Don't Answer the Phone - Financial Advice and Individual Investors' Performance*

Daniel Hoechle†, Stefan Ruenzi‡, Nic Schaub§, Markus Schmid¶

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Abstract

We use a proprietary dataset from a large Swiss wholesale bank and examine the impact of financial advice on individual investors' trading performance and behavioral biases. Due to the unique structure of our dataset, we can classify each trade as either an advised or an independent trade. This allows us to compare advised and independent trades on a trade-by-trade within-person analysis. Thus, our study is not plagued by the typical selection and endogeneity problem existing studies on the impact of financial advice typically face. We document that advisors hurt trading performance and that this effect is particularly pronounced if the trade follows a client-advisor contact that is initiated by the advisor. There is also only limited evidence that advisors help to reduce behavioral biases, casting serious doubts on the role of financial advisors.

JEL Classification: D14, G11, G21, G28

Keywords: financial advice, individual investors, trading performance, behavioral biases

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†Department of Finance, University of Basel, CH-4051 Basel, Switzerland, and Man Investments, CH-8808 Pfaeffikon, Switzerland

‡University of Mannheim, Finance Area, D-68131 Mannheim, Germany

§University of Mannheim, Finance Area, D-68131 Mannheim, Germany; corresponding author: +49 621 181 3755, schaub@bwl.uni-mannheim.de

¶Swiss Institute of Banking and Finance, University of St. Gallen, CH-9000 St. Gallen, Switzerland

1 Introduction

Nearly two thirds of all individual investors in the U.S. rely on financial advice when investing in stocks or bonds (ICI, 2008). However, still only little is known about the influence of financial advisors on their clients' portfolio composition and performance. In this paper we use unique data from a large Swiss bank to address three main questions: First, we investigate the determinants of an investor relying on advice or not. Second, we analyze how financial advice impacts individual investors' trading performance to shed some light on the question whether financial advice has some informational value. Third, we analyze whether financial advice helps individual investors to overcome various behavioral biases such as the disposition effect (e.g, Odean, 1998), the home bias (e.g., Calvet et al., 2007), or excessive trading due to overconfidence (e.g., Barber and Odean, 2000).

The theoretical literature points out that financial advice is subject to agency problems and that advisors suffer from conflicts of interest (e.g., Krausz and Paroush, 2002; Inderst and Ottaviani, 2009, 2012). On the one hand, from the banks' perspective, advisors are expected to generate profits for their employer by inducing customers to trade. On the other hand, advisors need to advice their clients and foster their needs and expectations. This can give rise to conflicts of interest and the typically prevailing asymmetric information between individual investors and advisors may result in advisors acting in their own, i.e., their bank's, interest rather than in the best interest of their clients. Thus, financial advice may be biased.

In this paper, we use a unique dataset from a large Swiss wholesale bank to investigate the influence of financial advice on the portfolio performance and composition of individual investors. The dataset provides information on almost 40,000 clients, their approximately 500 advisors, and over 150,000 trades executed between January 2002 and June 2005. Optional free advice is offered to all customers through bank employees. Our dataset includes information on the exact date of meetings, phone calls, mail and email contacts between clients and advisors. Hence, based on these client-advisor contacts we are able to classify each trade as either carried out by the client independently or as induced by the advisor. While previous work focuses on clients' overall portfolios, our study concentrates on investors' individual trades. To the best of our knowledge, this is the first study to analyze the impact of financial advice on individual investors' performance and behavioral biases on a trade-by-trade basis. This allows us to isolate the impact of advice in a very clean way by focusing on within-person variation.

A few empirical studies have analyzed the relation between financial advice and clients' portfolio performance as well as behavioral biases. However, the results of these studies are mixed. While some papers find a positive effect of advisors on individual investors' portfolio performance (e.g., Shapira and Venezia, 2001), most of the more recent papers find a negative impact (e.g., Chalmers and Reuter, 2012; Hackethal et al., 2012) or no influence of advisors on clients' portfolio performance (e.g., Kramer, 2012). We argue that one reason for this mixed

evidence may be due to various shortcomings most existing studies suffer from – and that we are able to overcome: First, financial advice is defined in a rather imprecise way. Prior studies focus on optional advice but do not differentiate between clients fully delegating trading decisions to their advisors and clients only consulting their advisors for guidance sometimes and then place most of their orders independently. Portfolios of both types of clients are treated as advised. This is problematic, because many clients who are classified as advised clients might often conduct trade ideas of their own besides the trades that are really based on advice.

Second, and related to the first point, there is a severe endogeneity problem that many existing studies face due to their classification of advised and unadvised investors. The reason for this is that investors with poor investment skills are probably more likely to rely on financial advice. Even if these investors sometimes rely on advice, they will typically not completely delegate trading. For example, in our sample, even clients who do sometimes trade based on advice (and would thus be classified as advised clients in most existing studies) still conduct over 70% of their trades independently. Thus, even if advisors might be skilled, by pooling all trades of advised investors (or by only looking at their overall portfolios) one might well find inferior performance of these clients. Even if the advice they got might have been good.[1]

Third, due to the focus on portfolio performance and not individual trades, previous studies are not able to separate the informational value of specific financial advice from advisors' effect on behavioral biases (and eventually performance). Previous research suggests that the impact of advice on behavioral biases is mixed. Financial advisors seem to induce excessive trading (Shapira and Venezia, 2001; Hackethal et al., 2011; Hackethal et al., 2012). However, financial advisors typically also improve overall portfolio diversification (Chalmers and Reuter, 2012; Kramer, 2012), reduce the home bias (Kramer, 2012), and the disposition effect (Shapira and Venezia, 2001). Thus, while advisors may have a positive impact on performance by reducing behavioral biases, they might suffer from poor stock-picking abilities (or vice versa). The former effect would positively impact portfolio performance while the latter would influence performance negatively and the overall effect would be ambiguous.

Finally, some existing studies rely on data from discount brokerages (e.g., Hackethal et al., 2012). However, discount brokerage accounts are typically not the main accounts of individual investors. By relying on these accounts a considerable part of clients' wealth is often disregarded.[2] Furthermore, the discount brokerage account is likely to be considered as

[1] Instrumental variable approaches used by previous studies to resolve the endogeneity problem have limited explanatory power because of weak instruments (e.g., Hackethal et al., 2012). Bhattacharya et al. (2012) perform an experiment to overcome the endogeneity issue and offer unbiased optional advice to customers. However, individual investors hardly follow the advice leading to a very small sample size and only weak results. Kramer (2012) attempts to resolve the endogeneity problem by comparing the portfolio performance of clients before and after their first interaction with the advisor.

[2] Hackethal et al. (2012) use two datasets. Average account wealth is approximately EUR 11,000 for brokerage clients and approximately EUR 13,000 for bank clients. In both cases, it is rather unlikely that this

a 'play account' by many investors (Goetzmann and Kumar, 2008). Thus, evidence based on these accounts – while certainly insightful – does not necessarily allow to draw conclusions regarding general financial behavior.

Our dataset and empirical approach allow us to alleviate these concerns. Most importantly, our dataset allows us to classify each trade as either an advised trade or as an independent trade. Thus, we can focus on trades (rather than on overall portfolios) of clients. Therefore, we are able to separately investigate advisors' stock-picking skill and their impact on behavioral biases. Our focus on the performance of individual trades also eliminates endogeneity issues. Poor past portfolio performance may still be one reason why individual investors rely on advice. However, we investigate the performance of the transaction recommended by the advisor and not the overall portfolio performance and we can compare the performance of advised and independent trades in a within-person setting. Finally, the individual investors in this dataset are traditional bank branch customers with average account wealth of over CHF 250,000. Hence, a considerable amount of their wealth appears to be on the account at our bank and the accounts we have information on are their main accounts rather than 'play money' accounts.

Our empirical study first shows that certain client characteristics are significantly related to the probability of relying on advice at least once and on the frequency of advised trades by clients. For example, older, more wealthy, and better educated clients are more likely to rely on advice. Furthermore, female clients are more likely to rely on advice than male clients. Our dataset also includes information on the advisor. We find that clients with female advisors, younger advisors, advisors with children, advisors that are responsible for fewer clients, as well as advisors that are higher in the hierarchy of the bank are more likely to rely on advice. We also find that advised trades are more likely to occur if either the client or the advisor or both are female as compared to the male/male case.

However, the main focus of our study is on the impact of advisors on performance. In order to analyze advisors' stock-picking skills we compare the performance of advised trades and the performance of independently executed trades. In addition, we form portfolios based on advised trades and portfolios based on independent trades and compare their performance. Based on both approaches we find strong evidence that advised trades underperform independent trades, casting serious doubts on the investment skills of the financial advisors (at least of the bank we focus on). The effect is mainly driven by purchases, while the performance difference for sales transactions is much less pronounced. Interestingly, the underperformance of advised transactions is particularly severe if the contact between client and advisor was initiated by the advisor.

Finally, to take a closer look at advisors' effect on behavioral biases, we investigate whether advised trades help clients to overcome behavioral biases such as excessive trading, under-

represents the whole portfolio of clients.

diversification, the home and local bias, and the disposition effect. Using our approach of a within-person comparison of the advised and independent trades of the same client, we find only weak evidence of any impact of the advisor. If anything, they help to slightly reduce the local bias of investors and to diversify the portfolio slightly better. However, they have no significant impact on the disposition effect, the preference for lottery-type stocks, the focus on visible stocks, as well as the adjustment and anchoring bias. Furthermore, we confirm the results from Shapira and Venezia (2001) and others that advisors induce investors to trade heavily. We conclude that the negative impact of advisors on trade performance is not (over)compensated by a positive impact of their advice on the reduction of several well-known behavioral biases.

Besides to the literature on the impact of financial advice on individual investors' performance that we discuss above, our paper also relates to the broad general literature on individual investor behavior. For example, Barber and Odean (2000) find that overconfidence induces individual investors to trade too much, while Barber and Odean (2001) show that men are more overconfident than women, trade more, and as a consequence perform worse than women. Glaser and Weber (2009) report that both past market returns as well as past portfolio returns increase trading of individual investors which can be explained by overconfidence based on biased self-attribution. Dorn and Sengmueller (2009) find that investors, who report to enjoy gambling, turn over their portfolio at twice the rate of their peers. Barber and Odean (2008) show that individual investors are net buyers of attention-grabbing stocks. Dorn and Huberman (2010) show that more risk-averse individuals pick lower-volatility stocks. Ivkovic, Sialm, and Weisbenner (2008) find that more concentrated portfolios of individual investors perform better and argue that skilled investors can exploit information asymmetries by concentrating their portfolios in the stocks about which they have favorable information. Ivkovich and Weisbenner (2005) and Massa and Simonov (2006) show that the local stock investments of private investors outperform their remote stock holdings.

The structure of this paper is as follows. In the following section we introduce the proprietary dataset from the Swiss bank and describe our variable definitions. Section 3 contains our empirical study, and Section 4 concludes.

2 Data and variables

2.1 Data and sample selection

The data stems from a large anonymous Swiss wholesale bank, which we will simply call 'bank' henceforth. It covers the time period from January 2002 to June 2005. This investigation period includes bullish and bearish market conditions. Both the blue chip index SMI (Swiss Market Index) and the broader SPI (Swiss Performance Index) decrease during the first part of

the sample period and reach their lowest level on March 12, 2003. Subsequently, both indices increase steadily. At the end of the sample period, both indices are close to their starting level.

The bank operates a network of bank branches throughout Switzerland as well as a small number of branches abroad. Customers tend to be traditional bank branch customers relying on a strong and long lasting bank relationship. The clients in our dataset constitute a random sample comprising 90% of the bank's private clients whose main account is denominated in Swiss Francs and whose wealth at the bank exceeds CHF 75,000 (equivalent to roughly USD 50,000 to 60,000 during our sample period) at least once prior to December 2003.[3] As of December 2003, 42.0% of Swiss residents subject to taxation have net wealth of more than CHF 50,000 (Swiss Federal Statistic Office, 2012). Hence, clients in our sample represent the wealthier part of the population. This is an advantage for any study on the impact of financial advice on investment performance: wealthier individuals provide a larger revenue potential for the bank, giving advisors incentives to pay more attention to these clients as compared to the relatively low net-wealth accounts that dominate the online brokerage samples used in prior studies (e.g., Hackethal et al., 2012).

An advisor is assigned to each client who opens an account at our bank. This advisor is the main contact person for the client. They offer optional advice free of charge to all clients. The bank does not provide information on whether advisors have direct financial incentives to increase revenues with clients. However, we have no reason to expect this bank to deviate from the typical commissions-based remuneration model for their advisors. Furthermore, career concerns are likely to provide indirect incentives for advisors to generate commissions with customers.

We apply several filters on our raw data. First, a number of accounts are directly managed by advisors without any client interactions. We eliminate these completely delegated accounts, since our focus is on optional advice offered to clients. Furthermore, we exclude clients younger than 18. Typically, these accounts are run by the parents whose characteristics are unknown. We also do not consider accounts of dead clients. These accounts are usually owned by beneficiaries whose characteristics are also not known. After applying these filters, we are left with 37,622 clients and 491 advisors. 18,520 clients, assigned to 427 advisors, execute a total of 150,272 trades while 19,102 customers do not trade at all during our investigation period from January 2002 to June 2005. Since we investigate the performance of advised trades and independently executed transactions, we focus on the 18,520 trading clients and their 427 advisors in our database.

Besides the information provided by the bank, we use daily return data on individual stocks as well as indices from Thomson Financial Datastream to measure performance. In some of our later analysis we also use data on financial analyst coverage from IBES (Institutional

[3]The bank did not provide information on all their clients for confidentiality reasons.

Brokers' Estimate System).

2.2 Descriptive statistics

The database includes various investor characteristics such as gender, age, marital status, education, employment, and place of residence. In addition, the dataset provides account information such as whether investors receive product information, whether they have e-banking access, and the length of the bank relationship. Moreover, the dataset contains clients' total bank wealth, individual security positions, and transaction data. Finally, advisors' gender, age, marital status, number of children, whether the advisor is part of the bank's management,[4] and the number of clients the advisor is responsible for are reported. All information is collected by the bank on the date of the account opening and updated according to new information provided by clients and advisors. Appendix A provides detailed descriptions of these and all other variables used throughout the study.

Table 1 reports descriptive statistics on the clients and advisors in our dataset. Panel A presents various socio-demographic variables on the clients and information on their accounts. All numbers are with respect to the beginning of our sample in January 2002. 57.8% of the clients in our sample are male and their average age is 59.9 years. 21.2% are single, 65.9% are married, 5.0% are divorced, and the remaining clients are widowed. The education variable is assigned a value between 1 and 7 based on the highest actual education a client received. The specific definitions can be found in Appendix A. Out of all clients, 0.2% are unskilled, 2.5% semi-skilled, 76.8% completed a vocational education, 0.6% hold a high school degree, 2.8% completed a higher vocational education, 1.7% went to a technical college, and 15.5% hold a university degree. We only have information on the clients' marital status and education for 7,149 and 4,031 clients, respectively. 63.6% of the clients in our sample are employed, 30.7% are retired, and 5.7% belong to other categories like 'self-employed', 'housewives', or 'students'. 73.3% live in Switzerland and 63.8% are local clients, i.e., they live in the canton where our bank is headquartered or in a canton which is not further away than 25 kilometers from the bank's headquarter.[5] 76.1% of all clients receive some kind of product information. Product information is typically distributed via mass mailings. It intends to inform about new and existing bank products and is only partially personalized to clients' characteristics. 14.6% of all clients have an e-banking account. On average, clients are with the bank for 6.8 years.[6]

[4] Bank management is defined broadly by our bank. It is a dummy variable that is set to one, once an advisor reaches a certain hierarchical level within the bank. Established advisors belong to the management category quite regularly.

[5] Switzerland's political organization is that of a federal state and it is divided into 26 cantons, that are member states of this federal state.

[6] This variable is missing for the 76.4% of clients in our sample that opened their account before December 1995. We assume that all these customers opened their account in December 1995. Hence, the true average length of bank relationships of the clients in our sample is underestimated.

Panel B reports portfolio and trading characteristics. In January 2002, the average financial wealth of clients at our bank is CHF 266,077. A large part of clients' financial wealth appears to be represented in our dataset.[7] Hence, accounts at our bank seem to be clients' main accounts rather than 'play money' accounts (Goetzmann and Kumar, 2008). On average, clients hold 26.6% of their wealth at the bank in cash, they invest 18.3% in stocks, 22.5% in bonds, 31.3% in mutual funds, 0.8% in derivatives, and 0.3% in structured products. Customers on average hold 5.8 securities in their portfolios, 2.5 of which are stocks. Individual investors invest 86.3% of their equity portfolios in Swiss stocks, 41.4% in local stocks, and 30.9% in the bank's own stock. They execute 2.5 trades per annum which results in a monthly turnover of 1.1%.

Panel C reports characteristics of the 427 advisors in our dataset. 61.4% of the advisors are male. The average advisor is 35.9 years old in January 2002. 41.6% of the advisors are single, 52.5% are married, 5.6% divorced, and the remaining advisors are separated but not divorced. On average, they have 0.9 children. 46.6% are part of the bank's management. One advisor is on average responsible for approximately 666 individual investors.

2.3 Advised und independent clients and trades

The dataset provides information on 62,482 contacts between clients and their advisors during the sample period from January 2002 to June 2005. Contacts as defined in this dataset include everything from a client receiving an anonymous mass mailing to an in-person meeting between the client and the advisor. 11,451 contacts are explicitly classified as advisory contacts.[8] For each contact, we know the exact day on which it occurred and whether it was initiated by the advisor or the client.[9] Figure 1 shows the monthly number of advisory contacts between January 2002 and June 2005. There is an upward trend observable in the number of advisory contacts over time and the number of advisory contacts per month is roughly between 100 and 400.

Overall, the clients in our sample executed 150,272 transactions over the time period from January 2002 to June 2005. Panel A of Figure 2 shows how trades are distributed around advisory contacts. Advisory contacts clearly lead to an increased number of trades. The contact between the client and advisor takes place on day t = 0 and trades peak on this day. An exceptionally high number of trades also take place on the days following the advisory contact. Thus, we define an *advised trade* as a trade executed within four days after an

[7] In December 2003, the average net wealth of a Swiss resident subject to taxation with net wealth above CHF 50,000 is CHF 529,011 (Swiss Federal Statistic Office, 2012). This also includes non-financial wealth.

[8] 68.0% of advisory contacts are flagged as 'advisory talk' (in German 'Beratungsgespräch'), 27.8% as 'investment advice' ('Anlagevorschlag'), 2.3% as 'advisory activity' ('Beratungsaktivität'), and 1.9% as 'investment suggestion' ('Anlageempfehlung').

[9] If the advisor meets the client at the client's home, this contact is virtually always initiated by the advisor and is thus classified as advisor initiated contact. If the advisor calls the client or sends a letter or email to the client, this is also classified as an advisor initiated contact. 40.5% of all advisory contacts are advisor initiated.

advisory contact, i.e., between t = 0 and t = 4.[10] 53.8% of all advisory contacts lead to at least one trade. If a client decides to trade after interacting with his advisor, he executes 1.6 trades on average. This leads to 9,917 advised transactions in our dataset, i.e., 6.6% of all trades are advised trades. There are 2,118 clients assigned to 67 advisors that are *advised clients* and that execute at least one trade on advice during our investigation period while 16,402 clients are *independent clients* who only trade independently.

When investigating the impact of financial advice on performance and behavioral biases we follow previous research and focus on stock trades rather than all trades of financial assets (e.g., Odean, 1998; Shapira and Venezia, 2001). We restrict ourselves to stock trades, because data (un)availability makes it very difficult to define the performance of trades in other assets. Panel B of Figure 2 is similar to Panel A but focuses on how stock trades (rather than all trades) are distributed around advisory contacts. We observe a very similar pattern to that in Panel A. In total, there are 73,739 trades in 2,453 stocks. Again, we define an advised trade as a trade executed within four days after an advisory contact. This results in 4,221 of these trades being defined as advised transactions. 77.0% of all advised stock trades take place on t = 0, 11.1% on t = 1, 5.0% on t = 2, 4.1% on t = 3, and 2.7% on t = 4. 40.4% of the advised stock trades take place after a contact between client and advisor that was initiated by the advisor. 43.3% of the advised stock trades follow after a personal meeting, 54.2% follow after a phone call, and only approximately 0.5% follow after a letter or an email.[11] Panels A and B of Figure 3 show the monthly number of all stock trades as well as the monthly number of advised stock trades between January 2002 and June 2005. The number of trades in both figures slightly increases over time.

3 Empirical results

The unique structure of our dataset allows us to conduct three sets of novel tests. First, it includes clients who never trade based on financial advice and clients who get advice and trade based on this advice. This allows us to analyze what the determinants of a client relying on financial advice at all (or how frequently) are (Section 3.1). Second, the fact that we can classify each individual trade as either advised or independent allows us to examine the impact of advisors on performance on a trade-by-trade basis. Unlike previous studies, we can analyze the impact of advisors not only based on the performance of clients who could or sometimes do get advice and clients who trade completely independently. Rather, our setting allows us to examine the impact of advice on performance based on a within-person comparison as well as for a hypothetical portfolio consisting of all advised buys and sells (Section 3.2). Finally, we can use our trade-by-trade analysis to investigate whether advisors help to reduce several

[10] We report results for alternative definitions of advised trades in Table 7.

[11] 42.5% of all advisory contacts are meetings, 51.1% are phone calls, and 0.8% letters or emails.

widely documented behavioral biases that many retail investors are subject to (Section 3.3).

3.1 Which individual investors rely on financial advice?

To investigate which clients rely on financial advice, we classify all clients as either advised or independent. Clients who execute at least one advised trade as defined above during our sample period from January 2002 to June 2005 are classified as advised clients, while clients who never trade based on advice during our sample period are classified as independent clients. We start our analysis with a univariate comparison of the characteristics of advised and independent clients. Results are reported in Panel A of Table 2.

The fraction of male clients is nearly identical at 58% among advised as well as independent clients, but advised clients are on average about three years older than independent clients. The fraction of single and divorced clients who are classified as independent is significantly larger than the fraction classified as advised clients, while there is no significant difference among married clients. Clients with higher levels of education are more likely to be advised clients. Furthermore, the fraction of employed (retired) clients is significantly lower (higher) among those classified as advised clients than among independent clients. Swiss as well as local investors seem to rely less on advice than foreign and non-local investors, respectively. This is surprising given that at least personal meetings with the advisor should be less costly for domestic investors who presumably live closer to the next branch. Independent clients are more likely to receive product information (i.e., mass mailings) and to have an e-banking account. Finally, the length of the bank relationship is longer among independent clients.

In Panel B of Table 2, we compare the portfolio characteristics of advised and independent clients. Our results show that wealthier clients and clients with a higher fraction of stocks, bonds, derivatives, and structured products in their portfolios are more likely to trade on advice. In addition, clients with more individual securities and more individual stocks in their portfolio as well as clients with a better diversified portfolio as indicated by a lower Herfindahl-Hirschman Index (HHI) are more likely to trade on advice. The percentage of Swiss stocks held by clients is roughly equal among the two groups, but independent clients hold more local stocks and more stocks of the bank. Finally, advised clients trade more actively, as indicated by an average number of trades of nearly 6 among advised clients but only a little bit more than 2 among independent clients. Consistent with this finding, the average turnover ratio is 65% higher among advised clients than among independent clients.

Obviously, these findings are univariate in nature. As many client characteristics like age and wealth are significantly correlated, we now turn to a multivariate analysis at the client level. We estimate a logit regression with a dummy variable that takes on the value one if the client is advised, and zero otherwise, as dependent variable. An advised client is defined

as a client that conducts at least one advised trade.[12] We include various combinations of client, account, portfolio, and advisor characteristics as independent variables.[13] To capture a possible non-linear impact of age, we include three age category dummies for 45 to 59 years, 60 to 74 years, and above 75 years, respectively, i.e., the base case are all clients with an age below 45.

The results are reported in Table 3. In the first column, we find no significant impact of gender, but all age dummies have a significantly positive impact that increases for the higher age categories, i.e., older clients are more likely to rely on advice. The coefficient estimate suggests that the probability of being an advised client is 3.6% higher for those aged above 75 as compared to the base case of those below 45. Consistent with our univariate results, we document that Swiss clients as well as local clients are less likely to rely on advice. Clients who receive product information are also significantly less likely to trade on advice. This effect is probably driven by the fact that the bank might send more product information to clients who are not trading on advice so far. We also find that having an e-banking account has no significant impact. The coefficient on the length of the bank relationship is negative but only marginally significant (t-value of 1.75). This is likely due to the fact that the interaction between the client and the advisor is more intense at the account opening compared to later stages when the parties established a working routine. In contrast, the coefficient on total bank wealth is positive and highly significant, i.e., wealthier clients are more likely to trade on advice.

In Column 2, we add education as additional control variable. As education is available for only about 22% of our total sample of 18,520 clients, the sample size is substantially reduced to 3,452 observations if we add this variable. Most of the results in Column 1 hold, but statistical significance is in some cases reduced due to the much smaller number of observations. The coefficient on education is positive and significant, i.e., better educated clients are more likely to trade on advice.

In Columns 3 and 4, we replace the advised client dummy variable by the average percentage of advised trades per year as dependent variable and re-estimate the regressions in Columns 1 and 2 by OLS. Largely consistent with our previous results, our findings show that older, foreign, better educated, and wealthier clients trade on advice more frequently. The results in Columns 3 and 4 also show that male clients on average trade less on advice than female clients. This finding is consistent with Guiso and Jappelli (2006) who find that male investors tend to be more overconfident and overconfidence reduces the propensity to seek

[12] As our later analysis on trade performance and behavioral biases is based on stock trades only, we rerun the multivariate analysis of Table 3 for clients executing at least one stock trade (instead of a trade in any asset class) during our investigation period. The results, reported in Table A1 in the Appendix, are qualitatively unchanged as compared to the results in Table 3 which are discussed in the text.

[13] In all analyses of this paper, we use beginning-of-period values for the portfolio characteristics to minimize endogeneity concerns due to reverse causality.

advice.[14] Furthermore, the findings in Column 3 now show that having an e-banking account is negatively associated with the frequency of advised trades.

Our data on advisor characteristics allows us also to investigate the relationship between these characteristics and the probability of a client relying on advice. To the best of our knowledge previous studies running comparable analyses do not include advisor characteristics. Hence, although we can obviously make no causal statements based on this investigation, documenting these relationships is interesting in itself. The results in Columns 1 to 4 of Table 3 show that female advisors, younger advisors (under 30 years of age), advisors with more children, advisors who are part of the bank's management, and advisors who are responsible for fewer clients are associated with a higher probability that their clients trade on advice and a higher average percentage of advised trades. We can only speculate on the reasons for these patterns. The result that younger advisors generate more trading might be due to them being more motivated because of career concerns and eventually putting in more effort to convince clients to trade. Advisors with children might be considered to be more reliable and trustworthy by clients. The same holds true for advisors that are part of the bank's management. This status might also proxy for being successful as advisors in the past and thus having the necessary skills to convince clients. The negative coefficient on the number of clients suggests that an advisor who is responsible for more clients can spend less time and effort on each individual client.

To analyze whether certain matches of clients to advisors harmonize better than others, we re-estimate the regressions in Columns 3 and 4, but add various explanatory variables based on the gender- and age-matching between client and advisor. We create four groups based on the gender of clients and advisors: (1) male client, male advisor, (2) female client, female advisor, (3) male client, female advisor, and (4) female client, male advisor. Moreover, we build three groups based on the relative age of clients and advisors: (1) clients are of similar age as their advisor (i.e., not more than 10 years younger or 10 years older), (2) clients are more than 10 years older than their advisors, and (3) clients are more than 10 years younger than their advisors. In our regressions we replace the gender dummy variables of the clients and advisors by the group dummy variables for gender- and age-matched clients and advisors. To avoid multicollinearity, we omit the dummy variable for the male/male and the same age combination groups, i.e., the age- and gender-matching dummies show the impact of the specific match as compared to the base case of a male/male and same age match, respectively. Results are presented in the last two columns of Table 3.

Our previous results are largely unaffected by the addition of the client-advisory matching variables. More interestingly, the coefficients on all gender-match dummies are positive and significant. As the male/male category is our base category, this result shows that the involve-

[14] Irrespective of this result, we also find that male investors in general trade more than female investors, confirming the results of Barber and Odean (2001).

ment of a woman either as client and/or as advisor leads to more advised trades. The effect is of roughly equal economic magnitude when both involved parties are female and when a male advisor is matched with a female client. For example, results in Column 5 suggest that the percentage of advised trades is 3.4% (3.0%) higher if a female advisor is matched with a female (male) client as compared to the all-male base case. Given the overall percentage of advised trades that amounts to 6.6%, this effect is economically large. This result is surprising, given that earlier evidence in Niessen-Ruenzi and Ruenzi (2012) shows that investors generally are prejudiced against females in finance. Our results suggest that such prejudice can be overcome due to the more personal interaction between advisor and client in our setting. The effect is somewhat weaker if a male advisor is matched with a female client. However, even in this case the percentage of advised trades still increases by about 1%. Results in Column 6, where we include client education as additional control, are slightly stronger. There is no impact of any of the age-match dummies in Columns 5 and 6. Overall, these findings suggest that it could make sense for the bank to hire more female advisors to increase clients' trading and to match new and existing female clients with female advisors.

To check whether the bank does assign advisors to clients in a way that maximizes the advisors' influence over clients and thereby clients' trading activities, we analyze the correlation between client and advisor characteristics for the 1,594 clients who open their account during our investigation period. The results are reported in Table 4. Based on our findings from above, we might expect female clients to be matched with female advisors. However, the correlations between client and advisor gender is virtually zero, suggesting that banks might be able to increase client trading and eventually commission income by re-matching. In general, the correlation coefficients in Table 4 are relatively low and in nearly all cases below 0.25. However, a few patterns are observable. For instance, older clients tend to be matched to older advisors. Wealthier clients with more securities in their portfolios tend to be assigned to advisors that are part of the bank's management. In general, however, the matches between clients and advisors seem to be mostly random. This suggests that new clients are typically directed to an advisor depending on time availability of the advisory. Hence, the bank makes only limited use of specific advisor skills when dealing with different types of clients.

3.2 Financial advice and individual investors' trades and performance

We now turn to the main part of our analysis and investigate how financial advice impacts individual investors' performance. As the majority of prior research on financial advice and private investors more generally, we focus on stock trades (e.g., Odean, 1998; Shapira and Venezia, 2001). In the following analysis, we first compare the characteristics of advised and independent stock trades (Section 3.2.1). Next, we compare the performance of these trades in a univariate setting and extend the analysis to a multivariate setting to examine whether advised trades perform differently from independent trades after controlling for trade

characteristics and the impact of the client itself (Section 3.2.2). Finally, we conduct a portfolio analysis, comparing the performance of a portfolio consisting of all advised trades and a portfolio consisting of all independent trades (Section 3.2.3).

3.2.1 Characteristics of advised and independent stock trades

Table 5 reports the descriptive statistics for the 73,739 stock trades split into sub-samples consisting of 37,771 purchases (Panel A) and 35,968 sales (Panel B). Column 1 presents results based on all trades, while the following columns show results for advised and independent trades separately as well as the difference and the respective statistical significance. The average trade sizes are substantial. They amount to CHF 20,730 and CHF 26,883 for purchases and sales, which is equivalent to 6.8% and 7.7%, respectively, of the average client's total bank wealth. When comparing advised stock trades and independent stock trades (Columns 2 to 5), the results show that advised transactions are larger in absolute terms but smaller in relative terms (in relation to the client's total bank wealth) than independent trades. Regarding the characteristics of the stocks traded, we find that advised and independently traded stocks have a similar beta, but advised stock trades involve significantly larger stocks in terms of market capitalization. Furthermore, advised trades involve stocks with significantly lower book-to-market ratios, suggesting that advisors lean more towards a growth strategy than independent client trades. Both patterns hold for buy as well as sell transactions. We also calculate the past 1-week (6-month, 1-year) return decile to which a stock belongs. Results show that advised buys are more likely to involve stocks that performed relatively well as compared to independent buys. The reverse pattern holds for sells, indicating that advisors tilt more towards a momentum strategy as compared to independent trades. The differences with respect to book-to-market and momentum suggest to control for differences in exposures to systematic risk factors in our later performance analysis. Finally, we find that advised buys as well as sells are less likely to involve the bank's stock as compared to independent trades.

3.2.2 Performance of advised and independent stock trades

To investigate whether advisors help to improve performance, we now compare the performance of advised and independent stock trades. We compute returns and abnormal returns of advised and independent stock trades over different horizons based on daily stock return data. Overall, we analyze four performance metrics over three horizons. We analyze (1) simple raw returns, (2) market-adjusted returns computed as the difference between the stock's return and the return of the SPI (Swiss Performance Index), (3) the cumulative abnormal return (CAR) of a stock calculated based on a one-factor market model with the SPI return as a proxy for the equity market risk factor, and (4) the CAR based on an extended market model where we include the SPI as well as the MSCI World Index as proxies for the equity market

risk factor and a Swiss size, value, and momentum factor. We include the world equity market factor because many stock trades are in non-Swiss stocks and the other risk factors because Fama and French (1993) and Carhart (1997) show that not only exposure to market risk is rewarded but that there is also a size, a value, and a momentum premium. The results in Table 5 show that the size, value, and past return characteristics of stocks differ among the group of advised and independently executed trades which suggests to include the respective risk factors.[15]

To compute the CAR of a trade we first estimate the two models over 1-year rolling windows from t = -252 to t = -1. Estimated factor loadings are then used to calculate abnormal returns starting on day t = 0. We compute returns, market-adjusted returns, and CARs based on the market and the extended market model over the following 1-week, 6-months, and 1-year period. The cumulative (abnormal) returns are calculated by summing up daily (abnormal) returns over the respective time period. To mitigate the effect of extreme stock returns, we winsorize daily (abnormal) stock returns at the 1% level and at the 99% level.

Univariate comparisons of the trading performance of advised and independent stock trades are reported in Table 6. Panel A reports the results for purchases and Panel B for sales. The results in Panel A show that advised purchases deliver significantly lower raw returns than independent purchases over the 1-week and the 1-year horizon. The difference is insignificant for the 6-month horizons. However, once we look at the more meaningful excess returns over the SPI, we find a significantly better performance of independent trades over all horizons. For example, the 1-year excess return over the market of independent purchases amounts to 8.2% p.a., while it is much lower at 4.7% p.a. for advised purchases. The difference of 3.5% is statistically significant at the 1%-level. Results get even stronger if we take into account the exposure to systematic risk factors by estimating the market model or the extended market model. In this case, the 1-year CAR amounts to -0.69% p.a. (-0.78% p.a.) for advised trades and to 3.41% p.a. (3.25% p.a.) for independent trades based on the market (extended market) model. The difference is again statistically significant at the 1%-level.

In Panel A of Figure 4 we plot the average CAR over all advised and independent purchases based on the extended market model over the 252 trading days following the trade. The figure shows the evident outperformance of independent trades and an increase in the spread between the CARs of advised and independent trades over time. These findings clearly show that advisors – at least the advisors of our bank – do not seem to help investors to make good stock purchases.

[15] The size factor SMB (small minus big companies) is approximated by the difference in daily returns between the Vontobel Small Cap Index and the Swiss Market Index (SMI) blue chip index. The value factor HML (high minus low book-to-market ratio) is approximated by the return difference between the MSCI Switzerland Value Index and the MSCI Switzerland Growth Index. Finally, the momentum factor is the daily return difference between the 30% top performing stocks in the SPI over the past six months and the 30% worst performing stocks in the SPI over the same time period. Top and bottom performing portfolios of stocks are determined at the end of each month and kept constant over the following month.

Panel B of Figure 4 replicates Panel A, but for sales. We plot the CARs of all advised and independent sales. Both kinds of trades deliver negative CARs after the sale, i.e., both groups seem to sell stocks that subsequently underperform. Furthermore, we find that independent sales have CARs that are more negative than those of advised sales. Although the difference is smaller, the stocks sold independently do worse than the stocks sold in an advised trade, i.e., advisors also do not help to identify the worst performing stocks to sell. To assess whether this relatively small difference is statistically significant, we also present numerical results on stock sales in Panel B of Table 6. For easier comparison of results between purchases and sales, we multiply the performance after a sale by -1. Our findings indicate that after the transaction, the difference in performance between advised and independent sales is statistically insignificant. Moreover, based on both the market model and the extended five-factor market model both advised and independent trades underperform their benchmarks over the subsequent 1-week, 6-month, and 1-year periods. Even though sales might partly be driven by liquidity needs, both advised and independent sales seem to be based on better predictive skills than purchases. Overall, our findings so far suggest that advisors seem to be harmful in stock purchase decisions and are not able to make up for this by providing better sales suggestions.

We now turn to a regression analysis to investigate the relationship between trade performance and advice in greater detail. In Table 7, we run multivariate OLS regressions of individual trade performance measured by the 1-year CAR based on the extended market model on a dummy variable whether the trade is advised and a number of additional explanatory variables related to advice.[16] Results on purchases (sales) are reported in Columns 1 to 5 (6 to 10). For easier comparison of results between purchases and sales, we again multiply the CAR after a sale by -1, i.e., a negative coefficient on the advised dummy indicates that advised trades underperform in both cases.

We start with a univariate regression of the 1-year CAR on the advised trade dummy. Consistent with our previous findings, the results in Column 1 of Panel A show that advised purchases perform significantly worse than independent purchases. The coefficient estimate suggets that the difference in abnormal returns between advised and independent trades is approximately 4% p.a.

For each advisory contact, our data contains information whether this contact was advisor initiated or client initiated. This enables us to examine whether advised purchases only underperform when the client initiates the contact (possibly with a trading idea of her own that she has already on her mind) or whether – in contrast – trades after advisor initiated contacts do just as bad or even worse. To do so, in Column 2 we additionally add a dummy variable that takes on the value one if the advisory contact was initiated by the advisor, and

[16] The results for 1-week and 6-month cumulative abnormal returns as well as cumulative abnormal returns based on market-adjusted returns and the single-factor market model are qualitatively similar. They are reported in Table A2 in the Appendix.

zero otherwise. It measures the additional impact on the CAR if an advised trade follows an advisor initiated contact. Thus, in this regression, the advised trade dummy measures the effect of advice on trade performance following a client initiated contact. Its impact stays significantly negative and amounts to -2.7%. However, the advisor initiated dummy has an additional negative effect of -3.6%. Thus, the overall performance of advised trades that follow advisor initiated contacts amounts to -6.3%. This result is troublesome as it suggests that advisors not only give bad advice when they are called by clients (which could also be explained by them being caught on cold foot), but that they do even worse when they actively approach their clients with some supposedly good trading ideas.

In Column 3 of Table 7, we replace the advice dummy variable by a set of dummy variables for whether the advisory contact took place on the day of the trade or one, two, three, or four days before the trade. As we classify advised trades as trades which are executed up to four days after an advisory contact, we test whether our results depend on the exact time period used in our definition of advised trades. The results indicate that trades executed on the day of an advisory contact as well as on the subsequent three days all perform significantly worse over the subsequent year. The underperformance of trades executed four days after the advisory contact is insignificant.

In Column 4, we investigate whether different means of advisory contacts, i.e., meetings vs. phone calls, are associated with different (under)performance.[17] However, the results indicate that both meetings and phone calls are associated with a similar underperformance of about 2.9% p.a. and 2.7% p.a., respectively.

In Column 5, we additionally analyze whether advisor initiated meetings and phone calls differ from client initiated meetings and phone calls by adding dummy variables for advisor initiated meetings and advisor initiated phone calls to the specification in Column 4. The results show that advisor initiated meetings and phone calls are associated with an even more negative performance of stock purchases than client initiated meetings and phone calls. The difference in 1-year CARs amounts to 5.5% p.a. and 4.1% p.a., respectively, and is significant at the 1%-level in both cases.

Similar as in the univariate analysis, the results on sales in Columns 6 to 10 of Table 7 are much weaker and show only limited evidence that advised stock sales perform worse than independent stock sales (Columns 7 and 8). However, we can also clearly reject the hypothesis that advised sales are better than independent sales. Moreover, there is no significant difference between stock sales based on advice initiated by the advisor and advice sought by the client

[17] 42.5% of all advisory contacts are meetings and 51.1% are phone calls. Only 0.8% are letters or emails and for the remaining advisory contacts the information on the means of contact is missing. Regarding the trades, 43.3% of advised stock trades materialize through a meeting, 54.2% through a phone call, and only approximately 0.5% through a letter or an email. In Columns 4 and 5, we exclude advised trades that materialize through a letter or an email as well as advised trades for which the information on the means of contact is missing.

(Columns 9 and 10). A reason for these weak and mostly insignificant results on stock sales may be that they are often liquidity driven and a sales decision is more restricted in the sense that only stocks that are in the portfolio to start with are candidates for sale.[18]

As mentioned above, the main advantage of our data is that we can classify not only clients as advised or independently trading clients, but that we can classify each individual trade as advised or independent trade. This is important for the following reason: it could be the case that those clients who trade based on advice have worse investment skills and thus decide to rely more heavily on advice. Possibly, such clients might perform even worse if they had not been advised. This situation of an unobservable counterfactual is a severe problem in all existing studies on the impact of advice that we are aware of. The structure of our data allows us to at least partially address this concern by looking at the within person variation of the impact of advice on trade performance. The cleanest way to do so is to add client fixed effects to the regressions in Panel A. This controls for all unobserved client characteristics that are constant over time. By adding client fixed effects, the impact of the advised dummy now captures the difference in trade performance between advised and independent trades after controlling for the average trade performance of the client. The results are reported in Panel B of Table 7. They are very similar to those in Panel A and show that advised stock purchases on average perform significantly worse than independent purchases *by the same investor*: advised purchases perform by 2.9% worse than independent purchases. Comparing this figure to the findings from Panel A shows that the underperformance of advised trades is only reduced by about 1% by adding client fixed effects. Thus, our previous findings from Panel A are not due to a selection of badly performing clients seeking advice. Additionally, the results in Column 2 show that the complete underperformance can now be attributed to advised trades after advisor initiated contacts. The other results are also similar to those in Panel A.[19]

We perform a number of additional robustness tests on these results. First, we re-estimate Column 1 of Table 7 for the bearish (January 1, 2002, to March 11, 2003) and the bullish (March 12, 2003, to June 30, 2005) market environment separately. Second, we focus on Swiss clients only. Possibly, trades by foreign clients are motivated by tax reasons. Third, we exclude all trades in non-Swiss stocks, as our factor model might be more precise in capturing trade performance for Swiss stocks. Fourth, we exclude trades in the stocks of the bank itself. Possibly, advice to trade the bank's own stocks is driven by a different motivation than other trades. The findings from these robustness tests can be found in Table A2 in the Appendix. They broadly confirm the findings from our main analysis: the impact of the advised trade

[18] The clients in our sample do not hold short positions.

[19] Another advantage of our dataset is that it includes information on the identity of the advisor. This feature of our data allows us to not only control for client fixed effects but also unobserved advisor effects which are constant over time. Hence, we re-estimate the regressions in Panel A and add client-advisor fixed effects to all specifications. The results are reported in Table A3 in the Appendix. Again, we find our results to remain virtually unchanged.

dummy is always negative.

Another concern may be that some of our results are driven by trades of our clients influencing the market. As advised trades are somewhat larger, they might create a larger price impact, which might explain our findings of an underperformance of these trades. The total volume of the 73,739 stock trades executed over our investigation period amounts to CHF 1.7 billion. This equals an average daily volume of CHF 2.0 million. The maximum daily volume is CHF 10.2 million. The mean transaction size is CHF 26,274 for advised and CHF 20,444 for independent purchases and CHF 31,221 for advised and CHF 26,577 for independent sales, respectively. The overall average daily turnover on the SWX Swiss Exchange is CHF 2.7 billion over our investigation period. Hence, it is highly unlikely that the trades in our sample affect market prices. When including trade size as an additional control variable in our regressions, results remain materially unchanged (see Table A2 in the Appendix).

3.2.3 Performance of advised and independent stock portfolios

Our analysis so far treats each trade equally, irrespective of how large it is. Thus, to further investigate the relative performance of advised and independent stock trades while taking into account their weight, we construct two value-weighted portfolios, one consisting of advised stock trades and one consisting of independent stock trades, and compare their performance. Specifically, a stock enters the advised (independent) portfolio with its dollar weight if there is any advised (independent) purchase of that stock by any of our clients. The weight of this stock is adjusted upwards or downwards when the same or another investor conducts an advised (independent) subsequent buy or sell transaction in this stock. Although individual investors typically do not hold short positions, our portfolio tracking the trades of the investor groups might contain short positions as we start with a holding of zero for all stocks at the beginning of our investigation period.

We compute the daily returns of these advised and independent portfolios. To determine daily alphas we then calculate daily return differences between the portfolio of advised trades and the portfolio of independent trades and estimate various risk factor models with the same set of factors as above. The daily risk-free interest rate is approximated by the Swiss 3-month LIBOR. We subtract the returns of the independent trade portfolio from the returns of the advised trade portfolio, i.e., a positive alpha of this difference portfolio would suggest that advised trades do better than independent trades. In order to be able to form portfolios from a sufficiently large number of trades, the first three months of the sample period are not taken into account. Hence, we investigate the period from April 2002 to June 2005.

The results are reported in Table 8. In Column 1 we present results for a model including the Swiss and the international market factor. The difference portfolio loads negatively on both

factors, suggesting that the independent trade portfolio carries a higher level of systematic market risk than the advised trade portfolio. More important in our context is the alpha of the portfolio which is statistically significant at the 1%-level and which amounts to -0.032% per day, i.e., the advised trade portfolio underperforms the independent trade portfolio by more than 8% p.a. In a next step, we repeat the trade portfolio analysis but additionally include the size and value factors (Column 2) and the momentum factor (Column 3). The factor loadings on the additional factors are insignificant or only weakly significant, suggesting that the styles of the overall trade-based portfolios do not differ much between independent and advised trades. However, the alpha remains highly significant in both cases and is of similar magnitude as in the first column, indicating an outperformance of the independent trade based portfolio of more than 8% p.a.

Overall, our findings from the portfolio as well as the individual trade based analysis clearly show that advisors are not helpful in generating superior performance for investors. The results in this section are broadly in line with Chalmers and Reuter (2012) and Hackethal et al. (2012) who also report a negative effect of financial advice on individual investors' portfolio performance. However, in these papers portfolio performance of advised clients and portfolio performance of independent clients are compared. This can be problematic, because not all trades of clients who are classified as advised clients are necessarily based on advice.[20] Our analysis is more refined as we can explicitly distinguish on the individual trade basis whether a trade was triggered by an advisory contact or not.

3.3 Financial advice and individual investors' behavioral biases

Although advisors do not help investors to conduct superior trades, they might offer other benefits to them. By having access to the overall portfolio composition of the investors, they might analyze the stock holdings of investors in context and help them to overcome behavioral biases.

Some first evidence on behavioral biases is already provided in Table 2. Panel B of the table shows that advised clients trade more frequently and have higher turnover rates. However, the larger number of transactions of advised clients cannot solely be attributed to advised trades. While independent clients on average execute 6.7 transactions over our investigation period from January 2002 to June 2005, advised clients perform 14.2 independent trades and 4.7 advised trades on average. The average monthly turnover reveals a similar picture. A high trading activity of clients typically hurts their performance and is often interpreted as a sign of overconfidence (Barber and Odean, 2000). Our results suggest that advisors do not reduce trading activity. On the contrary, advisors seem to induce trading activity, possibly by amplifying clients' overconfidence. This might be due to advisors' incentives to generate

[20] We find that even clients classified as advised clients execute about 75.2% of their trades independently, i.e., without any interaction with their advisor shortly prior to the trade.

commissions with customers.

Besides this initial evidence, our unique data structure also allows us to investigate the impact of advisors on various behavioral biases on a trade-by-trade basis. Specifically, we analyze whether advisers mitigate under-diversification (e.g., Goetzmann and Kumar, 2008), the home and local bias (e.g., Calvet et al., 2007), a focus on visible stocks (e.g., Barber and Odean, 2008), the adjustment and anchoring bias (e.g., Kahneman and Tversky, 1974), a preference for lottery-type assets (e.g., Bali et al., 2011), and the disposition effect (e.g., Weber and Camerer, 1998). First, to consider the diversification effect of purchases, we construct a dummy variable whether a purchased stock helps to diversify the client's portfolio or whether the client already holds this stock in his portfolio. Second, to analyze the home bias, we create a dummy variable which equals one for Swiss stocks.[21] Third, we create a dummy variable for local stocks to analyze the local bias. Local stocks are defined as companies headquartered in the canton where our bank is headquartered or in a canton which is not further away than 25 kilometers from the bank's headquarter.[22] Fourth, we investigate whether advisors follow analyst recommendations and generate a dummy variable for stocks covered by at least one sell-side analyst.[23] This variable will show whether advisors help investors to find more opaque and less visible stocks. Fifth, we measure the proximity of the stock price to the 52-week high to analyze whether clients or advisors are more likely to use the 52-week high price as a reference point (George and Hwang, 2004). Sixth, to analyze whether private investors or advisors have a preference for stocks with lottery-like payoffs, we measure the maximum daily return over the past month (Bali et al., 2011). Finally, we investigate roundtrips to analyze whether advised or independent trades are more likely to be driven by the disposition effect. Roundtrips are trades where there was a buy and a subsequent sale so that at the end of the roundtrip the client does not hold the security anymore (Shapira and Venezia, 2001)

Table 9 reports the results from univariate comparisons of these behavioral variables between advised stock trades and independent stock trades. Panel A reports the results on purchases and Panel B on sales. The results in Panel A show that advised purchases are in fact less likely to involve stocks which are already in the portfolio and therefore help to diversify the portfolio.[24] Moreover, the results indicate that advised trades seem less likely to involve purchases of Swiss or local stock. However, the difference is not statistically significant. Both advisors and clients heavily rely on stocks covered by sell-side analysts but advisors even more so. Hence, advisors do not help their clients to discover less popular stocks. Independently purchased stocks are further below the 52-week high price than stocks bought

[21] This variable is only analyzed for the 73.3% of clients in our sample that are Swiss residents.

[22] This variable is only analyzed for the 63.8% of clients in our sample that are local residents.

[23] This variable only exists for Swiss securities. We obtain recommendation data from IBES which has to be matched manually to our investor dataset.

[24] This result is consistent with Panel B of Table 2 which shows that portfolios of advised clients are significantly better diversified than portfolios of independent clients as indicated by the Herfindahl-Hirschman Index.

on advice. Hence, advisors seem to help clients to overcome the adjustment and anchoring bias as described by Kahneman and Tversky (1974). Moreover, research suggests that the 52-week high strategy is profitable (George and Hwang, 2004). Finally, advisors seem to help to overcome the clients' preference for stocks with lottery-like payoffs

The results on sales in Panel B may be influenced by the characteristics of stocks which are in the portfolio at the time of the sale. While advisors are more likely to recommend selling Swiss stocks and thereby reduce the home bias, they are more likely to advise their clients to sell stocks closer to their 52-week high and stocks with a smaller maximum daily return over the past month, and therefore a less lottery-like payoff. Most importantly, the last two lines in Panel B show that both advisors and independently acting clients suffer from a disposition effect as winning roundtrips are substantially shorter than losing roundtrips. However, the relative difference between winning and losing roundtrips is larger for advised trades than for independent trades (35% vs. 40% of losing roundtrips, respectively), i.e., advised trades seem to be subject to the disposition effect to a larger extent.

In Table 10, we replicate the univariate results from Table 9 in a regression setup. For binary dependent variables we estimate logit regressions (Columns 1 to 4) and for all other variables OLS regressions (Columns 5 to 8). As in Table 6, we first run the regressions without fixed effects (Panel A). In Panel B, we add client fixed effects. We report the results for purchases and sales separately. The results in Panel A are similar to the findings in Table 9. They suggest that advisors help to improve diversification, overcome the home and local bias as well as the adjustment and anchoring bias, mitigate investing according to a 52-week high strategy, and refrain from risky stocks with lottery-like payoffs.[25] In contrast, advisors are even more likely to recommend stocks covered by at least one sell-side analyst. Also the results on sales are qualitatively unchanged as compared to Table 9. Moreover, the results in the bottom part of Panel A show that both winning and losing roundtrips are significantly larger for advised trades and losing roundtrips even more so. Hence, financial advice does not help to mitigate the disposition effect.

As argued above in the context of our analysis of the impact of advice on performance, results are more meaningful once we add client fixed effects. When we do so in Panel B, the results become substantially weaker. For purchases, only two specifications are statistically significant. Financial advice helps to improve diversification (Column 1), as indicated by the negative impact of the advised dummy on the probability that a stock bought is already in the portfolio. However, the effect is only marginally significant at the 10%-level. There is also some evidence that adivors help to overcome the local bias (Column 3), but not the home bias (Column 2). For sales, none of the regressions produces significant findings. Thus, once we control for the characteristics of the client itself by adding client fixed effects, there is at best

[25]This is expected as the only difference between Table 9 and Panel A of Table 10 is that standard errors are heteroskedasticity-robust in the OLS regressions of Table 10 as well as the estimation method (logit) in Columns 1 to 4 of Table 10.

weak evidence that advisors help to overcome the under-diversification and possibly the local bias, but none of the other behavioral biases examined.[26]

4 Conclusion

We examine the impact of financial advice on individual trade performance of bank clients as well as on various behavioral biases individual investors are often subject to. Using a unique dataset from a Swiss wholesale bank, we are able to show that advice does not improve performance. In contrast, our results show that trades that follow the advice of a bank advisor on average perform significantly worse than the trades the same investor carries out independently. By focusing on a within-person comparison of the trade performance of the advised and independent trades of a client we are able to overcome most of the methodological problems that earlier studies on the impact of financial advice have to face. Furthermore, our results also indicate, that those advised trades that follow a contact between client and advisor that was initiated by the advisor perform specifically bad, suggesting that advisors pro-actively contact clients with bad trading ideas.

Even though advisors do not seem to help achieving a better trade performance, it could still be the case that they are beneficial for clients by helping them to reduce behavioral biases. As long as we do not control for the characteristics of the client there is indeed some evidence that advised trades seem to improve portfolio diversification, reduce the home bias as well as local bias, and reduce the tendency to invest in lottery-type assets. However, once we control for client fixed effects, most of these effects vanish. This shows that it is important to control for client characteristics, as results otherwise might be driven by selection and endogeneity effects.

Given that we find not much evidence for a positive role of financial advice on how clients do, the question arises why so many clients still rely on financial advice. One possible reason might be that many clients are not aware of the relatively bad performance of their advised trades as compared to the trades they carry out independently or that advisors are good at convincing investors that their advise is valuable (even though it is not). Another possibility, which is suggested in Bergstresser et al. (2009) is that brokers provide other intangible benefits that are unobservable for us like helping the investor to set up a portfolio that is in accordance with the risk tolerance of the investor.

While our setting and the structure of our dataset has many advantages, the main limitation of our study is that all information we use comes from one bank only. Thus, it is a valid question whether this bank, its customers, and particularly the skills and performance of its advisors are representative. Although we have no reason to expect the advisors of our bank to be different from the advisors of other banks in any fundamental way, we can of course not

[26] Results are even weaker once we add client-advisor fixed effects (see Table A4 in the Appendix).

proof that this really is the case. However, this is a problem we share with all other studies on individual investor behavior and the impact of financial advice that we are aware of.

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Figures

Figure 1: Number of advisory contacts

This figure shows the monthly number of contacts explicitly marked as advisory contacts between January 2002 and June 2005. There are 62,482 contacts in total, thereof 11,451 are explicitly marked as advisory contacts.

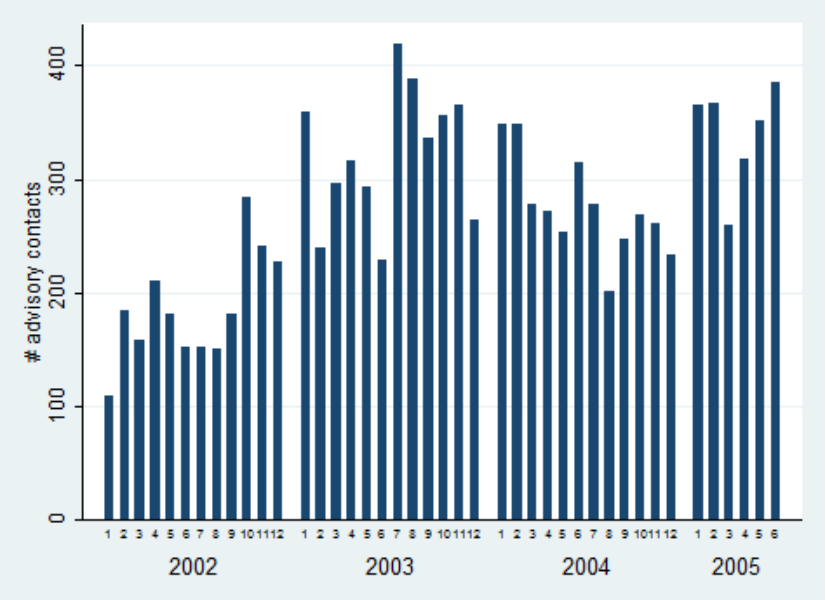
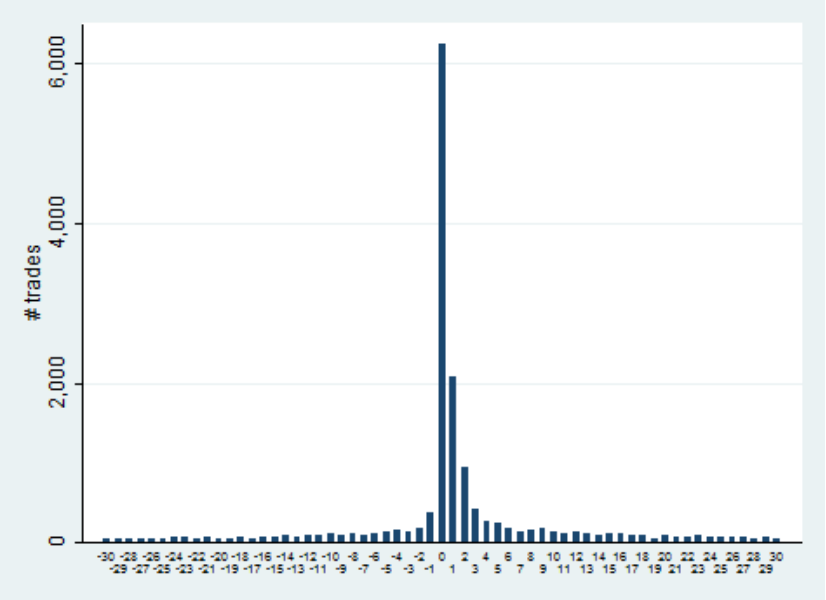


Figure 2: Number of trades around advisory contacts

These figures show the number of all trades (Panel A) and the number of stock trades (Panel B) around advisory contacts. There are 150,272 trades in total between January 2002 and June 2005, thereof 73,739 are stock trades. Within the time period from t = 0 to t = 4 after an advisory contact there are 9,917 trades when considering all securities, thereof 4,221 are stock trades.

Panel A: Number of all trades around advisory contacts



Panel B: Number of stock trades around advisory contacts

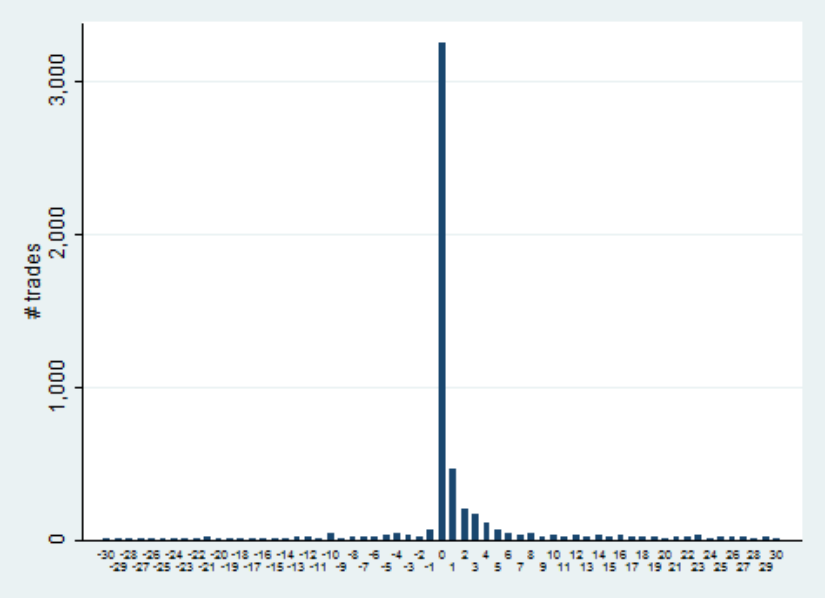
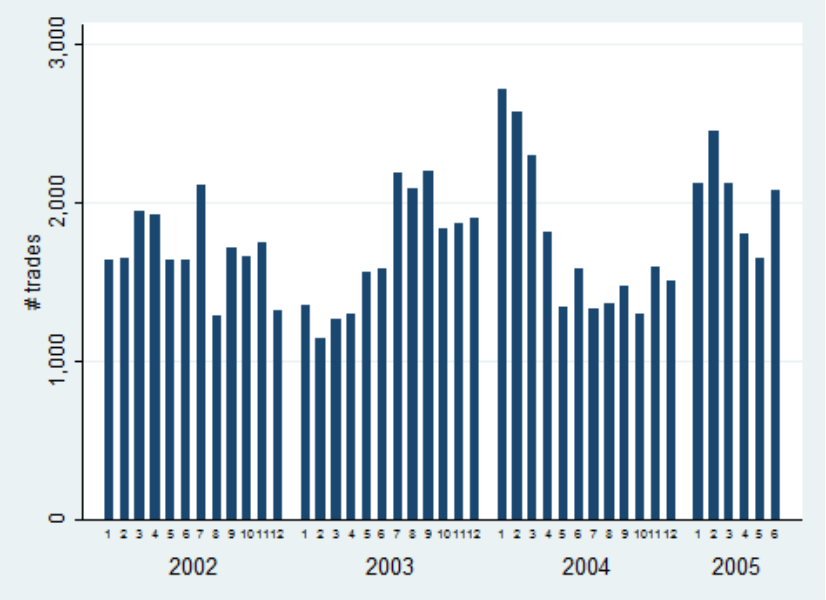


Figure 3: Number of stock trades

These figures show the monthly number of stock trades (Panel A) and the monthly number of advised stock trades (Panel B) between January 2002 and June 2005. There are 73,739 stock trades in total, thereof 4,221 take place within the time period from t = 0 to t = 4 after an advisory contact.

Panel A: Number of stock trades



Panel B: Number of advised stock trades

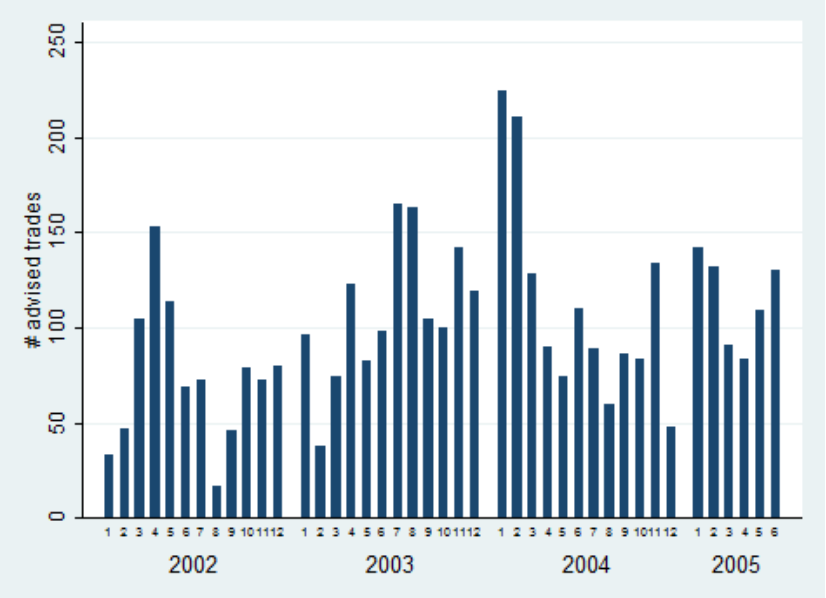
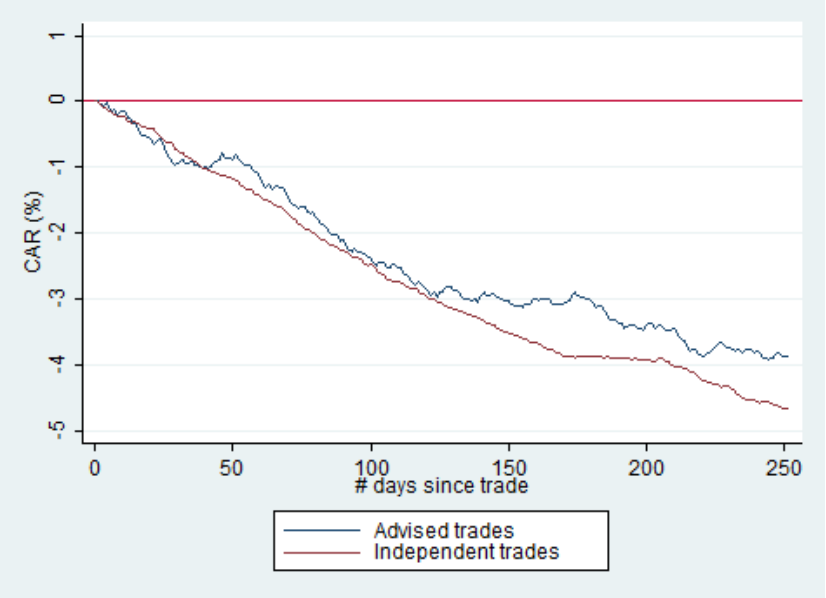


Figure 4: Cumulative abnormal returns of advised stock trades and independent stock trades

These figures show cumulative abnormal returns of advised stock trades and independently executed stock trades for the time period from t = 0 to t = 252. Results for buys (Panel A) and sells (Panel B) are reported separately. The trade takes place on t = 0. Abnormal returns are calculated as the difference between the daily returns and the returns predicted by an extended market model. The extended market model is estimated over the time period from t = -252 to t = -1 and uses the SPI (Swiss Performance Index) and the MSCI World Index as proxies for the market, a SMB factor, a HML factor, and a momentum factor.

Panel A: Buys

Panel B: Sells



Tables

Table 1: Descriptive statistics

This table presents descriptive statistics of client and account characteristics (Panel A), portfolio and trading characteristics (Panel B), and advisor characteristics (Panel C). For time-varying variables either values as of January 2002 (e.g., age, bank wealth) or averages over the sample period from January 2002 to June 2005 are reported (e.g., # trades p.a., turnover). Appendix A provides detailed descriptions of all variables used throughout the study.

Panel A: Client and account characteristics

	Mean	10%	Median	90%	St.Dev.	N
Male (d)	0.578	0.000	1.000	1.000	0.494	18,520
Age (years)	59.921	38.000	61.000	79.000	15.232	18,516
Age $<$ 45 (d)	0.183	0.000	0.000	1.000	0.387	18,516
45 $\leq$ age $<$ 60 (d)	0.269	0.000	0.000	1.000	0.443	18,516
60 $\leq$ age $<$ 75 (d)	0.367	0.000	0.000	1.000	0.482	18,516
Age $\geq$ 75 (d)	0.181	0.000	0.000	1.000	0.385	18,516
Marital status, single (d)	0.212	0.000	0.000	1.000	0.409	7,149
Marital status, married (d)	0.659	0.000	1.000	1.000	0.474	7,149
Marital status, divorced (d)	0.050	0.000	0.000	0.000	0.218	7,149
Education (1-7)	3.705	3.000	3.000	7.000	1.512	4,031
Employment, employed (d)	0.636	0.000	1.000	1.000	0.481	14,886
Employment, retired (d)	0.307	0.000	0.000	1.000	0.461	14,886
Swiss (d)	0.733	0.000	1.000	1.000	0.442	18,520
Local (d)	0.638	0.000	1.000	1.000	0.481	18,520
Product information (d)	0.761	0.000	1.000	1.000	0.426	18,520
E-banking account (d)	0.146	0.000	0.000	1.000	0.354	18,520
Length of relationship (years)	6.838	2.167	8.000	8.000	2.341	18,520

Panel B: Portfolio and trading characteristics

	Mean	10%	Median	90%	St.Dev.	N
Bank wealth ('000; CHF)	266.077	43.145	146.185	515.669	616.351	18,520
% cash	26.630	0.711	16.400	71.421	27.419	16,081
% stocks	18.322	0.000	4.467	61.147	26.352	16,081
% bonds	22.472	0.000	6.911	70.233	29.027	16,081
% mutual funds	31.338	0.000	22.594	84.968	32.004	16,081
% derivatives	0.835	0.000	0.000	0.000	4.200	16,081
% structured products	0.261	0.000	0.000	0.000	2.733	16,081
Herfindahl-Hirschman Index	0.255	0.019	0.166	0.642	0.248	16,081
# securities	5.772	1.000	4.000	13.000	5.850	16,081
# stocks	2.482	0.000	1.000	7.000	4.299	16,081
% Swiss stocks	86.283	47.924	100.000	100.000	26.076	8,124
% local stocks	41.399	0.000	20.039	100.000	43.038	7,106
% bank stock	30.883	0.000	3.635	100.000	41.604	9,602
Avg. # trades p.a.	2.549	0.286	0.857	5.429	6.793	18,520
Avg. turnover (%)	1.134	0.018	0.489	2.472	2.674	18,496

Panel C: Advisor characteristics

	Mean	10%	Median	90%	St.Dev.	N
Male (d)	0.614	0.000	1.000	1.000	0.487	427
Age (years)	35.874	21.000	35.000	52.000	11.254	356
Age $<$ 30 (d)	0.351	0.000	0.000	1.000	0.478	356
30 $\leq$ age $<$ 45 (d)	0.407	0.000	0.000	1.000	0.492	356
Age $\geq$ 45 (d)	0.242	0.000	0.000	1.000	0.429	356
Marital status, single (d)	0.416	0.000	0.000	1.000	0.494	356
Marital status, married (d)	0.525	0.000	1.000	1.000	0.500	356
Marital status, divorced (d)	0.056	0.000	0.000	0.000	0.231	356
# kids	0.864	0.000	0.000	3.000	1.167	427
Part of bank's management (d)	0.466	0.000	0.000	1.000	0.499	427
# clients	665.661	0.000	315.000	1114.000	1658.963	387

Table 2: Univariate comparisons of clients trading on advice and clients trading independently

This table presents mean values of client and account characteristics (Panel A) and portfolio and trading characteristics (Panel B) for subsamples of clients who trade on advice at least once during the sample period from January 2002 to June 2005 (*Advised*) and clients trading independently (*Independent*). Panel C reports mean values of advisor characteristics for subsamples of advisors with at least one client who trades on advice (*Advised*) and advisors with clients who trade only independently (*Independent*). For time-varying variables either values as of January 2002 (e.g., age, bank wealth) or averages over the sample period from January 2002 to June 2005 are reported (e.g., # trades p.a., turnover). Appendix A provides detailed descriptions of all variables used throughout the study. Means of the subgroups are tested for equality using a standard t-test (t). ***, **, * denotes statistical significance at the 1%, 5%, 10% level.

Panel A: Client and account characteristics

	Mean	Advised	Independent	Difference	t	N
Male (d)	0.578	0.579	0.578	0.001	0.128	18,520
Age (years)	59.921	62.794	59.550	3.244	9.241***	18,516
Age $<$ 45 (d)	0.183	0.119	0.191	-0.073	-8.144***	18,516
45 $\leq$ age $<$ 60 (d)	0.269	0.244	0.272	-0.027	-2.669***	18,516
60 $\leq$ age $<$ 75 (d)	0.367	0.430	0.359	0.070	6.310***	18,516
Age $\geq$ 75 (d)	0.181	0.207	0.178	0.030	3.342***	18,516
Marital status, single (d)	0.212	0.181	0.214	-0.033	-1.771*	7,149
Marital status, married (d)	0.659	0.677	0.657	0.020	0.904	7,149
Marital status, divorced (d)	0.050	0.031	0.052	-0.020	-2.005**	7,149
Education (1-7)	3.705	4.198	3.642	0.557	7.476***	4,031
Employment, employed (d)	0.636	0.583	0.643	-0.060	-4.937***	14,886
Employment, retired (d)	0.307	0.370	0.299	0.072	6.121***	14,886
Swiss (d)	0.733	0.466	0.768	-0.302	-30.256***	18,520
Local (d)	0.638	0.372	0.672	-0.300	-27.605***	18,520
Product information (d)	0.761	0.494	0.796	-0.301	-31.409***	18,520
E-banking account (d)	0.146	0.080	0.155	-0.075	-9.179***	18,520
Length of relationship (years)	6.838	6.400	6.894	-0.494	-9.165***	18,520

Panel B: Portfolio and trading characteristics

	Mean	Advised	Independent	Difference	t	N
Bank wealth ('000; CHF)	266.077	546.836	229.822	317.013	22.580***	18,520
% cash	26.630	12.904	28.454	-15.550	-23.540***	16,081
% stocks	18.322	23.641	17.614	6.026	9.358***	16,081
% bonds	22.472	31.172	21.316	9.856	13.941***	16,081
% mutual funds	31.338	29.036	31.644	-2.608	-3.327***	16,081
% derivatives	0.835	2.308	0.639	1.668	16.342***	16,081
% structured products	0.261	0.600	0.215	0.384	5.743***	16,081
Herfindahl-Hirschman Index	0.255	0.164	0.267	-0.103	-17.048***	16,081
# securities	5.772	9.640	5.258	4.382	31.498***	16,081
# stocks	2.482	4.291	2.242	2.050	19.691***	16,081
% Swiss stocks	86.283	85.241	86.391	-1.150	-1.158	8,124
% local stocks	41.399	22.048	43.301	-21.253	-12.002***	7,106
% bank stock	30.883	11.038	33.889	-22.851	-18.511***	9,602
Avg. # trades p.a.	2.549	5.889	2.118	3.771	24.425***	18,520
Avg. turnover (%)	1.134	1.685	1.063	0.622	10.108***	18,496

Panel C: Advisor characteristics

	Mean	Advised	Independent	Difference	t	N
Male (d)	0.614	0.836	0.572	0.264	4.140***	427
Age (years)	35.874	36.983	35.649	1.335	0.837	356
Age $<$ 30 (d)	0.351	0.233	0.375	-0.142	-2.103**	356
30 $\leq$ age $<$ 45 (d)	0.407	0.583	0.372	0.212	3.075***	356
Age $\geq$ 45 (d)	0.242	0.183	0.253	-0.070	-1.155	356
Marital status, single (d)	0.416	0.400	0.419	-0.019	-0.270	356
Marital status, married (d)	0.525	0.600	0.510	0.090	1.270	356
Marital status, divorced (d)	0.056	0.000	0.068	-0.068	-2.079**	356
# kids	0.864	1.209	0.800	0.409	2.652***	427
Part of bank's management (d)	0.466	0.701	0.422	0.279	4.288***	427
# clients	665.661	507.770	695.206	-187.435	-0.810	387

Table 3: Determinants of trading on advice

The table reports marginal effects from logit regressions (Columns 1 and 2) and the results from cross-sectional OLS regressions (Columns 3 to 6). The dependent variable is either a dummy variable which equals one for clients who trade on advice at least once (Columns 1 and 2) or the average number of advised trades p.a. as percentage of all trades p.a. (Columns 3 to 6) during the sample period from January 2002 to June 2005. Appendix A provides detailed descriptions of all variables used throughout the study. For time-varying variables values as of January 2002 are used (e.g., age, bank wealth). In OLS regressions, the t-values (in parentheses) are based on heteroskedasticity-robust White (1980) standard errors. ***, **, * denotes statistical significance at the 1%, 5%, 10% level.

	Trades on advice (d)		% advised trades		% advised trades	
	(1)	(2)	(3)	(4)	(5)	(6)
Client and account characteristics						
Male (d)	-0.004	-0.008	-0.009***	-0.018**		
	(-1.27)	(-0.90)	(-3.32)	(-2.31)		
45 ≤ age < 60 (d)	0.015**	0.015	0.003	0.007	0.002	0.013
	(2.43)	(1.39)	(0.86)	(1.12)	(0.33)	(1.64)
60 ≤ age < 75 (d)	0.032***	0.033***	0.013***	0.019***	0.010*	0.027***
	(5.01)	(2.60)	(3.35)	(2.71)	(1.89)	(2.64)
Age ≥ 75 (d)	0.036***	0.021	0.011**	0.006	0.008	0.015
	(4.34)	(1.10)	(2.42)	(0.54)	(1.31)	(1.01)
Swiss (d)	-0.048***	-0.035**	-0.044***	-0.041***	-0.044***	-0.041***
	(-5.94)	(-2.17)	(-8.91)	(-3.71)	(-8.91)	(-3.72)
Local (d)	-0.017***	-0.009	0.003	0.010	0.003	0.010
	(-2.59)	(-0.73)	(0.83)	(1.23)	(0.83)	(1.24)
Product information (d)	-0.031***	-0.043***	-0.026***	-0.043***	-0.026***	-0.043***
	(-5.76)	(-3.05)	(-6.33)	(-3.93)	(-6.32)	(-3.90)
E-banking account (d)	-0.004	-0.004	-0.008***	-0.006	-0.008***	-0.006
	(-0.60)	(-0.39)	(-2.78)	(-1.08)	(-2.77)	(-1.13)
Length of relationship (years)	-0.001*	0.001	-0.001	0.003**	-0.001	0.003**
	(-1.75)	(0.56)	(-0.78)	(2.04)	(-0.77)	(2.05)
Education (1-7)		0.006***		0.007***		0.007***
		(3.04)		(3.19)		(3.23)
Portfolio characteristics						
Log(total bank wealth)	0.005***	0.026***	0.002**	0.006***	0.002**	0.006***
	(3.87)	(4.40)	(2.39)	(4.22)	(2.37)	(4.28)
Advisor characteristics						
Male (d)	-0.014	-0.050**	-0.027***	-0.035***		
	(-1.58)	(-2.35)	(-7.08)	(-3.79)		
30 ≤ age < 45 (d)	-0.050***	-0.071***	-0.013***	-0.009	-0.013***	-0.010
	(-6.84)	(-4.73)	(-3.15)	(-1.06)	(-2.94)	(-1.20)
Age ≥ 45 (d)	-0.047***	-0.051***	-0.029***	-0.019**	-0.028***	-0.025**
	(-9.70)	(-5.29)	(-7.30)	(-2.36)	(-5.73)	(-2.42)
# kids	0.018***	0.013***	0.013***	0.009***	0.013***	0.008***
	(14.55)	(4.56)	(12.54)	(4.06)	(12.51)	(3.90)
Part of bank's management (d)	0.083***	0.083***	0.053***	0.054***	0.053***	0.055***
	(23.44)	(10.60)	(13.59)	(7.52)	(13.48)	(7.55)
# clients	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(-32.76)	(-9.64)	(-27.89)	(-11.93)	(-27.91)	(-11.94)
Client-advisor matching characteristics						
Female, Female					0.034***	0.041**
					(6.03)	(1.99)
Male, Female					0.030***	0.038***
					(6.07)	(3.85)
Female, Male					0.010***	0.020**
					(3.30)	(2.40)
Older client					0.003	-0.005
					(0.75)	(-0.58)
Older advisor					-0.000	0.016
					(-0.00)	(1.26)
Constant			0.104***	0.018	0.066***	-0.038
			(9.41)	(0.75)	(6.12)	(-1.64)
Adj. R^2			0.083	0.096	0.083	0.096
Pseudo R^2	0.199	0.244				
N	15,673	3,452	15,673	3,452	15,673	3,452

Table 4: Correlations between client and advisor characteristics

This table presents correlation coefficients between client and advisor characteristics for clients who open their account during the investigation period from January 2002 to June 2005. Appendix A provides detailed descriptions of all variables used throughout the study. ***, **, * denotes statistical significance at the 1%, 5%, 10% level.

	Advisor characteristics					
Client characteristics	Male (d)	Age (in years)	# kids	Bank's management (d)	# clients	N
Male (d)	0.002	-0.030	0.009	-0.009	-0.020	1,592
Age (in years)	-0.031	0.079***	-0.011	0.024	-0.005	1,592
Education (1-7)	0.043	-0.259**	-0.059	-0.057	-0.215**	103
Employeed (d)	0.014**	-0.016	0.057**	0.047*	0.014	1,463
Retired (d)	-0.059**	0.006	-0.055**	-0.030	-0.032	1,463
Swiss (d)	-0.061**	0.073**	-0.003	-0.025	0.119***	1,592
Local (d)	-0.064**	0.059**	-0.013	-0.048*	0.095***	1,592
Bank wealth (CHF)	0.163***	0.031	0.135***	0.157***	-0.048*	1,592
% cash	-0.224***	0.031	-0.068	-0.122***	0.152***	522
% stocks	-0.076*	0.068	0.027	0.045	-0.018	522
# securities	0.100**	0.077*	0.131***	0.141***	-0.063	522

Table 5: Univariate comparisons of advised stock trades and independent stock trades

This table presents mean values of trade characteristics and stock characteristics for subsamples of advised stock trades (*Advised*) and independent stock trades (*Independent*). Results for buys (Panels A) and sells (Panels B) are reported separately. Appendix A provides detailed descriptions of all variables used throughout the study. Means of the subgroups are tested for equality using a standard t-test (t). ***, **, * denotes statistical significance at the 1%, 5%, 10% level.

Panel A: Buys

	Mean	Advised	Independent	Difference	t	N
Trade characteristics						
Trade value ('000; CHF)	20.730	26.274	20.444	5.830	4.420***	37,771
Trade value (%)	6.825	5.758	6.880	-1.122	-4.003***	37,376
Stock characteristics						
Beta (SPI)	0.938	0.913	0.939	-0.026	-1.544	31,613
Market cap (CHFbn)	28.317	43.665	27.540	16.125	11.381***	32,224
Book-to-market	0.696	0.661	0.698	-0.037	-2.883***	30,241
Past 1-week return decile	5.306	5.703	5.286	0.417	5.688***	32,206
Past 6-month return decile	5.054	5.154	5.049	0.105	1.519	32,091
Past 1-year return decile	4.860	4.995	4.853	0.141	1.979**	31,605
Bank stock (d)	0.120	0.069	0.122	-0.053	-6.910***	37,771

Panel B: Sells

	Mean	Advised	Independent	Difference	t	N
Trade characteristics						
Trade value ('000; CHF)	26.883	31.221	26.577	4.644	2.593***	35,968
Trade value (%)	7.650	6.173	7.754	-1.581	-6.629***	35,942
Stock characteristics						
Beta (SPI)	0.937	0.916	0.938	-0.023	-1.619	28,576
Market cap (CHFbn)	37.113	57.571	35.800	21.771	14.308***	29,272
Book-to-market	0.624	0.572	0.627	-0.055	-4.528***	27,529
Past 1-week return decile	6.128	5.806	6.149	-0.343	-5.220***	29,041
Past 6-month return decile	5.615	5.521	5.621	-0.101	-1.553	28,825
Past 1-year return decile	5.182	5.122	5.186	-0.064	-0.964	28,569
Bank stock (d)	0.046	0.013	0.049	-0.036	-7.972***	35,968

Table 6: Univariate comparisons of the trading performance of advised stock trades and independent stock trades

This table presents mean values of cumulative returns and cumulative abnormal returns (CAR) for subsamples of advised stock trades (*Advised*) and independent stock trades (*Independent*). Results for buys (Panel A) and sells (Panel B) are reported separately. 1-year CAR for sells are multiplied by -1. Abnormal returns are calculated as the difference between the daily returns and the returns predicted by a(n) (extended) market model. The (extended) market model is estimated over the time period from t = -252 to t = -1 and uses the SPI (Swiss Performance Index) and the MSCI World Index as proxies for the market, a SMB factor, a HML factor, and a momentum factor. Means of the subgroups are tested for equality using a standard t-test (t). ***, **, * denotes statistical significance at the 1%, 5%, 10% level.

Panel A: Buys

	Mean	Advised	Independent	Difference	t	N
Returns						
1-week return (%)	0.396	0.087	0.411	-0.324	-2.082**	32,252
6-month return (%)	6.071	6.636	6.042	0.594	0.787	32,040
1-year return (%)	19.868	17.249	20.000	-2.752	-2.355**	31,804
Market-adjusted returns						
1-week CAR (%)	0.254	0.026	0.265	-0.240	-1.754*	32,252
6-month CAR (%)	3.006	1.745	3.070	-1.325	-2.125**	32,040
1-year CAR (%)	8.018	4.680	8.187	-3.507	-3.804***	31,804
Market model with SPI						
1-week CAR (%)	0.174	-0.091	0.187	-0.278	-2.097**	31,628
6-month CAR (%)	1.848	-0.466	1.966	-2.431	-3.540***	31,883
1-year CAR (%)	3.215	-0.687	3.413	-4.100	-4.582***	31,799
Extended market model with two market indices, SMB, HML, and momentum factors						
1-week CAR (%)	0.150	-0.102	0.163	-0.265	-2.121**	31,628
6-month CAR (%)	1.364	-0.457	1.457	-1.913	-3.154***	31,883
1-year CAR (%)	3.059	-0.781	3.254	-4.034	-4.758***	31,799

Panel B: Sells

	Mean	Advised	Independent	Difference	t	N
Returns						
1-week return (%)	-0.223	-0.335	-0.216	-0.119	-0.870	29,097
6-month return (%)	-6.307	-5.643	-6.349	0.706	1.049	28,772
1-year return (%)	-18.339	-15.991	-18.488	2.497	2.396**	28,347
Market-adjusted returns						
1-week CAR (%)	-0.090	-0.136	-0.087	-0.050	-0.416	29,097
6-month CAR (%)	-1.872	-0.963	-1.930	0.967	1.786*	28,772
1-year CAR (%)	-4.716	-2.620	-4.850	2.230	2.835***	28,347
Market model with SPI						
1-week CAR (%)	0.124	0.024	0.130	-0.106	-0.903	28,564
6-month CAR (%)	3.420	3.220	3.432	-0.212	-0.386	28,468
1-year CAR (%)	5.423	4.752	5.466	-0.714	-1.043	28,319
Extended market model with two market indices, SMB, HML, and momentum factors						
1-week CAR (%)	0.138	0.086	0.142	-0.056	-0.494	28,564
6-month CAR (%)	3.061	2.895	3.071	-0.176	-0.354	28,468
1-year CAR (%)	4.638	3.883	4.686	-0.803	-1.249	28,319

Table 7: Determinants of trading performance

The table reports the results from OLS regressions without fixed effects (Panel A) and with client fixed effects (Panel B). The dependent variable is the 1-year cumulative abnormal return (CAR) of stock trades. Results for buys (Columns 1 to 5) and sells (Columns 6 to 10) are reported separately. 1-year CAR for sells are multiplied by -1. Abnormal returns are calculated as the difference between the daily returns and the returns predicted by an extended market model. The extended market model is estimated over the time period from t = -252 to t = -1 and uses the SPI (Swiss Performance Index) and the MSCI World Index as proxies for the market, a SMB factor, a HML factor, and a momentum factor. The t-values (in parentheses) are based on heteroskedasticity-robust White (1980) standard errors. ***, **, * denotes statistical significance at the 1%, 5%, 10% level.

Panel A: Without fixed effects

	1-year CAR (%)									
	Buys					Sells				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Advised (d)	-4.034***	-2.728***				-0.803	-1.370*			
	(-7.02)	(-3.77)				(-1.50)	(-1.95)			
Advisor initiated (d)		-3.547***					1.390			
		(-3.23)					(1.36)			
Advised (d; day 0)			-3.078***					-0.227		
			(-4.72)					(-0.39)		
Advised (d; day 1)			-7.175***					-4.009**		
			(-4.33)					(-2.11)		
Advised (d; day 2)			-7.021***					1.929		
			(-3.38)					(0.88)		
Advised (d; day 3)			-7.259***					-0.860		
			(-3.40)					(-0.39)		
Advised (d; day 4)			-0.633					-5.051*		
			(-0.13)					(-1.81)		
Meeting (d)				-2.925***	-2.664***				-0.697	-0.733
				(-5.72)	(-5.05)				(-1.21)	(-1.26)
Phone call (d)				-2.725***	-2.038***				-0.211	-0.268
				(-4.76)	(-3.16)				(-0.45)	(-0.49)
A. initiated meeting (d)					-5.535***					1.206
					(-3.50)					(0.38)
A. initiated phone call (d)					-4.106***					0.253
					(-3.58)					(0.27)
Constant	3.254***	3.254***	3.254***	3.486***	3.486***	4.686***	4.686***	4.686***	4.706***	4.706***
	(17.23)	(17.23)	(17.22)	(17.16)	(17.16)	(29.52)	(29.52)	(29.52)	(27.80)	(27.80)
Adj. R^2	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.000	-0.000	-0.000
N	31,799	31,799	31,799	31,759	31,759	28,319	28,319	28,319	28,268	28,268

Panel B: With client fixed effects

	1-year CAR (%)									
	Buys					Sells				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Advised (d)	-2.929***	-0.768				-0.900	-1.628			
	(-2.88)	(-0.64)				(-1.08)	(-1.52)			
Advisor initiated (d)		-5.531***					1.579			
		(-2.97)					(1.05)			
Advised (d; day 0)			-2.211*					0.270		
			(-1.90)					(0.29)		
Advised (d; day 1)			-5.826**					-5.735**		
			(-2.50)					(-2.31)		
Advised (d; day 2)			-4.778*					0.246		
			(-1.70)					(0.09)		
Advised (d; day 3)			-4.773*					-2.034		
			(-1.67)					(-0.72)		
Advised (d; day 4)			3.830					-5.976*		
			(0.62)					(-1.79)		
Meeting (d)				-2.459**	-2.042*				-0.401	-0.496
				(-2.19)	(-1.74)				(-0.38)	(-0.45)
Phone call (d)				-2.855***	-1.984*				-0.459	-0.602
				(-2.98)	(-1.87)				(-0.56)	(-0.61)
A. initiated meeting (d)					-5.268					1.981
					(-1.62)					(0.63)
A. initiated phone call (d)					-4.716**					0.555
					(-2.41)					(0.36)
Constant	3.200***	3.194***	3.197***	3.470***	3.453***	4.692***	4.697***	4.683***	4.712***	4.716***
	(17.33)	(17.31)	(17.30)	(16.05)	(15.97)	(29.47)	(29.48)	(29.42)	(24.28)	(24.19)
Adj. R^2	0.058	0.058	0.058	0.058	0.058	0.019	0.019	0.020	0.019	0.019
N	31,799	31,799	31,799	31,759	31,759	28,319	28,319	28,319	28,268	28,268

Table 8: Performance of a portfolio of advised trades and a portfolio of independent trades

The table reports the results from OLS regressions of the daily return difference between a value-weighted portfolio formed from advised trades and a value-weighted portfolio formed from independent trades. To be able to form portfolios based on a suffciently large number of trades, the first three months of the sample period are not taken into account. Hence, we investigate the period from April 2002 to June 2005. The t-values (in parentheses) are based on heteroskedasticity-robust White (1980) standard errors. ***, **, * denotes statistical significance at the 1%, 5%, 10% level.

	Daily return difference (%)		
	(1)	(2)	(3)
Alpha (%)	-0.032***	-0.032***	-0.034***
	(-2.73)	(-2.71)	(-2.89)
SPI	-0.045***	-0.041*	-0.037*
	(-3.21)	(-1.87)	(-1.67)
MSCI	-0.090***	-0.082***	-0.079***
	(-4.58)	(-4.19)	(-4.06)
SMB		-0.011	-0.012
		(-0.52)	(-0.61)
HML		-0.047**	-0.035
		(-2.13)	(-1.55)
Momentum			0.047*
			(1.93)
Adj. R^2	0.118	0.127	0.132
N	849	849	849

Table 9: Univariate comparisons of behavioral biases between advised stock trades and independent stock trades

This table presents mean values of stock selection criteria for subsamples of advised stock trades (*Advised*) and independent stock trades (*Independent*). Results for buys (Panels A) and sells (Panels B) are reported separately. Appendix A provides detailed descriptions of all variables used throughout the study. Means of the subgroups are tested for equality using a standard t-test (t). ***, **, * denotes statistical significance at the 1%, 5%, 10% level.

Panel A: Buys

	Mean	Advised	Independent	Difference	t	N
Already in portfolio (d)	0.356	0.294	0.360	-0.066	-5.764***	37,771
Swiss stock (d)	0.744	0.728	0.745	-0.017	-1.114	29,134
Local stock (d)	0.197	0.173	0.197	-0.024	-1.538	23,937
Covered by analyst (d)	0.930	0.959	0.929	0.030	3.608***	24,848
52-week high (%)	71.340	78.248	70.992	7.256	9.620***	32,238
MAX (%)	4.600	4.071	4.627	-0.555	-7.529***	32,239

Panel B: Sells

	Mean	Advised	Independent	Difference	t	N
Swiss stock (d)	0.715	0.748	0.713	0.035	2.631***	27,417
Local stock (d)	0.112	0.048	0.115	-0.067	-6.261***	22,297
Covered by analyst (d)	0.945	0.967	0.944	0.024	3.779***	23,003
52-week high (%)	76.743	79.280	76.581	2.699	3.922***	29,090
MAX (%)	4.555	4.045	4.587	-0.542	-8.031***	29,099
Winning roundtrip (days)	163.333	214.024	161.378	52.646	3.877***	8,968
Losing roundtrip (days)	414.676	614.443	404.559	209.884	6.208***	3,983

Table 10: Determinants of behavioral biases

The table reports the results from logit regressions (Columns 1 to 4) and OLS regressions (Columns 5 to 8) without fixed effects (Panel A) and with client fixed effects (Panel B). The dependent variable is either a dummy variable whether the client already holds the newly purchased stock in his portfolio (Column 1), a dummy variable which equals one for Swiss stocks (Column 2), a dummy variable which equals one for local stocks (Column 3), a dummy variable for stocks covered by at least one sell-side analyst (Column 4), the current stock price relative to the 52-week high (Column 5), the maximum daily stock return over the past month (Column 6), the length of winning roundtrips (Column 7), or the length losing roundtrips (Column 8). Results for buys and sells are reported separately. In OLS regressions, the t-values (in parentheses) are based on heteroskedasticity-robust White (1980) standard errors. ***, **, * denotes statistical significance at the 1%, 5%, 10% level.

Panel A: Without fixed effects

	Buys					
	Already in portfolio (d)	Swiss stock (d)	Local stock (d)	Covered by analyst (d)	52-week high (%)	MAX (%)
	(1)	(2)	(3)	(4)	(5)	(6)
Advised	-0.299***	-0.616***	-0.629***	0.588***	7.256***	-0.555***
	(-5.74)	(-12.90)	(-7.53)	(3.56)	(11.00)	(-8.69)
Constant	-0.577***	0.686***	-1.719***	2.575***	70.992***	4.627***
	(-52.45)	(61.37)	(-116.95)	(102.06)	(426.85)	(284.45)
Adj. R^2					0.003	0.002
Pseudo R^2	0.001	0.003	0.002	0.001		
N	37,771	37,771	37,771	24,848	32,238	32,239

	Sells						
	Swiss stock (d)	Local stock (d)	Covered by analyst (d)	52-week high (%)	MAX (%)	Winning roundtrips (days)	Losing roundtrips (days)
	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Advised	-0.247***	-1.221***	0.576***	2.699***	-0.542***	52.646***	209.884***
	(-5.70)	(-9.53)	(3.73)	(4.26)	(-8.67)	(3.85)	(6.00)
Constant	0.590***	-2.360***	2.817***	76.581***	4.587***	161.378***	404.559***
	(51.81)	(-121.47)	(95.57)	(452.65)	(276.87)	(61.69)	(54.61)
Adj. R^2				0.000	0.002	0.002	0.009
Pseudo R^2	0.001	0.007	0.002				
N	35,968	35,968	23,003	29,090	29,099	8,968	3,983

Panel B: With client fixed effects

	Buys					
	Already in portfolio (d)	Swiss stock (d)	Local stock (d)	Covered by analyst (d)	52-week high (%)	MAX (%)
	(1)	(2)	(3)	(4)	(5)	(6)
Advised	-0.206**	-0.069	-0.454***	-0.014	0.484	0.031
	(-2.39)	(-0.77)	(-2.59)	(-0.05)	(0.49)	(0.31)
Constant					71.317***	4.598***
					(490.97)	(319.33)
Adj. R^2					0.273	0.259
Pseudo R^2	0.000	0.000	0.001	0.000		
N	29,017	24,508	15,853	8,600	32,238	32,239

	Sells						
	Swiss stock (d)	Local stock (d)	Covered by analyst (d)	52-week high (%)	MAX (%)	Winning roundtrips (days)	Losing roundtrips (days)
	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Advised	-0.133	-0.137	0.382	0.092	-0.019	16.152	-7.133
	(-1.61)	(-0.74)	(1.36)	(0.09)	(-0.20)	(1.20)	(-0.17)
Constant				76.737***	4.556***	162.733***	415.020***
				(482.31)	(294.82)	(92.15)	(88.55)
Adj. R^2				0.192	0.201	0.574	0.676
Pseudo R^2	0.000	0.000	0.001				
N	24,754	15,441	7,632	29,090	29,099	8,968	3,983

Appendix

Appendix A: Variable descriptions

Variable	Description	Availability
Dependent variables		
Trades on advice	Client trades at least once on advice, i.e., within the time period from t = 0 to t = 4 after an advisory contact (dummy variable)	Time-invariant
Percentage of advised trades p.a.	Average number of advised trades p.a. / Total number of trades p.a.	Time-invariant
Cumulative return	Cumulative 1-week/ 6-month/ 1-year gross return of trade	Precise date
CAR	Cumulative abnormal 1-week/ 6-month/ 1-year return of trade. Abnormal returns are calculated as the difference between the daily returns and the returns predicted by a(n) (extended) market model. The (extended) market model is estimated over the time period from t = -252 to t = -1 and uses the return on the SPI (Swiss Performance Index) and the return on the MSCI World Index as proxies for the market, a SMB factor (return difference between Vontobel Swiss Small Cap Index and the SMI (Swiss Market Index)), a HML factor (return difference between the MSCI Switzerland Value Index and the MSCI Switzerland Growth Index), and a momentum factor (return difference between the portfolio of 30% top performing stocks in the SPI minus the 30% of bottom performing stocks based on the past six months' performance).	Precise date
Independent variables		
Client and account characteristics		
Gender	Client's gender (male/ female; dummy variable)	Time-invariant
Age	Client's age (in years)	Time-invariant
Marital status	Client's marital status (single/ married/ divorced; dummy variables)	Time-invariant
Education	Client's education (1: unskilled; 2: semiskilled; 3: apprenticeship/ vocational education; 4: high school; 5: high vocational education; 6: technical college; 7: university)	Time-invariant
Employment	Client's employment (employed/ retired/ other (self-employed, housewives, students); dummy variables)	Time-invariant
Swiss	Client lives in Switzerland (dummy variable)	Time-invariant
Local	Client lives in the canton where the bank's headquarter is located or in a canton which is not further away than 25 kilometers from the bank's headquarter (dummy variable)	Time-invariant
Product information	Product information is distributed via mass mailings. It intends to inform about new and existing bank products and is only partially personalized to clients' characteristics (dummy variable)	Time-invariant

E-banking account	Client has e-banking access (dummy variable)	Time-invariant
Length of bank relationship	Number of years since account has been opened (in years)	Yearly
Portfolio and trading characteristics		
Bank wealth	Total bank wealth (in CHF)	Monthly
Percentage of securities in portfolio (e.g., percentage of stocks)	Value of securities / Total bank wealth	Monthly
Number of securities	Number of securities in portfolio	Monthly
Herfindahl-Hirschman-Index (HHI)	Sum of squared portfolio weights. Funds are assumed to consist of 100 equally weighted positions that do not overlap with other positions in the portfolio (Dorn, Huberman, and Sengmueller, 2008)	Monthly
Percentage of Swiss stocks	Value of Swiss stocks / Value of all stocks (calculated only for Swiss residents)	Monthly
Percentage of local stocks	Value of local stocks / Value of all stocks (calculated only for local residents). A local company is headquartered in the canton where the bank's headquarter is located or in a canton which is not further away than 25 kilometers from the bank's headquarter.	Monthly
Percentage of bank stock	Value of the stock of the bank which provided the dataset / Value of all stocks	Monthly
Number of trades p.a.	Number of trades p.a.	Monthly
Turnover	Average of buy and sell turnover during a month. The buy (sell) turnover in month t is computed as the value of the shares purchased in month t-1 (sold in month t) at the beginning of month t divided by the investors' total bank wealth at the beginning of month t (Barber and Odean, 2000)	Monthly
Advisor characteristics		
Gender	Advisor's gender (male/ female; dummy variable)	Time-invariant
Age	Advisor's age (in years)	Time-invariant
Marital status	Advisor's marital status (single/ married/ divorced; dummy variables)	Time-invariant
Number of kids	Number of children of advisor	Time-invariant
Part of bank's management	Advisor is part of the bank's management (dummy variable)	Time-invariant
Number of clients	Number of clients managed by advisor	Time-invariant
Trade characteristics		
Trade value	Trade value (in CHF) or Trade value / Total bank wealth	Precise date
Stock characteristics		
Market beta	Beta from a simple market model. The market model is estimated over the time period from t = -252 to t = -1 and uses the return on the SPI (Swiss Performance Index) as proxy for the market.	Precise date

Market capitalization	Market capitalization (in CHF)	Precise date
Book-to-market ratio	Book value of assets / Market capitalization	Precise date
Return decile	Decile sorting of all 2,453 stocks in the dataset based on the past 1-week/ 6-month/ 1-year return. Decile one contains the worst performing stocks and decile ten the top performing stocks.	Precise date
Bank stock	Stock of the bank which provided the dataset (dummy variable)	Time-invariant
Behavioral biases		
Already in portfolio	Client already holds the newly purchased stock in his portfolio (dummy variable)	Precise date
Swiss security	A Swiss company is headquartered in Switzerland (Swiss/ foreign; dummy variable; calculated only for Swiss residents)	Time-invariant
Local security	A local company is headquartered in the canton where the bank's headquarter is located or in a canton which is not further away than 25 kilometers from the bank's headquarter (dummy variable; calculated only for local residents)	Time-invariant
Analyst coverage	Stock is covered by at least one sell-side analyst (dummy variable; only available for Swiss stocks)	Monthly
52-week high	Current stock price / 52-week high price	Precise date
MAX	Maximum daily return over the past 1-month (Bali et al., 2011)	Precise date
Roundtrip	Roundtrips are trades where there was a buy and a subsequent sale so that at the end of the roundtrip the client does not hold the security anymore (in days; Shapira and Venezia, 2001).	Precise date

Table A1: Determinants of trading stocks on advice

The table reports marginal effects from logit regressions (Columns 1 and 2) and the results from cross-sectional OLS regressions (Columns 3 to 6). The dependent variable is either a dummy variable which equals one for clients who trade stocks on advice at least once (Columns 1 and 2) or the average number of advised stock trades p.a. as percentage of all stock trades p.a. (Columns 3 to 6) during the sample period from January 2002 to June 2005. Appendix A provides detailed descriptions of all variables used throughout the study. For time-varying variables values as of January 2002 are used (e.g., age, bank wealth). In OLS regressions, the t-values (in parentheses) are based on heteroskedasticity-robust White (1980) standard errors. ***, **, * denotes statistical significance at the 1%, 5%, 10% level.

	Trades on advice (d)		% advised trades		% advised trades	
	(1)	(2)	(3)	(4)	(5)	(6)
Client and account characteristics						
Male (d)	-0.011**	-0.004	-0.019***	-0.017		
	(-2.17)	(-0.30)	(-4.41)	(-1.63)		
$45 \leq$ age < 60 (d)	0.020**	0.027*	0.006	0.013*	0.011*	0.019**
	(2.14)	(1.71)	(1.26)	(1.81)	(1.86)	(2.10)
$60 \leq$ age < 75 (d)	0.042***	0.041**	0.025***	0.025***	0.034***	0.033***
	(4.37)	(2.20)	(5.22)	(3.01)	(4.48)	(2.66)
Age ≥ 75 (d)	0.054***	0.058	0.030***	0.034*	0.039***	0.042*
	(3.88)	(1.58)	(4.36)	(1.81)	(4.18)	(1.92)
Swiss (d)	-0.050***	-0.004	-0.067***	-0.022	-0.068***	-0.021
	(-3.95)	(-0.22)	(-7.10)	(-1.39)	(-7.15)	(-1.36)
Local (d)	-0.027***	-0.024	-0.006	0.001	-0.006	0.001
	(-2.94)	(-1.34)	(-1.07)	(0.08)	(-1.00)	(0.11)
Product information (d)	-0.026***	-0.057***	-0.019**	-0.062***	-0.019***	-0.062***
	(-3.12)	(-2.64)	(-2.56)	(-4.40)	(-2.60)	(-4.43)
E-banking account (d)	-0.007	-0.008	-0.007*	-0.007	-0.007*	-0.008
	(-0.94)	(-0.64)	(-1.86)	(-1.21)	(-1.95)	(-1.30)
Length of relationship (years)	-0.001	0.001	0.001	0.003**	0.001	0.003**
	(-0.72)	(0.40)	(0.90)	(2.16)	(0.86)	(2.13)
Education (1-7)		0.008***		0.005**		0.005**
		(2.87)		(1.99)		(2.05)
Portfolio characteristics						
Log(total bank wealth)	0.002	0.015**	-0.001	0.004***	-0.001	0.004***
	(1.16)	(2.17)	(-0.49)	(3.04)	(-0.47)	(3.04)
Advisor characteristics						
Male (d)	-0.019	-0.040	-0.019***	-0.029**		
	(-1.42)	(-1.45)	(-3.29)	(-2.28)		
$30 \leq$ age < 45 (d)	-0.032***	-0.062***	-0.013**	-0.011	-0.014**	-0.013
	(-3.23)	(-3.12)	(-2.02)	(-0.97)	(-2.17)	(-1.07)
Age ≥ 45 (d)	-0.035***	-0.048***	-0.020***	-0.013	-0.025***	-0.020
	(-4.42)	(-3.47)	(-3.37)	(-1.21)	(-3.39)	(-1.50)
# kids	0.013***	0.010***	0.009***	0.005	0.009***	0.004
	(7.66)	(2.68)	(6.11)	(1.61)	(5.88)	(1.51)
Part of bank's management (d)	0.070***	0.065***	0.042***	0.035***	0.043***	0.036***
	(14.31)	(6.63)	(7.36)	(3.55)	(7.43)	(3.64)
# clients	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(-20.91)	(-6.84)	(-16.25)	(-7.06)	(-16.24)	(-6.95)
Client-advisor matching characteristics						
Female, Female					0.025***	0.021
					(3.00)	(0.88)
Male, Female					0.032***	0.035**
					(4.36)	(2.38)
Female, Male					0.023***	0.020*
					(4.82)	(1.83)
Older client					-0.009	-0.003
					(-1.44)	(-0.32)
Older advisor					0.002	0.020
					(0.26)	(1.23)
Constant			0.142***	0.049*	0.105***	-0.001
			(9.20)	(1.91)	(6.62)	(-0.03)
Adj. R^2			0.074	0.074	0.074	0.074
Pseudo R^2	0.153	0.174				
N	8,174	2,046	8,174	2,046	8,174	2,046

Table A2: Determinants of trading performance - Robustness tests

The table reports the results from OLS regressions without fixed effects (Panel A) and with client fixed effects (Panel B). The dependent variable is either the 1-year/ 6-month/ 1-week cumulative abnormal return (CAR) of stock purchases based on the extended market model (Columns 1, 2, 3, and 11), the 1-year CAR of stock purchases based on the market model with only the SPI (Swiss Performance Index) (Column 4), the 1-year market-adjusted return of stock purchases (Column 5), the 1-year CAR of stock purchases based on the extended market model for the bearish market environment (until March 12, 2003) (Column 6), for the bullish market environment (Column 7), for Swiss clients (Column 8), for Swiss stocks (Column 9), or for non-bank own stocks (Column 10). Abnormal returns are calculated as the difference between the daily returns and the returns predicted by a(n) (extended) market model. The (extended) market model is estimated over the time period from t = -252 to t = -1 and uses the SPI (Swiss Performance Index) and the MSCI World Index as proxies for the market, a SMB factor, a HML factor, and a momentum factor. Market-adjusted returns are calculated as the difference between the daily returns and the return of the SPI (Swiss Performance Index). The t-values (in parentheses) are based on heteroskedasticity-robust White (1980) standard errors. ***, **, * denotes statistical significance at the 1%, 5%, 10% level.

Panel A: Without fixed effects

	Extended market model			Market model with SPI	Market-adjusted returns	Extended market model					
	1-year CAR (%)	6-month CAR (%)	1-week CAR (%)	1-year CAR (%)	1-year CAR (%)	1-year CAR, bearish market (%)	1-year CAR, bullish market (%)	1-year CAR, only Swiss clients (%)	1-year CAR, only Swiss stocks (%)	1-year CAR, without bank own stock (%)	1-year CAR (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Advised (d)	-4.034***	-1.913***	-0.265**	-4.100***	-3.507***	-9.152***	-0.216	-5.122***	-5.345***	-4.566***	-3.276***
	(-7.02)	(-4.11)	(-2.53)	(-6.68)	(-4.51)	(-6.41)	(-0.37)	(-5.98)	(-7.00)	(-7.26)	(-5.71)
Log(trade value)											-1.480***
											(-9.60)
Constant	3.254***	1.457***	0.163***	3.413***	8.187***	12.704***	-1.991***	4.136***	6.306***	3.809***	16.854***
	(17.23)	(10.81)	(5.88)	(17.13)	(40.13)	(31.51)	(-11.09)	(18.98)	(27.48)	(17.33)	(11.38)
Adj. R^2	0.001	0.000	0.000	0.001	0.000	0.002	-0.000	0.001	0.001	0.001	0.004
N	31,799	31,883	31,628	31,799	31,804	11,182	20,617	24,730	21,516	27,280	31,757

Panel B: With client fixed effects

	Extended market model			Market model with SPI	Market-adjusted returns	Extended market model					
	1-year CAR (%)	6-month CAR (%)	1-week CAR (%)	1-year CAR (%)	1-year CAR (%)	1-year CAR, bearish market (%)	1-year CAR, bullish market (%)	1-year CAR, only Swiss clients (%)	1-year CAR, only Swiss stocks (%)	1-year CAR, without bank own stock (%)	1-year CAR (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Advised (d)	-2.929***	-1.281	-0.446**	-3.617***	-0.593	-6.312*	-1.845*	-3.261**	-4.149***	-3.076***	-2.652***
	(-2.88)	(-1.57)	(-2.55)	(-3.36)	(-0.43)	(-1.83)	(-1.82)	(-2.05)	(-2.59)	(-3.03)	(-2.62)
Log(trade value)											-2.962***
											(-8.88)
Constant	3.200***	1.426***	0.172***	3.390***	8.046***	12.607***	-1.900***	4.081***	6.261***	3.732***	30.456***
	(17.33)	(10.58)	(5.90)	(17.40)	(39.24)	(32.12)	(-10.55)	(18.93)	(27.11)	(18.39)	(9.78)
Adj. R^2	0.058	0.026	-0.076	0.063	0.030	0.110	0.022	0.041	0.012	0.150	0.062
N	31,799	31,883	31,628	31,799	31,804	11,182	20,617	24,730	21,516	27,280	31,757

Table A3: Determinants of trading performance - Client-advisor fixed effects

The table reports the results from OLS regressions with client-advisor fixed effects. The dependent variable is the 1-year cumulative abnormal return (CAR) of stock trades. Results for buys (Columns 1 to 5) and sells (Columns 6 to 10) are reported separately. 1-year CAR for sells are multiplied by -1. Abnormal returns are calculated as the difference between the daily returns and the returns predicted by an extended market model. The extended market model is estimated over the time period from t = -252 to t = -1 and uses the SPI (Swiss Performance Index) and the MSCI World Index as proxies for the market, a SMB factor, a HML factor, and a momentum factor. The t-values (in parentheses) are based on heteroskedasticity-robust White (1980) standard errors. ***, **, * denotes statistical significance at the 1%, 5%, 10% level.

	1-year CAR (%)									
	Buys					Sells				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Advised (d)	-3.235***	-0.927				-0.634	-1.355			
	(-3.11)	(-0.76)				(-0.73)	(-1.19)			
Advisor initiated (d)		-5.814***					1.554			
		(-3.08)					(1.00)			
Advised (d; day 0)			-2.546**					0.442		
			(-2.14)					(0.46)		
Advised (d; day 1)			-6.318***					-5.187**		
			(-2.59)					(-1.99)		
Advised (d; day 2)			-4.710*					-0.198		
			(-1.72)					(-0.07)		
Advised (d; day 3)			-5.032*					-0.857		
			(-1.74)					(-0.28)		
Advised (d; day 4)			3.693					-5.374		
			(0.57)					(-1.52)		
Meeting (d)				-2.245*	-1.753				0.135	0.051
				(-1.94)	(-1.45)				(0.12)	(0.04)
Phone call (d)				-3.203***	-2.280**				-0.194	-0.357
				(-3.27)	(-2.10)				(-0.23)	(-0.35)
A. initiated meeting (d)					-6.049*					1.669
					(-1.79)					(0.52)
A. initiated phone call (d)					-4.891**					0.627
					(-2.48)					(0.40)
Constant	3.215***	3.207***	3.212***	3.488***	3.466***	4.676***	4.681***	4.668***	4.651***	4.655***
	(17.49)	(17.46)	(17.46)	(16.15)	(16.04)	(29.29)	(29.28)	(29.24)	(23.61)	(23.50)
Adj. R^2	0.071	0.072	0.071	0.071	0.072	0.024	0.024	0.024	0.024	0.024
N	31,799	31,799	31,799	31,759	31,759	28,319	28,319	28,319	28,268	28,268

Table A4: Determinants of behavioral biases - Client-advisor fixed effects

The table reports the results from logit regressions (Columns 1 to 4) and OLS regressions (Columns 5 to 8) with client-advisor fixed effects. The dependent variable is either a dummy variable which equals one if the client already holds the newly purchased stock in his portfolio (Column 1), a dummy variable which equals one for Swiss stocks (Column 2), a dummy variable which equals one for local stocks (Column 3), a dummy variable for stocks covered by at least one sell-side analyst (Column 4), the current stock price relative to the 52-week high (Column 5), the maximum daily stock return over the past month (Column 6), the length of winning roundtrips (Column 7), or the length losing roundtrips (Column 8). Results for buys and sells are reported separately. In OLS regressions, the t-values (in parentheses) are based on heteroskedasticity-robust White (1980) standard errors. ***, **, * denotes statistical significance at the 1%, 5%, 10% level.

	Buys					
	Already in portfolio (d)	Swiss stock (d)	Local stock (d)	Covered by analyst (d)	52-week high (%)	MAX (%)
	(1)	(2)	(3)	(4)	(5)	(6)
Advised	-0.198**	-0.056	-0.392**	-0.005	0.175	0.040
	(-2.27)	(-0.61)	(-2.19)	(-0.02)	(0.17)	(0.40)
Constant					71.332***	4.598***
					(496.99)	(320.98)
Adj. R^2					0.296	0.273
Pseudo R^2	0.000	0.000	0.001	0.000		
N	28,097	23,776	15,058	7,969	32,238	32,239

	Sells						
	Swiss stock (d)	Local stock (d)	Covered by analyst (d)	52-week high (%)	MAX (%)	Winning roundtrips (days)	Losing roundtrips (days)
	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Advised	-0.129	-0.076	0.442	-0.046	-0.009	14.483	0.390
	(-1.54)	(-0.41)	(1.56)	(-0.05)	(-0.10)	(1.09)	(0.01)
Constant				76.746***	4.555***	162.795***	414.658***
				(488.82)	(296.50)	(94.46)	(89.32)
Adj. R^2				0.219	0.217	0.595	0.689
Pseudo R^2	0.000	0.000	0.001				
N	24,086	14,638	7,137	29,090	29,099	8,968	3,983