# Switching from commissions on mutual funds to flat-fees: How are advisory clients affected?[☆]

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## ARTICLE INFO

## ABSTRACT

Using a field study at a German brokerage, we investigate advised individual investors' behavior and outcomes after self-selecting into a flat-fee scheme (percentage of portfolio value) for mutual funds. In a difference-in-differences setting, we compare 699 switchers to propensity-score-matched advisory clients who remained in the commission-based scheme. Switchers increase their portfolio values, improve portfolio diversification, and increase their portfolio performance. They also demand more financial advice and follow more advisor recommendations. We argue that switchers attribute a higher quality to the unchanged advisory services.

## 1. Introduction

Financial advisors should help their clients select efficient portfolios depending on their personal financial situation and preferences. However, when advising under commission-based schemes, the incentives of financial advisors and private investors might be misaligned.[1] To curb the risk of potential mis-selling and to protect private investors, regulators have reacted either by increasing disclosure requirements or—as in the US and in the Netherlands—by banning sales commissions

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[1] Bergstresser et al. (2008); Bolton et al. (2007); Chang and Szydlowski (2020); Inderst and Ottaviani (2009, 2012a, 2012b, 2012c); Stoughton et al. (2011).

altogether. While policymakers assume fee-only advice to be welfare improving, this is not necessarily the case for any private investor. In particular, below-median wealth households might shy away from financial advice that comes with fixed (hourly) fees. Thus far, technological advances have not changed this situation. In this context, offering a percentage flat-fee advice model based on assets under management provides a potential solution between fee-based and commission-based advice, as it combines features of both compensation models.

Fee-only advisory schemes have received much attention regarding their effect on the supply side. However, how private investors with a preference for flat-fees respond to such schemes has not been researched. Does switching from traditional commissions to a flat-fee scheme change clients' behavior and portfolio efficiency? Do adopters ultimately change their demand for and use of financial advice?

We leverage a unique field study to address these questions. In September 2009, a large online bank operating in the German market was among the first banks to introduce a flat-fee for trading and holding mutual funds. Brokerage fees and transaction costs for all other products, such as stocks, bonds, or options, remained unchanged. The flat-fee scheme runs in parallel with the bank's traditional commission-based scheme, and importantly, the scope and quality of financial advice and services offered to clients as well as support functions are identical under both schemes. As the differences in advisory quality between both schemes are muted, this setting allows us to isolate clients' responses toward the flat-fee scheme. In our analyses, we scrutinize how clients change their investment behavior (relative to a control group) after deliberately switching into the flat-fee scheme.

When choosing the flat-fee scheme, clients pay a quarterly fee in proportion to the average value of their total portfolio holdings, including stocks, bonds, funds, etc. The fees sum up to 0.7% to 1.0% p.a. (per annum) depending on portfolio size. In exchange, front loads for mutual funds are waived, and any kickbacks that the bank receives from fund management companies are reimbursed to the client.[2] Under the traditional commission-based scheme, which is still the standard model used at most banks in continental Europe in general and Germany in particular, clients pay front loads to the bank when purchasing mutual funds (on average, 2.0%. The 25th percentile is 1.2% and for the 75th percentile, 2.6%) and the annual fund management expenses of which kickbacks are a part.

All clients, irrespective of whether they opt for the flat-fee scheme or the commission-based scheme, may consult with a team of professional financial advisors at no extra cost over the phone. All advisors are trained bank clerks who are employed by the bank on a fixed-salary contract. The advisors are randomly assigned to clients on a call-by-call basis regardless of the client or pricing scheme. The advisors mainly aid clients in selecting mutual funds from the universe of funds available on the German retail market. The bank's central investment committee provides advisors with a list of mutual funds from all fund categories that advisors are supposed to prioritize in their recommendations.[3] Advisors remain free to discuss all types of investment products on clients' request. We find that advisors recommend products with similar characteristics to clients under the flat-fee scheme as under the commission-based scheme. This holds at any given point in time as well as for all adopters (=switchers) before and after the introduction of the flat-fee scheme.

The bank's data we analyze contain deidentified records from 9543 randomly selected clients in Germany who consulted the advisory team at least once during the sample period and for which demographic and portfolio data are available. The sample period ranges from January 2008 to December 2015. All sample clients have unrestricted access to the new flat-fee scheme, which was advertised prominently on the main website of the bank and which was subject to multiple mailing campaigns. Over our sample period, 1034 clients adopted the new scheme. Of these, 699 had been taking advice before the introduction of the flat-fee scheme, and 335 had been trading self-directedly before and started using advice through the new scheme.[4] We focus on the 699 clients who used financial advice before the introduction of the flat-fee scheme, as we are interested in the effect of the adoption of the flat-fee scheme rather than in the effects of the adoption of financial advice itself.[5] Univariate comparisons show that clients with a higher portfolio value, larger fund shares, and better portfolio efficiency (diversification and performance) are more likely to switch to the flat-fee scheme. Thus, adopters seem to be more financially sophisticated than their peers, who continue to take advice under the commission-based scheme.

We use a difference-in-differences approach that compares the 699 switchers to the new flat-fee scheme to a control group of propensity-score-matched clients. The control group before matching consists of 7,828 clients who continue taking advice under the commission-based scheme.[6] This creates a sample of switchers and matched nonswitchers who behaved similarly before the flat-fee scheme became available. Switchers have a preference for flat-fees that they could not exercise

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[2] The flat-fee scheme is relatively more attractive when both the turnover in mutual funds and the mutual fund share are higher. It is constructed by the bank to be cost effective for approximately half of the clients based on their trading behavior over the previous twelve months. This also holds for our sample.

[3] Our cross-sectional regression analysis shows that the funds on the recommendation list are characterized by larger fund volumes, exhibit better historical performance, and have higher front-end loads than their respective nonrecommended funds. We document the analysis in the internet appendix in Tables A.I. to A.III. The bank does not produce mutual funds. Additionally, operating an open architecture provides all funds with a comparable a priori likelihood of being on the list.

[4] This latter number compares to 1,380 investors who started using the brokerage's advisory services during the same period but remained under the conventional commission-based scheme after becoming an advisory client. We exclude from our analysis clients that are new clients of the bank and that switch into or directly start in the flat-fee scheme, as we need to observe clients before they start the flat-fee scheme.

[5] This avoids the endogeneity of whether people use financial advice.

[6] The propensity-score matching of clients is based on the use of sociodemographics, past investment and trading behavior, and differences in asset allocation as inputs. The matching process produces common trends prior to the switching dates of investors.

before the introduction. In contrast, the control group revealed their preference to stay in the commission-based scheme. Thus, the analysis shows how switchers respond to the flat-fee scheme once it is made available compared to how they would likely have behaved had they stayed under the commission-based scheme.

Our difference-in-differences analysis documents an immediate reaction by those who switch. We show that switchers increase the share of mutual funds in their portfolios by 18% and sharply increase the number of advisory contacts. Additionally, the average portfolio value of switchers increases by 30,774 euros, and the average portfolio performance, as measured by risk-adjusted gross returns using 4-factor alphas (ignoring potential cost savings coming from the fee or the commission-based scheme), improves by 3.5% p.a. in the three years after the switch relative to that of nonswitchers.

In general, clients under the flat-fee scheme trade more using the advisory channel, although they could have traded the same mutual funds self-directedly at the same price with the same reimbursements. By analyzing the probability of following received financial advice, we show that flat-fee scheme clients are at least 38% more likely to follow an advisor's recommendation in comparison with both the control group and their own previous behavior. Switching clients especially increase their following for actively managed funds in more informationally distant, international regions. These findings might speak to a higher level of trust once clients are enrolled under the flat-fee scheme which is in line with Gennaioli et al. (2015). We find additional evidence for a potential trust channel using the results of an online survey with a subsample of 709 clients. Of these participants, 45 clients are users of the flat-fee scheme. These 45 clients perceive the advice under the flat-fee scheme as being of a higher quality than that under the commission-based scheme. They associate the flat-fee scheme at the bank with fairer and better advisor recommendations and feel more confident in investing in international capital markets. Thus, clients seem to trust the same financial advice more under the flat-fee scheme.[7]

Our results on which recommendations clients decide to follow are not commensurate with the idea that people buy more funds because they have become relatively cheaper under the flat-fee scheme. We also largely rule out a sunk cost fallacy or novelty effect. Using marketing campaign data, we compare clients who switch following marketing campaigns to clients who switch at another, probably more endogenously chosen point in time. We find qualitatively unaltered results for the two groups. To further ensure the robustness of our results and as an alternative matching approach, we compare the change in behavior of early switchers to that of clients who have not yet switched but will ultimately do so.[8]

Overall, our results show that simply offering additional flat-rate pricing schemes for purchasing financial products can be a powerful instrument in improving portfolio efficiency of private investors if they adopt it. This is particularly true, as these results replicate when using a similar setting in a brick-and-mortar bank where face-to-face financial advice is prevalent. Thus, offering flat-fee advice on an economy-wide level will likely lead to similar positive effects. However, we can only speculate about the behavior of clients who remain in the commission-based scheme, if they had been randomly assigned into a flat-fee scheme. Our robustness tests show that clients who switch based on a marketing campaign show a similar behavior. However, we do not know and cannot test how many investors would choose not to take financial advice anymore and what the effects of this decision would be. Thus, our results cannot be seen as a case for commission bans. We will leave it to future research to study how clients who prefer remaining in commission-based schemes are responding to flat-fee schemes. We also highly encourage other researchers to investigate take up rates and underlying channels.

The positive effects found in this study seem to be in contrast to the theoretical findings by Chang and Szydlowski (2020), who suggest that banning conflicted fees improves the information quality but has not necessarily a positive impact on customers' welfare, relative to a world with self-directed clients only. It is worth noting that their theoretical model is different from the empirical setting underlying this study. While Chang and Szydlowski (2020) model the equilibrium in a competitive market for financial advice with heterogeneous advisors and heterogeneous investors, the investors in our sample receive the same advice irrespective of the chosen pricing model, i.e., we are able to single out the client effect. Our findings especially extend Bhattacharya et al. (2012), who show that financial advice, even if it was unbiased and inexpensive, was hardly taken up or followed by brokerage clients who would have benefited from it.[9,10]

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[7] An alternative intuition would be that clients who previously planned to increase mutual fund investments demand more financial advice to discuss these plans. Then, clients who self-select into the fee scheme might have decided to consult the advisory service more and to follow the advisory service more closely. While this may play a role, it does not invalidate the increase in perceived quality, as clients also follow more in sell recommendations of mutual funds. If they were only interested in increasing their fund share, they did not have to rebalance, as they have sufficient funds.

[8] Despite the fact that advisors are randomly assigned to clients, we also run specifications in which we control for advisor fixed effects for the one advisor a client has been talking to most frequently. Moreover, we restrict the analysis to clients who use the sample bank as their main bank relationship. These alternative approaches do not change our results qualitatively. The respective tables are shown in the internet appendix.

[9] Note that the initial following with 15% in our sample is highly comparable to Bhattacharya et al. (2012). The switch to the flat-fee scheme then leads to an increase in following by at least 38% in all subsequent advisory talks underscoring the important role that payment schemes for financial advice may play.

[10] Our study also contributes to the stream of literature on financial advice. Recent studies have shown that financial advisors affect the behavior of individual investors on average (Hackethal et al. (2012); Hoechle et al. (2018); Linnainmaa et al. (2021); Stolper and Walter (2019)) but that brokers charge mark-ups and sell structured retail products for which clearly better alternatives exist (Célérier and Vallée (2017); Egan (2019)), repeatedly commit misconduct (Egan et al. (2017, 2022)), and fail to cure client biases Mullainathan et al. (2012). These studies focus on the quality or take up of financial advice, the misconduct of advisors, or their capability and willingness to cure clients' biases. In contrast and adding to the overall picture of financial advice, we focus solely on customer reactions. Gaudecker (2015), using a Dutch household survey, shows that advised clients hold better diversified investment portfolios due to a higher fund share. We add to this study by showing that the way a client pays for mutual fund transactions is an additional factor to promoting the portfolio diversification within advised clients.

## 2. The setting

### 2.1. Overview

The German sample bank, an online bank with a focus on brokerage services, offers the complete range of retail financial products—including online trading, current accounts, savings products, retirement solutions, and consumer credits—to its several hundred thousand retail clients. The bank does not produce financial products or mutual funds on its own but instead runs an open architecture for selling and advising on mutual funds from all asset management firms available on the German retail market. Most trades clients make are self-directed. There is no fee charged on the advice itself, and transaction and product costs remain the same for clients no matter if and how much advice they use. The motivation of the bank to offer advice is twofold: first, the bank does not want to lose clients who need investment assistance to competitors who offer some form of financial advice, and second, since advisors steer their clients toward mutual funds, the bank reckons that the costs for advisors are at least partly compensated by higher revenues from their mutual funds sales business. The bank offers to all its clients two alternative pricing schemes for purchasing mutual funds. The first scheme is the traditional commission-based scheme, where clients pay a front-end load and management fees, including any kickbacks from the fund management companies to the bank. The second scheme is the new flat-fee scheme (introduced in September 2009), where all front-end loads are waived and all kickbacks are reimbursed. The flat-fee to be paid by a client is a fraction of the average value of her portfolio over the previous quarter. This fraction is 1% per annum for portfolio values smaller than 100,000 euros and declines to 0.7% per annum for portfolio values larger than 500,000 euros. Neither the content and scope of financial advice nor the incentives for advisors were changed by the bank when the flat-fee scheme was introduced; hence, it still offers the same type of advice to all clients independent of the chosen pricing scheme. Overall, 1034 clients of the 55,551 sample clients opt into the flat-fee scheme, of which 699 had previously used commission-based financial advice and 335 had placed all their prior trades self-directedly and now use financial advice at the bank for the first time. In addition, 1380 investors started to use financial advice under the commission-based scheme during the sample period.

### 2.2. Advisory services

Financial advice began to be offered in July 2005 and is available only via phone. All clients, irrespective of the chosen pricing scheme, may consult the financial advisory services.[11] The clients are randomly assigned to a financial advisor on a call-by-call basis regardless of the client or pricing scheme. Advisors help their clients only with investment matters but not with, for example, consumer loans or mortgages. The financial advisory services are provided by trained bank clerks in specialized call centers located in Germany. These bank clerks have all completed a three-year vocational training.[12] The bank hires trained bank clerks as full-time employees, and their salary is defined by the collective wage agreement for the banking industry, which, for financial advisors, is an annual gross salary of 30,000 to 45,000 euros, depending on experience. Any variable payment[13] to financial advisors is partly based on the performance of the entire bank and partly on the performance of the relevant division, and it must not exceed one monthly gross salary per year. Therefore, variable financial incentives play a minor role for financial advisors in this sample.[14] Job promotions for advisors depend on team evaluations, leadership skills, and team performance because measuring individual performance is prohibited under collective wage agreements at the bank. To the extent that team performance is measured, the key performance indicator is assets under management, not sales or portfolio turnover.

The bank employs a central research unit that produces and creates a list of recommended products for both advisors and clients. For the recommendation list, the research unit considers only delegated financial products. It gives preference to mutual funds, but index funds, exchange traded funds (ETFs) and basket certificates may occasionally be part of the list. The resulting recommendation list is reviewed monthly. The recommendation list is the basis for financial advice but can also be viewed by all clients when they have logged into their brokerage account. Advisors discuss products that do not appear on the recommendation list only by client requests. We provide further details on the financial advice in the internet appendix A.I. in Tables A.I. to A.III. The bank does not produce any mutual funds itself. The bank instead operates an open architecture, which features available funds in Germany, and a small subset thereof is put on the recommendation list.

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[11] Clients need to call in to receive recommendations irrespective of the chosen pricing scheme. There are a few cases of calls initiated by advisors. These advisor-initiated calls may occur if the advisor is asked to (e.g., the client receives another call and asks the advisor to call back) or needs to call back (e.g., the client calls in to ask for a specific security and the financial advisor wants to get more information about the security before calling back to make a recommendation).

[12] The vocational training for bank clerks in Germany includes extensive on-the-job training in various departments at banks, such as serving as client advisor on investments and credit, performing teller functions, and managing back-office responsibilities. During the vocational training, trainees spend two days per week at a vocational school and take classes on financial mathematics, finance, accounting, financial markets and products as well as regulations and legal issues.

[13] As outlined by Hoechle et al. (2018), incentives affect advisor behavior.

[14] In line with this notion of weak-powered incentives, changing the performance metric on which the individual variable pay is based by the bank from portfolio turnover to assets under management on January 1, 2011, had no effect on advisors' turnover with clients. This result holds in unreported analyses we run and is confirmed by bank officials who closely monitored advisors during the period in which variable pay was based on turnover and the flat-fee scheme was already made available in September 2009 to avoid gaming by the advisors.

The bank does not construct and showcase model portfolios with different risk profiles for its clients. Instead, the individual asset allocation and product selection are determined during the interaction of the advisor and the client and mainly depend on self-reported risk aversion by the client in the know-your-customer (KYC) documentation. The data do not allow for investigation of the content of single advisory counselings. However, the composition of the recommendation list, mainly featuring mutual funds, leads clients to chase fund returns and redirect their investments from single stocks to funds. As mentioned above, financial advice itself is always free for all clients—any initial charges and management fees do not differ between advised and self-directed trades.

### 2.3. Details on the introduction of the flat-fee pricing scheme

The bank has traditionally used a commission-based pricing scheme for its fund brokerage services, which continues to be the standard in most bank-client relationships in continental Europe in general and in Germany in particular. Clients pay front loads (at this bank, an average of 2.0%—the average for the 25th percentile is 1.2% and for the 75th percentile, it is 2.6%) and annual management fees when purchasing and holding mutual funds. Such management fees include kickbacks from the fund management company to the bank. Clients receive a receipt for every security purchase detailing the value, the instrument, the exchange, the purchase price, and all costs related to that purchase. We label this pricing scheme the commission-based scheme.

In September 2009, the sample bank was one of the first in Germany to introduce a flat-fee scheme in parallel to its commission-based scheme as a general offer to all clients.[15] The bank's reason to offer such a flat-fee scheme was fourfold: (1) Immediately after the financial crisis, the bank expected regulatory interventions into the advisory processes. They assumed that regulators might ban commission-based advice or require banks to offer fee-only advice alongside traditional commission-based advice. They decided to offer such a pricing scheme to gain first mover advantages proactively. (2) Offering a flat-fee scheme was also a strategic decision to enroll more clients in financial advice. The bank assumed that some self-directed clients who did not use advice under the traditional commission-based scheme might be interested in advice under a flat-fee scheme. (3) Offering the flat-fee scheme comes at relatively low costs for the bank because the new pricing scheme does not affect the advisory processes. (4) The average revenues per client do not increase when a client switches pricing schemes. The bank constructed the flat-fee scheme so that the flat-fee reflects the historical average revenues per advisory client; i.e., flat-fees are beneficial for approximately 50% of the client base. However, the flat-fee scheme smooths the bank's revenues. In general, the bank expected that the overall revenues might increase if the flat-fee scheme attracted self-directed clients to make use of the advisory services because advisory clients usually increase their portfolio values.

Our dataset contains the information about when clients first pay for the flat-fee scheme, from which we infer the quarter in which the switch occurred. After the introduction of the flat-fee model, all clients were able to switch into the new pricing scheme at any point in time. Clients are also free to switch back to the commission-based scheme and no termination fees arise.[16] Then, the switch occurs with the start of the subsequent quarter.

The bank decided to charge a percentage fee instead of a fixed fee per hour or per counseling session to curb the risk of attracting only richer clients. As mentioned before, in return for paying the fee, front-end loads on mutual fund purchases are waived, and the bank reimburses all kickbacks they receive at the end of each quarter. Kickbacks are initially part of the management fee of the fund. Thus, the remaining cost of holding a fund for a client in the fee-based scheme is the difference between the management fee and the reimbursed kickback. These benefits apply to all mutual fund purchases and holdings of a flat-fee scheme client and not only to mutual funds recommended by the bank or the advisor. Thus, to reap the savings of mutual fund trading, flat-fee scheme clients are free to trade mutual funds self-directedly or to purchase them after calling an advisor.[17] Additionally, the scope and content of advice delivered are based on the same recommendation list. Advisor recommendations are identical for all clients and are independent of the pricing scheme chosen by a client. No financial advisor exclusively talks to clients in one pricing scheme only.[18] Empirically, we find no differences in the recommendations under the flat-fee scheme or the commission-based scheme.[19] The pricing for all other products and services remains unchanged.

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[15] The bank rolled out the fee-only advice scheme in the fall of 2009 and used the first two quarters of 2010 as an operative beta phase. For this beta phase, the bank sent promotional campaigns to a limited number of clients and enrolled interested clients under the new scheme. The subsequent two quarters were then used to implement and test backend processes, such as the reimbursement of kickbacks and the automated provision of documentations. The full roll-out was in 2010. To deal with the potential concern that the clients of the test phase might be different, we replicated our analyses excluding the clients enrolled in fee-only advice in 2009. The results remain unchanged. Figure A.I. in the internet appendix shows the individual switching dates to the fee scheme.

[16] One might think that some clients use this opportunity to enroll in the flat-fee scheme, trade excessively, and then switch back to the commission-based scheme once all transactions are settled. This is not the case. Within the sample period, fewer than 10 clients switched back to the commission-based scheme. This sample size is too small for any analyses, but excluding those clients from our main analyses does not change the results.

[17] We provide a cost–benefit analysis in Figure A.II. in the internet appendix. It shows that clients benefit from switching into the flat-fee scheme when having a high fund and a high monthly turnover.

[18] Financial advisors have access to an internal customer relationship management system in which they can see the portfolio holdings and past transactions of the respective client as well as chosen pricing scheme.

[19] We provide the analyses on the purchase recommendations before and after the switch, summary statistics of recommended and not-recommended funds, and characteristics of recommended funds in Table A.I. to A.III. as well as a discussion of the results in A.I. in the internet appendix.

The bank advertised the new flat-fee scheme on its webpage, including numerical examples. Furthermore, clients received an e-mail on the alternative pricing model when it became available. Additionally, purely technical and processual support is available via telephone through which clients can be informed about the particularities of the flat-fee scheme.[20] Therefore, it is likely that all but a few clients were aware of the new scheme and its main attributes. However, the commission-based scheme with its zero recurring charges was the default scheme for everyone, and switching required a client's deliberation and action: signing up for or switching to the flat-fee scheme required checking a box on the website and entering a 6-digit transaction number (TAN) to confirm the change (approximately 3 min of effort in total).

## 3. Data and characteristics of flat-fee scheme clients

### 3.1. Investor data

We use pseudonymized records on a randomly chosen subset of 113,000 investors for the period from 2008 to 2015. The data comprise sociodemographic information, time-stamped security transactions, and monthly portfolio holdings. Additionally, we have a file outlining whether a client has received financial advice and how often clients and their advisors have interacted. The information on the advisory meetings includes purchase recommendations identified by ISIN and the date of the recommendation. Here, we limit our analysis to purchase recommendations for two reasons. First, switching pricing schemes affects only the cost of purchase transactions, as selling is always free. Second, sell recommendations are path dependent because they are subject to the existing portfolio of the client and therefore would bias our assessment of what has changed due to the introduction of the flat-fee scheme. We are also equipped with a file that shows the payment of fees to the bank as well as kickbacks paid to the clients. The file containing fees paid also allows us to identify when clients switched to the flat-fee scheme.

Our initial sample was reduced to approximately 90,000 investors when we combined the 113,000 original IDs with sociodemographic records and selected those clients who fulfilled all of the following conditions: had a private account (noninstitutional clients), were alive, were above the age of 18 and had for at least 5 years a securities portfolio during the period between 2008 and the end of the sample. In addition, to measure the effects of the introduction of the flat-fee scheme, we need the clients to be active around the time of its introduction. To do so, we require clients to have portfolio returns for at least 200 trading days over the 12 months prior to the introduction of the flat-fee scheme in September 2009. For some of these clients, additional demographic variables, such as employment status, are missing because they are not mandatorily reported. Of the remaining 55,551 clients, we restrict our analyses to the 9543 clients who used the advisory services at least once over our observation period. We exclude nonadvised clients, as we are interested in the effects of alternative pricing schemes in the advisory context. The analysis of the effects of pricing schemes on self-directed clients may be a subject of future research. Of these 55,551 clients, 7828 clients are advised under the commission-based scheme and 1034 are advised under the flat-fee scheme at the end of our observation period. Of the 1034 clients adopting the flat-fee scheme since September 2009, 699 had been taking advice in the past (switchers), and 335 had been trading self-directedly before (new fee). This latter number compares to 1380 investors who had also been trading self-directed before but then selected the conventional commission-based scheme to obtain their first advice from the bank.[21] We focus on the 699 clients who used financial advice before, as we are interested in the effect of the adoption of the flat-fee scheme rather than in the effects of the adoption of financial advice itself. This avoids the endogeneity of whether people use or do not use financial advice.[22]

The groups of investors are described in Table I (column 1): The average advised client under the commission-based scheme is 55 years old, married (64%), male (86%), a German resident (97%), and has been a client of the bank for 15 years. Most investors work as employees (46%) or are retired (17%). The average investor has a risk aversion of 3.84, which is measured on a scale of 1 (indicating high risk aversion) to 5 (indicating low risk aversion).[23] This risk aversion parameter is self-reported and can be adjusted by the client. Clients are required to overrule their risk class on a case-by-case basis

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[20] Note that the bank has not called certain clients to explicitly offer them the flat-fee scheme.

[21] We exclude clients from our analysis that are new clients of the bank and that switch into or directly start in the fee scheme, as we need to observe clients before they start the fee scheme.

[22] In the robustness section, we run analyses with the new fee clients and clients who newly start advice under the commission-based scheme to rule out novelty effects. The descriptive statistics for these groups of clients are shown in the internet appendix A.IV.

[23] The German Security Trading Act makes it mandatory for financial institutions to inform investors about the respective risk level of each asset classified by a risk class ranging from less risky to very risky. Consistent with these guidelines, the bank uses for all securities risk classes on a five-point scale and makes this information salient to investors before they can buy the respective security. Thus, the risk perception of the investors regarding an asset's risk level very likely depends on this risk class. Note that investments in international stocks are classified as at least risk class 4. Thus, each internationally diversified mutual fund containing equity is classified as risk class 4 or 5.In detail, risk class 1 includes assets such as German government bonds, 3-year (or less) government bonds of other euro countries or money market bonds. Risk class 2 includes assets, such as 3- to 10-year government bonds of other euro countries, pension funds or open property funds. Risk class 3 includes assets, such as German or European large cap stocks, stock funds, mixed mutual funds, DAX or EUROSTOXX certificates, bonds of noneuro issuers or 10-year (or less) bonds of euro issuers but not in euros. Risk class 4 includes assets, such as German mid-cap stocks, Dow Jones stocks (because of currency risk to German investors), certificates without knock-out conditions or bonds with low credit rankings. Risk class 5 includes assets, such as foreign small cap stocks, bonds with very low ratings, high-risk certificates, such as knock-out or highly levered certificates, and derivatives, such as options or futures.

**Table I**

**Investor data and demographics of advised and nonadvised clients.** This table presents summary statistics for our retail investor data as of September 2009, which is the month before the flat-fee scheme was made available. Column (1) shows the statistics for commission-based scheme clients, whereas column (2) shows the statistics for advised commission-based scheme clients switching to the flat-fee scheme (Switchers). We report sociodemographic information on the clients' age (Age), marital status (Married), gender (Gender), whether they hold a PhD (PhD), length of the relationship with the bank (Length of relationship), whether they currently live in Germany (German resident) and whether they work as employees (Employed), are retired (Retired) or have another job (Other). We also include information on their portfolio and trading behavior. All variables that require a time series to be computed use the previous 12 months. Thus, we include the average portfolio value in euros, the turnover from purchases, sales, and the entire portfolio, and the fees paid. We also include information on asset allocation in September 2009. We show asset allocation by instrument, asset class and regional focus. The asset class and the regional focus account only for funds and equities. Finally, we provide information on clients' diversification using the unsystematic variance share from a 4-factor model and the Herfindahl-Hirschman Index assuming that a mutual fund holds 100 securities. We finally report average factor loadings between January 2003 and September 2009 using the 4-factor model. The 4-factor model uses the German CDAX and its constituents to build daily factors. Data on the investors come from the bank, while data on asset allocations come from the bank and Refinitiv Eikon. Other market data are taken from Refinitiv Datastream. We include investors who had a portfolio for at least 200 days as of September 2009.

| *Date: End September 2009* | (1) Inducement-advice | | | (2) Switchers to fee-advice | | |
|---|---|---|---|---|---|---|
| | N | Mean | Median | N | Mean | Median |
| *Socio-demographics* | | | | | | |
| Age (in years) | 7828 | 55.17 | 54.00 | 699 | 54.50 | 53.00 |
| Married (married = 1) | 7828 | 0.64 | 1.00 | 699 | 0.68 | 1.00 |
| Gender (male = 1) | 7828 | 0.86 | 1.00 | 699 | 0.84 | 1.00 |
| Ph.D. (yes = 1) | 7828 | 0.07 | 0.00 | 699 | 0.09 | 0.00 |
| Length of relationship (in years) | 7828 | 15.04 | 13.00 | 699 | 15.36 | 13.00 |
| Risk class (1 = low, 5 = high) | 7828 | 3.84 | 4.00 | 699 | 3.91 | 4.00 |
| German resident (yes = 1) | 7828 | 0.97 | 1.00 | 699 | 0.96 | 1.00 |
| Employed (yes = 1) | 7828 | 0.46 | 0.00 | 699 | 0.45 | 0.00 |
| Retired (yes = 1) | 7828 | 0.17 | 0.00 | 699 | 0.15 | 0.00 |
| Other (yes = 1) | 7828 | 0.37 | 0.00 | 699 | 0.39 | 0.00 |
| *Portfolio & Trading (previous 12 months)* | | | | | | |
| Portfolio value (average past 12 months, in Euro) | 7828 | 60,307 | 34,939 | 699 | 85,063 | 51,294 |
| Turnover from sales (past 12 months, in% per month) | 7828 | 4.40 | 0.35 | 699 | 2.04 | 0.11 |
| Turnover from purchases (past 12 months, in% per month) | 7828 | 5.80 | 1.73 | 699 | 4.14 | 1.85 |
| Turnover total portfolio (past 12 months, in% per month) | 7828 | 5.10 | 1.40 | 699 | 3.09 | 1.31 |
| Trading fees paid (past 12 months, in Euro) | 7828 | 518.45 | 105.17 | 699 | 615.18 | 178.07 |
| Trading fees paid funds (past 12 months, in Euro) | 7828 | 217.61 | 19.52 | 699 | 471.05 | 106.63 |
| *Asset allocation (in%)* | | | | | | |
| *by instrument:* | | | | | | |
| Funds (active) | 7828 | 49.27 | 49.81 | 699 | 65.52 | 71.76 |
| Single stocks | 7828 | 33.83 | 21.63 | 699 | 16.48 | 3.54 |
| Certificates | 7828 | 7.36 | 0.00 | 699 | 9.68 | 1.49 |
| Funds (passive) | 7828 | 3.88 | 0.00 | 699 | 1.87 | 0.00 |
| Single bonds | 7828 | 2.94 | 0.00 | 699 | 2.10 | 0.00 |
| Other instrument | 7828 | 2.73 | 0.00 | 699 | 4.35 | 0.00 |
| *by asset class (for funds):* | | | | | | |
| Equity | 7828 | 74.30 | 83.65 | 699 | 69.66 | 73.83 |
| Fixed income | 7828 | 6.97 | 0.00 | 699 | 8.17 | 3.05 |
| Real estate | 7828 | 4.07 | 0.00 | 699 | 4.68 | 0.00 |
| Commodities | 7828 | 2.74 | 0.00 | 699 | 0.91 | 0.00 |
| Money market | 7828 | 0.51 | 0.00 | 699 | 0.37 | 0.00 |
| Other asset class | 7828 | 11.40 | 0.00 | 699 | 16.22 | 9.57 |
| *by region (for equity & funds with equity):* | | | | | | |
| Germany | 7828 | 30.45 | 16.84 | 699 | 17.86 | 5.56 |
| Multinational | 7828 | 26.73 | 18.67 | 699 | 40.91 | 38.16 |
| Europe | 7828 | 16.89 | 10.14 | 699 | 16.65 | 11.48 |
| Asia | 7828 | 10.04 | 0.00 | 699 | 9.36 | 2.16 |
| North America | 7828 | 6.86 | 0.00 | 699 | 3.91 | 0.00 |
| South America | 7828 | 2.33 | 0.00 | 699 | 3.67 | 0.00 |
| Africa | 7828 | 0.09 | 0.00 | 699 | 0.07 | 0.00 |
| Other region | 7828 | 6.65 | 0.00 | 699 | 8.16 | 1.47 |
| *Diversification (in%)* | | | | | | |
| Unsystematic variance share (4 factor, 01/2003–09/2009) | 7828 | 34.13 | 36.74 | 699 | 32.09 | 35.81 |
| HHI 100 | 7828 | 11.78 | 4.28 | 699 | 6.57 | 2.19 |
| Number of positions | 7828 | 13.92 | 11.00 | 699 | 14.50 | 12.00 |
| *Performance & Factor loadings (annualized from daily data from 01/2003 - 09/2009, in%)* | | | | | | |
| Alpha (4 factor) | 7828 | −3.21 | −0.90 | 699 | −3.18 | −0.63 |
| Beta | 7828 | 74.13 | 74.59 | 699 | 65.08 | 66.52 |
| SMB | 7828 | 35.27 | 35.66 | 699 | 36.58 | 38.13 |
| HML | 7828 | −4.02 | −2.01 | 699 | −2.91 | −0.14 |
| MOM | 7828 | −12.57 | −12.46 | 699 | −11.05 | −9.26 |

if they purchase securities that exceed their self-reported risk class. Clients usually set risk aversion parameters that are commensurate with their trading behavior. Brokerage clients are generally expected (Cole et al. (2014)) and are also found to be more sophisticated than the overall population (Dorn and Huberman (2005)). Therefore, it is not surprising that 7% of our investors hold a doctoral degree. This value is higher than that of the German population (1.1%, German Federal Bureau of Statistics (2011)). Overall, the descriptive statistics are comparable to those of advised clients reported in household finance studies based on brokerage data (Bhattacharya et al. (2012); Hackethal et al. (2012)). Compared to advised clients of German brick-and-mortar banks (Bucher-Koenen et al. (2021); Stolper and Walter (2019)), our sample contains a higher share of male investors.[24]

The average (median) advised client under the commission-based scheme holds a securities portfolio worth 60,307 (34,939) euros and produces a monthly portfolio turnover of 5.1% (1.4%), an unsystematic variance share of 34% and a portfolio performance of −3.2% per annum (4-factor alpha). The average portfolio consists of 34% individual stocks and 49% actively managed funds. Out of these actively managed funds, 74% are equity funds, which are mostly focused on Germany (30%), Europe (17%), and multinational countries (27%). Clients who switch into the flat-fee scheme are comparable in terms of sociodemographic characteristics to clients who remain in the commission-based scheme. The most important difference is that switchers have higher mean portfolio values of 85,063 euros (versus 60,307 euros), have lower portfolio turnovers (3.1 versus 5.1), pay more trading fees and have a higher fund share (65.5% versus 49.3%) with a more multinational focus (41% versus 27%). The numbers for our advised clients are in line with findings in previous research on the performance of private investors in Germany and the US (e.g., Bhattacharya et al. (2017); Barber and Odean (2000); Bhattacharya et al. (2012)). Of course, stock market participants are different from the average German citizen because participation is well below 50%.

Data on brokerage accounts are usually subject to the concern that they comprise play money accounts. To address this concern, we compare average portfolio values to official statistics. Deutsche Bundesbank (2014) reports an average portfolio value of a German stock market investor that is roughly of the same magnitude as the average portfolio value in our sample, which therefore seems to be comparable. Additionally, we compare portfolio holdings to self-reported gross annual household incomes for investors from our sample. Since income is reported within several ranges, we use the midpoint of each range as a proxy for investor income. The mean ratio of the average portfolio value (for the entire sample period) to annual income is close to 1.2. As a comparison, the ratio of total financial assets to gross household income for the German population is approximately 1.1 (German Federal Statistical Office, 2021a, 2021b).

### 3.2. Market data

We complement the bank data with data on mutual funds from Refinitiv Eikon and with market data from Refinitiv Datastream. We use monthly position statements combined with transactions, transfers, and securities returns to compute daily portfolio positions and daily return series (gross and net of transaction costs) for every investor. To do so, we first infer daily holdings from monthly position statements, security transactions, and account transfers. We have end-of-day holdings for the last day in every month. To obtain the next end-of-day holdings, we multiply the end-of-day value of each holding by the corresponding price return (excluding dividends but including any capital actions) for that security. These holdings are then properly adjusted for any sales, purchases, and account transfers that occurred on that same day. We repeat this procedure for every security and investor for each trading day in a given month. The holdings on the last day of each month are then reconciled with the true holdings obtained from the online bank to address any data quality issues that might result from the market data.

Second, we compute daily portfolio returns as the weighted average of the returns of all securities held, purchased, or sold by the investor on that day. We use total return data (including dividends) for securities without transactions on that day. With our market data, we are able to cover 97% of the securities held or traded as measured by investors' total portfolio value. For securities that are either purchased or sold, we consider exact transaction prices to compute returns. We weight each security's return to calculate investors' daily portfolio returns. All holdings and sales are weighted by using values in euros based on the previous day's closing prices. All purchases are weighted by using the transaction value in euros. We compare the performance of investors using *gross* returns (before trading costs and after management costs of securities) and thereby ignore transaction costs. This procedure is used to isolate the decision quality of the investments. This procedure leads to commission-based scheme clients appearing to be in a relatively better position because we ignore front-end loads and do not account for the reimbursement of kickbacks for flat-fee scheme clients. Our approach in this area is hence conservative with respect to the benefit of the flat-fee scheme. We underestimate the effects by approximately 100 basis points per year because we ignore the reimbursement of kickbacks.

We use 4-factor alphas to evaluate the performance of each portfolio. The factors are computed daily for the broadest German index (CDAX): the German market factor (MKT), a bond factor, small minus big (SMB), high minus low (HML), and the momentum factor (MOM). We use the German CDAX because investors exhibit a home bias. For robustness, we also run a model using international factors from the data library by Kenneth French. All analyses are carried out in euros.

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[24] In the internet appendix (Table A.V), we provide a comparison of the investor characteristics in our study to the investor characteristics in other studies using bank data of advised clients.
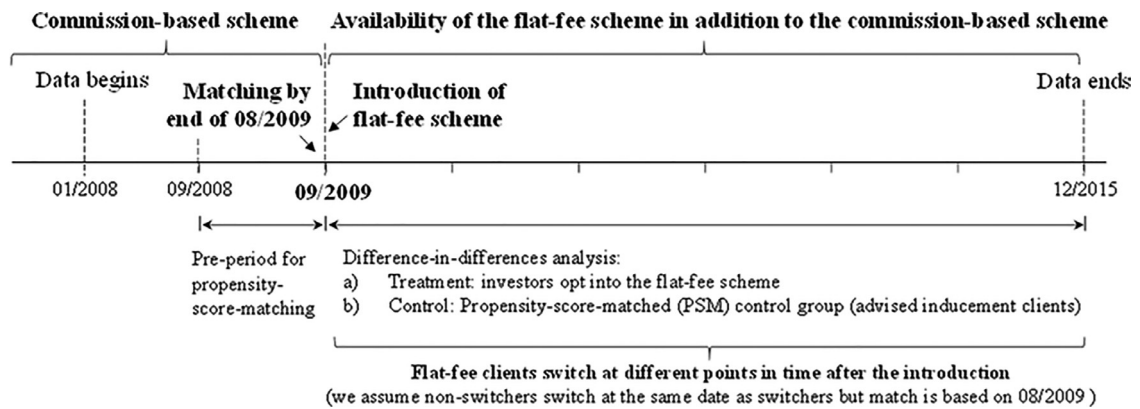
**Exhibit 1. The timeline of the data and the empirical approach.** This chart shows the sequences of relevant events in the field study. The data we use for the paper start in 2008 and end in December 2015. For this period, we possess trading records, portfolio holdings, recommendations by advisors and client sociodemographic information.

## 4. Empirical approach

### 4.1. Identification of the effects of the flat-fee scheme

The main goal of our analysis is to investigate what happens to trading behavior, asset allocation, advice usage and portfolio outcomes after clients deliberately switch pricing schemes. Investors can switch into the flat-fee scheme from being financially advised and from being self-directed. However, after the switch, almost all flat-fee clients asked for and used financial advice. Irrespective of the chosen pricing scheme, all clients continue to make self-directed trades.

Hence, we can compare investors who were advised before and after the switch, or we can compare investors who were self-directed before the switch and used financial advice either under the commission-based or the flat-fee scheme after the switch. As the decision to use financial advice is endogenous but not the focus of this study, we mute this effect by focusing exclusively on clients who took financial advice before as well as after the switch. This comparison allows us to isolate the effect of the flat-fee scheme. Additionally, we present the results on the second comparison (newly advised clients) in the robustness section. There, we also discuss concerns related to novelty effects.

The introduction of the flat-fee scheme reveals clients' preferences for particular pricing schemes. Switching clients prefer flat-fees, while clients who remain under the commission-based scheme prefer commissions. We implement a propensity-score-matching approach initially introduced by Rosenbaum and Rubin (1983) to match switchers to nonswitchers. Propensity-score-matched nonswitchers serve as a control group and approximate the behavior that switchers would have displayed if the flat-fee scheme had not been made available to them. We estimate the propensity score using a logit specification.[25] Exhibit 1 presents the available data as well as the availability of the flat-fee scheme in a timeline. The flat-fee scheme is available from September 2009 onward, and clients switch at different points in time. Regardless of the individual switching date, we match a switcher into the flat-fee scheme to a similar investor who decides to remain in the commission-based scheme at the end of August 2009, which is the month prior to the introduction of the flat-fee scheme. This procedure is used to ensure that the variables are unaffected by the flat-fee scheme.

We perform one-to-one matching using the nearest-neighbor approach without replacement. To match, we require switchers and matched nonswitchers to be from the region of common support. We use all investor and portfolio characteristics that are available to us. If variables require a time series to be computed (e.g., monthly portfolio turnover), we use the twelve months before September 2009. This approach follows Roberts and Whited (2013) and Lemmon and Roberts (2010) and ensures that all matching variables are unaffected by the treatment. We also include outcome variables, such as portfolio value, mutual fund share or number of contacts with an advisor prior to the introduction of the flat-fee scheme, to follow the general guideline by Heckman and Hotz (1989) stating that a rich set of variables is needed to have a low bias. All clients we consider for the matching have received financial advice under the commission-based scheme prior to September 2009. Table A.VII in the internet appendix shows that after matching, the differences between the treatment and control group are statistically insignificant. To further speak to the unconfoundedness assumption, Table A.VIII provides the results of a placebo test showing that there are no effects for an artificial placebo switching date one year before the actual event happened. In addition, Figure A.III shows that there is enough common support to find individuals with similar propensity scores. The right panel shows the common support for all individuals used in our study. We drop treatment observations whose propensity score is higher than the maximum or less than the minimum propensity score of the controls.

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[25] In unreported tests, we also consider probit specifications. The results do not depend on the specification we choose.

For each switcher to the flat-fee scheme, we match one investor who remained in the commission-based scheme. Thus, the control group before matching consists of 7828 clients who continue trading and taking advice under the commission-based scheme. This creates a panel in event time in which investors effectively switch at different points in time. We set the Event dummy equal to 1 for the matched investors at the same time in which the treated (=switching) investor changes to the flat-fee scheme. To investigate the effects, we analyze the effects from 12 (36) months around the switching date in event time for each investor. This procedure creates both cross-sectional and time-series variations that help to better identify the effect of switching on investor portfolios. The general panel regression setup for the difference-in-differences analysis is as follows

$$Y_{i,t} = \alpha + \beta_1 \, Event \, time \, (dummy \, (post = 1))_{i,t} + \beta_2 \, Event \, time \, (dummy \, (post = 1))_{i,t} * Fee \, (dummy)_i + \beta_3 PFE + \varepsilon_{i,t}$$

(1)

where Y represents one of our key metrics from the last section, $\alpha$ displays the constant, Fee (dummy) is set to one for switchers, and the Event Time dummy is set to one after the individual switching date of each switcher and zero otherwise. The switching date for the matched investors is aligned with the switching date of the treated switcher. PFE represents person fixed effects. Including additional time fixed effects has no effect on the results. We also control for month fixed effects and event time fixed effects and report the results in the internet appendix (Tables A.X and A.XI). The effect in which we are interested is the coefficient for the interaction term between the Fee and the Event Time dummy, which is measured by $\beta_2$. The null hypothesis is that diversification, trading behavior, portfolio performance, or investment decisions remain unchanged after switching. We run the analyses using investor double-clustered standard errors on the person and the monthly date.

To evaluate the matching procedure, we first turn to differences in the levels of key outcome variables pretreatment. In internet appendix A.VII., we show that propensity-score matching reduces any differences between treated and control investors to statistically insignificant values. For example, before matching, the difference in portfolio values was approximately €30,000, and this difference was highly statistically significant. After matching, the difference is reduced to €6000, which is statistically insignificant. This result carries over to other important variables such as portfolio performance (alpha), the active mutual fund share, portfolio turnover, the HHI (Herfindahl-Hirschman index), the length of the relationship or whether the flat-fee scheme would be beneficial. Hence, the matching fulfills its function by reducing pretreatment differences and mitigating overt bias.

Our approach of matching by the end of August 2009 causes a time gap between the matching and the individual switching date. The switch happens at a customer-chosen point in time after the introduction of the flat-fee scheme. Nevertheless, when exploring time-series graphs of the preperiod, we still find the crucial assumption in Roberts and Whited (2013) of common trends between switchers and their matches to be fulfilled. The existence of common trends provides evidence for the quality of our matching, but they are also necessary preconditions for causally interpreting the results. Their existence also alleviates concerns over hidden bias. The charts in Fig. I provide evidence for reasonable common trends in the 12 months before individual switching dates. We also provide a placebo analysis with switching dates one year prior to the real dates in the internet appendix (Table A.VIII). There are no meaningful effects to report. To further alleviate these concerns, we also run specifications in which we control for month-of-year fixed effects. Using month-of-year fixed effects controls for time-specific events that apply to all individuals. In addition, here, our main conclusions remain unchanged.

For completeness, we also run the difference-in-differences analysis without matching. The resulting table can be found in the internet appendix (A.IX.). As expected, without matching, the results are somewhat stronger,[26] as endogenous differences between the groups still exist, documenting that our endogeneity treatment reduced potential biases. The remaining time-invariant but unobserved differences are absorbed by the person fixed effects. In sum, we have no reason to believe that our matching did not work properly, and we use the results to evaluate the effects of the flat-fee scheme on the investment decisions of investors.

To demonstrate the robustness of our findings further, we try out different approaches. One alternative way of addressing potential endogeneity concerns and clients' heterogeneity in preferences is to compare early switchers to late switchers. We split the sample at the median date of switching (July 2012). This strategy exploits the differences in the timing of the switching decision and assumes that those who switch early are comparable in pricing scheme preferences to those who switch late. Late switchers are characterized by the same preferences and should then represent how early switchers would have behaved if they were still enrolled under the commission-based scheme. We discuss all of the results in the robustness section. The results qualitatively match those from the propensity score approach. The second alternative we consider is analyzing clients who switched immediately after receiving a marketing campaign by the bank. These clients are more likely to switch due to the exogenous marketing campaign, while the decision of clients switching later is more endogenous. Again, we do not find substantially different results for the two groups.

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[26] Without matching, the coefficients go in the same direction, but some of them tend to be stronger. For example, switchers to the flat-fee scheme have a 2.03% lower unsystematic variance share using the propensity-score-matched sample, whereas they have an 8.95% lower unsystematic variance share without matching. Furthermore, switchers' portfolio performance (portfolio turnover) increases by 3.23% (2.67%) on average for the matched sample, whereas switchers increase their portfolio performance by 5.43% (3.03%) with no matching. The same occurs for the coefficients on portfolio value (14,614 versus 25,853). The coefficient on the share of active funds and talks per month is even higher for the setting using matched clients, whereas the HHI is highly comparable.

Furthermore, investors might use financial advice at points in time that are special to the individual. For example, they may have planned before the flat-fee scheme was announced to invest more into mutual funds, which might have created extra demand for financial advice on mutual funds. Alternatively, taking up financial advice may create some form of excitement. Both may be sources of endogeneity. To address these issues, we turn to the second group of flat-fee scheme clients that we above labeled newly advised clients. We compare newly advised clients in the flat-fee scheme to those who start receiving financial advice in the commission-based scheme. We discuss the results in Section 6.4 and again show no qualitative differences in the results.

### 4.2. Definition of variables

To investigate the behavior and portfolio performance of switchers, we examine four dimensions. These dimensions are portfolio efficiency (diversification and performance), advice usage, trading behavior and portfolio size. In accordance with the literature, we use the following seven measures.

(1) We measure the total number of client-advisor interactions for each client by counting the number of calls initiated by either the advisor or the client. (2) We measure the HHI as a measure of diversification and portfolio efficiency.[27] It is calculated as the sum of the squared portfolio weights of each security (identified by its ISIN) in a portfolio at each month end. Following Dorn et al. (2008), mutual funds are counted as 100 equally weighted securities. When this measure has a lower value, the degree of diversification is higher. (3) As an alternative measure for diversification, we regress portfolio returns on 4-factor portfolios using the German CDAX as the market and use $(1 - R^2)$ as a measure for the share of unsystematic risk in total portfolio risk. (4) We determine the share of mutual funds because it drives diversification, and mutual funds are the key advisory content. (5) We take the total portfolio value in euros at month end for each investor. (6) We follow Barber and Odean (2001) to measure *portfolio turnover* and compute it for investor $i$ in month $t$:

$$Portfolio\ turnover_{i,t} = 0.5 * \frac{purchases_{i,t}}{portfolio\ value_{i,t}} + 0.5 * \frac{sales_{i,t}}{portfolio\ value_{i,t-1}} \qquad (2)$$

When monthly portfolio turnover is larger than 1, the turnover is set to 1 for that specific month. (7) We measure the bottom line of investment success using 4-factor alphas (using German factors) to measure portfolio performance, following Carhart (1997). The results remain qualitatively unaltered when we use 1-factor alphas or international factors instead.

## 5. Results and discussion

### 5.1. Characteristics of switchers to the flat-fee scheme

In Section 3.1, we described the descriptive statistics of commission-based clients and switchers (Table I). In Table II, we report the results from probit regressions using the variables also presented in Table I. The results from both tables are comparable. We find that switchers are more likely to be female and more likely to hold a PhD; they also have a slightly higher risk class and a longer relationship with the bank than advised commission-based scheme clients. They also have higher portfolio values with lower turnovers[28] from sales and purchases than do commission-based clients.[29] They also achieve higher returns when comparing the 4-factor alphas.

These results point to two important insights. First, switchers to the flat-fee scheme seem to be more financially sophisticated as they are better diversified and have a marginally better portfolio performance. Switching to new and innovative offers by more sophisticated clients is regularly observed in the literature (e.g., Bhattacharya et al. (2012)). Second, the decision to switch might be driven by the rational motive of reducing costs. Those who switch have higher portfolio values and have a higher benefit from switching to the flat-fee scheme. These clients might hence benefit more from the flat-fee scheme, as holding and trading mutual funds becomes relatively cheaper.

### 5.2. Changes in behavior and portfolios after switching to the flat-fee scheme

In this section, we investigate whether switchers change their behavior after opting into the flat-fee scheme and, ultimately, whether they benefit from doing so. We first depict the results graphically and then provide statistical robustness through a regression analysis.

Fig. I provides evidence that after the switch to the flat-fee scheme, clients trade more in funds. The increasing fund share improves portfolio efficiency by using more diversified mutual funds. Twelve months after the switch, switchers hold an ac-

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[27] The HHI is a measure of diversification widely used in the finance literature (Dorn et al. (2008); Ivković et al. (2005); Ivković et al. (2008)).

[28] In Table A.XIV in the internet appendix, we include the turnover in deciles to investigate whether clients with low turnover are more likely to switch to the flat-fee scheme. We do not find that clients in the first deciles are more prone to switch in the flat-fee scheme. We also include a dummy variable equal to one if a client had a below median performance in 2008 to capture clients who were hit hard by the financial crisis. This dummy variable does not turn out to be statistically significant.

[29] In unreported analyses, we find that investors in the top three deciles of trading fees paid for funds in the past 12 months are significantly more likely to switch.

**Table II**

**Demographics of switchers and new flat-fee scheme clients.** This table presents the results from the probit regressions on switchers. The dependent variable in columns (1) and (2) is a dummy variable equal to one when an investor switches from financial advice under the commission-based scheme to financial advice under the flat-fee scheme (Switchers) and zero if the client continues to receive commission-based scheme advice. As explanatory variables, we use sociodemographic information on the client's age (Age), marital status (Married), gender (Gender), whether they hold a PhD (PhD), length of the relationship with the bank (Length of relationship), whether they currently live in Germany (German resident) and whether they work as employees (Employed), are retired (Retired) or have another job (Other). We also include information on their portfolio and trading behavior. All variables that require a time series to be computed use the previous 12 months. We include the average portfolio value in euros, the turnover from purchases, sales, and the entire portfolio as well as the fees paid and a variable showing whether the flat-fee scheme would have been beneficial in terms of costs using the previous 12 months. We also include information on asset allocation in September 2009. We show the allocation by instrument, asset class and regional focus. The asset class and the regional focus account only for funds and single stocks, not the total portfolio. Finally, we provide information on clients' diversification using the unsystematic variance share from a 4-factor model as well as the Herfindahl-Hirschman Index (HHI), assuming that a mutual fund holds 100 securities. We finally report average factor loadings for the previous 12 months using the 4-factor model. The 4-factor model uses the German CDAX and its constituents to build daily factors. Data on the investors come from the bank, while data on asset allocations come from the bank and Refinitiv Eikon. Other market data are taken from Refinitiv Datastream. ***, **, and * indicate that the coefficient estimates are significantly different from zero at the 1%, 5%, and 10% levels, respectively. We use heteroscedasticity-robust standard errors.

|  | (1) Inducement advice to fee advice (Switchers) | (2) Inducement advice to fee advice (Switchers) |
|---|---|---|
| *Socio-demographics* | | |
| Age (in years) | −0.0041* | −0.0030 |
|  | (0.0024) | (0.0025) |
| Married (1 = married) | 0.1133** | 0.0957** |
|  | (0.0452) | (0.0462) |
| Gender (male = 1) | −0.0460 | −0.0238 |
|  | (0.0564) | (0.0573) |
| Ph. D. (yes = 1) | 0.0149 | 0.0066 |
|  | (0.0753) | (0.0768) |
| Length of relationship (in years) | 0.0077 | 0.0011 |
|  | (0.0064) | (0.0066) |
| Risk class (1 = low, 5 = high) | 0.0382** | 0.0497*** |
|  | (0.0170) | (0.0181) |
| German resident (yes = 1) | −0.2293** | −0.2446** |
|  | (0.1082) | (0.1108) |
| Employee (yes = 1) | −0.0487 | −0.0734 |
|  | (0.0448) | (0.0459) |
| Retired (yes = 1) | 0.0271 | 0.0196 |
|  | (0.0749) | (0.0767) |
| *Portfolio & Trading (previous 12 months)* | | |
| Portfolio value (past 12 months, in Euro) | 0.0000*** | 0.0000*** |
|  | (0.0000) | (0.0000) |
| Turnover total portfolio (past 12 months, in% per month) | −0.6289* | −0.4377 |
|  | (0.3280) | (0.3333) |
| Trading Fees paid (past 12 months, in Euro) | −0.0001*** | −0.0001** |
|  | (0.0000) | (0.0000) |
| Advantage if fee-based scheme (past 12 months, in Euro) | 0.0002*** | 0.0001*** |
|  | (0.0000) | (0.0000) |
| *Asset Allocation (in%)* | | |
| *by instrument:* | | |
| Single stocks | | −0.0259 |
|  | | (0.4680) |
| Single bonds | | −0.0607 |
|  | | (0.5116) |
| Funds (active) | | 0.5049 |
|  | | (0.4522) |
| Funds (passive) | | −1.0391** |
|  | | (0.4954) |
| Certificates | | 0.5106* |
|  | | (0.2715) |
| *by asset class (for funds):* | | |
| Equity | | −2.1317*** |
|  | | (0.5463) |
| Fixed income | | −0.2255 |
|  | | (0.3773) |
| Money Market | | −1.0678 |
|  | | (0.7096) |
| Commodities | | −1.3303* |
|  | | (0.7247) |
| Real estate | | −0.8599** |
|  | | (0.3650) |

**Table II** (*continued*)

|  | (1) Inducement advice to fee advice (Switchers) | (2) Inducement advice to fee advice (Switchers) |
|---|---|---|
| *by region (for equity & funds with equity):* |  |  |
| Germany |  | 1.7941*** |
|  |  | (0.4491) |
| Europe |  | 1.5412*** |
|  |  | (0.4379) |
| North America |  | 1.8443*** |
|  |  | (0.5059) |
| Africa |  | 0.9303 |
|  |  | (1.1184) |
| South America |  | 2.6391*** |
|  |  | (0.4954) |
| Asia |  | 1.2418*** |
|  |  | (0.4558) |
| Multinational |  | 1.9810*** |
|  |  | (0.4099) |
| Other region |  | 2.0408*** |
|  |  | (0.4642) |
| *Diversification* |  |  |
| Unsystematic variance share (4 factor) | 0.2159* | 0.1496 |
|  | (0.1251) | (0.1374) |
| HHI 100 (in%) | −0.6331*** | −0.7723*** |
|  | (0.1597) | (0.2491) |
| *Performance & Factor loadings (previous 12 months)* |  |  |
| Alpha (4 factor) (in%) | 0.2395** | 0.2710** |
|  | (0.1098) | (0.1302) |
| Beta (in%) | −0.3588*** | −0.0473 |
|  | (0.0968) | (0.1186) |
| SMB (in%) | 0.1659 | −0.1538 |
|  | (0.1071) | (0.1251) |
| HML (in%) | −0.0967 | −0.0435 |
|  | (0.1079) | (0.1220) |
| MOM (in%) | 0.0652 | −0.0545 |
|  | (0.1216) | (0.1449) |
| Constant | −1.1281*** | −1.2188*** |
|  | (0.2181) | (0.3735) |
| Observations | 8527 | 8527 |
| R-squared (pseudo) | 0.0493 | 0.0881 |

tive fund share of 80% in their portfolios, whereas commission-based scheme clients hold a share of approximately 62% active funds. Switchers double their portfolio turnover during the first month after their switch and remain at that higher level during the next months. Furthermore, switchers increase the portfolio value by approximately 20,000 euros from 120,000 to 140,000. This finding indicates that the increase in fund share is driven by newly invested money rather than by real-location within the investment portfolio. Ultimately, switchers also benefit from the switch in the form of higher portfolio performance measured by 4-factor alphas based on gross returns (Carhart (1997)). The increase in portfolio turnover mainly comes from trading mutual funds for which loads are waived.[30] Hence, the higher turnover cannot lower the performance.[31]

Interestingly, Fig. I also shows that clients switching to the flat-fee scheme talk more often to their advisor after the switch. While both nonswitchers and switchers talked to an advisor once per year on average before the switch, the number of contacts increased for switchers to 3.5 contacts per year over the 12 months after the switch, whereas the number of contacts remained unchanged for commission-based scheme clients. This divergence is unlikely to be due to a sensation or novelty effect of using a new pricing scheme because it persists throughout the 36 months after the switch.

We provide econometric validation of these results using a panel regression in event time on the seven key metrics. We are interested in the interaction term of the Fee dummy and the Event Time dummy. We provide the analysis with 12 (36) months before and after the individual switching date of the respective client and show the results in Table III. As the two

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[30] Redemption fees and swing pricing arrangements were prohibited in Germany during the sample period. In March 2020, a legislation that allowed swing pricing was enacted. Additionally, other mechanisms that penalize investors who switch mutual funds often do not exist.

[31] In fact, using gross returns leads to a fair comparison as the flat fee and the reimbursement of kickbacks of approximately 1% almost perfectly sets off the management fee. By using gross returns, we do not factor in front-end loads that inducement scheme clients pay for every fund purchase. Thus, we rather overestimate the performance of inducement scheme clients.
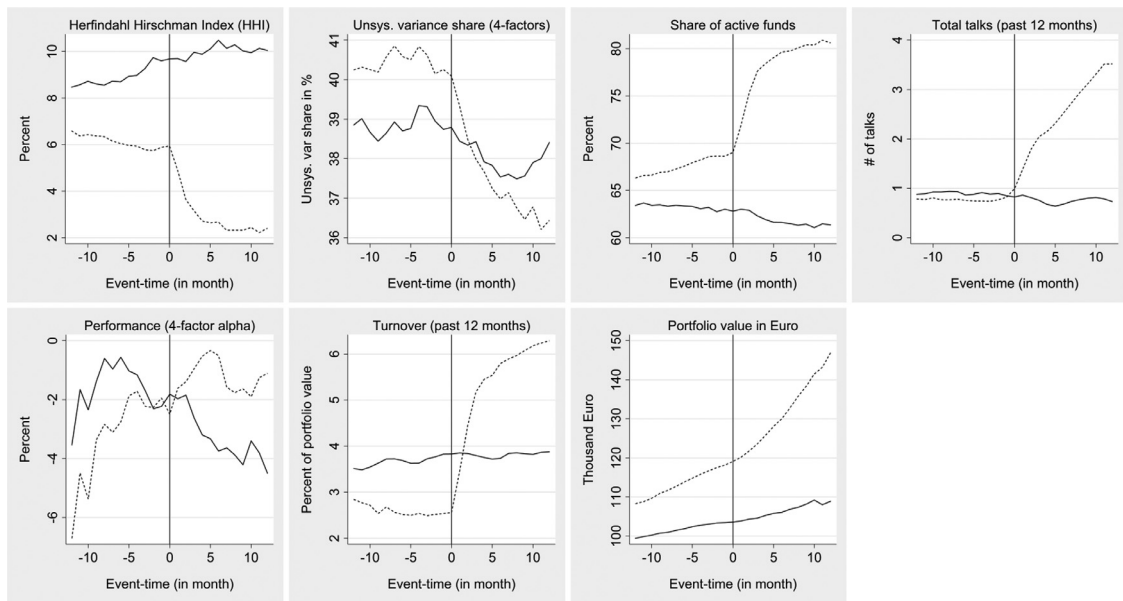
**Fig. I. Common trends and effects of the switch.** The charts show the effect of the switch to the flat-fee scheme on measures of advice usage, portfolio allocation and portfolio performance for switching clients compared to propensity-score-matched commission-based scheme clients in event time, analyzing the 12 months before and after the switch. Switchers are defined as commission-based scheme clients who switch to the flat-fee scheme. Chart (1) illustrates the monthly Herfindahl Hirschman Index (HHI), assuming that a mutual fund holds 100 securities, and (2) shows the unsystematic variance share in percentage terms measured by 4-factor alphas. Chart (3) shows the share of active funds purchased, and chart (4) illustrates the total number of talks with an advisor in the past 12 months. Chart (5) shows the portfolio performance per year in percentage terms measured by 4-factor alphas, and chart (6) depicts the monthly portfolio turnover as a percentage of the portfolio value. Chart (7) illustrates the monthly portfolio value in thousands of euros. The dotted line illustrates clients switching into the new flat-fee scheme, whereas the solid line shows the propensity-score-matched control group of nonswitchers.

sets of results are comparable, we discuss the results with the longer time horizon only. Flat-fee scheme clients are significantly more likely to talk with an advisor following the switch than are nonswitchers. Switchers have approximately two additional advisory talks per year (panel C, column 4). We document that clients switching into the flat-fee scheme improve their portfolio efficiency and increase their performance compared to clients remaining in the commission-based scheme. Flat-fee scheme clients significantly increase their portfolio diversification (a 5.78% decrease in HHI, column 1) by increasing their fund share by 17.7% (columns 3). We find a significant increase in portfolio value by 30,774 euros and an increase in portfolio turnover by 1.67% (panel D, columns 1 and 2). In line with the higher fund share and increasing turnover, flat-fee scheme clients increase their portfolio performance by 3.5% (column 1). We use the CDAX and German factors or, alternatively, international factors to measure alphas and unsystematic variance shares. Both approaches document an improvement in performance and unsystematic variance share. The improvement is even stronger when we use international factors. In an event window of plus/minus 36 months, using international factors (not tabulated), we find that the alpha increases by 1.74% and the unsystematic variance share decreases by 3.12%. Both effects are statistically significant at the 10% and the 1% levels. This is not surprising, as investors are rather advised to invest in internationally focused mutual funds. Note that these results comprise relative differences between the treatment and the control group. The results for alpha therefore do not imply that advised customers achieve positive alphas.

In the robustness section and internet appendix, we demonstrate that these results hold for different approaches of defining the control group, and by comparing early to late switchers, we show that the results are also not driven by novelty effects. The results also hold for advisor and time fixed effects. We obtain similar results when we limit ourselves to clients who have their salary account with our bank.

### 5.3. Changes in the demand for and reliance on financial advice after switching to the flat-fee scheme

As flat-fee scheme clients are more likely to consult a financial advisor, we proceed by analyzing the role of advice in explaining the surge in fund shares. That will also shed light on the channel underlying the results. We first run a difference-in-differences specification in event time that has a dummy for following advisor recommendations as the dependent variable to investigate the flat-fee scheme clients' propensity to follow received recommendations. To investigate following, we consider all recommendations and transactions of a client within 7 (or 30) days following an interaction with a financial advisor. The following dummy is set equal to one if a purchase (sell) in security $i$ is made following a buy (sell) recommendation for this security $i$ within 7 (or 30) days after an interaction with a financial advisor and zero otherwise

**Table III**

**Event-time study on the flat-fee scheme's impact.** This table presents a difference-in-difference analysis in event time for clients switching to the flat-fee scheme relative to a propensity-score-matched control group. Event time is set to 1 after the switch to the flat-fee scheme and zero otherwise. Fee is 1 for all clients switching to the flat-fee scheme. Fee x Event Time is the interaction effect of the two. Panel A includes the regressions on portfolio allocation and advice usage. We report the Herfindahl-Hirschman Index (HHI), assuming that a mutual fund holds 100 securities; the unsystematic variance share from a 4-factor model; the share of active funds; and the number of talks per month. Panel B includes measures of portfolio performance and trading activity. We show the portfolio performance (4-factor alpha), the monthly portfolio turnover, and the monthly portfolio value in euros. Panels A and B report the results for the period from 12 months before and 12 months after the switch in event time. Panels C and D report the results of the same analyses as panels A and B but for 36 months before and after the switch. We use investor fixed effects. Standard errors are double-clustered on portfolio ID and month-by-year. ***, **, and * indicate that the coefficient estimates are significantly different from zero at the 1%, 5%, and 10% levels, respectively.

*Panel A: Portfolio allocation & Advice usage (12 months before and after the switch)*

|  | (1) HHI | (2) Unsys. variance share | (3) Share of active funds | (4) Talks per month |
|---|---|---|---|---|
| Event time (dummy) | 0.0120*** | −0.00984 | −0.0198*** | −0.108 |
|  | (0.00402) | (0.00701) | (0.00541) | (0.0914) |
| Fee (dummy) x Event time (dummy) | −0.0439*** | −0.0203** | 0.129*** | 1.960*** |
|  | (0.00560) | (0.00888) | (0.00954) | (0.220) |
| Investor fixed effects | YES | YES | YES | YES |
| Observations | 32,827 | 32,881 | 32,827 | 19,765 |
| R-squared | 0.777 | 0.780 | 0.872 | 0.619 |

*Panel B: Portfolio performance & Trading activity (12 months before and after the switch)*

|  | (1) Portfolio performance | (2) Portfolio turnover | (3) Portfolio value |
|---|---|---|---|
| Event time (dummy) | −0.0189** | 0.00220 | 4679*** |
|  | (0.00812) | (0.00172) | (1568) |
| Fee (dummy) x Event time (dummy) | 0.0323** | 0.0267*** | 14,614*** |
|  | (0.0120) | (0.00314) | (3302) |
| Investor fixed effects | YES | YES | YES |
| Observations | 32,881 | 32,879 | 32,879 |
| R-squared | 0.448 | 0.849 | 0.975 |

*Panel C: Portfolio allocation & Advice usage (36 months before and after the switch)*

|  | (1) HHI | (2) Unsys. variance share | (3) Share of active funds | (4) Talks per month |
|---|---|---|---|---|
| Event time (dummy) | 0.0207*** | −0.0281*** | −0.0328*** | −0.0672 |
|  | (0.00571) | (0.00828) | (0.00850) | (0.0987) |
| Fee (dummy) x Event time (dummy) | −0.0578*** | 0.00684 | 0.177*** | 2.217*** |
|  | (0.00697) | (0.0113) | (0.0124) | (0.158) |
| Investor fixed effects | YES | YES | YES | YES |
| Observations | 86,549 | 86,694 | 86,549 | 49,794 |
| R-squared | 0.632 | 0.587 | 0.777 | 0.548 |

*Panel D: Portfolio performance & Trading activity (36 months before and after the switch)*

|  | (1) Portfolio performance | (2) Portfolio turnover | (3) Portfolio value |
|---|---|---|---|
| Event time (dummy) | −0.00539 | 0.00127 | 10,324*** |
|  | (0.00606) | (0.00238) | (2743) |
| Fee (dummy) x Event time (dummy) | 0.0350*** | 0.0167*** | 30,774*** |
|  | (0.00890) | (0.00328) | (4988) |
| Investor fixed effects | YES | YES | YES |
| Observations | 86,694 | 86,648 | 86,648 |
| R-squared | 0.207 | 0.668 | 0.904 |

if a recommendation is not followed. This means we are only looking at recommendations and disregard fully self-directed transactions. We run the difference-in-differences analysis in event time over the 7 (or 30) days following an interaction with the financial advisor. To do so, we regress an *Event Time* dummy (before and after) and the interaction of the *Event Time* dummy with whether a client switched to the flat-fee scheme on *Following*. We show the following of recommendations in the 7 days (column (1)) and 30 days (columns (2) and (3)) after the interaction with the financial advisor. We include investor fixed effects. In column (3), we control for cost advantages. We show the results in Table IV.

We find that switching to the flat-fee scheme has an enormous effect on switchers' likelihood to follow received recommendations. The average following increases by 38.9% for advised clients under the flat-fee scheme for the 7 days after the

**Table IV**
**Following in an event-time study.** This table presents panels in an event-time study for flat-fee scheme clients receiving financial advice. The dependent variable is Following, which is a dummy equal to one if a trade follows financial advice and 0 if the advice is not followed. Event Time is set to 1 after the switch to the flat-fee scheme and zero otherwise. Fee is 1 for all clients switching to the flat-fee scheme. Fee x Event Time is the interaction effect of the two. Fees (%) is the initial charge of a mutual fund. We include the interaction effects of these variables. Column (1) refers to Following during the 7 days after an advisor interaction, whereas columns (2) and (3) illustrate Following during the 30 days after an advisor interaction. We use investor fixed effects. Standard errors are double-clustered on portfolio ID and month-by-year. ***, **, and * indicate that the coefficient estimates are significantly different from zero at the 1%, 5%, and 10% levels, respectively.

| | (1)<br>Following (Day 0 to 7) | (2)<br>Following (Day 0 to 30) | (3)<br>Following (Day 0 to 30) |
|---|---|---|---|
| Event time (dummy) | −0.0530 | −0.0519 | −0.0754 |
| | (0.0530) | (0.0630) | (0.0555) |
| Fee (dummy) x Event time (dummy) | 0.389*** | 0.535*** | 0.583*** |
| | (0.0672) | (0.0672) | (0.0585) |
| Fees (%) | | | 0.790 |
| | | | (1.621) |
| Event time (dummy) x Fees (%) | | | 1.347 |
| | | | (2.161) |
| Fee (dummy) x Fees (%) | | | 0.574 |
| | | | (1.867) |
| Fee (dummy) x Event time (dummy) x Fees (%) | | | −2.545 |
| | | | (2.458) |
| Investor fixed effects | YES | YES | YES |
| Observations | 9120 | 13,430 | 13,430 |
| R-squared | 0.502 | 0.499 | 0.500 |

advisor-client interaction (column (1)). Following before switching was at 12.5%. Extending the specification to 30 days after the interaction reveals that following significantly increases by up to 53.5% for flat-fee scheme clients. When comparing the results reported here with those in the subsequent Table V, note that Table V weights asset classes and regions equally and is therefore not directly comparable.

In column (3), we control for fees to rule out potential cost considerations for the decision to follow financial advisors' recommendations. *Fees (%)* is the front-end load of a recommended security to be paid (for commission-based clients) or saved for flat-fee clients (see the explanation in the previous section and the calculation example in Figure A.II. in the internet appendix). We find that an advised client under the flat-fee scheme is even more likely (58.3%) to follow the received recommendations when controlling for fees. Beyond increasing the propensity of following advice, all other interactions involving fund fees are insignificant in explaining following. This result provides evidence that fees do not explain the mechanism behind the higher propensity of following advisor recommendations by flat-fee scheme clients. Clients do not seem to make their fund choice based on the announced fees of funds, nor do they seem to take fees (more) into account after the switch.

As a next step, we dig deeper into the following decisions to investigate whether the increase in following is driven by a higher following in specific asset classes. We compare following in different asset classes and in funds that focus on different regions as well as following in purchase and sell recommendation before and after the switch. We show the results in Table V. Although the content of financial advice does not change for flat-fee scheme clients, these clients follow their advisors more after switching across all asset classes and regions. This result also holds for products and asset classes with which clients may not be experienced. Additionally, following increases even more in sell recommendations.[32]

The general increase in following and in more complex and more informationally distant securities in particular might be driven by an increase in trust in the received recommendations. This idea is in line with Gennaioli et al. (2015), who showed that investors with more trust in their advisor are also more willing to participate in the stock market and in more risky assets. Trust should be particularly important in products and asset classes that clients know less about. Thus, clients' increase in following in situations involving such less familiar and thus more information-intensive products speaks to a trust channel. The increase in following for sell recommendations provides further evidence for a trust channel. Furthermore, selling funds has always been free. If cost considerations were the only drivers of the higher following, we would not expect an increase in following.

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[32] Note that the propensity-score matching does not incorporate advice usage (i.e., number of talks or share of recommendations followed). Thus, switchers and matched inducement clients can be different in their following decisions before the individual switching dates. This analysis splits recommendations by their direction (purchase vs. sell). Reporting the direction of recommendations was only mandatory for financial advisors from January 2010 onwards. That means that there is a number of unflagged recommendations that is not included in Table V. As unflagged recommendations are likely purchase recommendations, we run the before analysis containing the unflagged recommendations in an unreported analysis. In this analysis, the following statistics for inducement-scheme clients and switchers before the switching dates are getting closer. The authors provide the analyses to any interested reader on request.

**Table V**

**Following of purchase and sell recommendations.** This table reports summary statistics on followed purchase (panels A and B) and sell (panels C and D) recommendations of commission-based scheme clients and switchers to the flat-fee scheme before and after the actual switch date. The security characteristics come from the bank and are enriched with data from Refinitiv Eikon. The percentage numbers provided in this table are based on counts of the purchase and sell recommendations that were followed. Panels A and C show a split by asset class, and panels B and D show a split by region. We group commodity and money market funds together because recommendations for them were few. We report numbers for switchers and their propensity-score-matched controls. Columns 1 and 2 split the sample before the switch into switchers and matched investors who remain in the commission-based scheme. Columns 3 and 4 split the sample after the switch to the flat-fee scheme.

| | Before switch date in fee scheme | | | | After switch date in fee scheme | | | |
|---|---|---|---|---|---|---|---|---|
| | N | Following purchase recommendations (inducement) | N | Following purchase recommendations (switchers) | N | Following purchase recommendations (inducement) | N | Following purchase recommendations (switchers) |
| *PANEL A: Following by asset class (in%)* | | | | | | | | |
| Equity | 382 | 31.15 | 1528 | 15.18 | 908 | 29.85 | 12,062 | 65.08 |
| Fixed income | 134 | 24.63 | 417 | 7.91 | 165 | 23.03 | 1935 | 62.69 |
| Real estate | 1 | 0.00 | 6 | 0.00 | 11 | 18.18 | 129 | 60.47 |
| Commodity & money market | 2 | 50.00 | 2 | 0.00 | 1 | 0.00 | 33 | 63.64 |
| *PANEL B: Following by region (in%)* | | | | | | | | |
| Multi-national | 202 | 33.66 | 858 | 17.02 | 443 | 26.86 | 5365 | 63.93 |
| Europe | 81 | 25.93 | 269 | 10.78 | 194 | 26.80 | 2780 | 66.44 |
| Asia | 6 | 16.67 | 45 | 8.89 | 41 | 34.15 | 790 | 66.58 |
| South America | 0 | 0.00 | 5 | 0.00 | 4 | 50.00 | 55 | 54.55 |
| Germany | 21 | 33.33 | 83 | 24.10 | 50 | 42.00 | 751 | 66.31 |
| North America | 28 | 35.71 | 93 | 6.45 | 60 | 35.00 | 1021 | 65.43 |
| Other & Africa | 106 | 26.19 | 154 | 12.99 | 106 | 34.91 | 7 | 66.86 |

| | Before switch date in fee scheme | | | | After switch date in fee scheme | | | |
|---|---|---|---|---|---|---|---|---|
| | N | Following Sell Recommendations (inducement) | N | Following Sell Recommendations (switchers) | N | Following Sell Recommendations (inducement) | N | Following Sell Recommendations (switchers) |
| *PANEL C: Following by asset class (in%)* | | | | | | | | |
| Equity | 179 | 49.16 | 665 | 30.68 | 457 | 35.89 | 5702 | 81.27 |
| Fixed income | 28 | 64.29 | 58 | 39.66 | 59 | 47.46 | 1004 | 84.66 |
| Real estate | 2 | 0.00 | 15 | 26.67 | 7 | 28.57 | 35 | 62.86 |
| Commodity & money market | 2 | 0.00 | 1 | 0.00 | 1 | 0.00 | 27 | 81.48 |
| *PANEL D: Following by region (in%)* | | | | | | | | |
| Multi-national | 93 | 50.54 | 281 | 36.65 | 207 | 40.10 | 2537 | 81.43 |
| Europe | 15 | 33.33 | 125 | 25.60 | 82 | 45.12 | 1076 | 82.16 |
| Asia | 18 | 55.56 | 97 | 21.65 | 53 | 28.30 | 525 | 78.10 |
| South America | 10 | 80.00 | 30 | 26.67 | 19 | 26.32 | 170 | 71.76 |
| Germany | 17 | 41.18 | 39 | 33.33 | 36 | 13.89 | 426 | 84.04 |
| North America | 3 | 33.33 | 17 | 11.76 | 14 | 35.71 | 303 | 87.79 |
| Other & Africa | 31 | 48.39 | 2 | 35.23 | 31 | 40.38 | 10 | 81.00 |

To further explore a potential change in clients' trust in the advice, we turn to an online survey with the clients of the bank that we administered in 2012. The invitation e-mail was sent out to 10,000 randomly drawn clients in our sample. The survey was conducted online from the end of March to the beginning of May 2012. A total of 826 clients started the survey, and 709 completed it. Participants in the survey were predominantly male (84%), married (68%), had a college education (68%) and were, on average, 54 years old. Overall, the participants are comparable to the average client observed in our sample. The survey focused on collecting information on the respondents and their behavioral predispositions. We asked people whether they currently receive financial advice under the commission-based or flat-fee scheme at this bank. 45 out of 709 participants responded that they were using financial advice under the flat-fee scheme. 43% of those flat-fee clients replied on a five-point Likert-type scale (1 and 2 do not agree; 4 and 5 do agree) that they do not believe that the advice under the flat-fee scheme is beneficial in terms of cost, while 35% perceive it as beneficial in terms of costs. However, 49% (32%) believe the quality of advice had (not) improved, 54% say the advisor now works in the best interest of the client, and 46% (vs. 39%) claim they are now more active in the stock market. Although the advice itself did not change by the introduction of the flat-fee scheme, clients with a preference for flat-fees thus seem to perceive the financial advice to be of better quality under the flat-fee scheme and feel more encouraged to participate in the stock market. These survey results should be interpreted as suggestive evidence for a potential trust channel. However, the sample size is too small to draw

reliable conclusions or to investigate the behavior of the surveyed clients in any further detail. In chapters 6.3 to 6.5 we largely rule out cost advantages, a novelty effect, and a sunk cost fallacy as alternative competing conjectures.

*5.4. Test for external validity: replication with an alternative dataset from a brick-and-mortar bank*

Our data stem from a large online bank in Germany. Thus, they might be subject to the concern that we are observing effects only for a special group of online-affine, more active, and more financially literate investors that are less in need of financial advice. Furthermore, the bank plays a pioneering role in offering a flat-fee pricing scheme to its clients in a context directly following the financial crisis. We have already shown that the investors in our sample are comparable to the average German investor, and we will rule out a potential novelty effect in chapter 6.4.

However, to investigate whether the results presented in this study hold if a flat-fee scheme were offered economy-wide and to address the potential criticism of a selected online sample, we make use of a comparable dataset of one of the largest German banks with a widespread network of branches. The sample ranges from January 2012 to September 2014 and contains 1466 switchers to fee-only advice and matched controls. The clients in this sample are on average 64 years old, married (61%), male (64%), have an average (median) portfolio value of 104,000 euros (37,000 euros), and have an average monthly portfolio turnover of 0.3%. In this bank, face-to-face financial advice is prevalent, with financial advisors ultimately executing customer orders. Self-directed trading by customers plays only a minor role. This bank also introduced an alternative flat-fee scheme in July 2013 in which clients pay an annual fee of 1.45% of their portfolio value (but at least 20 euros per quarter), but they do not pay for their securities account, nor do they pay initial charges for mutual fund purchases. Additionally, annual charges are reduced, and only third-party management fees, on average of 0.25%, are charged. On the contrary, clients in the traditional commission-based scheme pay a small securities account fee (they pay an annual securities account fee of 0.175% of their portfolio value, but at least around 20 euros per quarter). They also pay initial charges and annual charges in full. Usually, initial charges are higher in brick-and-mortar banks than for online brokerages. In both schemes, clients can receive the same face-to-face individual financial advice in the branch, online or via phone at no extra cost. Adopters of the new flat-fee scheme additionally receive periodic newsletters including analyst reports; have access to several additional reports and sources of information (e.g., daily market assessment, 7-day outlook, 30-day outlook, detailed assessments of single products such as stocks, bonds, ETFs, mutual funds, and certificates); and can participate in periodic CIO calls. Flat-fee scheme clients trade every asset class (stocks, bonds, mutual funds, and certificates) at no cost except for the remaining management fee. The offered financial advisory services are also the same for fee and commission-based scheme clients. As self-directed trades play only a minor role, portfolio turnover is likely mainly driven by advised trades. We expect the effect of the flat-fee scheme not to be limited to mutual funds only because the financial advice in this bank aims to all instruments.

We apply the same identification strategy to the alternative dataset as we used for our main sample. We propensity-score match users of the flat-fee scheme to non-users to mitigate the effects of self-selection and then repeat both the graphical common trend analysis for the alternative dataset from the second bank and the difference-in-differences fixed-effect regression. Using our alternative dataset on one of the largest German banks, in which clients are commonly advised, demonstrates the robustness and external validity of our initial findings: The buy turnover increases in a setting where self-directed trading plays only a minor role, clients increase their portfolio values, and also hold more diversified portfolios.

In detail, we include portfolio turnover, portfolio buy turnover, mutual fund share, value of mutual funds in euros, portfolio diversification (HHI), and portfolio value (Fig. II). Flat-fee scheme clients increase their portfolio turnover after having switched to the flat-fee scheme. This increase is mainly driven by buy turnover. Additionally, switchers increase their mutual fund holdings. However, this increase is proportional to an increasing overall portfolio value. Flat-fee scheme clients increase their portfolio values by approximately 15,000 euros from 90,000 euros to 105,000 euros in the 12 months after the switch. Furthermore, flat-fee scheme clients improve their portfolio diversification, as the HHI decreases after the switch.

We continue by analyzing the effect of the switch to the flat-fee scheme in a pooled cross-sectional difference-in-differences analysis including an Event Time dummy and its interaction with the Flat-fee scheme dummy on the above-mentioned variables. We show the results in Table VI. The regression results are in line with the graphical results and show that flat-fee scheme clients significantly increase their portfolio turnover. This increase is driven by an increasing buy turnover in the same magnitude. The share of purchased mutual funds is not statistically significant, whereas the total value in active funds increases significantly by approximately 13,000 euros. Flat-fee scheme clients seem to hold their fund share constant but increase their overall portfolio value and mutual fund values concurrently. Flat-fee scheme clients also significantly improve their portfolio diversification.

Overall, the results for our alternative dataset lead to the same insights generated from our primary analysis. The introduction of flat-fee schemes induces clients to increase their turnover, and to hold larger, more diversified portfolios. These phenomena occur in a situation where the financial advisory processes and financial advisors remain unaltered.

## 6. Robustness tests and further analyses

In this chapter, we present two robustness tests: Chapter 6.1 contains an analysis of staggered marketing campaigns to investigate the timing of the switching decision and chapter 6.2 presents a comparison of early and late switchers as an alternative matching procedure. Chapters 6.3 to 6.5 investigate competing conjectures to the evidence found for a trust
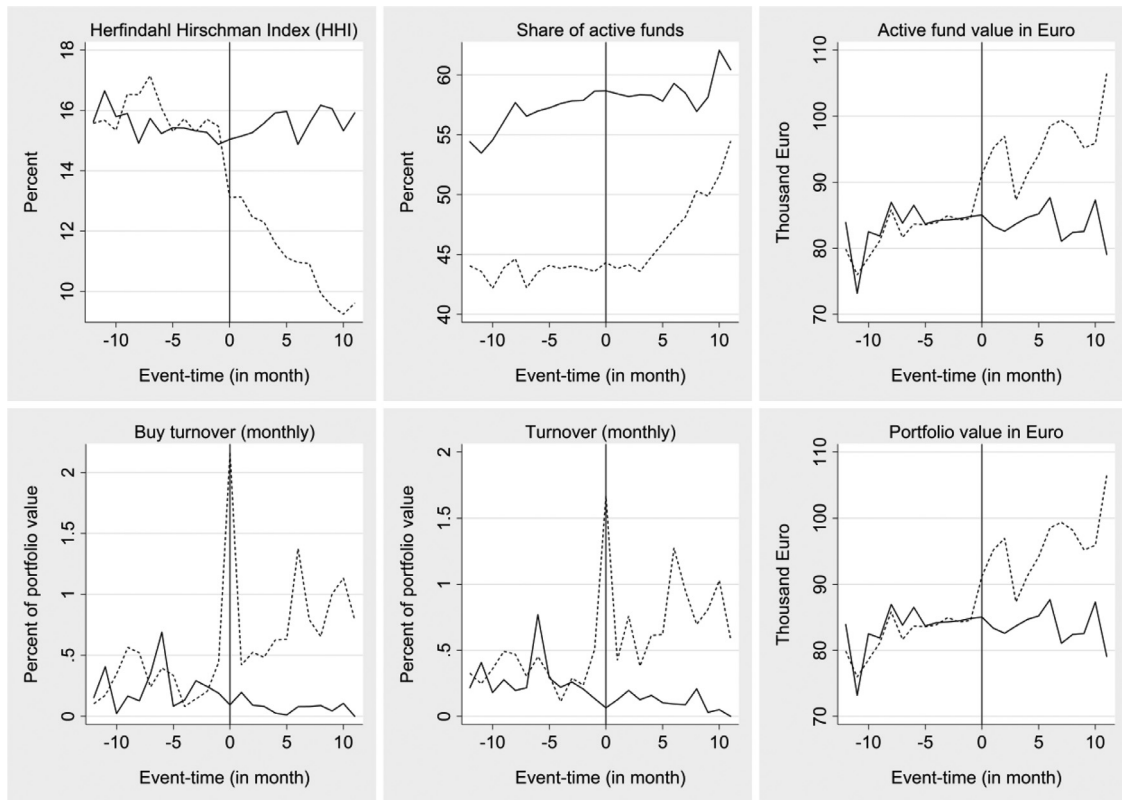
**Fig. II. Common trends and effects of the switch (brick-and-mortar bank).** The charts show the effect of the switch to the flat-fee scheme at a branch bank on measures of portfolio allocation and trading behavior for switching clients compared to propensity-score-matched commission-based scheme clients in event time, analyzing the 12 months before and after the switch. Switchers are defined as commission-based scheme clients who switch to the flat-fee scheme. Chart (1) shows the monthly Herfindahl Hirschman Index (HHI), assuming that a mutual fund holds 100 securities, and chart (2) shows the share of mutual funds purchased per month. Chart (3) shows the total value of mutual funds per month in euros, and chart (4) illustrates the monthly portfolio buy turnover as a percentage of the portfolio value. Chart (5) shows the monthly portfolio turnover as a percentage of the portfolio value, and chart (6) shows the monthly portfolio value in thousands of euros. The dotted line illustrates clients switching into the new flat-fee scheme whereas the solid line shows the propensity-score-matched control group of non-switchers. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

**Table VI**
**Event-time study on the flat-fee scheme's impact: alternative bank data.** This table presents a difference-in-differences analysis in event time for clients switching to the flat-fee scheme relative to a propensity-score-matched control group for an alternative dataset taken from a branch bank. Event Time is set to 1 after the switch to the flat-fee scheme and zero otherwise. Fee is 1 for all clients switching to the flat-fee scheme. Fee x Event Time is the interaction effect of the two. We report the Herfindahl-Hirschman Index (HHI), assuming that a mutual fund holds 100 securities; the share of actively managed mutual funds; the total value held in actively managed mutual funds in euros; the portfolio buy turnover; the portfolio turnover; and the portfolio value. We report the results for the period from 12 months before and 12 months after the switch in event time. We use investor fixed effects. Standard errors are double-clustered on portfolio ID and month-by-year. ***, **, and * indicate that the coefficient estimates are significantly different from zero at the 1%, 5%, and 10% levels, respectively.

| | (1) HHI | (2) Share of active funds | (3) Active fund value | (4) Portfolio buy turnover | (5) Portfolio turnover | (6) Portfolio value |
|---|---|---|---|---|---|---|
| Event time (dummy) | −0.00114 | 0.0309*** | 4006** | −0.00158*** | −0.00150*** | −769.0 |
| | (0.00379) | (0.00599) | (1983) | (0.000580) | (0.000510) | (2557) |
| Fee (dummy) x Event time (dummy) | −0.0365*** | −0.0108 | 13,407*** | 0.00398*** | 0.00404*** | 23,630*** |
| | (0.00820) | (0.01000) | (3220) | (0.00139) | (0.00119) | (4427) |
| Investor fixed effects | YES | YES | YES | YES | YES | YES |
| Observations | 17,530 | 17,530 | 17,530 | 17,885 | 18,240 | 17,885 |
| R-squared | 0.875 | 0.926 | 0.967 | 0.080 | 0.064 | 0.966 |

channel in chapter 5.3. The evidence for the trust channel in chapter 5.3 should be read as a conjecture as we cannot observe the actual beliefs and expectations of clients. In this chapter, we challenge this conjecture by testing competing channels. We test cost advantages, a novelty effect, and a sunk cost fallacy. We do not find supporting evidence for any of these alternative channels and interpret this as evidence for the trust channel.

### 6.1. Marketing campaigns

The bank offers the flat-fee scheme to all of its clients and does not randomly assign clients to the flat-fee scheme. Thus, clients make an active decision to switch to the flat-fee scheme based on their preferences. However, we can make use of the staggered marketing campaigns sent out by the bank to differentiate the severity of the switching decision's endogeneity and to dig deeper into clients' heterogeneity. The exogenous timing of the marketing campaign could also be helpful in ruling out potential unobserved changes at the client level at the moment when clients sign up for the flat-fee scheme. The underlying assumption is that clients who sign up for the flat-fee scheme immediately after being contacted by the bank are more likely to switch because of the exogenously received e-mail rather than because of preferences. If only endogenous switching would drive our results, we would expect that the results for those who switch as a response to the marketing campaign would be significantly weaker.

Clients receive the invitation either in August 2010, September 2010, November 2010 or January 2011. The e-mails were identical in each of these campaigns, and the clients were assigned to one of these campaigns depending on the number of e-mails clients had received previously.[33] To mitigate the endogeneity and revealed preferences issue, we follow Levi and Benartzi (2021) and only look at those clients who switch in the months they received the e-mail. We find that although some coefficients change slightly in size and/or significance, the results remain qualitatively unaltered for this subsample of clients switching after receiving an e-mail campaign.

### 6.2. Using early versus late switchers as an alternative matching approach

In the main analyses, we used propensity-score matching to compare switchers with a preference for flat-fees to non-switching clients, who are revealing their preference to remain in the commission-based scheme. This matched control group approximates the behavior that switchers would have displayed if the flat-fee scheme had never been made available to them. A sensible alternative to this strategy is employing a strategy that exploits the differences in the timing of the switching decision. Assuming that those who switch early are comparable to those who switch later, we compare those who switch before July 2012 to those who had not yet switched at this date but who switched later. This creates a matched control group of clients who are also characterized by a preference for flat-fees but exercise this preference later in time.

Using these two groups simplifies our main specification to only having an indicator for before and after the switch alongside investor fixed effects. The results from running this specification are reported in Table VIII. The results are comparable to those we reported earlier. The switch to the flat-fee scheme increases the number of contacts and improves diversification by increasing the share of actively managed funds. It also leads to higher portfolio values, turnover and fees paid. All effects are significant at the 1% level except for the effect on performance.

### 6.3. Cost advantages

The results in Section 5 could be driven by the cost advantages of the flat-fee scheme. As fund transaction costs fall to zero under the flat-fee scheme, the price of purchasing and holding funds also declines relative to those of other financial instruments. The increasing fund share might be caused by clients switching to the flat-fee scheme for the sole purpose of purchasing funds at reduced entry fees as well as reduced holding costs. Clients' fund shares might also increase because clients perceive the waived front-end loads and reduced management fees as a gain and now expect higher returns after costs.

Before turning to a more formal analysis, recall that front-end loads are waived and kickbacks are reimbursed for mutual funds independent of whether the trade has been conducted self-directedly or based on an advisor recommendation. If the only explanation for the increase in fund shares would be cost advantages, an increase in the number of talks would not be explained by reduced costs of investing in funds.

If reaping savings were the only reason to switch in the flat-fee scheme, we would expect self-directed trades and advised trades to be of the same importance before and after the switch. The reason is that, irrespective of the chosen pricing model, financial advice is free and does not change. If cost advantages were the explanation, both self-directed and advised mutual fund trading would increase because the lower costs apply irrespective of whether a mutual fund is purchased through an advisor or directly. The clients in our sample are well experienced in trading all sorts of securities self-directedly. Thus, they neither need to consult an advisor for trade executions nor would they substantially save time (e.g., by lowering information costs) by doing so.

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[33] The bank has an internal rule to only send a prespecified number of e-mails per rolling quarter to the client. Consequently, for some clients, the mail was not sent in August 2010 but slightly later.

**Table VII**
**Event-time study on the flat-fee scheme's impact (marketing campaign).** This table presents a difference-in-difference analysis in event time for clients switching to the flat-fee scheme relative to a propensity-score-matched control group. The sample is restricted to clients switching in the month they received the invitation for the flat-fee scheme. Event time is set to 1 after the switch to the flat-fee scheme and zero otherwise. Fee is 1 for all clients switching to the flat-fee scheme. Fee x Event Time is the interaction effect of the two. Panel A includes the regressions on portfolio allocation and advice usage. We report the Herfindahl-Hirschman Index (HHI), assuming that a mutual fund holds 100 securities; the unsystematic variance share from a 4-factor model; the share of active funds; and the number of talks per month. Panel B includes measures of portfolio performance and trading activity. We show the portfolio performance (4-factor alpha), the monthly portfolio turnover, and the monthly portfolio value in euros. Panels A and B report the results for the period from 12 months before and 12 months after the switch in event time. Panels C and D report the results of the same analyses as panels A and B but for 36 months before and after the switch. We use investor fixed effects. Standard errors are double-clustered on portfolio ID and month-by-year. ***, **, and * indicate that the coefficient estimates are significantly different from zero at the 1%, 5%, and 10% levels, respectively.

*Panel A: Portfolio allocation & Advice usage (12 months before and after the switch)*

|  | (1) HHI | (2) Unsys. variance share | (3) Share of active funds | (4) Talks per month |
|---|---|---|---|---|
| Event time (dummy) | 0.00906 | 0.0179 | −0.0319*** | 0.0622 |
|  | (0.00696) | (0.0125) | (0.0106) | (0.112) |
| Fee (dummy) x Event time (dummy) | −0.0375*** | −0.0114 | 0.141*** | 2.009*** |
|  | (0.0102) | (0.0166) | (0.0167) | (0.160) |
| Investor fixed effects | YES | YES | YES | YES |
| Observations | 10,413 | 10,413 | 10,413 | 6020 |
| R-squared | 0.810 | 0.738 | 0.862 | 0.635 |

*Panel B: Portfolio performance & Trading activity (12 months before and after the switch)*

|  | (1) Portfolio performance | (2) Portfolio turnover | (3) Portfolio value |
|---|---|---|---|
| Event time (dummy) | 0.00710 | −0.00174 | 2078 |
|  | (0.0190) | (0.00356) | (1394) |
| Fee (dummy) x Event time (dummy) | 0.0229 | 0.0298*** | 13,315*** |
|  | (0.0270) | (0.00447) | (2555) |
| Investor fixed effects | YES | YES | YES |
| Observations | 10,413 | 10,413 | 10,413 |
| R-squared | 0.434 | 0.753 | 0.981 |

*Panel C: Portfolio allocation & Advice usage (36 months before and after the switch)*

|  | (1) HHI | (2) Unsys. variance share | (3) Share of active funds | (4) Talks per month |
|---|---|---|---|---|
| Event time (dummy) | 0.0219** | 0.0446*** | −0.0610*** | −0.0651 |
|  | (0.00895) | (0.0141) | (0.0151) | (0.130) |
| Fee (dummy) x Event time (dummy) | −0.0544*** | −0.0713*** | 0.203*** | 2.519*** |
|  | (0.0111) | (0.0203) | (0.0222) | (0.191) |
| Investor fixed effects | YES | YES | YES | YES |
| Observations | 27,546 | 27,546 | 27,546 | 15,266 |
| R-squared | 0.673 | 0.550 | 0.737 | 0.586 |

*Panel D: Portfolio performance & Trading activity (36 months before and after the switch)*

|  | (1) Portfolio performance | (2) Portfolio turnover | (3) Portfolio value |
|---|---|---|---|
| Event time (dummy) | −3.49e-05 | −0.00126 | 5209* |
|  | (0.0193) | (0.00411) | (3055) |
| Fee (dummy) x Event time (dummy) | 0.0459** | 0.0205*** | 27,004*** |
|  | (0.0214) | (0.00497) | (4908) |
| Investor fixed effects | YES | YES | YES |
| Observations | 27,546 | 27,519 | 27,519 |
| R-squared | 0.249 | 0.560 | 0.919 |

Our data allow us to investigate whether the adoption of the flat-fee scheme affects the relative probability of purchasing funds self-directedly or through an advisor in a difference-in-differences setting in event time. We flag each client-advisor contact and the respective recommendations. We analyze the probability of trading funds within 7 (30) days before and after the advisor interaction and differentiate between self-directed trading and trading based on recommendations by the advisor. This analysis is possible because a substantial number of investors trade in this period both self-directedly and based on advisor recommendations. We create a dummy variable for each trade that relates to an advisor recommendation over the preceding 7 (30) days. We include this dummy and two interaction terms. The first interaction term is for the flat-fee scheme and event time, and the second interaction term is for recommendation, advice and event time. The first

**Table VIII**

**Early vs. late switchers.** This table presents a difference-in-difference analysis in event time for clients switching to the flat-fee scheme early (between September 2009 and July 2012) relative to those switching late (after July 2012). Event Time is set to 1 after the switch to the flat-fee scheme and zero otherwise. Panel A includes the regressions on portfolio allocation and advice usage. We report the Herfindahl-Hirschman Index (HHI), assuming that a mutual fund holds 100 securities; the unsystematic variance share from a 4-factor model; the share of active funds; and the number of talks per month. Panel B includes measures of portfolio performance and trading activity. We show the portfolio performance (4-factor alpha), the monthly portfolio turnover, and the monthly portfolio value in euros. Panels A and B report the results for the period from 12 months before and 12 months after the switch in event time. Panels C and D report the results of the same analyses as panels A and B but applied to 36 months before and after the switch. We use investor fixed effects. Standard errors are double-clustered on portfolio ID and month-by-year. ***, **, and * indicate that the coefficient estimates are significantly different from zero at the 1%, 5%, and 10% levels, respectively.

*Panel A: Advice usage & Portfolio allocation (12 months before and after the switch)*

|  | (1) HHI | (2) Unsys. variance share | (3) Share of active funds | (4) Talks per month |
|---|---|---|---|---|
| Event time (dummy) | −0.0239*** | −0.0308*** | 0.0874*** | 1.090*** |
|  | (0.00510) | (0.0104) | (0.0107) | (0.135) |
| Investor fixed effects | YES | YES | YES | YES |
| Observations | 7728 | 7740 | 7728 | 7389 |
| R-squared | 0.697 | 0.749 | 0.806 | 0.627 |

*Panel B: Trading activity & Portfolio performance (12 months before and after the switch)*

|  | (1) Portfolio performance | (2) Portfolio turnover | (3) Portfolio value |
|---|---|---|---|
| Event time (dummy) | 0.0143 | 0.0214*** | 21,625*** |
|  | (0.0214) | (0.00262) | (3356) |
| Investor fixed effects | YES | YES | YES |
| Observations | 7740 | 7740 | 7740 |
| R-squared | 0.425 | 0.715 | 0.980 |

*Panel C: Portfolio allocation & Advice usage (36 months before and after the switch)*

|  | (1) HHI | (2) Unsys. variance share | (3) Share of active funds | (4) Talks per month |
|---|---|---|---|---|
| Event time (dummy) | −0.0287*** | −0.0471*** | 0.129*** | 1.427*** |
|  | (0.00594) | (0.0131) | (0.0127) | (0.139) |
| Investor fixed effects | YES | YES | YES | YES |
| Observations | 21,521 | 21,546 | 21,521 | 19,259 |
| R-squared | 0.568 | 0.515 | 0.705 | 0.484 |

*Panel D: Portfolio performance & Trading activity (36 months before and after the switch)*

|  | (1) Portfolio performance | (2) Portfolio turnover | (3) Portfolio value |
|---|---|---|---|
| Event time (dummy) | 0.0320 | 0.00960*** | 45,569*** |
|  | (0.0222) | (0.00282) | (6449) |
| Investor fixed effects | YES | YES | YES |
| Observations | 21,546 | 21,522 | 21,522 |
| R-squared | 0.161 | 0.498 | 0.911 |

measures the changes in self-directed mutual fund trading, and the second measures the changes in mutual fund trading based on financial advice. Table IX shows the results.

Looking at the latter interactions, we find that advised clients under the flat-fee scheme are 20.9% more likely to trade funds if they have been recommended after the introduction of the flat-fee scheme, in the 7 days after the interaction with their advisor (column 1).[34] This effect is statistically significant at the 1% level. We also look at the days before the interaction with an advisor (columns 3 and 4). In this period, we do not find an increase in self-directed trading in mutual funds. In this case, we are interested in the coefficients on Fee x Event Time because it shows the increase in self-directed mutual fund trading before the interaction with the advisor but after the client has switched to the flat-fee scheme. The result is statistically insignificant, showing no change in self-directed mutual fund trading.

Taken together, these findings contradict the idea of flat-fee scheme clients simply taking advantage of a cheaper way of trading funds. After switching, flat-fee scheme clients are significantly more likely to trade on financial advisors' recommendations than to place self-directed trades. Lower trading costs cannot cause this behavior because the same trading costs applied if clients traded on their own.

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[34] The same result applies when analyzing the 30 days before and after the interaction (column 2).

**Table IX**
**Analysis of cost advantages in an event-time study.** This table presents panels in an event-time study for flat-fee scheme clients. The dependent variable is trading in active mutual funds. Therefore, each trade is flagged with one if it is a mutual fund trade and zero otherwise. Column (1) illustrates mutual fund trading in the 7 days after an advisor contact, whereas column (2) shows mutual fund trades in the 30 days after an advisor contact. Columns (3) and (4) show mutual fund trading in the 7 and 30 days before an advisor contact. Event Time is set to 1 after the switch to the flat-fee scheme and zero otherwise. Fee is 1 for all clients switching to the flat-fee scheme. Fee x Event Time is the interaction effect of the two. Recommended is set to 1 if a mutual fund has been recommended by a financial advisor to the clients. Fee x Event Time x Recommended is the interaction effect of the three. We use investor fixed effects. Standard errors are double-clustered on portfolio ID and month-by-year. ***, **, and * indicate that the coefficient estimates are significantly different from zero at the 1%, 5%, and 10% levels, respectively.

|  | (1) Mutual fund trading (Day 0 to 7) | (2) Mutual fund trading (Day 0 to 30) | (3) Mutual fund trading (Day −7 to 0) | (4) Mutual fund trading (Day −30 to 0) |
|---|---|---|---|---|
| Event time (dummy) | 0.0271 | 0.0361 | 0.105 | 0.0463 |
|  | (0.0295) | (0.0337) | (0.0804) | (0.0603) |
| Fee (dummy) x Event time (dummy) | −0.0929* | −0.0713* | −0.0110 | 0.0420 |
|  | (0.0477) | (0.0410) | (0.0924) | (0.0709) |
| Fee (dummy) x Event time (dummy) x Recommended (dummy) | 0.209*** | 0.222*** |  |  |
|  | (0.0234) | (0.0170) |  |  |
| Investor fixed effects | YES | YES | YES | YES |
| Observations | 7304 | 19,094 | 3500 | 16,179 |
| R-squared | 0.453 | 0.456 | 0.582 | 0.530 |

## 6.4. Novelty effect

The increasing fund share might be caused by the novelty of the flat-fee scheme. The novelty effect describes the higher usage of new products and services after signing up for or buying them. This situation applies, for example, when individuals first sign up for a gym contract.

To investigate a potential novelty effect, we hence focus on people who use financial advice services for the first time at this bank and may be subject to a novelty effect. Thus, we compare new investors under the flat-fee scheme and new investors under the commission-based scheme. Both groups have only recently begun to make use of financial advice, and both groups may be subject to a novelty effect. Note that these clients are not included in the main specification, where we are focusing on formerly advised clients switching in the flat-fee scheme. A total of 335 users under the flat-fee scheme had been trading self-directedly before. This compares to 1380 investors who started using the brokerage's advisory services during the same period but remained under the conventional commission-based scheme after becoming an advisory client.[35] Following the same approach as for the main analyses, we match the 335 new flat-fee clients to the 1380 clients starting financial advice under commission-based advice. If our results were driven by the novelty effect, the effects would not apply for new fee clients matched to new commission-based scheme clients. The results are summarized in Table X.[36] We find that our main results remain significant and at a comparable size for newly advised clients. In particular, the increase in fund shares and improvement in diversification are again observable. However, the results on performance are insignificant. Nevertheless, it seems less likely that our results are driven by the novelty effect.

## 6.5. Sunk cost fallacy

An alternative explanation for the increasing fund share is the sunk cost fallacy. The sunk cost fallacy dates back to the work of Arkes and Blumer (1985) and describes an effect according to which people continue a behavior or prefer an option once they have invested nonrecoverable money or time into it although it is not necessarily the best option.

This theory suggests testable implications. If the sunk cost fallacy could explain the rising fund share, we would expect that those who pay more after switching into the flat-fee scheme are the ones who purchase more funds. We only focus on flat-fee scheme clients (i.e., those who pay an upfront fee) and compare the clients who pay more under the flat-fee scheme than they did previously when being commission-based advised to the clients who pay less under the flat-fee scheme. Additionally, this group should be particularly eager to reach the break-even point to increase their fund shares more and, potentially, to increase their advisor contacts.

To test these implications, we look at changes in the mutual fund share and changes in the number of contacts with advisors. The first variable allows us to look at changes in diversification, and the second variable allows us to analyze whether people seek more financial advice. We employ three proxies for the investors most susceptible to the sunk cost fallacy: investors with larger portfolios for which the absolute costs in the flat-fee scheme are higher (columns 1 and 4);

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[35] We exclude clients that are new clients of the bank and that switch into or directly start in the fee scheme from our analysis, as we need to observe clients before they start the fee scheme.

[36] We do not report counseling sessions with an advisor per month before the take-up of advice for either group because they were self-directed. Thus, a difference-in-difference analysis would not be meaningful for talks per month.

**Table X**

**Analysis of the novelty effect in an event-time study.** This table presents a difference-in-difference analysis in event time for clients switching from being self-directed to advice under the flat-fee scheme and clients switching from being self-directed to advice under the commission-based scheme. Neither group had received advice before. Event Time is set to 1 after the switch to the flat-fee scheme and zero otherwise. Fee is 1 for all clients switching to the flat-fee scheme. Fee x Event Time is the interaction effect of the two. Panel A includes the regressions on portfolio allocation and advice usage. We report the Herfindahl-Hirschman Index (HHI), assuming that a mutual fund holds 100 securities; the unsystematic variance share from a 4-factor model; the share of active funds; and the number of talks per month. Panel B includes measures of portfolio performance and trading activity. We show the portfolio performance (4-factor alpha), the monthly portfolio turnover, and the monthly portfolio value in euros. Panels A and B report the results for the period from 12 months before and 12 months after the switch in event time. Panels C and D report the results of the same analyses as panels A and B but applied to 36 months before and after the switch. We use investor fixed effects. Standard errors are double-clustered on portfolio ID and month-by-year. ***, **, and * indicate that the coefficient estimates are significantly different from zero at the 1%, 5%, and 10% levels, respectively.

*Panel A: Advice usage & Portfolio allocation (12 months before and after the switch)*

| | (1)<br>HHI | (2)<br>Unsys. variance share | (3)<br>Share of active funds |
|---|---|---|---|
| Event time (dummy) | −0.0289*** | −0.0101* | 0.0308*** |
| | (0.00405) | (0.00578) | (0.00602) |
| Fee (dummy) x Event time (dummy) | −0.0521*** | −0.0550*** | 0.151*** |
| | (0.0117) | (0.0103) | (0.0170) |
| Investor fixed effects | YES | YES | YES |
| Observations | 45,229 | 45,354 | 45,229 |
| R-squared | 0.713 | 0.792 | 0.860 |

*Panel B: Trading activity & Portfolio performance (12 months before and after the switch)*

| | (1)<br>Portfolio performance | (2)<br>Portfolio turnover | (3)<br>Portfolio value |
|---|---|---|---|
| Event time (dummy) | 0.0242* | 0.0139*** | 19,563*** |
| | (0.0138) | (0.00167) | (1956) |
| Fee (dummy) x Event time (dummy) | −0.00175 | 0.0286*** | 9705*** |
| | (0.0171) | (0.00330) | (3525) |
| Investor fixed effects | YES | YES | YES |
| Observations | 44,996 | 44,959 | 44,959 |
| R-squared | 0.431 | 0.813 | 0.917 |

*Panel C: Portfolio allocation & Advice usage (36 months before and after the switch)*

| | (1)<br>HHI | (2)<br>Unsys. variance share | (3)<br>Share of active funds |
|---|---|---|---|
| Event time (dummy) | −0.0268*** | −0.0294*** | 0.0202*** |
| | (0.00496) | (0.00716) | (0.00695) |
| Fee (dummy) x Event time (dummy) | −0.0545*** | −0.0283** | 0.178*** |
| | (0.0110) | (0.0130) | (0.0177) |
| Investor fixed effects | YES | YES | YES |
| Observations | 116,221 | 116,585 | 116,221 |
| R-squared | 0.643 | 0.642 | 0.802 |

*Panel D: Portfolio performance & Trading activity (36 months before and after the switch)*

| | (1)<br>Portfolio performance | (2)<br>Portfolio turnover | (3)<br>Portfolio value |
|---|---|---|---|
| Event time (dummy) | 0.0296* | 0.00486** | 29,175*** |
| | (0.0165) | (0.00215) | (2683) |
| Fee (dummy) x Event time (dummy) | −0.00851 | 0.0219*** | 24,487*** |
| | (0.0136) | (0.00396) | (5746) |
| Investor fixed effects | YES | YES | YES |
| Observations | 115,699 | 115,546 | 44,959 |
| R-squared | 0.262 | 0.674 | 0.917 |

those who now pay more than before (columns 2 and 5); and those who are in the top two terciles (in terms of fees paid) of the flat-fee scheme (columns 3 and 6).

All tests we run yield nonsignificant results. The only statistically significant effect we find is that clients who are in the top two terciles of fees paid under the flat-fee scheme are less likely to contact an advisor. This result contradicts the idea of the sunk cost fallacy driving the results.

One reason for not finding any evidence for the sunk cost fallacy might be that the fee is paid only at the end of the quarter and that it is subtracted directly from the customer account, while kickbacks are reimbursed. Thus, clients may hardly recognize the payment of the flat-fee. This is in line with previous literature showing that more mentally distant pay-

**Table XI**

**Test for the sunk-cost fallacy.** This table presents the results from the cross-sectional regressions on the percentage change in the mutual fund share and the percentage increase in the number of talks from the month of switching to twelve months after the switch. This analysis focuses on switchers to the flat-fee scheme only. Fee more expensive is a dummy variable equal to one when a flat-fee scheme client pays more under the flat-fee scheme than this client paid in the previous year and zero otherwise. Fee in% differentiates clients by the percentage they have to pay under the flat-fee scheme. All tests reject the presence of collinearity. We control for the sociodemographic information on the client's age (Age), marital status (Married), gender (Gender), whether they hold a PhD (PhD), length of the relationship with the bank (Length of relationship), whether they currently live in Germany (German resident) and whether they work as employees (Employed), are retired (Retired) or have another job (Other). We also include information on their portfolio and trading behavior. We use heteroscedasticity-robust standard errors following White (1980). ***, **, and * indicate that the coefficient estimates are significantly different from zero at the 1%, 5%, and 10% levels, respectively.

| | (1) Change in fund share | (2) Change in fund share | (3) Change in fund share | (4) Change in talks | (5) Change in talks | (6) Change in talks |
|---|---|---|---|---|---|---|
| *Sunk-cost fallacy/ buffet effect measures* | | | | | | |
| Fee more expensive (dummy) | | 0.206 | 0.208 | | 0.732 | 0.771 |
| | | (0.178) | (0.179) | | (0.489) | (0.491) |
| Portfolio value (in thousand euros) | 0.000186 | 0.000183 | 0.000172 | −0.000370 | −0.000412 | −0.00323* |
| | (0.000186) | (0.000181) | (0.000193) | (0.00231) | (0.00227) | (0.00188) |
| Fee in% (medium group) | | | 0.0854 | | | −3.007*** |
| | | | (0.146) | | | (1.089) |
| Fee in% (highest group) | | | 0.0307 | | | −4.398*** |
| | | | (0.182) | | | (1.322) |
| *Socio-demographics & Performance* | | | | | | |
| Age (in years) | 0.00480 | 0.00474 | 0.00429 | −0.00197 | −0.00126 | −0.00951 |
| | (0.00708) | (0.00714) | (0.00719) | (0.0262) | (0.0261) | (0.0265) |
| Married (married = 1) | −0.301*** | −0.283** | −0.280** | −0.544 | −0.497 | −0.412 |
| | (0.105) | (0.115) | (0.115) | (0.476) | (0.476) | (0.480) |
| Gender (male = 1) | 0.337 | 0.341 | 0.340 | 0.313 | 0.326 | 0.280 |
| | (0.225) | (0.225) | (0.226) | (0.640) | (0.639) | (0.641) |
| Ph. D. (yes = 1) | 0.0776 | 0.102* | 0.0915 | 0.371 | 0.458 | 0.211 |
| | (0.0715) | (0.0610) | (0.0629) | (0.794) | (0.794) | (0.788) |
| Length of relationship (in years) | 0.000354 | 0.000355 | −0.000738 | −0.0804 | −0.0750 | −0.103 |
| | (0.0165) | (0.0166) | (0.0175) | (0.0761) | (0.0757) | (0.0758) |
| Risk class (1 = low, 5 = high) | 0.000354 | 0.000355 | −0.000738 | −0.0804 | −0.0750 | −0.103 |
| | (0.0165) | (0.0166) | (0.0175) | (0.0761) | (0.0757) | (0.0758) |
| German resident (yes = 1) | −0.138 | −0.152 | −0.151 | 0.678 | 0.538 | 0.807 |
| | (0.121) | (0.112) | (0.113) | (1.216) | (1.216) | (1.179) |
| Employed (yes = 1) | −0.0764 | −0.0678 | −0.0707 | −0.710 | −0.680 | −0.662 |
| | (0.0936) | (0.0956) | (0.0927) | (0.446) | (0.446) | (0.449) |
| Retired (yes = 1) | −0.140 | −0.148 | −0.142 | −1.704* | −1.721* | −1.641* |
| | (0.237) | (0.237) | (0.237) | (0.910) | (0.908) | (0.909) |
| Performance (Alpha) | 0.110 | 0.124* | 0.130* | 0.0292 | 0.00144 | 0.205 |
| | (0.0739) | (0.0699) | (0.0737) | (0.443) | (0.443) | (0.439) |
| Constant | 0.0131 | −0.0408 | −0.0381 | 1.559 | 1.381 | 6.277*** |
| | (0.333) | (0.309) | (0.386) | (2.011) | (1.996) | (2.333) |
| Observations | 620 | 620 | 620 | 440 | 440 | 440 |
| R-squared | 0.024 | 0.030 | 0.030 | 0.030 | 0.034 | 0.052 |

ments and means of payments mitigate the effect, which is consistent with our results (e.g., Prelec and Loewenstein (1998); Prelec and Simester (2001); Soman (2001, 2003)).

## 7. Conclusion

To investigate how changes in the way clients pay for financial services can affect individual investors' behavior, we make use of a unique field experiment in Germany. In September 2009, the bank with which we collaborate introduced a flat-fee model (flat-fee scheme) for trading and holding mutual funds. The flat-fee scheme runs in parallel with the bank's traditional commission-based model. This choice of pricing scheme does not change the scope and quality of the services a client obtains.

We find that clients opting into the flat-fee scheme have ex ante higher portfolio values, hold more efficient portfolios, and generate a cost–benefit by switching. We find that switchers benefit from the switch by increasing their portfolio diversification due to a higher share of actively managed funds and they also benefit from better portfolio performance. Furthermore, switchers increase their portfolio value and their monthly portfolio turnover. We find that flat-fee scheme clients speak more often with their financial advisor and are also much more likely to follow the financial advisor's recommendations. At the same time, they do not modify their self-directed trading activities in mutual funds. Combining evidence on

the types and regional focus of funds traded with survey evidence, our study suggests that switching in the flat-fee scheme likely boosts trust in the unaltered advisory services offered by the bank.

Our study shows that offering a no-commission pricing alternative for financial services leads to a sustainable and beneficial change in the behavior of clients with a preference for no-commission schemes. Thus, our study informs financial institutions, regulators, and policymakers alike in showing not only how clients with a preference for flat-fee schemes benefit from these schemes but also how simply changing pricing structures can change the demand for and reliance of financial advice for those clients. Offering flat-fee advice on an economy-wide level will likely lead to similar positive effects for already advised clients. The setting does not allow us to investigate whether clients with a preference for remaining in the commission-based scheme would benefit from being forced into the flat-fee scheme. Thus, our results can be seen as a call to offer individual investors no-commission alternatives, but they should not be interpreted as a case for commission bans.

## Declaration of Competing Interest

## Data availability

The data that has been used is confidential.

## Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jebo.2023.03.015.

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