The Smart Money Effect in Germany - Do Investment Focus and Bank-Affiliation Matter?

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Abstract – We investigate the smart money effect in the German mutual fund market from 2001 to 2016. Results show a positive relation between fund flows and subsequent performance for mutual funds with a European or international diversified investment focus. Funds that invest domestically, however, show no signs of a smart money effect. Moreover, evidence suggests that flows to funds managed by bank-affiliated investment companies are smart. We argue that less sophisticated investors rather invest domestically and that financial advice improves retail investors' mutual fund investment decisions.

EFM-Codes: 320, 380, 530, 730

Keywords: Smart money effect, mutual fund flows, fund performance, home bias, financial advice

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1 Introduction

Mutual funds enjoy great popularity among investors around the world. Nearly 45% of all US households own mutual funds (Investment Company Institute, 2018) and also in Germany mutual funds are the most important securities for retail investors (Deutsche Bundesbank, 2015a). It follows that a proper fund selection could help investors to improve their investment performance and consequently to increase their wealth.

The smart money hypothesis states that there is a positive relationship between investors' capital flows to mutual funds and subsequent fund performance. It offers a possible explanation for why investors continue to mainly invest in actively managed funds, although they charge higher fees than index funds and are not able to beat their benchmarks on average (Fama and French, 2010; Ferreira, Keswani, Miguel, and Ramos, 2013). Empirical studies provide diverging findings whether mutual fund investors are able to identify superior funds and thus shift their money into funds with better subsequent performance (Gruber, 1996; Keswani and Stolin, 2008; Sapp and Tiwari, 2004; Zheng, 1999).

Notwithstanding that Germany is the fourth largest mutual fund market in the world (EFAMA, 2018), there is no evidence about the smart money effect in Germany, yet. Moreover, most studies on the smart money effect only investigate fund flows to mutual funds with domestic investment focus. Furthermore, there is no evidence on how the affiliation of investment companies, as it is predominant in Europe, affects the relationship between fund flows and subsequent fund performance. We fill this gap by doing an extensive study on the smart money effect in the German mutual fund market. Therefore, we investigate the following three research questions: first, is there a smart money effect in the German mutual fund market? Second, are mutual fund flows to funds with European or international investment focus smarter

than flows to funds with domestic investment focus? Third, does the bank-affiliated fund distribution system in Germany have an impact on the smartness of fund flows?

The German mutual fund market has some specific characteristics that could significantly influence the smartness of mutual fund flows. The largest share of capital in the German market is invested in mutual funds with non-domestic investment focus (Deutsche Bundesbank, 2015b). This is a remarkable difference to the US fund industry, where most of the research on the smart money effect has been conducted examining equity funds with a domestic investment focus only. Therefore, we investigate the relation between flows and subsequent performance not only for domestically investing funds but also for funds with a European or international investment focus. Furthermore, in contrast to the US, banks are the main distribution channel for mutual funds in Germany, selling primarily mutual funds of affiliated investment companies (European Commission, 2018; Ferreira, Matos, and Pires, 2018). We include this aspect in our investigation by comparing findings about the smart money effect between affiliated and unaffiliated mutual funds.

To address our research questions, we use a dataset provided by the German Investment Funds Association (BVI)[1] covering quarterly data of the German mutual fund market from 2001 to 2016. We follow previous literature on the smart money effect by focusing on equity funds and adopting the portfolio approach to investigate the relationship between fund flows and subsequent fund performance (Keswani and Stolin, 2008; Sapp and Tiwari, 2004; Zheng, 1999). Considering the special characteristics of the German market, we build samples by mutual funds' geographical investment focus. Furthermore, we use subsamples to compare results of bank-affiliated mutual funds to those of unaffiliated funds. Moreover, we use a Fama and

[1] The BVI is the German equivalent of the Investment Company Institute (ICI) in the US.

Macbeth (1973) regression model to investigate if fund characteristics are able to explain our findings of the smart money effect on the fund-level.

We find evidence for a smart money effect among mutual funds with a European or international diversified investment focus. Fund flows to funds that invest domestically, however, seem to be "dumb" as investors shift money rather into funds with inferior subsequent performance and disinvest from future winners, respectively. A common finding in the literature is that less experienced investors tend to invest disproportionately high in domestic assets (Grinblatt and Keloharju, 2001; Kimball and Shumway, 2010). We argue that, on the one hand, less sophisticated investors prefer funds with domestic investment focus, which could explain flows to those funds not being smart. On the other hand, flows to funds with European or international investment focus could be able to anticipate future performance because they come from more experienced investors. Moreover, results suggest that flows to mutual funds affiliated to banking groups that offer financial advice are rather smart than flows to unaffiliated mutual funds. These findings indicate the merit of financial advice offered by banks seemingly providing value to investors. These results possibly offer a rationale for why investors primarily invest in actively managed funds, irrespective whether this smartness is due to return chasing behavior or genuine forecasting ability.

Our results are robust for different methods of performance measurement, weighting schemes, portfolio formation criterions as well as different lengths of portfolio holding periods.

The remainder of the paper proceeds as follows: Section 2 describes the institutional framework of the German mutual fund industry; Section 3 summarizes corresponding literature and develops hypotheses; Sections 4 and 5 describe the data and the methodology, respectively. Section 6 presents the main results as well as robustness checks and Section 7 concludes.

2 Institutional Framework

Germany is the fourth largest mutual fund market in the world. While the US is the largest market by far, the German fund industry also plays an important role with 2,616 billion euros of fund assets under management in 2017 (BVI, 2018). In both countries, equity mutual funds hold the majority of mutual fund assets (BVI, 2018; Investment Company Institute, 2018). However, the institutional setting of the fund industry in Germany considerably differs from the US in at least two major aspects.

First, the share of mutual funds that mainly invest in domestic equity is relatively low in Germany. Only about 17.6% of equity mutual funds' assets under management are invested in equity mutual funds with a domestic investment focus.[2] In the US, domestically investing equity funds represent more than 72.6% of equity funds' assets under management (Investment Company Institute, 2018). While the lower fraction of domestic equity funds is coherent in terms of the worldwide equity market capitalization, it is essential to also incorporate funds that do not only invest in Germany into the investigation.

Second, the financial system in Germany is bank-dominated. Banks offer an extensive range of financial services to their retail customers including payment transactions, loans, investment advisory and more. Thus, there is traditionally a close relationship between the bank and the customer; most customers manage all of their financial affairs with one bank (Krahnen, Schmid, and Theissen, 2006). Furthermore, most banking groups hold their own investment company. Germany, like it is prevalent in Europe, is dominated by bank-affiliated mutual funds as three out of the five largest investment companies are bank-affiliated (Ferreira et al., 2018). In result, banks are the main distribution channel for mutual funds in Germany (European Commission, 2018). However, as banks primarily sell funds of their affiliated investment company, retail

[2] According to the BVI dataset (see Section 4).

fund investors are often bound to mutual funds of a particular investment company (Ber, Kempf, and Ruenzi, 2007). By contrast, most mutual fund investors in the US purchase fund shares from several other units that offer professional investment advice (such as full-service brokers, registered investment professionals, etc.). Furthermore, the fraction of investors purchasing funds directly from investment companies or from discount brokers is comparably high in the US (Investment Company Institute, 2018).

The dominant role of banks within the fund distribution system in Germany results in a high market concentration: the four largest investment companies account for over 70% of the entire market share in Germany. Three of them are bank-affiliated, so that these investment companies have a market share of 55% (BVI, 2018; Ferreira et al., 2018). By comparison, the share of assets under management by the 25 largest investment companies in the US amounts to 77% (Investment Company Institute, 2018). Ferreira, Keswani, Miguel, and Ramos, 2013) confirm Germany to be among the countries with the highest industry concentration, while finding a comparatively low level of concentration for the US fund industry.

Overall, these aspects might bear implications for our analysis. Thus, outcomes about the smart money effect could differ significantly from those of US studies. To incorporate the characteristics of the German mutual fund market in our study, we do not only consider funds that invest domestically, but also investigate funds with a European or international investment focus. Furthermore, we examine if the smart money effect is driven by financial advice by investigating the flow-performance relationship for affiliated and unaffiliated mutual funds separately.

3 Related Literature and Hypotheses

3.1 The Smart Money Effect

Gruber (1996) is the first to find a positive relationship between fund flows and subsequent fund performance for US mutual funds. Following up, Zheng (1999) explicitly focuses on the question whether mutual fund flows are smart, i.e. whether mutual fund investors have proper selection abilities. She finds that mutual funds with net inflows subsequently outperform funds with net outflows and calls this finding the smart money effect. Sapp and Tiwari (2004) argue that the smart money effect reported by previous studies can be explained entirely by return momentum, implying that investors do not have selection abilities but just chase past performance. However, Keswani and Stolin (2008) show that when using monthly instead of quarterly data, the smart money effect remains significant even when controlling for return momentum.

Although literature about the smart money effect is mainly dominated by US data, there is evidence about the smart money effect outside the US as well. Keswani and Stolin (2008) find a smart money effect in the UK fund market. Additionally, studies find evidence for the smart money effect in Australia (Gharghori, Mudumba, and Veeraraghavan, 2007) and Spain (Vicente, Ortiz, and Andreu, 2011).

On the other hand, Cho and Shin (2013) investigate the Korean mutual fund market and find no evidence for the smart money effect except for young mutual funds. Feng, Zhou, and Chan (2014) even find a "dumb money" effect among individual investors, showing that Chinese retail mutual funds that receive more money do subsequently underperform funds with outflows.

Overall, evidence on the existence of the smart money effect is mixed. As we focus our investigation on mutual funds that allow investments of retail investors, we hypothesize:

H1: Fund flows to mutual funds with domestic investment focus are not smart

3.2 Geographical Investment Focus of Mutual Funds

All studies mentioned so far investigate funds that invest domestically. By 2016, equity mutual funds in Germany with a domestic investment focus show assets under management of approximately 58 billion euros. Equity funds that invest non-domestically, including funds with an investment focus in Europe or international investment focus, show assets under management of about 266 billion euros.[3] It follows that an investigation of funds with a domestic investment focus alone would not be appropriate to answer our research questions. Therefore, we additionally research the existence of a smart money effect among funds with a European or international investment focus.

A common finding in the literature is that less sophisticated investors are more prone to invest disproportionally high sums in domestic securities and thereby neglect the relevance of diversification (Grinblatt and Keloharju, 2001; Kimball and Shumway, 2010; Von Gaudecker, 2015). Given those circumstances, we assume that a high share of non-sophisticated investors invest in German mutual funds with domestic investment focus. Moreover, we assume sophisticated investors to invest predominantly in European or internationally diversified mutual funds. Based on these assumptions, we hypothesize:

H2: Fund flows to mutual funds with a European or international investment focus are smarter than flows to funds with domestic investment focus

[3] According to the BVI dataset (see Section 4).

3.3 Fund Affiliation and Financial Advice

A large body of literature studies whether financial advice helps investors to enhance investment decisions. One strand of literature finds financial advice to be able to improve investment decision of private households by increasing stock market participation (Meyll, Pauls, and Walter, 2017; Shum and Faig, 2006) and portfolio diversification (Bluethgen, Gintschel, Hackethal, and Mueller, 2007; Kramer, 2012; Von Gaudecker, 2015). However, some other studies find that investors do not benefit from receiving financial advice, e.g. due to higher fees and agency conflicts (Bhattacharya, Hackethal, Kaesler, Loos, and Meyer, 2012; Foerster, Linnainmaa, Melzer, and Previtero, 2017; Hackethal, Haliassos, and Jappelli, 2012; Hoechle, Ruenzi, Schaub, and Schmid, 2017). Consistently, studies focusing on mutual fund investments show an underperformance of advisor-directed investments (Bergstresser, Chalmers, and Tufano, 2009; Christoffersen, Evans, and Musto, 2013).

Florentsen, Nielsson, Raahauge, and Rangvid (2018) provide further evidence for financial advice being biased and costumers strongly obeying it. They show that the affiliation of investment companies and banks in Denmark significantly affects investor's fund choice. Banks have the incentives to direct customer's money to affiliated mutual funds. Thus, the relation between bank and customer causes large fund flows, but investors do not end up with funds performing better nor having lower fees. Moreover, Ferreira et al. (2018) show that bank-affiliated mutual funds significantly underperform unaffiliated funds.

Given a similar bank-dominated fund distribution system in Germany, we expect affiliated fund flows to be less smart as they follow biased financial advice. Therefore, we hypothesize:

H3: Fund flows to affiliated mutual funds are less smart than flows to unaffiliated funds

4 Data

Our panel dataset covers the period from January 2001 to December 2016. We obtain data from three sources. First, we use flow data of the BVI investment statistics, directly provided by the German Investment Funds Association (BVI). The statistics cover net assets and net sales within the German mutual fund and asset management industry. They integrate all investment funds accredited for sale in Germany. In contrast to the majority of studies on the smart money effect (Gruber, 1996; Lou, 2012; Sapp and Tiwari, 2004; Sirri and Tufano, 1998; Zheng, 1999), the data allows us to directly measure fund flows instead of calculating implied flows. The dataset is free of survivorship bias. Second, we employ data on fund performance from Thomson Reuters Datastream. Third, we receive additional fund characteristics (e.g. total expense ratios, front loads) from Morningstar Direct.

We follow the literature by only including equity mutual funds into the investigation. Furthermore, we exclude funds that are restricted to institutional investors. In order to come to our final three samples, we only consider actively managed funds with a domestic (domestic sample), European (European sample) or international (international sample) investment focus. Table 1 provides descriptive statistics.

[Insert Table 1 here]

While the domestic sample (Panel A) only covers 177 equity mutual funds, the European (Panel B) and international (Panel C) sample include 895 and 1,957 funds, respectively. Although funds with a domestic investment focus show a relatively high mean of total net assets (*TNA*) of 330.94 million euros, compared to 125.44 million (European investment focus) and 136.76 million euros (international investment focus), multiplying *TNA* with the number of

funds confirms the subordinated role of funds with domestic investment focus in the German fund market.

The average quarterly net cash flows (*Flow*) are negative for all three samples. This is mainly attributable to two facts: first, the investigation period is characterized by two crises, which boost outflows in equity funds as a whole in their aftermath (Wittmann, 2011). Second, an increasing number of investors prefer equity index funds and equity ETFs over actively managed equity funds (BVI, 2018; Investment Company Institute, 2018). Overall, in nine out of 15 years, outflows in equity funds exceed inflows. However, funds with an international investment focus suffer a lower outflow of capital on average.

In order to investigate if the flow-performance relationship is affected by the affiliation of the investment company, we classify a fund as affiliated, if the majority owner of its investment company is a commercial bank or banking group. The fraction of affiliated funds (*Affiliated*) in terms of number of funds is the highest within the domestic sample showing a mean of 33 percent. While this number suggests that those funds are of lower importance, affiliated funds account for approximately 62 percent of total net assets of all three samples during our sample period (not in the table).

5 Methodology

To investigate the smart money effect in the German fund market we firstly employ a portfolio approach as it has been established as the prevalent method in previous literature (Keswani and Stolin, 2008; Sapp and Tiwari, 2004; Zheng, 1999). For this purpose, we form two new money portfolios based on the funds' net cash flows at the end of each quarter. Therefore, we assign each fund of the sample to one of the two portfolios. The first portfolio includes all funds that realized an above median net cash flow while the second portfolio includes all

funds that realized a below median net cash flow.[4] We weight each mutual fund in a portfolio by fund flows to the corresponding fund in the previous quarter (flow-weighted portfolio).[5]

After building the portfolios, we compare the performance of the above median portfolio with the performance of the below median portfolio. Therefore we estimate the average monthly Carhart (1997) four-factor alpha of both portfolios *p* over the whole sample period:

$$return_{p,t} = \alpha_p + \beta_p RMRF_t + \gamma_p SMB_t + \delta_p HML_t + \theta_p WML_t + \varepsilon_{p,t} \quad (1)$$

Here *return* is the monthly return on a portfolio of funds *p* in excess of the one-month risk free rate; *RMRF* is the excess return on a market portfolio; and *SMB*, *HML*, and *WML* are returns on zero-investment factor-mimicking portfolios for size, book-to-market, and one-year momentum in stock returns, respectively. We obtain European and international factors from the web page of Kenneth R. French (French, 2018) while we use the German factor set provided by Brückner et al. (2015) for the German sample. We additionally use the Fama and French (1993) three-factor model to examine whether results on the smart money effect are driven by return momentum, as reported by Sapp and Tiwari (2004).

Besides the portfolio approach, we apply a Fama and Macbeth (1973) regression model to examine the flow-performance relation on the fund-level. We do so to investigate if our results can be explained by fund characteristics that act as control variables in our estimations. Furthermore, we use this procedure to test the robustness of our prior findings. We estimate the following equation:

[4] Following Zheng (1999) we build above and below median flow portfolios in our main results as this approach accounts for overall trends in flows per quarter. In Table B1 in the appendix, we additionally report results for positive and negative flow portfolios.
[5] Please find results for equally-weighted portfolios in Table A1 in the appendix.

$$alpha_{i,t} = \alpha + \beta\, Flow_{i,t-1} + \sum_{j}^{J} \gamma_j\, Control_{j,i,t-1} + \varepsilon_{i,t} \qquad (2)$$

We regress the one quarter alpha (*alpha*) of fund *i* in quarter *t* on the one quarter lagged net cash flow (*Flow*) and on control variables *j* (*Control*). Both, the portfolio approach and the Fama and Macbeth estimation weight every period equally. Standard errors are heteroscedasticity and autocorrelation consistent and are calculated following Newey and West (1987). Again, our performance measures are the Fama and French (1993) three-factor alpha as well as the Carhart (1997) four-factor alpha. Used control variables are the total net assets (*TNA*), family size (*family size*), total expense ratio (*TER*), performance (*past performance*) and front load (*load*) of fund *i* in quarter *t*-1, as they are potential determinants of subsequent fund performance.

6 Results

6.1 The Smart Money Effect by Investment Focus

We investigate the smart money effect in the German mutual fund market and distinguish funds by geographical investment focus. In our first specification we use the portfolio approach to compare the performance of the above median flow portfolio to the performance of the below median flow portfolio. Table 2 presents the results for the flow-weighted new money portfolios.[6]

[6] Please find results for equally-weighted portfolios as well as results for the positive and negative flow portfolios in the appendix in Table A1 and Table B1, respectively.

[Insert Table 2 here]

Panel A shows that for funds with domestic investment focus the above median portfolio performs significantly worse than the below median portfolio. The three-factor alpha of the above median flow portfolio underperforms the benchmark by 0.188 percentage points per month, whereas the underperformance of the below median flow portfolio is only 0.159 percentage points. The difference between the above median and the below median portfolio, as reported in column (3), amounts to -0.029 percentage points per month or -0.348 percentage points per year, respectively. The difference of alphas is statistically significant at the 1 percent level. The difference remains significant when the Carhart four-factor model is employed (column 6). It follows that there is no smart money effect for funds with domestic investment focus as investors are not able to identify funds with higher performance in the future: they proportionally allocate more money to worse performing funds and less money to better performing funds. Following the denomination of Feng et al. (2014), we find evidence for a "dumb money" effect. Altogether, results support our hypothesis H1 that investment flows to funds with domestic investment focus are not smart.

We obtain contrary results for mutual funds with European or international investment focus as presented in Panel B and Panel C, respectively. Investors of those funds seem to be smart as the above median portfolios significantly outperform the below median portfolios. Panel B shows that the above median flow portfolio has a higher alpha than the below median flow portfolio on average. Taking the difference between both portfolio alphas, the smart money effect constitutes 0.055 (*3F Model*) or 0.075 percentage points (*4F Model*) per month. The difference in alphas is statistically significant for both models. These findings indicate that investors, on aggregate, show fund selection abilities as they direct more money flows towards

funds that subsequently earn higher risk-adjusted returns. The size of the smart money effect for funds with international investment focus (Panel C) has a comparable dimension.

Even though we find a smart money effect for the European and international sample, both the below and the above median portfolio show negative alpha values. This finding indicates that the returns of both portfolios are inferior to the hypothetical return of a benchmark with the same risk level. This finding is robust over all regressions and is in line with the literature on the performance of German equity mutual funds (Ferreira et al., 2013; Otten and Bams, 2002; Stotz, 2007; Vidal-García, 2013).[7] More recent studies on the smart money effect report negative alpha as well (Feng et al., 2014; Jiang and Yuksel, 2017; Keswani and Stolin, 2008). It follows that even "smart" mutual fund investors on average are unable to earn positive risk-adjusted returns.

Our findings in Table 2 do not differ among the different benchmark models. In contrast to findings by Sapp and Tiwari (2004), the momentum factor is not able to explain the smart money effect in our sample. This result is in line with Keswani and Stolin (2008) and Gharghori et al. (2007). Moreover, including the momentum factor does not significantly increase the explanatory power of the estimation.[8]

Overall, findings support our hypothesis H2 that fund flows to mutual funds with a European or international investment focus are smarter than flows to funds that invest domestically. We interpret those results as follows. Less sophisticated fund investors possibly rather rely on domestic funds. This is in line with literature stating that more sophisticated investors prefer to invest in broader diversified markets as they have a higher awareness of the relevance of diversification and are less affected by the home bias (Grinblatt and Keloharju, 2001; Kimball

[7] For example, Stotz (2007) reports that actively managed mutual funds in Germany underperform their risk-adjusted benchmark by 1.9 percentage points p.a., whereas passive index funds underperform by 1.0 percentage points p.a. from 1998-2005. In this context, Blitz et al. (2012) report that European index funds and ETFs underperform their benchmarks by 0.5 to 1.5 percentage points p.a. not only due to expenses but also due to dividend taxation.

[8] The marginal increase in R^2 through the Carhart four-factor model is reported by several studies (see e.g. Gharghori et al., 2007; Vidal-García, 2013; Hanauer et al., 2013).

and Shumway, 2010; Von Gaudecker, 2015). Hence, we argue that the different results regarding the smart money effect over our samples are driven by different levels of investor sophistication. As most unsophisticated investors rely on funds that invest domestically, we find no smart money for this sample. For the European and the international sample, however, we find a smart money effect, as more sophisticated investors are present here. This is in line with other studies that report a more distinctive smart money effect for sophisticated investors (Feng et al., 2014; Gharghori, Sujoto, and Veeraraghavan, 2008).

To test the robustness of previous findings and to analyze if our results regarding the smart money effect can be explained by fund characteristics, we additionally apply the fund-level approach.

[Insert Table 3 here]

The first four columns of Table 3 show results for the domestic sample. Columns (5) to (8) report results for the European sample and columns (9) to (12) show results for the international sample.

When using Fama and French three-factor alphas as performance measures (*3F Alpha*) we find no significant relationship between fund flows (*Flows*) and subsequent fund performance for the domestic sample (column 1). The coefficients remain insignificant when adding fund characteristics (column 2) or using Carhart four-factor alphas for performance measurement (columns 3 and 4). Whereas we find a negative relationship for the domestic sample when using the portfolio approach (Table 2), regression results still support our hypothesis H1. There is no evidence for a smart money effect for funds with domestic investment focus.

For the European and the international sample, we find a significant positive relationship between fund flows and subsequent performance for all of the eight estimations. A one billion

euros increase in fund's net flows in quarter *t* increases the future four-factor alpha of the fund in quarter *t*+1 by 3.35 (column 8) or 3.45 percentage points (column 12) for the European or the international sample, respectively. The positive relationship between flows and subsequent performance can be explained neither by return momentum nor by different fund characteristics. Fund flows seem to be smart for funds with a European or international investment focus. These results support our hypothesis H2.

Altogether, results on the fund-level confirm our findings of the portfolio approach.

6.2 Affiliated vs. Unaffiliated Mutual Funds

In this section, we focus on the question if there is a difference in the flow-performance relationship between affiliated and unaffiliated mutual funds. Therefore, we divide our three samples, based on fund affiliation, in two subsamples each. We then investigate the smart money effect for each subsample separately. Consistent to Section 6.1, we begin with the portfolio approach. Table 4 shows the results.

[Insert Table 4 here]

Column (1) of Panel A implies a positive relationship between fund flows and subsequent performance for affiliated funds in the domestic sample when using the three-factor model for performance measurement. The statistically significant difference between the above median and the below median flow portfolio is positive and constitutes 0.021 percentage points per month. However, there is no distinct indication of a smart money effect as significance vanishes when controlling for return momentum (column 2). In contrast to affiliated funds, there is a

"dumb money" effect for unaffiliated funds with domestic investment focus. The negative difference in alphas in terms of the absolute value is even larger than for the full domestic sample including both, affiliated and unaffiliated funds (Table 2).

Panel B reveals results for funds with European investment focus. The smart money effect is only existent for affiliated funds. The difference of alphas is 0.110 percentage points (or 0.135 percentage points when using the four-factor model, respectively) and substantially higher compared to the full European sample (Table 2). Thus, the smart money effect reported in Table 2 is mainly driven by affiliated funds. For unaffiliated funds, however, we find no statistically significant difference of alphas between both portfolios (column 3 and 4).

As can be referred from Panel C, results for the international sample are comparable to those of the European sample. We find evidence for a smart money effect for affiliated funds only.

Altogether, results indicate that flows to affiliated funds are smarter than flows to unaffiliated funds. It follows that we have to reject our hypothesis H3 that flows to affiliated mutual funds are less smart than flows to unaffiliated funds. We interpret our findings as follows. Mutual funds of bank-affiliated investment companies are primarily distributed via banks in the context of financial advice (Ber et al., 2007; European Commission, 2018; Ferreira et al., 2018). Thus, financial advice could add additional value to the fund selection process. As investors of affiliated funds allocate money to funds with superior subsequent performance, financial advisors are beneficial in identifying future winners and thereby add value to their clients' investment decisions. This result is supportive of the strand of literature considering financial advice as rather advantageous to investors (Bluethgen et al., 2007; Kramer, 2012; Von Gaudecker, 2015).

Again, we use a panel regression model to investigate if our results can be explained by a set of fund characteristics. See Table 5 for regression results.

[Insert Table 5 here]

In line with our previous results, we find no evidence for a smart money effect in the subsamples with domestic investment focus. The coefficients of *Flow* are neither statistically significant for affiliated funds, nor for unaffiliated funds (columns 1 to 4). Our results for the European and the international sample imply investors of affiliated funds being smart (columns 5, 6, 9 and 10). For unaffiliated funds, however, we find no statistically significant relationship between fund flows and subsequent performance (columns 7, 8, 11 and 12). Results confirm our findings of the portfolio approach.

Altogether, we reject our hypothesis H3 that fund flows to affiliated funds are less smart than flows to unaffiliated funds.

7 Conclusion

Our investigation of the smart money effect in the German mutual fund market reveals that the question whether investors are able to identify superior funds cannot be answered in general but has to be further differentiated.

While we find flows to mutual funds with European or international investment focus to be smart on aggregate, flows to funds that invest domestically are not. We argue that this finding could result from mostly unexperienced investors to predominantly invest in funds with domestic investment focus as they are possibly prone to home bias or familiarity bias (Grinblatt and Keloharju, 2001; Kimball and Shumway, 2010). Therefore, we highlight the importance to increase the awareness of the benefits of international diversification.

Moreover, flows to mutual funds of investment companies affiliated to banks that offer financial advice seem to be smarter than flows to unaffiliated funds. Results imply that financial

advice contains valuable information and therefore enhances investment decisions of fund investors.

We find negative alphas for equity funds throughout all (sub-) samples, indicating that even "smart" mutual fund investors on average sustain underperformance. This raises the question whether investments in actively managed funds are smart at all. However, even index funds and ETFs underperform their benchmarks not only due to expenses (Blitz, Huij, and Swinkels (2012) and investors do not necessarily benefit from passive products by reason of poor selection or market timing (Bhattacharya, Loos, Meyer, and Hackethal, 2017).

Overall, results suggest that the enhancement of investor sophistication as well as the usage of financial advice are relevant parameters for investors and policy makers seeking to increase investment performance and wealth.

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Tables

Table 1: Summary Statistics

Panel A represents equity mutual funds with investment focus in Germany. Panel B and Panel C represent equity mutual funds with European investment focus and international investment focus, respectively. *Flow* is the net cash flow to or out of fund *i* in quarter *t* in million euros. *Return* is the monthly raw return of fund *i* in percent. *3F Alpha* is the monthly Fama and French three-factor alpha of fund *i* in percent. *4F Alpha* is the monthly Carhart four-factor alpha of fund *i* in percent. *TNA* are the total net assets of fund *i* in quarter *t* in million euros. *Family Size* is the size of the fund family of fund *i* in quarter *t* in billion euros. *Frontload* is the front load of fund *i* in quarter *t* in percent. *TER* is the annual total expense ratio of fund *i* in quarter *t* in percent. *Affiliated* is a dummy variable equaling one if the investment company of fund *i* is affiliated with a banking group and zero otherwise.

VARIABLES	(1) Mean	(2) Median	(3) P25	(4) P75	(5) S.D.
Panel A: Domestic Investment Focus (177 Funds)					
Flow	-1.71	-0.36	-4.24	0.66	46.26
Return	0.37	0.92	-2.89	4.06	6.55
3F Alpha	-0.15	-0.14	-1.04	0.77	1.99
4F Alpha	-0.11	-0.13	-1.02	0.77	1.97
TNA	330.94	73.26	17.37	238.31	719.21
Family Size	7.96	2.57	0.44	13.28	10.05
TER	1.43	1.40	1.11	1.65	0.73
Front Load	4.61	5.00	4.71	5.00	1.44
Affiliated	0.33	0.00	0.00	1.00	0.47
Panel B: European Investment Focus (895 Funds)					
Flow	-1.39	-0.01	-1.41	0.17	34.17
Return	0.31	0.81	-2.27	3.30	8.41
3F Alpha	-0.21	-0.18	-1.18	0.78	6.05
4F Alpha	-0.17	-0.18	-1.15	0.78	5.72
TNA	125.44	14.99	1.23	71.14	421.28
Family Size	4.82	1.43	0.35	5.81	7.26
TER	1.64	1.65	1.25	1.95	0.62
Front Load	4.04	5.00	3.50	5.00	1.88
Affiliated	0.24	0.00	0.00	0.00	0.43
Panel C: International Investment Focus (1,957 Funds)					
Flow	-0.18	-0.00	-1.06	0.32	70.35
Return	0.26	0.69	-2.09	3.07	7.50
3F Alpha	-0.28	-0.22	-1.29	0.76	5.33
4F Alpha	-0.28	-0.24	-1.26	0.73	5.15
TNA	136.76	15.18	2.13	66.85	542.92
Family Size	4.96	1.78	0.39	6.12	7.34
TER	1.67	1.67	1.31	1.96	0.66
Front Load	4.16	5.00	4.00	5.00	1.79
Affiliated	0.27	0.00	0.00	1.00	0.45

Table 2: Performance of Fund Portfolios Formed on Past Flows

This table reports the alpha estimates and factor loadings of above median and below median flow portfolios formed within the sample of funds with domestic investment focus (Panel A), funds with European investment focus (Panel B) and funds with international investment focus (Panel C). Each quarter, funds in each sample are grouped to form an above median and a below median fund flow portfolio based on the median net cash flow of each fund during the previous quarter. Portfolio performance is evaluated based on portfolio alpha of the new money portfolios. *3F Model* present results for the Fama and French three-factor model and *4F Model* is the Carhart four-factor model, respectively. The table reports results for flow-weighted portfolios. The differences in alphas between the above and the below median portfolios are also reported. Alpha values are expressed in percentage per month. The regression coefficients' *p*-values are based on the Newey and West covariance matrix; statistical inferences for the differences in alphas are based on the $\chi 2$ differences test. *P*-values are reported in parentheses: * significant at 10%; ** significant at 5%; *** significant at 1%.

	3F Model			4F Model		
	(1) Above Median Portfolio	(2) Below Median Portfolio	(3) Above - Below	(4) Above Median Portfolio	(5) Below Median Portfolio	(6) Above - Below
Panel A: Domestic Investment Focus						
Alpha	-0.188	-0.159*	-0.029***	-0.197	-0.146	-0.051***
	(0.114)	(0.063)	(0.007)	(0.145)	(0.128)	(0.000)
RMRF	0.971***	0.961***		0.972***	0.960***	
	(0.000)	(0.000)		(0.000)	(0.000)	
SMB	0.052	0.044		0.051	0.046	
	(0.201)	(0.149)		(0.201)	(0.135)	
HML	0.108***	0.055*		0.106**	0.059*	
	(0.008)	(0.074)		(0.011)	(0.073)	
WML				0.007	-0.010	
				(0.826)	(0.680)	
Adj. R^2	0.939	0.965		0.939	0.965	
Panel B: European Investment Focus						
Alpha	-0.239**	-0.294***	0.055***	-0.233**	-0.308***	0.075***
	(0.015)	(0.001)	(0.000)	(0.031)	(0.002)	(0.000)
RMRF	0.936***	0.984***		0.935***	0.986***	
	(0.000)	(0.000)		(0.000)	(0.000)	
SMB	0.073	0.062		0.074	0.058	
	(0.179)	(0.224)		(0.172)	(0.252)	
HML	0.024	-0.003		0.022	0.003	
	(0.583)	(0.948)		(0.614)	(0.950)	
WML				-0.005	0.013	
				(0.875)	(0.703)	
Adj. R^2	0.926	0.941		0.925	0.941	
Panel C: International Investment Focus						
Alpha	-0.196	-0.248	0.053***	-0.169	-0.227	0.059***
	(0.284)	(0.166)	(0.004)	(0.384)	(0.231)	(0.003)
RMRF	0.646***	0.761***		0.639***	0.756***	
	(0.000)	(0.000)		(0.000)	(0.000)	
SMB	0.227*	0.198*		0.237*	0.206*	
	(0.073)	(0.081)		(0.066)	(0.073)	
HML	0.081	0.053		0.078	0.051	
	(0.513)	(0.677)		(0.537)	(0.694)	
WML				-0.052	-0.041	
				(0.490)	(0.573)	
Adj. R^2	0.656	0.722		0.657	0.722	

Table 3: Regression of Fund Performance on Lagged Net Cash Flows

This table contains Fama and Macbeth (1973) regression results of two performance measures (Carhart four-factor alphas as well as Fama and French three-factor alphas) on one month lagged fund net cash flows and a set of control variables. *Domestic Investment Focus* represent equity mutual funds with an investment focus in Germany. *European Investment Focus* and *International Investment Focus* represent equity mutual funds with European investment focus and international investment focus, respectively. *3F Alpha* is the Fama and French three-factor alpha of fund *i* in quarter *t* in percent. *4F Alpha* is the Carhart four-factor alpha of fund *i* in quarter *t* in percent. *Flow* is the net cash flow to fund *i* in quarter *t*-1 in billion euros. *Family Size* is the size of the fund family of fund *i* in quarter *t*-1 in billion euros. *TNA* are the total net assets of fund *i* in quarter *t*-1 in billion euros. *Past Performance* is the return of fund *i* in quarter *t*-1 in percent. *TER* is the annual total expense ratio of fund *i* in quarter *t*-1 in percent. *Frontload* is the front load of fund *i* in quarter *t*-1 in percent. *P*-values of Newey and West (1987) standard errors in parentheses: * significant at 10%; ** significant at 5%; *** significant at 1%.

	Domestic Investment Focus				European Investment Focus				International Investment Focus			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	3F Alpha	3F Alpha	4F Alpha	4F Alpha	3F Alpha	3F Alpha	4F Alpha	4F Alpha	3F Alpha	3F Alpha	4F Alpha	4F Alpha
Flow	-0.016	1.724	1.275	2.804	2.459*	3.272*	2.611*	3.349*	2.338***	3.215***	2.742***	3.453***
	(0.993)	(0.437)	(0.517)	(0.260)	(0.076)	(0.057)	(0.080)	(0.053)	(0.008)	(0.001)	(0.005)	(0.001)
Family Size		0.015**		0.018**		0.000		-0.002		-0.003		-0.005
		(0.045)		(0.036)		(0.981)		(0.887)		(0.678)		(0.524)
TNA		-0.258***		-0.270***		-0.161**		-0.175**		-0.097**		-0.080*
		(0.001)		(0.002)		(0.022)		(0.016)		(0.038)		(0.084)
Past Performance		0.113**		0.101**		0.057		0.073		0.043		0.077
		(0.015)		(0.034)		(0.200)		(0.124)		(0.317)		(0.107)
TER		0.147		0.322*		0.114		0.086		-0.077		-0.073
		(0.354)		(0.070)		(0.167)		(0.360)		(0.188)		(0.278)
Frontload		-0.022		-0.022		-0.032		-0.035		0.007		0.009
		(0.283)		(0.313)		(0.164)		(0.132)		(0.741)		(0.674)
Observations	4,785	3,948	4,785	3,948	17,800	15,714	17,800	15,714	39,156	32,338	39,156	32,338
Adj. R^2	0.012	0.142	0.014	0.153	0.003	0.070	0.003	0.078	0.002	0.061	0.002	0.076

Table 4: Affiliated Funds vs. Unaffiliated Funds (Portfolio Approach)

This table reports the average performance of above median and below median flow portfolios formed within the sample of funds with domestic investment focus (Panel A), funds with European investment focus (Panel B) and international investment focus (Panel C). Each quarter, funds in each sample are grouped to form an above median and a below median fund flow portfolio based on the median net cash flow of each fund during the previous quarter. *Affiliated* represents funds of investment companies that are affiliated with a banking group. Portfolio performance is evaluated based on portfolio alpha of the new money portfolios. *3F Alpha* is the intercept of the Fama and French three-factor model. *4F Alpha* is the intercept of the Carhart four-factor model. The table reports estimates of alphas for flow-weighted portfolios. The differences in alphas between the above and the below median fund flow portfolios are also reported. Alphas are expressed in percentage per month. The regression coefficients' *p*-values are based on the Newey and West covariance matrix; statistical inferences for the differences in alphas are based on the $\chi 2$ differences test (*diff_p-value)*: * significant at 10%; ** significant at 5%; *** significant at 1%.

	Affiliated		Unaffiliated	
	(1)	(2)	(3)	(4)
	3F Alpha	4F Alpha	3F Alpha	4F Alpha
Panel A: Domestic Investment Focus				
Above Median Portfolio	-0.152	-0.172	-0.326**	-0.305*
Below Median Portfolio	-0.173*	-0.161	-0.109	-0.094
Alpha(above)-Alpha(below)	0.021*	-0.011	-0.217***	-0.211***
diff_*p*-value	(0.052)	(0.374)	(0.000)	(0.000)
Panel B: European Investment Focus				
Above Median Portfolio	-0.223**	-0.210*	-0.255**	-0.268**
Below Median Portfolio	-0.333***	-0.345***	-0.259***	-0.278**
Alpha(above)-Alpha(below)	0.110***	0.135***	0.004	0.010
diff_*p*-value	(0.000)	(0.000)	(0.661)	(0.371)
Panel C: International Investment Focus				
Above Median Portfolio	-0.150	-0.123	-0.138***	-0.136***
Below Median Portfolio	-0.249	-0.225	-0.138***	-0.136***
Alpha(above)-Alpha(below)	0.099***	0.102***	0.000	0.000
diff_*p*-value	(0.000)	(0.000)	(0.544)	(0.496)

Table 5: Regression of Fund Performance on Lagged Net Cash Flows: Affiliated Funds vs. Unaffiliated Funds

This table contains Fama and Macbeth (1973) regression results of two performance measures (Carhart four-factor alphas as well as Fama and French three-factor alphas) on one month lagged fund net cash flows and a set of control variables. *Domestic Investment Focus* represent equity mutual funds with an investment focus in Germany. *European Investment Focus* and Inter*national Investment Focus* represent equity mutual funds with European investment focus and international investment focus, respectively. *Affiliated* represents funds of investment companies that are affiliated with a banking group. 3*F Alpha* is the Fama and French three-factor alpha of fund *i* in quarter *t* in percent. *4F Alpha* is the Carhart four-factor alpha of fund *i* in quarter *t* in percent. *Flow* is the net cash flow to fund *i* in quarter *t*-1 in billion euros. *Family Size* is the size of fund family of fund *i* in quarter *t*-1 in billion euros. *TNA* are the total net assets of fund *i* in quarter *t*-1 in billion euros. *Past Performance* is the return of fund *i* in quarter *t*-1 in percent. *TER* is the annual total expense ratio of fund *i* in quarter *t*-1 in percent. *Frontload* is the front load of fund *i* in quarter *t*-1 in percent. *P*-values of Newey and West (1987) standard errors in parentheses: * significant at 10%; ** significant at 5%; *** significant at 1%.

	Domestic Investment Focus				European Investment Focus				International Investment Focus			
	Affiliated		Unaffiliated		Affiliated		Unaffiliated		Affiliated		Unaffiliated	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	3F Alpha	4F Alpha	3F Alpha	4F Alpha	3F Alpha	4F Alpha	3F Alpha	4F Alpha	3F Alpha	4F Alpha	3F Alpha	4F Alpha
Flow	1.742	1.590	-5.633	-5.553	4.013*	3.763*	0.339	1.131	3.610***	3.406***	0.725	2.277
	(0.533)	(0.629)	(0.400)	(0.485)	(0.074)	(0.087)	(0.887)	(0.603)	(0.005)	(0.004)	(0.723)	(0.256)
Family Size	0.016	0.030**	0.036***	0.030**	0.004	0.004	0.017	0.011	0.001	0.001	0.003	-0.006
	(0.235)	(0.045)	(0.002)	(0.019)	(0.671)	(0.625)	(0.257)	(0.535)	(0.893)	(0.859)	(0.817)	(0.633)
TNA	-0.270***	-0.302***	-0.357***	-0.302**	-0.232**	-0.178**	-0.057	-0.080	-0.078	-0.051	-0.138	-0.156
	(0.004)	(0.004)	(0.005)	(0.030)	(0.010)	(0.042)	(0.545)	(0.340)	(0.144)	(0.309)	(0.201)	(0.185)
Past Performance	0.185***	0.169**	0.103**	0.082*	0.025	0.018	0.060	0.083	0.051	0.063	0.041	0.080
	(0.002)	(0.013)	(0.026)	(0.085)	(0.620)	(0.715)	(0.211)	(0.103)	(0.260)	(0.226)	(0.371)	(0.110)
TER	0.757**	0.920***	0.124	0.328*	0.208**	0.185*	0.073	0.014	0.066	0.081	-0.156*	-0.153
	(0.017)	(0.004)	(0.455)	(0.083)	(0.036)	(0.087)	(0.660)	(0.936)	(0.335)	(0.298)	(0.086)	(0.116)
Frontload	0.115**	0.124**	-0.194***	-0.200***	-0.029*	-0.034*	-0.041	-0.050	-0.007	-0.013	-0.002	0.006
	(0.020)	(0.020)	(0.001)	(0.001)	(0.083)	(0.072)	(0.269)	(0.182)	(0.673)	(0.429)	(0.952)	(0.868)
Observations	1,351	1,351	2,597	2,597	4,258	4,258	11,456	11,456	9,788	9,788	22,550	22,550
Adj. R^2	0.374	0.383	0.191	0.205	0.169	0.176	0.087	0.093	0.113	0.131	0.069	0.083

Appendix

Table A1: Portfolio Approach (Equally-weighted Portfolios)

This table reports the alpha estimates and factor loadings of above median and below median flow portfolios formed within the sample of funds with domestic investment focus (Panel A), funds with European (Panel B) and international investment focus (Panel C). Each quarter, funds in each sample are grouped to form an above median and a below median fund flow portfolio based on the median net cash flow of each fund during the previous quarter. Portfolio performance is evaluated based on portfolio alpha of the new money portfolios. *3F Model* present results for the Fama and French three-factor model and *4F Model* is the Carhart four-factor model, respectively. The table reports results for equally-weighted portfolios. The differences in alphas between the above and the below median fund flow portfolios are also reported. Alpha values are expressed in percentage per month. The regression coefficients' *p*-values are based on the Newey and West covariance matrix; statistical inferences for the differences in alphas are based on the $\chi 2$ differences test. *P*-values are reported in parentheses: * significant at 10%; ** significant at 5%; *** significant at 1%.

	3F Model			4F Model		
	(1) Above Median Portfolio	(2) Below Median Portfolio	(3) Above - Below	(4) Above Median Portfolio	(5) Below Median Portfolio	(6) Above - Below
Panel A: Domestic Investment Focus						
Alpha	-0.219**	-0.188**	-0.031***	-0.216**	-0.168	-0.048***
	(0.029)	(0.040)	(0.002)	(0.048)	(0.110)	(0.000)
RMRF	0.933***	0.941***		0.933***	0.939***	
	(0.000)	(0.000)		(0.000)	(0.000)	
SMB	0.042	0.047		0.042	0.049	
	(0.247)	(0.178)		(0.234)	(0.154)	
HML	0.090**	0.053		0.090**	0.058	
	(0.013)	(0.144)		(0.018)	(0.143)	
WML				-0.003	-0.016	
				(0.926)	(0.591)	
Adj. R^2	0.955	0.959		0.955	0.959	
Panel B: European Investment Focus						
Alpha	-0.212**	-0.267***	0.055***	-0.206**	-0.264**	0.058***
	(0.012)	(0.006)	(0.000)	(0.028)	(0.016)	(0.000)
RMRF	0.941***	0.967***		0.940***	0.966***	
	(0.000)	(0.000)		(0.000)	(0.000)	
SMB	0.084*	0.068		0.086*	0.068	
	(0.099)	(0.219)		(0.097)	(0.216)	
HML	0.022	0.019		0.020	0.018	
	(0.565)	(0.697)		(0.571)	(0.684)	
WML				-0.006	-0.003	
				(0.857)	(0.947)	
Adj. R^2	0.943	0.922		0.943	0.922	
Panel C: International Investment Focus						
Alpha	-0.225	-0.234	0.008	-0.204	-0.210	0.005
	(0.175)	(0.191)	(0.650)	(0.249)	(0.273)	(0.773)
RMRF	0.713***	0.731***		0.708***	0.725***	
	(0.000)	(0.000)		(0.000)	(0.000)	
SMB	0.201*	0.221*		0.209*	0.230*	
	(0.079)	(0.065)		(0.074)	(0.059)	
HML	0.077	0.073		0.075	0.071	
	(0.535)	(0.576)		(0.553)	(0.595)	
WML				-0.041	-0.046	
				(0.579)	(0.569)	
Adj. R^2	0.729	0.711		0.729	0.711	

Table B1: Portfolio Approach (Positive vs. Negative Flow Portfolios)

This table reports the alpha estimates and factor loadings of positive and negative flow portfolios formed within the sample of funds with domestic investment focus (Panel A), funds with European (Panel B) and international investment focus (Panel C). Each quarter, funds in each sample are grouped to form a positive and a negative fund flow portfolio based on the net cash flow of each fund during the previous quarter. Portfolio performance is evaluated based on portfolio alpha of the new money portfolios. *3F Model* present results for the Fama and French three-factor model and *4F Model* is the Carhart four-factor model, respectively. The table reports results for flow-weighted portfolios. The differences in alphas between the positive and negative flow portfolios are also reported. Alpha values are expressed in percentage per month. The regression coefficients' *p*-values are based on the Newey and West covariance matrix; statistical inferences for the differences in alphas are based on the $\chi 2$ differences test. *P*-values are reported in parentheses: * significant at 10%; ** significant at 5%; *** significant at 1%.

	3F Model			4F Model		
	(1) Positive Flow Portfolio	(2) Negative Flow Portfolio	(3) Positive - Negative	(4) Positive Flow Portfolio	(5) Negative Flow Portfolio	(6) Positive - Negative
Panel A: Domestic Investment Focus						
Alpha	-0.179	-0.159*	-0.020*	-0.193	-0.146	-0.047***
	(0.142)	(0.063)	(0.071)	(0.162)	(0.129)	(0.000)
RMRF	0.975***	0.959***		0.976***	0.958***	
	(0.000)	(0.000)		(0.000)	(0.000)	
SMB	0.056	0.044		0.054	0.046	
	(0.177)	(0.149)		(0.182)	(0.134)	
HML	0.109***	0.057*		0.106**	0.060*	
	(0.008)	(0.067)		(0.012)	(0.066)	
WML				0.011	-0.011	
				(0.730)	(0.669)	
Adj. R^2	0.937	0.965		0.937	0.965	
Panel B: European Investment Focus						
Alpha	-0.241**	-0.293***	0.053***	-0.235**	-0.308***	0.073***
	(0.014)	(0.001)	(0.000)	(0.030)	(0.002)	(0.000)
RMRF	0.936***	0.984***		0.935***	0.986***	
	(0.000)	(0.000)		(0.000)	(0.000)	
SMB	0.074	0.062		0.076	0.058	
	(0.172)	(0.225)		(0.164)	(0.253)	
HML	0.025	-0.003		0.023	0.003	
	(0.564)	(0.950)		(0.594)	(0.949)	
WML				-0.005	0.013	
				(0.875)	(0.708)	
Adj. R^2	0.926	0.941		0.925	0.941	
Panel C: International Investment Focus						
Alpha	-0.195	-0.248	0.052***	-0.168	-0.227	0.058***
	(0.284)	(0.167)	(0.005)	(0.386)	(0.232)	(0.003)
RMRF	0.645***	0.761***		0.639***	0.756***	
	(0.000)	(0.000)		(0.000)	(0.000)	
SMB	0.228*	0.199*		0.238*	0.206*	
	(0.073)	(0.080)		(0.066)	(0.072)	
HML	0.082	0.053		0.079	0.051	
	(0.511)	(0.677)		(0.535)	(0.694)	
WML				-0.053	-0.041	
				(0.485)	(0.572)	
Adj. R^2	0.656	0.722		0.656	0.722	