Gender Differences in Financial Advice

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Abstract

We show that financial advisors recommend more costly products to female clients, based on minutes from about 27,000 real-world advisory meetings and client portfolio data. Funds recommended to women have higher expense ratios controlling for risk, and women less often receive rebates on upfront fees for any given fund. We develop a model relating these findings to client stereotyping, and empirically verify an additional prediction: Women (but not men) with higher financial aptitude reject recommendations more frequently. Women state a preference for delegating financial decisions, but appear unaware of associated higher costs. Evidence of stereotyping is stronger for male advisors.

JEL Codes: G2, E2, D8
Keywords: credence goods, financial aptitude, consumer protection, financial literacy, discrimination

1 Introduction

Who is most in need of sound financial advice? An important group involves individuals who have difficulties making financial choices on their own, either due to insufficient aptitude or a lack of confidence in their decision making. Systematic empirical evidence has identified that women have lower financial literacy as well as lower confidence in their financial decisions. This basic result holds controlling for a wide range of factors, from wealth and income to education and the household decision making context (Lusardi and Mitchell, 2014; Bucher-Koenen, Lusardi, Alessie, and van Rooij, 2017; Bucher-Koenen, Alessie, Lusardi, and van Rooij, 2021). At first glance, financial advice could therefore be particularly beneficial to women on average. A strain in the literature on financial advice provides an important caveat, by emphasizing that the incentives of advisors (e.g., due to kickbacks or career concerns) and their clients are not necessarily aligned, which may lead to mis-selling (see, e.g., Inderst and Ottaviani, 2012; Egan, Matvos, and Seru, 2019). Clients whose aptitude is or appears to be low could be particularly susceptible to mis-selling, if they are judged to be less likely to observe the actual quality of advice. If women are subject to stereotyping, they would be particularly affected. Our central question therefore is: Do advisors treat men and women differently? And if yes, Why so?

In this paper we analyze in detail whether and how financial advice differs depending on the gender and aptitude of clients, as well as which mechanisms are able to explain these differences. We provide unique empirical evidence from real-world financial advisory meetings between clients and advisors at their bank. These data allow us to analyze key dimensions of advisors' recommendations, especially the type of product and its costs. We analyze how these are related to client's gender and financial aptitude. We find striking and robust evidence that financial advice given to women differs systematically from advice given to men. Funds recommended to female clients are significantly more expensive conditional on funds' risk categories and client characteristics. In particular, advisors are significantly more likely to recommend expensive (in terms of their annual costs) bank own products to women than to men. Moreover, male clients are significantly more likely to receive a rebate on purchase fees than women by the same advisor for any given fund that is recommended.

The question is: Why? We develop a theoretical mechanism that could explain the observed differences, which is related to the fact that financial advice is a type of credence good (see, e.g., Dulleck and Kerschbamer, 2006; Dulleck, Kerschbamer, and Sutter, 2011). In such a context, knowledgeable clients are more likely to be able to assess product quality. This implies, that they have better outside options and are better able to judge the quality of advice received. Advisors incentivized by career concerns, sales commissions and kickbacks might attempt to sell costly or less suited products to clients who appear clueless.[1] First, if advisors cannot observe clients' true financial aptitude, but only a noisy signal that is on average informative, then clients who appear to be knowledgeable (here: men) will on average receive better advice, while clients who

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[1]This is, e.g., similar to Chen and Gesche (2019); Inderst and Ottaviani (2012); Stoughton, Wu, and Zechner (2011); Mehran and Stulz (2007).

appear to be less knowledgeable (here: women) will receive worse (more expensive) advice.[2] This is reflected by the empirical evidence we document. Second, since gender is only a noisy signal of financial aptitude, there are women with high financial skills. From this, we derive an additional testable hypothesis: Women with high financial literacy skills are more likely to reject financial advisors' recommendations. For men, who on average receive high-quality advice, the probability of rejection should not depend on their financial aptitude. In accordance with this hypothesis, our data show that only women with higher financial literacy are in fact more likely to reject advisor recommendations; this pattern is not observed for men.

Such detailed real-world evidence on advisor client interactions has been lacking so far. The main reason for this is that it is extremely difficult to observe details of meetings between advisors and clients, which makes it challenging to evaluate the quality of advice in actual interactions. Other studies primarily focus on experimental settings and examine specific aspects of interactions with advisors (see, e.g., Mullainathan, Noeth, and Schoar, 2012; Bhattacharya, Kumar, Visaria, and Zhao, 2020; Brock and De Haas, 2020). In contrast to this, we use detailed administrative bank data including the minutes of advisory meetings between advisors employed by the bank and clients, as well as information on clients' portfolios and investment decisions. According to German law since January 2010, advisors are mandated to document all client advisory meetings in written form, including the motivation for and duration of the meeting, the advisor's product recommendations, along with a justification for each recommendation. We use this protocol data and complement it with additional administrative data on client portfolios and transactions. Moreover, for a subset of clients we can link to data from a survey which contains information on motivations, financial literacy, and preferences. Further, we commissioned an independent survey of financial advisors to better understand differences in their perceptions of male and female clients. Our main administrative data set contains information from around 27,000 advisory meetings that took place between January 2010 and December 2017. We observe characteristics of the client and the outcomes of the meetings: For the meeting outcomes, we have characteristics of the product being recommended (type, risk, fee structure, and fund identifier) as well as information on whether the client implemented the recommendation. For the client characteristics, among other things we observe the clients' gender, wealth, risk tolerance, age and the duration of their relationship with the bank. From the linked client survey, we observe a test-based measure of financial literacy as well as motivations for seeking advice and product preferences for a subset of clients.

The evidence we find fully matches our supply-side driven theoretical mechanism; i.e., advisors have an incentive to tailor more expensive recommendations to clients that appear to have a lower aptitude. At the same time demand-side differences, like for example, differences in client preferences, could contribute to the empirically observed patterns. Bank own balanced funds could be tailored to clients' preferences for low-maintenance all-in-one products. Instead of being driven by strategic behavior or preconceptions of advisors, female clients may demand different products (at

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[2]This use of simple heuristics when judging groups can be motivated by stereotyping as described by Bordalo, Coffman, Gennaioli, and Shleifer (2016).

higher costs) compared to male clients, in return for not having to build and regularly re-balance their portfolios. In our client survey, a significantly higher share of women states that it is a relief to delegate financial decisions. In addition, men significantly more often indicate to be looking for a second opinion and reassurance with regard to their investments. These findings are also reflected in the responses from our advisor survey: Advisors state that men are more likely to approach advisors with specific investment ideas, while women are more willing to make joint decisions with an expert and, in general, dislike having to monitor their portfolio on a regular basis. Taking these findings into account, balanced funds (and their high fund fees) would not necessarily indicate poor advice or mis-selling, but would rather imply a catering or "peace of mind" effect in line with Gennaioli, Shleifer, and Vishny (2015). However, in our administrative bank data we do not find evidence that women have a higher preference for these specific bank own balanced funds and actively seek them out. They are also not significantly more likely to follow recommendations for bank own balanced funds than men. Finally, substantially less expensive balanced funds, which would fulfill women's low maintenance requirement are available in the market (and are among the observed recommended products), but are not recommended to women significantly more often.

However, we can go one step further and examine the premises under which advisors sell bank own and other products to their clients. For this purpose, we conduct a textual analysis of the meeting protocols, in which advisors are required by law to provide an explanation for their recommendation. The main result of this analysis is that advisors appear to tailor the recommendation of these relatively expensive bank own balanced funds to women's preferences for hand holding and peace of mind.

Whether or not the higher recommendation rate of the bank's own balanced funds can be (at least partly) explained by women's stronger preference for delegation, it remains an open question whether they are aware of the higher fees they pay, compared to funds with the same risk category and similar returns. To understand the economic relevance of the observed differences in costs, we perform a simple back of the envelope calculation. The higher fees for the most frequently recommended bank own balanced fund in our sample (compared to a combination of the average cost equity and bond funds in our sample) would result in a ten year difference in final wealth of around 1,455 Euro (3,890 Euro after 20 years) based on a 10,000 Euro initial investment. If we compare it to a balanced index fund (which also comes with little monitoring effort) the differences are even more pronounced.

This issue is critical, since we find strong evidence for low understanding of the associated costs (or cost illiteracy) in our sample in general, and in particular among women. Thus, even though the evidence suggests that women tend to look for investment opportunities that allow them decision delegation and an easy solution to their portfolio management, it does not seem to be the case that the clients who follow these recommendations are aware of the price they pay. Finally, while the catering effect can explain the recommendations of the bank own funds which carry higher annual management fees, it is hard to come up with a preference based explanation for the lower likelihood of rebates being offered to women for given products.

As a last step, our administrative bank data allows us a further venue into better understanding the interactions between financial advisors and their clients: the possibility that the advisor's gender may also contribute to the observed outcomes. We find that male advisors on average appear to offer recommendations with a larger equity share and higher category of risk. This is in line with findings in the literature that clients' portfolios seem to reflect their advisors' preferences (Foerster, Linnainmaa, Melzer, and Previtero, 2017), as men are on average less risk-averse. Moreover, we are able to show that it is mainly male advisors that engage in differentiating recommendations across client gender. Specifically, we find that male advisors are more likely to recommend the bank own funds to female compared to male clients. They on average recommend higher cost products and offer fewer rebates to women compared to men. No such differences are found among female advisors. Reflecting this finding, it is only the male advisors in our advisor survey who state that female clients are more subject to stereotyping compared to men.

We contribute to several strands of literature. First and foremost we contribute to the literature on financial advice. With regard to costs and benefits of financial advice in general, some systematic issues have been uncovered. On the one hand, studies comparing do-it-yourself and advised individual investor portfolios suggest that on average, advisors have a negative impact on portfolio performance (Hoechle, Ruenzi, Schaub, and Schmid, 2018, 2016; Chalmers and Reuter, 2020; Hackethal, Haliassos, and Jappelli, 2012). Egan, Matvos, and Seru (2019) and Honigsberg, Hu, and Jackson (2021) document frequent misconduct among US financial advisors with limited consequences for the offending advisors. On the other hand, advice is also shown to improve financial planning and to ameliorate investment mistakes.[3] While we do not examine the general benefit of financial advice, we add an additional layer of complexity to the analysis by showing that advice might have different benefits to clients with different observable and unobservable characteristics. However, it is important to note that our analysis does not allow us any conclusions on whether men and especially women should consult advisors in the first place.

Regarding the willingness to pay for advice, a theoretical framework by Gennaioli, Shleifer, and Vishny (2015) and survey-based evidence from the client perspective (Weber, 2020; Rossi and Utkus, 2020) show that private households might be willing to pay for other services rather than returns, namely peace of mind and hand holding, when consulting an advisor.[4] In line with this, we also find that women are more likely to state that, without the help of an advisor, they would not invest at all. On the cost side, we can confirm previous findings showing that fees are often not taken into account in clients' evaluation of advisory services.

Our analysis also contributes to a line of research on gender differences or stereotyping in financial markets. This literature so far has focused mainly on credit markets. For example, Alesina,

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[3]Specifically, mistakes such as under-diversification as well as home or local bias (Hoechle, Ruenzi, Schaub, and Schmid, 2016; Gaudecker, 2015), and the disposition effect (Hoechle, Ruenzi, Schaub, and Schmid, 2016).

[4]In line with the idea that the evaluation of advice has many subjective components and is not based on the assessment of financial returns only, Stolper and Walter (2018) find, that clients are more willing to follow advice given by advisors, who are more like them in terms of demographic similarities.

Lotti, and Mistrulli (2013) find that compared to male business owners, female business owners in Italy pay higher interest rates conditional on risk characteristics.[5] In a recent paper, Brock and De Haas (2020) show that female loan applicants are significantly more likely to get their approval only conditional on the presence of a guarantor. In addition, the authors are also able to show that the effect is concentrated among young, inexperienced, and gender-biased loan officers. We contribute to this literature by examining gender differences in investment advice to retail clients. Moreover, we show that in this context stereotyping seems to be more pronounced among male advisors. Related to this, Bhattacharya, Kumar, Visaria, and Zhao (2020) show in a field study using trained "auditors" that women are more likely than men to receive recommendations that are associated with lower diversification (single stocks). In our context, this dimension of the quality of financial advice is less relevant, since advisors overwhelmingly recommend investment funds (and not individual stocks) in accordance with European financial market regulations. Instead, we focus on the costs associated with the recommended products and provide evidence that women receive recommendations for significantly more expensive products.[6]

Lastly, on a more general note, the basic mechanism in our theoretical framework is not limited to the domain of financial advice but applies to many credence goods (Dulleck, Kerschbamer, and Sutter, 2011). For example, individuals who appear more intimate with the subject of cars should receive better advice from their mechanics. Other relevant applications include taxi services (see Balafoutas, Beck, Kerschbamer, and Sutter, 2013), health care (see Gottschalk, Mimra, and Waibel, 2020), or legal matters.

Our findings have considerable welfare implications. The fact that women are more likely to receive recommendations for more expensive products is worrisome in the light of many gender gaps documented in economics and finance. To name but a few, women have been found to earn lower incomes, plan and save less for retirement, accumulate less wealth and invest less in risky assets. They also have lower financial literacy skills and are less confident in their financial decisions. Adding to this, we find that women receive higher cost product recommendations by advisors. This might in the medium and long run exacerbate the gender difference in asset accumulation and ultimately contribute to lower financial well-being of women compared to men.

2   Data

For our empirical analysis, we make use of three unique data sets. First, we have access to administrative client-advisor data of a large German bank. This data includes the protocols of advisory meetings. We are able to match the meeting protocols to clients' portfolio holdings and transaction data. Our second data set results from an academic survey of bank clients carried out by university researchers (solely for research purposes). For a subsample of clients in the

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[5]This also relates to the literature on ethnic discrimination in credit markets in the US (see Cavalluzzo and Cavalluzzo (1998) and Blanchflower, Levine, and Zimmerman (2003) for reviews).

[6]Grinblatt, Ikäheimo, Keloharju, and Knüpfer (2016) argue that variations in risk-adjusted returns on mutual fund portfolios result largely from differences in fees.

administrative data set, we can match survey respondents to advisory clients. Third, we conducted an additional online survey of bank advisors in Germany – independent of the previous data – which was carried out by the research company YouGov, a survey agency which is widely used in economics and finance research.

2.1 Bank Data

2.1.1 Administrative Data

We use data on private clients receiving investment recommendations from financial advisors employed by a large German bank operating a nationwide branch network. Our main source of information are advisory minutes that provide detailed information on meetings of clients with financial advisors. Since January 2010, advisors are mandated by law to document all client advisory meetings in written form, including the motivation for and duration of the meeting, as well as the advisor's final product recommendations, along with a justification for each recommendation. Our data covers 26,747 advisory meetings between 13,239 retail clients and 4,604 advisors. The meetings took place between January 2010 and December 2017. We are able to complement this rich source of information with data on clients' security transactions and demographic information, which are also taken from the bank's records.

In Germany, as in many other European countries such as Sweden, Italy, and France, financial advice to retail investors is primarily provided by banks. This marks an important difference to the US, where advice to retail investors is often provided by independent financial advisors.[7] Most German households seek out advice from their house bank in the context of financial decisions.[8]

When opening an account with the bank providing our data, clients are assigned a designated advisor. In the retail segment, the client-advisor match is based on branch location, but it is otherwise independent of customer characteristics. Bank customers either conduct transactions unassisted or consult with their advisor. Complete delegation of financial decisions is rare in Germany and mostly limited to the wealthiest customers who are not part of our data set. In the context that we study, there are no direct fees for seeking advice. Bank customers pay for financial advice indirectly through product fees and commissions, that are (partly) channeled to the bank.

The advisors in our sample are full-time employees of the bank who have completed a three-year vocational training. They are paid a fixed wage in accordance with the collective wage agreement of the banking industry as well as a variable component. The variable component (up to 10% of total salary) is typically a function of team or branch performance, acquisition of new client assets, and surveyed client satisfaction. While advisors are not individually compensated for their sales performance, career concerns provide indirect sales incentives, with the bank benefiting more from sales of some types of products (Hoechle, Ruenzi, Schaub, and Schmid, 2018).

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[7]Similarly, the United Kingdom is an exception among European countries with independent advisors playing an important role.

[8]A recent survey indicates that 69% of households in Germany consult with a financial advisor when making financial decisions (Statista, 2020).

Clients and advisors. All clients in our sample interact with a bank advisor at least once over the sample period. On average, both female and male clients consult the bank for advice about twice during our sample period. Panel A of Figure A1 in the appendix shows the distribution of the number of meetings by client. For about one quarter of the clients we observe only one advisory meeting in our sample period. Around 23% of the clients are observed twice, and about half of the sample is observed three or more times within the sample period. Panel B of Figure A1 shows the distribution of protocols over calendar months. The figure reveals that that there are seasonal patterns in the distribution of advisory meetings, which we will account for in our analyses by controlling for time fixed effects.

Summary statistics on the overall sample as well as split by gender are reported in Table 1. In Panel A we show statistics at the client level, in Panel B we report statistics at the recommendation and meeting level. Slightly less than half (46 percent) of the clients in the sample are female. The median client is 65 years old or older. Clients in our sample are on average risk-averse, with the majority willing to take only moderate financial risk (55% are in the second lowest category on a 1-4 scale). In line with findings in the literature, male clients show a higher risk tolerance (47% are in the moderate risk category) compared to female clients (61% are in the moderate category). The average financial wealth in our sample is around EUR 108,000 (median EUR 67,501).

The majority of client-advisory meetings takes place in person: 86% for female, 84% for male clients. In only a small fraction of cases advice is received over the phone. About three-quarters of the meetings take 30 minutes or longer (see Panel B in Table 1).

Overall we observe recommendations by 4,604 different advisors, who are approximately balanced by gender (48 percent are male). However, there is wide variation in the number of observations per advisor. This is due to the fact that our sample is a draw across bank clients, rather than advisors.[9] Among those clients for whom we observe more than one meeting, 20 percent of the follow-up meetings are with a new advisor. Advisor changes in the retail segment are not uncommon and are mostly driven by fluctuations in the career position or the location of bank employees.

Product recommendations. As a result of regulatory tightening and ensuing compliance concerns, large banks have standardized financial advice services, especially in the retail client segment. Advisors at the bank are supposed to pick recommendations from a pre-selected list of actively managed mutual funds, covering different asset classes and risk categories. Individual stocks, individual bonds, certificates, index funds, or exchange traded funds (ETFs) can also be recommended and discussed with the clients. In principle the bank maintains an open fund architecture, which means that advisors have a bank's own funds as well as outside options in their menu. As a result of standardization, the 10 products that are recommended most often account for 40% of all purchase recommendations in our sample (see Figure A2 in the Appendix). All of these top 10 products are actively managed mutual funds, 7 of which are bank own products. Overall the bank's own balanced fund products also account for the lion's share of fund recommendations to retail clients.

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[9]We observe exactly one meeting for 27 percent of advisors, for 30 percent of the advisors we observe more than five meetings.

These products are multi-asset funds that invest both in stocks and bonds with different allocations and are designed to provide an all-in-one portfolio solution to retail clients.[10]

Figure A3 in the Appendix shows the distribution of recommendations across product types by gender. It closely mirrors the precepts of the bank's standardized advisory approach. Overall, funds are the most recommended product category to both male and female clients. However, female clients receive recommendations for funds more frequently than men (67% for female versus 64% for male clients). The frequency of single bond recommendations is comparable (11% for female versus 10% for male clients). Single stocks are rarely recommended, and if so, they are more often recommended to male than to female clients (4% versus 2% of all recommendations in our sample). Given their predominance, the main focus of our analyses is on recommendations to invest in mutual funds.

Quality of recommendations – product costs. In general, there are two aspects of the quality of advisor recommendations, (1) risk adequacy and (2) fees. The Markets in Financial Instruments Directive (MiFID) of the European Parliament and the European Council (2004 and 2006) stresses risk adequacy, requiring investment recommendations to match investor risk preferences.[11] Mullainathan, Noeth, and Schoar (2012) consider retail financial advice as high quality if it provides the clients with a broadly diversified, but low-cost portfolio. The recommended mutual funds that we observe are diversified products. We therefore assess the fees of the fund recommendations (for otherwise comparable funds) as the main criterion for recommendation quality. As opposed to returns, which at least in part result from luck, fund fees can directly be influenced by the advisor.

Fees for mutual fund purchases typically have two components: initial up-front fees (loads) paid upon purchase of a mutual fund, and recurring fees summarized by the annual expense ratio paid annually in proportion to the amount invested. Funds differ considerably with regard to their annual expense ratios, as will be discussed further in the next section. The fund's annual expense ratio applies equally to all investors and is payed to the firm managing the fund. In case of bank own funds, a significant fraction of recurring fees accrues to the bank. Hoechle, Ruenzi, Schaub, and Schmid (2018) study a comparable bank setting in Switzerland and show that trades in bank own mutual funds are the most profitable for the bank in the context of retail financial advice. We observe characteristics of the recommended funds including their annual management fees.

Upfront fees paid upon fund purchase are directly collected by the bank. While the annual expense ratios apply to all clients purchasing the same fund, upfront loads paid upon purchase can be adjusted to the individual client. In particular, advisors can offer discretionary rebates (up to 100 percent) on the upfront charge. From the advisory minutes, we observe whether the advisor granted a partial or full rebate on the upfront load of a recommended fund. About 26% of all fund

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[10]We exclude recommendations for a topic specific in-house fund from our data. The distribution of this fund was accompanied by comprehensive marketing campaigns, which we cannot control for.

[11]Investment firms are required to obtain "information as is necessary for the firm to understand the essential facts about the customer" (Article 35, 1) and to elicit the customer's "preferences regarding risk taking, his risk profile, and the purpose of the investment" (Article 35, 4).

recommendations come with a rebate on the up front load (see Panel B in Table 1). Figure A4 in the Appendix shows that there is considerable variation at the level of individual funds with regard to whether a rebate was granted to clients or not.[12] The graph shows, that rebates being granted is not a feature of certain specific funds. There are no funds for which a rebate is always granted, about 18% of the recommended funds never come with a rebate. For slightly more than 30% of the recommended funds, a rebate on the upfront load is offered for at least 30% of the sales observed in the data.

Adherence to advisor recommendations As an outcome of the advisory meeting, we can observe if recommendations are implemented afterwards by the client. We define a recommendation as implemented, if the client buys the recommended security within 30 days after the meeting. Overall, 62% of all recommendations are followed by the clients within 30 days (see Panel B in Table 1).

2.1.2 Client Survey Data

In an independent research project, a random sample of all clients of the bank was invited to participate in academic surveys, which are conducted to gain deeper insights into the decision making process of private households. The resulting data is only available to researchers (not to the bank or the advisors). We make use of the responses of those clients that can be matched to our protocol data, and refer to this source of information as the client survey. Overall, we are able to match survey and protocol data for up to 485 clients (1,342 recommendations), depending on the survey questions under consideration.

In the surveys, clients for example answer questions regarding the motivation for seeking advice and general attitudes toward investment and financial markets. Additionally different measures of test-based financial literacy and knowledge with regard to fund investing were collected. All clients in the client survey answered six questions related to financial aptitude: The financial literacy questions entail the Big Three financial literacy questions by Lusardi and Mitchell (2014), and additional questions about the riskiness of different savings products and institutional knowledge about investment funds. We group the literacy questions into four general questions of financial literacy and three questions of fund specific knowledge. The distribution of the correct answers to the financial literacy and the fund literacy questions is shown in Figure A5 in the Appendix. Since two of the fund literacy questions are specifically concerned with the understanding of funds' costs we are also using a two question cost literacy indicator in some of our analyses in Section 5. Moreover, the surveys also assessed clients agreement to the statement "The stock market is a sealed book to me" (mean of 3.3 on a 1-7 scale). The wording of all financial literacy questions can be found in Tables B1 and B2 in the Appendix.

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[12]For the graph, we consider only funds that are recommended for at least 50 times.

2.2 Advisor Survey

From the client survey, we are able to derive some insights into the motivations of individuals seeking financial advice. Mirroring this, we are equally interested in possible preconceptions and subjective assessments on the side of advisors. To gain insights into these channels, we designed, commissioned and ran a survey with the help of the research company YouGov that targeted individuals with experience working as financial advisors in Germany (advisor survey). Note that the advisor survey was not run among the bank's advisors.

The survey was run in July 2020 and participants were compensated according to an internal reward system for their participation. Overall, we collected data from 103 active financial advisors working either for a bank or independently.[13] About one third of the surveyed advisors are female and 58% are older than 45 years. Sample statistics and further information on the questions are reported in Appendix D.

3 Gender Differences in Product Recommendations and Fees

The key question to be answered in this section is whether there are significant differences between recommendations to male and female clients, in particular with regard to the costs of products. To be able to make meaningful cost comparisons, we need to take the nature of the products being recommended into careful account: The costs (e.g., expense ratios) of funds are product specific, and generally higher-risk products are associated with higher costs. So as a first step, we need to better understand the products being recommended and whether there are observable gender differences in this regard. First, we study the types of products that are recommended as well as the associated levels of risk. In the second step, we focus on the cost dimension of the recommendations, and analyze whether there are systematic differences in the costs of funds recommended to male vs. female clients controlling for product specifics. Finally, we test whether the effective costs incurred by clients differ at the individual fund level.

3.1 Fund Type and Risk Level

In line with the recommendations of the MiFID, the main product category featured in the recommendations are funds. Figure 1 presents the distribution of fund recommendations by fund type and gender. It is immediately apparent that female clients are substantially more likely to receive recommendations for one of the bank's own balanced funds (71% for female versus 60% for male clients). This category of funds will be of particular interest below. Balanced funds which are not under the bank's own management are recommended to men slightly more often (6% to men

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[13]We excluded data from insurance advisors since their expertise is for different types of products. Results are robust to the inclusion of respondents, who do no longer work as financial advisors, but have worked as an advisor in the past and which were also excluded from the sample.

vs. 4% to women). Male clients are also significantly more likely to get recommendations for pure equity funds (22% for male versus 14% for female clients). Bond funds are recommended to men and women with similar probability (6% for female versus 5% for male clients). Next, we consider how these differences feed into the risk of the products that are recommended to male and female clients.

The resulting differences in risk levels become apparent from Panel A of Figure 2. Funds are assigned into seven risk classes depending on the average volatility over the last five years, in accordance with MiFID. Funds in category 1 exhibit the lowest risk level, category 7 implies high risk. The figure shows the distribution of fund recommendations over the seven fund risk categories differentiated by gender. Female clients are more likely to receive recommendations for lower-risk products (i.e., there is more mass on lower risk categories for women than for men).

These findings could be due the fact that a lower risk-tolerance is observed in women than in men on average, so the differences in recommendations could simply be driven by clients' preferences. To better understand these channels, next, we analyze in detail what drives the risk level of funds that are recommended in a multi-variate regression framework.

Empirical specification. Our aim is to obtain a detailed understanding of the relationships between product-risk, financial advice and client gender. Therefore, we apply three different variables to measure different risk dimensions of a fund being recommended. First, *equity* is a dummy equal to one if a recommended fund is a pure equity fund. This applies to 18 percent of all fund recommendations. Second, *equity share* is the share of equity in a fund's holdings. The equity share varies between 0 percent (pure bond and money market funds) and 100 percent (pure equity funds). Equity shares of balanced funds take intermediate values, depending on their investment strategy.[14] The average equity share over all fund recommendations is 48 percent. Third, we use the *fund risk category*, ranging between 1 and 7. The average fund that is recommended in our sample falls into category 4.

Does the finding hold that advisors recommend different funds and levels of risk to women than to men, even when controlling for client risk preferences and a broad set of personal characteristics and the circumstances of the meeting? We run linear regressions using the three measures of fund risk as the dependent variable. The unit of observation is a single recommendation resulting from one of client i's advisory meetings. We estimate linear regression models of the form:

$$y_{ij} = \beta_0 + \beta_1 female_i + \beta_2 characteristics_i + \beta_3 meeting_{ij} + \mu_t time + \mu_a advisor_{ij} + \epsilon_{ij} \quad (1)$$

The dependent variable y is one of our three risk measures for the recommended fund, for client i in meeting j. The variable $female$ is an indicator equal to one if the client is female. $characteristics_i$ captures the client's personal and financial characteristics. The perhaps most relevant control measures the personal risk tolerance of the client (on a 1-4 scale from very low to

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[14]Equity allocations of funds are taken from the Morning star data base.

very high). The variable is a legally binding (MiFID) assessment of the client's risk preferences, and therefore a mandatory part of the protocols. Further client characteristics are the log financial wealth with the bank, dummies for age groups, and occupational and educational status (employed, manager, and academic (PhD)). We also include variables to control for the circumstances of the meeting ($meeting_{ij}$). These are indicators for whether advice was received in person rather than over the phone and whether the meeting took longer than 30 minutes. We also control for the length of the relationship the client has with the bank in years. All regressions include year-times-month fixed effects. Following Foerster, Linnainmaa, Melzer, and Previtero (2017), we also include advisor fixed effects $\mu_{\mathbf{a}}$ to control for advisor heterogeneity. Standard errors are clustered at the client level.

Results. Table 2 presents the results of the regression for the different dependent variables (Columns 1-3). Columns 4 and 5 represent robustness checks, in which we restrict the sample to fund recommendations with an equity share greater than 0 (therefore excluding recommendations for bond and money market funds). For each dependent variable and each specification, we find that women receive less risky recommendations, even if risk preferences (and a wide range of other characteristics) are explicitly controlled for. Women are on average 2pp less likely to receive an equity fund recommendation (Column 1) than men with identical measures of risk attitude. Compared to an average of 18% equity fund recommendations, this translates to a substantial 11% lower likelihood to receive an equity fund recommendation for women. Column 2 shows that funds recommended to women have a 1.59pp lower equity share compared to men, controlling for risk tolerance. Limiting the sample to only recommendations with a positive equity share, the observed difference is even larger, at 2.33pp (Column 4). Compared to the average equity allocations, this corresponds to a 3.4% to 5.0% lower equity share – again, note that this is based on the same risk preferences and controlling for a wide range of other characteristics. Finally, the risk categories of recommended funds are significantly lower for women than for men (Columns 3 and 5), which is in line with the descriptive results from Figure 2. For each of the specifications, the measure of the client's risk tolerance is highly significant and has the expected effect. Clients with higher risk tolerance are more likely to receive recommendations for equity investments.[15] These results show that, taking into account and controlling for client risk preferences, advisors tend to recommend less risky products to female clients. This result is highly relevant in and of itself, since it documents that there are significant differences in financial advice offered to male and female clients.

There are further significant differences in advice related to categories of products. A product category that is of particular interest is balanced funds managed by the bank employing the advisor. From the perspective of the bank – and the advisor via career concerns or incentives – sales in this type of product are particularly profitable (see Hoechle, Ruenzi, Schaub, and Schmid, 2018). In

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[15]Nevertheless, it is possible that the available risk assessment on a 4-point scale does not entirely reflect clients' risk preferences. For a subsample of clients who participated in the survey we additionally have a self-assessed survey measure of risk preferences on a 7-point scale. When we include this measure instead of the risk measure reported in the protocol, our findings remain unchanged with regard to sign and size of coefficients.

Column (6) of Table 2, we present the results of a regression in which the dependent variable is a dummy indicating a recommendation for one of the bank's own balanced funds. Women are 3 pp more likely to receive a recommendation for one of the bank's own products compared to men (an increase of 4.6% relative to the average share of recommendations of bank own products of around 65%). For this type of product, we do not find a monotone relationship with risk preferences, it is more likely to be recommended for clients with intermediate levels of risk tolerance.

Therefore, women receive systematically different recommendations both regarding the type and the risk level of products. Next, though, we address the main question that we are interested in: The costs and fees associated with the observed recommendations.

3.2 Product Fees

In the next set of analyses we look at differences in fees across products recommended to men and women. As a starting point, we consider the annual expense ratios. Simply comparing average expense ratios of the funds recommended to male and female clients at first glance results in a slightly higher fee for female clients. For them, the average annual expense ratio is 1.90 percent, while it is 1.87 for male clients (p-value of paired t-test is 0.00). Still, this comparison fails to take a number of relevant factors into account. In particular, fees are generally higher for more risky funds (Gennaioli, Shleifer, and Vishny, 2015), and they increase in the level of active management (Linnainmaa, Melzer, and Previtero, 2020). The evidence in our data reflects these findings. Panel B of Figure 2 shows the relationship between total expense ratios and fund risk; higher risk categories are generally associated with higher costs, but the fees for pure equity funds are on average lower compared to actively managed balanced funds with a high equity share. Given our previous result that male clients receive recommendations with significantly higher levels of risk and equity shares, the observation that average fund fees are slightly higher for female clients therefore is quite puzzling. In order to make sense of this puzzle, we need to examine the costs of recommendations while taking product risk into account.

In the following, we study cost differences in recommendations using two different dependent variables. The first is the annual expense ratio associated with a recommendation, mirroring the discussion above. Note that this variable involves a potential endogeneity issue when controlling for product risk, which is related to our previous analyses: The risk category of products recommended to clients also depends on their gender, as shown above. Simply controlling for this (endogenous) risk category in a regression that also includes gender might introduce a dependence in the related error terms. To address this issue, we construct a second dependent variable inspired by Linnainmaa, Melzer, and Previtero (2020): a risk category specific fee ranking. Prior to constructing this variable, it is important to note that there is substantial variation in the annual expense ratios within risk categories, as Figure 2 Panel B shows. In the lowest risk category 1, we observe a difference of 70 basis points between funds with the lowest fees and those with the highest fees. In the highest risk category 7 this difference is 197 basis points. The highest spreads (around 300 basis points) as well as the costliest individual funds are observed in the "intermediate" risk categories

3 through 5. In fact, the spreads within these categories by far exceed the differences in average costs observed across categories. While the average costs of funds do depend on the risk categories, for an individual fund the relative ranking within the category is therefore more relevant.

To build a risk category specific fee ranking, we sort funds into quintiles according to their annual expense ratios for each fund risk category (from 1 to 7). This means that within each risk category we measure the 20% cheapest (lowest quintile) up to the 20% most expensive (highest quintile) products among those that were recommended. The average expense quintile of the recommended products in our sample is 4.10 (3.98 for male and 4.25 for female clients), i.e., more expensive products are generally recommended more often; about 70% of the observed fund recommendations are ranked in the highest quintile. Figure 3 shows the respective distributions of fund recommendations by fee quintile for male and female clients. For women there is substantially more mass in the most expensive quintile. This implies that female clients on average receive more expensive recommendations within a given risk category. To rule out that this is driven by other observable factors, we examine the relationship between gender and the fund's fees more closely in a multivariate framework.

Empirical specification. We use OLS regression models of the form:

$$y_{ij} = \beta_0 + \beta_1 female_i + \beta_2 characteristics_i + \beta_3 meeting_{ij} + \mu_t time + \mu_a advisor_j + \epsilon_{ij} \quad (2)$$

The two dependent variables y are the annual expense ratio and the fee quintile of the fund recommended to client i during the meeting j. Our main independent variable, $female$, and the other control variables are the same as in the previous regressions. We again include month-times-year and advisor fixed effects.

Results. Column (1) of Table 3 reports results of a regression on annual expense ratios controlling for client characteristics, advisor, and time fixed effects, but not the product risk categories. The gender effect is insignificant, which corresponds to the introductory descriptive cost comparison. On average, if we ignore the risk characteristics of products, recommendations to men and women are associated with similar costs. This changes fundamentally, when we explicitly control for the risk categories of recommended products in column (2). Taking the risk of the product into account, recommendations to women are associated with a fee that is significantly higher. This finding also holds for the approach using fee quintiles (column 4). Recommendations to women involve a fee rank that is 0.14 higher (more expensive) than those to men (compared to an average fee rank of 4.10). On average advisors recommend significantly more expensive funds (funds in a higher fee quintile) to women within given risk categories.

This opens up the question whether we are able to explain these differences in management fees for given risk levels across genders. The results from the previous section offer a potential explanation; there we have shown that women are more likely to receive recommendations for balanced funds, in particular those managed by the advisor's bank. These bank owned funds have a high degree of active management, and tend to charge higher fees compared to other funds in the same risk category. In Panel B of Figure 3 we show the average annual expense ratio by fund risk category

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and differentiate between external funds on the left and funds under the bank's own management on the right. In each risk category the bank managed funds are more expensive than comparable funds.

Are the higher management fees for women associated with the higher prevalence of bank own funds being recommended to them? In Column (3) and (5) of Table 3, we control for whether the recommendation involves one of the bank's own balanced funds. We find that bank own funds shift fund fees substantially upwards by more than one percentage point (column 3) or two fee quintiles (column 5), on average. When we control for bank own balanced funds, the gender dummies no longer indicate that women pay more for products. In fact, for the annual expense ratios, the female indicator switches its sign and turns significantly negative (column 3), while it becomes insignificant (and very close to 0) in the fee rank specification (column 5). While women on average receive more expensive product recommendations than men for given product risk levels (Columns 2 and 4), this difference can therefore be explained by the fact that they more often receive recommendations for the bank's own managed funds that are associated with particularly high product fees.

So far, the differences we have observed are driven by the fact that different (types of) products are recommended to men and women. In the next step, we focus on a cost dimension that allows for differences in cost for a given product. In addition to management fees, funds carry sales fees – the so called upfront load. These are one-time costs to the investor, charged upon purchase of the fund. While a fund's annual management fee is fixed, the advisor has discretion to individually reduce upfront loads. This fact is neither advertised nor typically known by clients. In the context of these rebates, the costs for the very same financial product suggested by advisors can potentially differ by clients. Note that we observe rebates only for recommendations that were actually implemented by clients. We observe rebates on the upfront load for roughly one quarter of all fund purchases in our sample. In Figure 4, we show for which share of purchases rebates were offered to male and female clients across different risk categories. For five out of the seven risk categories, the share of purchases with a rebate applied is higher for male clients (the exceptions are the lowest category 1, in which rebates barely feature at all, and category 3, in which there is almost no difference in the rates at which rebates were applied across genders). Next, we examine whether these differences persist when controlling for client characteristics and other factors in a multivariate regression framework.

Empirical strategy. The dependent variable of our regressions is an indicator equal to one if the client has received a rebate on the upfront load. In order to test whether female clients face higher costs than men for the same financial products we include fund fixed effects (ISIN fixed effects) into the regression. Otherwise, the structure of the model is unchanged from the previous set of regressions.

Results. The results in Table 4 reveal that female clients are significantly less likely to receive a rebate when they purchase funds. The observed difference of 2pp translates into a 8.4% lower probability for female clients to get a rebate on a fund load compared to men. The result is robust to introducing a wide range of additional controls. In particular, higher value investments are

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associated with a significantly higher probability of receiving a rebate. Since rebates matter more for short term investments, we also control for the investment horizon in Column (3) and the results stay the same. In Column (4), we restrict the sample to funds (at the level of ISIN codes) that are recommended at least 50 times in our sample. Again, results remain stable. As a last test, we exclude bank own funds from the regression to show that the result is not driven by bank own balanced funds potentially being associated with a different probability or channel of rebates. The effect remains in the same order of magnitude and highly significant (Column 5).

Note that in all regressions including ISIN-level fixed effects (i.e., Colums 2 through 5) the differences between men and women are only identified through differences in upfront fees paid for the same product offered by the same advisor to different clients. This implies that female clients are in fact significantly less likely to receive a rebate on the fund load for any given product.

To summarize, we find first that product recommendations by financial advisors in our sample differ significantly between male and female clients who are otherwise comparable according to a wide range of characteristics including individual risk preferences. Women receive significantly fewer recommendations to invest in pure equity funds and are recommended lower equity shares in their investment. Beyond this, women are significantly more likely to receive recommendations for the bank's own balanced funds, which has further important ramifications.

Second, we show that there are systematic differences in the costs of products that are recommended to male vs. female clients. Within given fund risk categories, advisors on average suggest funds with higher fees to women than to men. This effect can be explained by the fact that the bank's own balanced funds are more expensive compared to other funds with the same risk level recommended by advisors. But not all cost differences that we observed are due to different products being recommended. To the contrary, women are significantly less likely to receive rebates on the upfront load of any given product. This fact cannot be explained by a (hypothetical) higher willingness to pay for characteristics of the (expensive) bank own funds.

4   What Explains Differences in Product Recommendations and Costs?

In the previous section, we documented that women receive significantly different recommendations from financial advisors than men, both with regard to types of products and costs. We showed that these results are not purely driven by factors such as (gender) differences in risk preferences, differences in the wealth held at the bank or the value of recommendations. These observations raise the question how to explain the systematic differences that we observe.

In principle, these differences could on the one hand be caused by structures on the "supply-side" of financial advice, especially strategic behavior by or preconceptions of advisors. On the other hand, explanations might focus on the "demand-side", in particular female clients demanding different products (at higher costs) compared to male clients, for example due to differences in

preferences.

In this section, we first present a mechanism which focuses on the supply-side, i.e., strategic behavior by advisors. This mechanism can be derived from a formal model of advisor-client-interactions, in which gender serves advisors as a proxy for a client's financial aptitude. The mechanism offers an explanation for the empirical findings in the previous section and, beyond this, it allows us to derive a further testable hypothesis that we can take to our data.

Following this, we explore alternative "demand-side" explanations that might also account for at least some of the observed differences across genders: Men and women may not have the same preferences with regard to financial products as well as motivations to seek financial advice; or, negotiation skills of men and women may not be equally pronounced.

4.1   Stereotyping: Gender as a Signal for Financial Aptitude?

We develop a simple theoretical model which relates financial advice to clients' gender and financial aptitude; this model both accounts for the empirical findings in the previous section and allows us to derive a new prediction regarding differences in financial advice to women and men. A central building block in the model is the widely documented fact that women on average have lower levels of financial literacy and lower confidence in their financial abilities than men (Bucher-Koenen, Lusardi, Alessie, and van Rooij, 2017; Bucher-Koenen, Alessie, Lusardi, and van Rooij, 2021). Higher financial sophistication is related with significantly better financial decision making skills (Lusardi and Mitchell, 2014).

In the model, a rational advisor suggests an investment alternative to a client, who then decides whether or not to implement the recommendation (we present the full formal model in Appendix C). As is typically assumed in the recent advice literature, the advisor in our model benefits in some way if the client picks from a certain subset of alternatives. This can, for example, be a result of kickbacks or due to greater familiarity with default options (such as products managed by the advisor's institution), which therefore require less research and effort on the part of the advisor.

In the model, as in reality, the advisor is uncertain with regard to the client's financial aptitude. Why does this matter? Clients with higher financial aptitude have a better understanding of financial matters and are able and confident to make better decisions on their own. In other words, they have a better outside option (obtain a higher expected utility) if they decide to reject the advisor's recommendation.

The advisor tries to infer the client's financial aptitude from observable traits, because this knowledge helps him tailor his advice. This can be related to models of stereotyping such as, e.g., Bordalo, Coffman, Gennaioli, and Shleifer (2016). Less financially apt clients are less likely to recognize high-cost recommendations (which may be beneficial to the advisor) as being overly expensive and vice-versa. The advisor therefore has an incentive to suggest better (e.g., lower costs or more bespoke) options to clients with higher *signals* of financial aptitude, who might recognize and reject sub-optimal advice. Assuming that advisors use gender as a signal of financial aptitude, male clients would therefore be more likely to receive better advice from advisors than women. We

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refer to this as the *mis-selling hypothesis* – it matches and provides an explanation for the evidence presented in the previous section. We provide further evidence supporting this hypothesis from our advisor survey in Section 4.1.1.

The model allows us to derive a further hypothesis that lets us shed additional light on the (not directly observed) quality or utility that clients derive from advisors' recommendations. In our data, we observe objective, test-based measures of financial aptitude for a subsample of clients. Using this, we are able to indirectly infer the quality of advice from whether or not clients implement the recommendation they receive. In particular, clients signalling lower aptitude (in our case women) whose actual or true financial aptitude is high should be more likely to reject advice they have received. The reason for this is that they (a) receive and (b) recognize bad advice with a substantially higher probability. We refer to this second hypothesis derived from the model as the *rejection hypothesis*. We provide evidence supporting this hypothesis in Section 4.1.2.

It is important to note that financial advice offers different benefits to clients in our model: First, they do not have to incur search and information costs themselves, if they choose to follow the recommendation. Second, it provides clients who would otherwise be inactive a point of entry into participating in financial markets. Third, advisors "weed out" dominated alternatives, i.e., products that are neither beneficial for the client nor the institution.

4.1.1 Further Evidence for Gender-based Differences in Product Recommendations: Stereotyping

We have already presented evidence from our administrative bank data in line with the mis-selling hypothesis in Section 3. In particular, women pay higher annual expense ratios for products in a given risk category than men, and are significantly less likely to receive rebates on front-end loads for any given fund that they purchase. Beyond this, they are significantly more likely to receive recommendations for bank own funds – these are associated with higher fees, but are at the same time the type of product that advisors are most familiar with.

The underlying mechanism that we posit requires two things: First, that advisors perceive the average aptitude of men and women differently on average, and second, that they let these perceptions influence the recommendations that they give. To see if this holds up in practice, we incorporated the following question into our advisor survey: Do you think that advisors are influenced by stereotypes when recommending products to men (women)? Advisors responded on a 1-5 scale, with 5 being very strongly influenced. We find that – according to the advisers in the survey – there is a relationship between client gender, stereotyping the resulting recommendations. The assessments for the question are significantly higher for female clients (mean of 2.9 for female versus 2.7 for male clients, p-value of paired t-test is 0.0173).

This is a further indication that the underlying mechanism that we suggest is relevant in practise. In the next section, we empirically investigate whether the second hypothesis derived from our model is supported by the available data.

4.1.2 Are Women With High Financial Aptitude More Likely to Reject Advice?

The rejection hypothesis states that women with high financial aptitude should be more likely to reject recommendations. In order to be able to test this hypothesis, we need a data set in which we observe both the signal (i.e. gender) as well as the actual financial aptitude of the client. A useful feature of our bank data set is that for a subsample of clients and their respective recommendations there is an overlap with the additional surveys conducted in 2018/2019 which included different measures of clients' test based financial knowledge. It is important to note that the results of these surveys and the associated measures for individual clients are unknown to the bank (and consequently also unknown to the advisors).

We use three aptitude measures for our analyses - a financial literacy score (based on a test with four questions), a fund literacy score (based on a test with three questions) and a subjective stock market familiarity indicator (agreement to the statement "The stock market is a sealed book to me" on a scale from 1 – "do not agree at all" – to 7 – "totally agree").[16] The distributions of correct answers for the general literacy measures are shown in Figure A5. For the first measure, the median client was able to correctly reply to three out of four questions. For fund literacy, the median client provided the correct answer to 2 out of 3 questions.

In our sample women have significantly lower levels of test based financial literacy on average, which is in line with results in the literature. This corroborates the assumption in our model that gender is an informative signal for a client's financial aptitude. For the financial literacy measure, men on average correctly answer 3.25 questions, compared to 2.97 for women (p-value for a t-test of the difference is 0.05). For fund literacy, men on average achieve a score of 1.84, while the average score for women is 1.47 (p-value for a t-test of the difference is 0.00). Women are also more likely to perceive the stock market as a sealed book (mean of 3.82 versus 3.10 for men, p-value for a t-test of the difference 0.00), which can be seen in Panel C of Figure A5.

To be able to test the rejection hypothesis, we define high-aptitude clients as follows: A high financial literacy client is someone who was able to answer all financial literacy questions correctly. Analogously, a high fund literacy client was able to provide the correct answer to all fund questions. For the subjective stock market familiarity measure, we define a dummy "high stock market knowledge" with a value of 1 if the person gave a below-median response of 3 or lower to the statement "The stock market is a sealed book to me".

Empirical strategy. Our identification strategy with regard to the rejection hypothesis hinges on the following fact: In our data, we are able to observe measures of the client's true financial aptitude, which are unavailable to the advisor, in addition to the gender signal, which is known to both the advisor and us as researchers.[17] Since advisors do not know clients' true aptitude, their recommendations are at least in part influenced by the gender signal. In other words, women are

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[16]The exact wording of all questions is in Appendix B1.

[17]One potential problem in this context is that couples perhaps make financial decisions jointly given the financial advice they have received; to account for this, we control for the marital status of respondents in all specifications.

more likely to receive suboptimal advice. If the rejection hypothesis holds, then women (and only women) with high levels of true aptitude should recognize this fact and be more likely to reject the recommendation instead of implementing it.

To test the rejection hypothesis according to the strategy sketched out above, we estimate linear models of the following form:

$$y_{ijk} = \beta_0 + \beta_1 female_i + \beta_2 x_i * female_i + \beta_3 x_i * male_i + \beta_4 z_{ij} + \mu_t month_j + \mu \overline{z_k} + \epsilon_{ij} \quad (3)$$

where y is a measure of client i's adherence to the advisor's recommendation. More specifically, it is an indicator variable equalling 1 if the recommended investment alternative was implemented within 30 days after the meeting. x represents the different measures of financial aptitude (i.e., financial literacy, fund literacy and subjective stock market familiarity), and z is a vector of controls including the familiar individual level controls from the previous sets of regressions as well as a control term specific to advisor k described below. In order to directly test the rejection hypothesis, we interact each of the financial aptitude measures with the indicator for gender. Financial aptitude should have a significant and negative effect on following advice or implementing recommendations only for individuals with "bad" signals, in our context women. In other words we expect β_2 to be negative.

For these specifications including the aptitude measures, we only observe a randomly drawn subsample of the observations used in the previous sets of regressions, the observations range between N=675 and N=1,342 depending on the measure used. Therefore, the sample for this analysis is substantially smaller, which restricts the feasibility of adding fixed effects for time (month times year) and advisors. To take potential seasonality into account, we add month fixed effects. With regard to advisors, we follow Mundlak (1978) and average control variables by advisor and include these advisor averages as additional controls.[18]

Results. The regression results are reported in Table 5. First, we run the regressions without interactions to determine the average effect of the measures of aptitude on the likelihood of following recommendations (Columns 1-3). For each of the measures we find a negative effect on adherence; the effects of fund literacy (Column 2) and perceived stock market knowledge (Column 3) are significant. The direct effect of gender is mostly negative, but insignificant across the different specifications. Note that the rejection hypothesis has two prerequisites; the channel requires both higher aptitude (to discover suboptimal recommendations and have the confidence to be able to do better when rejecting it) and a bad signal resulting in a higher probability of receiving sub-par advice. The specifications with interactions between gender and financial aptitude (Columns 4-6) display precisely this structure. For each of the three measures, higher aptitude is related to a higher likelihood of rejecting advice only for female clients. The effect of financial aptitude on men is not significantly different from zero for any of the specifications. Beyond this, F-tests reveal that the coefficients for men and women differ significantly for two out of the three regressions. These

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[18]Mundlak (1978) proposed adding group-means as independent variables in order to relax the assumption in the random-effects models that the observed variables are uncorrelated the unobserved variables.

findings are completely aligned with the rejection hypothesis: Higher aptitude (i.e., better outside options or higher confidence in own stock market knowledge) makes rejecting recommendations received by an advisor more likely, but only for women.

Together with the findings on systematic gender differences in received recommendations with regard to products and their fees, this evidence supports the "supply-side" driven explanation formalized in our model: Advisors may be tailoring their advice to clients based on observed signals of financial aptitude. As a result, women would receive lower quality advice, i.e., recommendations for products that are less in line with their risk preferences and more costly and overall more beneficial for the advisor. In fact, the "supply-side" explanation is able to account for every single relationship that we have observed in the data up to this point.

In the remainder of this section, we will explore alternative more "demand-side" driven mechanisms and determine which parts of the empirical puzzle can be explained through these channels.

4.2 Demand-side Explanations for Observed Differences in Product Choices

In the previous sections, we have empirically uncovered systematic differences in the advice offered to men and women. In this section, we revisit two central results from our administrative data set to determine whether there are alternative, demand-side based explanations for them: The prevalence of (relatively expensive with regard to their management fees) bank own balanced funds being recommended to women, and the significantly lower frequency of rebates on upfront loads.

4.2.1 Demand-side Explanations for Differences in Fees

In Section 3.1, we showed that advisors are significantly more likely to recommend bank own balanced funds to women than to men with otherwise similar characteristics. These bank own balanced funds are the underlying factor that explains why funds recommended to women are on average significantly more expensive given their preferred risk category. Considering the wider context, we can also interpret this as further evidence in favour of our proposed supply-side mechanism.

Is it possible, though, that these differences in recommendations are instead driven by demand-side effects, at least in part? In this Section, we consider three different approaches to identifying an alternative explanation: First, if female clients actually prefer the bank own funds (e.g., due to certain product features that we cannot observe in the data) they may in fact actively seek them out. Second, if these funds are a better match for their preferences, then this should be reflected by the implementation decisions. And third, we allow for the fact that the main motivations for consulting a financial advisor may differ across client gender. We analyze these different explanations using both the administrative bank data, as well as the client and the advisor surveys.

First, we consider the possibility that women actively seek out bank own funds and this is the reason they feature more prominently in the recommendations. In the administrative bank data we observe whether the advisory meeting was scheduled due to the advisor's or the client's initiative.

Overall, 72% of the meetings in the data are initiated by the advisor (with no significant difference between male and female clients).[19] A client actively seeking out a bank own balanced fund should be more likely to initiate a meeting with one of the bank's advisors; on the other hand, for meetings initiated by the advisor, this effect should be weaker or muted. To test this relationship, we return to the empirical specification from Section 3.1 with the indicator for a bank own balanced fund being recommended as the dependent variable. Now, though, we limit the sample to meetings that were initiated by the advisor only. Column (1) in Table 6 reveals that the results from the full sample remain completely unchanged, with identical coefficients of interest: Female clients are significantly more likely to receive a recommendation for one of the bank's own balanced funds, irrespective of who initiated the meeting. This does not support the alternative explanation that female clients actively seek out the product category in question.

A second straightforward approach to testing whether unobserved differences in preferences across genders (that are not captured by risk preferences) might explain the higher frequency of bank own balanced fund recommendations to women is to look at implementation decisions. If women are more likely than men to actually implement recommendations for bank own funds, controlling for the set of client personal characteristics as well as time and advisor fixed effects, this could reflect the existence of gender-based differences in preferences. To test this, we again run a regression in which the dependent variable is an indicator for adherence, which is equal to one if the client implements a recommendation within 30 days. In addition to the specification in Section 3.1, we now add an indicator for whether the recommended product is a bank owned balanced fund as well as an interaction of this variable with the client's gender. The results in Column (2) in Table 6 reveal the following: All clients are more likely to implement advice by about 3 percentage points when the advisor recommends bank own balanced funds. This could reflect the fact that advisors are most familiar with these products and can therefore more effectively communicate their benefits, or be due to advisors increased interest in selling bank own funds. More importantly, though, for the question we focus on, there is no significant difference in the implementation decision across genders, where bank own balanced funds are concerned. The interaction term does not indicate that women are more likely than men to adhere to this type of recommendation. Adherence decisions, therefore, do not provide evidence that the more frequent recommendations for this type of product to women are driven by differences in preferences.

The administrative bank data to this point did not provide evidence in favor of alternative demand-side driven explanations. Next, we consider the information from our other sets of data, beginning with the client survey.

Client survey. Our goal is to better understand the motivation of clients to consult an advisor and how this might be connected to their willingness to buy bank own balanced funds – at substantially higher costs. Here, we allow for the possibility that a client cares about more than only the costs and expected returns of the financial product being considered. In the linked client survey, clients are asked about the reasons for consulting an advisor. Figure 5 summarizes the results for

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[19]In practise, the advisor either calls the client or sends a message suggesting to schedule a meeting.

six answer categories. By gender, it presents the share of respondents who ranked the respective motive as the most or second most important. First, we consider motives that might classically be associated with rational models of investors: Achieving higher returns and avoiding investment mistakes. Each of these motives receives high assessments both from male and female respondents frequently, with shares between 35% and 42% ranking them among the top motives. We do not observe significant differences across genders for these categories, though. Instead, these appear for categories which indicate clients' willingness to deal with financial matters on their own. Men significantly more often rank the motives "obtaining a second opinion" and "receiving reassurance on finances being in order" highly. Each of these requires own time and effort to be spent on financial matters. At the opposite end of the spectrum, a significantly higher share of women consult an advisor as a source of motivation to deal with their own finances. Finally, a significantly higher share of women state that finding a suitable asset allocation is among the two most important reasons for advice.

Separately, clients were asked to agree/disagree with the statement that it would be a great relief to delegate their financial decisions on a 7-point Likert scale. Figure 6 presents the distribution of answers by gender. Women are more likely to agree with the statement, with substantially more mass on the higher answer categories. This is also reflected by the mean of the answers, which is 3.90 for women, significantly higher than the mean of 3.28 observed for men (p-value of t-test is 0.00).

These observations matter for at least two separate reasons: First, they are an indication that there are significant differences in how women and men approach investment decisions. It appears as if it is more costly for the women observed in the sample to exert independent effort on their own. Note that this fully corresponds to how we model the outside option in our analytical framework. Second, these differences may enable banks to tailor their products to implement a certain level of price discrimination. Fund brochures of the bank's own balanced funds directly appeal to the desires captured by the questions in the survey. Rather than having to make a series of individual investment decisions and incorporating own ideas, these products promise to be a "convenient" all-in-one portfolio solution that does not require any further action on the part of the investor; but they are also associated with substantially higher costs.

Advisor survey. The question that remains to be considered is whether in practice financial advisors actually do perceive these or similar differences in motives across client genders. If so, this would enable them to differentiate their recommendations accordingly. To address this question, we use data from the advisor survey. Here, advisors are asked to which degree they agree with various statements, e.g., "Men (women) come to a financial advisor with specific investment ideas in mind". The exact wording of the questions can be found in Appendix B, Table D1. Panel A of Figure 7 displays the differences in mean responses by financial advisors to the statements concerning male and female clients, respectively.

According to the perception of advisors that were surveyed, male clients are significantly more likely to approach advisors with specific investment ideas than women. This requires prior effort

in dealing with the subject matter. On the other hand, men are considered to assign a higher importance to past investment returns. Based on the advisors' perceptions, it is significantly more important for women not to have to actively monitor their investment product and they are significantly more willing to make joint investment decisions together with an expert than men. An open question that we could previously not address is whether female clients are willing to bear higher costs for the type of products that involve a higher degree of delegation. According to the perception of the advisors in the survey, this is not the case: Women assign the same importance to costs as men, and are not significantly more willing to pay more for products that require less monitoring.

Taken together, results of both surveys point into the direction of the money doctors model of Gennaioli, Shleifer, and Vishny (2015), which suggests that some clients might in exchange for hand-holding, responsibility sharing, or peace of mind rationally prefer to invest through an advisor, even if the advice is costly, generic, and self-serving.

Bank data. In a next step, we test whether advisors make use of these arguments in the transcribed advisory meeting protocols.

As part of the administrative bank data, we observe the legally mandated meeting protocols as described above. Within these protocols, advisors are mandated to provide justifications for each of their recommendation resulting from the advisory meeting. The justifications in our data on average contain 133.4 words, with a range (trimming the top and the bottom percent) between 59 and 283 words. Overall, the justifications in our data contain almost 3.5 million words, about six times the length of Tolstoy's novel War and Peace.[20] From this unstructured information, we attempt to extract information on the reasons that advisors state for recommending different products, focusing on the distinction between bank own balanced funds and other products, along the dimensions previously identified in the client survey and the advisor survey: Diversification, investment strategy, hand holding (delegation) and convenience (lesser need for monitoring and own effort).

To be able to create a mapping from the justifications into these categories, we proceeded in the following way: First, we ran a text analysis in Python that returned the frequency of words occurring in the each justification. Then we removed articles (e.g., "the", "a", "an"), prepositions, forms of "to be", etc. Then we ranked the remaining terms by frequency. Using only the list of the top 2,000 terms (which corresponds to those with 10 or more occurrences), we hand-selected terms matching the categories mentioned above. For example, the term "diversification" occurs in different forms (as a noun, verb and adjective) more than 6,000 times. The mapping from the terms into the categories can be found in Table E1 in the Online Appendix E.

Only after this selection, in the next step, we used regular expressions to create indicators in the administrative bank data, which are equal to 1 if the protocol for a given recommendation contains any of the terms mapping into the respective category. As a result, a given recommendation can

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[20]A further issue is that the recommendations are abundant with typos, abbreviations and variations in phrasing.

be associated with multiple categories.

Figure 8 shows categorized reasons for recommending a product, separately for bank own balanced funds and other fund products. Diversification is the reason very often stated for both categories equally (it was stated as relevant for recommending in 78% of cases for other products and for 81% of cases in bank own balanced funds). A fund's investment strategy plays a role in slightly less than 20% of the cases, respectively. As opposed to this, we observe substantial differences when looking at the role of "hand-holding" and "convenience". These reasons are relevant for around half of the recommendations for the bank own balanced funds compared to almost no references (4% hand holding, 0% convenience) in case of other product recommendations. We do, however, within the bank own fund recommendations not find a higher share of reasons related to convenience and hand-holding between male and female clients. Taking the evidence from both figures together, we do observe a correspondence between the motives stated by women for seeking investment advice and the reasons stated by advisors for recommending bank own balanced funds.

To summarize, in this Section we analyzed more demand-based explanations for the observation that female clients receive recommendations for relatively expensive bank-own balanced funds significantly more often. Using complementary sets of data, we were able to confirm that female clients express interest in delegation and not having to monitor their financial assets regularly as motives for consulting advisors. This matches the perception of advisors from an independent survey of financial advisors. A textual analysis of the meeting protocols in the administrative bank data reveals that these motives are strongly related to the recommendation of the corresponding type of product: bank own balanced funds that are marketed as low-maintenance products to clients. Finally, it is important to note that women's stronger desire to delegate is not associated with a significantly higher willingness to pay for delegation, or a lower importance associated with product costs. This aspect of cost sensitivity will be further explored in Section 5.

4.2.2 Are Rebates a Result of Differences in Negotiation Skills?

Previously, we considered alternative explanations for the finding that women receive more recommendations for (expensive) bank own balanced funds than men. None of these, though, could explain the fact that in our data, women on average pay more for any given fund due to significantly lower probabilities of receiving a rebate on upfront loads.

Another driver of the results could be differences in the tendency to negotiate by gender. The existing evidence in the psychological literature indicates, that differences across genders in the willingness and ability to negotiate are dependent on the context or setting (see Mazei, Hüffmeier, Freund, Stuhlmacher, Bilke, and Hertel (2015) for a meta-analysis). Thus in a meeting concerning investment advice, women might be less likely to ask for other alternatives or a rebate. Conversations with advisors of the bank suggest that advisors use rebates on upfront loads as a sales instrument, and are rarely asked for rebates by the clients. We have, however, no possibility to test this in our bank data. Instead, we asked advisors in our survey about the role of negotiations. Results in Panel B of Figure 7 suggest that two channels may play a role: According to the surveyed

advisors, male clients are significantly more likely to know that rebates are possible and to ask for a rebate. In addition, however, advisors are also more likely to offer a rebate to male clients, even without being prompted by a client.

Overall, we find that both advisors and clients seem to drive gender differences in recommendations. Female clients seem to be on average more willing on recommendation to purchase products promising of "peace of mind", while male clients seem to be more willing on average to spend time analyzing their asset allocation and discussing investment ideas. On the other hand, advisors use these differences to tailor their recommendations to a client's gender and not necessarily to the other relevant individual characteristics (stereotyping). As a result, we observe that women with a higher financial aptitude are more likely to reject the advice they receive.

But even if women have a preference for convenience with regard to investment products, it is not clear, whether they are aware of the size of the price they pay for this. We will discuss the economic costs associated with our findings in the next section.

5 Implications: Does it Matter and What is the Cost?

In the previous section we provided evidence from different sources of data that there are gender differences in preferences for delegation and own monitoring effort, and that these differences feed into product recommendations by financial advisors. It is important to note that there is no corresponding evidence that women care less about costs or are willing to pay significantly more for products involving "hand-holding". In this section, we first show in a simple model calculation how expensive the observed fee differences actually are for clients. Second, we demonstrate that over a long period of observation the more expensive products under consideration did not provide investors with higher returns. Finally, we provide evidence for the fact that the importance of fees for long term wealth accumulation is largely underestimated - on the client and the advisor side.

To understand the economic relevance of the observed differences in costs, we perform a simple back of the envelope calculation. The most frequently recommended bank own balanced fund in the sample invests 40% in equity and 60% in bonds, and is associated with an annual expense ratio of 2.3%. A similar financial product could therefore be constructed by investing 40% of assets into an equity fund and 60% into a bond fund. For this example, we use a conservative approach and choose an equity fund and a bond fund from the observed recommendations (and not from the entire potential investment universe). The average annual expense ratio of equity funds in the sample is 1.39%, for the observed bond funds it is 0.67%, resulting in an average expense ratio of the constructed product of 0.96%. Alternative benchmarks – leading to more extreme results – would be to instead consider index funds or exchange traded funds (ETFs).

Figure 9 shows the results of a model calculation in which a client invests 10,000 Euro with different investment horizons up to 30 years. We assume constant returns of 4% per year. Over 10 years, the higher costs of the bank own balanced fund results in a difference in final wealth of around 1,455 Euro – after 20 years, this grows to 3.890 Euro. This figure is especially relevant,

since 48% of the recommendations in the sample are tailored to a long-term investment horizon. If we instead compare the bank own balanced fund with a combination of two ETFs (e.g. 60% in a bond ETF with an annual expense ratio of 0.1% and 40% in an equity ETF in the German stock index with an annual expense ratio of 0.4% resulting in an overall annual expense ratio of 0.22%), the differences in final wealth are 2,326 Euro after ten years and 6,463 Euro after 20 years. Note that it is also possible to purchase a balanced ETF (at an annual expense ratio of around 0.4%), which would not require clients to regularly rebalance their portfolio. Given the initial investment of 10,000 Euro, these observed differences are economically meaningful.

In the simple calculation above, we assume that the yearly returns of the two alternatives are identical; this is a reasonable assumption, if the asset structure of the funds is well diversified. Nevertheless, it could be possible that the bank own balanced funds outperform the alternatives with regard to returns, despite the fact that a large literature shows that actively managed funds do not persistently offer higher returns than the market. Figure A7 shows that this was also not the case for the observed time period from 2009 to 2017. The average yearly returns of the bank own balanced funds are not statistically different from the average returns of the other funds that are recommended by advisors. This holds both during bull markets (e.g., prior to the financial crisis) and during bear markets like the Great Recession. Clients are not compensated for the higher costs of the product by higher returns.

Even if women were prepared to pay a premium for certain characteristics of bank own balanced funds (for which we do not have any evidence), there are a number of reasons to suspect that they are not fully aware of the actual costs that they pay for this and how these costs influence their wealth in the future.

The literature has documented in experimental studies as well as administrative bank data that bank clients and private investors are in general very insensitive to fees (see, e.g., Choi, Laibson, and Madrian, 2010; Linnainmaa, Melzer, and Previtero, 2020). In a recent survey based study, Rossi and Utkus (2020) show that a large majority of respondents do not know how much they pay for financial advice. When asked, they even tend to overestimate the fees. More importantly, the authors find that clients do not associate the costs of advice with its quality. In a similar vein, Weber (2020) documents that clients mostly ignore – especially non-salient – fees when evaluating advice.

With respect to the cost sensitivity of the clients in our data we would like to add two observations. First of all, the fact that women less often receive a rebate on the upfront fee charged upon mutual fund purchase casts doubt on the hypothesis that the higher fund fees paid by women exclusively reflect a higher willingness to pay for additional services. Second, our client survey provides evidence that women's cost literacy is lower compared to men. For this we analyse two of the fund literacy questions introduced previously, which focus specifically on knowledge regarding funds' cost structure (see Figure A6). Women on average answer 0.7 of the two questions correctly, while the number is 1.0 for men (paired t-test shows a significant difference with a p-value of 0.00). Figure A6 also reveals that men are substantially less likely to reply with "do not know" to these

questions compared to women.

In a final step, we asked participants in the advisor survey a set of questions concerning the effect of costs on the performance of an investment product. Specifically, we asked bank advisors to do an interest calculation. We asked them to estimate the expected wealth level when investing 1.000 Euros over 5 (15) years at a return of 6% (see appendix D for details). Surprisingly, less than half of the advisors state a number which is loosely in the correct range, both for the 5 as well as the 15 year horizon. We then provided the correct solution to these questions, and asked for an estimate of the effect of a 1% cost (i.e., returns lowered by one percentage point) on wealth accumulation. Despite providing the correct results to the first exercise, the fraction of respondents who are able to provide an estimate loosely in the correct range is only marginally higher. Therefore, even for the professional advisors we surveyed, almost half of the respondents do not display the ability to roughly estimate the effect of a 1% annual cost on an investment outcome.

Summarizing, even though the evidence suggests that women tend to look for investment opportunities that allow them decision delegation and an easy solution to their portfolio management, and even if advisors tend to sell the bank's own funds exactly under these premises, the evidence does not support the fact that the clients who follow these recommendations are aware of the price they pay. Interestingly, a disclosure of the Euro price might not help in these cases either because individuals might not be able to make a price and product comparison easily.

6 Differences by Advisor Gender

In this paper, so far, we have documented systematic differences in the financial advice clients receive based on their gender, as well as the resulting considerable economic effects. We have presented evidence that the differences in fees are driven by recommendations of products that are comparatively costly and cater to (perceived) differences in preferences. Our administrative bank data offers us a further final venue into better understanding the mechanisms that are in play in the interactions between financial advisors and their clients: the possibility that the advisor's gender may play a role in the observed outcomes.

What can we learn from this approach in relation to our previous findings? We proceed in two steps. First, we analyze if there are systematic differences in the average recommendations across advisor gender, while controlling for the characteristics of the client. If this is the case, it might reflect differences in preferences on the side of advisors: There is a large literature showing that the choices and beliefs and the treatment vary with the gender of financial professionals (e.g., Niessen-Ruenzi and Ruenzi, 2019; Egan, Matvos, and Seru, 2018; Adams and Funke, 2012). Furthermore, Foerster, Linnainmaa, Melzer, and Previtero (2017) document the important role of advisors preferences in explaining variation in clients' portfolio risk, and show that an advisor's own asset allocation strongly predicts their clients' portfolio characteristics. Our setting differs from their data, in that the advisors in our sample are not independent, such that the advisory process is likely to be more standardized.

In the second step, we study whether the gender of advisors contributes to explaining the observed differences in recommendations, i.e., whether male or female advisors are equally likely to differentiate their recommendations by the client's gender.

With regard to the empirical specification, we revisit the models from Sections 3.1 and 3.2. The dependent variables of interest are an indicator for an equity fund being recommended, the equity share, the risk category, an indicator for a bank own balanced fund, the annual expense ratio of the product and finally an indicator on whether a rebate on the upfront load was offered. In the previous specifications, we applied advisor fixed effects, which precluded controlling for the gender of the advisor. Table 7 presents the results of regressions including the advisor's gender as a regressor, together with our typical set of controls. First, note that the effects of the client's gender are mostly unchanged compared to the specifications with advisor fixed effects – they remain highly significant and quantitatively very similar. But our central focus in these specifications is on the direct effect of the advisor's gender. The effects are highly significant and sizeable, while controlling for client and meeting characteristics. In the observed sample of advisory meetings, male advisors are substantially more likely to recommend a pure equity fund, by about 3pp (Column 1). Correspondingly, the equity share in their recommendations is higher by about 2.6pp on average (Column 2) and they are significantly more likely to recommend higher risk category products (Column 3). Since we are not able to control for the (unobserved) risk preferences of the advisor, one explanation for these results could be that the recommendations of (potentially less risk averse) male advisors correspond to their own preferences. The remaining results in this set of regressions are particularly surprising. Male advisors are significantly less likely to recommend bank own balanced funds (Column 4) and their recommendations are associated with fees that are significantly lower by about 0.3pp (Column 5) compared to the recommendations by female advisors (similar results for the fee rank in Column (6)). Finally, male compared to female advisors are significantly more likely to issue recommendations involving a rebate on upfront loads (Column 7).

Note that the recommendations of male advisors on average are therefore less aligned with the incentives of the bank employing them – the institution benefits more from sales of its own products (in the best case, without rebates). This could be a result of unobserved advisor characteristics: For example, if male advisors in the sample on average have longer tenure and higher positions at the bank, then career concerns may be of lesser importance to them. Then it would be younger (instead of female) advisors whose career concerns guide them toward recommendations that are more favourable to their employer. Unfortunately, we are not able to further test this relationship using the data available to us. But we do not need to end the analysis at this stage, because we are able to consider whether male (female) advisors differentiate their recommendations depending on their client's gender.

In order to test these relationships, we estimate models that are fully interacted by advisor gender (i.e., we run separate linear regressions for male and female advisors) on the familiar outcomes using the administrative bank data. We observe the recommendations from 209 female and 297 male advisors. The results are presented in Table 8. It is important to bear in mind that the

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reported effects on client gender have to be interpreted as interaction effects. They for example show whether male advisors treat female clients differently from male clients, relative to the average effects that we have previously established. In these specifications, we are able to employ advisor fixed effects again. This means that we identify differential treatment of male and female clients by the same advisors.

The results that we find for the interactions of advisor and client genders are striking. Male advisors differentiate their recommendations significantly for each of the observed outcomes: In meetings with male advisors women receive recommendations for significantly more costly products than male clients (both according to annual expenses and fee ranks) and are significantly more likely to be offered a bank own balanced fund than men. In addition to this, male advisors are significantly less likely to offer a rebate on upfront loads to women than to male clients.

The female advisors in the sample differentiate their recommendation across gender as well, but to a much lesser degree. In particular, we do not observe significant differences in their advice to women with regard to the annual expenses of products or the likelihood of offering rebates on upfront loads. With regard to two outcomes we do observe differentiation by female advisors: They are significantly more likely to recommend products with a higher fee rank to women, which is most likely associated with the fact that they are also more likely to recommend bank own balanced funds to female clients. But even for these two outcomes, female advisors differentiate their recommendations to a substantially lesser degree by client gender than their male colleagues: The size of the observed effects (i.e., the interaction term concerning female clients) is about half the size of the one observed with male advisors – F-tests reveal that these differences are indeed statistically significant (p-values of the F-tests are 0.028 for the fee rank result and 0.0853 for the bank own balanced fund indicator).

Overall, an interesting pattern emerges with regard to the advisors' gender. On the one hand, male advisors on average appear to offer recommendations that are in line with less risk-aversion; in addition, they are significantly less likely to recommend bank own balanced funds and are more likely to offer rebates on upfront loads. On the other hand, we show that it is mainly male advisors that engage in differentiating recommendations across client gender.

7 Conclusion

Our empirical results emphasize the problems surrounding the misalignment of incentives of advisors and their customers. To refer back to the title of the paper: Yes, there are gender differences in financial advice on both sides – the client and the advisor. Women get different financial advice compared to men even when controlling for many observable characteristics. Specifically, they receive recommendations for funds with lower risky shares, are more likely to receive recommendations for the bank own managed funds, and pay a higher price overall, both in terms of the upfront load as well as the annual management fees. We propose that this derives from the fact that individuals who *appear* to be more financially apt receive better advice on average due to

stereotyping. This systematic differential treatment of customers by professional advisors has not previously been documented in real-world data, but is related to patterns documented in field experiments (see, e.g., Mullainathan, Noeth, and Schoar, 2012; Bhattacharya, Kumar, Visaria, and Zhao, 2020). Furthermore, it appears likely that this finding not only applies to financial matters but can be generalized to other settings in which individuals receive advice from professionals and where the quality of the advice received is hard to judge.

The basic mechanism responsible for the conflict of interest is the contractual incentive structure of advisors, with higher bonuses exacerbating the problems as discussed in the theoretical literature, for example, by Inderst2012AER, Inderst2009. It is especially problematic given the evidence in our paper that there seems to be a large knowledge gap regarding fees in general, and, specifically, about their long-term impact on financial outcomes. Among many other things, the experience of the COVID-19 pandemic has shown that it is hard for individuals to understand the concept of exponential growth, and that this is very difficult to communicate in an understandable manner. Consequently, more evidence is needed on how to inform individuals about costs of financial products and advice such that individuals can consider them in their financial decisions.

Various policies to address the conflict of interest in financial advice have been implemented, in particular disclosure of the conflict of interest to clients or a decrease in incentives for advisors by reducing the bonus component of their contracts. However, these approaches have drawbacks of their own: Lacko and Pappalardo (2010) and Loewenstein, Cain, and Sah (2011) show in experimental settings that disclosure could be associated with other disadvantages, such as clients becoming distracted from essential details owing to information overload, or advice even becoming more biased owing to the interaction of trust and signaling effects. Fee-based advisory contracts are also no panacea, since they may induce advisors to strategically inflate the number of interactions with each customer. Overall, there seems to be no easy way out. Still, our findings add an additional reason for and more urgency to these regulatory and policy efforts, since we show that costs associated with product recommendations are borne disproportionately by women (especially those with lower financial aptitude).

Our results are particularly worrisome in the light of persistent gender gaps in income and financial inclusion. Women worldwide are less likely to have access to an account at a formal financial institution, and less access to formal credit. Moreover, aside from the widely documented gender gaps in income, women plan and save less for their retirement and invest less in risky assets. There are high numbers of financially fragile female-headed households even before the onset of the COVID-19 crisis (Hasler and Lusardi, 2019). Increasing individual responsibility for retirement income and the longer life expectancy of women compared to men may contribute to increasing rather than closing the gender gap in overall financial well-being.

The intention of this paper is not to question the overall quality and utility of advice. In contrast, we find evidence that women are more likely to state that they would not invest at all without the help of their advisor (see Figure 10). The reference group in our paper for advised women are advised men, and not, women who do not consult an advisor at all. What we can say is

that the documented mechanism adversely affects those generally more in need of professional financial advice. The Federal Trade Commission provides shopping tips and questions to ask for customers on its website (https://www.consumer.ftc.gov/topics/shopping-saving). Initiatives like that and improving the overall level of financial literacy, in particular among women, may help less financially apt clients to at least ask the right questions in an advisory meeting.

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Figure 1: Variation in Recommendations by Fund Type and Gender

This figures shows the share of different fund categories recommended to male and female clients separately based on the 34,895 recommendations in our sample.
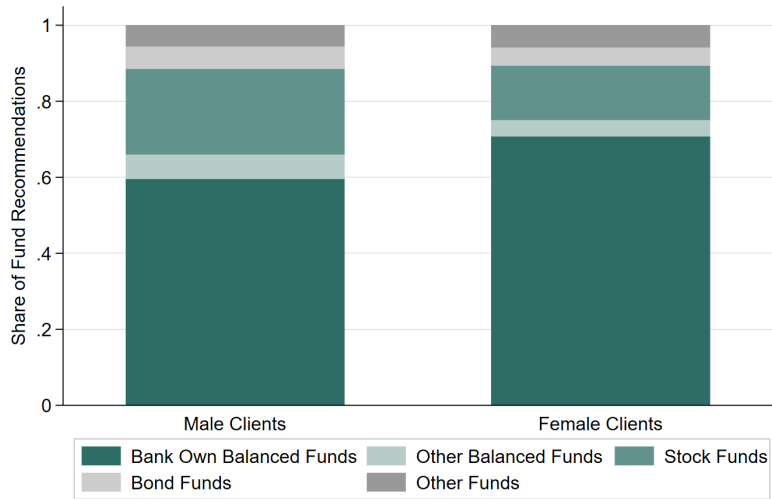
Figure 2: Fund Recommendations: Management Fees and Risk Categories

Panel A: Distribution of Fund Risk Categories by Gender
For each risk category the figure shows the share of recommendations for male and female clients separately.
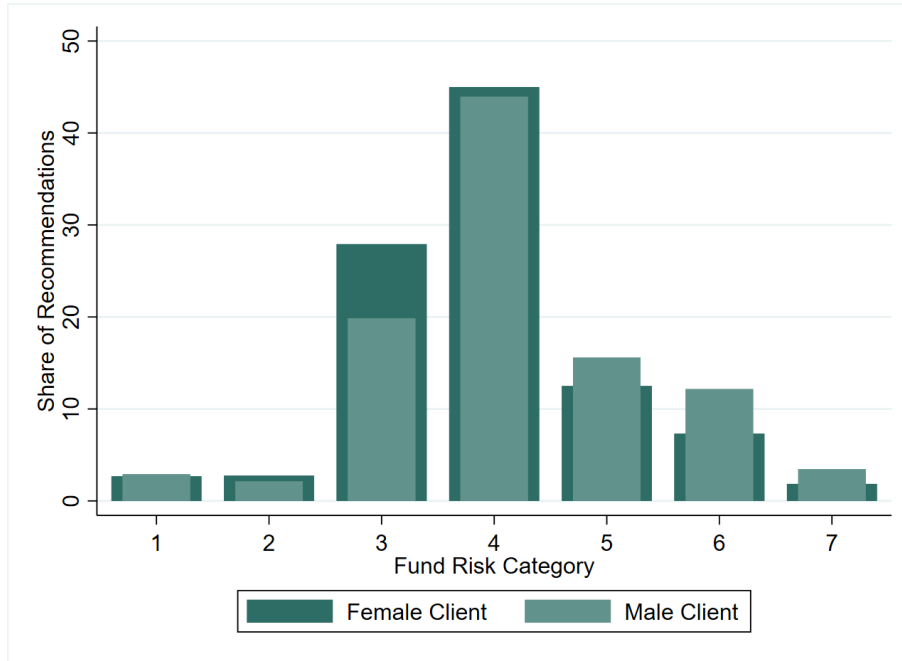
Panel B: Management Fees by Risk Category
For each risk category the figure shows the annual expense ratios for all funds in our sample.
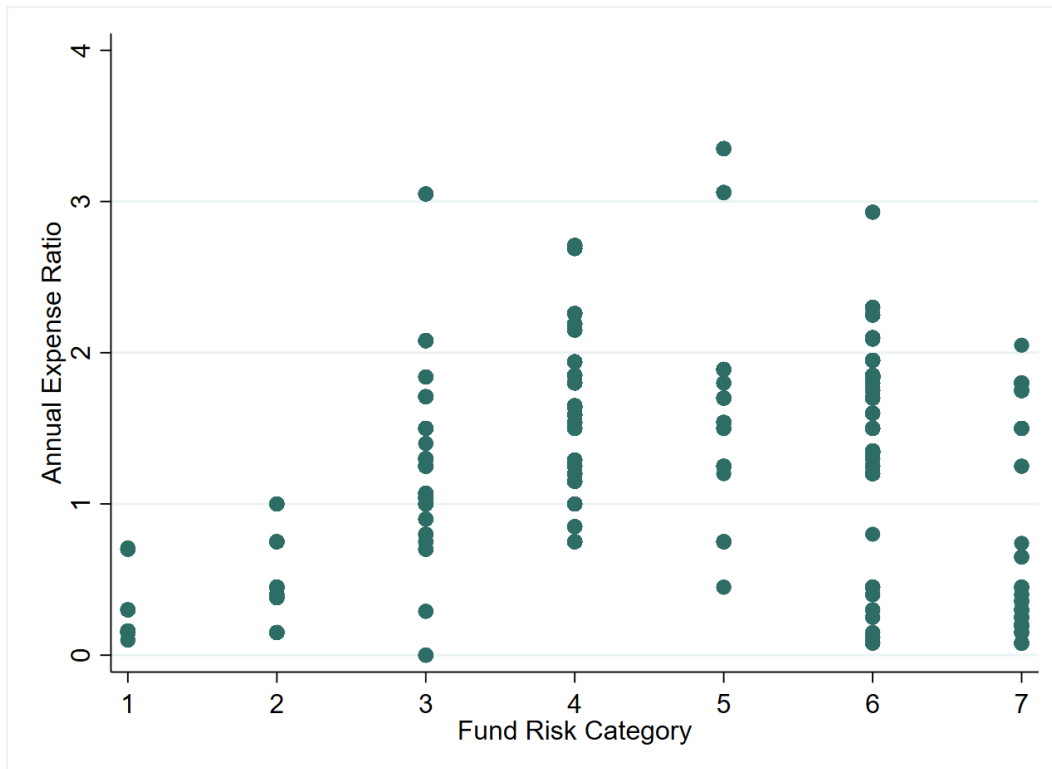
Figure 3: Fee Rank and Management Fees by Risk Category

Panel A of this figures shows the distribution of fund recommendations across five quintiles of the cost distribution, from low (1) to high (5) costs, for female and male clients. The quintiles (ranks) were calculated for each of the seven fund risk categories separately. Panel B shows the average annual expense ratio for bank own balanced and other funds separately by fund risk category.

Panel A: Distribution of Fee Rank by Gender
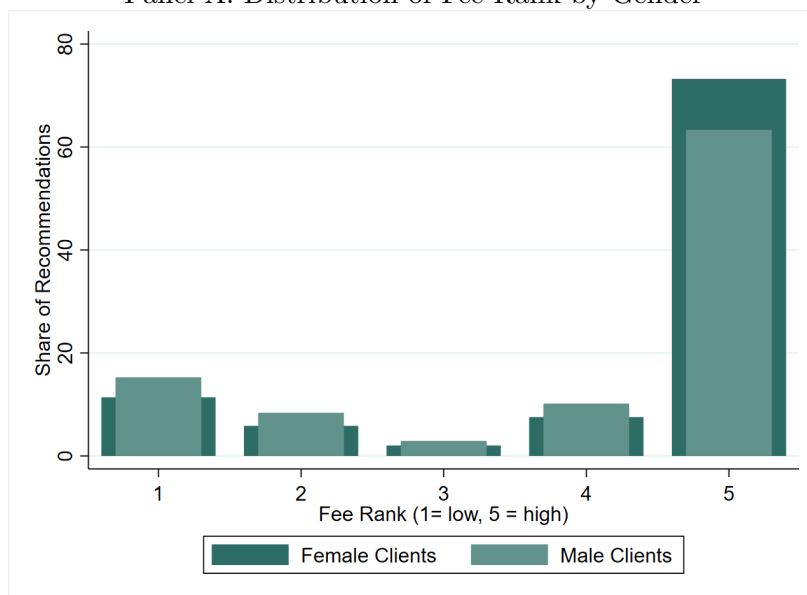
Panel B: Annual Expense Ratio by Risk Category
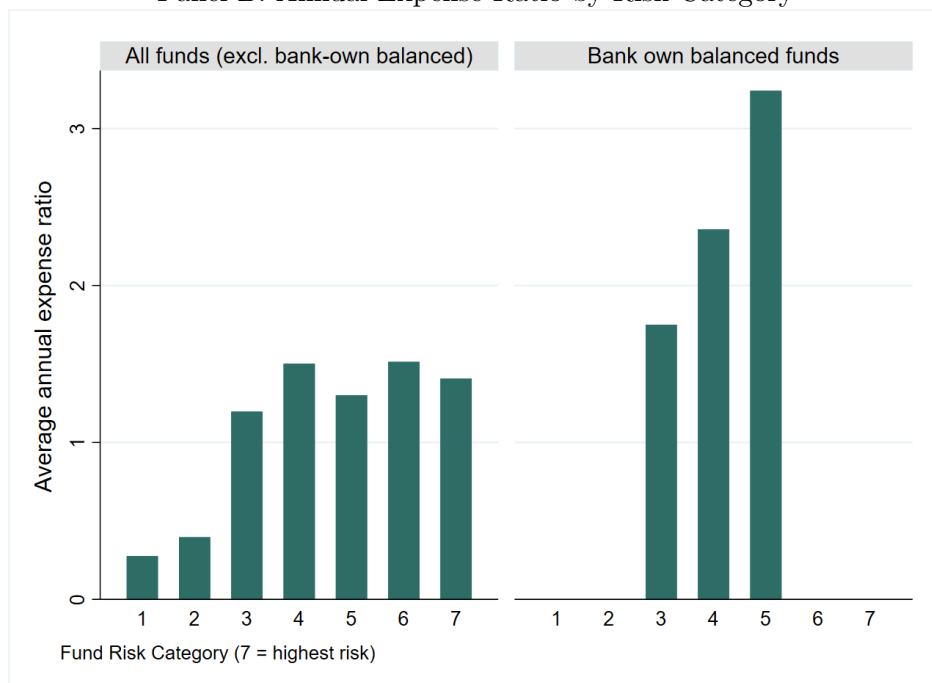
Figure 4: Rebate on Fund Loads to male (M) and female (F) clients

The figure shows the share of fund purchases that were granted a rebate by the advisor by fund risk category for male and female clients.
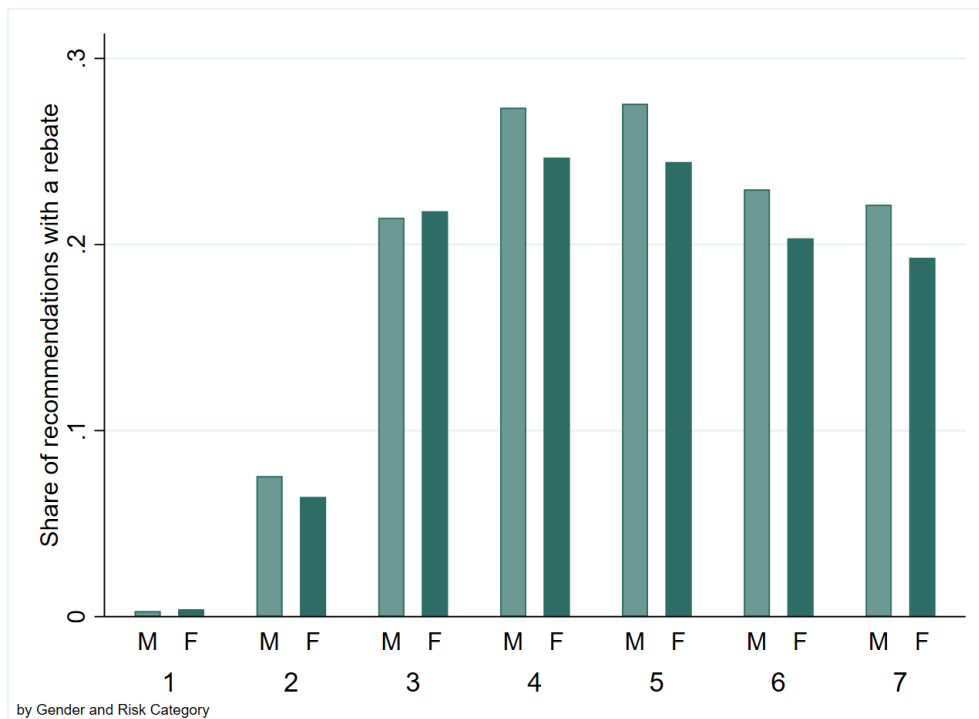
Figure 5: Motives for Seeking Advice by Gender

This figures shows the reasons for seeking advice by gender. Each figure represents the share of clients naming the mentioned reasons as most or second most important reason for seeking advice. The questions were answered by 537 clients (387 men) in our sample.
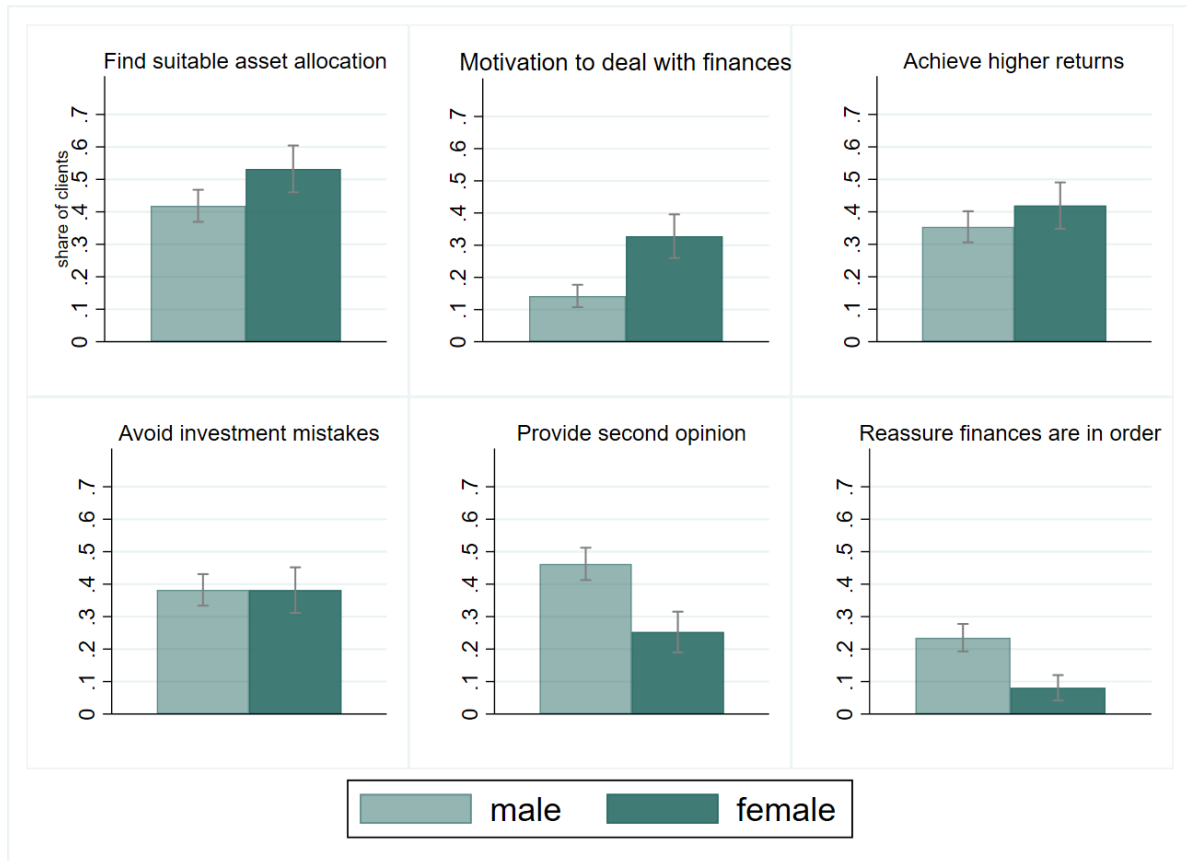
Figure 6: Preferences to delegate financial decisions

This figure shows distribution to the question on the preference to delegate financial decisions by gender.
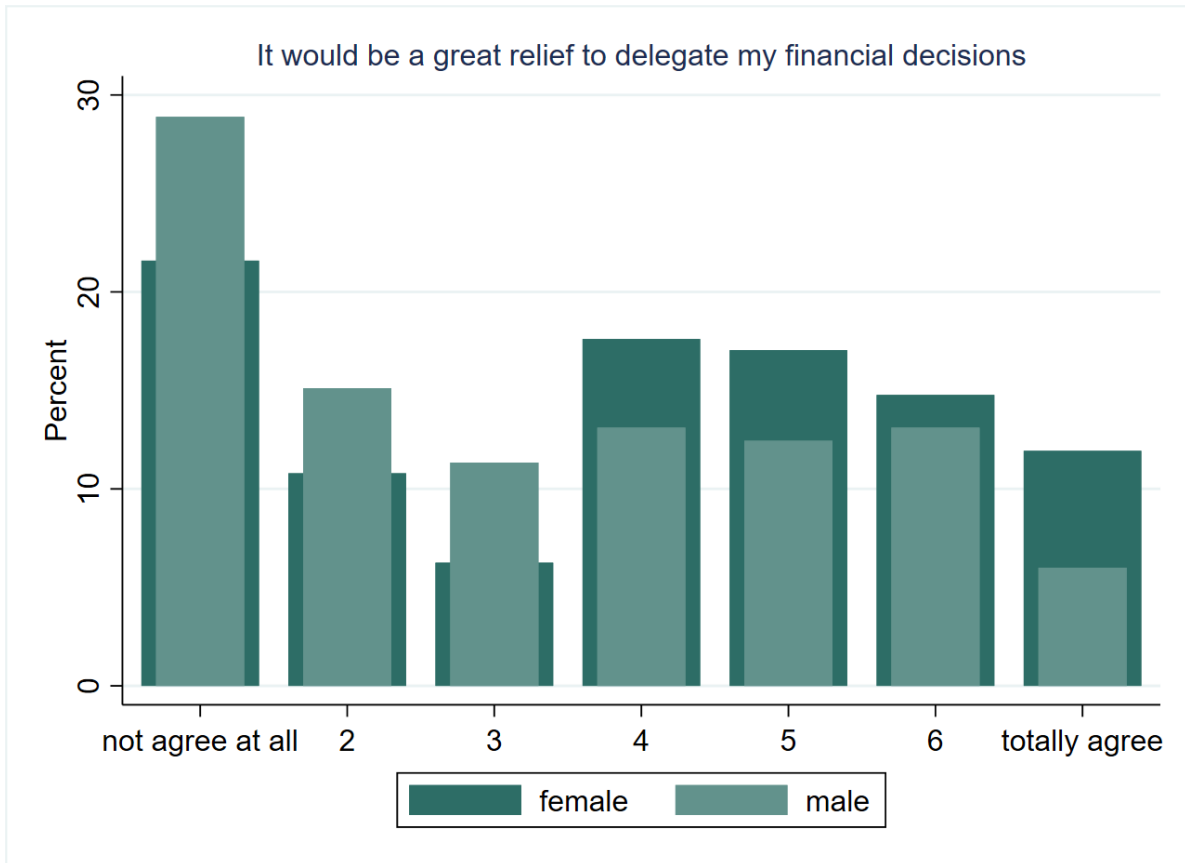
Figure 7: Differences in advisors' perception of male and female clients

This figures shows advisors' perceptions of client preferences and negotiation skills as a difference between the average value associated with male versus female clients. More precisely, we calculate the differences in the mean answers between gender on a scale from 1 to 7 (mean answers among men minus mean answers about women). Confidence bars are calculated at the 95% confidence level.

Panel A: Client Needs

Panel B: Negotiations Skills and Rebate Offers
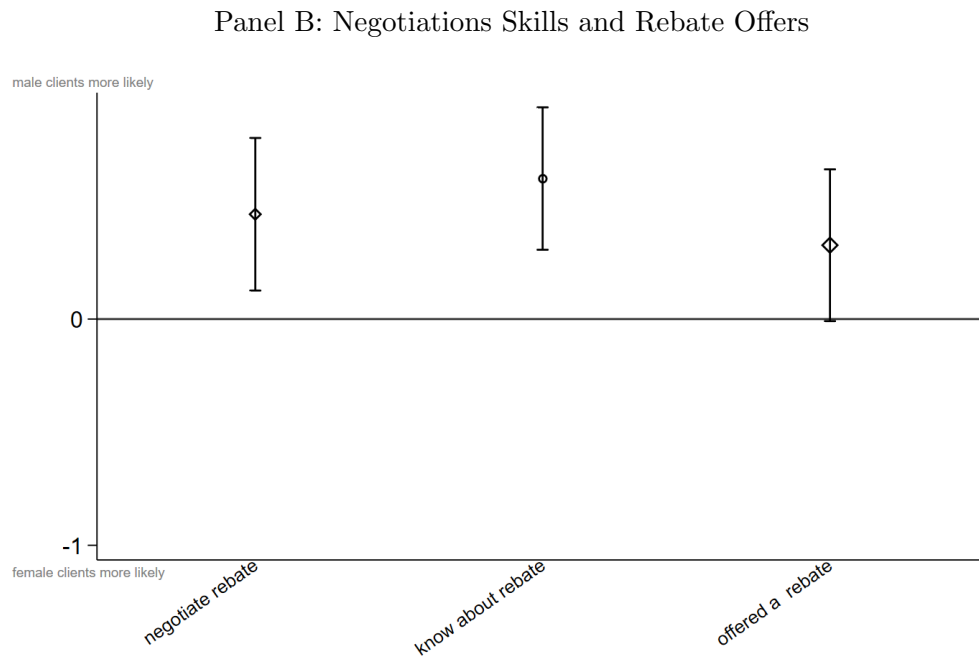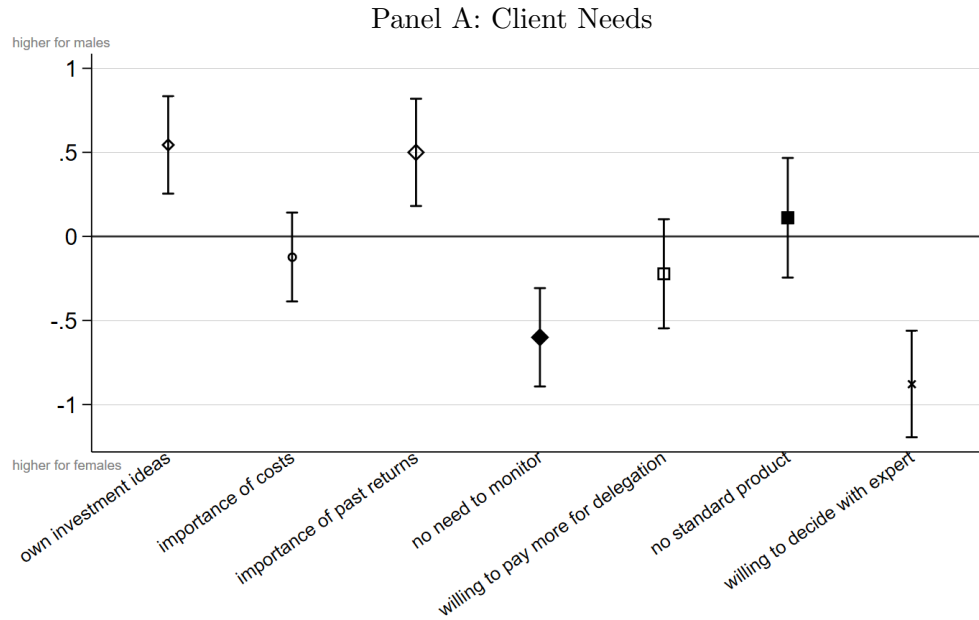
Figure 8: Differences in Reasons for Recommendations

This figure shows differences in reasons for the recommendations of bank own versus other funds based on text analysis of protocols.
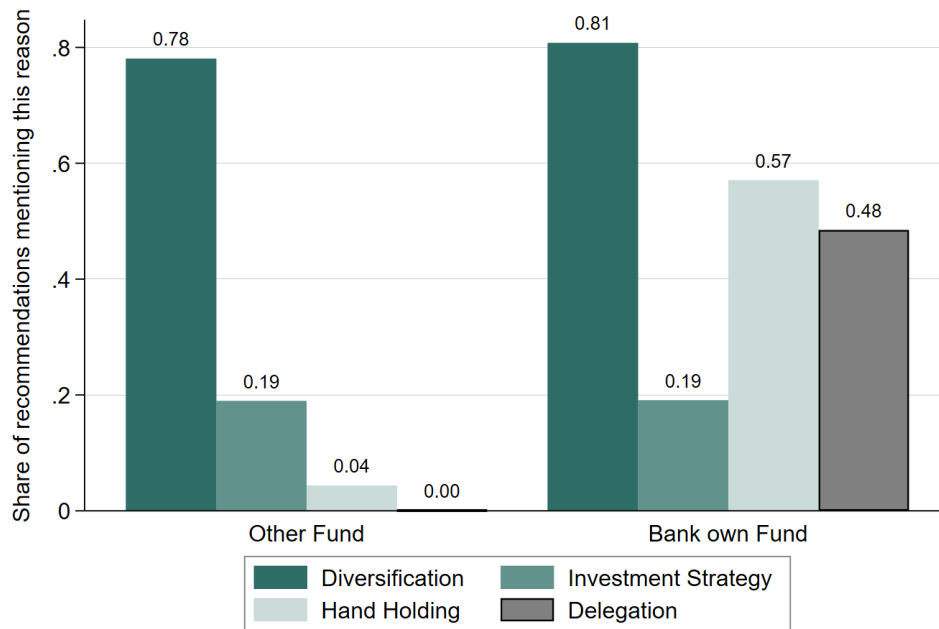
Figure 9: Stylized Differences in Financial Wealth as a result of Fund Selection

This figures shows the result of a stylized calculation of the financial wealth as a result of an investment of 10,000 euros in a bank-own versus own mixed investment approach. The annual ratio of 2.3% represents the ongoing fee of the most recommended bank-own balanced fund. The annual expense ratio of 0.96% reflects a combined solution with the same risky share based on the combination of a pure equity (40%) and a bond fund (60%). Return is fixed to 4% per year for both funds.

Annual Expense Ratios and Final Wealth

Data labels on green line (Annual Expense Ratio 0.96%): 13,093; 17,665; 23,833
Data labels on light green line (Annual Expense Ratio 2.30%): 11,638; 13,775; 16,305

Legend:
- Final Wealth (Annual Expense Ratio 0.96%)
- Final Wealth (Annual Expense Ratio 2.30%)

Y-axis: Euro (0 to 30000)
X-axis: Investment Horizon (0 to 30)
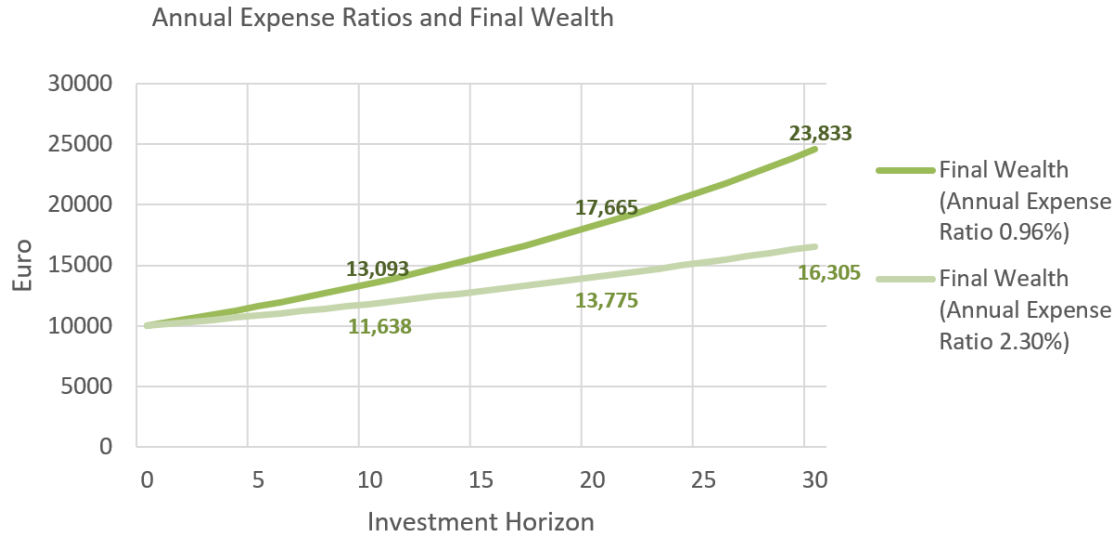
Figure 10: Differences in advisors' perception of male and female clients

This figures shows the distribution of clients' answer to the statement on a 1-7 scale.
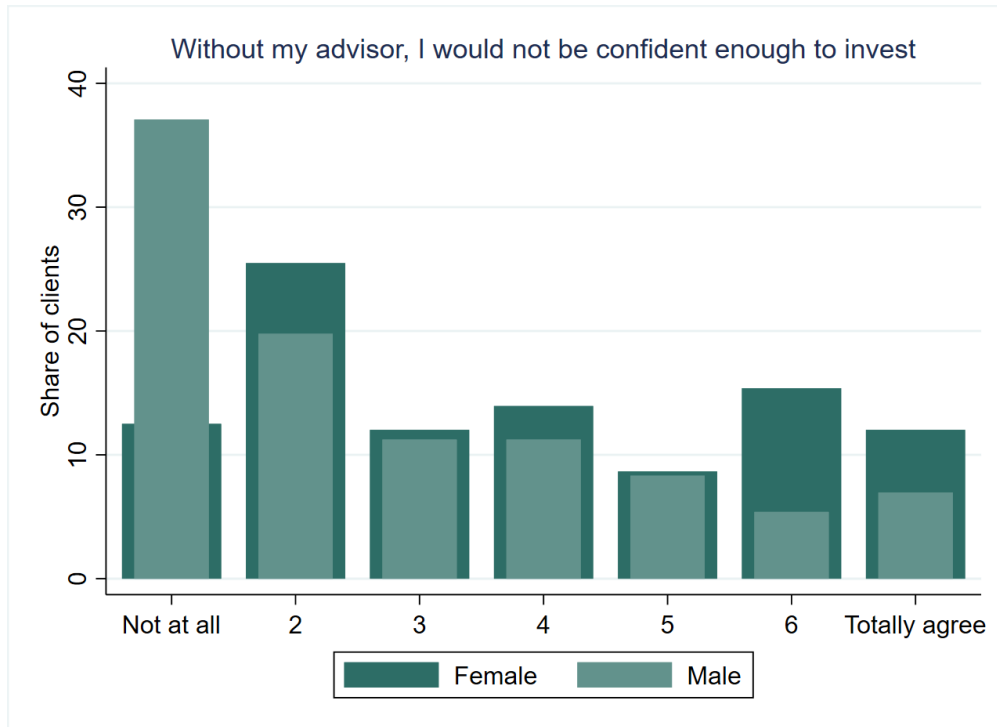
Table 1: Summary Statistics

Panel A: Client level information

	All		Women		Men	
	N	mean	N	mean	N	mean
Female	13,239	0.46	6,078	1	7,161	0
Risk tolerance: low	13,239	0.07	6,078	0.10	7,161	0.07
Risk tolerance: moderate	13,239	0.55	6,078	0.61	7,161	0.47
Risk tolerance: high	13,239	0.23	6,078	0.19	7,161	0.26
Risk tolerance: very high	13,239	0.17	6,078	0.10	7,161	0.20
Investment horizon: < 3 y.	13,239	0.01	6,078	0.01	7,161	0.01
Investment horizon: 3 - 5 y.	13,239	0.55	6,078	0.56	7,161	0.54
Investment horizon: > 5 y.	13,239	0.44	6,078	0.43	7,161	0.45
Financial wealth	13,239	108,515	6,078	98,336	7,161	117,155
Married	13,239	0.55	6,078	0.45	7,161	0.63
Age: younger than 50	13,239	0.17	6,078	0.18	7,161	0.17
Age: 50 to 65	13,239	0.31	6,078	0.3	7,161	0.31
Age: older than 65	13,239	0.52	6,078	0.52	7,161	0.52
Employed	13,239	0.39	6,078	0.39	7,161	0.39
Academic	13,239	0.05	6,078	0.02	7,161	0.07
Manager	13,239	0.04	6,078	0.02	7,161	0.05
Client-bank-relation (in years)	13,239	18.47	6,078	18.46	7,161	18.47
Foreign citizenship	13,239	0.07	6,078	0.06	7,161	0.07
Financial literacy (Survey)	485	3.15	147	2.97	338	3.25
Fund literacy (Survey)	242	1.54	68	1.3	174	1.67
Fund fee literacy (Survey)	242	0.92	68	0.71	174	1.00
Conf. in fund fee knowl. (Survey)	242	0.49	68	0.37	174	0.53
Stock market sealed book (Survey)	485	3.47	147	4.01	338	3.23

Panel B: Recommendation level (R) and meeting (M) information

	All		Women		Men	
	N	mean	N	mean	N	mean
Advice in person (M)	26,747	0.85	12,080	0.86	14,667	0.84
Meeting duration > 30 min. (M)	26,747	0.74	12,080	0.75	14,667	0.74
Number of recommendations (M)	26,747	1.31	12,080	1.24	14,667	1.36
Share stock funds (R)	34,895	0.19	14,989	0.14	19,906	0.23
Fund equity share in percent (R)	34,895	46.68	14,989	42.82	19,906	49.59
Fund risk category (R)	34,895	4.06	14,989	3.91	19,906	4.17
Bank-own balanced fund (R)	34,895	0.64	14,989	0.71	19,906	0.60
Annual expense ratio (R)	34,895	1.88	14,989	1.91	19,906	1.87
Fee rank (quintile) (R)	34,895	4.10	14,989	4.25	19,906	3.98
Rebate (R)	21,084	0.26	9,342	0.25	11,742	0.27
Recomm. value (in Euros) (R)	34,895	22,597	14,989	29,323	19,906	17,533
Adherence (R)	34,895	0.62	14,989	0.64	19,906	0.60

Table 2: Differences in product recommendations for male and female clients

The dependent variables are: Column (1) an indicator equal to one if the recommendation is an equity fund, Column (2) and (4) the equity share of the recommended fund, Column (3) and (5) the risk category of the recommended fund, Column (6) and indicator equal to one if the recommendation is one of the bank's own balanced funds. Standard errors clustered by client in parentheses. */**/*** denote significance at the 10/5/1%-level.

VARIABLES	(1) Stock fund	(2) Equity share	(3) Risk category	(4) Equity share	(5) Risk category	(6) Bank own balanced fund
Female	-0.02***	-1.59***	-0.08***	-2.33***	-0.09***	0.03***
	(0.00)	(0.40)	(0.02)	(0.38)	(0.01)	(0.01)
Risk tol. low [Ref.]						
Risk tol. moderate	0.05***	12.67***	0.77***	5.02***	0.46***	0.16***
	(0.01)	(0.75)	(0.03)	(0.77)	(0.03)	(0.01)
Risk tol. high	0.15***	25.40***	1.19***	17.98***	0.85***	0.06***
	(0.01)	(0.85)	(0.03)	(0.85)	(0.03)	(0.01)
Risk tol. very high	0.32***	35.48***	1.51***	28.08***	1.17***	-0.12***
	(0.01)	(0.94)	(0.04)	(0.93)	(0.03)	(0.02)
ln (value of recomm.)	-0.05***	-4.08***	-0.17***	-3.47***	-0.12***	0.04***
	(0.00)	(0.14)	(0.01)	(0.12)	(0.00)	(0.00)
ln (financial wealth)	0.01***	0.80***	0.05***	1.12***	0.04***	-0.02***
	(0.00)	(0.15)	(0.01)	(0.14)	(0.00)	(0.00)
Married	0.01*	0.30	-0.01	0.66*	-0.00	-0.02***
	(0.00)	(0.40)	(0.02)	(0.37)	(0.01)	(0.01)
Employed	-0.00	0.19	0.04	-0.16	0.02	0.00
	(0.01)	(0.62)	(0.02)	(0.56)	(0.02)	(0.01)
Academic	0.03**	1.76*	0.11***	1.93**	0.09***	-0.02*
	(0.01)	(1.01)	(0.04)	(0.95)	(0.03)	(0.02)
Manager	0.03*	2.47**	0.08*	3.28***	0.06	-0.05***
	(0.02)	(1.19)	(0.04)	(1.10)	(0.04)	(0.02)
Client-bank-relat.	-0.00	-0.01	-0.00	-0.01	-0.00	0.00**
(in years)	(0.00)	(0.02)	(0.00)	(0.02)	(0.00)	(0.00)
Foreign citizen	0.01	-0.53	0.01	-0.14	-0.01	-0.01
	(0.01)	(0.86)	(0.03)	(0.83)	(0.03)	(0.01)
Personal advice	-0.03***	-0.97	-0.03	-2.61***	-0.06***	0.06***
	(0.01)	(0.59)	(0.02)	(0.54)	(0.02)	(0.01)
Meeting duration:	0.05***	4.42***	0.16***	3.48***	0.08***	-0.04***
over 30 min	(0.01)	(0.46)	(0.02)	(0.42)	(0.01)	(0.01)
Constant	0.53***	57.17***	4.13***	69.01***	4.55***	0.12***
	(0.04)	(2.63)	(0.10)	(2.50)	(0.09)	(0.04)
Age groups	X	X	X	X	X	X
Month x year FE	X	X	X	X	X	X
Advisor FE	X	X	X	X	X	X
Observations	34,895	34,895	34,895	30,999	30,999	34,895
Adjusted R-squared	0.275	0.261	0.304	0.379	0.423	0.358

Table 3: Differences in annual fund fees by gender

The dependent variables in Columns (1) to (3) are the annual management fees, and in Columns (4) and (5) the fee rank within in each risk category. Standard errors are clustered by client and reported in parentheses. */**/*** denote significance at the 10/5/1%-level.

VARIABLES	(1) Exp. Ratio	(2) Exp. Ratio	(3) Exp. Ratio	(4) Fee Rank	(5) Fee Rank
Female	-0.01	0.01**	-0.02***	0.14***	-0.01
	(0.01)	(0.01)	(0.00)	(0.02)	(0.01)
Bank own			1.15***		2.58***
balanced fund			(0.01)		(0.02)
ln (value of recom.)	0.00	0.02***	-0.00**	0.12***	-0.00
	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)
ln (financial wealth)	0.00	-0.00**	0.01***	-0.03***	0.01***
	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)
Married	-0.03***	-0.03***	-0.01	-0.08***	-0.02*
	(0.01)	(0.01)	(0.00)	(0.02)	(0.01)
Employed	0.03**	0.01	0.01**	-0.01	0.02
	(0.01)	(0.01)	(0.01)	(0.03)	(0.02)
Academic	0.01	0.01	0.01	-0.02	0.05*
	(0.02)	(0.02)	(0.01)	(0.05)	(0.03)
Manager	-0.00	-0.00	0.04***	-0.12**	0.08**
	(0.03)	(0.02)	(0.01)	(0.05)	(0.03)
Client-bank-rel.	0.00**	0.00***	0.00**	0.00*	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Foreign citizen	-0.03	-0.01	-0.00	-0.04	0.01
	(0.02)	(0.01)	(0.01)	(0.04)	(0.02)
Personal advice	0.07***	0.04***	0.00	0.18***	0.03
	(0.01)	(0.01)	(0.01)	(0.03)	(0.02)
Meeting duration	0.01	-0.03***	0.01	-0.11***	-0.00
longer than 30 min	(0.01)	(0.01)	(0.00)	(0.02)	(0.01)
Constant	1.36***	-0.07	0.14***	2.10***	1.86***
	(0.06)	(0.04)	(0.03)	(0.14)	(0.08)
Age groups	X	X	X	X	X
Month x year FE	X	X	X	X	X
Advisor FE	X	X	X	X	X
Fund risk category FE		X	X		
Observations	34,895	34,895	34,895	34,895	34,895
Adjusted R-squared	0.147	0.549	0.821	0.209	0.677

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Table 4: Rebates on fund purchases

Panel A Rebate is an indicator equal to one if a client received a rebate on the upfront fee on a mutual fund purchases (load). Specification (1) to (3) include all fund purchases, specification (4) includes purchases of the 50 most frequently recommended funds, and specification (6) contains only recommendations which are not part of the group of bank own balanced funds. In Columns (3) - (5) additional controls: risk preferences, ln (financial wealth), marital status, age groups, employment status, academic, manager, duration of the client bank relationship, foreign citizenship, advice in person, duration of the meeting. Standard errors are reported in parentheses. */**/*** stars denote significance at the 10/5/1%-level.

VARIABLES	(1) rebate	(2) rebate	(3) rebate	(4) rebate >50 recomm.	(5) rebate w/o bank own
Female	-0.02**	-0.02**	-0.02***	-0.02***	-0.04**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
ln (value of the recomm.)			0.06***	0.06***	0.05***
			(0.00)	(0.00)	(0.01)
Inv. Horizon: <3y [Ref.]					
Inv. Horizon: 3y to 5y			0.03	0.03	0.06
			(0.05)	(0.05)	(0.07)
Inv. Horizon: > 5y			0.04	0.04	0.07
			(0.05)	(0.05)	(0.07)
Constant	0.23***	-0.20	-0.61***	-0.31***	-0.31**
	(0.04)	(0.12)	(0.13)	(0.10)	(0.15)
Controls			X	X	X
Month x year FE	X	X	X	X	X
Advisor FE	X	X	X	X	X
Fund (ISIN) FE		X	X	X	X
Observations	21,084	21,084	21,077	19,817	7,334
Adjusted R-squared	0.201	0.226	0.255	0.255	0.313

Table 5: Following Financial Advice

This table reports the effect of financial literacy and various controls on following financial advice using OLS regressions. Adherence is measured on the basis of the recommendations implemented after a meeting with a financial advisor. Financial literacy is measured by dummies indicating high financial literacy/high fund literacy/high self-assessed stock market familiarity based on survey questions. Additional controls: risk preferences, ln (value recomm.), ln (financial wealth), marital status, age groups, employment status, academic, manager, duration of the client bank relationship, foreign citizenship, advice in person, duration of the meeting. Standard errors are clustered at the client level and reported in parentheses.*/**/*** stars denote significance at the 10/5/1%-level.

	(1) adherence	(2) adherence	(3) adherence	(4) adherence	(5) adherence	(6) adherence
High fin. literacy	-0.08					
	(0.10)					
High fund literacy		-0.75**				
		(0.36)				
High stock market			-0.19*			
			(0.10)			
High lit. x female				-0.30*		
				(0.17)		
High lit. x male				0.06		
				(0.11)		
High fund fit. x female					-0.79**	
					(0.35)	
High fund lit. x male					-0.43	
					(0.36)	
High stock market x female						-0.28**
						(0.14)
High stock market x male						-0.15
						(0.12)
Female	-0.05	-0.11	-0.06	0.05	-0.04	-0.01
	(0.08)	(0.15)	(0.08)	(0.10)	(0.18)	(0.11)
Constant	0.48**	0.85***	0.46**	0.48**	0.89***	0.45**
	(0.20)	(0.27)	(0.20)	(0.20)	(0.29)	(0.20)
Controls	X	X	X	X	X	X
Month FEs	X	X	X	X	X	X
Mundlak correction	X	X	X	X	X	X
Observations	1,342	675	1,342	1,342	675	1,342
Adjusted R-squared	0.0468	0.110	0.0439	0.0482	0.111	0.0436
Ftest, Prob > F				0.0750	0.0843	0.4185

Table 6: Catering to client requests

Bank-owned fund is an indicator equal to one if the recommended purchase is a bank-owned balanced fund. Adherence is an indicator if the recommendation was implemented within 30 days. Standard errors are reported in parentheses. */**/*** stars denote significance at the 10/5/1%-level.

VARIABLES	(1) bank own fund	(2) adherence
Female	0.03***	0.02*
	(0.01)	(0.01)
Bank own fund*female		0.00
		(0.01)
Bank own fund		0.02***
		(0.01)
Constant	0.13***	0.32***
	(0.05)	(0.05)
Standard Controls	X	X
Advisor fixed effects	X	X
Month fixed effects	X	X
Observations	25,326	34,895
R-squared	0.45	0.26
Adjusted R-squared	0.360	0.146

Table 7: Recommendations by advisor gender

The dependent variables are: Column (1) an indicator equal to one if the recommendation is an equity fund, Column (2) the equity share of the recommended fund, Column (3) the risk category of the recommended fund, Column (4) and indicator equal to one if the recommendation is one of the bank's own balanced funds, Column (5) the annual management fee,Column (6) the fee rank conditional on the risk category, and Column (7) an indicator if a rebate was granted. Standard errors clustered by client in parentheses. */**/*** denote significance at the 10/5/1%-level.

VARIABLES	(1) Equity Fund	(2) Equity Share	(3) Risk Category	(4) Bank own Fund	(5) Annual Exp. Ratio	(6) Fee Rank	(7) Rebate
Male advisor	0.03***	2.60***	0.21***	-0.08***	-0.03***	-0.20***	0.04***
	(0.00)	(0.35)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)
Female client	-0.02***	-1.42***	-0.21***	0.04***	0.02***	0.18***	-0.02***
	(0.00)	(0.38)	(0.02)	(0.01)	(0.01)	(0.02)	(0.01)
Constant	0.26***	42.23***	4.60***	0.63***	0.25***	3.97***	-0.22***
	(0.02)	(1.77)	(0.08)	(0.03)	(0.03)	(0.08)	(0.04)
Controls	X	X	X	X	X	X	X
Month FE	X	X	X	X	X	X	X
Fund FE							X
Observations	34,828	34,828	34,828	34,828	34,828	34,828	28,736
Adjusted R-squared	0.233	0.229	0.152	0.255	0.524	0.129	0.090

Table 8: Gender differences in recommendations by advisor gender

VARIABLES	(1) Stock fund Female	(2) Stock fund Male	(3) Equity share Female	(4) Equity share Male
female	-0.00	-0.03***	-0.37	-2.43***
	(0.01)	(0.01)	(0.55)	(0.54)
Constant	0.43***	0.74***	49.61***	74.60***
	(0.05)	(0.05)	(3.99)	(3.94)
Controls	X	X	X	X
Month fixed effects	X	X	X	X
Advisor fixed effects	X	X	X	X
Observations	14,860	19,968	14,860	19,968
Adjusted R-squared	0.256	0.289	0.274	0.257
Ftest, Prob > F		**0.00**		**0.00**

VARIABLES	(5) Risk cat. Female	(6) Risk cat. Male	(7) bank own fund Female	(8) bank own fund Male
female	-0.03	-0.11***	0.02*	0.04***
	(0.02)	(0.02)	(0.01)	(0.01)
Constant	3.65***	4.84***	0.31***	0.01
	(0.16)	(0.15)	(0.06)	(0.05)
Controls	X	X	X	X
Month fixed effects	X	X	X	X
Advisor fixed effects	X	X	X	X
Observations	14,860	19,968	14,860	19,968
Adjusted R-squared	0.305	0.309	0.316	0.372
Ftest, Prob > F		**0.02**		**0.09**

Table 8 (continued): Gender differences in recommendations by advisor gender

VARIABLES	(1) Exp. Ratio Female	(2) Exp. Ratio Male	(3) Fee Rank Female	(4) Fee Rank Male	(5) Rebate Female	(6) Rebate Male
female	0.01	0.02**	0.09***	0.17***	-0.02	-0.02*
	(0.01)	(0.01)	(0.03)	(0.03)	(0.01)	(0.01)
Constant	0.04	-0.04	2.90***	2.46***	-0.37**	-0.71***
	(0.06)	(0.06)	(0.21)	(0.18)	(0.17)	(0.11)
Controls	X	X	X	X	X	X
Month FE	X	X	X	X	X	X
Advisor FE	X	X	X	X	X	X
Fund FE					X	X
Observations	14,860	19,968	14,860	19,968	9,177	11,860
Adjusted R-squared	0.573	0.536	0.191	0.215	0.242	0.282
Ftest, Prob > F		**0.05**		**0.03**		**0.52**

Online Appendix: Gender Differences in Financial Advice

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A   Additional figures

Figure A1: Distribution of Meetings

Panel A of this figures shows the distribution of the number of meetings by client over our sample period. Panel B shows the number of protocols in our sample over calendar months.

Panel A: Distribution of the number of meetings by client

Panel B: Distribution of meetings over calendar month
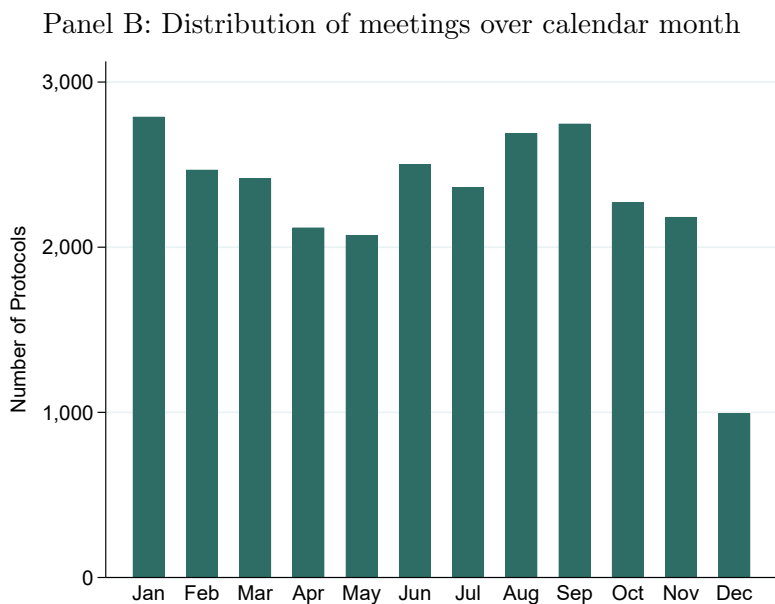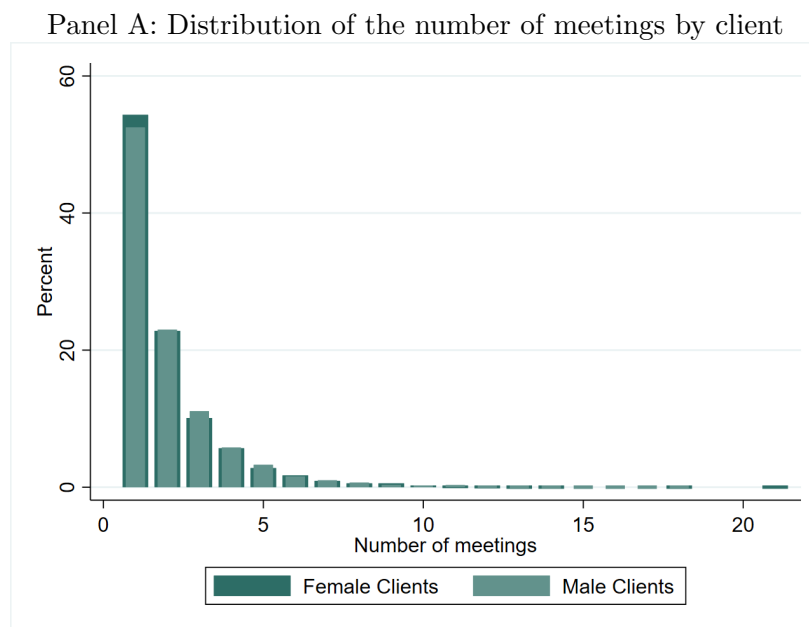
Figure A2: Variation in Product Recommendations by Gender

This figures shows the cumulative distribution of distinct product recommendations. On the x-axis securities (identified by their ISIN) are ordered by their frequency of occurrence in the data (equally weighted). The vertical dashed line intersects with the distributional graph at the point of the 10 (20, 30, 40, 50) most recommended securities in the sample.


Variation in product recommendations
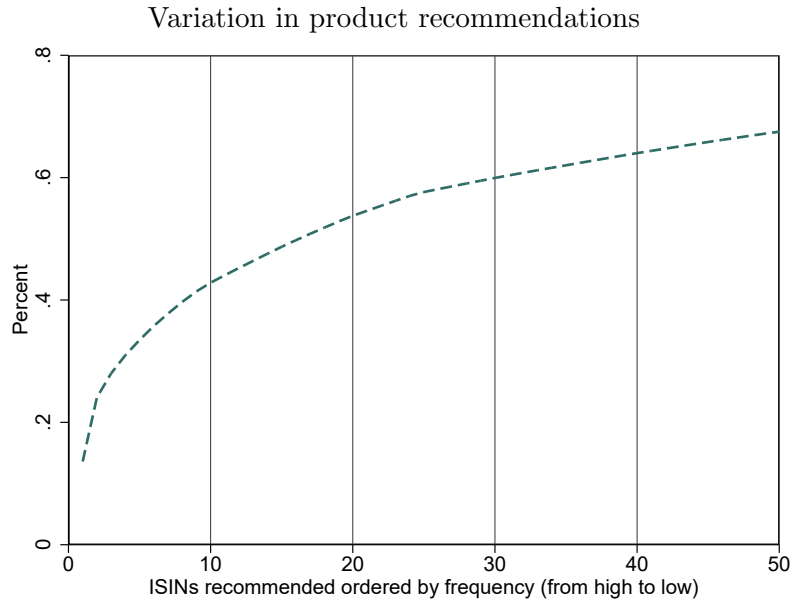
Figure A3: Variation in Product Recommendations by Gender

This figures shows the share of different product categories recommended to male and female clients separately.

3
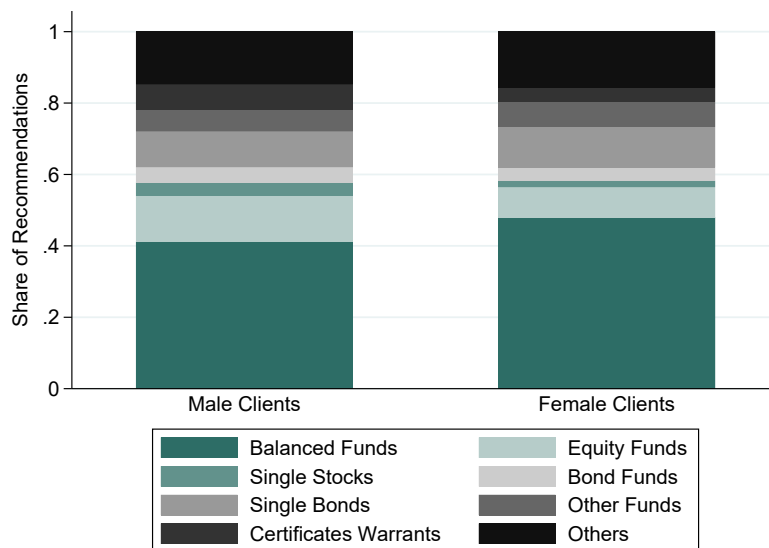
**Figure A4:** Distribution of Rebates by Fund (ISIN)

The figure shows the share of rebates for a given ISIN. More precisely, the figure entails one observation for each fund in our data set, that reflects the share of all recommendations for this fund coming with a rebate. We excluded funds that were recommended less than 50 times from the graph.
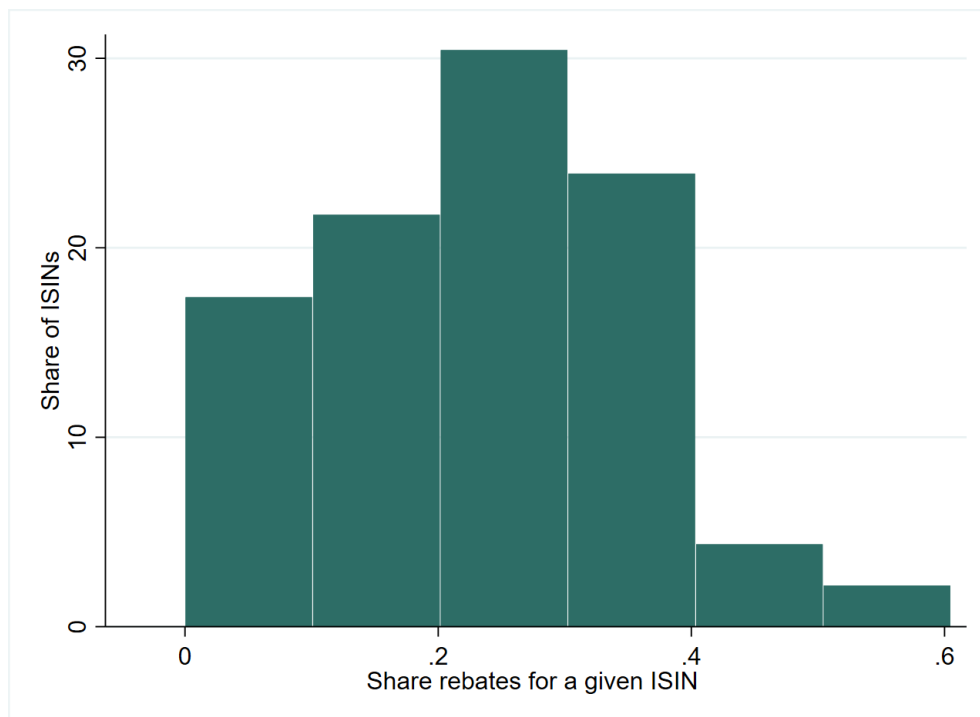
Figure A5: Financial Sophistication by Gender

Panel A of this figures shows the distribution of correct answers to the four general financial literacy questions by gender. Panel B shows the distribution of correct answers to three fund literacy questions by gender. Panel C shows the degree of agreement to the statement "The stock market is a sealed book to me" on a scale from 1 (do not agree at all) to 7 (totally agree).
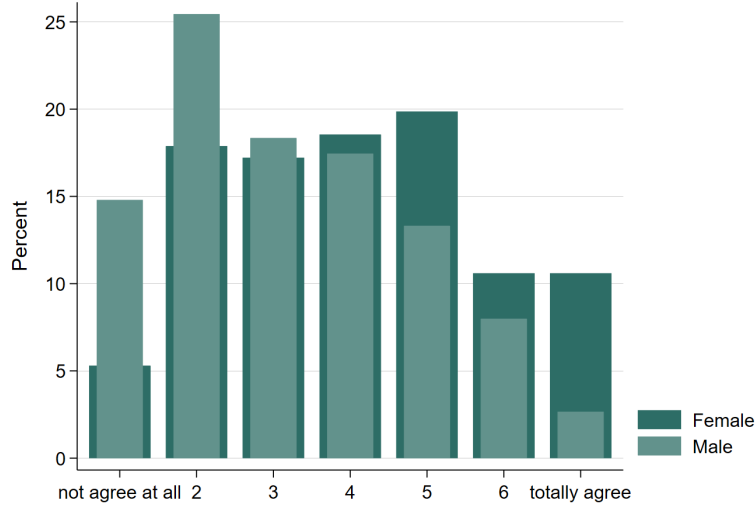
Panel A: Distribution of Correct Answers to General Questions
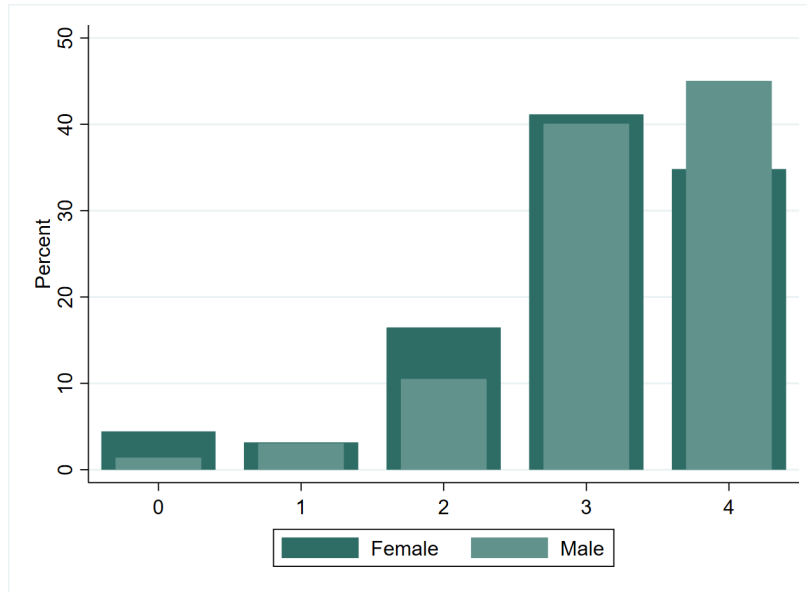
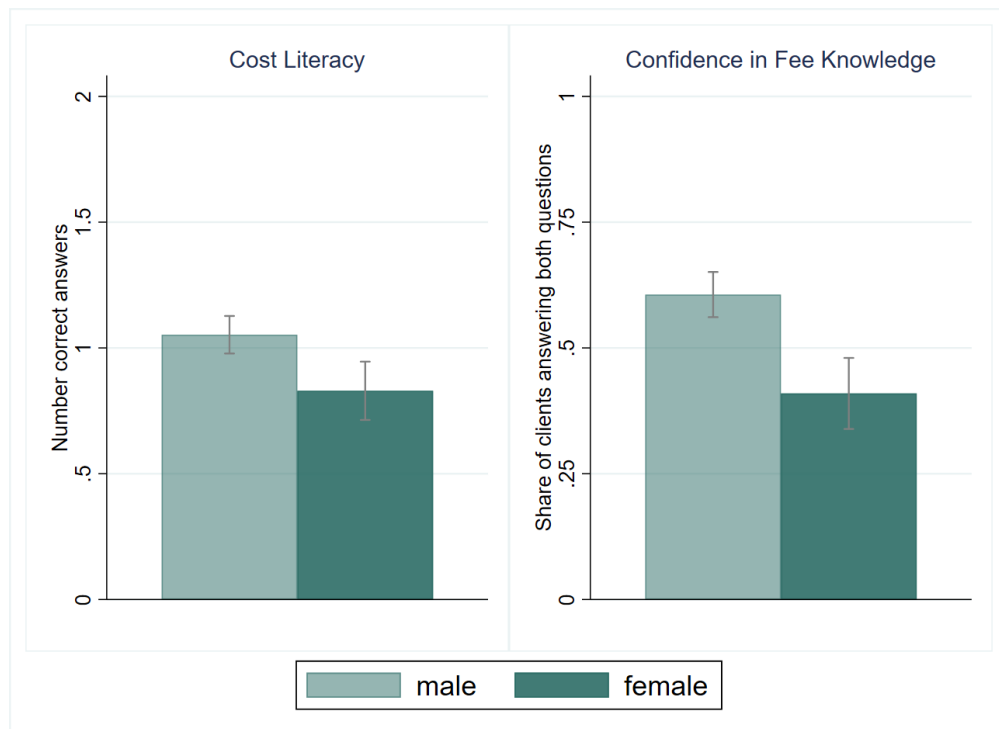Panel B: Distribution of Correct Answers to Fund Literacy Questions

5
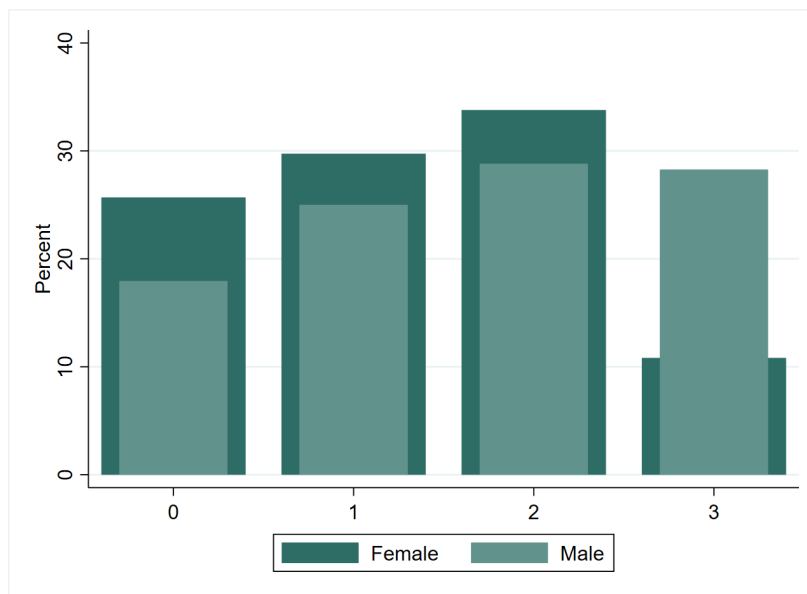
Panel C: Agreement "The stock market is a sealed book to me"

Figure A6: Differences in clients fee knowledge

This figures shows clients objective cost literacy and their confidence measured by the share of clients, who do answer none of the two cost questions with don't know.

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Figure A7: Returns of bank own funds versus other funds over the sample period

This figure shows the average returns of bank own funds versus the average returns of all other funds over the sample period. The dashed lines indicate the area within one standard deviation of the average return of all other funds.
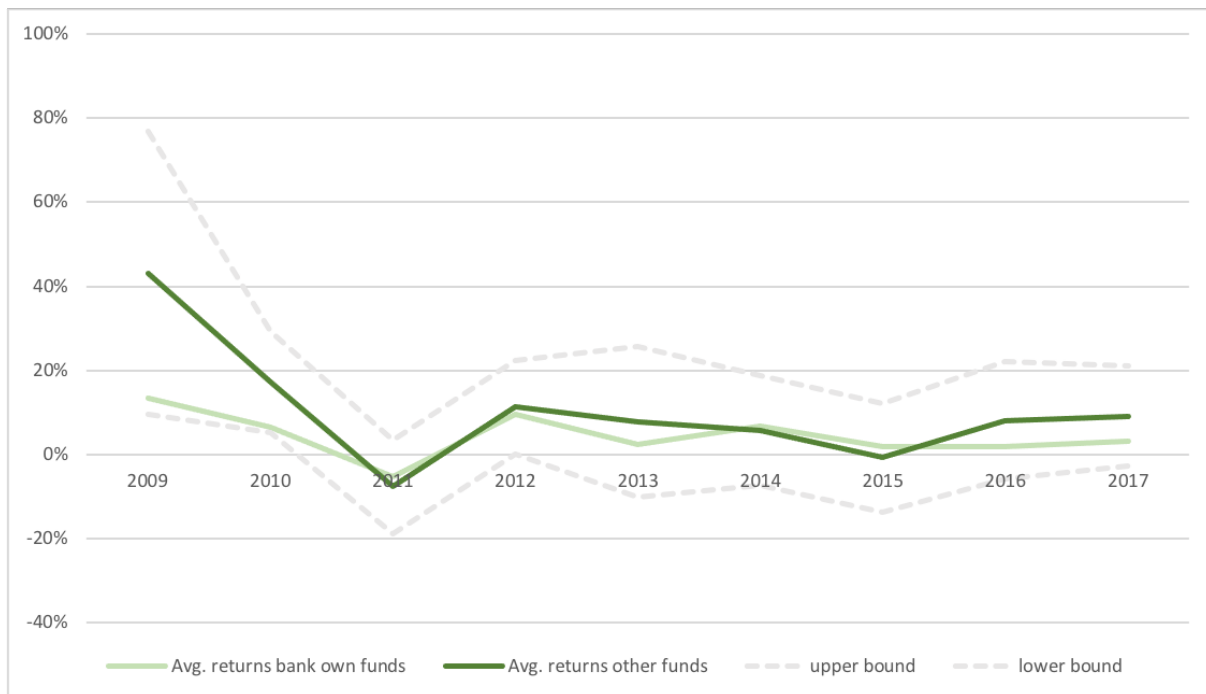
B Additional Tables

Table B1: Financial literacy questions

The table presents the exact wording of the four general financial literacy questions along with their answer format.

Concept	Question text	German original
Compound interest	Suppose you had EUR 100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow? *a) More than EUR 102, b) Exactly EUR 102, c) Less than EUR 102, d) Do not know*	Angenommen, ein Sparguthaben von 100 EUR wird mit 2% pro Jahr verzinst. Was mei- nen Sie: Wie viel Guthaben weist das Sparkonto nach 5 Jahren auf? *a) Mehr als EUR 102, b) Genau EUR 102, c) Weniger als EUR 102, d) Ich weiß es nicht, e) Keine Angabe*
Inflation	Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account? *a) More than today, b) Exactly the same, c) Less than today, d) Do not know*	Angenommen, die Verzinsung eines Spar- kontos beträgt 1% pro Jahr und die Infla- tionsrate beträgt 2% pro Jahr. Was glau- ben Sie: Könnte man nach einem Jahr mit dem Guthaben des Sparkontos genau- so viel, mehr oder weniger als heute kaufen? *a) Mehr als heute, b) Genauso viel, c) Weniger als heute, d)Ich weiß es nicht, e) Keine Angabe*
Diversification	Please tell me whether this statement is true or false. "Buying a single company's stock usually provides a safer return than a stock mutual fund." *a) True, b) False, c) Do not know*	Ist die folgende Aussage wahr oder falsch: "Die Anlage in Aktien eines einzelnen Unternehmens ist weniger riskant als die Anlage in einem Fonds mit Aktien ähnlicher Unternehmen." *a) Wahr, b) Falsch, c) Ich weiß es nicht, d) Keine Angabe*
Product risk	Please rank the following investment products according to their financial risk involved (in ascending order, starting with the one with the lowest risk) *Correct ranking: 1. Savings account 2. Corporate bond 3. Stock; alternatively, clients yould choose "Do not know"*	Bitte ordnen Sie die vier untenstehenden Anlageformen nach ihrem durchschnitt- lichen Risiko (in aufsteigender Reihen- folge, beginnend mit dem Produkt mit dem geringsten Risiko). *Korrekte Reihen- folge: 1. Sparkonto 2. Unternehmensan- leihe 3. Aktie; alternative Antwortmö- glichkeit: "Ich weiß es nicht"*

Table B2: Fund literacy questions

The table presents the exact wording of the three fund literacy questions along with their answer format.

Concept	Question text	German original
Fund fees: actively managed vs. passive funds	Please state whether this statement is true or false. "ETFs and other passive funds on average charge higher annual fees compared to actively managed funds." *a) True, b) False, c) Do not know*	Ist die folgende Aussage wahr oder falsch: "ETFs und andere passive Fonds verlangen in der Regel höhere jährliche Gebühren als aktiv gemanagte Investmentfonds." *a) Wahr, b) Falsch, c) Ich weif es nicht.*
Fund fees: Size of upfront charge	In many cases, a upfront fee is charged upon purchase of an actively managed investment fund. In what range does this fee fall for an average actively managed equity fund? *a) 0-0.5% of the amount invested, b) 1-2% of the amount invested, c) 4-6% of the amount invested, d) 8-10% of the amount invested, e) I do not know the average size of this feet, f) I did not know that there is such a fee*	Beim Kauf von aktiv gemanagten Investmentfonds fällt häufig eine Ausgabege- bühr an. In welcher Größenordnung liegt dieser sogenannte Ausgabeaufschlag regu- lär für einen durchschnittlichen, aktiv gemanagten Aktienfonds? *a) 0-0,5% der Anlagesumme, b) 1-2% der Anlagesumme, c) 4-6% der Anlagesumme, d) 8-10% der Anlagesumme, e) Ich weiß nicht wie hoch diese Gebühr ist, f) Ich wusste nicht, dass eine solche Gebühr existiert*
Mutual fund	Which one of the following statements is NOT a possible advantage of investing in investment funds from the perspective of an investor? a) The possibility to invest diversified, b) The possibility to invest in special markets, c)The possibility to invest small amounts of money, d) The possibility to participate in the choice of individual stocks, e) Do not know.	Bei welchem der folgenden Punkt handelt es sich aus der Sicht eines Anlegers NICHT um einen möglichen Vorteil eines Fonds? *a) Die Möglichkeit diversifiziert zu investieren, b) Die Möglichkeit in spezielle Märkte zu investieren, c) Die Möglichkeit mit kleinen Beträgen zu investieren, d) Die Möglichkeit bei der Titelauswahl mitzuentscheiden, e)Ich weiß es nicht*

C   Theoretical Framework and Hypotheses

General Setup. Consider a setting with two rational agents, a client and a financial advisor. The client faces the task of choosing a product (e.g., an investment fund) from a set $Q = \{q_1, ..., q_z\}$ of potential alternatives. She derives utility $u(q_j)$ from alternative q_j, whereas she receives a utility normalized to 0 if no alternative is chosen. Clients differ in their levels of financial sophistication or aptitude θ_i, with $\theta \in [0, 1]$.[5] A higher θ signifies stronger ability.

Ex ante, the client does not know the full set of potential alternatives. In the spirit of Stigler (1961) she can engage in a search to uncover them on her own, which determines her outside option in the "advice game" described below. We assume that the expected utility from random search is $Eu(q_S|\theta_j)$.[6] As Rothschild (1974) demonstrates, this expected utility generally increases as clients' search costs decrease. We assume that clients' search costs are decreasing as their level of financial literacy rises, and therefore $Eu(q_S|\theta_i)$ is strictly increasing in θ.[7] This assumption seems natural: Higher aptitude could be associated with a better grasp of technical terms and concepts such as compound interest, so that less effort is required to study each offer. It could also decrease the time necessary to recognize and dismiss unsuitable offers.

We model the interactions with the advisor as a reduced form game of asymmetric information with the following timing and information structure:

1. The client observes her level of financial sophistication θ_i. The advisor receives a signal of the client's financial sophistication s_i (but not the actual θ_i). From this signal, he infers a subjective distribution of financial sophistication $F(\theta|s_i)$, conditional on the client having solicited advice. On the basis of this inference, he suggests to the client an investment alternative q_a from the set of alternatives available to him, Q.

2. The client decides whether to accept or reject the offer. If the client accepts the offer, she receives the utility $u(q_a)$ and the advisor receives the utility $\nu(q_a)$. If she rejects the offer, the advisor receives utility $-\lambda_i$, for example, owing to complaints or the possibility of lost future business. The client can then decide whether to search independently or to choose no option and obtain a utility of 0.

The client's problem. Consider the decision problem of the client who has been offered investment alternative q_a by the advisor. The client should follow the recommendation and pick alternative q_a only if the following holds:

$$u(q_a) \geq \max\{Eu(q_s|\theta_i), 0\} \tag{4}$$

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[5]Here, we think of financial sophistication as an individual's level of understanding regarding financial matters and financial products, in particular with respect to their risk, returns and cost structure as well as a client's willingness and confidence to deal with financial decisions.

[6]For a micro foundation, one may think of the optimal number of searches, or equivalently the reservation value of the client depending on θ.

[7]Hackethal, Haliassos, and Jappelli (2012) argue for the opposite relationship owing to potentially higher opportunity costs of time spent on research for people with higher aptitude. However, we have evidence that on average, clients with higher financial literacy compare more alternative products.

The utility derived from the suggested alternative must exceed the expected utility from both independent search (which we call the client's outside option) and choosing none of the alternatives. This requirement immediately yields the first hypothesis:

Hypothesis 1: *For a given suggested alternative q_a, the probability that a client will accept is (weakly) decreasing in the client's level of financial sophististication θ_i.*

In other words, more sophisticated clients are more selective regarding advice, owing to their more valuable outside option from independent search.

The advisor's problem. The advisor's task is to pick an alternative $q_a \in Q$ to suggest to the client. The advisor observes a signal s_i and updates the (subjective) distribution of the client's financial sophistication to $F(\theta|s_i)$, with the associated densities $f(\theta|s_i)$. We assume the following structure: If s' is a signal of higher expertise than s, then $F(\theta|s_i') < F(\theta|s_i) \forall \theta \in (0,1)$. That is, higher signals lead to first order stochastic dominance of the subjective distribution contingent on the received signal.

Let $\theta^c(q_j)$ signify the critical level of financial literacy, for which a client would be indifferent between accepting the offer of q_j and searching independently. That is, $u(q_j) \geq Eu(q_s|\theta^c(q_j))$ and $u(q_j) < Eu(q_s|\theta')$ if $\theta' > \theta^c(q_j)$. The advisor, upon observing signal s_i, expects the client to follow advice q_j with probability:

$$p^+(q_j|s_i) = F(\theta^c(q_j)|s_i) \tag{5}$$

The advisor's utility is $\nu(q_a)$ if the client picks the suggested alternative, whereas he suffers expected (dis)utility $-\lambda_i$ if the client refuses the offered advice, the size of which may depend on the client's characteristics. This approach captures the possibility of losing future business if the client is dissatisfied or if complaints are logged. The advisor facing client i solves the maximization problem:

$$\max_{q_a \in Q} p^+(q_a|s_i)\nu(q_a) - (1 - p^+(q_a|s_i))\lambda_i \tag{6}$$

Assume that alternatives can be ordered such that a higher index represents a better alternative from the perspective of the client. The advisor will prefer to suggest alternative $j+1$ over alternative j, that is, he will offer better advice for the client, if the following condition holds:

$$\frac{p^+(q_{j+1}|s_i)}{p^+(q_j|s_i)} > \frac{(\nu(q_j) + \lambda_i)}{(\nu(q_{j+1}) + \lambda_i)} \tag{7}$$

Intuitively, the increased probability of the client following advice has to outweigh the advisor's utility loss from suggesting a less preferred (from the advisor's perspective) option. The advisor trades off the additional likelihood of the better suggestion being accepted versus the foregone private benefit from lower compensation. The inequality is trivially satisfied whenever $\nu(q_{i+1}) \geq \nu(q_i)$. In this case, the interests of the advisor and the client are aligned and alternative q_j is dominated – the advisor can increase either his own payoff or the probability of acceptance by picking the

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dominant alternative. In general, screening out dominated alternatives is an important benefit that financial advisors offer their clients. Finally, note that the righthand-side of the inequality is decreasing in the value of λ_j: as the disutility from failing to convince the client grows larger, the necessary increase in the likelihood of acceptance from offering better advice shrinks.[8]

Conflict of interest and kickbacks or standard products. Next, we zoom in on the structure of ν, the advisor's compensation. Financial advisors are frequently incentivized through kickbacks or bonus payments if they sell certain products. Bank financial advisors receive a fixed salary, but banks are allowed to pay their employees bonuses based on the success of the branch, the team, and/or the entire bank. Alternatively (or in addition) advisors may have an incentive to recommend standard products predefined by their employer, because it reduces the effort required on their part (e.g., time spent researching alternatives), while the bank benefits from selling own products (Hoechle, Ruenzi, Schaub, and Schmid, 2018), in turn.

Assume that the advisor (or the bank) receives a base utility of v (fixed-wage component) as well as a private advantage (via a kickback or lower effort cost) of $b > 0$ only if he successfully suggests an alternative from the set $Q_b \subset Q$ to the client. Within Q_b, the advisor then has an incentive to suggest the alternative that conveys maximal utility to his client, because it has the highest probability of acceptance. Analogously, all but one of the alternatives for which the advantage b does not accrue to the advisor must be (weakly) dominated: The one that conveys the maximal utility to the client. If the overall optimal (from the perspective of the client) alternative is not within Q_b,[9] then the advisor's problem is reduced to suggesting either an alternative for which he receives an advantage, which we denote as a_1, or the best overall option, which we denote as a_2, with $u(a_2) > u(a_1)$, while $\nu(a_1) > \nu(a_2)$. From this, we derive the following:

Lemma 1: *If the advisor receives a private advantage $b > 0$ for successfully suggesting an alternative from the set $Q_b \subset Q$, by elimination of (weakly) dominated alternatives his problem is reduced to suggesting one of (at most) two alternatives a_1 and a_2.*

Financial sophistication and the quality of advice. An advisor would prefer to convince the client to pick alternative a_1, even while he knows that the client would be better served by a different option. Given the findings above, we derive the following central result. Assume that an advisor receives $b > 0$ if he successfully suggests an alternative from $Q_b \subset Q$ to the client. Further assume that an alternative a_Z exists, with $u(a_Z) > u(q_b) \, \forall q_b \in Q_b$ and $u(a_Z) \geq u(q_i) \, \forall q_i \in Q$.

Hypothesis 2: *For two signals $s' > s$, the probability of the advisor suggesting a_Z is greater if he observes the signal of higher financial sophistication s' than if he observes signal s.*

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[8]In the extreme (as $\lambda_i \to \infty$), the right-hand side approaches 1: If a certain client is very important or valuable, the advisor will have an incentive to maximize the probability of her acceptance of his advice by making the best available suggestion. For this reason and since we allow λ_i to depend on the client's characteristics, we have to control for the client's importance to the bank, such as by using overall financial wealth with the bank or the value of the specific recommendation.

[9]If the optimal alternative is within Q_b, then no conflict of interest exists.

Proof: If an alternative a_Z with the properties described above exists, then $p^+(a_Z|s_j) = 1 \, \forall s_j$ and a_Z must be one of the two alternatives that the adviser considers. Denote the alternative in Q_b that maximizes the acceptance probability by the client as a_1. By Lemma 1, we know that the advisor only considers these two alternatives. Denote the distribution function of ϵ as $\mathcal{N}$. Plugging into (7), we can explicitly derive the probability of the advisor suggesting a_Z over alternative a_1 as $1 - \mathcal{N} \left(\frac{p^+(a_1|s_j)}{1-p^+(a_1|s_j)} b - v - \ell_j \right)$. By first order stochastic dominance, $p^+(a_1|s') < p^+(a_1|s)$ if $s' > s$ which yields Hypothesis 2.

A higher observed signal of financial literacy is more likely to induce the advisor to offer better advice to the client, and (partially) forego his private advantage. This response is the central mechanism we are interested in. To paraphrase: Clients who *appear to be smarter* are more likely to receive better advice from advisors. We refer to this hypothesis as *miss-selling hypothesis*.

Finally, this analytical framework suggests an additional aspect, which can be empirically examined: As a high signal of financial literacy is associated with receiving better advice, it is rational to adhere, irrespective of actual financial knowledge of the client. So we should observe the mechanism of Hypothesis 1 – smarter clients reject advice more often – mainly or only when they also receive suboptimal advice due to a bad signal – Hypothesis 2. Intuitively, two factors must coincide for an offer to be rejected: 1) The advice received from the advisor must be suboptimal and 2) the client must recognize this and be able to do better on her own. Thus we hypothesize that clients with bad signals of financial literacy but high actual financial literacy are more likely to reject a given advisor recommendation. We refer to this as the *rejection hypothesis*.

D   Advisor Survey

Table D1: Questions Advisor Survey

The table presents the exact wording of the questions in the advisor survey along with their answer format.

General Question: To what extent do you agree to the following statements:
(scale: 0 = not at all until 10 = totally agree)

Concept	Question text	German original
Own investment ideas	When men (women) go to meet an advisor, they already have concrete investment ideas of their own.	Männer (Frauen) gehen zum Bankberater schon mit konkreten Anlageideen im Kopf.
Importance of costs	Men (women) are strongly focused on the costs of financial products.	Männer (Frauen) achten bei Finanzprodukten stark auf die Kosten.
Importance of returns	Men (women) are strongly focused on past returns when they make investment decisions.	Männer (Frauen) achten bei Anlageent-scheidungen stark auf die vergangene Rendite.
No need to monitor	Men (women) want financial products whose development they do not have to constantly monitor.	Männer (Frauen) wollen Finanzprodukte, deren Entwicklung sie nicht ständig prüfen müssen.
Willing to pay more for delegation	Men (women) are willing to pay substantially more, in order to delegate financial decisions.	Männer (Frauen) sind bereit erhebliche Mehrkosten zu zahlen, um Finanzent-scheidungen zu delegieren.
No standard product	It is harder to convince men (women) to purchase a standard fond product.	Bei Männern (Frauen) ist es schwierig sie vom Kauf eines Standardfonds zu berzeugen.
Financial Knowledge	Men (women) on average have good financial knowledge.	Männer (Frauen) haben im Durchschnitt ein gutes Finanzwissen.
Offered rebate	Advisors are more likely to offer men (women) a rebate on upfront loads (purchase fee of investment funds).	Männer (Frauen) bekommen vom Berater/in eher Rabatte auf den Ausgabeaufschlag (Kaufgebühr bei Investmentfonds) angeboten
Know about rebate	Men (women) are aware of the fact that it is possible to receive a rebate on the upfront load (purchase fee of investment funds) when purchasing an investment fund.	Männer (Frauen) Frauen wissen, dass man beim Fondskauf einen Rabatt auf den Ausgabeaufschlag (Kaufgebühr bei Investmentfonds) bekommen kann.
Negotiate rebate	Men (women) negotiate rebates on upfront loads (purchase fee of investment funds) during advisory meetings.	Männer (Frauen) verhandeln im Beratungsgesprñch ber Rabatte auf den Ausgabeaufschlag (Kaufgebühr bei Investmentfonds).
Return estimation	Let's begin with an estimation question: Assume that you have 1000 Euro and invest this sum with an annual return of 6%. If you let the money accumulate, which sum would you have after 5 (15) years? We are interested in your estimate (please do not use a calculator)	Los geht's mit einer Schätzfrage: Gehen Sie davon aus, Sie hätten 1000 Euro und würden diese bei einer jährlichen Rendite von 6% anlegen. Wenn Sie kein Geld abheben würden, wie viel hätten Sie ungefär nach 5 bzw. nach 15 Jahren? Hier interessiert uns Ihr Bauchgefühl (bitte benutzen Sie also keinen Taschenrechner)!
Cost estimation	The solution was: Investing 1000 Euro at 6% would yield 1,338 after 5 and 2,396 Euro after 15 years. The next and last estimation question is: If the return was 5% instead of 6%, what would be the estimated final wealth after 5 years?	Die Lösung lautet: Bei einer Anlage von 1000 Euro zu 6% würde man nach 5 Jahren 1.338 Euro und nach 15 Jahren 2.396 Euro erwarten können. Nächste und letzte Schätzfrage: Wenn Sie nun 5% statt 6% bekommen würden: Wie würde dann das geschätzte Endvermögen nach 5 Jahren aussehen?

Table D2: Summary Statistics Advisor Survey

Variable	N	Mean	Std. Dev.
Female	103	0.33	0.47
Vocational training	102	0.53	0.50
Tertiary education	102	0.41	0.49
Age: 18 to 24	103	0.08	0.27
Age: 25 to 34	103	0.17	0.37
Age: 35 to 44	103	0.17	0.38
Age: 45 to 54	103	0.24	0.43
Age: 55 +	103	0.34	0.48
Net income $< 2000 Euros$	94	0.26	0.44
Net income $>= 2000 Euros < 2500 Euros$	94	0.30	0.46
Net income $>= 2500 Euros < 3500 Euros$	94	0.20	0.40
Net income $>= 3500 Euros$	94	0.24	0.43
Stereotyping men	99	2.71	1.03
Stereotyping women	100	2.88	1.08
Own investment ideas men	101	4.09	1.36
Own investment ideas women	103	3.49	1.42
Importance of cost men	102	4.05	1.46
Importance of cost women	101	4.18	1.41
Importance of past returns men	101	4.50	1.44
Importance of past returns women	100	4.03	1.42
No need to monitor men	99	4.20	1.30
No need to monitor women	103	4.77	1.43
Willing to pay more for delegation men	100	3.26	1.38
Willing to pay more for delegation women	100	3.57	1.49
Negotiate rebate men	102	3.94	1.58
Negotiate rebate women	101	3.41	1.43
Know about rebate men	98	3.87	1.45
Know about rebate women	100	3.22	1.51
Offered a rebate men	97	3.13	1.59
Offered a rebate women	99	2.78	1.52
No standard product men	100	3.52	1.57
No standard product women	101	3.41	1.51
Willing to decide with expert men	100	3.81	1.35
Willing to decide with expert women	100	4.74	1.33
Estimated investment amount: 6% over 5 years	80	1807.13	2271.38
Estimated investment amount: 6% over 15 years	74	3082.35	3217.80
Estimated investment amount: 5% over 5 years	78	1314.47	454.57
Estimated investment amount: 5% over 15 years	73	2251.60	1281.33

Table D3: Advisor Survey: Return/Cost Estimation

Investing 1000 Euros in a risk less investment. Estimated investment amount after 5/15 years at an interest rate of 5/6%

Amount after 5 years	6%		5%	
	Freq.	Percent	Freq.	Percent
correct amount	3	2.91	2	1.94
apply Taylor rule and add small amount	39	37.86	45	43.69
apply Taylor rule without correction	8	7.77	9	8.74
underestimation	13	12.62	16	15.53
overestimation	17	16.5	6	5.83
no answer	23	22.33	25	24.27
All	103	100	103	100

Amount after 15 years	Freq.	Percent	Freq.	Percent
correct amount	2	1.94	1	0.97
apply Taylor rule and add small amount	47	45.63	48	46.6
apply Taylor rule without correction	2	1.94	6	5.83
underestimation	11	10.68	12	11.65
overestimation	12	11.65	6	5.83
no answer	29	28.16	30	29.13
All	103	100	103	100

E   Text Analysis

Table E1: Categories Text Analysis

The table presents the categories used in the text analysis of the justifications for recommendations by advisors from the advisory meeting protocols. For each category, we present the original search terms used (German) as well as their English translation.

Concept	German search terms (original)	English translations
Convenience	Bequemlichkeit	convenience
	bequem	convenient
	Zeitersparnis	time-saving
	Delegation	delegation
Hand-holding	Experten	expert(s)
	professionell	professional
	Expertise	expertise
	Planbarkeit	predictability (plannability)
	planbar	predictable (plannable)
	unsicher	uncertain
	Unsicherheit	uncertainty
	nicht selbst	not (by) yourself
Diversification	Risikostreuung	diversification (spreading risk)
	Diversifikation	diversification
	Beimischung	addition of alternative investments
	Streuung	diversification (spreading risk)
	Diversifizierung	diversification
	gestreut	diversified
Investment strategy	Zielinvestment	target investment
	Anlagepolitik	investment policy
	Anlagehorizont	investment horizon
	Anlageschwerpunkt	investment focus
	Anlageziele	investment goals
	Portfoliotheorie	portfolio theory
	Optimierung	optimization