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Conference Paper

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Beiträge zur Jahrestagung des Vereins für Socialpolitik 2010: Ökonomie der Familie - Session:
Individual Investments and Portfolio Choice, No. C19-V3

Provided in Cooperation with:

Verein für Socialpolitik / German Economic Association

Suggested Citation: Karabulut, Yigitcan (2010) : Financial Advice: An Improvement for Worse?,
Beiträge zur Jahrestagung des Vereins für Socialpolitik 2010: Ökonomie der Familie - Session:
Individual Investments and Portfolio Choice, No. C19-V3, Verein für Socialpolitik, Frankfurt a. M.

This Version is available at:

<https://hdl.handle.net/10419/37166>

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Financial Advice: An Improvement for Worse?

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January 2010

Preliminary Version

Abstract

Using a unique administrative data set from a large German commercial bank, this paper aims to ascertain the role of financial advisors in individual portfolios. Following on the heels of the ongoing regulatory and political debate as to the merits of financial advice, we focus in this paper on three key issues. First, we examine whether collaboration with financial advisors attains to better performing portfolios. Second, we investigate whether the involvement of financial advisors mitigates costly investment mistakes. Third, we document whether financial advisors provide asset allocation recommendations that market time. Econometric analysis that is corrected for the endogeneity of making use of financial advice suggests that collaboration with financial advisors lowers portfolio returns, increases portfolio risk, and results in worse market timing than is the case when individuals manage their accounts on their own. Nevertheless, the involvement of financial advisors helps investors to attenuate costly investment mistakes such as underdiversification, home bias and portfolio churning. Overall, this paper implies that financial advice lacks quality in some tangible dimensions; however, in the end it is the customer who gauges the added value of financial advisors.

Keywords: Financial advice, household finance.

JEL Codes: G1, D8.

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1 Introduction

Both prudently designed advised portfolios devastated by the recent market turmoil and recent *misselling* scandals in the retail finance industry give rise to doubts concerning the competence and honesty of financial advisors. These doubts have triggered a debate as to the merits of financial advice among regulators and politicians that primarily rests on the questions of whether financial advisors do indeed create a surplus for private investors, and whether there is a need for more strict regulations in the industry.

Following on the heels of the current political and regulatory discussion, we pose in this paper three key questions in order to assess the extent of financial advice in individual portfolios. First, we examine whether the involvement of advisors improves portfolio performance in terms of higher returns and lower risk. Second, we investigate whether making use of financial advice mitigates the costly investment mistakes such as non-participation, excessive trading, risky share inertia or underdiversification. Third, we ask whether financial advisors provide dynamic asset allocation recommendations that help the customer to market time. We attempt to answer these questions using a unique administrative data set from a large German commercial bank that records the portfolios, investments and trades of 10,434 randomly selected customer accounts over 34 months.

Intuitively, it is natural to conjecture that delegating financial responsibility to professionals should create a surplus for individuals. Particularly, the involvement of financial advisors can attenuate investment mistakes and behavioral biases, lower information search and acquisition costs and lead to a superior dynamic asset allocation which, altogether, would improve portfolio performance. There is, however, no free lunch: Employing the services of a financial advisor entails direct costs such as paying higher commissions, fees and loads. As noted by Bergstresser et al. (2009), brokered-channel mutual fund customers pay more than twice as much loads and fees as direct-channel customers. Furthermore, the credence good characteristic of financial advice (Bluethgen et al., 2008), variable compensation scheme of advisors as well as the multidimensional nature of an advisor's task (Inderst and Ottaviani, 2009) may elicit informed advisors incentives to abuse their clients, which could induce further (agency) costs. As stressed by Inderst and Ottaviani (2009), the possibility of abuse and costly incentive problems such as *misselling* is particularly severe when the advisor is also acting as a direct marketing agent for the financial firm. In sum, whether the costs of financial advice dominate its benefits (or vice versa) is an empirical question to which this paper aims to find an answer

by analyzing the different facets of financial advice.

Once the possible endogeneity of making use of financial advice and other investor characteristics are controlled, we document that financial advisors have a negative effect on portfolio performance, and the extent of their negative impact is greater for less-wealthy investors. In particular, an advised customer realizes a lower return of almost 110 basis points (net of transaction costs) in exchange for a 1.21 percentage points higher return volatility relative to a self-directed customer, suggesting that financial advisors might possess limited skills in investment management. Nevertheless, our findings also imply that collaboration with financial advisors improves portfolio diversification and moderates home bias that would add value to individuals by lowering the efficiency losses arising from underdiversification. This evidence in itself is not very surprising when the monetary benefits of advisors to promote mutual funds and international securities are taken into consideration. Further, we also find that financial advisors have no significant effect on stock market participation whereas they lower trading frequency and account turnover that prevent portfolio churning but end in risky share inertia. As to the latter, it can be conjectured that advisors trade off the costs arising from inertia with the costs of churning, and they run the risk of inertia by discouraging intensive trading. This finding provides some evidence for the notion that advisors adhere to their fiduciary duty, and prevent churning despite their direct pecuniary benefits. Finally, our analysis fails to provide evidence that making use of financial advice attains to a superior dynamic asset allocation. Indeed, self-directed customers display better market timing abilities using a simple rule of thumb in asset allocation, (*100-age*), in comparison to their peers who act on the recommendations of professionals.

In fact, the underlying idea of this paper is similar to the ideas employed in Bergstresser, Chalmers, and Tufano (2009) (hereafter referred to as BCT, 2009) who study the possible benefits and costs of brokers in the mutual fund industry, and Hackethal, Haliassos, and Jappelli (2009) (hereafter referred to as HHJ, 2009) who analyze the effects of independent financial advisors on individual portfolio performance. However, our work maintains significant advantages over these studies and extends the literature in some important respects. First, we go one step further than portfolio performance, investigating the effects of advisors on constituent investment mistakes. In spite of the growing literature on this topic, to the best of our knowledge this is the first paper examining explicitly whether financial advisors have any influence on investment mistakes. Second, we complement the literature by investigating the market timing abilities of financial advisors. Even though the forecasting abilities of professionals have been

studied extensively (e.g. Cowles, 1933), almost no attention has been paid to analyzing the dynamic asset allocation decisions of private investors and the effects of financial advisors on market timing decisions. Third, our results rely on a more representative data set in comparison to discount brokerage data employed by HHJ (2009) or mutual fund data used by BCT (2009), both of which do not necessarily cover the entire population and the total wealth of individuals. Finally, having a rich data set at account level that also captures the portfolio holdings and trades at asset classes allows us to contrast the advised and self-managed portfolios from different facets, enhancing the robustness and reliability of our results.

In sum, this paper assesses all the relevant tangible aspects of generic financial advice for individual portfolios. We believe that the questions posed in this paper are highly relevant and insightful not only from an academic standpoint but also from both political and regulatory perspectives.

The remainder of the paper is organized as follows. Section 2 discusses the possible benefits and costs of financial advice and motivates the empirical work. Section 3 introduces our data set and provides summary statistics. Section 4 reports the main findings, and Section 5 presents the results of robustness tests. Section 6 concludes the paper.

2 The Role of Financial Advice

In recent years the increased responsibility for retirement financing as well as the high sophistication of financial markets constrains individuals to actively manage their personal finances. However, as there is ample evidence that private investors are financially illiterate (Lusardi and Mitchell, 2007), lack information (Guiso and Jappelli, 2006) and possess behavioral biases (Kahneman and Tversky, 1979; Huberman et al., 2007), doubts arise in regard to financial decisions made by individuals themselves. As a means of solving these deficits, financial advice is proposed as a remedy in conjunction with financial literacy education and default options whereas financial advice alone is the prevalent recipe among individuals (Allen, 2001; Fisher and Gerhardt, 2007). This section discusses the possible benefits and costs of financial advice and motivates the empirical work.

Even though basic finance theories postulate that information is costless and available to all market participants, from a practical point of view these assumptions are violated. Indeed, information is costly to process, and individuals mostly rely on noisy sources which provide scarce and low-quality information which leads to making suboptimal investment choices (Mc-

Call, 1970). At this juncture the involvement of professionals can add value to individuals by lowering the information costs as they have the ability to exploit economies of scale in information search and acquisition processes. Hence, compared to self-directed investors advised investors can enjoy more and better information at lower costs which may improve their portfolio performance (Peress, 2004).

Another potential contribution of professionals is providing investment recommendations that outperform/time the market. Ever since Cowles (1933), numerous empirical studies have been carried out to ascertain whether professionals could outperform/time the market. From an academic perspective, posing such a question is especially interesting as it asserts that professionals possess informational advantage, and thus, it challenges the efficient market hypothesis. Recently, Womack (1996) who analyzes stock recommendations of fourteen major US brokerage houses, documents that professionals display ability in stock picking and market timing. The securities which are recommended to buy or to sell move in the same direction as predicted by the analysts, both in the 3-day time interval and in the postrecommendation period. In a similar study, Desai and Jain (1995) examine the investment advice of the 'Wall Street Superstar' money managers who participate in the *Barron's* Annual Roundtable. Their results imply that recommendations of money managers earn abnormal returns within a period of about fourteen days, however, in the longer holding term, i.e. 1 to 3 years, average abnormal returns go to zero. Examples from the literature which investigates the forecasting abilities of professionals can be further extended. However, to the best of our knowledge, no paper has so far analyzed the effects of advisors on the market timing decisions of private investors. We therefore complement the literature by addressing the question of whether collaboration with advisors leads to displaying better market timing skills in terms of adjusting portfolio weights among asset classes prior to future realizations of the market.

There is also ample evidence that private investors behave irrationally and deviate consistently from ideal investment behavior (e.g. Campbell, 2006; Calvet et al., 2006). Such deviations are costly and induce welfare and utility losses for individuals. In this environment, an investor can benefit from making use of financial advice as advisors can attenuate the non-trivial costs that stem from judgmental misperceptions and investment mistakes of individuals. There is also evidence that supports the hypothesis that professionals are more immune to behavioral biases and less subject to investment mistakes. For instance, Shapira and Venezia (2001) find that disposition effect (i.e. tendency to sell winning stocks too early and losing stocks too late) is less pronounced for professionals compared to lay investors. Feng

and Seasholes (2005) also document that trading experience and financial sophistication are of substantial importance in limiting investor biases, which supports the findings of Shapira and Venezia (2001). Accordingly, the involvement of financial advisors may prevent behavioral biases such as overconfidence and loss aversion that may give rise to excessive trading and risky share inertia, respectively. Also financial advice can contribute to overcome the non-participation phenomenon. Particularly, advisors can help their clients to overcome the barriers to stockholding both by bridging the information asymmetries as well as eliminating the misperceptions as to stock market (Kramer, 2009). Yet, there is no evidence that confirms the hypothesis that making use of financial advice increases participation rates. Our paper also contributes to the literature by investigating whether financial advisors increase stock market participation probability. Finally, involvement of advisors could also attenuate underdiversification and home bias. HHJ (2009) note that advisors face direct pecuniary incentives to encourage portfolio diversification by fostering their customers to invest in mutual funds and international securities both of which would ensure greater risk diversification.

In spite of the brightly painted picture of financial advice, the delegation of portfolio decisions also entails direct (i.e. commissions, loads) and indirect costs (i.e. agency costs) which can partially, or even fully, offset the discussed benefits. Recall that the interaction between a financial advisor and his client is subject to agency relationship, and given the fact that all people are self-interested and have their own preferences (Jensen, 1994), it is natural to conjecture that informed advisors can face incentives to exploit their uninformed customers.

For instance, the multitasking and variable compensation scheme of advisors¹ as well as the credence good characteristic of financial advice can lead to opportunistic behavior of advisors. In particular, advisors could direct their customers to high-commission products which, however, may not match their particular needs - an incentive problem known as *misselling* (Inderst and Ottaviani, 2009). In recent years a number of misselling scandals such as mortgage endorsement or precipice bond misselling in the UK or Lehman certificates misselling in Germany, have occurred which have bestowed huge losses on private investors, all of which underpin the concern of *misselling*.² Further, as stressed above, advisors can limit portfolio churning by

¹In our context we consider advisors who operate and give advice to clients on behalf of a single financial firm. In this environment the task of an advisor has a multidimensional nature: providing both adequate and high-quality advice to the customer, and acting as a direct marketing agent for the financial firm.

²Not only the customers but also the financial firms to which the financial advisors are tied could suffer from the opportunistic behavior of their agents. In particular, financial firms can face agency costs in the form of losing reputation, paying high indemnities to the affected customers or even losing their certificates when their agents practice *misselling* (Inderst and Ottaviani, 2009). Taking into account the interaction between financial advisors, financial firms and customers, we can speak of the existence of a *trilateral dilemma* (Jackson, 2005).

discouraging their clients from executing too many trades. However, since the compensation of advisors partly hinges on the purchases of their clients, they can face incentives to higher the portfolio turnover as well. Whether they act consistent with their pecuniary incentives and encourage trading, or adhere to their fiduciary duty and attenuate churning is an empirical question which we also address in the empirical part of the paper.

All in all, based upon arguments on the possible contributions of financial advisors, one might ask whether the benefits of financial advice dominate the costs (or vice versa), and whether involvement of financial advisors does create a surplus for individuals despite the arising agency problems. This is the underlying question of this paper to which we aim to find an answer in the following by contrasting the advised and self-managed portfolios.

3 Data and Methodology

3.1 Data and Descriptive Statistics

The primary data set for this research is information from a large German commercial bank on portfolio holdings and investments of 10,434 randomly selected customers for the 34-month period from January 2003 to October 2005. We have for each customer in the sample key demographic and investor-type data; portfolio holdings, purchases and sales information recorded by asset category as well as a variable that indicates the intensity of reliance on financial advice during the observation period.³ For the remainder of the paper, an advised customer is defined as an investor who makes use of financial advice at least once during the sample period.

Although each customer of the bank with an investment account is assigned to a financial advisor at the local branch, it is not mandatory for the customers to consult the professionals for each investment decision. However, when a customer (irrespective of whether advised or self-directed) places an order via internet, phone or fax in the system, the bank's information system shows this order to the corresponding advisor who can make an entry whether this order hinges on a recommendation made by him or not. Indeed, financial advisors also have the option of not making any entries. If a bank advisor prefers not to make any entry, this makes it unclear as to whether the order placed by the customer is related to the recommendations of the bank's advisors or not. Due to this unclarity, we drop 5,444 customer accounts without

³This variable is computed as the proportion of advised trades relative to all trades executed by the customer. This variable can take a value between 0 and 1 where 0 implies self-managed accounts and 1 represents full delegation of financial responsibility to the financial advisors.

any entry about financial advice which gives us a sample of 5,051 accounts. We drop a further 543 accounts due to missing data on the zip codes of residence and regional variables. Finally, we have a total of 4,447 customer accounts in our final sample.

Table 1 and Table 2 present summary statistics on the demographics and sample size from our data set. As shown in the Tables, the average customer in our sample is 54.46 years old and has an average portfolio value of almost 45,993 Euro. Almost 38 percent of the bank's customers are occupied as employees and the share of blue-collar workers and retirees are 2.7 and 19.7 percent, respectively. As to the tendency of reliance on financial advice, we observe that 62.8 percent of the customers consult advisors at least once during the sample period whereas almost 43 percent of them fully delegate portfolio decisions to professionals. The latter statistic is especially interesting as it again underlines the importance of financial advice on household investment decisions.

To obtain a picture of individuals' investment behavior, we next present the portfolio compositions of customers who are aggregated as advised and self-directed. As shown in Table 2, a self-directed customer holds on average 29.7 percent of account volume in single stocks, 7.8 percent in bonds, and 36 percent in mutual funds whereas an advised customer invests on average only 12 percent of portfolio volume in single stocks, 9.8 percent in bonds and the lion's share, 56.7 percent, in mutual funds. In sum, the univariate statistics suggest that advised customers on average invest more conservatively where they have lower equity exposure and better diversified portfolios.

In addition to the bank data we also employ *destatis* data set which is procured by the German Federal Statistical Office. This data set provides structural information for the German regions (HHJ, 2009). We aim to correct the endogeneity issue that arises in our econometric analysis by using the regional variables as instruments for the endogenously determined regressor.

3.2 Measuring Portfolio Performance

A traditional and widely-accepted way of evaluating portfolio performance is the mean-variance analysis by Markowitz (1952). This approach suggests that the first two moments of returns, mean and variance, have the power to evaluate the overall portfolio performance meaningfully (Elton et al., 2003). We therefore rely on this approach in analyzing the effects of financial advice on portfolio performance and assume that the basic assumptions of this procedure also hold for our sample.

Portfolio returns are measured on a monthly basis; therefore, an assumption for the timing of transactions should be made. As in Dietz (1968), we also assume that all transactions occur in the middle of a given month and compute the monthly portfolio returns net of direct transaction costs (i.e. commissions) using the Dietz measure:

$$R_{it} = \frac{(V_{it} - V_{it-1}) - (P_{it} - S_{it}) + E_{it}}{V_{it-1} + \frac{(P_{it} - S_{it} + E_{it})}{2}} \quad (1)$$

where R_{it} represents the net monthly return in month t ; V_{it} is the market value of portfolio at the end of month t ; P_{it} and S_{it} represent the cumulated purchases and sales in month t , respectively; and E_{it} is the cash proceeds from dividends, coupons, etc at the end of month t .

Table 1 gives descriptive statistics on portfolio returns. As shown in the Table, self-managed portfolios account on average higher net returns than advised portfolios (.007 vs .003 in logs per month). It can be argued that advised customers realize lower returns because of the higher commissions and loads charged by advisors. Nevertheless, when the gross returns are compared, we observe that advised portfolios still have a lower mean log return than self-managed portfolios (.006 vs .009 percent). Interestingly, in net terms both customer groups underperform the benchmark index; DAX (German Stock Index), however, the sample mean of gross log returns on self-managed portfolios is almost as high as the market portfolio, suggesting that self-directed customers tend to have similar portfolios to the market portfolio.

One might argue that advisors lead to lower returns as they seek to reduce portfolio risk. If this is the case, advised portfolios can still be efficient in spite of the lower returns, and thus, the added value of advisors to account performance could be positive. Although there are several measures to estimate risk, portfolio risk is computed as the variance of log returns. Also, as shown in Table 1, the total variance of advised portfolios is almost half that of the self-managed portfolios (median values: .00043 vs .00073), implying that financial advisors obtain lower returns because of their desire to lower portfolio risk.

4 Results

Before turning to the findings, a number of technical issues in the econometric analysis need to be addressed. First, making use of financial advice can be motivated by the poor account performance of investors (HHJ, 2009). If this argument holds, any regression with the ordinary least squares (OLS) method would yield inconsistent estimates since zero conditional mean of error term assumption, $E(u_i/x_i) = 0$, is violated. In other words, the OLS estimates would be

misleading due to the arising endogeneity issue. We therefore assume that the use of financial advice is determined simultaneously along with portfolio performance. Accordingly, the Durbin-Wu-Hausmann test for endogeneity validates this a-priori assumption. In order to cope with the problem of endogeneity, we instrument the endogenous financial advice dummy by using regional variables such as number of bank branches, mean voter participation rate to federal elections and disposable income in the region. The rationale behind choosing these instruments is that they are correlated with the endogenous regressor but they do not directly explain the dependent variable. For instance, the overidentifying restriction test that we carried out after each regression confirms the validity of our instruments. For each estimation, the reported p-values of Hansen’s J Statistic are large numbers, indicating that null hypothesis for instrument validity cannot be rejected. Further, the statistics of robust Kleibergen-Paap rk Wald weak identification test exceed the Stock and Yogo (2002) critical values, indicating that the excluded instruments have explanatory power for the endogenous regressor.

Second, we use the generalized method of moments (GMM) estimation (Hansen, 1982) with robust standard errors in lieu of a simple instrumental variable estimation as it has been found out that error variance terms are not *i.i.d.*⁴ As noted by Baum, Schaffer, and Stillman (2002), the GMM estimator is more efficient than the simple IV estimator in the presence of heteroskedasticity.

Finally, the observations are clustered by bank branches in order to correct the standard errors that can be affected by the cross-sectional correlation within the sample (Petersen, 2009).

4.1 Portfolio Performance and Financial Advice

In this section, we investigate whether financial advisors contribute to yield better portfolio performance than is the case when individuals manage their accounts on their own. As noted earlier, we rely on the mean-variance analysis by Markowitz (1952) in evaluating the portfolio performance of customers.

We first address the question of whether financial advice helps to improve portfolio returns. Columns 1 and 2 of Table 3 regress the net log monthly returns on the instrumented financial advice dummy and other control variables such as gender, wealth, age and occupation of investors.

Endogeneity-corrected regression confirms the pattern shown in the univariate analysis,

⁴We have computed Pagan-Hall test for heteroskedasticity, and the results indicate that heteroskedasticity, $E(u_i^2) = \sigma_i^2$, is present in all regressions.

indicating a significant negative effect of financial advisors on portfolio returns, regardless of controlling for wealth or not. In particular, an advised portfolio exhibits a monthly return of almost 110 basis points lower than a self-managed portfolio. When we control for other investor characteristics, risk aversion is found to have a negative effect on returns that is consistent with the willingness of individuals to taking lower risk. Moreover, wealthier investors tend to realize higher returns than their peers with less wealth. This supports the notion that high wealth investors pay information costs, and obtain more and better information that leads to realizing higher returns (Peress, 2004). Other investor characteristics, inter alia age, gender and occupation do not show any significant effect on portfolio returns.

The estimated negative influence of financial advisors on portfolio return is surprising. One potential explanation for this effect are the fees and commissions charged by advisors, suggesting that direct costs of financial advice overcompensate its possible added value. Accordingly, this gives rise to the further question of whether advisory commissions are too high, and if financial advisory services should be more strictly regulated (HHJ, 2009). In order to shed light on this issue, in an unreported regression, raw portfolio return which is computed before deducting any advisory fees and commissions is regressed on instrumented financial advice dummy and other control variables. The results show that the direct cost argument for realized lower returns fails to receive empirical evidence: Advised portfolios underperform in gross terms the self-managed portfolios as well, implying that financial advisors may have narrow skills in investment management.

However, as yet, only the first moment of portfolio returns is explored. It can be conjectured that financial advisors lead to lower returns because of their desire to achieve smaller portfolio risk. We therefore next explore the effect of financial advice on overall portfolio risk which is captured by the variance of returns. Given our findings on portfolio returns, we intuitively expect advisors to lower the risk. Columns 3 and 4 of Table 3 present the GMM estimation results. As opposed to our a-priori expectation, we find evidence of a significant positive effect of advisors on portfolio risk. In other words, advised investors face higher return volatility compared to their self-directed peers. This finding is unexpected and raises further doubts about the abilities of financial advisors as making use of financial advice ends up in lower returns and higher risk.

Controlling for other variables, portfolios of older (age 60+) and more risk averse individuals display lower risk whereas male investors face higher return volatility relative to females which confirms the positive effect of male gender on risk taking as predicted by the literature (Barber

and Odean, 2001). Wealth has a significant negative effect, indicating that wealthier investors face lower return volatility. Including wealth proxy in the regression eliminates the statistical significance of older age and risk aversion dummies (conservative dummy), suggesting that these variables partly proxy wealth.

As a whole, we find evidence that financial advisors have a negative influence on individual portfolios: Advised customers realize lower returns and face higher risk. The underperformance of portfolios induces considerable costs as individuals hold inefficient portfolios with lower risk-adjusted-returns. This finding supports the results of HHJ (2009) who also find out a negative effect of independent financial advisors on individual portfolios.

4.2 Investment Mistakes and Financial Advice

Even though reliance on financial advice does not attain to better performing portfolios, advisors can still be valuable to individuals by attenuating costly investment mistakes. We therefore investigate in the following the effects of financial advisors on four common household investment mistakes, i.e. non-participation, underdiversification, excessive trading and risky share inertia.

4.2.1 Non-Participation

We define an investor as a *participant* in cases where the share of publicly traded stocks or stock mutual funds held in the portfolio is positive. To obtain an impression about the stockholding behavior of sampled customers, we first report the univariate statistics for participation. In the sample of 4,447 customers, almost 72 percent hold equities either directly or indirectly. Of the participants, 42.54 percent hold both single stocks and stock mutual funds, 24.41 percent hold only individual stocks while the remaining 33.05 percent invest only in stock mutual funds.

A-priori, it can be conjectured that financial advisors would encourage individuals to invest in stocks since they are aware of the positive equity premium, and equities are high margin products. On the other hand, advisors could also deter their clients from the stock market as they intend to limit the possible legal and reputational risks which might arise from speculative equity investments.

Table 4 reports the endogeneity corrected Probit regression results. As shown in the Table, we do not find any evidence of a significant negative or positive effect of advisors on stock market participation although the estimated coefficient has a negative sign. Apart from the main variable of interest, participation probability tends to be lower for more risk averse investors

(very safe and safe) which is in line with the findings of literature (e.g. Haliassos and Bertaut, 1995; Vissing-Jorgensen, 2000). Employees and executive employees are more likely to hold stocks compared to the omitted occupational group, students, which can be argued with their better access to relevant information for stock investments. Likewise, male investors tend to hold more stocks compared to female investors. Being older also increases the participation probability. In particular, older investors ($45 < \text{age} \leq 60$) hold directly/indirectly stocks with a 20.2 percentage points higher probability compared to younger investors ($\text{age} \leq 18$) when all the other variables in the regression are held constant at their means. In Column 2, wealth proxy is included in the regression. Akin to the findings of literature, participation rate increases with the wealth of investors. This provides evidence for the notion of fixed participation and transaction cost arguments to explain stockholding puzzle (Vissing-Jorgensen, 2000).

As a whole, in spite of the theoretical predictions, we find no evidence of a significant effect of financial advisors on participation probability. Indeed, future research may have more success in explaining the impact of financial advice on participation by investigating whether advisors convert non-participants to participants (HHJ, 2009).

4.2.2 Diversification and Home Bias

Besides non-participation, another common investment anomaly of private investors is the lack of portfolio diversification. Although diversification is a cornerstone for portfolio performance, many participants in the capital markets are underdiversified (Goetzmann and Kumar, 2008). Nevertheless, financial advisors can contribute to choosing mean-variance efficient portfolios which would limit the efficiency losses induced by underdiversification.⁵ To address this concern, portfolio diversification that is proxied by the share of stock mutual funds relative to all equity holdings is regressed on mean advisory intensity variable and other control variables.⁶ This ratio is computed only for participants which reduces the sample size to 3,232.

Regardless of controlling for wealth, the estimated coefficient for making use of financial advice is positive and statistically highly significant. This implies that financial advisors improve portfolio diversification by raising the share of indirectly held stocks. Given the incentives to sell mutual funds, the positive contribution of financial advisors to portfolio diversification is

⁵Although labor income, real estate as well as human capital play a major role in achieving efficient portfolio diversification, we ignore these issues and focus primarily on financial portfolio diversification.

⁶In the Tobit and Probit regressions we employ advisory intensity instead of financial advice dummy since endogeneity-corrected Tobit and Probit estimations assume that endogenous regressor is a continuous variable. Advisory intensity is computed as the proportion of advised trades relative to all trades during the sample period.

not unexpected: They act in consistence with their monetary incentives and boost the share of mutual fund holdings. Put differently, advisors in fact behave opportunistically to obtain higher commissions, however, their incentives are well-aligned with the interests of their clients which ends up in a surplus for the clients (HHJ, 2009). Apart from the high sales margins, advisors may foster their customers to invest in mutual funds presumably because they are not willing to disclose their information directly. Therefore, they prefer to pool information, and sell it indirectly through mutual funds which still allows them to trade strategically (Admati and Pfleiderer, 1988). Controlling for other investor characteristics, older and more risk averse investors invest less in stock mutual funds while wealth shows no significant effect on portfolio diversification.

Another important dimension of portfolio diversification is international diversification. Investments in foreign securities offer investors considerable gains, however, empirical studies show that private investors hold almost all of their wealth in domestic assets (French and Poterba, 1991; Grauer and Hakansson, 1987). In this respect, we next examine whether financial advisors encourage investments in foreign securities in order to mitigate the home bias. International diversification is measured as the portion of foreign securities relative to overall portfolio holdings. In Columns 3 and 4 of Table 5, endogeneity-corrected Tobit regression is performed to explore the effects of each variable in explaining international diversification.

As shown in Table 5, the involvement of financial advisors has a significant positive effect on international diversification. In particular, making use of financial advice increases the share of international securities, and thus, home bias is less pronounced for the advised portfolios. One might suggest that financial advisors encourage cross-border investments presumably because they receive higher sales commissions for promoting foreign securities. However, as noted by Bluethgen et al. (2008), international orders are not much more profitable than domestic orders which undermines this view. Interestingly, advised customers hold on average almost 76 percent of foreign share holdings in stock and bond mutual funds. This may reflect the tendency of advisors to direct their customers to international mutual funds due their monetary incentives which also moderates the home bias.

We also observe that male investors tend to be internationally better diversified than female investors while older individuals (age 60+) are less likely to hold foreign securities in their portfolios in comparison to younger investors. These findings confirm the earlier empirical findings of the existing literature (Graham et al., 2005). Moreover, wealthier investors hold a higher foreign securities share which underpins the transactions (Brennan, 1975) and information costs

(Merton, 1987) explanations for underdiversification.

All in all, financial advisors direct their clients towards a more international portfolio, limiting the home bias. Even though international diversification is associated with manifold gains, potential benefits may be offset by the arising exchange rate exposure if the portfolio is not hedged against this particular risk. As large fraction of private investors is not aware of exchange risk and do not hedge it efficiently (Bluethgen et al., 2008), this might also partly explain the higher return volatility of advised accounts.

4.2.3 Trading Frequency and Portfolio Turnover

We next turn to the effects of financial advisors on the trading behavior of individuals. Even though rational investors should trade until the net gains of transaction equals its marginal costs (Grossman and Stiglitz, 1982), private investors, in particular discount brokerage customers, trade intensively. Excessive trading is described as an investment mistake as it yields poor portfolio performance mainly because of the arising trading costs (Barber and Odean, 2000). Yet, collaboration with financial advisors might limit excessive trading and related costs that can partially or even fully compensate the commissions and fees charged for advisory services.

We first explore the effects of financial advisors on trading frequency. In Columns 1 and 2 of Table 6, the monthly average number of transactions is regressed on the instrumented financial advice dummy and other control variables. Contrary to the presumed pecuniary incentives of advisors, use of financial advice contributes to a lower transactions number. When we control for other covariates, investors who are employed as executives tend to trade more often. Likewise, male, older and wealthier investors also trade more frequently in comparison to female, younger and less wealthy investors, a fact that can be argued with the competence effect (Heath and Tversky, 1991). In particular, these investors perceive themselves as more competent, and thus, overestimate their beliefs and signals in the market which leads to a higher trading frequency (Graham et al., 2005).

It is, however, noteworthy that sales commissions of advisors do not solely depend on the number of transactions but rather they hinge on the volume of trades. Consequently, financial advisors may lower the number of transactions but still increase the turnover of portfolios to obtain higher commissions. We therefore analyze the effects of financial advisors on account turnover. Following Barber and Odean (2001), turnover is computed as the sum of one-half of monthly purchase turnover and one-half of monthly sales turnover.⁷ As shown in Table 6, we

⁷In particular, we compute sales turnover as the absolute value of all security sales divided by the overall

find evidence of a significant negative effect of financial advisors on portfolio turnover regardless of controlling for wealth or not. This result underpins the hypothesis that financial advisors adhere to their fiduciary duty, and prevent excessive trading and churning in spite of their direct monetary incentives. Surprisingly, wealth of investors has a negative effect on portfolio turnover, albeit the effect of a 1 percentage increase tends to be very slight. Investors who follow balanced and conservative investment strategies tend to have higher account turnovers whereas other investor characteristics such as gender, age or occupation do not show any significant effect on account turnover.

4.2.4 Portfolio Inertia

Basic portfolio theories posit that rational investors would periodically rebalance their portfolios to maintain their risk profile in response to market fluctuations (Bilias et al., 2009). Yet, empirical evidence indicates that investors do not alter the risky assets regularly and individual portfolios display inertia in risky assets (Campbell, 2006). Given this fact, we next investigate whether financial advisors direct their customers to alter their portfolios regularly as presumed by the orthodox theory.

To address this concern, risky share inertia is proxied by monthly absolute value changes of risky assets in levels as described in Calvet et al. (2009) and Vissing-Jorgensen (2000). Following Carroll (2000), risky assets are defined as the sum of single stocks, stock mutual funds, real-estate funds, warrants and derivatives.⁸ Absolute value change in risky assets can be driven either by active trades of investor or by returns on risky securities (Calvet et al., 2008). Hence, we disaggregate the absolute value change into two components: (i) active changes, and (ii) passive changes; and regress the active component on the instrumented financial advice dummy and remaining control variables. Table 7 reports the GMM estimation results.

Our results imply that advised investors tend to alter their portfolios less frequently than self-directed customers, suggesting that advised portfolios display more risky share inertia. In fact, this result is plausible when we recall our findings on trading frequency and turnover of advised customers. Taking both findings together, one can suggest that financial advisors trade off the costs arising from excessive trading with the costs of portfolio inertia, and they run the risk of inertia by lowering trading frequency in order to avoid portfolio churning and associated

market value of the portfolio at the beginning of the month. In calculating purchase turnover, we have employed the lagged value of overall market value of portfolio instead of the current portfolio value.

⁸Although corporate and government bonds may have default as well as inflation risk, we have ignored these issues, considering these assets as risk-free assets.

costs. Further, advised investors might rebalance their portfolios less regularly partly due to the higher mutual fund share in their portfolios. Particularly, having higher mutual fund share in the portfolio may reflect scope for rebalancing the portfolios less frequently at lower costs. The regression also confirms the predicted positive effect of wealth on rebalancing, implying that the transaction cost argument might have the potential for explaining inertia. Furthermore, an individual is more likely to rebalance the portfolio if she is more risk averse. Likewise, investors who are occupied as executive employee tend to alter their portfolios more frequently, and finally, inertia is also less pronounced for older (age 60+) investors in comparison to their younger peers.

4.3 Asset Allocation, Market Timing and Financial Advice

Another extent to which financial advisors might positively contribute is by providing asset allocation recommendations that help the customers to market-time (BCT, 2009). Put differently, advisors could raise (lower) the portfolio weights among asset classes prior to a rise (fall) in the market (Bollen, 2001). If financial advisors have the ability to forecast correctly the future market realizations, advised customers can enjoy abnormal returns relative to benchmark portfolios.

We investigate the asset allocation recommendations of financial advisors at aggregate level following the informal procedure suggested by BCT (2009). In this methodology, three asset classes (equities, bonds and cash) are assumed to represent the entire portfolio. Accordingly, the portfolio weights of these assets are calibrated. For each asset class, the relevant benchmark index is used in order to isolate the possible effects of security selection. For instance, MSCI World Index, Barclays European Aggregate Bond Index and monthly Euribor rates are employed as benchmark indexes for equity, fixed income and cash investments, respectively. Customer portfolios are classified as advised and self-managed at aggregate level, and the monthly portfolio asset weights are calculated correspondingly. To evaluate the market timing abilities of customers and the influence of financial advisors, we compare, at aggregate level, the cumulative value of 1 Euro over 34 months invested in the beginning of the observation period, and rebalanced regularly each month.

When the average monthly returns of aggregated portfolios are contrasted, we observe that advised portfolios slightly outperform self-managed portfolios: Advised customers realize 1.31 percent while self-directed investors achieve 1.3 percent return per month. Apparently, the involvement of financial advisors helps individuals to time the market. However, when the

volatility of returns is considered, and risk adjustment has been carried out, we see that self-managed portfolios produce higher Sharpe ratios than advised portfolios (.254 versus .187 per month). This result provides evidence that the involvement of financial advisors does not attain to a better dynamic asset allocation. Indeed, the aggregated asset allocation strategy of self-directed customers provides higher risk-adjusted-returns. More interestingly, self-directed customers display better dynamic asset allocation following a very simple rule of thumb, namely *100-age* rule. As illustrated in Figure 2 and 3, non-advised customers tend to act on this rule whereas advised customers seem not to follow it. This implies that a very well-known simple rule of thumb conquers the asset allocation recommendations of professionals, questioning the advisors' expert skills.

5 Robustness Checks

We verify the robustness of our results to alternative measures of financial advice dummy and investment mistakes. First, we repeat our analysis using an alternative financial advice dummy. We specify the median value of advisory intensity variable (.406) as a breakpoint, and define the customers above the 50th. percentile as advised and the rest as self-directed customers. The results imply that the main variable of interest, financial advice dummy, hardly changes in magnitude but retains the significance in every estimation, indicating that our results are robust to alternative financial advice dummy. Second, we employ an alternative measure for portfolio diversification. Particularly, we proxy diversification by the share of mutual funds in risky assets portfolio since only participants can raise the sample selection bias. We find that our results on diversification are also remarkably robust to alternative measure. Third, we disaggregate the portfolio risk into systematic and unsystematic components to test the effects of financial advice on these risk measures. While there is no evidence of a significant effect of financial advisors on systematic risk, we find a positive effect of financial advice on unsystematic risk. This confirms our findings that financial advisors have overall a negative effect on portfolio performance, irrespective of how the portfolio risk is computed. In the examination of the link between financial advice and portfolio turnover, we employ purchase turnover as an alternative measure. The rationale behind using this variable is that advisors obtain sales commissions for the purchases of their clients, and hence, they can face incentives to inflate this ratio rather than sales turnover. Nevertheless, measuring portfolio turnover as an absolute value of all security purchases over lagged portfolio value eliminates the significance

of financial advice dummy. Finally, we estimate each model using the robust estimator of GMM to weak instrument problem (continuously-updated estimator) since weak instrument problem can induce serious problems such as inconsistency of estimators or finite sample bias. We find that the coefficient of financial advice dummy changes very little in magnitude and retains significance, implying that our findings are not affected by the possible weak instrument problem. Indeed, it is noteworthy that there are some changes in the significance and magnitude of some control variables.

6 Conclusion

In this paper we attempt to shed light on the role of financial advisors in individual portfolios. Even though it is intuitive to conjecture that collaboration with financial advisors would create surplus for individuals, delegation of financial responsibility to professionals also entails direct and indirect costs that may partially, or even fully, offset the possible benefits of financial advice.

Our empirical evidence uncovers important interactions between financial advice and individual portfolios. For instance, econometric analysis that is corrected for the endogeneity of making use of financial advice shows that the involvement of financial advisors lowers portfolio returns and increases portfolio risk more than is the case when individuals manage their investments on their own. This finding raises doubts about the skills of professionals in investment management. Still, use of financial advice improves diversification and moderates home bias although we find no evidence of a significant effect on stock market participation. Last but not least, we find that advisors lower trading frequency and account turnover which prevents portfolio churning but, however, results in risky share inertia. We further document that the involvement of financial advisors does not attain to a superior dynamic asset allocation that time the market. Interestingly, self-directed customers who tend to follow a simple rule of thumb in asset allocation display better market timing than their peers who act on the recommendations of professionals. In sum, our results imply that financial advisors seem to adhere to their fiduciary duty and act in the best interests of their clients; however, it appears that they lack skills in investment management and market timing.

As a whole, evidence abounds that financial advice lacks quality in some tangible dimensions. Considering the ongoing discussion on improving the quality of financial advice, our results have two implications for policy and for financial practice: First, even though recent regulatory

developments (e.g. MiFID) aim to elaborate the quality of financial advice by improving the transparency between customers and advisors, our findings suggest that regulators should primarily focus on the question of how to enhance the qualifications and skills of financial advisors. Second, we show how the incentives affect financial advisors' behavior, suggesting that financial firms should also take on responsibility for improving the quality of financial advice. Particularly, financial firms can make use of alternative incentive structures such as contingent performance-based commissions in lieu of sales commissions in order to ensure that their advisors act in the best interest of the customers and provide them with high-quality advice. In other words, the *advisory* dimension of a financial advisor's task should be prioritized compared to the *salesman* duty.

Overall, we provide a first step in understanding the influence of financial advice on individual portfolios in several facets. The findings presented suggest that further research on this topic is worthwhile. For instance, we partly discuss the role of financial advisors in mitigating investment mistakes; however, further and detailed investigation on the effects of financial advisors on household investment mistakes appears to be promising.

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Table 1: Summary Statistics: Dependent and Control Variables

| | Sample Mean | | Sample Median | | Standard deviation | |
|---------------------------------|-------------|----------------------------------|---------------|----------------------------------|--------------------|----------------------------------|
| | All | Advised Port. Self-managed Port. | All | Advised Port. Self-managed Port. | All | Advised Port. Self-managed Port. |
| Dependent Variables | | | | | | |
| Log Returns | 0.005 | 0.003 | 0.004 | 0.003 | 0.016 | 0.023 |
| Variance of Portfolio Returns | 0.005 | 0.005 | 0.000 | 0.000 | 0.02 | 0.025 |
| Stockholding | 0.727 | 0.74 | 1.000 | 1.000 | 0.445 | 0.455 |
| Share of Indirectly Held Stocks | 0.192 | 0.12 | 0.000 | 0.000 | 0.313 | 0.39 |
| Share of Foreign Securities | 0.267 | 0.286 | 0.175 | 0.227 | 0.291 | 0.309 |
| Transactions Number p.a. | 2.383 | 4.995 | 1.719 | 2.823 | 10.392 | 10.878 |
| Turnover Rate | 0.059 | 0.052 | 0.03 | 0.031 | 0.121 | 0.154 |
| Control Variables | | | | | | |
| Male | 0.463 | 0.434 | 0.000 | 0.000 | 0.498 | 0.5 |
| Employee | 0.383 | 0.349 | 0.000 | 0.000 | 0.486 | 0.496 |
| Executive Employee | 0.026 | 0.025 | 0.000 | 0.000 | 0.161 | 0.166 |
| Retiree | 0.197 | 0.22 | 0.000 | 0.000 | 0.398 | 0.365 |
| Worker | 0.036 | 0.039 | 0.000 | 0.000 | 0.188 | 0.178 |
| Student | 0.093 | 0.085 | 0.000 | 0.000 | 0.29 | 0.307 |
| Age < 18 | 0.102 | 0.092 | 0.000 | 0.000 | 0.303 | 0.325 |
| 18 < Age <= 30 | 0.12 | 0.094 | 0.000 | 0.000 | 0.325 | 0.37 |
| 30 < Age <= 45 | 0.158 | 0.138 | 0.000 | 0.000 | 0.365 | 0.394 |
| 45 < Age <= 60 | 0.174 | 0.173 | 0.000 | 0.000 | 0.379 | 0.38 |
| 60 < Age | 0.444 | 0.501 | 0.000 | 1.000 | 0.496 | 0.476 |
| Safe | 0.052 | 0.053 | 0.000 | 0.000 | 0.223 | 0.222 |
| Low Risk | 0.093 | 0.112 | 0.000 | 0.000 | 0.29 | 0.237 |
| Conservative | 0.22 | 0.284 | 0.000 | 0.000 | 0.414 | 0.315 |
| Balanced | 0.112 | 0.133 | 0.000 | 0.000 | 0.315 | 0.264 |
| Growth | 0.096 | 0.107 | 0.000 | 0.000 | 0.294 | 0.265 |
| Speculative | 0.073 | 0.072 | 0.000 | 0.000 | 0.261 | 0.264 |
| Log Initial Account Size | 9.455 | 9.719 | 9.806 | 10.017 | 2.176 | 2.295 |
| Observations | 4447 | 2792 | 4447 | 2792 | 4447 | 1653 |

Table 2: Summary Statistics: Asset Allocation

| | All | Sample Mean | | Sample Median | Standard Deviation |
|--------------------------------------|------------|---------------|--------------------|---------------|--------------------|
| | | Advised Port. | Self-managed Port. | | |
| Portfolio Size | € 45993.26 | € 53561.91 | € 33212.58 | € 22005.97 | € 68040.29 |
| A. Asset Allocation | | | | | |
| Directly Held Stocks Share | 0.192 | 0.118 | 0.297 | 0 | 0.300 |
| Indirectly Held Stocks Share | 0.169 | 0.187 | 0.123 | 0.029 | 0.242 |
| Bonds Share | 0.094 | 0.098 | 0.078 | 0 | 0.196 |
| Bond Mutual Funds Share | 0.111 | 0.133 | 0.060 | 0 | 0.110 |
| Real Estate Funds Share | 0.227 | 0.247 | 0.177 | 0 | 0.306 |
| Derivatives Share | 0.0000 | 0.0002 | 0.0007 | 0 | 0.008 |
| Warrants Share | 0.044 | 0.057 | 0.023 | 0 | 0.108 |
| Cash Share | 0.094 | 0.061 | 0.113 | 0 | 0.200 |
| Other | 0.046 | 0.047 | 0.017 | 0 | 0.104 |
| B. Int. Portfolio Composition | | | | | |
| Directly Held Stocks Share (dom.) | 0.153 | 0.095 | 0.237 | 0 | 0.259 |
| Directly Held Stocks Share (int.) | 0.039 | 0.024 | 0.059 | 0 | 0.130 |
| Indirectly Held Stocks Share (dom.) | 0.014 | 0.015 | 0.012 | 0 | 0.071 |
| Indirectly Held Stocks Share (int.) | 0.154 | 0.174 | 0.111 | 0.017 | 0.231 |
| Bonds Share (dom.) | 0.091 | 0.095 | 0.075 | 0 | 0.194 |
| Bonds Share (int.) | 0.003 | 0.003 | 0.003 | 0 | 0.031 |
| Bond Mutual Funds Share (dom.) | 0.041 | 0.045 | 0.031 | 0 | 0.116 |
| Bond Mutual Funds Share (int.) | 0.041 | 0.045 | 0.034 | 0 | 0.123 |
| Warrants Share (dom.) | 0.015 | 0.019 | 0.009 | 0 | 0.056 |
| Warrants Share (int.) | 0.028 | 0.037 | 0.012 | 0 | 0.087 |
| Observations | 4447 | 2793 | 2654 | 4447 | 4447 |

Table 3: Portfolio Returns and Risk: GMM Estimates

| | Log Returns | | Portfolio Risk | |
|----------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | (1) | (2) | (3) | (4) |
| Financial Advice Dummy | -0.0128*** (0.004) | -0.0107*** (0.003) | 0.0121** (0.005) | 0.0087* (0.005) |
| Male | -0.0000 (0.000) | 0.0001 (0.000) | 0.0019*** (0.001) | 0.0016*** (0.000) |
| Employee | 0.0005 (0.001) | 0.0007 (0.000) | 0.0016** (0.001) | 0.0013** (0.001) |
| Executive Emp. | 0.0010 (0.001) | 0.0009 (0.001) | 0.0022 (0.002) | 0.0023 (0.002) |
| Retiree | -0.0003 (0.001) | -0.0002 (0.000) | 0.0003 (0.001) | 0.0002 (0.001) |
| Housewives | 0.0010* (0.001) | 0.0008 (0.001) | -0.0000 (0.001) | 0.0004 (0.001) |
| Very Safe | -0.0035*** (0.001) | -0.0035*** (0.001) | -0.0035*** (0.001) | -0.0036*** (0.001) |
| Conservative | 0.0012 (0.001) | 0.0002 (0.001) | -0.0041** (0.002) | -0.0024 (0.002) |
| Safe | -0.0022* (0.001) | -0.0027*** (0.001) | -0.0034** (0.002) | -0.0026* (0.001) |
| Balanced | 0.0034*** (0.001) | 0.0024** (0.001) | -0.0051*** (0.002) | -0.0033** (0.001) |
| Growth | 0.0051*** (0.001) | 0.0041*** (0.001) | -0.0045*** (0.001) | -0.0029** (0.001) |
| 18 < Age <= 30 | 0.0011 (0.001) | 0.0011 (0.001) | 0.0002 (0.001) | 0.0004 (0.001) |
| 30 < Age <= 45 | 0.0008 (0.001) | 0.0003 (0.001) | 0.0007 (0.001) | 0.0017* (0.001) |
| 45 < Age <= 60 | 0.0009 (0.001) | 0.0001 (0.001) | -0.0012 (0.001) | 0.0002 (0.001) |
| 60 < Age | 0.0009 (0.001) | -0.0004 (0.001) | -0.0022** (0.001) | 0.0001 (0.001) |
| Initial Account Size | | 0.0007*** (0.000) | | -0.0012*** (0.000) |
| Constant | 0.0117*** (0.002) | 0.0049*** (0.002) | -0.0011 (0.002) | 0.0107*** (0.002) |
| Observations | 4447 | 4447 | 4446 | 4446 |
| Hansen J statistics | 0.6288 | 0.4699 | 0.5664 | 0.6630 |
| Kleibergen-Paap statistics | 12.5438 | 14.1962 | 12.5520 | 14.2318 |

Note: The table presents the GMM estimates of portfolio return and risk using the following instruments for financial advice at the zip code level: log disposable income, number of bank branches and voter participation rate to federal elections. Heteroskedasticity robust standard errors are reported in the parenthesis. Three stars denote significance at 1 percent or less; two stars denote significance at 5 percent or less; one star denotes significance at 10 percent or less.

Table 4: Non-Participation: Endogeneity-corrected Probit Estimates

| | Stockownership Dummy | |
|----------------------|------------------------|-----------------------|
| | (1) | (2) |
| Advisory Intensity | -0.645 (0.493) | -0.368 (0.521) |
| Male | 0.119** (0.049) | 0.141*** (0.049) |
| Employee | 0.255*** (0.070) | 0.290*** (0.0679) |
| Executive Emp. | 0.332** (0.161) | 0.375** (0.167) |
| Retiree | 0.117 (0.0758) | 0.1396* (0.0763) |
| Housewife | 0.2209** (0.0881) | 0.201** (0.0895) |
| 18 < Age <= 30 | 0.176* (0.093) | 0.169* (0.0972) |
| 30 < Age <= 45 | 0.114 (0.087) | 0.057 (0.08855) |
| 45 < Age <= 60 | 0.202** (0.0862) | 0.116 (0.0885) |
| 60 < Age | 0.101 (0.0878) | -0.067 (0.0921) |
| Very Safe | -0.9687*** (0.1616) | -1.01*** (0.146) |
| Safe | -0.905*** (0.194) | -1.01*** (0.1803) |
| Conservative | 0.294** (0.139) | 0.175 (0.148) |
| Balanced | 0.934*** (0.1106) | 0.864*** (0.127) |
| Growth | 0.899*** (0.1034) | 0.829*** (0.115) |
| Initial Account Size | | 0.1069*** (0.0093) |
| Observations | 4447 | 4447 |

Note: The table presents the endogeneity-corrected Probit estimates of owning directly / indirectly stocks. We employ advisory intensity variable instead of financial advice dummy since discrete endogeneous regressor is not appropriate. The marginal effects are reported rather than original probit estimates. The following variables are used (at the zip code level) to instrument the financial advice dummy: log disposable income, number of bank branches and voter participation rate to federal elections. Heteroskedasticity robust standard errors are reported in the parenthesis. Three stars denote significance at 1 percent or less; two stars denote significance at 5 percent or less; one star denotes significance at 10 percent or less.

Table 5: Diversification and Home Bias: Endogeneity-corrected Tobit Estimates

| | Share of Indirectly Held Stocks | | Share of Foreign Securities | |
|----------------------|---------------------------------|------------------------|-----------------------------|-----------------------|
| | (1) | (2) | (3) | (4) |
| Advisory Intensity | 2.95*** (0.525) | 2.96*** (0.501) | 0.447*** (0.167) | 0.476** (0.163) |
| Male | -0.057 (0.048) | -0.057 (0.048) | 0.0241* (0.0142) | 0.0253* (0.014) |
| Employee | 0.0148 (0.0606) | 0.0161 (0.06) | 0.034* (0.0186) | 0.0373** (0.0187) |
| Executive Emp. | -0.0431 (0.125) | -0.043 (0.125) | 0.124*** (0.0374) | 0.124*** (0.0377) |
| Retiree | 0.071 (0.074) | 0.071 (0.0743) | 0.0434** (0.0215) | 0.044** (0.0217) |
| Housewife | -0.0721 (0.093) | -0.073 (0.0939) | 0.0189 (0.0246) | 0.016 (0.0249) |
| 18 < Age <= 30 | -0.167 (0.102) | -0.170* (0.103) | -0.0218 (0.0307) | -0.0239 (0.0310) |
| 30 < Age <= 45 | -0.231** (0.095) | -0.236** (0.097) | -0.039 (0.029) | -0.0464 (0.0293) |
| 45 < Age <= 60 | -0.229** (0.0931) | -0.235** (0.0936) | -0.0152 (0.0282) | -0.0249 (0.0287) |
| 60 < Age | -0.293*** (0.0942) | -0.302*** (0.093) | -0.108*** (0.094) | -0.125*** (0.0296) |
| Very Safe | 0.169 (0.181) | 0.171 (0.1802) | -0.383*** (0.0446) | -0.384*** (0.0448) |
| Safe | 0.0094 (0.185) | 0.0057 (0.17898) | -0.323*** (0.0493) | -0.331*** (0.0485) |
| Conservative | -0.349** (0.152) | -0.353** (0.143) | -0.1055** (0.048) | -0.117** (0.0467) |
| Balanced | -0.295** (0.132) | -0.299** (0.125) | 0.0404 (0.0411) | 0.0288 (0.0399) |
| Growth | -0.279*** (0.132) | -0.2822*** (0.0987) | 0.106*** (0.0329) | 0.0962** (0.0323) |
| Initial Account Size | | 0.043 (0.014) | | 0.0092** (0.0037) |
| Observations | 3232 | 3232 | 4440 | 4440 |

Note: The table presents the endogeneity corrected Tobit estimates using the following instruments for financial advice at the zip code level: log disposable income, number of bank branches and voter participation rate to federal elections. We employ advisory intensity variable instead of financial advice dummy since discrete endogenous regressor is not appropriate. Marginal effects are reported rather than original Tobit coefficients. Diversification is measured by the portion of indirectly held stocks relative to all equity holdings while foreign securities share is computed as the share of international securities in the portfolio. Heteroskedasticity robust standard errors are reported in the parenthesis. Three stars denote significance at 1 percent or less; two stars denote significance at 5 percent or less; one star denotes significance at 10 percent or less.

Table 6: Trading Frequency and Portfolio Turnover: GMM Estimates

| | Number of Trades | | Portfolio Turnover | |
|----------------------------|-----------------------|-----------------------|----------------------|-----------------------|
| | (1) | (2) | (3) | (4) |
| Financial Advice Dummy | -0.6310*** (0.199) | -0.4148** (0.162) | -0.1089** (0.049) | -0.1210*** (0.046) |
| Male | 0.0195 (0.019) | 0.0321** (0.016) | 0.0026 (0.004) | 0.0020 (0.004) |
| Employee | -0.0101 (0.024) | 0.0075 (0.020) | 0.0046 (0.006) | 0.0037 (0.006) |
| Executive Emp. | 0.1571** (0.065) | 0.1512** (0.061) | 0.0074 (0.012) | 0.0077 (0.013) |
| Retiree | 0.0215 (0.029) | 0.0280 (0.026) | -0.0019 (0.006) | -0.0023 (0.006) |
| Housewives | 0.0614* (0.036) | 0.0387 (0.032) | 0.0002 (0.007) | 0.0016 (0.007) |
| Very Safe | -0.0417 (0.042) | -0.0366 (0.037) | 0.0066 (0.012) | 0.0062 (0.012) |
| Conservative | 0.2023*** (0.068) | 0.0962* (0.055) | 0.0252 (0.017) | 0.0312** (0.015) |
| Safe | 0.0350 (0.058) | -0.0179 (0.048) | 0.0109 (0.014) | 0.0139 (0.014) |
| Balanced | 0.3263*** (0.065) | 0.2170*** (0.051) | 0.0188 (0.015) | 0.0249* (0.014) |
| Growth | 0.3650*** (0.062) | 0.2624*** (0.050) | 0.0134 (0.013) | 0.0191 (0.012) |
| 18 < Age <= 30 | 0.0135 (0.034) | 0.0037 (0.029) | -0.0061 (0.010) | -0.0055 (0.010) |
| 30 < Age <= 45 | 0.0893*** (0.034) | 0.0336 (0.029) | 0.0054 (0.010) | 0.0085 (0.010) |
| 45 < Age <= 60 | 0.1601*** (0.035) | 0.0809*** (0.030) | 0.0085 (0.009) | 0.0130 (0.009) |
| 60 < Age | 0.1933*** (0.039) | 0.0583* (0.030) | -0.0014 (0.010) | 0.0064 (0.010) |
| Initial Account Size | | 0.0720*** (0.006) | | -0.0042** (0.002) |
| Constant | 0.4836*** (0.093) | -0.2097*** (0.060) | 0.1135*** (0.023) | 0.1538*** (0.020) |
| Observations | 4447 | 4447 | 4445 | 4445 |
| Hansen J statistics | 0.8524 | 0.9808 | 0.3361 | 0.3797 |
| Kleibergen-Paap statistics | 12.5438 | 14.1962 | 12.5452 | 14.2229 |

Note: The table presents the GMM estimates of trading frequency and monthly turnover rate. The following variables are employed (at the zip code level) to instrument the financial advice dummy: log disposable income, number of bank branches and voter participation rate to federal elections. Heteroskedasticity robust standard errors are reported in the parenthesis. Three stars denote significance at 1 percent or less; two stars denote significance at 5 percent or less; one star denotes significance at 10 percent or less.

Table 7: Risky Share Inertia: GMM Estimates

| | Absolute Active Value Change in Risky Share in Levels | |
|----------------------------|---|----------------------------|
| | (1) | (2) |
| Financial Advice Dummy | -5005.2897*** (1213.540) | -3897.3299*** (985.056) |
| Male | -17.4562 (113.688) | 43.2300 (95.459) |
| Employee | -229.4201* (136.242) | -138.4892 (114.433) |
| Executive Emp. | 1179.9180*** (394.378) | 1159.7146*** (359.957) |
| Retiree | 15.4342 (170.593) | 49.6614 (146.906) |
| Housewives | 133.7607 (202.251) | 19.6655 (174.581) |
| Very Safe | 44.7957 (258.406) | 71.4026 (221.214) |
| Conservative | 1873.2359*** (421.167) | 1336.9825*** (335.199) |
| Safe | 854.9302** (366.215) | 586.2440* (302.686) |
| Balanced | 2066.4589*** (396.318) | 1517.4210*** (313.506) |
| Growth | 2214.8722*** (375.914) | 1696.5996*** (299.303) |
| 18 < Age <= 30 | -57.3518 (198.061) | -110.4222 (165.055) |
| 30 < Age <= 45 | 399.6202** (186.156) | 112.8167 (156.103) |
| 45 < Age <= 60 | 892.5882*** (204.724) | 485.2227*** (167.301) |
| 60 < Age | 1293.8561*** (231.499) | 605.9020*** (175.956) |
| Initial Account Size | | 361.2012*** (36.334) |
| Constant | 2522.6674*** (570.004) | -963.6922** (376.224) |
| Observations | 4447 | 4447 |
| Hansen J statistics | 0.2831 | 0.2480 |
| Kleibergen-Paap statistics | 12.5438 | 14.1962 |

Note: The table presents the GMM estimates of risky share inertia. The following variables are employed (at the zip code level) to instrument the financial advice: log disposable income, number of bank branches and voter participation rate to federal elections. Heteroskedasticity robust standard errors are reported in the parenthesis. Three stars denote significance at 1 percent or less; two stars denote significance at 5 percent or less; one star denotes significance at 10 percent or less.

Value of an Euro over Investment Horizon with Model Portfolios

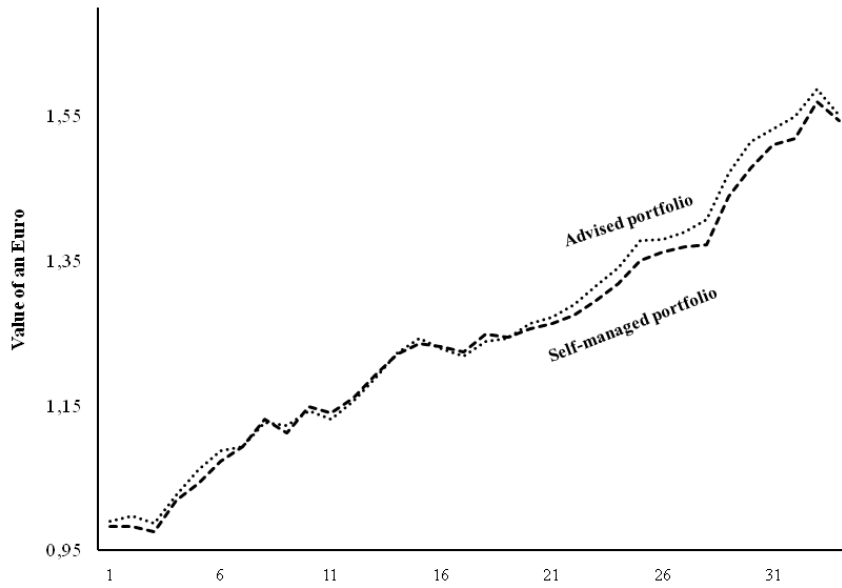


Figure 1: Value of an Euro over the Observation Period at Aggregate Level

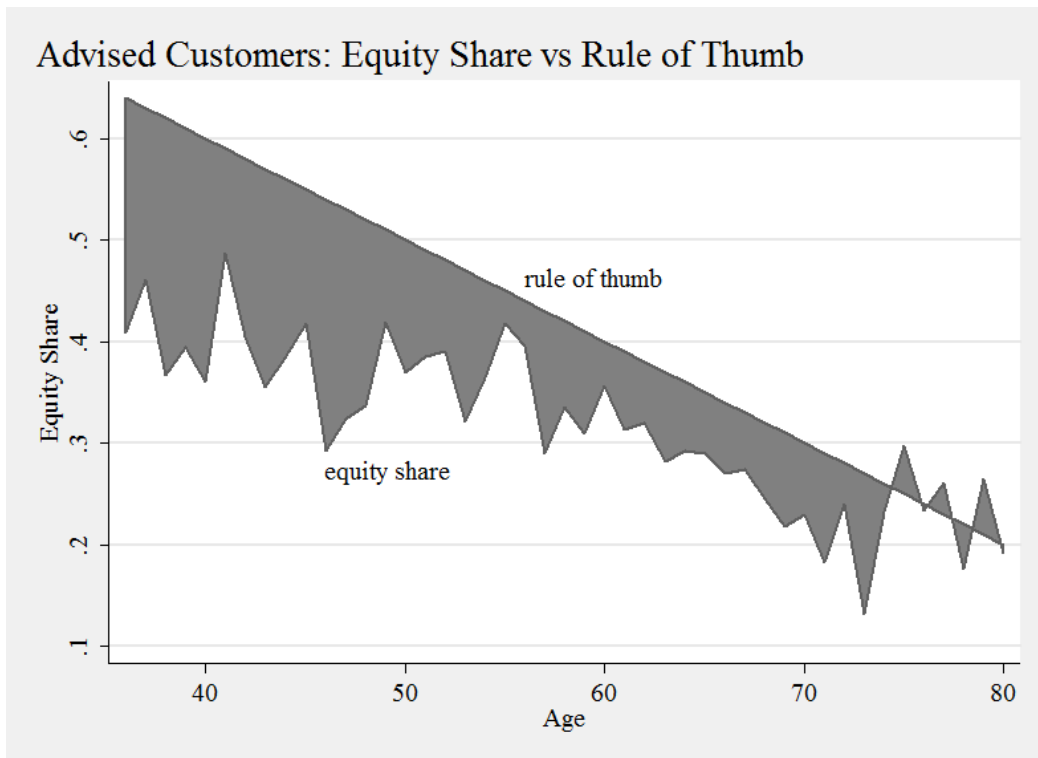


Figure 2: Advised Customers: Equity Share versus Rule of Thumb

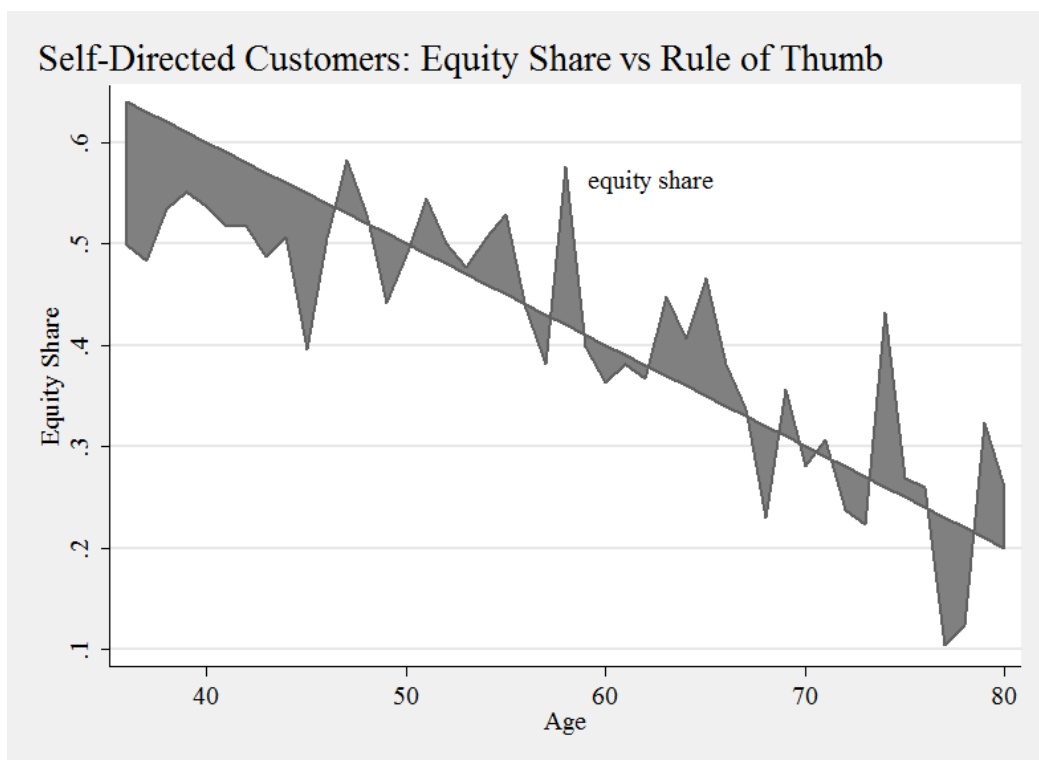


Figure 3: Self-Directed Customers: Equity Share versus Rule of Thumb