Investment Advice and Individual Investor Portfolio Performance

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Abstract

We aim at answering the question whether financial advisors add value to individual investor portfolio decision making. We do so by comparing portfolio performance of advised and self-directed (execution-only) investors using a large dataset of Dutch investors. Although the portfolios of advised and self directed investors differ remarkably, we do not find any evidence of significant outperformance or underperformance of advised investors.

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1. Introduction

We aim at answering the question whether financial advisors add value to individual investor portfolio decision making. We do so by comparing portfolio performance of advised and self-directed investors using a large dataset of Dutch investors.

So far, most empirical research on private investors has dealt with the behavior of self-directed (primarily: online) investors. This focus on online investor behavior is convient as it rules out, to a certain extent[2], the role of financial advisors. However, online investors only count for a fraction of the individual investor population. Many investors use a financial advisor to help them make their portfolio investment decisions. Allen (2001) reports that more than half of US households rely on financial advice. Fisher & Gerhardt (2007a) indicate that roughly 80% of individual investors in Germany rely on financial advice for their investment decisions. In the Netherlands approximately 50% of the households with an investment portfolio rely on financial advice (Millward Brown, 2005). And 80% of US mutual fund-owning households outside a retirement plan rely on a financial advisor (ICI, 2007). Furthermore, polls among banking executives indicate that the role of financial advisors, catering so called high value customers, will increase in the future (WRBR, 2005).

The question is, of course, why portfolio performance of advised investors would deviate from that of self-directed investors. Firstly, we need to establish that an advisor has a measurable impact on individual portfolio decision making. Guiso and Jappeli (2005) and Fisher and Gerhard (2007a) assert that this is the case. Secondly, we need to determine whether this influence is positive or negative. Performance might be negatively affected by agency problems between an advisor and his client. Advisors have an incentive to generate commissions. They can do so by stimulating the number of transactions and by advising mutual funds with high sales margins (see e.g. Zhao, 2007), which both have a potentially negative effect on performance. On the other hand, we argue that advisors may have a positive influence on private investor portfolios because they have a formal education in financial matters, experience in dealing with financial markets, better access to information

[2] By using online trading data one only knows that the transaction was made through the internet, it does not automatically imply that no advice was given. Independent investors can be free riders on available advice. Furthermore, financial institutions often provide generic (as opposed to personal) advice which is available online without charge, but this, of course, counts for all online investors to the same extent.

and may be able to keep a level head. These factors might well lead to more knowledgeble and less biased decision making (see e.g. Shapira and Venezia, 2001; Seasholes, 2005, and Lo and Repin, 2002). In addition, there are legal considerations (discussed later), that provide incentices for advisors to act in the best interest of a customer. Taken the above arguments together, the question of whether advisors enhance or reduce individual investor portfolio performance becomes an empirical question.

While three decades ago, Schlarbaum, Lewellen and Lease (1978a and 1978b) report risk adjusted returns of around zero percent and 'reasonable skill in security selection', more recent empirical studies find that the average individual investor performs poorly. Using data from a discount brokerage firm, Odean (1998) shows investors hurt their performance by selling winners too soon and holding loosers too long, a tendency which has been labeled the disposition effect (Shefrin and Statman, 1985). Odean (1998) estimates a potential gain of 3.4% per year when losers rather than winners should have been sold. In another paper, Odean (1999) studies the performance of 10,000 private investors and finds that buys underperform sells by a large margin, a result he attributes to overconfidence. Barber and Odean (2000) confirm this result by showing a large penalty for excessive trading. This penalty is mainly caused by transaction costs, therefore the most active traders underperform the most. Moreover, Barber and Odean (2001) find a significant gender effect in overconfidence-based excessive trading: male investors tend to be more subject to excessive trading than female investors and, therefore, perform worse. However, all results stated above ignore the large heterogeniety in performance that exists among private investors. Barber and Odean (2000) report that the top-performing quartile of the investors in their dataset outperform the market by 0.5 percent per month. Coval, Hirshleifer and Shumway (2005) report strong persistence of trades of individual investors, suggesting that a group of skillful individual investors earns abnormal profits. This finding is confirmed by Che, Norli and Priesley (2007). Research by Ivkovic and Weisbenner (2004) indicates that the local holdings of individual investors perform well, and Ivkovic, Sialm and Weisbenner (2005) show that skilled investors earn abnormal returns by concentrating their portfolios in stocks about which they have favourable information.

As we study the outcomes of a decision making process which is a combined result of both the individual investor and his/her professional advisor, performance of professional money

managers may provide us with some clue whether professional influence could in priciple enhance performance or not.

The added value of portfolio managers has been debated among academics since Jensen (1967) showed that mutual funds on average were not able to outperform a buy and hold strategy. Furthermore, recent studies indicate that actively managed mutual funds underperform passivily managed funds (Henriksson, 1984; Gruber, 1996; Carhart, 1997; Ikenberry, Shockley and Womack, 1998). On the other hand, Wermers (1999) reports that mutual fund managers have significant stock picking skills and that performance persistence exists which he attributes to portfolio manager skill. Carhart (1997), hoewever, attributes this performance persistence to the momentum effect of Jegadeesh and Titman (1993). Studies on pension fund performance report similar results. Coggin, Fabozzi and Rahman (1993), for example, report positive selection skill and negative timing skill.

Other studies compare portfolio performance of individual households and of professionals. Using a large Finnish dataset, Grinblatt and Keloharju (2000) find that the professional institutions (mainly foreign mutual funds, hedge funds and investment banks) significantly outperform less sophisiticated investors (domestic housholds). This result is confirmed by Shapira & Venezia (2001), who compare independent and professionally managed investors in Israel and report better round trip performance of the profesionally managed accounts. Barber, Lee, Liu and Odean (2008) document an annual underperformance of 3.8 percentage point for the aggregate portfolio of Taiwanese individual investors while institutional investors gain from trading. They conclude: "*Investors who are saving to meet longterm goals would benefit from effective guidance regarding best investment practices*". Our paper aims at evaluating this suggestion through an empiral study based on a Dutch dataset covering the 2003-2007 period.

The remainder of this paper is organized as follows. Section 2 presents the potential costs and benefits of financial advice. Section 3 decribes the data and provides summary statistics. In section 4, we present our empirical results and, section 5 concludes the paper.

2. Advice and Individual Investor Performance

2.1. The Potential Cost of Investment Advice

In as far as professionals are operating in an organizational setting, they are subject to agency relationships. In general, such relationships may induce particular incentive-based behaviors (Ross, 1973). Such incentives also relate to the different financial concerns of financial advisors: (1) generating commissions for their financial institution, (2) possibly, generating a performance-based bonus and, (3) enhancing the performance of the investors' portfolio[3] (Loonen, 2006). An indication that these different incentives do influence the advisors behavior is presented by Zhao (2005) who reports that load funds with higher loads tend to receive higher inflows. Krausz and Paroush (2002) develop a model in which conflicts of interest and information asymmetry induce the advisor to exploit a client. Some exploitation will occur in a situation where investors pay for both financial advice and investment execution as a joint product and where the cost to switching advisors ar non-negligible. Ottaviani (2000) derives similar conclusions from a model where the advisor faces a trade-off between providing good advice which leads to returning clients and good publicity on the one hand, and maximizing commission and preferential treatment of product providers on the other hand.

2.2. The Potential Benefits of Investment Advice

Although, the agency relationship potentially deminishes the benefit of an advisor, the legal setting in which investment advice takes place, at least partly, mitigates these problems. Legal protection of individual investors in the Netherlands −which is the domain of our empirical research− is grounded in a new Financial Supervision Act ('Wet Financieel Toezicht', Wft) that took effect on 1 January, 2007, and the Markets in Financial Instruments Directive (MiFID) from the EU, that was included in the Wft on 1 November, 2007. The legal protection that these regulations provide, builds on the *know your customer* principle. Its implication differs among asset management and investment advice, and other services like internet or phone based brokerage services. The financial institution acting as asset manager or advisor must obtain information on the customer's financial situation, knowledge,

[3] Next to these financial responsibilities, the advisor is partly responsible for the image and reputation of the financial institution which also relates to complying with law and regulations.

experience, objectives and risk attitude, in so far as this is reasonably relevant to the advice, and ensure that the advice takes all this information into consideration. (Wft 4:23)[4]. In case of execution-only services, a limited client profile has to be made[5]. Transactions made by the execution-only investor do not have to be checked with respect to the profile. So, the legal setting in which counseling takes place, provides a private investor with a guardian making sure that financial transactions fit the investor's characteristics and financial situation. Next to this, the Wft also provides a safety pal on excessive trading as it forbids churning (Wft 6:12). Furthermore, Dutch retail banks can signal the competence of their security specialists by means of the Dutch Securities Insitute (DSI). The DSI sets knowledge and experience requirements to security specialists like asset managers and investment advisors, and it provides a register of those professionals that meet the DSI criteria. Individual investors can file their complaints with the DSI complaints committee which makes binding decisions. The DSI therefore provides an incentive to advisors to act in the best interest of their clients.

Although internet access provides investors with a vast amount of information, it is unlikely that the average investor can digest everything, analyze it and interpret it correctly. Therefore, we pose that bridging the information asymmetry gap is an essential *raison d'être* of the financial advisor, as Bhattacharya and Thakor (1993) have already noted. In addition, advisors base their investment advice on experience with financial markets and on a formal education in financial matters. List (2003) finds that the degree of market experience of subjects tends to correlate with the degree of rationality of their decision making. Feng and Seasholes (2005) support this finding by showing that increased sophistication and trading experience are strongly related to the elimination of biased decision making. Shapira & Venezia (2001) report that professionally managed accounts exhibit less biased decision making than independent individual investors. These findings indicate that education and experience may reduce behavioral biases that are known to hurt performance, although, they do not eliminate them.

Additionally, recent research indicates that emotions may have major impacts on decision making (Loewenstein, 2003), and that experience is related to the level of these emotions. Lo

[4] The MiFID (19:4:36-38) is more specific than the Wft: the financial institution is required to acquire information about the following: assets, free available assets, investments, real estate, debt, investment horizon, risk attitudes, risk profile, financial objectives, knowledge concerning required services taking volume and frequency of transactions into account, education, profession or previous relevant professions.
[5] The following information has to be obtained (electronically): investor goals, experience and risk attitude.

en Repin (2002) for example, observe significant differences in emotional responses between experienced and less experienced foreign exchange and derivatives dealers. In a recent working paper (Bluethgen et al (2007)) provide some initial prove for better investment decision making by advised investors (compared to self directed investors) in terms of portfolio diversification.

2.3. The Importance of Account Size

In this research we report our findings for relatively large portfolios in comparison to results for the whole sample. Advisors may have many clients that require guidance on their portfolio holdings. Large investors are better customers of a bank in terms of profit potential. In addition, their portfolios may contain more complex securities that require more advisory efforts. Therefore, it is likely that investors with larger portfolios are more influenced by an investment advisor than investors with smaller portfolios. Of course, the causal relationship might also be reversed in the sense that advisors tend to advise more complex securities or increase the value of the portfolio by their efforts, but the fact remains that the influence an advisor has on a portfolio's performance is more likely to be found in portfolios they pay most attention to. Analyzing large portfolios might therefore give additional insight in the impact of an investment advisor on individual portfolio performance.

3. Data

3.1. The Sample

We obtained data from a Dutch retail bank offering both advisory and execution only investment services. Of all investment clients, both position and transaction files are obtained covering a 52 month period from April 2003 till August 2007. We only use accounts of private investors with non-restricted accounts. Therefore, we exclude portfolios owned by a business, portfolios that are linked to mortgage loans, and portfolios that are part of a company savings plan. This leaves a final sample 16,053 investors. Execution-only and advised investors of the bank are treated by different departments within the bank. Investors that have an advisory relationship cannot trade trough the execution-only department, and investors that use execution-only services cannot trade with the help of an advisor. Accounts that were opened or closed during the sample period are included for the months in which they were active, making the data set free of survivorship bias.

The trade file includes the following data fields: account identifier, trade date, ISIN[6] code, transaction type, quantity traded, trade price, currency and commission paid. The file consists of 535,543 transactions with a combined market value of € 1,604 million. The following transaction types total 95% of all transactions in terms of absolute market value: sells € 585 million (mean transaction value € 12,451), buys: € 561 million (mean transaction value € 14,042), new issues: € 166 million (mean transaction value € 25,916), option trades (both buys and sells) € 85 million (mean transaction value € 2,218), repayment of bullet loans € 55 million (mean transaction value: € 21,386), dividend payments: € 46 million (mean transaction value € 265) and, monthly coupon payments: € 29 million (mean transaction value: € 146). Of the 138,210 buy and sell transactions, 30% are option trades.

The positions file consists of 2,434,326 investor-security-month positions which we aggregate into 654,036 monthly individual portfolio statements. The positions file also provides information on the type of the client (execution-only or advised), gender, zip code, date of birth and risk profile (for advised clients only).

3.2. Comparison of the Sample with National Data

In March 2006 the Dutch Central Bank ('De Nederlandsche Bank', DNB) provided data on the investment portfolios that Dutch households hold with all Dutch banks. These data provide us with a good benchmark to test the representativeness of our sample. This is relevant as our sample comes from a medium sized bank with ties to specific regions within the Netherlands. Table 4 compares the average portfolio size and asset mix of Dutch households with our sample of advised and self-directed investors. Average portfolio size in our sample is slightly smaller than that of overall Dutch households (€ 65,000 vs € 70,000). The equity weight in our sample almost equals the equity weight of the average Dutch household (52% vs 54%). Investors in our sample seem to be better diversified by including more mutual funds into their portfolios (especially so for advised investors), although, there is a more pronounced home bias in common equity. The share of structured products is identical (both 6%), but the amount of fixed income investments differs. One third of the portfolio's in our sample is allocated to fixed income securities, in contrast to a quarter for the average

[6] ISIN (International Securities Indentifying Number) provides each tradable security worldwide an unique 12 positions alpha numeric code.

Dutch household. Considering all, however, our impression is that our sample reasonably represents the average investor in the Netherlands.

3.3. Measuring Investor Portfolio Performance

In most previous studies on individual investor performance, only common equity positions are taken into consideration and intra-month trading is often overlooked (e.g. Barber & Odean, 2000). This approach ignores possible benefits from diversification among asset classes and also ignores returns that are a result of intra-month trades. Other research calculates only the performance of equity trades rather than portfolio performance (e.g. Odean, 1999; Schlarbaum et al.,1978a). In this research we take all portfolio holdings, including mutual funds, bonds and derivatives, into consideration and explicitly account for both the size and the timing of deposits and withdrawals including the intra-month trades. For comparison reasons we also provide an analysis of returns of common equity in our sample.

We calculate portfolio and common equity returns using the modified version of the so called Dietz measure (Dietz, 1968):

$$R_{it}^{gross} = \frac{MV_{it} - MV_{it-1} - \sum NC_{it}^{gross}}{MV_{it-1} + \sum w_k NC_{it}^{gross}} \qquad (1)$$

where R_{it}^{gross} is the gross monthly return of investor *i* in month *t*, MV_{it} is the end of month market value of the entire (or common equity only) portfolio, NC_{it}^{gross} is the net contribution (deposits minus withdrawals) in month *t* before transaction costs, and w_k is the weight attributed to the net contribution. This weight is determined by the timing of the contributions. The earlier in the month the contribution takes place, the higher the weight.

To calculate the net return (R_{it}^{net}), both transaction costs and custodial fees (including 19% VAT) are deducted from the end of month portfolio value. See expression 2.

$$R_{it}^{net} = \frac{MV_{it} - MV_{it-1} - \sum NC_{it}^{gross} - COSTS_{it}}{MV_{it-1} + \sum w_k NC_{it}^{gross}} \qquad (2)$$

For withdrawals that are a result of a dividend payment, dividend withholding taxes are added back (in the Netherlands private investors are allowed to compensate these withholdings through their income tax filings). Bond transactions are netted of accrued coupon interest, and for every month that a portfolio holds a fixed income security, the coupon (which has been recalculated on a monthly basis) is included in the transaction file. Monthly turnover is calculated by dividing all purchases and sales by the beginning of the month portfolio value. These calculations provide us with a sample of 604,831 investor-month observations and are the primary focus of our research. Missing values are due to those investors who do not invest for the whole sample period of 52 months and the elimination of extreme outliers.

The gross and net monthly return of the average advised and average self directed investor in every month are calculated as:

$$\overline{R}_{ADVt}^{gross} = \frac{1}{N_{ADVt}} \sum_{i=1}^{N} R_{jt}^{gross} \qquad \overline{R}_{SDt}^{gross} = \frac{1}{N_{SDt}} \sum_{i=1}^{N} R_{jt}^{gross} \qquad \text{(3a) (3b)}$$

$$\overline{R}_{ADVt}^{net} = \frac{1}{N_{ADVt}} \sum_{i=1}^{N} R_{jt}^{net} \qquad \overline{R}_{SDt}^{net} = \frac{1}{N_{SDt}} \sum_{i=1}^{N} R_{jt}^{net} \qquad \text{(4a) (4b)}$$

where N_t is the total number of investors at time *t* and the subscripts *ADV* and *SD* denote advised and self directed investors respectively.

3.4. Control Variables

In our analysis, we introduce several control variables that might influence returns. Bauer *et al*. (2008) indicate that turnover, gender and account size are significant determinants of gross returns. Portfolio turnover hurts net returns (Barber & Odean, 2000) and might be one of the mechanisms through which the advisor influences the return of the investor. Related to this, Barber and Odean (2001) show that men trade 45% more than woman, and because of the incurred trading costs men underperform by almost 1% per year. Bauer *et al*. report that the most active traders outperform in gross terms, but, underperform in net terms. Portfolio size is often used as a proxy for investor sophistication. On the one hand, Anderson (2008) shows a positive relation between portfolio value and trading performance, and Bauer *et al.* (2008) show that large portfolios outperform small portfolios. On the other hand, Barber and Odean (2000) find no significant risk adjusted return differentials between the largest and smallest

portfolios. Age is likely to be related to investor experience. Korniotis and Kumar (2008) show that older and experienced investors exhibit greater investment knowledge, but they appear to have worse investment skills which the authors relate to cognitive ageing.

3.5. Summary Statistics

Table 2 indicates that of the more than 16,000 investors in our sample approximately 70% receives advice at some point during the sample period. For portfolios with a value of above €100,000 this is more than 90%. The advised group contains more women (27% vs 24% for self-directed investors) and joint accounts (40% vs 36% for self-directed investors). The average advised investor is a little older (56 vs 52) and his/her portfolio value is a considerably higher than for the self- directed group (€ 70,000 vs € 15,000).

Panel B of table 1 indicates that the average portfolio turnover is 4.7% per month, less than the 6% reported in Barber & Odean (2000), but this might be attributable to the fact that their sample is from an internet brokerage firm only (while our sample includes investors using a full service or a phone-based execution-only brokerage service). Although, advised investors execute almost twice as much trades (0.27 vs 0.14 trades per month), self-directed investors are more active in terms of turnover (5.5% vs 4.4% per month). For larger portfolios, the turnover is almost equal between the two groups. From these statistics we find no evidence of churning in advised portfolios. In addition, we observe a large heterogeneity in trading activity; 25% of the investors never trade, while the 1% percent of most active investors turn their portfolio around almost once per annum.

Panel C of table 1 reports the asset allocation and indicates large differences between the asset mix of the average advised and self-directed investor. Although for both groups equity and bonds represent the main assets (approximately 85% of portfolio value), self-directed investors have more risky portfolios. Their asset mix consists of almost 70% equity, whereas advised portfolios allocate less than 50%. The median self-directed investor holds an all-equity portfolio, while the median advised portfolios allocates only 43% to equity. For larger portfolios (over €100,000) equity allocation drops by more than 5%, but this is mainly due to the lower equity exposure in the self-directed portfolios (which predominantly are of relatively small size). Considering the issue of diversification, the average number of common equity positions is 4.4 and larger for advised portfolios (5.3 vs 3.3). Larger portfolios hold

more common equity positions (almost 9 for portfolios over €100,000). In addition, self-directed investors own options more often (6% vs. 4.5%), and of the portfolios with an average portfolio value above € 100,000 almost 13% hold options.

In panel A of table 5 we report average portfolio returns. Advised portfolios generate an average gross (net) monthly excess return of 0.62% (0.58%) which is 0.26 percentage points (0.24 percentage points) less than self-directed portfolios. This finding seems quite plausible considering the larger equity exposure of the self-directed portfolios during a period with favourable equity market returns. Although self-directed portfolios outperform advised portfolios in all size deciles, returns of the smallest portfolios differ by only 0.13 percentage points in gross terms and 0.09 percentage points in net terms, while for the largest portfolios this difference is 0.28 and 0.31, respectively. Panel B shows returns when only common equity positions are taken into consideration. In general the average monthly return is quite high: 1.84% in gross terms and 1.69% in net terms. Advised portfolios significantly outperform self-directed portfolios, but only by a small margin of 0.06 percentage points in gross terms per month (and 0.07 percentage points in net terms). Although advised households generate better returns in almost all size deciles, the smallest portfolios (with an average equity value of only € 315) seem to benefit the most. For the smallest portfolios, gross (net) returns differ by 0.31 (0.23) per month between the two groups, while the largest portfolios (average portfolio value of € 267,000) perform the same in net terms.

4. Analysis and Results

In this section we compare advised and self directed returns while controlling for various risk exposures and cross sectional differences. First, we report the Sharpe and Sortino ratios, then we present portfolio alphas from various time-series regressions and finally we report results from cross-sectional regressions using the Fama-MacBeth methodology.

4.1. Sharpe and Sortino Ratios

The Sharpe ratio (Sharpe, 1966) is a frequently used reward-to-risk ratio, relating the excess return of a portfolio to the standard deviation of this excess return. The Sharpe ratio can be interpreted as a t-test for the hypothesis that the return of the portfolio equals the risk free rate. The ratio should be above 1.96 in order to reject the hypothesis. We calculate Sharpe ratios

only for the common equity portfolios. According to Bookstaber & Clarke (1985) the Sharpe ratio is not suited for portfolios that contain options. Plantinga (2007) reports similar findings for dealing with fixed income securities. Since on average 5% of our portfolios contain options and the average portfolio consists of 30% bonds, calculating Sharpe ratios for the entire portfolio will not be of much value. The Sharpe ratio has also been criticized for treating positive volatility (that is returns above the mean) just the same as negative volatility (returns below the mean); see e.g. Sortino & Van der Meer, (2001). Investors often do not consider higher than expected returns as risk. In this respect the Sortino ratio has been developed, relating the portfolio return above a certain minimum (for which mostly zero or the risk free rate is used) to the downside volatility of this return, for which only those returns that fall below the minimum are used.

The gross Sharpe ratio will be calculated as follows:

$$S_i^{gross} = \frac{\frac{1}{T}\sum_{t=1}^{T}\left(R_{it}^{gross} - R_{ft}\right)}{\sigma_i} \quad \text{in which} \quad \sigma_j = \sqrt{\frac{1}{T}\sum_{t=1}^{T}\left(\left(R_{it}^{gross} - R_f\right) - \left(\overline{R_{it}^{gross} - R_f}\right)\right)^2}$$

(5)

And the gross Sortino ratio is determined as follows:

$$Sort_i^{gross} = \frac{\frac{1}{T}\sum_{t=1}^{T}\left(R_{it}^{gross} - R_{mar}\right)}{\delta_i} \quad \text{for which} \quad \delta_i = \sqrt{\frac{1}{T}\sum_{t=1}^{T}\left(R_{it}^{gross} - R_{mar}\right)^2} \; \forall R_{it} < R_{mar}$$

(6)

Where R_{it} is the raw gross return of investor *i* in period *t*, and R_{ft} is the risk free rate at time *t*, R_{mar} is the minimal acceptable return, which is defined as the risk free rate; σ_i is the standard deviation of the gross excess return of investor *i*, δ_i is the downside risk of investor *i*. The net Sharpe and Sortino ratios are calculated in a similar fashion. In line with Ivkovic, Sialm and Weisbenner (2005), we report Sharpe and Sortino ratios only for common equity portfolios that at least have 24 monthly return observations and are advised or self-directed for the whole period that they are active. This leaves a sample of almost 4,300 household portfolios.

Panel A of table 6 presents the cross sectional Sharpe ratios split into size deciles based on common equity portfolio. The average gross (net) Sharpe ratio is 0.38 (0.35). On average we

find that advised portfolios generate higher Sharpe Ratios, but the differences are quite small. In four of the size deciles, net Sharpe ratios are virtually the same, while in two other size deciles self-directed investors perform marginally better. We find similar results when calculating Sortino ratios, which can be found in panel B. The gross (net) Sortino ratio for the average advised investor is 1.00 (0.85) which is 0.12 (0.10) higher compared to the average self-directed investor.

4.2. Time-series regressions

Additional to Sharpe and Sortino ratios, we analyze risk-adjust returns by calculating alphas of advised and self-directed investors. We form several portfolios by aggregating investors on an equally weighted basis according to the group to which they belong (advised or self directed) in a specific month. As advisors have an incentive to give most attention to large clients, we argue that it is likely that the effect of counseling are more pronounced for large clients. Therefore, we also create portfolios based on various account sizes.

We regress monthly common equity returns using a three factor model developed by Fama and French (1993) in order to correct for different style tilts in the portfolios. Additionally, we regress monthly portfolio returns using a 6 factor model which, in addition to the three Fama and French factors, takes other variations in portfolio characteristics into consideration, similar to Bauer et al.(2007). We estimate model 7 to calculate alphas for the common equity portfolios, whereas we use model 8 to calculate alphas for the overall investor portfolio.

$$R_{jt} = \alpha_j + \beta_{1j}\left(R_{mt} - R_{ft}\right) + \beta_{2j} SMB_t + \beta_{3j} HML_t + \varepsilon_{jt} \quad (7)$$

$$R_{jt} = \alpha_j + \beta_{1j}\left(R_{mt} - R_{ft}\right) + \beta_{2j} SMB_t + \beta_{3j} HML_t + \beta_{4j} BOND_t + \beta_{5j} CALL_t + \beta_{6j} PUT_t + \varepsilon_{jt} \quad (8)$$

Where R_{jt} is the average equally-weighted return for portfolio *j* in month *t* as calculated in specification 3a, 3b, 4a and 4b (see section 3.3, portfolio *j* refers to the aggregate portfolio of advised or self-directed investors); R_{mt} -R_{ft} is the excess return on the MSCI Netherlands index in month *t*; SMB_t is the return on a zero-investment factor mimicking portfolio for size; HML_t is the return on a zero-investment factor mimicking portfolio for value; $BOND_t$ is the excess

return on the Iboxx 10 year Dutch Government Index. Similar to the methodology of Agarwal and Naik (2004), $CALL_t$ (PUT_t) is a return series generated by buying a 2-months at the money index call (put) option at the end of each month and selling it again at the end of the following month. The procedure is repeated for every month, generating a time series of 52 monthly returns. To avoid multicollinearity problems both $CALL_t$ and PUT_t factors are orthogonalized on the R_{mt} factor.

In table 7 the factor premia used in the time series regressions can be seen. The average monthly excess return of the market was 1.6%, and small caps outperformed large caps just as value stocks outperformed growth stocks. The favourable market conditions can also be derived from the average option returns. The strategy of buying a two months at the money index option for one month every month yielded a gross return of 18%, which did not differ from zero at conventional significance levels because of the high volatility of these returns. The put strategy would have yielded a negative average monthly return of over 40%. The average excess return on bonds did not differ significantly from zero.

Table 8 and 9 report the gross and net returns for a calendar time portfolio that equally weights the returns of investors that have been advised or self-directed and can therefore be interpreted as the portfolio of the average investor in the respective groups. As can be expected from the average asset mix discussed previously and the favourable stock market in the sample period, the average self-directed investor outperformed the average advised investor with quite a margin. For the whole sample the difference in gross (net) returns constituted 0.25% (0.23%) per month similar to the finding we reported in table 5. For larger portfolios this return difference is smaller but still considerable.

Table 8 and 9 also report on the results from regressing the gross and net returns for the advised and self directed portfolios on the 6 factors described above. The most important finding here is that alpha never differs significantly from zero between the two groups. This implies that corrected for the differences in the portfolio composition, advised and self-directed investors perform the same. It is interesting to see that both the average advised and self-directed investor generate positive alphas. Although this alpha is not statistically different from zero for the whole sample it is significantly positive for the largest investors (portfolios in excess of €100,000), both in gross (0.18% per month) and net terms (0.14% per month). These findings are in contrast to most other research on individual investor performance that

indicate that the average individual investor generates negative alpha (Barber & Odean, 2000; Anderson, 2005; Bauer at al., 2007). Furthermore, the coefficients on $R_{mt} - R_{ft}$, SMB_t and $CALL_t$ in table 8 and 9 confirm that self directed investors on average take more risk which confirms the findings on German investors from Bluethgen (2007).

Table 10 and 11 show the results of regressing the aggregated equally weighted common equity portfolios on the 3 Fama and French (1993) factors. The most important finding, again, is that alpha does not significantly differ between advised and self directed households. This results hold for alphas in gross and net terms and for various portfolio sizes. Equally interesting we find that alpha's are significantly positive and quite high (0.47% per month). This might well be attributable to the specifics of our database which consists of average retail investors and not of active on-line traders. (Barber & Odean, 2000; Anderson, 2005; Bauer at al., 2007). Additionally, we find the average equity portfolio to be quite conservative with an coefficient on the market factor of only 0.77. Most other research on individual investor portfolio performance report beta's of over 1. (Barber & Odean, 2000; Bauer at al., 2007).

4.3. Cross Sectional Analysis

To test whether investor performance can be attributed to various investor characteristics, we apply the cross-sectional methodology developed by Fama and MacBeth (1973). We choose the Fama-MacBeth procedure as it provides statistical inference free of contamination from cross-sectional correlation. Cross- sectional correlation is very likely in our sample as many investors choose similar securities in their portfolios making return observations not independent over the cross section. Specifically, each month we run the following regression:

$$R_{it} = \alpha_{0t} + \beta_{1t} Advise_{it} + \beta_{2t} Woman_{it} + \beta_{3t} Joint_{it} + \beta_{4t} Age_{it} + \beta_{5t} \ln(Value)_{it} + \beta_{6t} \ln(Turnover)_{it} + \beta_{7t} Equity_{it} + \beta_{8t} FixedIncome_{it} + \beta_{9t} RealEsate_{it} + \beta_{10t} Structured_{it} + \beta_{11t} Mix_{it} + \beta_{12t} Derivative_{it} + \varepsilon_t \quad (9)$$

Where R_{it} denotes the gross or net month t excess portfolio return for investor i; $Advise_{it}$ is a dummy variable which equals one for investors that have an advisor in month t ; $Woman_{it}$ is a dummy which is one if the portfolio is held by a female and zero otherwise; $Joint_{it}$ is a dummy which is one if the portfolio is held by two persons, mostly a male and a female, and zero otherwise; Age_{it} is the age of the primary account holder in month t. $Value_{it}$ is the

beginning of the month portfolio market value in month *t*; $Turnover_{it}$ is the sum of all purchases and sells in month *t* divided by the beginning of the month portfolio value. As we are dealing with portfolios that differ in terms of assets allocation, we use the fractions of the total account value allocated to a specific asset classes in percentages of the total monthly portfolio as additional controls when estimating the regressions on the entire investor portfolio. $Equity_{it}$ refers to both individual stock holdings as well as equity mutual funds, $Fixed\ Income_{it}$ to individual bonds and bond funds, $Real\ Estate_{it}$ to real estate funds, $Stuctured_{it}$ to structured products and Mix_{it} to balanced funds. $Derivative_{it}$ is a dummy variable equal to 1 if the account held derivatives (mainly options) which is included as a proxy for the level of risk aversion. We argue that investors that trade in options are less risk averse and might therefore hold more risky equity position in their portfolios. The reported coefficients are the time series averages of the monthly cross sectional parameter estimates. We calculate the standard error of the coefficients from the time series of these monthly estimates.

We report the coefficients on the Fama-MacBeth regression in tables 12 and 13. The main finding from these regressions is that the coefficient on the Advice dummy, although sometimes positive but mostly negative, almost never differs statistically from zero at conventional confidence levels. Only in the regression using gross equity returns during the first half of our sample we find a marginal significant positive coefficient on the advise dummy, but this effect disappears when we regress on net returns. From this analysis we therefore conclude that advised households do not better nor worse than self directed individual investors. Additionally, it is interesting to see that women do not outperform men. This is in contrast to Barber & Odean (2001), and cannot be explained by our inclusion of the *Turnover* variable. Trading activity is the main cause of female outperformance in the Barber & Odean (2001) study but, leaving the *Turnover* variable out on our analysis does not change the results on the Women variable. The female accounts in our sample perform in line with male and joint accounts. The Trading activity in our study actually has a positive impact on gross returns. Apparently, trades are motivated by some informational advantage. However, taking trading costs into consideration, the advantage disappears. Turnover adversely influences net returns.

5. Conclusion and Discussion

In this paper we try to shed light on the value of financial advice. We do so by comparing the performance of advised and self-directed investors. Our main finding is that, although the portfolios of advised and self-directed investors differ remarkably, we do not find any evidence of significant out- or underperformance of advised households.

In section 2 we gave arguments that potentially could enhance or reduce the performance of advised investors. Future research will have to answer the question why both advised and self-directed investors perform as similar as they do as our analysis suggests. We can, however, make some comments on this issue. On the one hand, we argue that because of agency conflicts advisors could harm the portfolio performance of individual investors. We do not, however, find any evidence of churning in the advised portfolios. Turnover is actually lower. In addition, advisors could guide their customers to financial products with high sales margins which harm investor performance. In that case we should find differences when comparing returns of entire portfolios (which include all securities including 'expensive' mutual funds) and returns of common equity portfolios (where all securities generate the same commissions for the advisor), but we find rather similar risk-adjusted performance statistics for both portfolio and common equity returns when comparing advised and self directed investors. On the other hand, we argue that advised investors are protected from malpractice by law and can benefit from the experience and knowledge of advisors. This would, among others, lead to better diversification of advised portfolios, which is indeed something we do find: more fixed income securities, a higher number of common equity positions, more international securities (although home biased is very pronounced for both groups), and more equity mutual funds relative to the total equity allocation for advised investors portfolios. Volatilities of advised portfolios are therefore lower and Sharpe ratios higher. Differences are, however, too small to be significant.

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Table 1: Descriptive Statistics on Individual Investors, Trades and Portfolio's

This table presents descriptives of household and portfolio characteristics. Woman is the percentage of account held by a woman only. Joint is the percentage of portfolios held by 2 persons, mostly a man and a woman. Age is the age of the primary account holder. Account value is the beginning of the month account value. Turnover is the sum of buys and sells devided by the beginning of the month account value. (Derivative) Trades is the average number of (derivativee) buys and sells per month. Equity, Fixed Income, Real Estate, Structured and Mix refer to fractions of the total account value of specific asset classes; Equity refers to both individual stock holdings as well as equity mutual funds, Fixed Income to individual bonds and bond funds, Real Estate to real estate funds, Stuctured to structured products and Mix to mix funds. Derivative is a dummy variable equal to 1 if the account held options or turbo's. Common equity positions is the number of common equity positions in each portfolio.

	Mean	Std.Dev.	p5	p25	Median	p75	p95
Panel A: Characteristics							
Woman (%)	25.6	43.6	0.0	0.0	0.0	100.0	100.0
Advised	*26.7*	*44.2*	*0.0*	*0.0*	*0.0*	*100.0*	*100.0*
Self Directed	*23.7*	*42.5*	*0.0*	*0.0*	*0.0*	*0.0*	*100.0*
Joint (%)	39.2	48.8	0.0	0.0	0.0	100.0	100.0
Advised	*40.0*	*49.0*	*0.0*	*0.0*	*0.0*	*100.0*	*100.0*
Self Directed	*36.0*	*48.0*	*0.0*	*0.0*	*0.0*	*100.0*	*100.0*
Age (years)	55.0	18.3	21.0	43.4	56.7	67.4	83.2
Advised	*56.4*	*18.0*	*22.4*	*45.4*	*58.3*	*68.6*	*83.4*
Self Directed	*51.7*	*18.5*	*18.2*	*39.4*	*52.8*	*64.1*	*81.4*
Account Value (€)	52468	194027	395	3058	11367	36134	211660
Advised	*69358*	*231284*	*519*	*4414*	*16040*	*54080*	*290829*
Self Directed	*15134*	*34910*	*227*	*1571*	*5600*	*15374*	*56969*
Panel B: Monthly Trading Activity							
Turnover (%)	4.7	22.7	0.0	0.0	0.7	4.0	15.3
Advised	*4.4*	*22.7*	*0.0*	*0.0*	*0.9*	*4.0*	*13.8*
Self Directed	*5.5*	*23.9*	*0.0*	*0.0*	*0.0*	*3.7*	*20.8*
Trades (#)	0.2	1.3	0.0	0.0	0.0	0.1	0.9
Advised	*0.3*	*1.4*	*0.0*	*0.0*	*0.0*	*0.1*	*1.0*
Self Directed	*0.1*	*0.8*	*0.0*	*0.0*	*0.0*	*0.1*	*0.5*
Derivative trades (#)	0.1	0.9	0.0	0.0	0.0	0.0	0.0
Advised	*0.1*	*1.1*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Self Directed	*0.0*	*0.5*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Panel C: Portfolio Composition							
Equity (%)	54.9	43.3	0.0	0.0	61.6	100.0	100.0
Advised	*47.9*	*42.2*	*0.0*	*0.0*	*42.6*	*100.0*	*100.0*
Self Directed	*68.3*	*42.8*	*0.0*	*15.5*	*100.0*	*100.0*	*100.0*
Fixed Income (%)	30.7	39.9	0.0	0.0	0.0	65.1	100.0
Advised	*36.1*	*40.5*	*0.0*	*0.0*	*18.4*	*76.5*	*100.0*
Self Directed	*20.0*	*36.9*	*0.0*	*0.0*	*0.0*	*17.3*	*100.0*
Real Estate (%)	2.3	9.9	0.0	0.0	0.0	0.0	13.5
Advised	*3.0*	*10.9*	*0.0*	*0.0*	*0.0*	*0.0*	*16.6*
Self Directed	*0.8*	*7.3*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Structured (%)	7.5	22.1	0.0	0.0	0.0	0.0	76.0
Advised	*8.5*	*23.0*	*0.0*	*0.0*	*0.0*	*1.8*	*90.0*
Self Directed	*5.8*	*21.1*	*0.0*	*0.0*	*0.0*	*0.0*	*68.7*
Mix (%)	3.0	13.1	0.0	0.0	0.0	0.0	23.0
Advised	*3.4*	*13.8*	*0.0*	*0.0*	*0.0*	*0.0*	*28.1*
Self Directed	*2.3*	*11.8*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Derivative (% of portfolio's)	4.9	21.6	0.0	0.0	0.0	0.0	0.0
Advised	*4.5*	*20.6*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Self Directed	*6.0*	*23.7*	*0.0*	*0.0*	*0.0*	*0.0*	*100.0*
Common equity positions (#)	4.40	4.69	1	1	3	6	13
Advised	5.16	5.36	1	1	3	7	16
Self Directed	3.26	3.12	1	1	2	4	9

Table 2: Descriptive Statistics on Individual Investors, Trades and Portfolios, also related to portfolio size

This table presents descriptives of household and portfolio characteristics split in all households and households with begining of the month portfolio value of at least €25,000 and € 100,000.. *Woman* is the percentage of account held by a woman only. *Joint* is the percentage of portfolios held by 2 persons, mostly a man and a woman. *Age* is the age of the primary account holder. *Account value* is the beginning of the month account value. *Turnover* is the sum of buys and sells devided by the beginning of the month account value. *Trades* is the average number of buys and sells per month. *Equity, Fixed Income, Real Estate, Structured and Mix* refer to fractions of the total account value of specific asset classes; *Equity* refers to both individual stock holdings as well as equity mutual funds, *Fixed Income* to individual bonds and bond funds, *Real Estate* to real estate funds, *Stuctured* to structured products and Mix to mix funds. *Derivative* is the percentage of portfolios that held options. Common equity positions is the number of common equity positions in each portfolio.

	All Households				Household Portfolio at least € 25,000				Household Portfolio at least € 100,000			
	All	Advised (ADV)	Self Directed (SD)	Difference ADV-SD	All	Advised (ADV)	Self Directed (SD)	Difference ADV-SD	All	Advised (ADV)	Self Directed (SD)	Difference ADV-SD
Characteristics:												
Advised (%)	70%				84%				93.10%			
Woman (%)	25.6%	26.7%	23.7%	3.0%	25.1%	25.4%	25.1%	0.2%	25.1%	25.1%	23.7%	1.5%
Joint (%)	39.2%	40.0%	36.0%	4.0%	43.0%	43.5%	38.8%	4.7%	41.5%	42.0%	37.6%	4.4%
Age (years)	55.0	56.4	51.7	4.7	61.69	61.65	62.04	-0.39	63.88	63.68	67.27	-3.59
Account Value (€)	52,468	69,364	15,101	54,263	148,431	163,575	65,559	98,016	319,754	327,917	181,999	145,917
Initial Account Value (€)	41,183	54,117	12,914	41,203	114,416	125,668	54,904	70,764	240,140	245,896	149,929	95,967
Monthly Trading Activity:												
Turnover (%)	4.70	4.36	5.48	-1.12	5.21	5.25	5.08	0.17	5.98	6.03	5.15	0.17
Trades (#)	0.23	0.27	0.14	0.13	0.54	0.57	0.37	0.20	0.99	1.02	0.66	0.20
Derivative trades (#)	0.07	0.08	0.04	0.04	0.16	0.17	0.13	0.04	0.32	0.32	0.34	0.04
Portfolio Composition												
Equity (%)	54.9%	47.9%	68.3%	-20.4%	47.3%	44.3%	60.1%	-15.8%	49.7%	48.5%	61.1%	-15.8%
Fixed Income (%)	30.7%	36.1%	20.0%	16.1%	38.9%	40.6%	32.5%	8.1%	35.7%	36.5%	30.6%	8.1%
Real Estate (%)	2.3%	3.0%	0.8%	2.2%	5.3%	6.0%	2.0%	4.0%	6.3%	6.4%	3.7%	4.0%
Structured (%)	7.5%	8.5%	5.8%	2.7%	6.1%	6.7%	2.7%	4.0%	6.8%	7.2%	1.3%	4.0%
Mix (%)	3.0%	3.4%	2.3%	1.2%	2.2%	2.2%	2.1%	0.1%	1.1%	1.1%	1.7%	0.1%
Derivative (% of portfolios)	4.9%	4.5%	6.0%	-1.5%	9.0%	8.4%	11.9%	-3.5%	12.8%	12.5%	14.8%	-3.5%
Common equity positions (#)	4.40	5.16	3.26	1.90	6.83	7.12	5.65	1.47	8.83	8.91	7.86	1.05
Portfolios (#)	16,053				5,120				1,867			

Table 3: Correlation Matrix of Investor and Portfolio Characteristics

This table presents pairwise correlations between investor and portfolio characteristics. *Advice* is a dummy variable equal to 1 if an investor is advised. *Woman* is a dummy equal to 1 if the account was held by a woman. *Joint* is a dummy variable equal to 1 if the account was held by 2 persons, mostly a man and a woman. *Age* is the age of the primary account holder. *Value (ln)* is the logarithm of the beginning of the month account value.*Turnover(ln)* is the logarithm of the sum of buys and sells devided by the beginning of the month account value. *Equity, Fixed Income, Real Estate, Structured and Mix* refer to fractions of the total account value of specific asset classes; *Equity* refers to both individual stock holdings as well as equity mutual funds, *Fixed Income* to individual bonds and bond funds, *Real Estate* to real estate funds, *Stuctured* to structured products and *Mix* to mix funds. *Derivative* is a dummy variable equal to 1 if the account held options.

	Advice	Woman	Joint	Age	ln Value	ln Turnover	Equity	Fixed Income	Real Estate	Structured	Mix	Derivative
Advice	1.00											
Woman	0.02	1.00										
Joint	0.03	-0.50	1.00									
Age	0.11	-0.02	0.21	1.00								
ln Value	0.27	-0.01	0.09	0.40	1.00							
ln Turnover	0.02	-0.04	0.02	0.02	0.13	1.00						
Equity	-0.22	-0.08	-0.01	-0.26	-0.25	0.04	1.00					
Fixed Income	0.18	0.10	0.00	0.28	0.24	-0.06	-0.82	1.00				
Real Estate	0.10	-0.02	0.02	0.02	0.19	0.04	-0.15	-0.07	1.00			
Structured	0.07	-0.02	0.01	0.01	0.03	0.02	-0.25	-0.14	-0.01	1.00		
Mix	0.03	0.01	-0.01	-0.03	-0.05	-0.03	-0.20	-0.13	-0.04	-0.04	1.00	
Derivative	-0.03	-0.08	0.05	-0.02	0.12	0.17	0.10	-0.14	0.00	0.00	-0.04	1.00

Table 4: Comparison Investment Portfolio of Average Dutch Household (based on DNB Survey) and our Sample, as of March 31st, 2006

		DNB Data	Own Research Sample		
Asset	**Detail**	**ALL**	**All**	**ADV**	**SD**
Equity	Common Equity	37%	30%	28%	51%
	o.w. Dutch	*75%*	*81%*	*81%*	*86%*
	Equity Mutual Funds	17%	22%	23%	16%
	Total Equity	**54%**	**52%**	**51%**	**67%**
Fixed Income	Common bonds	18%	18%	19%	6%
	o.w. Dutch	*56%*	*87%*	*87%*	*98%*
	Bond Mutual Funds	7%	18%	17%	23%
	Total Bonds	**25%**	**36%**	**36%**	**29%**
Other	Mix funds	4%	0%	0%	0%
	Structured Products	6%	6%	6%	2%
	Other	11%	6%	7%	3%
	Total Other	**21%**	**12%**	**13%**	**5%**
		100%	**100%**	**100%**	**100%**
Average Portfolio		**€ 70,000**	**€ 65,376**	**€ 85,447**	**€ 19,771**

Table 5: Portfolio and Common Equity Returns across Portfolio Size Deciles

This table presents means of all monthly gross and net excess return observations for all (ALL), advised (ADV) and self directed (SD) households split into size deciles. We exclude portfolios with a beginning of the month common equity value of less than €250. Panel A reports means of all 604,831portfolio returns including bonds, mutual funds and derivatives, whereas panel B reports means of all 217,129 common equity returns.

Panel A: Portfolio Returns sorted by Portfolio Size

Size decile	Average Portfolio Value (€)	Gross Excess Monthly Portfolio Returns				Net Excess Monthly Portfolio Returns			
		ALL	ADVS	SD	ADV-SD	ALL	ADVS	SD	ADV-SD
1 (small)	418	0.89	0.83	0.96	-0.13***	0.75	0.71	0.80	-0.09**
2	1,485	0.84	0.74	0.96	-0.22***	0.77	0.69	0.88	-0.19***
3	3,257	0.83	0.73	0.99	-0.26***	0.78	0.69	0.93	-0.24***
4	6,058	0.76	0.62	1.01	-0.39***	0.72	0.59	0.96	-0.37***
5	9,866	0.60	0.50	0.80	-0.30***	0.57	0.47	0.76	-0.29***
6	14,987	0.56	0.47	0.74	-0.27***	0.53	0.45	0.71	-0.26***
7	22,805	0.53	0.47	0.71	-0.24***	0.50	0.44	0.67	-0.24***
8	37,924	0.62	0.56	0.82	-0.26***	0.58	0.53	0.78	-0.25***
9	77,334	0.68	0.66	0.78	-0.12***	0.64	0.62	0.75	-0.13***
10 (large)	358,314	0.72	0.70	0.99	-0.28***	0.67	0.66	0.96	-0.31***
Total	54,933	0.70	0.62	0.88	**-0.26*** **	0.65	0.58	0.82	**-0.24*** **

Panel B: Common Equity Returns sorted by Common Equity Portfolio Size

Size decile	Average Common Equity Portfolio Value (€)	Gross Excess Monthly Common Equity Returns				Net Excess Monthly Common Equity Returns			
		ALL	ADVS	SD	ADV-SD	ALL	ADVS	SD	ADV-SD
1 (small)	315	2.03	2.19	1.88	0.31	1.43	1.55	1.32	0.23
2	789	1.91	1.99	1.84	0.15*	1.58	1.64	1.53	0.11
3	1,950	1.93	2.02	1.84	0.18**	1.74	1.84	1.65	0.19**
4	3,728	1.95	1.94	1.96	-0.01	1.79	1.78	1.81	-0.03
5	6,482	1.87	1.93	1.82	0.10*	1.74	1.77	1.70	0.07*
6	10,745	1.88	1.94	1.82	0.12*	1.76	1.80	1.72	0.07
7	17,821	1.88	1.99	1.72	0.27***	1.78	1.87	1.64	0.23***
8	30,911	1.75	1.79	1.67	0.12*	1.65	1.67	1.59	0.09*
9	62,118	1.72	1.73	1.66	0.07	1.64	1.64	1.61	0.03
10 (large)	267,121	1.64	1.64	1.62	0.03	1.58	1.58	1.58	0.00
Total	43,652	1.84	1.86	1.81	**0.06** **	1.69	1.72	1.65	**0.07*** **

***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively

Table 6: Cross Sectional Sharpe Ratios and Sortino Ratios

This table presents cross sectional gross and net Sharpe and Sortino ratios, split into deciles based on average common equity portfolio value for each household. We report returns for all households (ALL), advised households (ADV) and self-directed households (SD). We calculate the ratios for each of the 4,291 households that hold common equity positions for at least 24 months and that have been advised or self-directed for the whole period that they are active. Households with an average end of the month common equity portfolio of less than €250 are excluded.

	Panel A: Sharpe Ratios							
	Gross Sharpe Ratio				Net Sharpe Ratio			
Size Decile	ALL	ADV	SD	ADV-SD	ALL	ADV	SD	ADV-SD
1 (small)	0.26	0.28	0.25	0.03	0.19	0.20	0.18	0.01
2	0.32	0.34	0.31	0.03	0.28	0.29	0.26	0.03
3	0.36	0.35	0.36	0.00	0.32	0.31	0.32	-0.01
4	0.37	0.37	0.37	0.00	0.34	0.33	0.34	0.00
5	0.38	0.39	0.37	0.02	0.35	0.35	0.35	0.00
6	0.41	0.42	0.39	0.03	0.38	0.40	0.37	0.02
7	0.40	0.40	0.39	0.01	0.38	0.37	0.37	0.00
8	0.41	0.41	0.40	0.01	0.38	0.38	0.38	0.00
9	0.43	0.43	0.43	0.00	0.40	0.40	0.42	-0.02
10 (large)	0.46	0.46	0.42	0.04	0.44	0.44	0.41	0.04
Total	0.38	0.40	0.36	0.04	0.35	0.37	0.33	0.04

	Panel B: Sortino Ratios							
	Gross Sortino Ratio				Net Sortino Ratio			
Size Decile	ALL	ADV	SD	ADV-SD	ALL	ADV	SD	ADV-SD
1 (small)	0.69	0.73	0.67	0.07	0.48	0.51	0.48	0.03
2	0.80	0.87	0.74	0.12	0.66	0.72	0.62	0.11
3	0.93	0.93	0.91	0.02	0.80	0.77	0.80	-0.03
4	0.92	0.94	0.90	0.04	0.81	0.83	0.80	0.02
5	0.95	0.99	0.91	0.08	0.85	0.85	0.83	0.02
6	1.03	1.09	0.98	0.10	0.95	0.98	0.92	0.07
7	1.01	1.03	0.98	0.05	0.92	0.92	0.92	0.00
8	1.00	1.02	0.97	0.06	0.91	0.92	0.90	0.02
9	1.05	1.05	1.04	0.01	0.96	0.95	1.01	-0.06
10 (large)	1.10	1.11	1.01	0.09	1.05	1.05	0.98	0.06
Total	0.96	1.00	0.88	0.12	0.85	0.89	0.79	0.10

Table 7: Summary Statistics and Correlations of Factor Premia

This table present summary statistics on 52 months from April 2003 until August 2007 on 6 risk factors. Rm is the excess return on the MSCI Netherlands index, SMB is a zero investment portfolio that is long the MSCI Netherlands Small Cap index and short the MSCI Netherlands Large Cap index, HML is a a zero investment portfolio that is long the MSCI Netherlands Value index and short the MSCI Netherlands Growth index. BOND is the excess return on the IBOXX 10 year Dutch Government Index. CALL (PUT) is a return series generated by buying a 2 months at the money index call (put) option as explained in the section on methodology.

Panel A: Summary Statistics of Factor Premia

Variable	*Rm-Rf*	*SMB*	*HML*	*BOND*	*CALL*	*PUT*
Obs.	52	52	52	52	52	52
Mean	1.59%	0.93%	1.03%	0.11%	18.33%	-41.09%
Std. Dev.	3.51%	3.48%	3.55%	1.32%	83.09%	71.62%
Median	1.73%	0.70%	0.68%	0.30%	7.34%	-74.18%
T-Value	3.27	1.93	2.09	0.60	1.61	-4.12
P-Value	0.00	0.06	0.04	0.55	0.11	0.00

Panel B:Correlation Matrix of Factor Premia

Rm	1.00					
SMB	-0.10	1.00				
HML	0.51	-0.04	1.00			
BOND	-0.28	0.14	-0.08	1.00		
CALL	0.86	-0.01	0.32	-0.23	1.00	
PUT	-0.83	-0.06	-0.24	0.29	-0.73	1.00

Table 8: Gross Raw and Risk-Adjusted Monthly Portfolio Returns, Advised vs. Self-Directed Investors

This table present raw and risk adjusted gross returns and factor loadings of aggregate equally weighted household portfolios as well as Sharpe Ratios. Households are classified as advised (self directed) if they were advided (self directed) during the whole period of the sample of 52 months. Risk adjusted monthly returns are calculated from a 6-factor model accounting for the three Fama-French (1993) factors *(Market, SMB* and *HML)* as well as three additional factors. *BOND* is the excess return on the IBOXX 10 year Dutch Government Index. *CALL (PUT)* is a return series generated by buying a 2 months at the money index call (put) option as explained in the section on methodology. Standard errors are computed following the Newey-West correction taking into account autocorrelation up to three lags. Results are expressed in percentages for all households, and households with portfolio values of at least € 25,000 and € 100,000.

	Gross Portfolio Returns											
	All Households				Household Portfolio at least € 25,000				Household Portfolio at least € 100,000			
	All	Advised	Self Directed	Difference	All	Advised	Self Directed	Difference	All	Advised	Self Directed	Difference
Raw return	0.69	0.60	0.86	-0.25	0.69	0.66	0.81	-0.14	0.77	0.76	0.87	-0.11
				(-0.79)								
Alpha	0.12	0.09	0.17	-0.07	0.14*	0.14*	0.14	-0.00	0.18**	0.18**	0.14	0.04
	(1.22)	(1.01)	(1.34)	(-1.35)	(1.82)	(1.81)	(1.63)	(-0.15)	(2.24)	(2.22)	(1.35)	(0.65)
Market	0.35***	0.31***	0.43***	-0.12***	0.34***	0.32***	0.41***	-0.09***	0.36***	0.35***	0.45***	-0.10**
	(17.39)	(15.50)	(17.19)	(-7.23)	(18.85)	(18.05)	(15.81)	(-4.57)	(15.89)	(15.57)	(9.72)	(-2.45)
SMB	0.13***	0.13***	0.15***	-0.02	0.11***	0.11***	0.12***	-0.01	0.10***	0.10***	0.09***	0.02
	(6.38)	(6.24)	(5.52)	(-1.42)	(7.70)	(7.54)	(7.91)	(-1.52)	(6.76)	(7.02)	(3.11)	(0.75)
HML	-0.02	-0.02	-0.01	-0.00	0.00	0.01	-0.02	0.03*	0.02	0.03	-0.06	0.09***
	(-0.56)	(-0.62)	(-0.41)	(-0.25)	(0.16)	(0.37)	(-0.70)	(1.86)	(1.02)	(1.27)	(-1.62)	(3.08)
Bond	0.13*	0.14*	0.10	0.04	0.17***	0.18***	0.15**	0.03	0.17***	0.17***	0.14	0.03
	(1.69)	(1.77)	(1.32)	(1.33)	(2.76)	(2.80)	(2.17)	(0.95)	(2.76)	(2.75)	(1.52)	(0.38)
Call	0.01***	0.01***	0.01***	-0.00***	0.01***	0.01***	0.01***	-0.00***	0.01***	0.01***	0.01***	-0.00***
	(4.29)	(3.72)	(4.91)	(-3.52)	(4.03)	(3.73)	(4.81)	(-4.10)	(3.69)	(3.54)	(4.16)	(-2.74)
Put	-0.01***	-0.01**	-0.01***	0.00	-0.01***	-0.01***	-0.01***	0.00	-0.01***	-0.01***	-0.01***	0.00
	(-3.22)	(-2.62)	(-4.09)	(1.42)	(-4.67)	(-4.33)	(-5.39)	(0.71)	(-5.85)	(-5.80)	(-4.19)	(0.04)

T-statistics are presented in parentheses

***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively

Table 9: Net Raw and Risk-Adjusted Monthly Portfolio Returns, Advised vs. Self-Directed Investors

This table present raw and risk adjusted gross returns and factor loadings of aggregate equally weighted household portfolios as well as Sharpe Ratios. Households are classified as advised (self directed) if they were advided (self directed) during the whole period of the sample of 52 months. Risk adjusted monthly returns are calculated from a 6-factor model accounting for the three Fama-French (1993) factors *(Market, SMB* and *HML)* as well as three additional factors. *BOND* is the excess return on the IBOXX 10 year Dutch Government Index. *CALL (PUT)* is a return series generated by buying a 2 months at the money index call (put) option as explained in the section on methodology. Standard errors are computed following the Newey-West correction taking into account autocorrelation up to three lags. Results are expressed in percentages for all households, and households with portfolio values of at least € 25,000 and € 100,000.

	Net Portfolio Returns											
	All Households				Household Portfolio at least € 25,000				Household Portfolio at least € 100,000			
	All	Advised	Self Directed	Difference	All	Advised	Self Directed	Difference	All	Advised	Self Directed	Difference
Raw return	0.64	0.56	0.79	-0.23	0.66	0.62	0.77	-0.15	0.73	0.72	0.84	-0.12
Alpha	0.08	0.06	0.11	-0.05	0.10	0.10	0.11	-0.01	0.14*	0.14	0.11	0.03
	(0.76)	(0.59)	(0.86)	(-0.99)	(1.30)	(1.28)	(1.23)	(-0.30)	(1.71)	(1.68)	(1.09)	(0.39)
Market	0.35***	0.31***	0.42***	-0.11***	0.34***	0.32***	0.41***	-0.09***	0.36***	0.35***	0.45***	-0.10**
	(17.02)	(15.43)	(16.42)	(-6.92)	(18.15)	(17.54)	(15.23)	(-4.60)	(15.41)	(15.14)	(9.57)	(-2.46)
SMB	0.13***	0.12***	0.14***	-0.02	0.11***	0.11***	0.12***	-0.01	0.10***	0.10***	0.09***	0.01
	(6.02)	(5.95)	(5.21)	(-1.37)	(7.36)	(7.23)	(7.56)	(-1.51)	(6.52)	(6.74)	(3.04)	(0.64)
HML	-0.02	-0.02	-0.01	-0.00	0.00	0.01	-0.02	0.03*	0.02	0.03	-0.06	0.09***
	(-0.50)	(-0.58)	(-0.37)	(-0.23)	(0.14)	(0.35)	(-0.67)	(1.87)	(0.99)	(1.24)	(-1.57)	(3.11)
Bond	0.12	0.14*	0.09	0.05	0.17***	0.18***	0.15**	0.03	0.17***	0.17***	0.14	0.03
	(1.64)	(1.74)	(1.23)	(1.37)	(2.74)	(2.79)	(2.14)	(1.00)	(2.75)	(2.74)	(1.47)	(0.41)
Call	0.01***	0.01***	0.01***	-0.00***	0.01***	0.01***	0.01***	-0.00***	0.01***	0.01***	0.01***	-0.00***
	(4.11)	(3.60)	(4.68)	(-3.55)	(3.93)	(3.63)	(4.75)	(-4.31)	(3.63)	(3.48)	(4.14)	(-2.83)
Put	-0.01***	-0.01**	-0.01***	0.00	-0.01***	-0.01***	-0.01***	0.00	-0.01***	-0.01***	-0.01***	0.00
	(-3.20)	(-2.62)	(-4.03)	(1.41)	(-4.62)	(-4.29)	(-5.31)	(0.68)	(-5.80)	(-5.75)	(-4.16)	(0.02)

T-statistics are presented in parentheses

***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively

Table 10: Gross Raw and Risk-Adjusted Monthly Common Equity Returns, Advised vs. Self-Directed Investors

This table present raw and risk adjusted gross returns and factor loadings of aggregate equally weighted household common equity portfolios as well as Sharpe Ratios. Households are classified as advised or self directed based on whether they were registed as an advised customer or not in a particular month. Risk adjusted monthly returns are calculated from a 3-factor model accounting for the three Fama-French (1993) factors (*Market, SMB* and *HML).* Standard errors are computed following the Newey-West correction taking into account autocorrelation up to three lags. Results are expressed in percentages for all households, and households with portfolio values of at least € 25,000 and € 100,000. Households with common equity portfolio values of less than €250,- are excluded.

	Gross Common Equity Returns											
	All Households				Household Portfolio at least € 25,000				Household Portfolio at least € 100,000			
	All	Advised	Self Directed	Difference	All	Advised	Self Directed	Difference	All	Advised	Self Directed	Difference
Raw return	1.84	1.84	1.83	0.01	1.84	1.83	1.87	-0.03	1.78	1.78	1.80	-0.02
				(0.02)				(-0.05)				(-0.04)
Sharpe ratio	0.63	0.64	0.62	0.02	0.62	0.62	0.61	0.02	0.62	0.62	0.64	-0.01
Alpha	0.62**	0.60**	0.64**	-0.04	0.55**	0.55**	0.56**	-0.02	0.52**	0.51**	0.57***	-0.05
	(2.60)	(2.67)	(2.37)	(-0.46)	(2.61)	(2.59)	(2.56)	(-0.28)	(2.67)	(2.63)	(2.98)	(-0.69)
Market	0.77***	0.78***	0.75***	0.04*	0.81***	0.81***	0.82***	-0.01	0.80***	0.80***	0.78***	0.02
	(9.07)	(9.68)	(8.05)	(1.88)	(10.41)	(10.55)	(9.64)	(-0.42)	(10.75)	(10.89)	(9.10)	(0.80)
SMB	0.28***	0.26***	0.31***	-0.05	0.23***	0.22***	0.29***	-0.08***	0.18***	0.18***	0.22***	-0.04*
	(6.18)	(6.34)	(5.34)	(-1.53)	(6.71)	(5.96)	(9.49)	(-3.57)	(5.13)	(4.90)	(7.55)	(-1.74)
HML	-0.08	-0.10*	-0.06	-0.04	-0.11**	-0.11**	-0.07	-0.04***	-0.13**	-0.13**	-0.13**	0.00
	(-1.30)	(-1.77)	(-0.79)	(-1.11)	(-2.06)	(-2.20)	(-1.45)	(-3.05)	(-2.58)	(-2.56)	(-2.58)	(0.08)
Adj R^2	84%	85%	81%	15%	85%	84%	86%	34%	83%	83%	82%	8%

T-statistics are presented in parentheses

***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively

Table 11: Net Raw and Risk-Adjusted Monthly Common Equity Returns, Advised vs. Self -Directed Investors

This table present raw and risk adjusted gross returns and factor loadings of aggregate equally weighted household common equity portfolios as well as Sharpe Ratios. Households are classified as advised or self directed based on whether they were registed as an advised customer or not in a particular month. Risk adjusted monthly returns are calculated from a 3-factor model accounting for the three Fama-French (1993) factors *(Market, SMB* and *HML).* Standard errors are computed following the Newey-West correction taking into account autocorrelation up to three lags. Results are expressed in percentages for all households, and households with portfolio values of at least € 25,000 and € 100,000. Households with common equity portfolio values of less than €250,- are excluded.

	Net Common Equity Returns											
	All Households				Household Portfolio at least € 25,000				Household Portfolio at least € 100,000			
	All	Advised	Self Directed	Difference	All	Advised	Self Directed	Difference	All	Advised	Self Directed	Difference
Raw return	1.69	1.70	1.67	0.02	1.68	1.66	1.76	-0.10	1.65	1.64	1.73	-0.09
				(0.04)				(-0.17)				(-0.16)
Sharpe ratio	0.58	0.59	0.57	0.02	0.57	0.57	0.57	-0.01	0.58	0.58	0.61	-0.04
Alpha	0.47*	0.45**	0.48*	-0.03	0.41*	0.39*	0.46**	-0.07	0.40*	0.39*	0.50**	-0.11
	(1.97)	(2.01)	(1.80)	(-0.32)	(1.87)	(1.77)	(2.09)	(-0.86)	(1.98)	(1.91)	(2.63)	(-1.11)
Market	0.77***	0.78***	0.75***	0.03*	0.80***	0.80***	0.82***	-0.02	0.78***	0.79***	0.78***	0.01
	(9.10)	(9.70)	(8.10)	(1.89)	(10.20)	(10.23)	(9.66)	(-0.82)	(10.44)	(10.52)	(9.17)	(0.30)
SMB	0.28***	0.26***	0.31***	-0.05	0.23***	0.21***	0.29***	-0.08***	0.17***	0.17***	0.22***	-0.05*
	(6.12)	(6.23)	(5.32)	(-1.51)	(6.09)	(5.29)	(9.41)	(-3.33)	(4.65)	(4.41)	(7.53)	(-1.77)
HML	-0.08	-0.10*	-0.06	-0.04	-0.10**	-0.11**	-0.07	-0.03**	-0.13**	-0.13**	-0.14**	0.01
	(-1.31)	(-1.79)	(-0.80)	(-1.09)	(-2.05)	(-2.18)	(-1.47)	(-2.25)	(-2.55)	(-2.53)	(-2.62)	(0.33)
Adj R^2	84%	85%	81%	14%	84%	83%	86%	24%	82%	81%	82%	6%

T-statistics are presented in parentheses

***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively

Table 12: Fama-MacBeth Regressions of Gross and Net Excess Potfolio Returns on Investor and Portfolio Characteristics.

This table presents coefficient estimates on various Fama-MacBeth regressions on Investor and Portfolio Characteristics. In the first 3 columns gross excess returns are the dependent variable while in the last 3 columns net excess returns are used. Advice is a dummy variable equal to 1 is an investor is advised. *Woman* is a dummy equal to 1 if the account was held by a woman. *Joint* is a dummy variable equal to 1 if the account was held by 2 persons, mostly a man and a woman. *Age* is the age of the primary account holder. *Value (ln)* is the logarithm of the beginning of the month account value. *Turnover (ln)* is the common logarithm of the sum of buys and sells devided by the beginning of the month account value. *Equity, Fixed Income, Real Estate, Structured* and *Mix* refer to fractions of the total account value of specific asset classes; *Equity* refers to both individual stock holdings as well as equity mutual funds, *Fixed Income* to individual bonds and bond funds, *Real Estate* to real estate funds, *Stuctured* to structured products and *Mix* to balanced funds. *Derivative* is a dummy variable equal to 1 if the account held options or turbo's. The whole periode covers the 52 months from April 2003 till August 2007. The first (second) half is the first (second) 26 months of this period.

	Fama-MacBeth Estimates					
	Gross Excess Returns			Net Excess Returns		
	Whole period	First half	Second half	Whole period	First half	Second half
Intercept	-0.10	-0.51	0.31	-0.52	-0.85	-0.18
	(-0.23)	(-1.03)	(0.42)	(-1.16)	(-1.67)	(-0.25)
Advice	**-0.07**	**-0.04**	**-0.10**	**-0.07**	**-0.03**	**-0.10**
	(-1.63)	**(-0.71)**	**(-1.50)**	**(-1.60)**	**(-0.66)**	**(-1.49)**
Woman	-0.02	-0.03	-0.01	-0.02	-0.03	-0.01
	(-1.12)	(-0.92)	(-0.63)	(-1.02)	(-0.85)	(-0.56)
Joint	0.01	-0.00	0.01	0.01	-0.00	0.01
	(0.56)	(-0.15)	(0.81)	(0.72)	(-0.02)	(0.93)
Age	0.00**	0.00	0.00**	0.00	0.00	0.00*
	(2.23)	(0.84)	(2.51)	(1.54)	(0.46)	(1.90)
Value (ln)	0.08	0.12*	0.05	0.13**	0.16**	0.09
	(1.65)	(1.75)	(0.63)	(2.55)	(2.32)	(1.30)
Turnover (ln)	0.27***	0.22**	0.31***	-0.17***	-0.23**	-0.10
	(4.29)	(2.10)	(4.64)	(-2.73)	(-2.24)	(-1.58)
Equity	0.95**	1.18**	0.71	1.16**	1.33**	1.00
	(2.17)	(2.08)	(1.06)	(2.62)	(2.29)	(1.46)
Fixed Income	-0.24	0.24	-0.73	-0.00	0.42	-0.42
	(-0.58)	(0.48)	(-1.11)	(-0.01)	(0.84)	(-0.64)
Real Estate	0.37	1.22**	-0.48	0.63	1.44**	-0.18
	(0.84)	(2.13)	(-0.75)	(1.42)	(2.53)	(-0.28)
Structured	0.25	0.27	0.23	0.47	0.43	0.51
	(0.63)	(0.60)	(0.35)	(1.17)	(0.93)	(0.77)
Mix	0.04	0.43	-0.36	0.24	0.62	-0.15
	(0.10)	(0.95)	(-0.55)	(0.60)	(1.35)	(-0.23)
Derivative	0.25**	0.16	0.34**	0.22**	0.13	0.31**
	(2.60)	(1.16)	(2.50)	(2.27)	(0.95)	(2.23)
R^2	22.9%	20.9%	24.9%	22.7%	20.9%	24.5%

T-statistics are presented in parentheses

***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively

Table 13: Fama-MacBeth Regressions of Gross and Net Common Equity Excess Returns on Investor and Portfolio Characteristics.

This table presents coefficient estimates on various Fama-MacBeth regressions on Investor and Portfolio Characteristics. In the first 3 columns gross excess returns are the dependent variable while in the last 3 columns net excess returns are used. Advice is a dummy variable equal to 1 is an investor is advised. Woman is a dummy equal to 1 if the account was held by a woman. Joint is a dummy variable equal to 1 if the account was held by 2 persons, mostly a man and a woman. Age is the age of the primary account holder. Value (ln) is the logarithm of the beginning of the month account value. Turnover (ln) is the common logarithm of the sum of buys and sells devided by the beginning of the month account value. Derivative is a dummy variable equal to 1 if the account held options or turbo's. The whole periode covers the 52 months from April 2003 till August 2007. The first (second) half is the first (second) 26 months of this period.

	Fama-MacBeth Estimates							
	Gross Excess Returns				Net Excess Returns			
	Whole period		First half	Second half	Whole period		First half	Second half
Intercept	1.96***	1.92***	1.79	2.12***	1.27*	1.24*	1.11	1.42**
	(3.06)	(2.96)	(1.60)	(3.27)	(1.99)	(1.92)	(1.00)	(2.20)
Advice	**0.03**	**0.03**	**0.12***	**-0.07**	**-0.01**	**-0.01**	**0.09**	**-0.11**
	(0.52)	**(0.56)**	**(1.75)**	**(-0.94)**	**(-0.27)**	**(-0.24)**	**(1.25)**	**(-1.56)**
Woman	-0.03	-0.04	-0.03	-0.03	-0.04	-0.05	-0.04	-0.05
	(-0.46)	(-0.65)	(-0.29)	(-0.38)	(-0.66)	(-0.79)	(-0.38)	(-0.58)
Joint	0.04	0.04	0.03	0.06	0.04	0.04	0.02	0.05
	(1.56)	(1.57)	(0.70)	(1.52)	(1.28)	(1.26)	(0.45)	(1.36)
Age	0.00**	0.00**	0.00	0.00**	0.00*	0.00*	0.00	0.00
	(2.23)	(2.19)	(1.09)	(2.11)	(1.87)	(1.92)	(0.98)	(1.70)
ln Equity Value	-0.08	-0.07	-0.03	-0.13	0.08	0.09	0.13	0.04
	(-0.70)	(-0.56)	(-0.15)	(-1.04)	(0.73)	(0.77)	(0.65)	(0.33)
ln Equity Turnover	0.38***	0.38***	0.29	0.47***	-0.40***	-0.40***	-0.51**	-0.29**
	(3.20)	(3.38)	(1.37)	(4.29)	(-3.24)	(-3.43)	(-2.34)	(-2.49)
Derivative		-0.13				-0.06		
		(-1.07)				(-0.50)		
R^2	2.8%	3.1%	3.0%	2.6%	2.9%	3.1%	3.3%	2.4%

T-statistics are presented in parentheses

***, **, * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively