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Do women receive worse financial advice? An audit study in Hong Kong, China

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DO WOMEN RECEIVE WORSE FINANCIAL ADVICE?

AN AUDIT STUDY IN HONG KONG, CHINA

Utpal Bhattacharya, Amit Kumar, Sujata Visaria, and Jing Zhao

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ABSTRACT

We arranged for trained undercover men and women to pose as potential clients and visit all 65 local financial advisory firms in Hong Kong, China. At financial planning firms, but not at securities firms, women were more likely than men to receive advice to buy only individual or only local securities. Female clients who signaled that they were highly confident, highly risk tolerant, or had a domestic outlook, were especially likely to receive suboptimal advice. Our theoretical model explains these patterns as the result of statistical discrimination interacting with advisors' incentives. Taste-based discrimination is unlikely to explain the results.

Keywords: audit study, gender, financial advice, securities firm, financial planner, risk tolerance, confidence, geographic outlook

JEL Codes: D14, D91, G11, G24, G41

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“Do you have your husband’s permission to buy this financial product?”

A question from a financial advisor to a female finance professor

I. Introduction

In many parts of the world, women are increasingly participating in financial markets as they become wealthier. Their investment choices can have a significant impact on their financial outcomes and economic empowerment. To the extent that individuals, particularly women, seek the advice of financial professionals before making investment decisions (Federal Reserve Board 2016; Chater, Huck, and Inderst 2010), it is important to both assess the quality of that advice and understand the factors that influence it.¹

We conducted an audit study to examine whether financial advice varies by client gender. In 2018–2019, we arranged for undercover “auditors” to visit the offices of all local Hong Kong, China financial advisory firms that cater to retail investors. During each visit, they followed a free-flowing prepared script and engaged the financial advisors in a conversation, explaining that they wanted to invest for their retirement and requesting recommendations for specific financial products. Each auditor was assigned to play a particular role (or “avatar”) consisting of three attributes: either high or low risk tolerance, high or low confidence, and domestic or international outlook.² After the visit, they answered an online questionnaire to report a range of information about the interview, including the names of all the products the advisor recommended. Experimentally induced random variation in the assignment of auditor gender and avatars to financial advisors, as well as stratified random matching of auditors and financial advisory firms, ensure that the advice we observe is not confounded by endogenous matching of advisor

¹ About 46% of all investors in the Hong Kong Stock Exchange in 2014 were women (Hong Kong Exchange and Clearing Limited 2014). It is possible that women in Hong Kong, China participate more in financial markets than women in other economies. In a 2017 online survey, 62% of female respondents in Hong Kong, China, but only 5% of female respondents in the United Kingdom (UK), said they planned to invest in stocks (IP Global 2017). The experience of women in Hong Kong, China may predict future patterns as women in other parts of the world become more active investors.

² A large literature has found that women are more risk averse and less confident than men in their ability to save and invest than, make more conservative financial choices, and trade less frequently (Bajtelsmit and Bernasek 1996; Barber and Odean 2001; Bertrand 2010; Merrill Lynch 2018).

and advisee or by underlying differences in these auditor characteristics.³ This also allows us to cleanly separate the advisor's response to the auditor's gender, the signaled attributes, and the combination of the attributes with gender.

A key challenge in a study like ours is to objectively evaluate the quality of financial advice. The optimal portfolio of any investor is a function of many attributes, both observed and unobserved by the researcher. Moreover, any self-reported measure of advice quality is likely to involve subjective judgment.⁴ In addition, financial shocks may prevent ex-ante optimal advice from generating high returns ex post.⁵ Our approach is to classify financial advice as suboptimal if it exposes the client to uncompensated risk. Specifically, we identify as "undiversified" advice that *only* consists of recommendations to purchase individual risky securities and "home-biased" advice that contains *only* recommendations to purchase local securities. This is because in both cases the financial products recommended expose the client to idiosyncratic risk for which there is no corresponding compensation.⁶

Our data suggest that, on average, retail clients in Hong Kong, China receive advice of poor quality. In 38% of the audit visits, advisors recommended *only* individual risky securities. Similarly, in 39% of visits, advisors recommended *only* local securities.

³ Gender discrimination in financial markets has been studied by Annan (2020); Alesina, Lotti, and Mistrulli (2013); Brock and De Haas (2019); and Egan, Matvos, and Seru (2018). Although Mullainathan, Noeth, and Schoar (2012) did not explicitly design their audit study to identify gender differences, they found that female investors were discouraged from buying actively managed or international funds and encouraged to hold more liquid assets than men.

⁴ Wang (1994) and Borzykowski (2013) find that financial advisors spend less time with female than male clients and provide them with fewer product choices, and yet women are more satisfied with their advisors than men.

⁵ Later we show that our results are qualitatively similar if we instead use market-adjusted returns as an ex-post measure of advice quality. Advice quality can also be measured by management fee, since regardless of advisee characteristics, the lowest fee index fund is the optimal choice for any investor (Elton, Gruber, and Busse 2004; Choi, Laibson, and Madrian 2010; Mullainathan, Noeth, and Schoar 2012; Bucher-Koenen et al. 2020). We cannot use this metric, because only three funds in Hong Kong, China are linked to the broad index. The literature has also examined aggressive selling of products by agents who receive large commissions from the financial firms from which they originate (Robles-Garcia 2020). We do not have detailed data on the commissions that advisors receive for selling these other financial products.

⁶ It is important to note that it cannot be optimal to recommend that any client purchase only individual securities or only local securities, even if they want to take a high degree of risk. For such clients, a high-beta, high-risk portfolio dominates individual risky securities because it involves systematic (not idiosyncratic) risk and compensates for it. If the investor does not have enough leverage, they may construct such a portfolio by buying only high-beta securities. This could explain there is abnormally high demand for high-beta securities (Frazzini and Pedersen 2014).

The unique empirical context of Hong Kong, China allows us to investigate deeper. Within the same market, we observe two distinct business models for financial advisory firms. We find that in 41% of the audit visits to securities firms (that derive their revenue mainly from trading commissions), advisors only recommended buying risky individual securities. In contrast, at financial planning firms (that derive their commissions from a wider variety of products), advisors recommended buying risky individual securities in significantly less than 25% of visits.

Remarkably, while securities firms were more likely to give suboptimal advice overall, they *did not* differentiate between male and female clients. In contrast, financial planners, who gave better advice on average, were significantly more likely to give suboptimal advice (single securities or home-biased) to female auditors than to male auditors. They were particularly likely to give this suboptimal advice to female auditors who signaled that they were risk-tolerant, confident, or had a domestic outlook.

Our stylized theoretical model explains this pattern as the result of an interaction between advisors' incentives and stereotypical beliefs about their clients' financial knowledge.⁷ In the same spirit as a well-established literature, financial advisors in our model face a conflict between providing advice that increases commissions within a client–advisor relationship and providing advice that increases the likelihood that the client will maintain the relationship (Mehran and Stulz 2007; Stoughton, Wu, and Zechner 2011; Inderst and Ottaviani 2012a, 2012b, 2012c; Chen and Gesche 2017). Specifically, advisors' commissions increase with the number of trades made by clients. This commission structure creates an incentive to recommend many individual products rather than a diversified product, such as an exchange-traded fund consisting of a portfolio of securities. In addition, all advisors face the possibility that if their clients do not like the advice they receive, they will not return for more advice. Therefore, advisors have an incentive to “cater” the advice to clients' signaled preferences. For example, they may give high-risk advice to risk-tolerant and confident clients, and home-biased advice to clients with a domestic outlook. On the other hand, advisors may expect that financially

⁷ Alternatively, advisors themselves may lack financial knowledge (Linnainmaa, Melzer, and Previtiero 2020). However, this lack of knowledge is unlikely to explain our results, as all advisors in our study passed a licensing exam set by the Securities and Finance Commission of Hong Kong, China.

knowledgeable clients will recognize suboptimal advice and terminate the relationship. If advisors perceive that female clients are less discerning (Lusardi and Mitchell 2008; Bucher-Koenen et al. 2016; Bertrand 2020; Klapper and Lusardi 2020), they are especially likely to recommend individual, risky (or local) securities to female clients who signal that they are risk-tolerant, confident, or have a domestic outlook.

The institutional context in Hong Kong, China provides the appropriate setting to test the importance of advisors' incentives. Securities firms in Hong Kong, China are able to trade on the stock exchange and therefore retain the entire trading commission for their clients' securities transactions. They operate a low-fee, low-service business model that attracts clients with moderate levels of financial knowledge who want general financial advice but mainly want to place trading orders. They have a strong incentive to recommend individual risky securities where they collect the entire commission. Financial planners are not licensed to trade on the stock market and must pass on their clients' trading orders to other brokers. Accordingly, they retain only a fraction of their clients' trading commissions. Their revenue source is more diversified, as they receive commissions from selling a wider variety of financial products, many of which are purchased and then held for an extended period of time. As a result, they operate a high-fee, high-service business model, attracting clients with low levels of financial knowledge who need detailed advice. It follows that securities firms are more likely to offer undiversified advice than financial planners.

We assume that there are underlying differences in the distribution of financial knowledge among men and women, such that a relatively small proportion of women have high financial knowledge and a relatively large proportion have low amounts of knowledge. Combined with the general pattern that financial planners attract investors with lower financial knowledge, this implies that, on average, among clients who visit financial planners, women have lower knowledge than men, while among clients of securities firms, the gender gap in financial knowledge is less pronounced. As a result, financial planners are more likely to provide suboptimal advice to women than to men, while securities firms make little distinction in their advice based on client gender.

Thus, our model shows that although advisor conflicts of interest contribute to low-quality advice, they do not by themselves lead to gender differences in advice. Securities firms that have the strongest conflicts of interest *do not* differentiate by client gender. Instead, it is the *interaction* between advisors' incentives and their beliefs about clients' financial knowledge that accounts for gender differences.

Our work contributes to the extensive literature that attempts to identify the causes of differential treatment of clients according to gender (Feins and Bratt 1983; Ayres and Siegelman 1995). For example, an alternative explanation for gender differences in advice quality is that advisors have an aversion to advising confident, risk-tolerant female investors who defy their gender stereotypes.⁸ However, this taste-based explanation predicts similar gender differences in advice among both securities and financial planning firms. Our finding that gender differences are unique to financial planners suggests that advisors' incentives interact with stereotypes about women's lower financial knowledge to generate the patterns we observe.

This paper also joins a recent strand of literature that finds that female investors receive worse financial advice than men. Baeckstrom, Marsh, and Silvester (2021) studied high net worth investors in the United Kingdom (UK) and found that female clients of female advisors hold significantly less cash (i.e., hold more risk) in their portfolios than their male clients. The analysis by Bucher-Koenen et al. (2020) of about 27,000 real advisor-client meetings at a German bank shows that advisors are more likely to advise women to purchase bank-owned, high-cost funds. A key distinction is that our audit study approach allowed us to randomize client characteristics, which allowed us to rule out the possibility that advisors' recommendation of individual risky securities was an optimal response to female customers' preferences, which we do not observe. In the absence of such variation, Bucher-Koenen et al. (2020) circumstantially argue that advice to purchase high-cost funds may not have been a response to greater unobserved female

⁸ Statistical discrimination refers to the phenomenon where the principal attributes to the individual the traits of their average group member (Phelps 1972; Arrow 1973), whereas taste-based discrimination occurs when the principal receives disutility from interacting with an individual of a particular group (Becker 1957; Yinger 1986).

demand for such products because financially knowledgeable women would be more likely to reject such advice.

In addition, because our institutional context includes two different types of advisory firms, we can examine how advisors' incentives affect the quality of their advice. We also model the role of investors' financial knowledge in their decision to seek financial advice and in their choice of advisory firm type to approach. This endogenous matching of clients and advisory firms plays a key role in our study. As we will argue below, it interacts with the different incentives of the two types of firms to produce different patterns of gender differences in advice quality.⁹

Because we obtained the data as part of an audit study, we can only observe how financial professionals advise walk-in clients at first contact. Consequently, we cannot see what trades the clients (would) ultimately make (if they had been real clients). It is also possible, in principle, that advisors change course and improve their advice to female clients in subsequent meetings. However, this would imply that advisors change course more toward their female clients than toward their male clients, and the central question would remain: why do financial advisors treat female clients differently? Our paper provides new insights on this question.

The paper is organized as follows. Section II describes the institutional context for our study. Section III develops the theoretical model underlying our empirical analysis. Section IV describes our study design in detail. Section V examines whether our audits were balanced across different auditor avatars and advisory firm offices. It also describes the characteristics of our auditors. Section VI presents our main results. In section VII, we present supplementary results. Section VIII concludes.

II. Institutional Context

In 2019, the market capitalization of domestic companies listed in the Hong Kong Stock Exchange was \$4.9 trillion, making Hong Kong, China one of the world's top

⁹ Bucher-Koenen et al. (2020) study advisors who are all employed by the same bank and are implicitly assumed to have the same incentive structure. Although it is possible that clients endogenously matched to advisors in their data, this matching does not play an important role in their analysis.

financial centers (World Bank 2019). Individual retail investors are important players in this market. According to the Hong Kong Exchange and Clearing Limited (2014), 36.5% of Hong Kong, China's adult population directly owned stocks and/or derivatives listed on the Hong Kong Stock Exchange, and nearly half of these retail equity investors were women. As women's education, labor force participation, and wealth increase globally and they become important clients of the retail advisory industry, insights from Hong Kong, China's advisory industry can provide lessons for what to expect.

Although increasingly important as a market segment, women in Hong Kong, China continue to have lower levels of financial knowledge than men. In a 2018 representative sample of adults in Hong Kong, China, men scored higher than women on a financial literacy test and self-reported higher levels of confidence in their financial knowledge (Investor Education Centre 2018). It is likely that financial advisors take these differences into account when advising their clients.

In Hong Kong, China, only individuals who hold a Type 4 license issued by the Securities and Futures Commission are allowed to practice as financial advisors (Securities and Futures Commission 2020).¹⁰ They are employed not only by financial planner firms but also by securities firms. Advisors employed by banks are outside the scope of our study because they can only advise clients of the bank and their recommendations are limited to products that the bank sells.

Securities firms provide a trading platform for individual investors. Financial advisors at such firms are referred to as "account executives." Securities firms are full-service brokers who advise clients on demand, but many of their investors are self-directed. In contrast, financial planner firms provide personalized wealth management advice. The financial advisors who work at financial planner firms are called "relationship managers" and work primarily with clients who want to delegate their investment decisions.

Advisors' incentives to recommend particular products likely depend on the revenue they earn from their advice. In this paper, we focus on the commissions they

¹⁰ A Type 4 license is issued only to individuals who have passed multiple examinations on local regulatory information and financial literacy (Hong Kong Securities and Investment Institute 2022).

earn from trading securities for their clients. This is because we can make clear comparisons of the quality of advice when it comes to recommendations for traded securities. Because they are authorized to trade directly on the local exchange, securities firms keep all the commission they receive from their clients. Financial planner firms are not authorized to trade directly and therefore must refer the client order to a broker and share the trading commission with them. Thus, within the class of individual risky local securities, securities firms can earn a higher trading commission than financial planner firms do. Therefore, securities firms have a greater incentive to recommend risky local securities than financial planner firms. However, Hong Kong, China-based financial advisory firms cannot directly execute trades on international stock exchanges. When a client wants to purchase an international security, both securities firms and financial planners must refer the order to an international broker and share an identical share of the commission with that broker. Therefore, the higher commissions on local securities provide advisors with an incentive to recommend more local securities than international securities. However, both securities firms and financial planner firms are rewarded equally for selling international securities because these securities earn the same small commissions for both types of advisors.

In addition to trading commissions, advisory firms also receive commissions from fund houses or insurance companies for selling their (non-traded) products. They may also receive a portion of the management fee that the client pays to the mutual fund house each year. Importantly for our purposes, these commissions, and thus the incentive to sell these products, are similar for securities firms and financial planner firms. Clients also pay the advisory firm a fee equal to a percentage of the client's assets under the firm's management. These fees are typically much lower for securities firms than for financial planner firms (and in some cases securities firms charge no fees at all).¹¹

¹¹ We do not have data on the commission rates of the various fund houses or insurance companies. Also, since this is an audit study, the auditors do not have existing portfolios with these firms. Therefore, we are unable to measure the quality of advice using such data.

III. Model

Our theoretical model provides the framework for the analysis and interpretation of our empirical findings. In what follows, we first describe how men and women differ in terms of their financial knowledge and how this affects the choice of financial advisory firm they seek out. We then explain how the different incentives faced by financial advisors at different firms affect their product recommendations and how these differ by client characteristics such as risk tolerance, confidence, geographic outlook, and most importantly, gender.

III.A. Demand: Matching of Investors and Financial Advisors

Individual investors vary in their ability to evaluate the menu of financial products available. Specifically, suppose that the financial knowledge of investor i , who belongs to gender g , is described by the random variable x_{ig} . Further, suppose that the financial knowledge of female investors follows the distribution $G_F(\cdot)$, while the financial knowledge of males follows the distribution $G_M(\cdot)$.

Financial advisors can assist investors with product selections. Investors incur costs when they hire an advisor: a fee and a variable commission per trade. In addition, the advisor's incentives may not be aligned with those of the investor, and so they may advise investors to buy "suboptimal" products. Financially savvy investors understand the financial product markets and are less likely to benefit from financial advice. We assume that investors know how much financial knowledge they have. Each investor then compares the benefits and costs of seeking advice and decides whether to approach an advisor. Investors with high levels of financial knowledge will choose to make their investment decisions without help. Specifically, suppose that an investor whose financial knowledge x_{ig} lies above the cut-off β . Such an investor does not seek advice. All other investors seek advice.

The group of investors who seek advice comprises (i) investors with moderate financial knowledge who expect a small (but positive) net benefit from the advice, and (ii) investors with little knowledge who expect a large net benefit. Advisory firms charge a fee (a fixed amount or a percentage of assets under management) and trading commissions.

As we mentioned earlier, the industry offers two different levels of service—in the low service model, the firm charges a low fee; in the high service model, the firm charges a high fee. Both firms charge the same commissions per trade. In our data, we assign the low-service firms to securities firms and the high-service firms to financial planners. We conjecture that individuals with moderate knowledge, i.e., with $\alpha \leq x_{ig} \leq \beta$ find that their net benefit is larger when they visit securities firms while individuals with low knowledge, i.e., $x_{ig} < \alpha$ find that the net benefit is larger when they visit financial planners. In section III.B, we will show that this conjecture will hold true in equilibrium.¹²

A well-established empirical literature shows that women have less financial knowledge than men (see, for example, Lusardi and Mitchell 2008; Bucher-Koenen et al. 2016). To incorporate this fact, we assume that the distribution of men’s financial knowledge, $G_M(\cdot)$, has the same shape as the women’s distribution, $G_F(\cdot)$, but lies everywhere to the right of it, shifted by a constant of 2μ . This is a special case of the condition that the density function of men’s financial knowledge first-order stochastically dominates that of women’s. For simplicity, we assume that the distribution functions are uniform. In Figure 1, both men’s and women’s distributions have the range 2ρ , but the distribution for men is shifted to the right by 2μ . As discussed, investors with high financial knowledge do not go to advisors, investors with medium financial knowledge go to securities firms, and investors with low financial knowledge go to financial planners.

[INSERT FIGURE 1 ABOUT HERE]

III.B. Supply: Financial Advisors’ Choice of Advice Quality

By construction, we assume that advisors who provide optimal advice receive a commission of zero. We then build on the canonical framework of Inderst and Ottaviani (2012a, 2012b, 2012c) and formally write the advisor a ’s payoff when they recommend that investor i purchase individual risky securities as

¹² The intuition is as follows. There is no incentive for investors to deviate from the norm. Even if investors with moderate knowledge who visit securities firms knew that they had received low-quality advice, they would not switch to financial planners because their marginal benefit from better advice from financial planners is too small to cover the higher fees. Similarly, investors with a low level of knowledge who know they are receiving high-quality advice from financial planners have no incentive to switch to securities firms because their loss from the resulting inferior advice outweighs the gain from paying a lower fee.

$$\Pi_a = \underbrace{[f_a + m_a(\gamma)]}_{\text{benefit}} [\theta(r_i, c_i, o_i, x_{ig})] - \underbrace{C(\gamma)}_{\text{cost}} \quad (1)$$

where $\gamma \in [0, \infty)$ indicates the quality of advice. Specifically, optimal advice is indicated by $\gamma = 0$, and when the quality of advice deteriorates, γ increases. The benefit of suboptimal advice is the expected value of future revenues, which is the fee, f_a , and the commission m_a , multiplied by the probability θ that the client maintains the relationship.

III.B.1. Fee (f_a) and Commissions (m_a)

The fee f_a does not vary with the quality of advice, but the commissions $m_a(\cdot)$ increase in γ . Trading commissions increase with each additional risky individual security that the client purchases. As mentioned earlier, securities firms are licensed to trade on the local stock market and therefore earn the entire broker's commission. Financial planners, unless licensed as brokers, are not authorized to trade directly and therefore must refer the client's order to a broker, who then shares the commission with them. Thus, within the class of individual risky securities, financial planners can earn higher commissions than brokers, even though the client pays the same trading commission to both. Therefore, $m_{SF}(\gamma) > m_{FP}(\gamma)$ for individual risky securities. Also, as discussed in section II, $f_{SF} < f_{FP}$.

III.B.2. Probability of Retention (θ)

Clients are more likely to maintain their relationship with an advisory firm if they view its advice positively. This depends in part on whether the advice aligns with the client's preferences, i.e., whether the advisor "caters to" the client's exhibited preferences (Mullainathan, Noeth, and Schoar 2012). For example, clients with high risk tolerance and high confidence are more likely to have relationships with advisors who recommend risky securities than clients with low risk tolerance or low confidence. Investors with a domestic

outlook are more likely to maintain relationships with advisors recommending domestic securities than clients with an international outlook.¹³

Accordingly, we assume that for a given level of γ , the probability θ that the investor maintains the relationship increases with the client's risk tolerance level (r) and confidence (c). At the same time, however, knowledgeable clients are likely to recognize that the advice is suboptimal. This tempers the positive effect of catering. Formally, the increase in θ with r and c is smaller when the client is more knowledgeable. In other words, more knowledgeable clients are less responsive to catering.

As discussed above, Figure 1 shows that clients with financial knowledge between α and β —defined as “moderate” knowledge—visit securities firms. Figure 1 also shows that when a securities firm observes both a male and a female client, it assumes that both have the same moderate financial knowledge level. This is because of the truncated distributions of financial knowledge between α and β . However, financial planners only receive clients whose knowledge is below the level α . Given the gender difference in the distribution of financial knowledge, we can see from Figure 1 that financial planners expect their female clients to be less knowledgeable than their male clients.¹⁴

In Table 1, we show the net effect of these different forces on the probability θ that an advisor who gives suboptimal advice will retain the client.

[INSERT TABLE 1 ABOUT HERE]

For example, consider an advisor at a securities firm who receives a male client. In line with our discussion above, the advisor infers that this client has a moderate amount of financial knowledge. Suppose that the client signals that he is highly risk tolerant or

¹³ Advice that caters to clients' risk tolerance or confidence need not be suboptimal. As discussed in footnote 6, highly risk-tolerant or confident clients could be advised to buy high-beta portfolios rather than individual risky securities. However, to cater to clients who have a domestic outlook or prefer famous or interesting securities, the advisor would have to suggest domestic or individual risky securities, which would be suboptimal advice.

¹⁴ When financial knowledge follows a uniform distribution and α and β are in the range $(\mu_M - \rho, \mu_W + \rho)$, men and women who visit securities firms have the same financial knowledge, as expected. Appendix A shows that when financial knowledge follows a normal distribution, a different range condition ensures that the expected gender difference in financial knowledge is smaller for the clients of securities firms than for the clients of financial planners. The Appendixes can be accessed at <http://dx.doi.org/10.22617/WPS230181-2>.

highly confident. If the advisor gives him suboptimal advice, on the one hand, this catering to his preferences increases the likelihood that he will return. On the other hand, it decreases the likelihood that he will return, since he is moderately likely to recognize that the advice is suboptimal. In Table 1, the net effect of these two opposing forces is shown as $\theta = a + d$. If the client had instead signaled that he had low risk tolerance or low confidence, then the suboptimal advice would not even match his preferences. Accordingly, he is less likely to return ($\theta = a$). The same reasoning applies to the case where the advisor receives a female client. The advisor assumes that this female client has the same moderate level of financial knowledge as the male client, and therefore expects that suboptimal advice will result in the same probability of retaining a client of either gender. Thus, securities firms have no incentive to vary the quality of advice based on the gender of the client.

Next, consider an advisor in a financial planning firm who receives a male client. The advisor infers that he has little financial knowledge. If he also signals that he has low risk tolerance or confidence, then the advice to purchase individual securities adds no benefit in retention probabilities. However, the client is also relatively unlikely to recognize that the advice is suboptimal. Compared with the male client who visited the securities firm, there is an added advantage for financial planners if they give suboptimal advice to this client. Accordingly, we denote $\theta = a + b$. On the other hand, if the client were female, the advisor would assume that she has very low financial knowledge. Accordingly, financial planners would consider it extremely unlikely that she would detect that the advice to purchase individual securities was suboptimal and so would consider it extremely likely that she would maintain the relationship. This results in an even larger benefit from giving her suboptimal advice; we denote this by $\theta = a + b + c$.

On the other hand, if the male client visiting the financial planner signals that he has high risk tolerance or high confidence, then the suboptimal advice caters to his preferences. However, as before, he is relatively unlikely to recognize that the advice is of low quality. Accordingly, we write $\theta = a + b + d + e$. Note that this probability is larger than that for male clients with low risk tolerance/confidence by the amount $d + e$. If the female client visiting the financial planner signals high risk tolerance or high confidence,

then her lower financial knowledge implies that the probability of her returning after receiving suboptimal advice is accordingly even greater; $\theta = a + b + c + d + e + f$. Note that this probability is larger than the probability for female clients with low risk tolerance/low confidence by the amount $d + e + f$, and this increase is larger than the increase for male clients, $d + e$. This is consistent with our assumption that the increase in θ with r and c is larger when the client is less knowledgeable—in other words, the benefits to an advisor from catering to a client's preferences are larger the lower the client's financial knowledge.

Figure 2 provides a graphic representation of these assumptions.

[INSERT FIGURE 2 ABOUT HERE]

III.B.3. Cost ($C(\gamma)$)

We assume that the cost to the advisor of giving suboptimal advice $C(\gamma)$ is a convex, increasing function of γ . We can think of this as either the fiduciary penalty or the psychic cost of violating a code of conduct.¹⁵

III.C. Equilibrium

Advisors maximize the payoff in (1) above by selecting advice quality (γ) such that

$$m'(\gamma)[\theta(r_i, c_i, x_{ig})] = C'(\gamma) \quad (2)$$

In Panel A of Figure 3, we graphically analyze the advisor's decision to recommend risky individual securities. For simplicity, we assume that commission $m(\cdot)$ is linear in advice quality, and as explained above, for all values of γ , $m_{SF}(\gamma) > m_{FP}(\gamma)$. Specifically, that $m_{SF}(\gamma) = K \cdot m_{FP}(\gamma)$, where K is sufficiently large.¹⁶ Since the values of θ in Table 1 are independent of γ for $\gamma > 0$, the marginal benefit curves on the left-hand side of (2) are horizontal lines. Therefore, in Panel A of Figure 3 for any given risk tolerance or

¹⁵ Advisors who have a personal bias against female investors may face lower psychic costs when giving suboptimal advice to women than to men. In section III.E., this will allow us to incorporate the possibility of taste-based discrimination against female clients.

¹⁶ Specifically, we require that $K > \frac{a+b+c+d+e+f}{a}$.

confidence, the marginal benefit curve for securities firms lies everywhere above the marginal benefit curve for financial planner firms (FPs).

Given that the cost function $C(\cdot)$ is increasing and convex in advice quality, the marginal cost function $C'(\cdot)$ is upward sloping. For simplicity, we assume that the marginal cost curves are straight lines.

[INSERT FIGURE 3 ABOUT HERE]

Let us first consider the case of securities firms. As noted earlier, the expected financial knowledge of men and women who visit these firms is similar. Therefore, advisors in these firms have no reason to distinguish between male and female clients. However, they will cater to the client's preferences because they can earn high commissions by providing suboptimal advice. Therefore, these advisors will give worse quality advice to clients with high risk tolerance/high confidence than to clients with low risk tolerance/low confidence clients. This is true whether the client is male or female.

Two things change when we consider the case of financial planners. First, they have less incentive to give suboptimal advice because they receive considerably lower commissions from selling individual securities. This is depicted in Panel A of Figure 3 by the smaller vertical intercepts of the marginal benefit curves for financial planners. Second, they expect that female clients are less knowledgeable than male clients, and therefore the marginal benefit curves for female clients (shown in red) are higher than those for male clients with the same preferences (shown in blue). The net result is that the equilibrium advice quality of financial planners is to the left of that of securities firms. That is to say that financial planners give higher quality advice than securities firms, but they distinguish between male and female clients: specifically, they give worse advice to female clients than to male clients.

The assumption that more knowledgeable investors are less responsive to catering provides an additional result: as discussed above, the gender difference in the marginal benefits of suboptimal advice is larger when clients have high risk tolerance or high confidence. In Panel A of Figure 3, this can be seen as a larger distance between the vertical intercepts of the male and female clients' marginal benefit curves when clients have high risk tolerance or high confidence— $c + f$ —compared to clients with low risk

tolerance or low confidence— c . It follows that financial planners are more likely to distinguish by gender when clients signal high confidence or high risk tolerance.

For these results to occur in equilibrium, investors must have no incentive to deviate from the previously conjectured sorting: Those with moderate knowledge visit securities firms, while those with low knowledge visit financial planners. Consider investors who visit securities firms and receive low-quality advice. If they deviated to financial planners, they would receive better advice, but at a higher fee. Since they have only moderate knowledge, their marginal benefit from the better advice is too small to cover this cost. Similarly, investors with low levels of knowledge who visit financial planners have no reason to switch to securities firms because their loss from the resulting worse advice outweighs the gain from switching and paying a lower fixed fee. We assume that at an earlier date, these two types of financial advisors set their fees to target different market segments, and that these fees are profit-maximizing given the size of these market segments. This ensures that there is no deviation on the part of the advisors.¹⁷

In summary, we obtain the following implications.

Implication 1 (Difference in propensity to recommend individual risky securities by firm type): Advisors in securities firms are more likely to recommend that clients purchase individual risky securities than advisors in financial planning firms.

Implication 2 (Difference in propensity to recommend individual risky securities by firm type and gender): Financial planners are more likely to recommend individual risky securities to female clients than to male clients. However, advisors in securities firms are equally likely to recommend individual risky securities to both genders.

Implication 3 (Difference in propensity to recommend individual risky securities by client attributes and gender – Financial Planners): Financial planners are more likely to distinguish their advice quality by gender if clients signal that they are highly confident or highly risk tolerant.

¹⁷ This equilibrium sorting can be formally modeled as an early-stage game, but this would not provide any new insights.

III.D. Extension: Home-Biased Advice

We now extend the model to analyze the advisor's choice to recommend local securities. Investors may differ in their geographic outlook. Denote by σ the extent to which the investor prefers to own stocks in domestic firms. By recommending that investors with a domestic outlook purchase local securities, the advisor can increase the chance that the client will return. Accordingly, in equation (1), we assume that for a given level of γ , the probability that the investor maintains the relationship, θ , increases with the client's domestic outlook (σ), and in Table 1, all else equal, we see a larger θ when the client has a domestic outlook.

However, local securities expose the investor to idiosyncratic domestic risks that could be diversified by purchasing international securities. Thus, any advice that caters to the preference of a client with a domestic outlook is necessarily suboptimal. Financially knowledgeable clients are likely to recognize that they have received suboptimal advice, making them less likely to return. Accordingly, in Table 1, advisors who recommend local securities expect female clients to return more often than similar male clients.

Recall the earlier assumption that more knowledgeable investors are less responsive to catering. In the case of client geographic outlook, this assumption implies that the gender difference in the marginal benefits of suboptimal advice is larger when the client has a domestic rather than an international outlook. This is also seen in Table 1, where the gap between the probability of retaining male and female clients is larger ($c + f$) when clients have a domestic outlook than when they have an international outlook (c).

An important difference from our earlier analysis is that advisors at both securities firms and financial planners receive lower commissions for selling global securities than for selling local securities. This is because neither firm can execute trades on international stock exchanges directly and must delegate an international broker to do so, who receives an identical share of the trading commission from both. Therefore, $m_{SF}(\gamma) = m_{FP}(\gamma)$, and thus both types of advisors have equal incentive to recommend local rather than global securities.

Accordingly, Panel B of Figure 3 can be viewed as a special case of Panel A of Figure 3, where $K = 1$. While in Panel A the marginal benefit curve for securities firms

was always higher than the curve for financial planners, in Panel B this is no longer the case.¹⁸ Hence, we do not obtain a clear rank-ordering of different firms' propensities to recommend local securities over global securities.

As before, securities firms expect that their male and female clients have similar financial knowledge and therefore they can earn the same marginal benefits from suboptimal advice (local securities) to both genders. Clients respond positively to catering, and therefore the marginal benefit curve of the securities firm is higher for domestic outlook clients than for international outlook clients. Therefore, in equilibrium, these advisors will give worse quality advice to domestic outlook clients, both male and female.

Financial planners continue to expect that their female clients are less knowledgeable than their male clients and that they are also more likely to respond to catering. Therefore, analogous to our earlier findings, they are more likely to recommend local securities to women than to men, especially if the clients have a domestic outlook.

In summary, we obtain the following implications.

Implication 4 (Difference in propensity to recommend local securities by firm type):

We cannot rank order the propensities of advisors in securities firms or financial planning firms to recommend local securities.¹⁹

Implication 5 (Difference in propensity to recommend local securities by firm type and gender): Financial planners are more likely to recommend local securities when advising female clients than when advising male clients. Advisors in securities firms are equally likely to recommend local securities to both genders.

¹⁸ In the previous case, our assumption that $K > \frac{a+b+c+d+e+f}{a} > 1$ led to the result that the vertical intercept of the lowest marginal benefit curve for securities firms is higher than the intercept of the highest marginal benefit curve for financial planners. Accordingly, securities firms always had a stronger incentive to recommend individual risky securities than financial planners, regardless of client characteristics. Since we now assume that $K = 1$, this order no longer obtains.

¹⁹ Alternatively, our earlier results could be explained by advisors at securities firms being less able than advisors at financial planners. If so, securities firms would have recommended both more individual risky securities and more local securities than financial planners. Instead, we find that securities firms recommended more individual risky securities than financial planners, but there is no difference in the case of local securities.

Implication 6 (Difference in propensity to recommend local securities by client attributes and gender – financial planners): Financial planners are more likely to distinguish by gender when clients signal that they have a domestic outlook.

3.E. Extension: Taste-Based Discrimination

We can extend this model to allow for the possibility that advisors may have an aversion to giving good advice to female clients. To do this, we also allow the advisor's cost function to depend on the gender of the client $C(\gamma, g)$. Advisors who have a personal prejudice against female clients face lower psychic costs when giving suboptimal advice to women than when giving it to men. Accordingly, in Panels A and B of Figure 4, the advisor's marginal cost curve for giving suboptimal advice to women is flatter than for men. As before, advisors choose the quality where marginal benefit equals marginal cost. Our previous result holds: financial planners give worse advice to women than to men. Unlike before, however, we now see that even securities firms distinguish between the genders: they give worse advice to women than to men. This leads to our final implication.

[INSERT FIGURE IV ABOUT HERE]

Implication 7 (Difference in propensity to recommend individual securities or local securities by firm type and gender – taste-based discrimination): In taste-based discrimination, both securities firms and financial planners give women worse financial advice than men.

IV. Study Design

Our sampling frame consists of all local firms in Hong Kong, China that provide advice to retail investors. In February 2017, we obtained from the Hong Kong Securities and Finance Commission (SFC) website a list of all individuals who held an active Type 4 license authorizing them to practice as financial advisors. For each of these individuals, the website also identifies the firm where the individual is employed, which allowed us to compile a list of all firms where advisory services are potentially offered.²⁰ We removed

²⁰ Employers apply for Type 4 licenses on behalf of the employee; thus, each Type 4 license corresponds to an employer–employee pair. If the employee leaves this employment with that company, the license becomes inactive. This ensured that we correctly identified the universe of all firms that provide financial advisory services.

multinational firms since their operating procedure is determined globally and may constrain the conduct of their advisors in Hong Kong, China. All firms belonging to the same parent company were treated as a single firm, and all firms that did not publicly provide contact information were removed.²¹

In the summer of 2018, our bilingual research assistant contacted each firm individually, by telephone or email. She posed as a potential retail customer and used a free-flowing script in Cantonese, the local language in Hong Kong, China, to inquire whether the firm would provide her personalized financial advice. In this way, we were able to identify firms that were unsuitable for our study, such as banks that provided advice only to their depositors; and firms that provided advice only to corporate clients, accepted only referred clients, required an initial deposit before giving advice, offered only a trading platform, or sold only sold gold, insurance, or futures. After eliminating such firms, our sampling frame consisted of 90 individual advisory firms. These included 75 securities firms and 15 financial planning firms. We included all 191 branches of these 90 firms in our study.²²

We designed our experiment so that each auditor embodied an “avatar” comprising three attributes: risk tolerance, confidence, and geographic outlook. We created eight avatars that included all possible combinations when we allowed two values for each attribute: high or low risk tolerance, high or low confidence, and a domestic or international outlook. A market research firm hired 32 auditors (16 men and 16 women); we assigned each avatar to 4 auditors (2 men and 2 women). We then randomly assigned between 18 and 20 audit visits to each auditor.²³

Each branch was visited multiple times, each time by a different auditor. To maximize the precision of our estimates, we balanced gender and avatar assignment

²¹ If a firm did not publicly disclose its contact information, it was unlikely that a prospective client could schedule an appointment. Such firms did not qualify for our study.

²² We initially assigned 111 of the 191 branches to auditors and held 80 branches in reserve as replacements for contingencies. We created 594 branches × auditor random assignments, linking 32 auditors to 111 branches of 74 firms. Based on an initial pilot study, our power calculations indicated that this sample size would be sufficiently powered. Details of the random assignments are provided in section C.2 of the Appendix.

²³ The auditors scheduled and attended their appointments independently.

across these multiple visits. Because the advisor could have asked to see the auditor's Hong Kong, China identity card, we instructed each auditor to truthfully provide his or her name when making the appointment. Auditors only visited firms with prior appointments. An individual auditor was assigned to visit only one branch of a particular firm; this helped avoid detection when firms had centralized scheduling platforms. We assigned more visits to firms with more branches. However, to avoid raising suspicion, no branch was visited more than 6 times.

Despite our elaborate groundwork, some of our visits failed—either because the staff at the advisory firm told the auditors that the firm did not make recommendations, or because they insisted on a prior referral, or because they insisted that the auditor open an account.²⁴ In such cases, we assigned the auditor to visit another office. The distribution of initially assigned and actual visits, as well as information on failed visits, can be found in Table C.1 and section C.5 in the Appendix. Importantly, the reasons for visit failure do not appear to be related to the outcome we are interested in. Our final sample consists of 463 visits conducted in 102 branches of 65 individual firms.

The market research firm trained the auditors to pose as potential clients visiting a financial advisor for the first time. They were all instructed to state the same investment objective, investment amount, and investment horizon, and to ask for appropriate product recommendations. We provided them with scripts that they could naturally incorporate into their conversation to signal their avatar. Each auditor played the same avatar for all visits. This helped to avoid problems such as forgetting their lines or mistakenly signaling the wrong avatar.²⁵

To signal high risk tolerance, we provided the script (in Cantonese), *“I don't mind if I lose money sometimes in bad times, but I want to make good money when the times are good. So I can afford to lose some money.”* In contrast, an auditor signaling a low

²⁴ Of our originally planned 594 visits, 187 (or 31.5%) failed [or “were canceled”?] for these reasons. We replaced 108 of these visits with new visits from our reserve list, for a total of 515 visits. However, even of these 515 visits, 52 did not result in usable data, as we explain in the Appendix C.5. As a result, our analysis is based on data from 463 visits.

²⁵ In 6 visits, auditors reported that advisors appeared to remember meeting another auditor previously. To avoid any bias from contamination, we did not include these 6 visits in our estimation sample. In addition, we did not include the immediately preceding visit to this branch.

tolerance for risk was instructed to say, *“I want to buy something that is safe. I worry that if I make a mistake, I will lose my money. I can tolerate a little loss, but not much.”* An auditor who was pretending to be very confident was asked to say, *“I usually make financial decisions myself. I don’t usually take the help of advisors. I am only here because my good friend insisted that I meet you before I make any decisions.”* Someone signaling low confidence was asked to say, *“I have never made important financial decisions on my own before. In my household, my parents/spouse have always done this. That is why I need your advice.”*²⁶ Finally, an auditor with an international outlook would say, *“My cousin lives in Canada and I am thinking of moving to Canada. I am not sure that I want to retire here.”* Someone with a domestic outlook was asked to say, *“I was born here and intend to retire here,”* and was also instructed not to mention relatives living abroad.

It is common for financial advisors to give first-time clients a risk profile questionnaire. To ensure that auditors’ responses to the questionnaire matched their avatar, we created sample answers for three risk profile questionnaires that we had obtained from various financial advisory firms before the visits began, and the research firm trained auditors to respond appropriately. The audits and training were conducted in Cantonese. Our bilingual research assistant attended the training sessions to ensure that our instructions were followed to the letter.

We collaborated with the market research firm to choose the criteria for hiring auditors. Auditors needed to be able to credibly signal that they were Hong Kong, China retail investors seeking financial advice. To ensure that the experimentally varied attributes and gender of the auditors, but not their other characteristics, generated the bulk of the variation in advisors’ perceptions of the auditors, they needed to be relatively homogenous in other aspects. Accordingly, all auditors were residents of Hong Kong,

²⁶ Our theoretical model assumes that confidence and financial knowledge are orthogonal. Accordingly, we assume that when the auditors’ signal their confidence, they do not signal their financial knowledge. However, it is possible that advisors instead interpreted the high confidence script as a signal of self-belief about high financial literacy. If self-belief about financial literacy is positively correlated with actual financial literacy (Allgood and Walstad 2015), then advisors may have given the same advice to clients signaling high confidence and clients with financial knowledge. However, according to this argument, both men and women who signaled high confidence should have received high-quality advice. Instead, we find that women with high confidence (but not men) were more likely to receive *suboptimal* advice than women with low confidence.

China, in the age range of 30–45 years, and earned an income equivalent to the mean salary level in Hong Kong, China (Census and Statistics Department, Hong Kong Special Administrative Region 2018). All spoke Cantonese. Section C.3 in the Appendix provides more details.

If education is correlated with financial knowledge, highly educated retail investors might be less likely to visit financial advisors. Accordingly, we chose to hire auditors who had not received a college education.²⁷ Similarly, we required that they had either no or limited experience in stock market trading.²⁸ Once hired, the auditors reported their characteristics using an online questionnaire we developed. Five individuals quit during the study and were replaced.²⁹ Table 2 presents descriptive statistics for all 37 individuals who were auditors. Note, however, that only 32 auditors were involved at any given time, with two men and two women playing each of the 8 avatars.

[INSERT TABLE 2 ABOUT HERE]

Not surprisingly, the male and female auditors differed in several characteristics. The women were on average 3 years older than the men. All of the women, but only about two-thirds of the men, were married. Accordingly, the average female auditor had more children. This likely reflects gender differences in labor force participation: married women with children are more likely to work part-time, while married men or fathers may be less likely to engage in part-time work. This is also borne out by the fact that only three-quarters of the female auditors were employed at the time of recruitment for our study, whereas nearly all the men were. Accordingly, women were also less likely to have a mandatory provident fund.³⁰ Men were more educated than women: 47% (22%) of men

²⁷ Despite this instruction, one male auditor did have a bachelor's degree in journalism. However, he met all other criteria: age, monthly income and net worth, and limited investment experience.

²⁸ Rather than include any unverifiable hiring criteria in the job posting, we asked the market research firm to use these criteria to screen job applicants.

²⁹ A female auditor resigned due to an accident, and a male auditor left Hong Kong, China for a month-long business trip. The market research company dismissed one male and one female auditor about one-third of the way through the study because of unsatisfactory performance, specifically because they did not probe sufficiently to ascertain the advisors' product recommendations. We do not know the reason for the termination of the fifth auditor.

³⁰ In Hong Kong, China, employers are required to contribute to the mandatory provident fund for all employees with a contract of employment of more than 60 days, regardless of whether they work full-time or part-time.

(women) had studied beyond senior secondary school. Men also reported owning greater wealth than women: 58% (33%) of men (women) reported having net worth of more than HK\$500,000. In line with our intention to use auditors with little to no trading experience, none of the auditors had traded stocks more than four times in the previous year. In fact, 56% of the female auditors and 32% of male auditors reported that they had never traded stocks before.

Within 24 hours of each visit, auditors completed an online questionnaire in which they reported on various details of the visit. The market research firm performed its internal quality control procedures to verify this information. The data from the questionnaire formed the basis for our empirical analysis. We were careful not to share our research question with either the market research firm or the auditors. Section C.4 of the Appendix provides details of the visit protocol, and Appendix D contains the Cantonese script and an English translation of the visit protocol.

V. Randomization Balance and Summary Statistics

We had planned our audits so that each avatar was played by an equal number of male and female auditors. As shown by the green (lighter) bars in Panel A of Figure 5, our original schedule included 149 visits by males and 149 visits by females playing a low-risk-tolerance avatar and 148 visits by males and 148 visits by females playing a high risk-tolerance avatar. As described above, some visits were unsuccessful, so we replaced them with visits to the branches we had held in reserve. The brown (darker) bars show that this did not create an imbalance in our actual visits. Visits were also gender-balanced on the attributes of confidence and geographic outlook (Figure 5, Panels B and C).

[INSERT FIGURE 5 ABOUT HERE]

The quality of the advice our auditors received may also have varied by the gender of the advisor with whom they met. Our study randomly assigned auditors to particular branches, but we could not specifically select the advisor with whom the auditor met. If firms simply assigned the first available advisor to each prospective client, it is reasonable to think that the assignment of advisors was random. However, firms could also selectively assign advisors and clients based on client characteristics—particularly those

that were easily observed when the appointment was made or when the auditor arrived for the meeting.

As we see in Table 3, probably because financial advising is a male-dominated profession, auditors met female advisors in only 25.7% of visits. Importantly, there is no evidence that firms match prospective clients with advisors of their own gender or the opposite gender: when women conducted the audits, they were about as likely to meet a female advisor (24.3%) as when men conducted the visits (27.2%). This pattern is similar for both securities firms and financial planners.³¹

[INSERT TABLE 3 ABOUT HERE]

VI. Empirical Results

We now proceed to analyze the quality of the advice received by the auditors. As we see in Table 4, in line with their commission incentives, securities firms often recommended products traded on the stock market. These included stocks, which were recommended in 60% of visits, exchange-traded funds (or ETFs, 21%), and real estate investment trusts (or REITs, 7%). Financial planners recommended a wider variety of products overall, although they too recommended traded products in 56% of visits.

[INSERT TABLE 4 ABOUT HERE]

In 30% of visits, advisors did not recommend a specific product. Table 5 examines the content that was discussed during these visits. First, we note that no-advice visits predominantly occurred at securities firms. In 56% (=53%+3%) of the 120 such visits at securities firms, the advisor claimed that their firm only facilitated trades but did not give customized advice to retail investors. In 23% (=17%+6%) of the cases, they administered a risk profile questionnaire to the auditor or discussed risk diversification strategies, and in 23% of the cases, they asked the auditor to open an account before they would give advice. During no-advice visits with financial planners, advisors were less likely to report that they did not advise their clients or require them to open an account first.

[INSERT TABLE 5 ABOUT HERE]

³¹ After this research was completed, an acquaintance who works at a securities firm told us that at their firm, “walk-in” clients are assigned to the first available advisor.

Importantly, in our empirical analysis, all visits in which the auditor did not receive specific product recommendations are coded as “undominated advice,” i.e., not undiversified or not home-biased advice. This implies that our results are *not* driven by a systematic selection of visits in which advisors choose to provide advice. Instead, our estimates for the incidence of suboptimal advice are lower than they would have been had we chosen to remove these visits from our estimation sample.³²

As we have argued, the purchase of a single risky security is dominated by the purchase of a basket of securities or a government bond. This is because any investor who purchases only individual risky securities is exposed to idiosyncratic risk that could be diversified away at no loss of expected return. Therefore, we define advice given during an audit visit as “undiversified” if the advisor recommended only individual risky securities to the auditor. The complement of this set, referred to as “diversified,” includes advice that mentions a basket of securities and visits in which no advice was given. This allows us to circumvent the usual problems that arise with evaluating the quality of financial advice. Ex-post measures of advice quality, such as the portfolio’s raw (or risk-adjusted) rate of return, are not appropriate in our context because the advisor is unlikely to discuss the exact weighting each product they recommend during an initial visit.³³ Ex-ante measures, such as the distance to an efficient portfolio, are also inherently problematic because they require that we observe the client’s true risk appetite and the feasible opportunity set. Our definition provides a simple and conservative measure of the extent to which advisors give suboptimal advice to prospective clients. Importantly, advisors at both securities firms and financial planning firms can recommend diversified products if they choose to do so. For example, securities firms could recommend baskets such as ETFs, and financial planners could recommend baskets such as mutual funds.

Similarly, we construct another variable where the advice is classified as “home-biased” if the advisor mentioned only products domiciled in Hong Kong, China: either stocks of firms headquartered in Hong Kong, China or mutual funds or ETFs invested in

³² As we discuss in section VII.E, our main conclusions are unaffected if we explicitly consider the possibility that advisors choose not to give advice.

³³ Our main conclusions are unaffected when we analyze the ex-post returns of recommended products. See section VII.D.

stocks of firms headquartered in Hong Kong, China. The complement of this set includes advice to buy securities from other jurisdictions and visits where no advice was given.³⁴

Table 6 presents the summary statistics for the variables described above. In column (1) of Panel A, we see that advisors recommended only single risky securities in 38.4% of the visits. Consistent with Implication 1, this propensity is significantly more pronounced among advisors employed by securities firms (41%) than among advisors employed by financial planning firms (25%). The difference is statistically significant ($p=0.011$). Column (2) shows that advisors recommended only local securities in 38.9% of visits. However, this propensity to give home-biased advice is equally prevalent among advisors at securities firms and financial planners. This is in line with Implication 4 that there is no clear ranking of the likelihood that advisors in securities firms or financial planning firms recommend local securities.

[INSERT TABLE 6 ABOUT HERE]

In columns (1) and (2) of Panel B, we see that a male auditor and a female auditor visiting a securities firm were offered undiversified (home-biased) advice 39.3% (36.1%) and 42.6% (43.1%) of the time, respectively. In contrast, columns (3) and (4) show that a male auditor visiting a financial planner was offered undiversified (home-biased) advice 13.5% (24.3%) of the time, while a female auditor was offered undiversified (home-biased) advice 36.8% (44.7%) of the time. The differences are 23.3% points ($p<0.05$) and 20.4% points ($p<0.10$). Thus, financial planners appear to be more likely to provide suboptimal advice to female than male clients, while securities firms are less likely to vary their advice quality by client gender. Since there do not seem to be any gender differences in advice given by securities firms, there is also no evidence of taste-based discrimination (Implication 7).

Multivariate regressions allow more rigorous tests of these implications of our model. We use the following specification:

³⁴ Note that this definition is independent of whether the advice consisted of single securities or a basket of securities. If the advisor recommends a fund, we classify the advice as home-biased or not based on the location of the underlying securities, not the fund manager's headquarters.

$$y_{ai} = \alpha + \beta \text{Financial Planner}_a + \gamma \text{High Risk Tolerance}_i + \delta \text{High Confidence}_i + \mu \text{Domestic Outlook}_i + \mathbf{X}_i + \epsilon_{ai} \quad (3)$$

Here, y_{ai} is a binary variable indicating the quality of the advice that auditor i received when they visited advisor a .³⁵ Recall that we classify the advice as “undiversified” (“home-biased”) if the advisor *only* recommended individual risky securities (securities domiciled in Hong Kong, China). The binary variable $\text{Financial Planner}_a$ takes value 1 if the firm is a financial planner and 0 if it is a securities firm. We also include three binary variables indicating the risk tolerance, confidence level, and geographic outlook of the avatar of the auditor who conducted the visit. Vector \mathbf{X}_i includes controls for the age, education level, and net worth of the auditor. In all regressions, standard errors are clustered at the level of the auditor.³⁶

In columns (1)–(3) of Table 7, the dependent variable takes value 1 if the advisor recommended only single risky securities, and 0 otherwise. Column (1) essentially replicates the result from column (1) of Panel A, Table 6. In column (2), we include as controls the three binary variables that indicate the randomly assigned attributes of the auditor. The coefficient on the financial planner variable is unaffected by these controls. Similarly, when we additionally control for the auditor’s personal characteristics in column (3), we continue to find that financial planners were 15 percentage points less likely than securities firms to give undiversified advice. This is in line with Implication 1.

[INSERT TABLE 7 ABOUT HERE]

In columns (4)–(6), the dependent variable takes the value of 1 if the advisor recommended only local securities. We do not estimate a statistically significant coefficient on the financial planner variable. This result also remains unchanged when we control for both randomly assigned and naturally varying auditor characteristics in

³⁵ Note that each observation in our data set is a visit by a particular auditor to a particular branch office of an advisory firm. In our empirical specifications, a branch office is considered synonymous with an advisor. In reality, of course, branch offices may employ multiple advisors.

³⁶ As we discuss in section VII.F., our results are robust to clustering standard errors at the branch level of the advisory firm or at the auditor level and to including advisory firm fixed effects.

columns (5) and (6). These results are consistent with the results in column 2 of Panel A, Table 6, and consistent with Implication 4.

In summary, we find that advice from securities firms is more likely to be undiversified than advice from financial planners, but securities firms and financial planning firms are about equally likely to recommend local securities.

To formally test Implications 2 and 5, we run the following regression separately for financial planners and securities firms:

$$y_{ai} = \alpha + \beta \text{Female Auditor}_i + \gamma \text{High Risk Tolerance}_i + \delta \text{High Confidence}_i + \mu \text{Domestic Outlook}_i + \mathbf{X}_i + \epsilon_{ai} \quad (4)$$

where Female Auditor is an indicator for whether a female auditor conducted the visit.

In columns (1)–(6) of Table 8, advice quality is measured using the dependent variable Undiversified Advice. As column 1 shows, female auditors were 23 percentage points more likely than male auditors to have received advice to buy only single risky securities during their visits to the financial planning firms. The estimate remains very similar and highly significant when we control for randomly varying avatar attributes in column 2, and it increases in magnitude when we further control for auditor characteristics in column 3.

[INSERT TABLE 8 ABOUT HERE]

In contrast, when we run the same specification using the sample of visits to securities firms in columns (4)–(6), we find no evidence that advisors vary their recommendation quality by auditor gender. The point estimates for the indicator variable Female Auditor range from 0.01 to 0.04, and none of them are statistically significant. In columns (7)–(12), we run the same specifications as in columns (1)–(6), but the dependent variable is Home-Biased Advice. Again, we find that financial planners are more likely to recommend only local securities to their female clients than to their male clients. Again, securities firms do not appear to vary their advice based on the gender of the client.

In summary, we find strong evidence that financial planners are more likely to provide suboptimal advice to female clients than to male clients, but that securities firms

do not vary advice quality by gender. This supports Implications 2 and 5. The finding that securities firms do not vary their advice by gender suggests that our findings cannot be explained as the simple result of taste-based discrimination by advisors who have a distaste for advising female investors. This addresses Implication 7.

The experimental variation we induced in the auditor's avatar attributes allows us to examine more deeply the causes of gender differences in advice.

[INSERT TABLE 9 ABOUT HERE]

We use the following empirical specification to investigate whether the gender difference in advice quality varies by investor attributes:

$$y_{ai} = \alpha + \beta \text{Female Auditor}_i + \gamma \text{Attribute } X_i + \omega (\text{Female Auditor}_i \times \text{Attribute } X_i) + X_i + \epsilon_{ai} \quad (5)$$

In columns (1) and (2) of Table 9, y_{ai} is an indicator variable representing Undiversified Advice, and Attribute $X = 1$ for high risk tolerance and 0 for low risk tolerance. We use this specification to estimate the predicted probability of the auditor receiving suboptimal advice, and then compute the difference in predicted probability due to the gender of the auditor within a risk-tolerance level. For brevity, we report the predicted probabilities for the four gender \times risk tolerance subgroups in the top half of Table 9, and in the bottom half we report the difference in predicted probabilities by gender (keeping risk tolerance constant) and by risk tolerance (keeping gender constant).

In column 2, we see that female auditors with high risk-tolerance were more likely to receive undiversified advice than male auditors with high risk tolerance (difference = 40 percentage points, significant at 5%). However, among auditors who signaled low risk tolerance, the likelihood of receiving undiversified advice did not vary by gender (difference = 17 percentage points, not significant). We present these results in Panel A of Figure 6.

[INSERT FIGURE 6 ABOUT HERE]

In columns (3) and (4) of Table 9, we examine how the quality of advice varies with the client's confidence level. Here, y_{ai} is an indicator variable representing Undiversified Advice, and Attribute $X = 1$ for high confidence and 0 for low confidence.

Column (4) shows that high-confidence female auditors were significantly more likely to receive undiversified advice than high-confidence male auditors (difference = 34 percentage points, significant at the 5% level). Less confident female auditors were also more likely to receive undiversified advice than less confident male auditors (difference = 24 percentage points, significant at the 10% level); however, the difference is clearly larger for highly confident auditors. These results are shown in Panel B of Figure 6.

Finally, in columns (5) and (6) of Table 9, y_{ai} is an indicator variable representing Home-Biased Advice, Attribute $X = 1$ for the domestic outlook and 0 for the international outlook. In column (6), we see that female auditors with a domestic outlook were significantly more likely to receive home-biased advice than male auditors with a domestic outlook (difference = 34 percentage points, significant at the 10% level). However, among auditors who signaled an international outlook, the likelihood of receiving home-biased advice did not vary by gender (difference = 11 percentage points, not significant). We present these results in Panel C of Figure 6.

Overall, our results are consistent with the idea that advisors in financial planning firms attempt to “cater” to clients' characteristics—risk preferences, confidence, and geographic outlook—but are more responsive to these attributes when the client is female than when the client is male. Our model interprets this as the result of differences in financial knowledge: advisors are more likely to cater to the preferences of women by offering suboptimal advice because they perceive that female clients have lower financial knowledge. Thus, women who exhibit high risk-tolerance, high confidence, or a domestic outlook are more likely to receive suboptimal advice than men who display the same attributes. This supports Implications 3 and 6.

VII. Supplementary Findings

Next, we examine our data to answer some additional questions of interest.

VII.A. Which type of firm gives better financial advice to female investors?

Table 7 shows that financial planners provide better advice than securities firms. However, Table 8 shows that financial planners provide worse advice to women than to men, while securities firms do not differentiate by client gender. Thus, it is unclear a priori which type of firm would provide better advice to female clients on average. To answer this question, we show in Table 10 the results of equation (3), run separately for male and female auditors. As we see in columns (4)–(6) and (10)–(12), female auditors were *equally* likely, on average, to receive suboptimal advice from financial planners and securities firms. In contrast, columns (1)–(3) and (7)–(9) make it clear that the average male auditor received better advice from a financial planner than from a securities firm. Specifically, he was 25–26 percentage points (significant at the 1% level) less likely to receive undiversified advice and 12–15 percentage points (insignificant) less likely to receive home-biased advice when he visited a financial planner rather than a securities firm.

[INSERT TABLE 10 ABOUT HERE]

VII.B. How does the quality of advice vary by the gender of the advisor?

Are clients equally likely to receive suboptimal advice from male and female advisors, or is it specifically men (or women) who offer poor advice?³⁷ To identify the correct answer this question, one would need to design an experiment in which auditors are randomly matched with advisors of different genders. Our data do not have this random matching, and so our findings are only associative. However, note that in Table 3 we saw no evidence that firms systematically match clients to advisors of the same or opposite gender. We run the specification:

$$y_{ai} = \alpha + \beta \text{Female Auditor}_i + \sigma \text{Female Advisor}_a + \omega (\text{Female Auditor}_i \times \text{Female Advisor}_a) + \mathbf{X}_i + \epsilon_{ai} \quad (6)$$

In column 2 in the bottom half of Table 11, we see that female and male auditors were equally likely to receive undiversified advice when they met with female advisors

³⁷ Using data from a survey of Swedish financial advisors and their clients, Soderberg (2012) finds that advisors of different genders have systematically different assessments of their customers' risk tolerance and financial literacy and different expectations about their clients' satisfaction with and trust in them.

(difference = 17 percentage points, not significant). However, female auditors were 26% more likely than male auditors (statistically significant at the 5% level) to receive undiversified advice when they met with male advisors. Similarly, column 4 shows that female clients were also more likely to receive home-biased advice when they met with male advisors (difference = 26 percentage points, though not statistically significant) than when they met with female advisors (difference = 7 percentage points, not significant). This suggests that it is primarily male advisors who provide suboptimal advice to female clients.³⁸

[INSERT TABLE 11 ABOUT HERE]

VII.C. Other Audit Visit Outcomes

In Table 12, we examine the differences in other elements of the conversations between auditors and advisors.

[INSERT TABLE 12 ABOUT HERE]

In column (7), we see that advisors in securities firms were, on average, less willing to make a recommendation than advisors in financial planning firms (row 1). They also spent less time speaking with the auditors (row 2) and asked fewer questions (rows 3, 4, and 5). In addition, securities firms treated male and female auditors similarly on all but two dimensions (column 10). They asked female auditors fewer questions about their financial situation than male auditors, and, remarkably, female auditors were also more likely to report that advisors were willing to advise them. Financial planners also asked female auditors fewer questions about their demographic characteristics (row 3, column 11).

VII.D. Ex-Post Performance of the Advised Portfolio

Thus far, we have defined advice as suboptimal if the advisor either recommended *only* single risky securities (undiversified advice) or if the advisor recommended *only* local

³⁸ This is consistent with Wang's (1994) finding that male financial advisors spend less time and offer a narrower range of financial products when advising female (compared to male) clients.

securities (home-biased advice). However, it is possible that advisors selectively recommended specific securities that beat the market ex post. Indeed, some have argued that retail investors ask advisors for tips on “hot stocks” and therefore the quality of advice should be measured only by the metric of whether the recommended products outperformed the market. Accordingly, we define an alternative measure of advice quality based on the ex-post market performance of the recommended products.

However, in the context of our study, this approach has limitations. In many visits, the advisor suggested multiple products but did not specify the portfolio weighting, or mentioned a particular mutual fund family but did not specify which mutual fund to buy. This hampers our ability to calculate the actual return the client could have earned. Nevertheless, for each visit, we assume that all recommended products had equal weight and calculate the market-adjusted return (return in excess of Hang Seng Index, the broad stock market index in Hong Kong, China) of the portfolio over the 3-month period from the date of the audit visit. We can calculate this return for only 221 out of 463 visits: these include 27 visits to financial planners and 194 visits to securities firms.

In Panel A of Table B.1 in the Appendix, we first find that the estimated 3-month market-adjusted return for all firms is 0.25% and is not statistically different from zero. When we disaggregate the observations by firm type, there is no evidence that advice from securities firms or financial planners significantly outperformed the market. The returns on financial planners’ recommendations were 1.36 percentage points higher than securities firms’ recommendations; however, the difference is not statistically significant.

In Panel B of Table B.1, we examine how these results vary by gender and firm type. Although the market-adjusted 3-month return on securities firms’ advice was higher for advice to male auditors (0.28%) than for female auditors (−0.07%), the gender difference is small (0.35 percentage points) and not statistically significant. For financial planners, the market-adjusted rate of return is 2.97% for male auditors and 0.04% for female auditors. This generates a much larger gender difference of 2.93 percentage points, although this is also imprecisely estimated and not statistically different from zero.

In Tables B.2 and B.3, we replicate the exercises from Tables 7 and 8, using this measure of ex-post advice quality as the dependent variable. Although not statistically

significant, the point estimates in Table B.2 suggest that financial planners provide better advice than securities firms. Similarly, the point estimates in Table B.3, although not statistically significant, suggest that financial planners provide worse advice to women than men, while the gender differences are smaller for securities firms. Although these differences are not significant due to low statistical power, there is suggestive evidence that financial planners' recommendations lead to lower market returns for women than for men.

VII.E. The Case of No Advice

In 30% of the audits, the advisor did not recommend a specific product. Recall that in our main analysis, if the audit resulted in no advice, we coded the dependent variable as undominated advice. As a result, our previous analysis provides conservative estimates for the true incidence of dominated advice.

It is plausible that some advisors, given a choice between no advice, dominated advice, and undominated advice, would prefer not to provide advice at all, but if they had to provide advice to the client, would offer dominated advice. These propensities may (or may not) vary by the type of firm the advisor works for or the gender of the client. Our previous analysis does not allow us to detect this. To address this, we use multinomial regressions to reexamine all the key findings. We start with the results on quality of advice and type of firm, reported above in Table 7. In columns 1 and 2 of Table B.4 in the Appendix, we run multinomial regressions in which we code the dependent variable to take one of the three values: No Advice, Undiversified Advice, and Not Undiversified Advice. Similarly, the dependent variable in columns 3 and 4 can take one of three values: No Advice, Home-Biased Advice, and Not Home-Biased Advice. In each regression specification, the third category is the reference category. As column 1 shows, relative to the reference category, financial planners were more likely than securities firms to *give advice* and were less likely to give undiversified advice. Columns 3 and 4 show that, relative to the reference category, financial planners are as likely as securities firms to give advice, but are significantly less likely to give home-biased advice. Thus, our main results from the binary specifications for dependent variables also hold in multinomial

regressions: financial planners were less likely to give poor quality advice *overall* and were less likely to avoid giving advice to the auditor.

Our earlier results in Table 8 on the firm type and gender differences are also confirmed in the multinomial regressions in Table B.5 in the Appendix. There is no evidence that advisors at either securities firms or financial planners are more hesitant to provide advice women than to men. However, compared with undominated advice, financial planners were more likely to give dominated advice to women than to men. This difference does not exist in securities firms. Also, our earlier results in Table 9 on differences across the three auditor attributes—risk tolerance, confidence, and geographic outlook—continue to hold for the multinomial specifications shown in Table B.6 in the Appendix. Specifically, these specifications confirm that among the risk-tolerant, confident, and domestic outlook-bearing auditors, women were significantly more likely to receive dominated advice over undominated advice during their visits with financial planners.

VII.F. Robustness to Alternative Clustering of Standard Errors and Firm-Fixed Effects

Advisors working in the same firm branch may share common characteristics, and so the measurement error in their advice quality variable may be correlated. To account for this, in Tables B.7–B.9 in Appendix B, we redo all tests from Tables 7–9, clustering standard errors at the branch level. Our conclusions remain qualitatively unchanged.

Finally, note that our data set consists of audits at 65 distinct advisory firms. Firm fixed effects may account for firm-specific inputs that affect advice quality, e.g., advisor training, incentives, or firm culture. In Tables B.10 and B.11 in the Appendix, we repeat the analysis from Tables 8–9 with firm fixed effects and standard errors clustered at the auditor level. Our results remain broadly similar.

VIII. Conclusion

Although some previous work suggests that finance professionals give different advice to men and women, it has been difficult to pin down the reasons why they do so. If advisors use a client's gender as a proxy for the client's risk preferences or other

characteristics that determine his or her optimal financial portfolio, then this is a benign explanation for differences in advice. However, because these preferences are difficult to measure objectively, researchers are unable to control for them. To our knowledge, this is the first paper to use a natural field experiment to randomly vary three such attributes—risk tolerance, confidence, and geographic outlook. This allows us to not only establish that there is a difference in the quality of financial advice that men and women receive, but also to shed light on the mechanisms that lead to these gender differences.

Our study provides evidence that women are more likely to receive low quality financial advice from some types of advisory firms than men, but not all. We explain this by differences in firms' incentives and advisors' beliefs about gender differences in financial knowledge. When their revenue comes from trading commissions, advisors are more likely to recommend individual local stocks that investors trade frequently. In firms that specialize in customized services, advisors are likely to cater advice to their clients' attributes. Critically, however, this tendency is more pronounced when the client is female. We argue this is because advisors believe that women are less financially knowledgeable and therefore may not recognize that the advice is of low quality.

One caveat is that we are unable to directly identify the effect of client financial knowledge. It is understandably difficult to conduct an audit study in which auditors credibly signal that they are highly knowledgeable, since knowledgeable investors would not typically seek financial advice, making such auditors not credible. Instead, we argue that advisors were most likely aware of the well-established empirical pattern that men tend to be more financially knowledgeable than women. Therefore, our results are consistent with the idea that advisors engage in statistical discrimination against women. Further, since we do not find gender differences in the advice provided by securities firms, it is unlikely that differences in advice quality are driven by taste-based discrimination.

Table 1: Probability of Retaining Clients After Giving Suboptimal Advice

Client Characteristics		If client visitsthen advisor infers client's financial knowledge is (4)	...implying (5)	Probability that client is retained: θ	
Risk Tolerance/ Confidence/Geographic Outlook (1)	Gender (2)				Financial Planners (6)	Securities Firms (7)
High / High / Domestic	Female	FP	Very low	High catering; Very low detection	$a + b + c + d + e + f$	—
	Male	FP	Low	High catering; Low detection	$a + b + d + e$	—
	Female	SF	Moderate	High catering; Moderate detection	—	$a + d$
	Male	SF	Moderate	High catering; Moderate detection	—	$a + d$
Low / Low / International	Female	FP	Very low	Low catering; Very low detection	$a + b + c$	—
	Male	FP	Low	Low catering; Low detection	$a + b$	—
	Female	SF	Moderate	Low catering; Moderate detection	—	a
	Male	SF	Moderate	Low catering; Moderate detection	—	a

FP = financial planner, SF = securities firm.

Note: This table shows the probability that an advisor, either a financial planner or a securities firm, will retain a client with different combinations of characteristics (high or low risk tolerance, high or low confidence, domestic or international outlook, female or male).

Source: Authors' calculations.

Table 2: Characteristics of Auditors

	All	Male	Female
	(1)	N=19 (2)	N=18 (3)
Age (Mean)	40.42	39.00	41.93
Married (Fraction)	0.84	0.68	1.00
Number of children (Mean)	0.97	0.74	1.22
Currently employed (Fraction)	0.84	0.95	0.73
Lives in own house (Fraction)	0.54	0.63	0.44
Has a mandatory provident fund plan (Fraction)	0.81	0.95	0.67
Never traded stocks before (Fraction)	0.43	0.32	0.56
Number of times traded stocks in last year (Fraction)			
Zero	0.49	0.42	0.56
1 to 2 times	0.30	0.37	0.22
3 to 4 times	0.22	0.21	0.22
Education (Fraction)			
Less than senior secondary school	0.05	0.00	0.11
Senior secondary school	0.59	0.53	0.67
2-year degree / Sub-degree	0.32	0.42	0.22
Bachelor's degree	0.03	0.05	0.00
Net worth (Fraction)			
Less than HK\$100,000	0.16	0.11	0.22
HK\$100,000–HK\$499,999	0.38	0.32	0.44
HK\$500,000–HK\$999,999	0.24	0.37	0.11
HK\$1,000,000–HK\$4,999,999	0.22	0.21	0.22

Notes: This table shows the summary statistics for the characteristics of the auditors. The study started with 32 auditors, but 5 new auditors were hired during the study to replace the 5 who dropped out. Summary statistics are given for all 37 individual auditors.

Source: Authors' calculations.

Table 3: Number of Visits by Gender of Financial Advisor and Auditor, and by Advisor Type

	Male Advisor (1)	Female Advisor (2)	Total Number (3)
All Firms			
Male Auditor	0.73 (0.48)	0.27 (0.52)	228
Female Auditor	0.76 (0.52)	0.24 (0.48)	235
Total	344 (0.74)	119 (0.26)	463
Financial Planning Firms			
Male Auditor	0.82 (0.49)	0.18 (0.5)	37
Female Auditor	0.82 (0.51)	0.18 (0.5)	38
Total	61 (0.81)	14 (0.19)	75
Securities Firms			
Male Auditor	0.71 (0.48)	0.29 (0.52)	191
Female Auditor	0.75 (0.52)	0.25 (0.48)	197
Total	283 (0.73)	105 (0.27)	388

Notes: This table reports the fraction of total audit visits that auditors of a given gender make to advisors of a given gender for the securities firm and financial planners combined and separately. The fractions without (with) parentheses sum to 100 across all columns (rows).

Source: Authors' calculations.

Table 4: Distribution of Recommendations across Product Classes

Product Description	Visits to Financial Planners			Visits to Securities Firms		
	(1)	(2)	(3)	(4)	(5)	(6)
	Fraction	Number of products recommended		Fraction	Number products recommended	
	Mean	Median		Mean	Median	
Stocks	0.51	2.1	2	0.60	2.3	2
ETF	0.13	1.0	1	0.21	1.2	1
REIT	0.09	1.0	1	0.07	1.0	1
Traded on exchange	0.56	1.0	1	0.67	1.0	1
Government bonds	0.03	1.7	1	0.02	1.0	1
Insurance	0.02	1.5	2	0.02	1.0	1
Not traded on exchange	0.05	1.0	1	0.04	1.0	1
Mutual funds	0.37	2.0	2	0.06	1.1	1
Others	0.04	-	-	0.02	5.0	5
No recommendation	0.25	-	-	0.31	-	-

ETF = exchange traded fund, REIT = real estate investment trust.

Notes: This table shows the fraction of visits to financial planners and securities firms where a particular class of financial products was recommended. Column 1 (4) shows the fraction of visits where financial planners (securities firms) recommended at least one product in that class. Column 2 (5) shows the mean and column 3 (6) the median of the number of recommended products within that class. Since advisors may recommend products from different classes during a visit, the fractions in columns 1 and 4 sum to more than one.

Source: Authors' calculations.

Table 5: Explanations for Visits Where the Advisor Did Not Recommend a Specific Product

Content of Conversation or Other Explanations	Financial Planners (N=19) (1)	Securities Firms (N=120) (2)
"We do not provide specific recommendations"	0.21	0.53
"You must open an account first"	0.11	0.23
"You must undergo a risk assessment first"	0.21	0.17
"Our company provides industry research findings"	0.05	0.20
Did not meet a licensed financial advisor	0.11	0.14
Advisor provided information but did not advise	0.11	0.10
"We do not take walk-in clients"	0.16	0.05
"We only work with professional investors"	0.26	0.03
Advisor gave non-specific advice to do X	0.05	0.06
"This is not a good time for financial investments"	0.00	0.03
Others [#]	0.11	0.01

* X: avoid excessive risk; invest in provident fund; diversify geographically; buy blue-chip stocks, insurance, bonds, mature stocks.

[#] Reason is unclear.

Notes: This table summarizes the content of conversations during visits where the advisor did not recommend a specific product. Multiple categories may apply at the same time during a visit.

Source: Authors' calculations.

Table 6: Advice Quality by Firm Type and Auditor's Gender**Panel A: Advice Quality by Firm Type**

	Undiversified Advice (UA) (1)	Home-Biased Advice (HB) (2)
All firms	0.384	0.389
Securities firms (SF)	0.410	0.397
Financial planners (FP)	0.253	0.347
Diff (SF – FP)	0.157**	0.050
<i>p-value</i>	0.011	0.414

Panel B: Advice Quality by Firm Type and Auditor's Gender

	Securities Firms		Financial Planners	
	UA (1)	HB (2)	UA (3)	HB (4)
Male	0.393	0.361	0.135	0.243
Female	0.426	0.431	0.368	0.447
Diff (M-F)	-0.034	-0.070	-0.233**	-0.204*
<i>p-value</i>	0.50	0.16	0.02	0.06

Notes: This table shows the difference in advice quality by financial-advisory firm type and by auditor's gender. Panel A shows the difference by type of firm, while Panel B shows the difference by auditor's gender within each type of firm.

Source: Authors' calculations.

Table 7: Advice Quality and Type of Firm

	Undiversified Advice			Home-Biased Advice		
	(1)	(2)	(3)	(4)	(5)	(6)
Financial Planner	-0.156*** (0.053)	-0.151*** (0.052)	-0.150*** (0.052)	-0.050 (0.058)	-0.072 (0.057)	-0.073 (0.059)
High Risk Tolerance		-0.007 (0.045)	-0.021 (0.046)		-0.202*** (0.052)	-0.232*** (0.050)
High Confidence		0.110** (0.046)	0.104** (0.044)		0.091* (0.052)	0.092** (0.044)
Domestic Outlook		-0.050 (0.044)	-0.064 (0.038)		0.029 (0.053)	0.013 (0.051)
Educated beyond Senior Secondary School			-0.002 (0.063)			-0.049 (0.057)
Net Worth above HK\$500,000			-0.065 (0.056)			-0.099* (0.055)
Age			0.005 (0.005)			-0.000 (0.005)
Constant	0.410*** (0.027)	0.383*** (0.046)	0.214 (0.197)	0.397*** (0.034)	0.440*** (0.074)	0.525** (0.197)
Observations	463	463	463	463	463	463
R-squared	0.014	0.030	0.035	0.001	0.053	0.067

***, **, and * denote statistical significance at the 1%, 5%, and 10% level.

Notes: This table shows the estimation result of the regression of *Undiversified Advice* and *Home-Biased Advice* on the advisor type. Financial Planner is a dummy variable that takes the value of 1 (0) if the advisor is from a financial planner firm (securities firm). *High Risk Tolerance*, *High Confidence*, and *Domestic Outlook* take the value of 1 (0) if the auditor plays an avatar of high (low) risk tolerance, high (low) confidence, and domestic (international) outlook, respectively, during the audit visit. *Educated beyond senior secondary school* takes the value of 1 if the auditor has an education higher than senior secondary school. *Net worth above HK\$500,000* takes the value of 1 if the auditor's net worth is more than HK\$500,000. *Age* is the auditor's age in years. Standard errors are clustered at the auditor level and shown in parentheses below the coefficients.

Source: Authors' calculations.

Table 8: Gender Difference in Advice Quality and Type of Firm

	Undiversified Advice						Home-Biased Advice					
	Financial Planner Firms			Securities Firms			Financial Planner Firms			Securities Firms		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Female Auditor	0.233** (0.098)	0.243** (0.095)	0.308*** (0.092)	0.034 (0.053)	0.037 (0.050)	0.011 (0.065)	0.204* (0.120)	0.202 (0.120)	0.256** (0.109)	0.070 (0.067)	0.072 (0.052)	0.051 (0.049)
High Risk Tolerance		0.119 (0.095)	0.132 (0.102)		-0.028 (0.049)	-0.040 (0.051)		-0.160 (0.130)	-0.159 (0.123)		-0.209*** (0.053)	-0.236*** (0.054)
High Confidence		0.137 (0.099)	0.218** (0.091)		0.106** (0.050)	0.099* (0.051)		0.164 (0.123)	0.263** (0.107)		0.079 (0.053)	0.082* (0.048)
Domestic Outlook		-0.047 (0.093)	0.007 (0.093)		-0.051 (0.049)	-0.064 (0.042)		0.026 (0.127)	0.083 (0.119)		0.031 (0.053)	0.023 (0.055)
Educated beyond Senior Secondary School			0.151 (0.107)			-0.007 (0.069)			0.217 (0.129)			-0.066 (0.053)
Net Worth above HK\$500,000			-0.131 (0.111)			-0.052 (0.062)			-0.238** (0.102)			-0.072 (0.059)
Age			-0.009 (0.009)			0.005 (0.006)			-0.003 (0.014)			-0.004 (0.005)
Constant	0.135** (0.059)	0.048 (0.128)	0.324 (0.326)	0.393*** (0.039)	0.378*** (0.053)	0.250 (0.235)	0.243** (0.096)	0.220 (0.158)	0.254 (0.568)	0.361*** (0.052)	0.413*** (0.085)	0.674*** (0.184)
Observations	75	75	75	388	388	388	75	75	75	388	388	388
R-squared	0.072	0.120	0.151	0.001	0.016	0.019	0.046	0.095	0.152	0.005	0.058	0.070

***, **, and * denote statistical significance at the 1%, 5%, and 10% level.

Notes: This table shows the estimation result of the regression of *Undiversified Advice* and *Home-Biased Advice* on the gender of the auditor. Columns (1)–(6) show the results of the regression of *Undiversified Advice*, while columns (7)–(12) show the results of the regression of *Home-Biased Advice* on the auditor's gender, estimated separately for audit visits to financial planner and securities firms. *Female Auditor* is an indicator that takes the value of 1 (0) for female (male) auditors. *High Risk Tolerance*, *High Confidence*, and *Domestic Outlook* take the value 1 (0) if the auditor plays an avatar of high (low) risk tolerance, high (low) confidence, and domestic (international) outlook, respectively, during the audit visit. *Educated beyond senior secondary school* and *Net worth above HK\$500,000* are indicator variables. *Age* is the age of the auditor in years. Standard errors are clustered at the auditor level and are reported in parentheses below the coefficients.

Source: Authors' calculations.

Table 9: Gender Difference and Auditor's Attributes in Financial Planner Visits

Dependent Variable (Y) Independent Variable/Attribute (X)	Undiversified Advice <i>X = Risk Tolerance</i>		Undiversified Advice <i>X = Confidence</i>		Home-Biased Advice <i>X = Outlook</i>	
	(1)	(2)	(3)	(4)	(5)	(6)
Prd. Pr. [Male, Low X]	0.136 (0.085)	0.121 (0.08)	0.100 (0.09)	0.038 (0.062)	0.278** (0.133)	0.288** (0.115)
Prd. Pr. [Male, High X]	0.133 (0.085)	0.141 (0.088)	0.176** (0.074)	0.205*** (0.072)	0.211 (0.139)	0.187 (0.141)
Prd. Pr. [Female, Low X]	0.280*** (0.082)	0.286*** (0.093)	0.273*** (0.088)	0.276*** (0.097)	0.429*** (0.114)	0.395*** (0.116)
Prd. Pr. [Female, High X]	0.538*** (0.12)	0.543*** (0.132)	0.500*** (0.121)	0.544*** (0.122)	0.471*** (0.078)	0.527*** (0.087)
Among High X: [Female – Male]	0.405*** (0.147)	0.402** (0.153)	0.324** (0.142)	0.339** (0.13)	0.26 (0.159)	0.340* (0.174)
Among Low X: [Female – Male]	0.144 (0.118)	0.165 (0.126)	0.173 (0.126)	0.238* (0.123)	0.151 (0.175)	0.106 (0.159)
Among Females: [High – Low] X	0.258* (0.145)	0.257 (0.156)	0.227 (0.15)	0.268* (0.152)	0.042 (0.138)	0.132 (0.151)
Among Males: [High – Low] X	-0.003 (0.122)	0.019 (0.13)	0.076 (0.117)	0.167* (0.097)	-0.067 (0.193)	-0.101 (0.181)
Demographic Controls	No	Yes	No	Yes	No	Yes
Observations	75	75	75	75	75	75
R-squared	0.112	0.118	0.109	0.135	0.049	0.088

***, **, and * denote statistical significance at the 1%, 5%, and 10% level.

Notes: The top half of the table shows the predicted probabilities that auditors of each gender and attribute combination receive *Undiversified Advice* in columns (1) through (4) and *Home-Biased Advice* in columns (5) and (6), when they visit financial planners. The probabilities are obtained from the regression equation (5). The key independent variable/attribute (X) is an indicator variable that takes the value of 1 (0) for *High (Low) Risk Tolerance* in columns (1) and (2), *High (Low) Confidence* in columns (3) and (4), and *Domestic (International) Outlook* in columns (5) and (6). *Demographic Controls* include a dummy for the auditor's education (=1 if educated beyond senior secondary school), a dummy for net worth (=1 if *net worth above HK\$500,000*), and auditor's age (in years). The bottom half of the table shows the difference in predicted probability and t-test for the difference in the respective dependent variable across the gender of auditors with a particular attribute, and across particular attributes of auditors for a given gender. Standard errors reported in parentheses are clustered at the auditor level.

Source: Authors' calculations.

Table 10: Which Firm Type Should a Female Investor Seek Advice From?

	Undiversified Advice						Home-Biased Advice					
	(1)	Male Auditors (2)	(3)	(4)	Female Auditors (5)	(6)	(7)	Male Auditors (8)	(9)	(10)	Female Auditors (11)	(12)
Financial Planner	-0.258*** (0.063)	-0.254*** (0.056)	-0.257*** (0.057)	-0.058 (0.082)	-0.047 (0.084)	-0.051 (0.084)	-0.118 (0.086)	-0.137 (0.080)	-0.147 (0.085)	0.016 (0.082)	-0.004 (0.086)	-0.003 (0.083)
High Risk Tolerance		0.005 (0.069)	0.036 (0.061)		-0.016 (0.053)	-0.020 (0.058)		-0.238*** (0.079)	-0.251*** (0.087)		-0.163** (0.064)	-0.170** (0.077)
High Confidence		0.041 (0.073)	0.042 (0.057)		0.180*** (0.050)	0.163** (0.060)		0.120 (0.082)	0.124 (0.074)		0.065 (0.064)	0.047 (0.058)
Domestic Outlook		-0.088 (0.070)	-0.158*** (0.055)		-0.014 (0.049)	-0.048 (0.056)		0.012 (0.083)	-0.071 (0.107)		0.048 (0.064)	0.030 (0.069)
Educated above Senior Secondary School			0.103 (0.061)			-0.155* (0.086)			-0.031 (0.075)			-0.103 (0.090)
Net Worth above HK\$500,000			-0.169** (0.062)			0.054 (0.086)			-0.182* (0.100)			0.007 (0.080)
Age			0.008 (0.006)			-0.002 (0.011)			0.001 (0.008)			0.002 (0.010)
Constant	0.393*** (0.040)	0.413*** (0.074)	0.163 (0.207)	0.426*** (0.036)	0.351*** (0.053)	0.477 (0.451)	0.361*** (0.052)	0.416*** (0.132)	0.527* (0.255)	0.431*** (0.043)	0.458*** (0.086)	0.392 (0.435)
Observations	228	228	228	235	235	235	228	228	228	235	235	235
R-squared	0.040	0.050	0.080	0.002	0.035	0.045	0.008	0.086	0.117	0.000	0.033	0.038

***, **, and * denote statistical significance at the 1%, 5%, and 10% level.

Note: This table shows the estimation result off a regression of the dummy variables *Undiversified Advice* and *Home-Biased Advice* on the type of financial advisory firm. *Financial Planner* takes the value of 1 (0) if the financial advisory firm is a financial planner (securities firm). *High Risk Tolerance*, *High Confidence*, and *Domestic Outlook* take the value 1 (0) if an auditor plays the avatar of high (low) risk tolerance, high (low) confidence, and domestic (international) outlook, respectively, on the audit visit. *Educated above senior secondary school* and *Net worth above HK\$500,00* are indicator variables. *Age* is the age of the auditor in years. Standard errors are clustered at the auditor level and are reported in parentheses below the coefficients.

Source: Authors' calculations.

Table 11: Is It Male or Female Financial Planners Who Advise Differentially by Gender of the Advisee?

	Undiversified Advice		Home-Biased Advice	
	(1)	(2)	(3)	(4)
Prd. Pr. [Male Auditor, Male FA]	0.167** (0.077)	0.166** (0.075)	0.267** (0.126)	0.264** (0.133)
Prd. Pr. [Male Auditor, Female FA]	-0.000 (0.000)	-0.016 (0.034)	0.143 (0.140)	0.102 (0.148)
Prd. Pr. [Female Auditor, Male FA]	0.419*** (0.086)	0.421*** (0.094)	0.516*** (0.069)	0.522*** (0.081)
Prd. Pr. [Female Auditor, Female FA]	0.143 (0.144)	0.157 (0.146)	0.143 (0.144)	0.170 (0.152)
Among Female FA: [Female Auditor – Male Auditor]	0.143 (0.144)	0.173 (0.152)	0.000 (0.201)	0.068 (0.219)
Among Male FA: [Female Auditor – Male Auditor]	0.253** (0.115)	0.255** (0.123)	0.249* (0.144)	0.258 (0.168)
Among Female Auditors: [Female FA – Male FA]	-0.276* (0.151)	-0.263* (0.147)	-0.373** (0.142)	-0.352** (0.139)
Among Male Auditors: [Female FA – Male FA]	-0.167** (0.077)	-0.181* (0.092)	-0.124 (0.211)	-0.162 (0.245)
Demographic Controls	No	Yes	No	Yes
Observations	75	75	75	75
R-squared	0.072	0.114	0.122	0.046

***, **, and * denotes statistical significance at the 1%, 5%, and 10% level.

Notes: The top panel of the table shows the predicted probabilities (Prd. Pr.) of receiving *Undiversified Advice* (*Home-Biased Advice*) by auditor's and advisor's gender for the audit visits to financial planners. The probabilities are obtained from the regression equation (8). *Demographic Controls* include a dummy for auditor's education (=1 if educated beyond senior secondary school), dummy for net worth (=1 if *net worth above HK\$500,000*), and auditor's age (in years). The bottom panel shows the difference in the predicted probability (and t-test for the difference) that an advisor of a given gender provides *undiversified advice* (*home-biased advice*) to female and male auditors, and that auditors of a given gender receive from female and male advisors. Standard errors are clustered at the auditor level and are reported in parentheses below the coefficients.

Source: Authors' calculations.

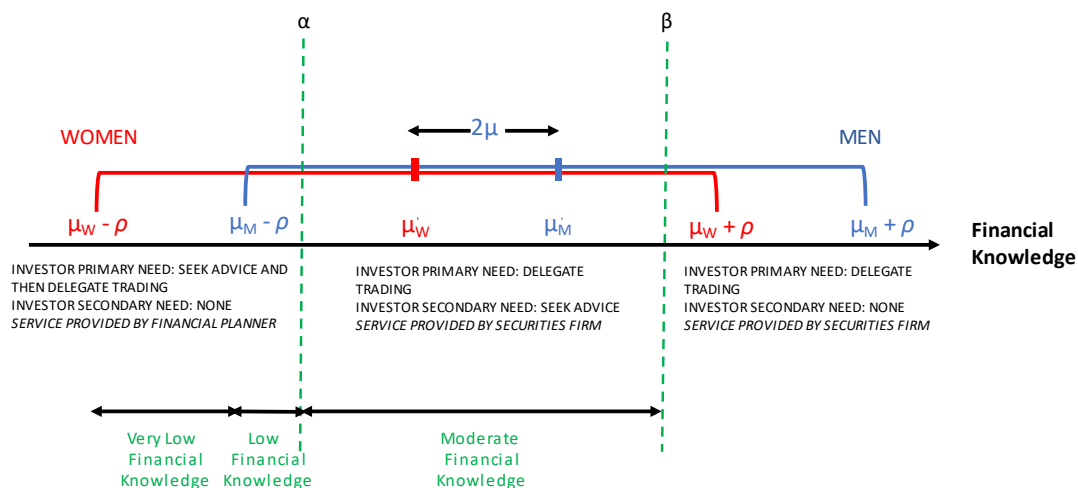
Table 12: Gender Differences in Other Audit Characteristics: Securities Firms versus Financial Planners

	Securities Firms			Financial Planners			Difference				
	All (1)	F (2)	M (3)	All (4)	F (5)	M (6)	(1-4) (7)	(2-5) (8)	(3-6) (9)	(2-3) (10)	(5-6) (11)
Willing to give advice	0.54	0.60	0.48	0.65	0.68	0.62	-0.11* <i>0.07</i>	-0.08 <i>0.35</i>	-0.15 <i>0.11</i>	0.13** <i>0.01</i>	0.06 <i>0.58</i>
Duration (min)	21.8	21.5	22.1	30.3	27.6	33.1	-8.6*** <i>0.00</i>	-6.2 <i>0.01</i>	-11.0*** <i>0.00</i>	-0.6 <i>0.62</i>	-5.6 <i>0.25</i>
Number of demographic questions	0.5	0.4	0.6	1.71	1.16	2.27	-1.21*** <i>0.00</i>	-0.76*** <i>0.00</i>	-1.67*** <i>0.00</i>	-0.2 <i>0.12</i>	-1.11** <i>0.04</i>
Number of financial condition questions	0.75	0.62	0.88	2.03	1.82	2.24	-1.28*** <i>0.00</i>	-1.2*** <i>0.00</i>	-1.36*** <i>0.00</i>	-0.26** <i>0.05</i>	-0.43 <i>0.29</i>
Asked about financial knowledge	0.31	0.33	0.29	0.61	0.61	0.62	-0.30*** <i>0.00</i>	-0.28*** <i>0.00</i>	-0.33*** <i>0.00</i>	0.04 <i>0.44</i>	-0.02 <i>0.89</i>
Did not inquire about any item	0.45	0.42	0.48	0.13	0.13	0.14	0.32*** <i>0.00</i>	0.29*** <i>0.00</i>	0.35*** <i>0.00</i>	-0.06 <i>0.23</i>	0.00 <i>0.96</i>

Notes: This table reports the difference in various audit characteristics by auditor gender separately for securities firms and financial planners. *Willing to give advice* is a binary variable that takes the value of 1 if an auditor assigns a top-two rating to the advisor on a five-point scale, and 0 otherwise. *Duration* of the meeting is measured in minutes. *Number of demographic questions* is the number of demographic-related questions (e.g., age, marital status, etc.) the advisor asked the auditor during a visit. *Number of financial condition questions* is the number of questions related to the financial condition of the auditor (monthly income, employment situation, etc.) the advisor asked during a visit. *Asked about financial knowledge* is a binary indicator that takes the value of 1 if the financial advisor asked any question related to financial knowledge or investment experience of the auditor in a visit, and 0 otherwise. *Did not inquire about any item* is a binary indicator that takes the value of 1 if a financial advisor did not ask the auditor about any of the 19 items we had listed, about their demographics, financial condition, or financial knowledge. p-values of pair-wise tests of difference are in italics.

Source: Authors' calculations.

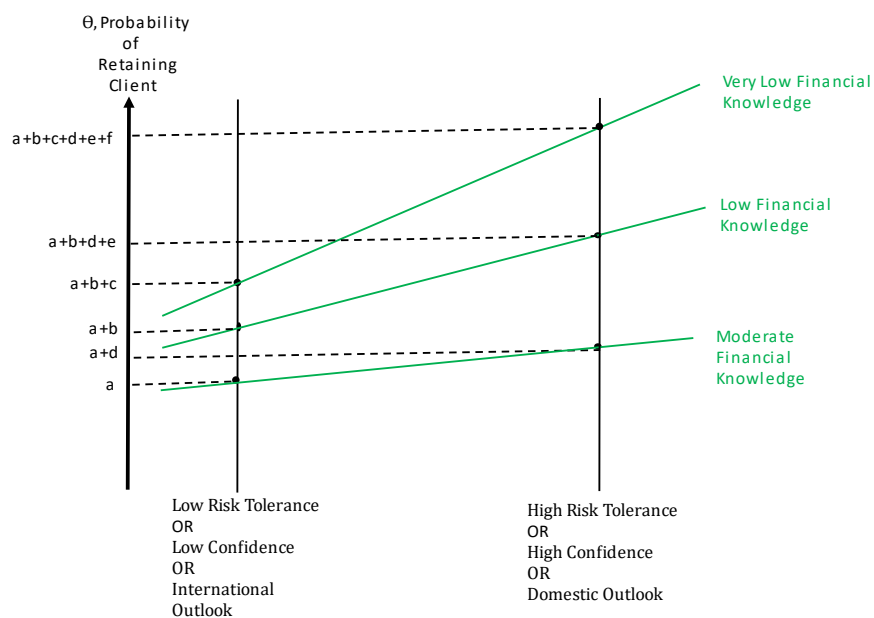
Figure 1: Matching of Investors to Financial Advisors



Notes: The figure shows the distribution of financial knowledge for women (in red) and for men (in blue). Everyone above knowledge level β does not visit any advisor, those with knowledge level between α and β visit securities firms, and those with knowledge level below α visit financial planners.

Source: Authors' calculations.

Figure 2: Probability of Retaining Client

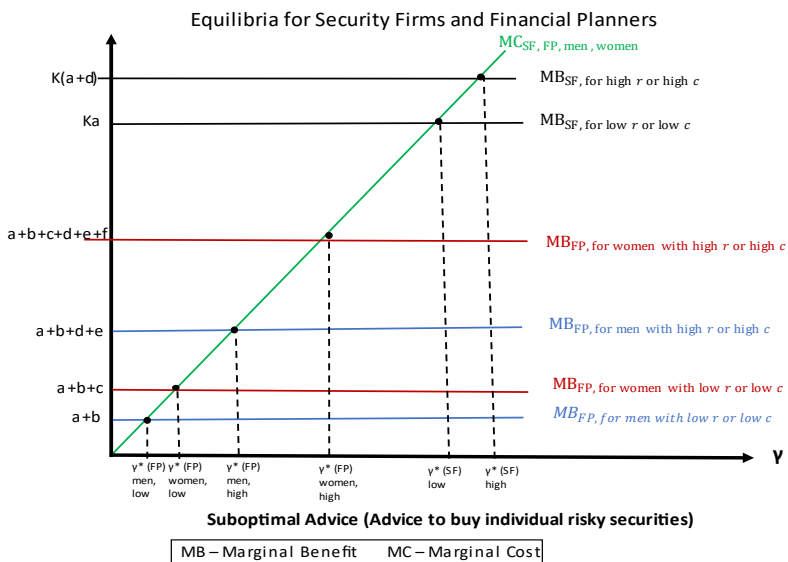


Notes: This figure shows the probability that an advisor, either financial planner (FP) or securities firm (SF), retains a client with different combination of characteristics (high or low risk tolerance; high or low confidence; domestic or international outlook; very low, low, or medium financial knowledge).

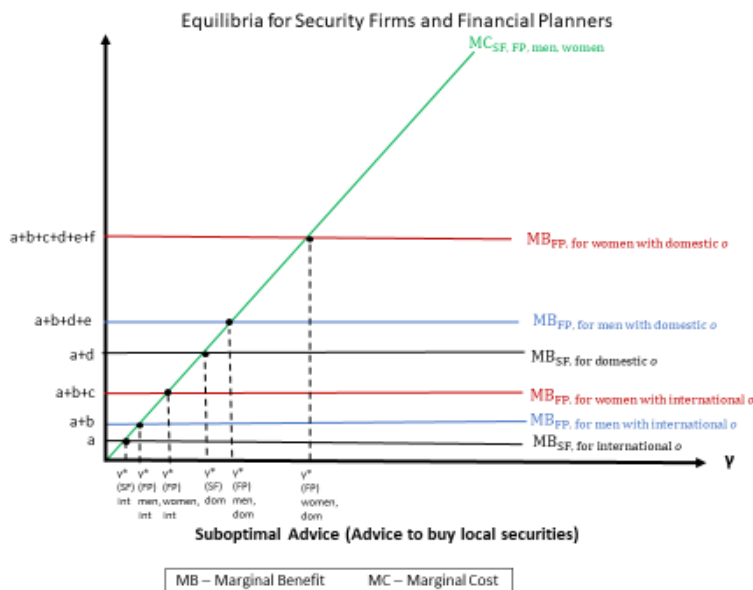
Source: Authors' calculations.

Figure 3: Advice to Buy Securities in the Absence of Taste-Based Discrimination

Panel A: Advice to Buy Individual Risky Securities in the Absence of Taste-Based Discrimination



Panel B: Advice to Buy Local Securities in the Absence of Taste-Based Discrimination

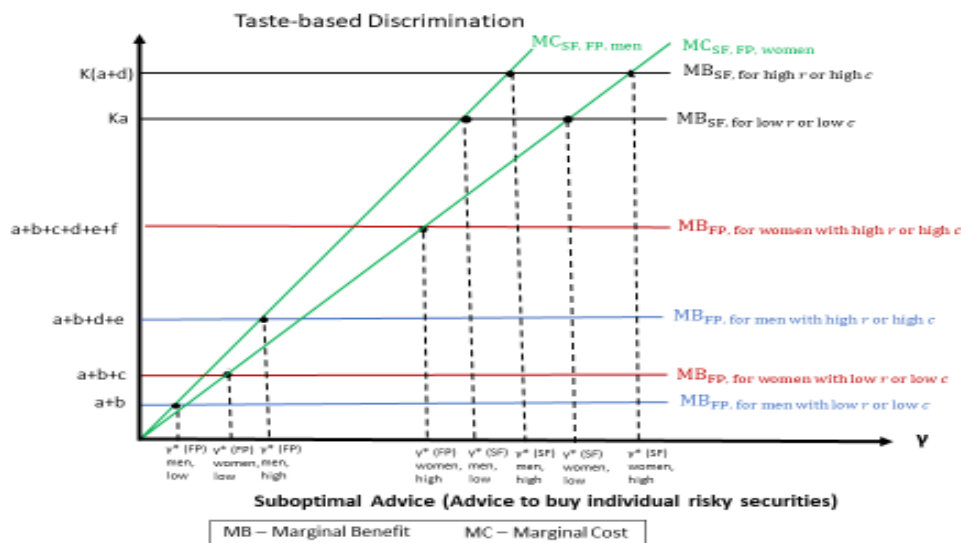


Notes: For the advice to buy individual risky securities (Panel A) or for the advice to buy local securities (Panel B), the figures show the marginal benefit (MB) and the marginal cost (MC) curves for financial planners (FP) and security firms (SF) in the absence of taste-based discrimination. Their points of intersection are the equilibrium points. The marginal benefit curves for security firms (MB_{SF}) are in black; the marginal benefit curves for financial planners (MB_{FP}) are in red for women and in blue for men; the marginal cost curves for both types of firms (MC_{SF, FP}) are in green. “r” refers to risk tolerance, and “c” refers to confidence and “o” refers to geographic outlook.

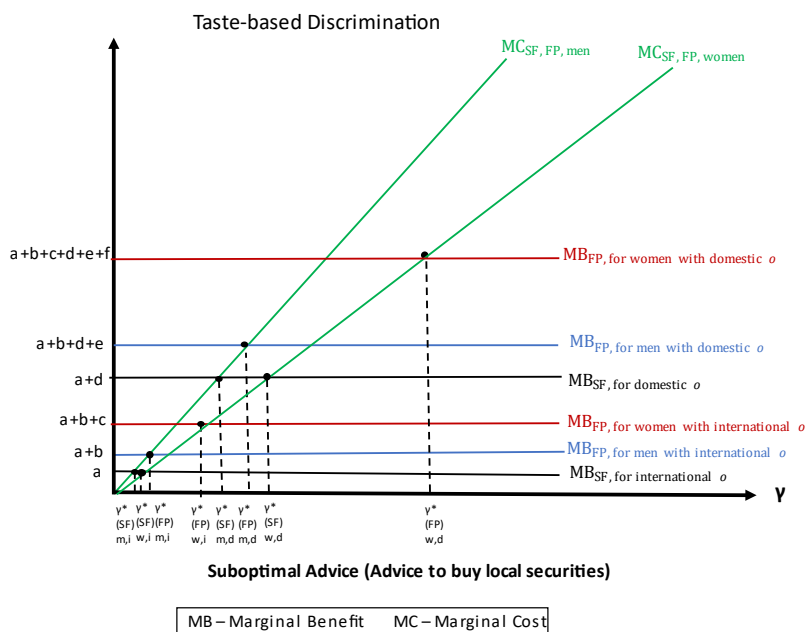
Source: Authors’ calculations.

Figure 4: Advice to Buy Securities in the Presence of Taste-Based Discrimination

Panel A: Advice to Buy Individual Risky Securities in the Presence of Taste-Based Discrimination



Panel B: Advice to Buy Local Securities in the Presence of Taste-Based Discrimination



Notes: For the advice to buy individual risky securities (Panel A) or for the advice to buy local securities (Panel B), the figures show the marginal benefit (MB) and the marginal cost (MC) curves for financial planners (FP) and security firms (SF) in the presence of taste-based discrimination. Their points of intersection are the equilibrium points. The marginal benefit curves for security firms (MB_{SF}) are in black; the marginal benefit curves for financial planners (MB_{FP}) are in red for women and in blue for men; the marginal cost curves for both types of firms ($MC_{SF, SF}$) are in green. “r” refers to risk tolerance, “c” refers to confidence and “o” refers to geographic outlook.

Source: Authors’ calculations.

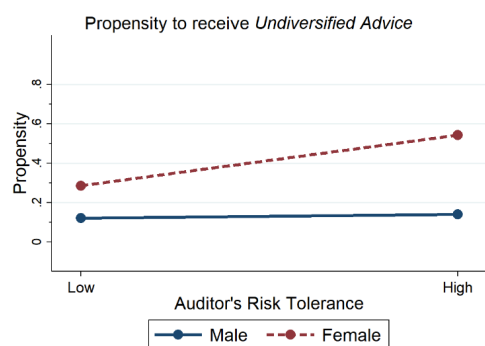
Figure 5: Gender Balance across Auditors' Attributes

Notes: The figures show gender balance by risk tolerance (Panel A), by confidence (Panel B), and by geographic outlook (Panel C). The green bars depict the number of audits that were planned, whereas the brown bars depict the number of audits that were finally successfully conducted.

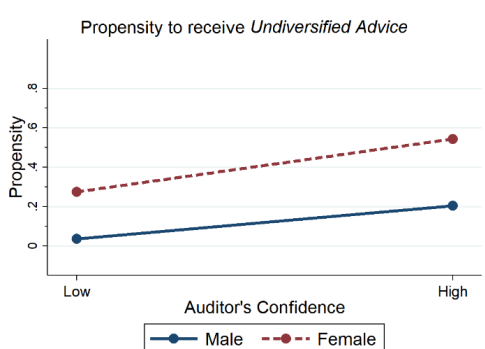
Source: Authors' calculations.

Figure 6: Propensity to Give Suboptimal Advice by Attributes of Auditors

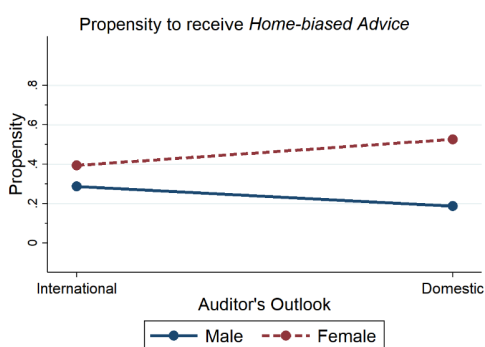
Panel A: Propensity to Give Undiversified Advice and Auditor's Risk Tolerance



Panel B: Propensity to Give Undiversified Advice and Auditor's Confidence



Panel C: Propensity to Give Home-Biased Advice and Auditor's Geographic Outlook



Notes: Panel A plots the propensity of financial planners to give undiversified advice against different levels of risk tolerance of men and women auditors; panel B plots the same against different levels of confidence of men and women auditors; and panel C plots the propensity of financial planners to give home-biased advice against different levels of geographic outlook of men and women auditors. The numbers on the y-axis in the three panels are from columns 2, 4, and 6 of Table 9, respectively.

Source: Authors' calculation.

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Do Women Receive Worse Financial Advice?

An Audit Study in Hong Kong, China

This audit study examines whether financial advisors' recommendations vary by client gender. It provides evidence that women are more likely than men to receive low-quality financial advice from some types of advisory firms. We explain this as the result of firms' incentives and advisors' beliefs about gender differences in financial knowledge.

About the Asian Development Bank

ADB is committed to achieving a prosperous, inclusive, resilient, and sustainable Asia and the Pacific, while sustaining its efforts to eradicate extreme poverty. Established in 1966, it is owned by 68 members—49 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.



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