.0667***	−0.0426***	0.001	0.0521***
	(0.078)	(0.007)	(0.006)	(0.002)	(0.006)
Whether children in household	0.2075*	−0.0117	0.0068	0.0065**	−0.0139*
	(0.119)	(0.010)	(0.007)	(0.003)	(0.008)
Number of adults in household	0.0831	0.0003	−0.0042	0.0056***	−0.0043
	(0.056)	(0.005)	(0.003)	(0.001)	(0.004)
Whether in very good health	0.1281**	0.0272***	−0.0151***	−0.0032*	0.0172***
	(0.059)	(0.006)	(0.004)	(0.002)	(0.005)
Some qualifications	0.3999***	0.1116***	−0.0502***	−0.0011	0.0718***
	(0.071)	(0.007)	(0.005)	(0.001)	(0.005)
Degree qualifications	0.7999***	0.1782***	−0.0987***	−0.0405**	0.1153***
	(0.087)	(0.008)	(0.006)	(0.002)	(0.006)
Employee	0.4434***	0.0607***	0.0016	−0.0017	0.0587***
	(0.122)	(0.011)	(0.008)	(0.003)	(0.009)
Self-employed	0.3757***	−0.1061***	0.0597***	0.0967***	−0.0875***
	(0.142)	(0.014)	(0.011)	(0.009)	(0.011)

(*Continued*)

TABLE A1
(Continued)

	Wealth	*(Stocks+Bonds)/TW*	*Real estate/TW*	*Business/TW*	*Pension/TW*
Natural log of labour income	0.0730***	0.0017*	0.0005	0.0009**	0.0023***
	(0.012)	(0.001)	(0.001)	(0.000)	(0.001)
Natural log of non-labour income	−0.0886***	−0.0069***	0.0022***	−0.0008**	−0.0052***
	(0.010)	(0.001)	(0.001)	(0.000)	(0.001)
Natural log of financial wealth	—	−0.0029***	−0.0026***	0.0002	−0.0012***
	-	(0.000)	(0.000)	(0.000)	(0.000)
Whether home owner	4.0855***	−0.1171***	0.5459***	−0.0052**	−0.0607***
	(0.076)	(0.008)	(0.005)	(0.002)	(0.007)
Aged <30	−3.7682***	−0.2821***	−0.0017	−0.0029	−0.2263***
	(0.239)	(0.018)	(0.012)	(0.006)	(0.014)
Aged 30–39	−2.2192***	−0.1701***	0.0027	0.0001	−0.1216***
	(0.167)	(0.015)	(0.010)	(0.004)	(0.012)
Aged 40–49	−1.5220***	−0.0828***	−0.0276***	−0.0049	−0.0494***
	(0.141)	(0.013)	(0.009)	(0.003)	(0.010)
Aged 50–59	−1.1641***	−0.0129	−0.0758***	−0.0032	0.0008
	(0.121)	(0.012)	(0.008)	(0.003)	(0.009)
Aged 60–69	−0.4366***	0.0602***	−0.0936***	−0.0019	0.0535***
	(0.062)	(0.007)	(0.005)	(0.001)	(0.006)
North East	0.3384**	0.1333***	−0.0916***	0.0037	0.1213***
	(0.163)	(0.016)	(0.010)	(0.003)	(0.013)
North West	0.2856**	0.1130***	−0.0863***	0.0051**	0.0951***
	(0.131)	(0.012)	(0.008)	(0.003)	(0.009)
Yorkshire & Humber	0.3508***	0.1046***	−0.0842***	0.0054**	0.0954***
	(0.126)	(0.012)	(0.009)	(0.003)	(0.010)
East Midlands	0.0137	0.0878***	−0.0746***	0.0081**	0.0740***
	(0.145)	(0.013)	(0.009)	(0.004)	(0.010)
West Midlands	0.2667**	0.0944***	−0.0672***	0.0097***	0.0923***
	(0.130)	(0.013)	(0.009)	(0.003)	(0.010)
East of England	0.2636**	0.0796***	−0.0353***	0.0039	0.0691***
	(0.122)	(0.012)	(0.009)	(0.003)	(0.009)
South East	0.3429***	0.0742***	−0.0420***	0.0029	0.0599***
	(0.114)	(0.011)	(0.008)	(0.003)	(0.008)
South West	0.4591***	0.0934***	−0.0406***	0.0061**	0.0761***
	(0.126)	(0.012)	(0.009)	(0.003)	(0.009)
Wales	0.4752***	0.0702***	−0.0602***	0.0111***	0.0756***
	(0.139)	(0.015)	(0.010)	(0.004)	(0.011)
Scotland	0.2493*	0.1310***	−0.0998***	0.0077**	0.1178***
	(0.134)	(0.013)	(0.009)	(0.003)	(0.010)
2014	0.0200	0.0021	−0.0004	0.0008	0.0066
	(0.060)	(0.006)	(0.004)	(0.002)	(0.004)
2015	0.2061***	0.0152***	−0.0074*	−0.0004	0.0179***
	(0.061)	(0.005)	(0.004)	(0.001)	(0.004)
2016	0.1630**	0.0063	−0.0091	0.0019	0.0148**
	(0.077)	(0.008)	(0.006)	(0.002)	(0.006)
Intercept	5.8651***	0.3130***	0.1830***	−0.0042	0.1766***
	(0.208)	(0.018)	(0.012)	(0.004)	(0.014)
R-squared	0.6293	0.1602	0.5544	0.1002	0.1480

Notes: Observations (NT) = 25,172. All models are estimated via OLS. SEs are clustered by the household and are shown in parentheses throughout. * $P < 0.1$, ** $P < 0.05$, *** $P < 0.01$.