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THE MARKET FOR FINANCIAL ADVICE:
AN AUDIT STUDY

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ABSTRACT

Do financial advisers undo or reinforce the behavioral biases and misconceptions of their clients? We use an audit methodology where trained auditors meet with financial advisers and present different types of portfolios. These portfolios reflect either biases that are in line with the financial interests of the advisers (e.g., returns-chasing portfolio) or run counter to their interests (e.g., a portfolio with company stock or very low-fee index funds). We document that advisers fail to de-bias their clients and often reinforce biases that are in their interests. Advisers encourage returns-chasing behavior and push for actively managed funds that have higher fees, even if the client starts with a well-diversified, low-fee portfolio.

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1. Introduction

A large and still growing body of research demonstrates that individual investors often make poor financial decisions if left to their own devices. Drawing on evidence from psychology and behavioral economics, these studies suggest that investor beliefs and decision processes are prone to biases that often result in financial decisions at odds with basic portfolio theory. For example, retail investors are overconfident, engage in trend-chasing, use naïve heuristics, and are generally susceptible to a number of different biases. Benartzi and Thaler (2007) document some of the most common biases.¹ Using trade data from retail customers, Barber and Odean (2000) document that excess trading in brokerage accounts and returns-chasing behavior leads to significantly lower returns compared to a buy-and-hold strategy. In short, the past decade of research has produced a large body of evidence suggesting that households may be bad at choosing portfolios on their own.²

Yet households do not make decisions in a vacuum. A variety of forces, from social interactions with friends and family to advertising and media, can influence their choices. One particularly important source of inputs comes from financial advisers.³ In a survey of retail investors, Hung et. al. (2008) found that 73% of all individuals surveyed consult a financial adviser before purchasing shares or mutual funds. Given this central role of advisers in the investment process, we ask whether or not the market for financial advice serves to de-bias individual investors and thus correct potential mistakes they might make without these inputs.⁴ We define ‘good advice’ as advice that moves the investor toward a low-cost, diversified, index-fund approach, which many textbook analyses on mutual fund investments suggest, see for example Carhart (1997). Alternatively, since many (though not all) advisers are paid with incentives that encourage them to direct money to specific funds and generate high fees, might advisers exploit these biases of retail investors in order to further their own interests? Additionally, if investors are unable to make portfolio decisions that are in line with text book recommendations, they might be equally unable to differentiate between advisors that are either self-interested or help investors to build a well diversified, low fee portfolio. In such a world, good advice, i.e. , to hold a well-diversified portfolio composed of low-fee funds, might not be rewarded sufficiently.⁵ As a

¹ Benartzi and Thaler (2001) for example argue that employees follow a naïve diversification strategy of mechanically spreading their money equally across the funds they are offered (what they call 1/n rule), generating quite perverse outcomes since the equity mix depends on the investment menu.

² It is not in the scope of this article to review this body of literature. See Barberis and Thaler (2003) and Campbell (2006) for additional in depth overviews.

³ Most financial advisers provide personalized advice of what stocks or funds to invest in. The Investment Advisers Act of 1940 defines (see section 202(11)): “Investment adviser” means any person who, for compensation, engages in the business of advising others, either directly or through publications or writings, as to the value of securities or as to the advisability of investing in, purchasing, or selling securities, or who, for compensation and as part of a regular business, issues or promulgates analyses or reports concerning securities; (...).” Bolton, Freixas, and Shapiro (2007) study competition between banks and its influence on incentives for truthful information revelation.

⁴ Chen, De, Hu, and Hwang (2011) focus on the impact of peer-based financial advice via social media on aggregate stock market outcomes.

⁵ Of course, understanding this effect requires a deeper understanding of a different source of cognitive bias-people’s perceptions of what constitutes good advice and what constitutes independent advice. See Moore, Cain, Loewenstein and Bazerman (2005) for work on this topic. In this context, it is also an open question why retail investors are mostly unaware of a conflict of interest between the provider of information and its recipient. Malmendier and Shanthikumar (2007) show that retail investors are mostly naïve with respect to analysts’ recommendation incentives. In addition, Chater, Inderst, and Huck (2010) document in a

consequence, these advisers might be driven out of the market in equilibrium, since they cannot attract a sufficient market share to account for their lower-fee structure. The experience of Vanguard, which offered the first index funds, is a case in point: the firm had to modify their sole reliance on low-cost index funds since consumers seemed to be susceptible to high-cost advertising (see Bogle, 2000). Thus, the market for financial advice may not mitigate behavioral biases and may even exacerbate them. Despite the (growing) importance of advisers in the investment process, especially due to an increasing number of defined contribution plans, very little is known about the market for financial advice.⁶ Campbell (2006) highlights our relative ignorance about this important sector.

Understanding this market is also important from an aggregate level. The market for financial advice might influence how individual biases translate into aggregate market outcomes, e.g., capital flows into different investment strategies or even pricing. How well it de-biases individuals is important for knowing how to model “representative” agents in macro-consumption models and how to model equity prices and for numerous policy applications.

In this paper we set up an audit study to test the quality of advice provided to retail investors in the market. The specific advisers we are looking at in this study are retail advisers whom the average citizen can access via their bank, independent brokerages, or investment advisory firms. These advisers are usually paid based on the fees they generate but not based on the assets under management or the performance of the portfolio. Once clients have more than US\$ 500k in investible capital, they have access to a broader set of advisers with better compensation structures. We focus on pure investment advisers in order to focus on a narrow set of measureable outcomes. Therefore, we do not include tax advisers, advisers who also provide estate planning services, or providers of other wealth management services.

In particular, we want to understand whether advisers actively de-bias their clients or instead exaggerate existing biases, especially biases that help the adviser’s own interests by increasing fees and turnover. For that purpose, auditors were randomly assigned to four different treatments (portfolios) which represent different investment strategies and biases. We make sure that the loss to the client from each of the biases is comparable. The random assignment allows us to test the average response of a typical adviser without any concern for self-selection of clients to different types of advisers. The auditors tracked the information requested from them, the advice given, and other features of the interaction. Our protocol records the advice given via auditor exit surveys, as well as written materials with portfolio suggestions by the adviser.

The first two portfolios (“bias scenarios”) reflect two of the most commonly described biases in the literature. In the first scenario (“chasing fund returns”), the auditor holds a portfolio in which 30% is invested in one sector exchange traded fund that performed well in the previous year, and he expresses an interest in identifying more industries that had done well recently. In this case, the incentives of the adviser and of the client are not aligned: the adviser benefits from the bias of the client since it allows him to churn the portfolio more often and generate more fees, whereas the client would profit from a better

European Survey with several thousand participants that retail investors ignore advisers’ potential conflict of interest. Inderst and Ottaviani (2011b) investigate theoretically the determinants of the compensation structure for brokers. Also see Schneider (2009) about trust and incentives structures.

⁶ The market for financial advice generates between US\$ 20bn and US\$ 50bn fees per year depending on the definition of advice and compensation models for advisers.

diversified portfolio.⁷ In the second scenario (“employer stocks”), an auditor holds 30% of his portfolio in the company stock of his assigned employer. Thus, incentives of the adviser and of the client are aligned: it is in the best interest of the adviser to reduce or eliminate the client’s bias since holding company stock also reduces the adviser’s ability to generate fees.⁸ In the third scenario, the auditor holds a diversified, low-fee portfolio consisting of index funds and bonds--in effect, an efficient US portfolio. We introduce this scenario to test if advisers are willing to move clients out of this portfolio which would be closest to an allocation recommended in most finance textbook. Finally we have a control group (“cash scenario”) in which the advisee simply holds certificates of deposits and does not espouse a particular view beyond a general willingness to increase risk for higher returns. This variation in treatment groups will allow us to test how responsive advisers are to the needs of their prospective clients.

Our audit produces three main sets of findings. First, advisers’ reactions to different portfolios or investment scenarios varied significantly. Advisers were broadly supportive of the trend-chasing portfolio but much less supportive of the company stock portfolio. Most strikingly, they were unsupportive of the (efficient) index portfolio and suggested a change to actively managed funds. Overall, advisers had a significant bias towards active management. In nearly 50% of the visits, the adviser encouraged investing in an actively managed fund; by contrast, in only 7.5% of the advice sessions (21 visits), advisers encouraged investing in an index fund. When advisers mentioned fees, they did so in a way that downplayed them without lying. For example, they often used arguments like, “This fund has 2% fee but that is not much above industry average.” These results suggest that the market for financial advice does not serve to de-bias clients but in fact exaggerates biases that are in the adviser’s financial interest while leaning against those that do not generate fees. In our index fund scenario, the advisers are even advocating a change in strategy (away from low fee index funds and towards high fee actively managed funds) that would make the client worse off than the allocation with which he or she started off.

Second, consistent with portfolio theory, most advisers did ask clients about their demographic characteristics, which may have been used to determine risk preferences, time-horizon and human capital risks, and covariance. Overall, we find that in more than 75% of the visits, advisers asked for this kind of information, specifically income, other savings (e.g. 401(k) plan) besides what they were investing with the adviser, occupation, and marital and parental status. The recommended investment in stocks and domestic assets significantly increased with annual income, a fact that may be explained by an assumed higher risk or loss tolerance for the well-off. Married clients were told to hold less in liquid assets. This is consistent with a model of spousal labor supply providing insurance, reducing the need for liquidity. However, in many cases, the information did not get used in the way predicted by portfolio theory: the recommended exposure to equities decreased with the amount invested. Female clients were asked to hold more liquidity, advised to hold less international exposure, and pushed less frequently to invest in actively managed funds. At the same time, advisers did not seem to tailor portfolio advice with the age of the client at hand. We find no significant differences in the mix of stocks and bonds for older clients. By and large, though, this is the arena where advisers were closest to traditional theory:

⁷ Inderst and Ottaviani (2009, 2011a) link advisers compensation and their advice quality theoretically either by focusing on the agency relationship between the selling firm and its employed sales force or by analyzing competition through commissions and kickbacks paid to advisers by the fund industry.

⁸ The advice to sell the employer stocks and to invest the money in a diversified portfolio enhances the client’s portfolio and generates fees for the adviser.

attempting to match portfolios to characteristics. The levels of portfolio advice were also broadly consistent with portfolio theory, with advisers suggesting a high equity mix (roughly 2/3) and thereby potentially reducing any bias that may generate an equity premium. Interestingly, they were also more likely to mention fees spontaneously when the auditor was older, possibly believing that older auditors would have asked themselves.⁹ Their responses to the different portfolios reinforce these facts.

Third, we find some suggestive evidence of ‘catering’, i.e. advisers showed support early on for the client’s existing strategies, most likely to establish credibility and not alienate a potential client. The “initial reaction” to a client’s strategy varied significantly from the later recommended course of action. In fact, the initial reaction to index fund investments was very positive while auditors who went in with company stock or returns-chasing portfolios faced more ambiguous support. These results highlight that advisers have to be aware of the fact that they are facing a sales situation and they cannot bluntly criticize what clients might have done in the past. However, it does not appear that advisers are severely limited in the investment recommendations they eventually give to their clients, since advisers have no problem discouraging clients from investing more in their current strategies (especially if it goes against the adviser’s interests). Instead, they suggest investments that are orthogonal to the client’s current approach.

Overall our findings suggest that the market for advice works very imperfectly. The advice by and large fails to de-bias clients and if anything may exaggerate existing biases or, in some cases, even makes the clients worse off. Moreover, individual biases can have first-order implications for aggregate capital flows and pricing of risk, if there is not enough informed capital to exploit arbitrage opportunities against capital flows from “biased” retail investors. It can also shed light on how we model information aggregation in equilibrium if competitive forces in the market for financial advice do not lead to the provision of the best possible advice. Competition might be limited by the fact that financial advisers exploit the biases of naïve (or uninformed) retail investors. At the same time, advisers who are interested in providing better advice might be unable to gain a market share if biased retail investors are unable to differentiate good from bad advice. While we cannot rule out the latter force, our evidence suggests that advisers’ self-interest plays an important role in providing advice that is not in the best interests of their clients.

It is important to note that our research design allows us to look at the quality of investment advice provided to clients. However, advisers may provide many other benefits for their clients, for example, by giving them the confidence and information to invest in risky assets in the first place, by protecting them from losing money in fraudulent funds, or by reducing transaction costs. These reasons might be as important as the actual content of the advice. However, even if these additional benefits are very important for retail investors (perhaps even the primary reason that clients seek advisers), there is no reason why advisers should not be able to also provide high-quality advice to their customers.

While audit studies have been used to measure discrimination in the labor and housing markets (Fix and Turner (1998), Altonji and Blank (1999) and Heckman (1998) for reviews), they have not been used in the financial context, save a few exceptions (see recent work by Iyer and Schoar, 2009 and 2011). Importantly, the audit study methodology allows us to measure an adviser’s response when we exogenously vary the types of clients and biases that the adviser is confronted with. This enables us to control for the selection of

⁹ Note that “mentioning fees” may include statements like “this is a no-load fund”, i.e. not all relevant fees are mentioned.

clients to advisers, which is one of the central problems plaguing non-experimental data. The reason is that non-experimental data (e.g., bank records) usually does not allow us to differentiate how much of the observed outcomes are driven by the adviser influencing the clients' decisions versus different clients selecting to certain types of advisers who will provide them with the recommendations they want to hear. In addition, the audit methodology enables us to vary the characteristics of the auditor exogenously either by selecting certain auditors or by assigning specific characteristics. In addition to demographic characteristics like age, gender, and number of children, we also varied traits such as investible wealth and housing status.

Our results are also related to a small but growing literature on financial advisers. One of the most noted early studies on financial advice is Canner, Mankiw, and Weil (1997), who examine the generic written advice given by investment advisers based on broad rules of thumb (see also Bodie and Crane, 1997). More recent work by Bergstresser, Chalmers, and Tufano (2009) or Del Guercio, Reuter, and Tkac (2011) show the role of incentives and distribution channels in the provision of financial advice. Bluethgen et al. (2008), Chalmers and Reuter (2011), Hackethal et al. (2011, 2012), Kramer (2012), and Bhattacharya et al. (2012) use data on portfolio outcomes or trading volume to quantify the benefits of financial advice. Georgarakos and Inderst (2011) show theoretically and provide some empirical evidence that trust in professional financial advice has a statistically and economically significant effect on the stock market participation for households with low financial capability, i.e., most retail investors. Similarly, Inderst, and Ottaviani (2009, 2011a) provide a theoretical framework that links adviser compensation with advice quality, focusing on the agency relationship between the advisory firm and its sales force and competition via commissions and kickbacks which are paid to advisers by the fund industry.

The rest of the paper proceeds as follows: section 2 provides a summary of the study design and setup of the audit. Section 3 shows the descriptive statistics and confirms the randomization. We report the main set of results in section 4 and conclude in section 5.

2. Study Design

2.1. Overview of Audit

In order to investigate the quality of financial advice that is commonly given to clients in the market, we set up an audit study in the greater Boston and Cambridge area. We sent trained, professional auditors to impersonate regular customers who are seeking advice on how to invest their retirement savings outside of their 401k plan.¹⁰ Our auditors were randomly assigned to four different treatment portfolios that reflect different types of investment strategies or biases. We will discuss these strategies in more detail below. We also vary the wealth ranges of the clients, either between US\$ 45,000 and US\$ 55,000 or between US\$ 95,000 and US\$ 105,000. These ranges were picked to mimic the savings for

¹⁰ If the shopper was asked for a 401(k) plan investment, the standardized answer was that a 401(k) plan existed but that she wanted advice on how to invest the extra money. Almost all advisers accepted this statement even though it might lead to an inferior household portfolio. However, if advisers asked for a 401(k) portfolio, they may have first wanted to enlist the client and would later include the 401(k) plan in the portfolio optimization. With respect to owning or renting real estate, we told our auditors to always say that they rented their apartment to avoid situations in which the best advice would be to reduce the mortgage first.

average US households in different age ranges.¹¹ Our study focuses on retail advisers at the lower end of the wealth spectrum, e.g., we do not include private wealth managers or hedge funds. The modal adviser in our study is working either for a bank, retail investment firm, or their own independent operation, focusing on the lower end of the retail segment. Most of them are paid on commission based on the fees and volumes that they generate, and only a small subset of the advisers are independent and would be paid based on capital under management. The fraction of this latter type of adviser is very small in our sample since they usually only deal with wealthier clients.¹²

2.2. Treatments

This setup allows us to test how advisers react to pre-existing investment strategies or client biases. For that purpose, we set up four different treatments to differentiate biases that go against the adviser's self-interest versus those where the adviser's and the client's interests are aligned. We designed the biases in such a way that the net expected loss to the investor is similar in magnitude. As discussed in the introduction, if advisers act purely out of self-interested motives, they should counteract client biases that lead to low-fee income (e.g., excessive investment in company stock) but reinforce biases that increase the adviser's ability to generate fees, such as trend-chasing. However, if advisers are constrained by having to cater to clients' pre-existing beliefs, we should expect that advisers are more restricted in the advice they can give, as in cases, for example, when the client has strong prior beliefs or is emotionally attached to the current portfolio. In contrast, an adviser is less restricted when the client has no predetermined opinion, and thus we should not see a differential response to different types of biases.

To test the importance of these countervailing forces, we selected four different treatments that are presented to the advisers (and impersonated by our auditors). As our "bias scenarios," we selected two of the most common biases documented in the literature: chasing fund returns and investing in employer stocks. We complemented these with two "unbiased scenarios" – a diversified low-fee stock/bond portfolio and an all-cash portfolio.

In *scenario 1* ("chasing fund returns") our auditors indicated that they had been trying to outperform the market by identifying industries that had excess returns in the recent past. In the advice session, the auditor would present the adviser with a portfolio that is concentrated in a few industries with high returns in the last year and ask the adviser to help identify more stocks and industries of this type. Note that de-biasing a client by diversifying the current portfolio would lead to (one-time) returns for the adviser, but he could profit even more by catering to the bias and turning over the portfolio at least once a year. We set up the portfolio such that 30% of the portfolio was invested in one sector exchange traded fund that had performed well in the previous year (i.e. 2007).¹³ These sectors included telecommunication, oil & gas, metals & mining, and US aerospace & defense. Depending on the age group (about 30 or 45 years old), 20% or 35% was invested in intermediate US high-credit quality bond funds. The rest of the portfolio (50% or 35%)

¹¹ In addition, these amounts are varied around the average annual household income in the Boston area (about US\$ 75,000).

¹² Financial advice by independent advisers, who are compensated by the hour or based on capital under management, is often not available or it is too expensive at several hundred dollars for a first visit.

¹³ We fixed the proportion at 30% for two main reasons. First, we wanted to give the adviser the opportunity to invest more in this strategy, although this would lead to less diversification. Second, we believe that the more extreme a portfolio allocation (see also scenario 2 with employer stock), the higher the probability that an adviser would remember a portfolio s/he saw some days ago from another potential client.

was invested in a single S&P 500 index fund. We varied the selection of index funds and the exact amount invested to reduce the probability that an adviser would recognize the portfolio from a previous visit.¹⁴ The average under-performance of the four selected sectors compared to the S&P 500 over 1.5 years *after* the end of our audit study has been about -6.5% p.a., i.e., the 30% investment in this sector resulted in an underperformance between US\$ 1,000 and US\$ 2,000 per year depending on the portfolio size. Even though returns-chasing may be similar to a momentum strategy, we believe that this is not appropriate in the context of this market since investment horizons of customers are rather long and the frequency with which people rebalance their portfolios is too low to allow them effectively to take advantage of momentum strategies.

In *scenario 2* (“employer stock”), we assigned the auditor to one of the 50 largest employers in the Boston area and assigned 30% of the person’s portfolio to company stock.¹⁵ Depending on the age group, 20% or 35% was invested in bonds and the rest in the S&P 500 (as in scenario 1). In this scenario, it was in the interest of both the financial adviser and the client to restructure the existing portfolio. The adviser can earn money in the portfolio rebalancing process, and the client will most likely end up with a better diversified portfolio. To allocate 30% of the portfolio to one stock increases portfolio risk even if we ignore human capital risk. Let’s assume a standard deviation in the market of 20% and a risk premium of 6% p.a., whereas the company stock has a 50% standard deviation, unit beta, and 6% risk premium. Then, a 30% allocation to company stock lowers the Sharpe ratio from 0.3 to 0.247, translating for a given risk to a return loss of 1.29% or US\$ 1,032 per year for an US\$ 80,000 portfolio.¹⁶ Appendix A contains examples of scenario 1 and 2 portfolios and additional client background information. Again, we did not want to assign more than 30% of the portfolio to company stock, since on average people usually do not hold more than 50% of assets in company stock and so that we avoided raising advisers’ suspicion.

In addition to these two scenarios with inherent biases, auditors were assigned a well diversified portfolio in *scenario 3*, consisting of low-fee US index stock funds and bonds, using the same allocation to bonds depending on the age group, as in all other scenarios. While the portfolio is the most efficient of all the treatments used in the study, this treatment does have a (US) home bias, and thus a value-enhancing adjustment to the portfolio might be to suggest more international diversification.¹⁷ Moving the low-fee portfolio to an actively managed portfolio with the same risk/return profile but average management fees would result in additional costs of about one percentage point per year, i.e., between US\$ 500 and US\$ 1,000 in our scenario.

Scenario 4 is our control treatment, since the available money is currently invested in a short-term certificates of deposit and the auditor does not display any preconceived biases. In this scenario, only the investment amount and the demographics are varied as before. The adviser receives no hints how the client would like to invest the money except that the client would like help with a better investment strategy.

¹⁴ Even though we used only ETFs or low-cost index funds both for the diversified part of the portfolio (treatments 1-3)) and for the sectors in treatment 1, only one adviser mentioned this fact.

¹⁵ Auditors were assigned to one of these employers in all treatments but had employer stock in their portfolios only in treatment 2. We provided them with some background information about their employer, including travel times to various points in Boston and Cambridge, such that auditors could answer basic questions about their working life.

¹⁶ We thank John Campbell for this example.

¹⁷ Given the high volatility of currency exchange rates over the last ten years, it is not obvious whether international diversification helps to improve the portfolio characteristics.

Auditors were randomly assigned to one of the four scenarios. They had to be college-educated and had to match our gender and age requirements. One group was in their early 30s, and we assigned them a financial wealth of about US\$ 50,000. The other group is in their mid- to late 40s and had a financial wealth of about US\$ 100,000. All auditors were assigned to one of the 50 largest employers in the Boston area. In scenario 2 (employer stocks), the employer had to be listed on an exchange. All other characteristics (like marital status, children, etc.) that auditors may have talked about with their advisers were their own characteristics, such that they could talk naturally about them. The investment horizon of all auditors was retirement age, i.e., about 30 years for the first group and about 15 years for the second group.

2.3. Logistics of Audit

To implement the actual logistics of the visits, we hired a financial audit firm that specializes in identifying and training auditors. We worked very closely with the firm to select suitable people as auditors for the study, and we were also intimately involved in training the auditors. We designed all the training scripts and set up the schedule of visits with predefined advisers to which auditors were randomized. To ensure that auditors were able to understand the advice that was given to them, they had to know at least some basics of financial products and received some guidelines on how to ask for specific advice. Auditors were trained first about basic financial literacy through our online manuscript. Then, they participated in a training session via video conference with the supervisors and our staff. Finally, audit candidates had to take a short online test to qualify for the study (about 10% of the pre-selected auditors failed and were excluded from this study. See Appendix B). Even after training, it is still possible that auditors do not retain all the information that advisers provide in the meeting. However, such behavior should just lead to more noise overall and not bias our results. Auditors were assigned only to one treatment at a time to avoid confusion and retraining. After the first set of audits was finished, we reassigned auditors to a second treatment to control for auditor fixed effects.

The audit firm provided the logistics of monitoring and implementing the scheduling of visits, setting up online survey forms, and finding and compensating auditors. Auditors were paid on a per visit basis and were told that they would not be invited for a repeat assignment if we heard any complaints about their behavior. We also sent our research associate to do random spot checks in order to observe whether the client was meeting with the adviser. To minimize any demand effects, we made sure that the study was triple blind: the financial advisers, the financial audit firm, and the auditors did not know why and how we chose specific parameters. The company and the auditors were told that the aim of our study was to conduct an assessment of the quality of the market for financial advice and that any variation in the treatment arms was instituted to create variation in order to minimize detection and suspicion.¹⁸

Logistics of the Meeting: To set up the in-person meeting, auditors called their assigned financial adviser and agreed on a time convenient for both.¹⁹ As a reason for the visit, the auditors stated that they were seeking advice on how to invest privately held retirement savings they had outside of employer-provided vehicles (401(k) and defined benefit plans).

¹⁸ Note that we never mentioned different treatments, neither in our conversations with the audit firm nor with the auditors.

¹⁹ A new adviser was only assigned after the previous visit had been completed. Advisers were at most visited once a week by different auditors.

At the agreed-upon time, the auditors would meet with the advisers for a consultation of about one hour, usually in the adviser's office. During the meeting, the auditor would follow the general script provided by us. Depending on their treatment assignment, they would explain their existing investment strategy and ask for advice with their portfolios and investment strategies as described above. The auditors were asked to write down their assigned portfolio on a piece of paper or print them out so that they could show the status quo to the adviser. There was enough variation in the way the information was presented that advisers would not be suspicious of any potential repetitions. Aside from the actual treatment assignment, auditors were told to answer truthfully any information concerning their name, social security number, or any other demographic information, such as number of children or marital status.

Tracking Advice: We encouraged auditors to write down information that the adviser provided in the course of the meeting to increase accuracy. Taking notes is natural in an advice situation and thus does not create any suspicion. Again, we made sure that the auditors had enough variation in how they would put down the notes to avoid any potentially suspicious repetitions. One caveat about the scope of advice is that many advisers are unwilling to provide detailed, personalized advice (e.g., advice on the allocation of assets to specific funds) unless the client has moved his or her funds to the adviser's firm.²⁰ Since our auditors were not able to provide the adviser with those funds, some advisers were reluctant to provide very specific advice and rather commented in general terms about the quality of the clients' existing portfolios and the recommended allocation going forward. Therefore, in most of the study we will focus on the type of advice given and the associated reasoning.

After the visit, auditors were asked to fill out an online exit survey that had multiple choice questions with free-text fields. They had 24 hours to fill out this information after the conclusion of the visit to make sure that they had not forgotten the information they obtained. In addition, each auditor had to send in the adviser's business card such that the audit company could make random calls to verify that the auditor actually had shown up to the visit.²¹ If the questionnaire was not available within 24 hours, the auditor was contacted by a supervisor and reminded to provide the information. This procedure helped extract high-quality and complete information after the visit. Moreover, auditors were only paid after filling in the form. For most questions, a "Don't know/Don't remember" option existed to avoid random answers. If auditors had received additional written information at or after the meeting with their adviser, they forwarded these materials to us and we coded the written recommendations if any were made. There was only one auditor who did not fill out his surveys in the necessary time and was subsequently dropped from the study. We also conducted an exit interview with each auditor after their first visit to verify that auditors were comfortable with the setup.

3. Summary Statistics and Randomization

The audit data of 284 client visits was collected between April and August 2008, i.e. after the problems of Bear Stearns surfaced but before the bankruptcy of Lehman Brothers in mid-September. We had initially planned for an audit of 480 observations but unfortunately had to stop our audit study prematurely, since in the ensuing financial contraction the

²⁰ This behavior is to some extent comparable to a car dealer who asks first for a down payment before agreeing to a test drive of a car.

²¹ Information on the adviser's identity was not passed on to us.

market for financial advice in the Boston area was significantly restructured.²² Moreover, the changing economic conditions were especially important for the *chasing returns* treatment since the outperforming industries of the previous year had changed.

As a result, our four scenarios are not evenly covered. **Table 1** shows the distribution of visits across the four different scenarios: there are 103 visits in scenario 1, 62 visits in scenario 2, 49 visits in scenario 3, and 70 visits in the last scenario. However, **Table 1** confirms that, despite the reduced sample size, the randomization of visits to advisers still seems to be intact. The average age of auditors does not vary across the treatment groups and is centered around 39-40 years. The average assigned annual income is US\$ 80,000 and again there is no significant difference between the four cells. The same is true for the investment amounts; the average investment is between US\$ 77,000 and US\$ 80,000. Finally, on average, the fraction of female auditors is about 77% and there are no significant differences between the different treatment groups.

While the power of the tests is lowered, due to the smaller sample size, it is reassuring that the randomization largely holds despite the smaller sample.

4. Results

4.1. Descriptive Statistics of a Typical Audit

Table 2 provides an overview over the information the adviser collected and her recommendation during the auditor's visit. It is a prerequisite to understand the client's financial situation, their ability to handle portfolio risk, and their current exposure to market risk through their other investments. Some of the basic information that an adviser should ask about are the income level of the client, whether they have savings in a 401(k) plan apart from the money they want to invest with the adviser, their occupation, and whether they have children. We form indicator variables equal to one if the adviser asked for the specific information at some point in the consultation and zero otherwise. The results in the first five rows of **Table 2** show that in the vast majority of cases advisers start off by asking the auditor for basic personal characteristics such as age, income, whether they have children, and whether they have a 401(k) plan.²³ On average these questions are asked in more than 70% of the visits.²⁴

In **Table 3**, we regress a dummy indicating whether the adviser asked about the client's age on the gender and log age of the client. We focus on these two characteristics since they are most easily observable from the outset of the visit. We find that women were asked for their age less often while the coefficient on log age is not significant but positive. Similarly, in columns (2) through (4), we see that women auditors were asked about their personal and financial situation less often than men. Columns (3) and (4) of **Table 3** show that older people were asked about their financial situation concerning income and whether they have a 401(k) plan more often than younger people. These results could indicate that advisers adjust their approach towards a potential client to reflect their expectation about the future return from this client including the probability of recruiting her: older auditors have higher investment funds, and men are usually viewed as being more willing to move their account to

²² Financial advice firms started to consolidate their advisory business by reducing the number of advisers. Thus, arranging visits within our design, given the previous visits, became almost impossible.

²³ As mentioned above, auditors said that they are investing in a 401(k) plan but do not want to discuss the details of these investments.

²⁴ Advisers ask for this crucial information even though it is not a legal requirement as in other countries.

another adviser. In both cases, the expected return for the adviser is higher than with younger or female clients. As a consequence, advisers are less likely to ask younger or female auditors some basic question about their financial situation, and it also leads to worse advice since the adviser does not have full information.

When we look at the advisers' recommendations in the same table, we see that advisers had a much higher propensity to suggest actively managed mutual funds than index funds. The advisers encouraged the client to invest in index funds in only 7.5% of the advice sessions (21 visits). In contrast, in 50% (or 142) of the visits, the adviser suggested investing in actively managed funds. This stark discrepancy is a first indication that advisers might be trying to guide clients to high-fee investments.²⁵ In that context, it is interesting to see that a majority of advisers mention (some) fees of the recommended funds spontaneously, without the client having to ask for it. But in many cases, the fee discussion is used to downplay the impact of fees. Given that clients usually come to advisers to receive help with their investments, it might not be too surprising that on average advisers try to change the clients' fund allocation. What is interesting, however, is that they tended to move shoppers away from the existing strategy regardless of the initial portfolio, i.e., even when they looked at a low-fee diversified portfolio. So they were willing to make the client effectively worse off.

Another interesting finding, inferred from clients' free-form answers, is that some advisers (84 visits, or roughly 30%) refused to offer any specific advice until the auditor transferred resources to the adviser. This is interesting because it illustrates a screening problem for customers: it is hard for them to judge the value of an adviser before committing to the adviser.

Finally, the mix of asset allocations is interesting (see **Table 6**). Advisers recommended on average an investment of about 63.5% in equity, 23.8% in bonds, and 12.7% in cash. However, the mean advice suggests an international equity allocation of about 27% of the portfolio. While this is a smaller international allocation than optimal portfolio theory suggests, this is an aggressive equity allocation and in that sense leans against any bias that might generate an equity premium.

4.2 Advisers' reactions to the current investment strategy

In a second step, we examine how treatment assignments affect the advice that auditors received from the advisers. As discussed above, since we randomly assign clients and their portfolios to different advisers, we can test the average response of a typical adviser without any concern of clients' self-selection to different types of advisers. First, in **Table 4** we focus on the adviser's overall reaction to the auditor's assigned portfolio as a function of the different scenarios presented by the auditors. We measure whether the adviser is supportive of the auditor's current strategy and supports more investment in the same portfolio or is critical of the current strategy and discourages further investment in the same.²⁶ This analysis excludes the "cash only" treatment. In that treatment, it is not possible

²⁵ Note that catering to client's beliefs based on their current portfolio would lead advisers to recommend more and/or different index funds since 70% (treatment 1 and 2) or 100% (treatment 3) of the current portfolio are invested in index funds.

²⁶ The encouragement/support variable is based on the question "Did the adviser make any comments about how you should modify your existing portfolio?" Auditors could choose from three multiple choice answers:

for the adviser to express support for the “strategy” since the client explicitly asks for help in improving the investment strategy. If advisers try to de-bias their clients, they should not be supportive of the trend-chasing or employer stock strategy but supportive of the diversified portfolio strategy. At most, they should suggest some international diversification, in that case. In contrast, if advisers aim to maximize their fee income they should be supportive of trend-chasing but not supportive of the employer stock or efficient portfolio strategy, since these will not generate a high number of transactions and fees.

Each cell in **Table 4** presents the mean, the standard deviation, and the p-value of a t-test between the subset presented in that cell versus the sample mean. Overall, advisers seem to support strategies that result in more transactions and higher management fees. The first two rows show the mean responses for whether the adviser supported the current investment strategy or suggested to change it.²⁷ In the case of the returns-chasing portfolio, the advisers were significantly more supportive than for either the company stock or the index portfolio. The likelihood of a supportive response was 19.4% for the returns-chasing portfolio, against the sample mean of 13.1%, but only 9.7% for the company stock portfolio and a remarkably low 2.4% in the case of the index portfolio. When we measure whether the adviser proactively encouraged the client to change the current investment strategy, we see a parallel pattern. The incident of a negative response is significantly below the mean for the returns-chasing portfolio but significantly above the mean for the index fund portfolio: in 59.2% of cases, an adviser suggested a change in the current strategy. In contrast, if the client had an index portfolio, the adviser suggested changing the current investment strategy in 85.4% of the cases.

These results show that even though the meeting between the client and adviser is also a sales situation, advisers are willing to go against the (revealed) preferences of the client and suggest changes away from the current strategy in the majority of cases. Therefore, the catering concerns are less strong in this context than one might have conjectured. However, it is possible that the visits start off differently from the ultimately suggested strategy and reflect more of the sales pitch: in the next two rows, we analyze the adviser’s *initial* response to the auditor’s portfolio as opposed to the final recommendations we saw before. This first reaction could be interpreted as a judgment of the client’s prior behavior. We indeed see in row (3) that the adviser’s initial reaction to the different portfolios is most likely to be positive in the case of the index portfolio (24.4%), least positive for the company stock portfolio (12.9%), and about average for the returns-chasing portfolio (16.5%). Explicitly negative comments about the portfolio are observed only in 23.3% of the cases with returns-chasing portfolio but in about 56% for both the index and company stock portfolios.

These results show advisers try to be more positive initially, even though they ultimately want to change the clients’ strategies. Interestingly, advisers seem more compelled to say something explicitly complementing about the index portfolio and are less comfortable to do so for the returns-chasing or the company stock portfolios. It is possible that advisers

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- (a) “Adviser encouraged me to invest more in the existing strategy”,
 - (b) “Adviser said that I should not change the allocation in my existing strategy but not invest more” or
 - (c) “Adviser discouraged me to invest more in the existing strategy”.

The encouragement variable is coded as 1 if the auditor answered (a) and 0 otherwise. Negative comments (discouragement) to the same question are coded as 1 if the auditor chose (c) and 0 otherwise. The correlation between the two dummy variables is -0.5374.

²⁷ We have too many banks and too few repeat visits in our sample such that we cannot include bank fixed effects. Probit regressions or using random effects instead of clustering at the auditor level have qualitatively the same results and are available on request.

feel constraint by what they know is the better advice, or that they do not want to undermine their credibility by being outright dismissive of diversification and index funds, assuming that most people have at least heard through the media and other sources that these are good investment guidelines.

Table 5 contains the results of a parallel analysis but using a regression set-up, where we cluster observations at the individual client level to control for base-rate characteristics. The regressions control for the age and income level of the auditors, since these were the two variables on which we stratified auditors. We also include month fixed effects since the study was implemented over a five months period to reduce the likelihood of detection. Column (1) reports the results from a regression of a dummy indicating encouragement on the treatment dummies where the omitted category is the returns-chasing portfolio (scenario 1). The results show that advisers were least supportive of the efficient portfolio, followed by the company stock treatment, with coefficients of $-.28$ and $-.17$, respectively, i.e., advisers supported the returns-chasing strategy significantly more often than the other two strategies.²⁸

In column (2), we replicate the regression setup of column (1) but include additional characteristics of the clients such as gender, marital status, and investment amount. None of the characteristics are significant and including these controls does not change the coefficients on the treatment dummies, as is to be expected given random assignment. In regressions (3) and (4), we now break out customers with an assigned investment amount of about US\$ 100,000 and about US\$ 50,000. The idea is to see if the advice across the scenarios differs for wealthier clients, and we find no support for any such differences.

In columns (5) to (8), we repeat the regression setup of the first four columns but use as a left-hand side variable whether the adviser strongly discouraged investing further in the existing strategy. We again find consistently with the prior results that advisers were most negative on the efficient portfolio. The coefficient is $.4$ and significant at the 1% level. There is no significant difference for company stock, however. These results strongly suggest that advisers try to dissuade clients from investing in an efficient portfolio, likely because this minimizes the fee income for the adviser. Interestingly, this incentive seems to be so strong that advisers are willing to push clients out of investments portfolios that are close to perfectly efficient (index scenario). However, it does seem that the investor is more constrained in the case of company stock, perhaps because of an attempt to cater to the clients' bias. This produces a perverse situation where the adviser is actively leaning against an efficient portfolio but not willing to lean against what is actually a biased strategy.

In columns (9) and (10), we look at the initial reactions of the adviser. The difference between the dependent variable here and in columns (1) through (4) is that we now focus on the adviser's very first reaction to the client's portfolio, i.e., looking backward. In contrast, the dependent variable in columns (1) through (4) focuses on how the adviser argued the portfolio should be structured or restructured going forward. As expected based on our results in **Table 4**, we now find very different advisers' reactions. Initially, advisers react significantly more positively to the index portfolio relative to the returns-chasing portfolio. But there is no significant difference between company stock and returns - chasing. In addition, these differences are much less pronounced than in the first eight columns. All this suggests that advisers are more moderated in their initial reactions. And

²⁸ In these regressions we use scenario 2 as the benchmark case to detect differences between scenarios 2 and 3. These results are available on request.

they seem much less willing to make overtly negative comments about the clients' prior choices.

4.3 Asset Allocation

In the next step, we evaluate the overall asset allocation (stocks, bonds, domestic or international investments) that is recommended by the advisers. In a large fraction of the visits, we did not get very detailed quantitative advice about which specific funds to invest in, since many advisers insisted that the client should first place the funds with the adviser's company. Therefore, we can compare differences in the capital allocation across broad asset classes. In the analysis in **Table 6**, we will now include all four different scenarios including the cash treatment (scenario 4), since we look at the recommendations that the adviser makes for the portfolio going forward. The mean comparison in **Table 6** is parallel to the setup in **Table 4**. The outcome variables here are measured as the recommended percentage of the portfolio that should be invested in one of the respective asset classes. The first three rows report the results for the fraction of assets in stock or bonds (we omit cash as the residual category) and the fraction of assets to be invested internationally. As can be seen in row 4, we lose about 45% of the sample in this analysis since many advisers did not provide specific enough recommendations.²⁹ Second, the means tests reported in **Table 6** indicate that advisers did not seem to tailor the asset allocation according to the scenario that auditors come in with, since none of the comparisons are even close to being significant. The one exception is that auditors who came in with an index portfolio seem to have received a higher suggested allocation to bonds on average across the sample advisers, suggest investing 23.8% of the assets in bonds, but this fraction goes to 31.9% for clients arriving with an index portfolio. This is surprising since our control group might be seen as being even more risk averse since they have had no exposure to equities. While we cannot rule out that this might be a spurious correlation, it could possibly suggest that advisers assessed people who hold index portfolios as more risk averse and thus felt that a stronger allocation to bonds could be in line with the auditor's preferences. But at the same time this interpretation is not so easy to square with the fact that advisers were strongly pushing the clients who come in with index portfolios to move out of these and into actively managed funds.³⁰

Advisers did not mention fees at a significantly different frequency depending on our four treatments (row 5). However, there are significant differences between treatments with respect to recommending actively managed or index funds (rows 6 and 7). The two most concrete dimensions of advice that we can measure are whether the adviser recommended actively managed funds and/or (passive) index funds as an investment to the client. These two dimensions are of interest since a large body of literature on mutual fund returns suggests that actively managed funds on average have lower net returns but allow fund companies and advisers to charge higher fees. In contrast, index funds have been shown to be a better investment option for retail investors since they provide access to

²⁹ We also used an indicator variable for whether the adviser did at all mention investment in any of the above mentioned asset classes and the results are qualitatively very similar.

³⁰ Another explanation is related to the amount of fees that can be earned with stock funds compared to bond funds. As a consequence, it does not pay off to know more about bond funds than about stock funds, i.e. advisers simply do not know enough to recommend another bond funds. Advisers may also believe that it is easier to move clients from index bond funds into actively managed stock funds than shifting them to actively managed bond funds.

investing in a well diversified portfolio at a low fee structure (see for example Gruber 1996). Rows 6 and 7 of **Table 6** reconfirm that on average advisers were much more likely to recommend actively managed funds (49.7% of the cases) versus index funds (only 7.3% of the cases). Interestingly, however, the likelihoods of when advisers suggest one of these two types of funds varies with the scenario: actively managed funds were recommended especially frequently to auditors who came in with an index fund portfolio (61.0% of the time)³¹ or just cash investments (75.0% of the time). In the case of returns-chasing portfolios, actively managed funds were suggested only in 40.8% of the visits and even less frequently for company stock portfolios, where it was only 24.2% of the time. In contrast, index funds were almost never mentioned by the advisers. Only when people came in with a cash portfolio the adviser was significantly more likely to recommend index funds.

As before, we now use a regression framework to confirm the robustness of the results. Column (1) of **Table 7** follows the usual baseline setup where we regress the recommended fraction of bonds on the dummies for the four scenarios (again, scenario 1 is the omitted one) and controls for the client characteristics. The fraction of bonds that was recommended for the client's portfolio does not seem to vary with the different scenarios. The same is true in columns (2) through (4) when looking at the allocations to the other asset classes. Again, the advice does not seem to vary by scenario. The one exception is that clients in the all-cash scenario 4 have significantly lower exposure to stocks (column 2). This could suggest that clients who are in scenario 4 are considered to be very risk averse (or even unsophisticated) by the advisers and therefore the advisers might think that these clients would not be able to handle the risk exposure of a high fraction of equities. But the results are quite noisy, which is most likely due to the much smaller sample size.

The recommended investment in stocks and domestic assets significantly increased with clients' annual income, which may be explained by an assumed higher risk or loss tolerance. However, the recommended exposure to stocks decreased with larger investment amounts. Married clients were advised to have significantly more bond and stock investments at the expense of liquidity, whereas female clients were advised to invest significantly less in both asset classes based. The months following the collapse of Bear Stearns had an effect on recommended domestic investments only – clients were told in May through July to invest domestically significantly less.

These different recommendations based on personal characteristics may be caused by the adviser's information collection process. Note that clients always disclosed the investment amount at the beginning of the conversation since they asked for advice with respect to their current portfolio. The likelihood of being asked for their current occupation (regression (2)) or annual income (regression (3)) significantly decreased with higher investment amounts (see **Table 3** in section 4.1).

4.4 Investment suggestions: Adviser and client incentives

We now also run the above results with respect to advisers' recommendations of actively managed or index funds in regression specification to make sure that they survive a number of different controls. In column (1) of **Table 8**, we regress an indicator variable equal to one if the adviser recommended investing in index funds and zero otherwise on dummies for

³¹ This result may not be too surprising at first. But recommending an internationally well-diversified low fee index funds would have been an option for the adviser and would have counted as "recommending an index fund".

the four scenarios with the returns-chasing scenario as the omitted category and controls for the age and income level of the client. All the regressions are clustered at the auditor level. The results in column (1) show that advisers were significantly more likely to recommend index funds to clients who came in with an “all cash” portfolio relative to the returns-chasing treatment (the coefficient on the “all cash” scenario is 0.18 and is significant at the 5% level). The coefficients on all other scenarios are close to zero and statistically insignificant. In column (2), we repeat the same regression but include further controls for client characteristics such as gender, marital status, number of children, and the amount they client wants to invest. The results are unchanged compared to column (1). In columns (3) and (4), we break out the sample into the visits where auditors were assigned an investment amount around US\$ 100,000 versus US\$ 50,000.³²

In contrast, in columns (5) to (8) of **Table 8**, we repeat the same regression setup as before but the dependent variable now is a dummy for whether the adviser suggested actively managed funds to the clients. It is important to note that advisers recommended actively managed funds in about half of all visits while they only recommended index funds in about 8% of visits. The baseline regression in column (5) shows that advisers were much more likely to recommend actively managed funds to clients who came in with either the index fund portfolio (scenario 3) or the all-cash portfolio scenario 4). Instead, advisers were almost 20% less likely to mention actively managed funds to clients in the company stock portfolio (scenario 2). Again, the results are unchanged with additional controls for client characteristics in column (6). As before, we then break out the sub-sample of clients that have about US\$ 100,000 to invest (column 7) and those that have about US\$ 50,000 to invest (column 8). Interestingly, clients with higher investment amounts tend to be recommended actively managed funds in scenarios 3 and 4 at a much higher rate than clients that are less wealthy. Moreover, less wealthy clients received significantly fewer recommendations in the employer stock scenario, which may reflect advisers’ beliefs that the probability of de-biasing these clients is rather low.

Overall, advisers seemed to maximize fees by placing more weight on actively managed funds that created a higher fee income. Most strikingly, even if a client had a well-diversified index funds portfolio, the adviser encouraged investment in actively managed funds. The objective of the adviser in this behavior might have been to signal that they could add value to the client by suggesting something different from the existing portfolio. This behavior was particularly pronounced for wealthier clients where the fee income mattered more to the adviser. But advisers could also have achieved this goal by suggesting low-fee international diversification. In general, advisers did not proactively reach out to clients to rebalance the portfolio due to changing circumstances of the client, but only to sell them new funds and generate fees. The advice that we observe in our treatments are a good proxy for the different situations that an adviser might encounter with their clients throughout a longer term relationship. The evidence suggests that most of the interaction is driven by the need to generate fees rather than to respond to the clients rebalancing needs.

But advisers also seem to attempt to cater to their clients’ perceived preferences. For clients that came in with a company stock portfolio, advisers were much less likely to suggest actively managed funds. One could hypothesize that high concentration in company stock might suggest to the adviser that this client is more risk averse and passive in their investment approach and thus might not be comfortable investing in an actively managed

³² The percentage improves to 10.7% (from 4.4%) in the index funds scenario when we eliminate those visits in which advisers are not willing to provide any advice before the client transfers her portfolio.

fund. Given that actively managed funds were recommended to half of the clients, it is no surprise that advisers spontaneously mentioned fees just as often or as seldom in all scenarios and with respect to most control variables. However, advisers spontaneously addressed fees with an increasing likelihood if clients were older and with a smaller investment amount (regression (10)). The first result can be explained by an assumed higher experience level, i.e., advisers pre-empted an often heard question in this age group. The second result may seem surprising, given that less wealthy clients received more recommendations for actively managed funds. But mentioning fees can involve talking about load fees (or discount of load fees) as well as management fees, which are more important in the long run. Thus, advisers may be more likely to talk about the less relevant fees with lower levels of wealth and less likely to talk about (all) fees with higher levels of wealth.

4.5 Personal Characteristics and Customization of Advice

In **Table 9**, we first analyze the advice that was given as a function of client characteristics. Characteristics such as gender and age can be inferred relatively easily by meeting the client. We also include characteristics of the client's personal situation that the adviser learns from the conversation, such as the client's marital status, the number of children, and income level. Standard finance theory would suggest that advisers should take personal circumstances of the client into account when setting the investment strategy. For example, clients with a shorter investment horizon, such as older clients, most textbooks would suggest that they should not be investing in risky long-term strategies. Similarly, risk averse clients should not be guided towards risky investments, such as having a high percentage in of their portfolio of stocks or actively managed funds.

In column (1), we investigate whether the adviser encouraged the auditor to invest in index funds as a function of the auditor's characteristics. Standard errors in all regressions are clustered at the auditor level. We see that the coefficient on log of age is positive but not significant. Similarly none of the other coefficients on the client characteristics are significant. Thus, there are no discernible differences between clients that were encouraged to invest in index funds. But it is important to keep in mind that the overall incidence of suggesting index funds was very low (8%). In column (2), we repeat the same regression set-up but use an indicator variable for whether the adviser suggested actively managed funds as the dependent variable. Now, the coefficient on log of age is large and statistically significant. Older clients were more often encouraged to invest in actively managed funds. Similarly, people with children were encouraged to invest in actively managed funds. In contrast, the coefficient on the gender dummy is negative and highly significant. This suggests that advisers are less likely to recommend actively managed funds to female clients. This could be in line with the belief that women are more risk averse and thus would have a lesser tolerance for actively managed funds. Alternatively, women are perceived as being more fee-sensitive.

We find that the only significant and economically very large coefficient of whether the adviser spontaneously mentioned the fees is log age (see column (3)). Advisers tend to explain the fee structure of funds much more to older clients than to younger ones. None of the other coefficients on characteristics are significant. The belief must be that older people are more cost-conscious and potentially better informed about investment options. Therefore, advisers proactively discuss the fees rather than trying to ignore the topic.

Finally, in column (4), we analyze the adviser's attitude towards the client relationship. We learned through the free text answers of our auditors that some advisers refused to offer any specific advice as long as the potential client had not transferred his or her account to the company of the adviser (n=84). The intention of the adviser seems to be that they first wanted to sign up the client before parting with any useful information. On the one hand, it makes sense that advisers would want to protect their time and insights so that clients do not replicate the advice for free. However, this situation is puzzling, since it forces the client to choose an adviser without being able to get any indication of the person's quality upfront. The result in column (4) shows that this behavior was most pronounced towards female auditors. Advisers were almost 40% more likely to tell female clients that they first had to transfer the balance to them. One could imagine that this behavior might be based on the perception that women are more docile or gullible.

5. Conclusions

Overall our findings suggest that the market for financial advice does not de-bias retail investors and if anything may exaggerate existing biases. While advisors seem to take into account client characteristics such as age or family status when making portfolio recommendations, they are unwilling to lean against biases that help them further their own economic interest, e.g. maximize fees. We find that in some cases the advice even pushes clients towards funds with higher expected fees with little change in portfolio diversification and thus would reduce the expected returns on their portfolios (as discussed in the case of the index portfolio). Intermediation in this market on average does not seem to correct individual biases. Therefore, these biases can have first order implications for aggregate capital flows and possibly pricing of risk more broadly, if there is not enough informed capital to exploit arbitrage opportunities against capital flows from "biased" retail investors. While in times of normal economic activity these biases might be arbitrated away, one could worry that in times of crisis they become particularly important when arbitrage capital dries up. It can also shed light on how we should model information aggregation in equilibrium if competitive forces in the market for financial advice do not lead to the provision of the best possible advice. Competition might be limited by the fact that financial advisers exploit the biases of naïve (or uninformed) retail investors. At the same time, advisers who are interested in providing better advice might be unable to gain market share if biased retail investors are unable to differentiate advice that is in the interest of the client from advice that is only in the self-interest of the advisor. While we cannot rule out that catering to client beliefs plays some role, our evidence suggests that adviser self-interest plays an important role in generating advice that is not in the best interest of the clients. Our findings show that advisers do not feel constraint to only give investment recommendations that affirm the clients' prior beliefs for fear of losing the client. In fact, advisors have no problem discouraging clients from investing more in their current strategies if this is not in the interest of the advisor. But we do see some evidence that the advisers are fully aware that this is a sales situation, since in the initial interaction with the client they always praise the client's prior investment choices no matter what they invested in.

These results are intriguing but they are also only a first step in what is a very important research area. They open the door to a set of other questions about the market for advice that our current sample size or treatments do not allow us to answer. Three questions stand out. First, does the nature and quality of the advice depend on the adviser's incentives? Answering this question will require a larger sample of advisers with varying

incentives, e.g., fee-only advisers. Though such advisers have grown in recent years, they are still a minority in the market. More importantly, auditing them would raise the costs of audits significantly since each audit would now entail a fee. While our current tests reflect the advice that the representative adviser in the market provides, it would be interesting to understand how variation in incentives might affect the interaction with the clients. For example, it is possible that fee-only advisers provide better advice but have to charge such high fees that average retail investors are better off in the status quo situation. Second, does the quality of advice change over time? In an ongoing and evolving advice relationship, an adviser might either use the relationship to tailor the advice more closely to the clients' needs or to be tempted to take advantage of the increasing trust. Third, how does the demand for financial advice look like and what role does it play in shaping the type of advisers that survive in the market? Specifically, how do individuals assess the quality of advice? In this audit study, auditors were willing to go back to about 70% of the advisers they visited but now with their own money (see **Table 2**). In other words, most advisers succeeded in convincing their potential clients and thus they have no need to change their advice giving. To understand why clients like the currently available financial advice would require a different methodology where the unit of observation would need to be potential investors. These types of questions are essential going forward to understanding the forces that shape the equilibrium in the market for advice.

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Table 1: Randomization across Scenarios

Scenarios	Chasing Returns PF (1)	Company Stock PF (2)	Index Funds PF (3)	All Cash (4)
Number of Observations	103	62	49	70
Age	39	40	40	40
Annual Income	US\$81,000	US\$80,000	US\$82,000	US\$81,000
Investment Amount	US\$77,000	US\$81,000	US\$80,000	US\$79,000
% Female Auditors	77%	80%	78%	75%

This table shows the distribution over the four different scenarios of the 284 audit visits to financial advisers between April and August 2008. In scenario 1, 30% of the client's portfolio (PF) was invested in a sector that outperformed the S&P 500 in the year prior to the audit study (Chasing Returns). In scenario 2, clients' current portfolios contained 30% company stock. Scenario 3 refers to a diversified client portfolio with only low-fee index funds. These funds were also used for the other 70% of the portfolio in scenario 1 and scenario 2. In scenario 4, the client said that all the money was invested in a certificate of deposit at a local bank. The auditor's actual age was used whereas the annual income and the investment amount were assigned by the study.

Table 2: Descriptive Statistics about the Adviser-Client Conversation

VARIABLES	Yes	No	Total
Advisers encourage more of current strategy?	28	186	214
Advisers suggest change of current strategy?	144	70	214
Initial Reaction Positive	36	178	214
Initial Reaction Negative	85	129	214
Recommend index funds	21	263	284
Recommend actively managed funds	142	142	284
Spontaneously mention fees	160	121	281
Ask about age	236	48	284
Ask about current occupation	217	67	284
Ask about annual income	212	72	284
Ask about 401k	252	32	284
Ask about number of children	200	84	284
Auditor would go back to this adviser with own money	200	84	284

This table contains descriptive statistics for the 284 audit visits at financial advisers. Auditors in the control treatment did not answer the first four questions. As answers to the question "Did the adviser make any comments about how you should modify your existing portfolio?" auditors could choose from multiple choice answers:(a) "Adviser encouraged me to invest more in the existing strategy", (b)"Adviser said that I should not change the allocation in my existing strategy but not invest more" or (c)"Adviser discouraged me to invest more in the existing strategy". The answer is counted as an encouragement if the auditor answered (a). If the adviser picked answer (c), he suggested a change of the current strategy. An initial positive or negative reaction to the clients' current portfolio has been recorded, too. Auditors also entered in the online exit questionnaire whether index funds or actively managed funds were recommended and whether any fees were mentioned by the adviser without being asked. In addition, auditors recorded whether they were asked at some point during their visit about their age, current occupation, annual income, the existence of a 401(k) plan or children. Finally, we asked auditors after each visit whether they would go back to this adviser with their own money, or not.

Table 3: Personal characteristics and adviser's information gathering

VARIABLES	(1)	(2)	(3)	(4)
	her age	her current occupation	her annual income	a 401(k) plan
log(Auditor's Age)	0.127 (0.153)	0.205 (0.169)	0.342** (0.165)	0.321** (0.141)
Gender	-0.171* (0.101)	-0.106 (0.0656)	-0.182* (0.0931)	-0.107** (0.0525)
Constant	-5.234* (2.737)	-7.865*** (2.785)	-5.709** (2.201)	-1.243 (1.765)
Observations	283	283	283	283
R-squared	0.178	0.129	0.111	0.127

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

This table shows regression results for advisers' questions about the auditor's age, her current occupation, her annual income and the existence of a 401(k) plan (all variables yes: 1/no: 0) based on 284 audit visits at financial advisers between April (omitted) and August 2008. The additional explanatory variables are the auditor's actual age her gender (female=1) as dummy variables.

Table 4: Advisers' initial reaction and (non-) supportive recommendations in different treatments

	Overall Sample	Chasing Returns	Company Stock	Index Funds
Is the adviser <i>supportive</i> of the current strategy?	13.11	19.41 (39.74) 0.007	9.68 (29.81) 0.0341	2.44 (15.62) 0.024
Is the adviser <i>against</i> the current strategy?	67.48	59.22 (49.38) 0.011	69.35 (46.48) 0.707	85.37 (35.78) 0.006
Initial reaction positive	16.99	16.50 (37.30) 0.854	12.90 (33.79) 0.308	24.39 (43.48) 0.160
Initial reaction negative	39.81	23.30 (42.48) 0.001	56.45 (49.98) 0.001	56.09 (50.24) 0.017
#observations	214	103	62	49

This table contains data collected in 214 visits (without the control treatment 4) at a financial adviser. Reported are the means, standard deviations and p-values of tests between the sample mean and the treatment mean. The two variables (supportive/not supportive) are coded based on the question "Did the adviser make any comments about how you should modify your existing portfolio?" Auditors could choose from multiple choice answers: (a) "Adviser encouraged me to invest more in the existing strategy", (b) "Adviser said that I should not change the allocation in my existing strategy but not invest more" or (c) "Adviser discouraged me to invest more in the existing strategy". The answer is counted as an encouragement (=1) if the auditor answered (a) and 0 otherwise. The answer is seen as discouraging (=1) if the auditor chose (c) and 0 otherwise. An initial positive (yes: 1/no: 0) or negative (yes: 1/no: 0) reaction to the clients' current portfolio are used for rows (3) and (4), respectively.

Table 5: Advisers' initial reaction and (non-) supportive recommendations

VARIABLES	(1) encouraged adviser client to invest more in the existing strategy				(5) discouraged adviser client to invest more in the existing strategy				(9) positive initial reaction	(10) negative initial reaction
	(2)	(3)	(4)	(6)	(7)	(8)				
Investment Amount	≈\$100k		≈\$50k		≈\$100k		≈\$50k			
Company Stock PF	-0.165** (0.0807)	-0.185** (0.0780)	-0.216 (0.154)	-0.205* (0.102)	0.110 (0.0908)	0.162 (0.111)	0.0550 (0.179)	0.297** (0.117)	0.0137 (0.0766)	0.252* (0.125)
Index Funds PF	-0.284** (0.111)	-0.304** (0.116)	-0.418* (0.210)	-0.300** (0.108)	0.397*** (0.0989)	0.438*** (0.109)	0.476** (0.176)	0.521*** (0.147)	0.199** (0.0884)	0.195 (0.167)
log(Auditor's Age)	0.0965 (0.152)	0.0121 (0.396)	0.991 (0.732)	-0.681 (0.489)	-0.0175 (0.181)	0.380 (0.485)	0.394 (0.481)	1.888** (0.775)	0.327* (0.181)	0.265 (0.275)
log(Annual Income)	-0.266 (0.228)	-0.249 (0.260)	-0.124 (0.349)	-0.801*** (0.166)	0.358 (0.252)	0.381 (0.262)	0.123 (0.390)	0.751** (0.275)	0.194 (0.357)	-0.0901 (0.353)
log(Investment Amount)		0.0190 (0.258)				-0.186 (0.293)				
Marital Status		-0.0354 (0.0355)				0.0866 (0.0924)				
Children		-0.125* (0.0682)				0.135 (0.119)				
Gender		-0.0119 (0.108)				-0.0871 (0.127)				
Constant	2.612 (2.273)	2.561 (2.185)	-2.026 (3.556)	11.24*** (2.984)	-3.911 (2.781)	-3.539 (3.039)	-2.442 (3.308)	-14.86*** (4.765)	-3.287 (4.006)	0.0809 (3.494)
Observations	214	214	105	109	214	214	105	109	214	214
R-squared	0.093	0.116	0.137	0.158	0.107	0.127	0.148	0.165	0.075	0.172

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

This table shows regression results for advisers' reactions to the clients' current portfolios based on 284 audit visits at financial advisers between April (omitted) and August 2008 -- did they encourage the client to pursue the current strategy or did they discourage the client? The two variables are coded based on the question "Did the adviser make any comments about how you should modify your existing portfolio?" Auditors could choose from multiple choice answers (a) "Adviser encouraged me to invest more in the existing strategy", (b) "Adviser said that I should not change the allocation in my existing strategy but not invest more" or (c) "Adviser discouraged me to invest more in the existing strategy". The answer is counted as an encouragement (=1) if the auditor answered (a) and 0 otherwise. The answer is discouraging (=1) if the auditor chose (c) and 0 otherwise. An initial positive (yes: 1/no: 0) or negative (yes: 1/no: 0) reaction to the clients' current portfolio are used as dependent variables for regressions (9) and (10). The explanatory variables are dummy variables for the first three scenarios: In scenario 1 (omitted), clients were chasing fund returns. In scenario 2, clients' current portfolios (PF) contained 30% company stock. Scenario 3 refers to a diversified client portfolio with only low-fee index funds. The auditor's actual age, her annual income assigned by the study, and the investment amount assigned by the study are used, as well. Finally, the client's actual marital status (married=1), the existence of at least one child in the household, and the client's gender (female=1) enter as dummy variables.

Table 6: Average advisers' asset allocation recommendations and fees

	Overall Sample	Chasing Returns	Company Stock	Index Funds	All Cash
allocation bonds %	23.79 (16.16)	23.71 (13.07)	21.84 (15.64)	31.94 (19.42)	21.65 (16.43)
		0.964	0.369	0.007	0.258
allocation stock %	63.48 (25.97)	67.13 (22.85)	63.65 (26.21)	67.27 (19.91)	57.89 (30.59)
		0.220	0.964	0.411	0.056
allocation international %	26.81 (17.21)	29.46 (14.91)	24.67 (19.49)	23.23 (11.06)	27.78 (20.45)
		0.199	0.414	0.234	0.662
observations (allocation)					
adviser mentions fees spontaneously	56.94 (49.61)	59.41 (49.35)	48.39 (50.38)	60.53 (49.53)	58.75 (49.53)
		0.533	0.124	0.638	0.701
actively managed funds	49.65 (50.09)	40.78 (49.38)	24.19 (43.18)	60.98 (49.38)	75.00 (43.57)
		0.024	0.000	0.117	0.000
index funds	7.34 (26.13)	2.91 (16.89)	4.84 (21.63)	0.00 (0.00)	18.75 (39.27)
		0.031	0.395	0.051	0.000
observations (all)	284	103	62	49	70

This table contains data collected in 284 visits at financial advisers in the Boston/Cambridge area in 2008. Reported are the means, standard deviations and p-values of tests between the sample mean and the treatment mean. There are fewer observations of the allocation data since not all advisers provided allocation advice. Mentioning fees (yes: 1/no: 0), actively managed funds (yes: 1/no: 0) and index funds (yes: 1/no: 0) are used for rows 5, 6 and 7, respectively.

Table 7: Advisers' asset allocation recommendations

VARIABLES	(1)	(2)	(3)	(4)
	adviser recommends to invest % of portfolio			
	in bonds	in stocks	internationally	domestically
Company Stock PF	-0.351 (4.569)	0.0278 (5.735)	-4.347 (6.797)	-0.306 (7.785)
Index Funds PF	7.108 (4.963)	3.776 (6.792)	-3.595 (6.094)	10.24 (6.699)
All Cash PF	-2.435 (6.046)	-9.851* (5.143)	-3.595 (8.691)	-13.06 (8.925)
log(Auditor's Age)	7.866 (8.620)	-0.812 (12.66)	5.149 (10.34)	-2.739 (14.09)
log(Annual Income)	12.57 (11.96)	27.52** (12.72)	-19.63 (15.05)	33.42* (19.23)
log(Investment Amount)	-2.444 (1.526)	-3.982*** (0.905)	-0.127 (0.766)	-2.437* (1.293)
Martial Status	0.908 (3.890)	20.44*** (3.804)	10.92** (4.676)	14.26* (7.364)
Children	-6.962 (4.221)	6.187 (4.496)	4.131 (6.536)	-15.49* (7.871)
Gender	-11.57** (4.314)	-9.621* (5.252)	-11.31** (4.970)	-10.76 (8.484)
Constant	-116.7 (150.3)	-205.4 (156.4)	237.6 (177.0)	-251.3 (255.5)
Observations	167	172	152	152
R-squared	0.174	0.211	0.128	0.334

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

This table shows regression results for advisers' portfolio allocation recommendations for bonds, stocks, internationally and domestically (all in %) based on 284 audit visits at financial advisers between April (omitted) and August 2008. The explanatory variables are dummy variables for all four scenarios: In scenario 1 (omitted), clients were chasing fund returns. In scenario 2, clients' current portfolios (PF) contained 30% company stock. Scenario 3 refers to a diversified client portfolio with only low-fee index funds. In scenario 4, the client claimed that all the money was invested in a certificate of deposit at a local bank. The auditor's actual age, her annual income assigned by the study, investment amount assigned by the study. In addition, we use the client's actual martial status (married=1), the existence of at least one child in the household, and the client's gender (female=1) as dummy variables.

Table 8: Advisers' recommendations and mentioning fees

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	adviser recommends index funds				adviser recommends actively managed funds				adviser talks spontaneously about (any) fees			
Investment Amount			≈\$100k	≈\$50k			≈\$100k	≈\$50k			≈\$100k	≈\$50k
Company Stock PF	0.0166 (0.0540)	0.0157 (0.0567)	0.0222 (0.0246)	0.102 (0.179)	-0.198** (0.0906)	-0.149* (0.0737)	-0.00673 (0.0796)	-0.455** (0.180)	-0.108 (0.0966)	-0.0967 (0.103)	-0.0133 (0.152)	-0.0774 (0.157)
Index Funds PF	-0.0191 (0.0354)	-0.0218 (0.0415)	0.0442 (0.0429)	0.105 (0.100)	0.255* (0.138)	0.308** (0.119)	0.663*** (0.0978)	-0.101 (0.167)	-0.0149 (0.142)	-0.0444 (0.133)	0.372* (0.215)	-0.248 (0.146)
All Cash PF	0.183** (0.0827)	0.168** (0.0697)	0.256*** (0.0658)	0.181 (0.137)	0.318*** (0.104)	0.292*** (0.105)	0.517*** (0.0704)	0.0750 (0.144)	-0.0106 (0.114)	-0.0274 (0.107)	0.0860 (0.167)	0.0421 (0.118)
log(Auditor's Age)	-0.0847 (0.120)	0.129 (0.110)	-0.541 (0.410)	1.559 (0.969)	0.287 (0.172)	0.504** (0.193)	-0.231 (0.560)	1.600 (1.050)	0.325 (0.196)	0.494** (0.205)	-0.563 (0.911)	1.190 (0.782)
log(Annual Income)	0.0313 (0.141)	0.0292 (0.126)	0.142 (0.119)	-0.165 (0.183)	-0.170 (0.291)	-0.267 (0.273)	-0.0744 (0.272)	0.186 (0.458)	-0.134 (0.240)	-0.131 (0.220)	0.223 (0.401)	-0.526 (0.312)
log(Investment Amount)		-0.109*** (0.0110)				-0.0783*** (0.0220)				-0.0620*** (0.0175)		
Marital Status		0.0271 (0.0365)				0.00512 (0.0623)				0.106 (0.0889)		
Children		-0.0521 (0.0518)				0.272*** (0.0913)				-0.0638 (0.0997)		
Gender		0.0553 (0.0490)				-0.134* (0.0744)				0.0409 (0.101)		
Constant	-0.0528 (1.349)	0.321 (1.285)	0.217 (1.847)	-3.570 (3.211)	0.884 (3.311)	2.188 (2.968)	2.067 (3.105)	-7.605* (4.085)	0.849 (2.862)	0.934 (2.673)	0.0365 (5.195)	2.371 (4.307)
Observations	284	284	148	136	284	284	148	136	281	281	148	133
R-squared	0.101	0.177	0.185	0.144	0.180	0.226	0.301	0.211	0.028	0.049	0.070	0.094

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

This table shows regression results for advisers' investment recommendations of index funds or actively managed funds (yes: 1/no: 0) based on 284 audit visits at financial advisors between April (omitted) and August 2008. In addition, regression results are shown for advisers' mentioning of fees (yes: 1/no: 0) without being prompted by the client. The explanatory variables are dummy variables for all four scenarios: In scenario 1 (omitted), clients were chasing fund returns. In scenario 2, clients' current portfolios (PF) contained 30% company stock. Scenario 3 refers to a diversified client portfolio with only low-fee index funds. In scenario 4, the client claimed that all the money was invested in a certificate of deposit at a local bank. The auditor's actual age, her annual income assigned by the study, investment amount assigned by the study. In addition, we use the client's actual marital status (married=1), the existence of at least one child in the household, and the client's gender (female=1) as dummy variables.

Table 9: Advice as a function of auditor characteristics

VARIABLES	(1) adviser recommends index funds	(2) actively managed funds	(3) adviser mentions fees	(4) advice after money transfer only
log(Auditor's Age)	0.190 (0.118)	0.643*** (0.217)	0.527** (0.197)	-1.283 (0.811)
log(Annual Income)	-0.0683 (0.120)	-0.361 (0.272)	-0.106 (0.219)	0.488 (0.350)
Marital Status	0.0557 (0.0366)	0.107 (0.0876)	0.130 (0.0804)	-0.124 (0.105)
Children	-0.0203 (0.0438)	0.320*** (0.0813)	-0.0471 (0.101)	0.138 (0.151)
Gender	0.0194 (0.0417)	-0.209** (0.0979)	0.0146 (0.101)	0.383*** (0.116)
Constant	1.366 (1.248)	2.884 (3.068)	0.574 (2.688)	-11.20** (4.488)
Observations	284	284	280	128
R-squared	0.113	0.124	0.045	0.218

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

This table shows regression results for advisers' recommendations of index funds and actively managed funds based on all 284 audit visits at financial advisers between April (omitted) and August 2008. The other regressions evaluate when advisers spontaneously mention (any) fees and why advisers offer advice only after the portfolio or money is transferred to the new account. The additional explanatory variables are the auditor's actual age, her assigned annual income, her actual marital status (married=1) and the client's gender (female=1) as dummy variables.

Appendices – Audit study design examples and test questions for potential auditors

Appendix A – Portfolio and background information examples

Scenario 1 (chasing fund returns)

Shopper ID	3		
Scenario	1	Company	Haemonetics
Gender	Female	Occupation	Product Development
Age	30-35	Annual Income	\$65.000
		\$ to Invest	\$45.000
		Portfolio ID	1T1
		Portfolio	\$45.000,00
		SPDR S&P Metals & Mining (XME)	\$13.500,00
		Vanguard 500 (VFINX)	\$22.500,00
		Vanguard Interm-Term Bond Index (VBIIIX)	\$9.000,00
			On-line account on E-Trade (mention only if asked)

Scenario 2 (employer stocks)

Shopper ID	52		
Scenario	2	Company	Analog Devices
Gender	Male	Occupation	Intellectual Property
Age	30-35	Annual Income	\$75.000
		\$ to Invest	\$49.000
		Portfolio ID	1T2
		Portfolio	\$49.000,00
		Analog Devices Stocks (ADI)*	\$14.700,00
		Vanguard 500 (VFINX)	\$24.500,00
		Vanguard Interm-Term Bond Index (VBIIIX)	\$9.800,00
			On-line account on E-Trade (mention only if asked)

Appendix B – Test for potential auditors

1. Please give an example of a fund family?

- a. General Mills
- b. Vanguard
- c. US Government
- d. Sovereign Bank

2. What do advisers mean when they talk of actively managed funds?

- a. Funds where the manager picks securities in which to invest the money
- b. Any fund that has a manager
- c. Funds that track the market portfolio

3. Usually index funds have lower fees than actively managed funds?

True/false

4. The definition of dividends is

- a. the profits that a company retains each year to invest in new projects
- b. a name for the increase in annual stock price of a company
- c. the part of profit that a company pays to its investors each year

5. Which of the following is not a “security”?

- a. Procter and Gamble stock
- b. Dividend from Coca-Cola
- c. US Government bond
- d. Oppenheimer Capital Appreciation A (OPTFX)

6. Advisers will usually recommend that your portfolio should be diversified between bonds, stocks and mutual funds. Imagine you had US\$ 20,000 to invest and wanted to invest 60% in equity and 40% in bonds, which of the following portfolios should you pick?

- a. US\$ 6,000 in Vanguard S&P 500 index
US\$ 4,000 in MFS high Income Municipal
US\$ 10,000 in Certificate of Deposit
- b. US\$ 8,000 US Government bonds
US\$ 1,000 Ford Motor stock
US\$ 6,000 in Vanguard S&P 500 index
US\$ 5,000 in Alliance Bernstein Intl Growth A
- c. US\$ 8,000 MFS high Income Municipal
US\$ 10,000 IBM stock
- d. US\$ 8,000 Vanguard 500 Index
US\$ 12,000 US Government Bonds

7. What is the relation between risk of default and return of a corporate bond?

- a. The higher the risk of default the lower should be the interest rate
- b. The lower the risk of default the lower the interest rate
- c. More trustworthy debtors offer higher interest rates
- d. Return is independent of risk

8. A front load is

- a. a sales commission the investor has to pay periodically for holding a fund
- b. a fund with a heavy concentration in short term securities
- c. a measure of the operational costs of the fund
- d. a sales charge the investor pays when buying a mutual fund