

# **Best buys and own brands: investment platforms' recommendations of mutual funds**

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## **ABSTRACT**

Individuals increasingly buy mutual funds via on-line platforms, whose 'best buy' recommendations heavily influence flows. As intermediaries of mutual funds, platforms provide none of the unobservable interaction or intangible benefits of brokers, and so allow clean tests of the determinants, influence, and value, of their fund recommendations. Using unique U.K. data, we find that platforms favor 'own brand' funds and those paying them a higher commission share. Investors discount own-brand recommendations, but not those paying high commission shares (which were not observable in the UK). A regulatory ban on commission-sharing lowered costs and improved the informativeness of platform recommendations.

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## 1. Introduction

Investment platforms, or ‘fund supermarkets’, are important intermediaries in mutual fund investment. These on-line services allow retail investors to research, buy and sell, manage, and monitor their mutual fund holdings. In the U.K., for instance, around 50% of retail mutual fund flows are now channeled through investment platforms, which offer investors a wide array of funds to choose from.<sup>1</sup> Since many investors would find sifting through thousands of mutual fund products complex and bewildering, some of the leading platforms publish recommendations of selected funds.<sup>2</sup> The considerable influence of these ‘best buy’ lists, which we document in the present paper, was recently brought to public attention in the U.K. by the high-profile collapse of Woodford Investment Management, after around 300,000 of the clients of Hargreaves Lansdown, the largest investment platform in the U.K., had followed their recommendation and committed \$2 billion to Woodford’s flagship fund. We use a unique, regulator-sourced data set covering the U.K. mutual fund industry to analyze the factors that determine whether a mutual fund appears on these best buy lists, and whether investors should be influenced by them.

In many markets, notably the U.S., the boundaries between brokers and platforms are blurred: many brokers also operate platforms, and do not make data available to distinguish the different channels through which they intermediate mutual fund flows. Prior research, working within this limitation, has found that broker-mediated mutual funds have higher fees and worse performance (Bergstresser, Chalmers, and Tufano (2009), Chalmers and Reuter (2012), and Del Guercio and Reuter (2014)), but investors may be willing to bear these costs in return for the intangible benefits brokers provide to investors by offering a personal service. In contrast, the platforms we study do not offer a personal service, and their advice is limited to the funds on their best-buy lists. Furthermore, unlike traditional brokers, the fund recommendations can be observed. This allows us to link recommendations with incentives, flows, and performance in a way which has not been possible in previous studies of mutual fund intermediation.

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<sup>1</sup> With some GBP1.2 trillion of assets under management the U.K. mutual fund industry is one of the largest outside the U.S. (Investment Company Institute (2017)).

<sup>2</sup> See Financial Times October 19, 2019.

The recommendations we study are prepared by teams of researchers employed by the platform and are expressly intended to help investors choose funds expected to outperform. As one leading platform explains “Our experienced research team analyses all the major markets and sectors to identify the best long-term prospects. We spend thousands of hours each year scrutinizing investment strategies, performance analysis, and fund managers”. In making these recommendations, investment platforms face two potential conflicts. First, when platforms both run a fund supermarket and manage funds offered through it, they have an incentive to recommend these ‘own brand’ funds. Second, when funds share commission revenue with the platform, platforms have an incentive to recommend such funds. Of course, giving in to such incentives would undermine the integrity of the process that produced the best buy list in the first place. We investigate whether the platforms are susceptible to such conflicts of interest when drawing up their lists of recommendations, and whether these recommendations add value for investors. We also test whether investors discount platform recommendations when they can identify a potential conflict. After all, it is normally obvious that a platform is recommending one of its own funds. On the other hand, commission sharing arrangements in the U.K. are not made publicly available.

In order to address these questions, we require information not only on the platform recommendations but also on the commission-sharing arrangements between funds and platforms. We have access, through the U.K. Financial Conduct Authority (FCA), to detailed, non-public data for three leading direct-to-consumer platforms over the period 2006–2015 including access to platforms’ recommendations of mutual funds. Each of these platforms offers on average 45% by number, and 75% by value, of all mutual funds available to retail investors in the U.K. Together these three platforms have a share of over 50% of assets under administration of all direct-to-consumer platforms. As well as platforms’ recommendations across a wide range of asset classes and investment regions, our data set includes precise details of the fees charged by asset managers, the fraction of these fees shared with platforms and, for two of the platforms, the investor flows into mutual funds which were channeled through the platforms. We also take advantage of a regulatory change that occurred in 2014, the Retail Distribution Review (RDR) which banned commission-sharing with platforms. We analyze

the impact of this change, which removed one of the potential conflicts of interest, on best buy lists, the funds offered by platforms, and the overall cost to investors.

Our main results are as follows. Considering first the drivers of recommendations, we find that affiliated own brand funds are more likely to be recommended by platforms. Controlling for past performance, costs, and other variables, affiliated funds are significantly more likely to be added to the recommendation list than non-affiliated funds. Average model-implied addition probabilities for affiliated funds are three times as large as for otherwise identical non-affiliated funds. At the same time, other things equal, affiliated funds are less likely to be deleted from recommendation lists than non-affiliated funds. We estimate that these differences in addition and deletion probabilities imply, in our sample, a long-term equilibrium percentage of affiliated funds in recommendation lists equal to 14.6%, compared to 3.9% for otherwise identical non-affiliated funds. This tendency of platforms to recommend affiliated funds (over non-affiliated funds) increased following RDR, which banned revenue sharing arrangements between platforms and funds.

We further find that, for the period when commission-sharing was permitted, funds were more likely to appear on recommended lists if they shared a higher proportion of their revenues with the platforms. Our estimates indicate that, all else equal, an increase of 42bps in the fraction of assets funds pay to platforms would result in an increase in the long-term probability of appearing on recommendations lists from 4.2% (current or baseline levels) to 6.4%.<sup>3</sup>

We contrast these findings with a parallel analysis based on Morningstar recommendations. Morningstar analysts, like platforms, make forward-looking recommendations, but they do not face the same potential conflicts of interest. In their case, recommendations are not tilted towards funds affiliated with platforms or those sharing high levels of revenues with platforms. This suggests that the tendency of platforms to recommend such funds is the result of favoritism, rather than some potentially unobservable qualities of the funds in question. The fact that, after revenue sharing agreements were banned, platforms tended to replace in

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<sup>3</sup> 42bps is the difference between the median revenue (as a percentage of assets) platforms obtain from funds in the top 2% of this variable and those in the bottom 98%. The 2% : 98% split mimics the split between affiliated and non-affiliated funds.

their recommendation lists funds that had shared a higher proportion of their revenues with funds that had shared less, points in the same direction.

Regarding the impact of platform recommendations on flows, our analysis shows that it is substantial. Every month following the addition of a fund to a platform's recommendation list or while still recommended, that fund experiences an average inflow of 0.16% (1.92% annualized) of the total assets under management of the fund (and not just those invested through the platform). When we interact recommendations with the first of our two possible conflict measures – affiliation – we find that flows are less responsive to the recommendation of a fund affiliated with a platform. On the other hand, the response of flows to recommendations does not vary significantly with revenue-sharing, suggesting that investors do not offset platforms' biases along this dimension. The different responses of flows to affiliated and high revenue-sharing funds likely reflect the fact that fund affiliation is evident to investors whereas, in the U.K., revenue-sharing agreements are not disclosed. Interestingly, our analysis suggests that payments by funds to platforms also have a noticeable impact on flows independently of their impact via recommendations.

As to whether recommendations help investors, over our 10-year sample period, a portfolio comprising all funds recommended by platforms delivered average net returns, in excess of Morningstar category benchmarks, of 0.08% per year. In contrast, non-recommended funds available on the same platform underperformed these benchmarks by 0.86% per year. When we compare the returns of recommended funds to the returns of non-recommended funds classified in the same Morningstar investment category, which is a closer comparison, the results are similar: recommended funds outperform non-recommended funds by a statistically significant 0.60% per year, or 0.80% per year if we base the comparison on category-matched fund alphas.

Platform recommendations are, however, highly correlated with Morningstar analyst ratings: 60.3% of platform recommendations are for funds classified as gold, silver, or bronze by Morningstar. When platforms recommend funds not endorsed by Morningstar, which happens disproportionately with affiliated funds and those that share a higher proportion of commission revenue, those funds do not outperform. This suggests that while recommended funds do better than funds chosen at random, their value on top of Morningstar recommendations is limited. It also suggests that conflicts of interest affect platform

recommendations and their value for customers: affiliation and revenue share deals seem to be behind the deviations of platform recommendations from Morningstar ratings. Only after RDR, which banned commission sharing arrangements between asset managers and platforms, did the platform recommendations become incrementally informative.

Consistent with the predictions of Stoughton, Wu, and Zechner (2011), RDR also resulted in a reduction in the costs faced by retail investors who use platforms. We estimate that the cost to such investors fell by 26 basis points, on average, for those funds which were available both before and after the change. When considering all funds, i.e. including those dropped by platforms at the time of the regulatory change and those taken up by platforms at that time, the drop in fees and charges was 33 basis points. This overall fee reduction came about partly through platforms replacing more expensive funds (typically paying larger percentages of assets under management to platforms) with less expensive ones. Therefore, RDR impacted not only which funds are recommended but also which funds are offered by platforms.

To the best of our knowledge, our paper is the first to analyze the mutual fund recommendations of investment platforms, a large and fast growing category of intermediary for retail investment, and relate them to the conflicts they face. In this sense, it is related to previous research which has studied the recommendations of mutual funds, notably Reuter and Zitzewitz (2006), by the financial media, and Armstrong, Genc, and Verbeek (2017), by Morningstar analysts.<sup>4</sup> It is also closely related to the work of Christoffersen, Evans, and Musto (2013), who find that the incentives of brokers intermediating mutual funds, notably revenue sharing, drive flows into those funds. With direct access to recommendations, and no unobserved actions or benefits associated with interaction with brokers, we can separate the actions of the intermediary from those of the customer to provide direct evidence of the role of platforms and their recommendations in directing flows. The focus on favoritism toward affiliated funds is something our paper shares with Pool, Sialm, and Stefanescu (2016) who find that mutual fund families acting as trustees of 401(k) plans display a bias towards affiliated funds which is not undone by customers. We find, by contrast, that retail investors do discount platforms'

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<sup>4</sup> Jenkinson, Jones, and Martinez (2016) and Cookson, Jenkinson, Jones, and Martinez (2019) also study recommendations of mutual funds and managed products but targeted to institutional (rather than retail) clients.

recommendations of affiliated funds, a contrast which perhaps reflects the difference between the narrowness of choice in 401(K) plans and the breadth of choice on platforms.<sup>5</sup>

## 2. Institutional setting and data

### A. *Investment platforms and the regulatory framework*

Investment platforms are web-based services which allow retail investors to research, buy and sell, manage, and monitor their holdings in mutual funds.<sup>6</sup> They are an important and growing distribution channel in many countries. In the U.K., assets under administration held in platforms rose from around GBP100 billion at the end of 2008 to almost GBP600 billion at the end of 2016 (Platforum (2017)). Platforms accounted for 52% of gross sales of funds to retail investors in 2015, representing GBP83 billion (Investment Association (2016)); a third of these platform sales were direct-to-consumer, and two-thirds intermediated by an advisor (FCA (2016)). In this paper, where we analyze the determinants and impact of platform recommendations, we focus on the direct-to-consumer channel. Sales not involving platforms may be made directly with an asset manager or through an advisor. The leading direct-to-consumer platform in the U.K. is Hargreaves Lansdown, which has a 36% share of assets under administration. The next three largest – Barclays Stockbrokers, TD Direct Investing, and Fidelity Personal Investing – have around 10% each. The rest of the market is shared among a large number of small players. Of the ten largest U.K. direct-to-consumer platforms by market share, seven are vertically integrated, meaning that they have affiliated mutual funds which they offer via their platform (FCA (2016)).

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<sup>5</sup> More widely, the paper can be seen in the context of studies that explore the distortive incentives faced by agents, brokers, financial advisors, and other intermediaries (see, e.g., Mullainathan, Noeth, and Schoar (2012); Anagol, Cole, and Sarkar (2017), Egan (2018), and the theoretical work of Stoughton, Wu, and Zechner (2011) and Inderst and Ottaviani (2012a, 2012b, and 2012c)).

<sup>6</sup> We use ‘investment platform’ synonymously with ‘fund supermarket’. The term ‘investment platform’ is sometimes used in the U.K. to include so-called ‘wrap’ platforms, in which assets other than fund shares (e.g. directly owned equities) may be held, but we do not include these in our study.

Investment platforms offer a wide range of funds, which can be analyzed by the user according to asset class, investment style, charges, and, sometimes, third-party rankings, and other criteria. Within its universe of funds, a platform may also provide a list of recommended funds, the focus of the present paper, which is updated from time to time.

The way in which platforms are remunerated for their services in the U.K. must be seen in the context of a regulatory change which occurred towards the end of our sample period. From 2006, when our sample starts, to 2012, investors paid a single all-in annual fee (and in some cases an initial charge) to the asset manager, who could share this fee with platforms in return for channeling funds to them. The details of such revenue-sharing arrangements were not disclosed and even their existence was unknown to many investors. There were no separate payments to platforms. The value of revenues paid to platforms by mutual funds as part of the revenue-sharing arrangements were typically between 0.5% and 0.75% of the amount invested.

Between 2013 and 2016, the U.K. asset management industry implemented the RDR which ended revenue-sharing with platforms and required investors to pay the platform and the asset manager separately for their services.<sup>7</sup> For platforms, RDR rules came into force for new business on 6 April 2014 and applied to all business (i.e. not just new business) through a ‘sunset clause’, which required these distributors to have completed the transition before 6 April 2016. In order to keep their business under the old and new regimes separate, mutual funds maintained ‘bundled’ share classes, on which revenues could be shared with platforms, and launched ‘clean’ share classes, which could not take part in revenue sharing. Each of the platforms we study switched to clean asset classes for new investments during the period February 2014 to April 2014. Existing investments were gradually converted into clean share classes by April 2016. Therefore, from April 2016 all their clients were being charged a separate distribution (platform) fee.

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<sup>7</sup> Similar bans on commission sharing have also been implemented in other countries (e.g. in the Netherlands and Australia) or are in the process of being implemented (e.g. in Switzerland, Sweden, South Africa, and Canada). In January 2018 the European Union banned independent advisors, including platforms that make recommendations, from receiving commission from asset managers under the Markets in Financial Instruments Directive (MiFID 2).



Following the implementation of RDR, the situation in the U.K. is simple for platforms: investors pay one fee to the platform (the platform charge) and a separate fee to the fund manager (the asset manager fee), and there is no sharing of either annual or initial charges.

*B. Mutual fund recommendations*

Some investment platforms produce (and regularly review) best buy lists of mutual funds, which appear prominently on their websites. Selection criteria include past performance, perceived risk, charges, process, as well as tenure of the fund manager. These recommendations are presented to investors as reflecting the outcome of in-depth research and are designed to guide investors – who are otherwise faced with a few thousand funds to choose from – towards a short-list of funds to consider. For instance, one of the leading platforms explains, “There are over 2,500 funds available to private investors. While many will conduct their own research, others might need some extra help, so our research team have scoured the market to unearth what we believe are the best funds for new investment across the major sectors.” They go on to claim that the funds on their best buy list “... offer the ultimate combination of first-class long-term performance potential and low management charges.” Another platform explains their process and philosophy as follows: “We are a team of 11 research analysts who spend our days sourcing, researching, recommending and monitoring fund managers for our clients to invest in. We believe in manager skill, and we believe that having a well-resourced team that can conduct in-depth analysis we can identify manager skill.”

In contrast to conventional supermarkets, which promote products in return for direct payments by suppliers, platforms present their best buys to investors by identifying funds that have better future prospects. As one platform puts it, the funds are their “highest conviction picks”. Whilst platforms give some indication about how they go about conducting their fund due diligence, there is clearly a large element of judgment involved. Platforms may also face a short-term financial incentive to recommend their own brand funds and (prior to RDR) those funds that share the most commission.

### C. *The dataset*

We use data obtained by the FCA from the four largest investment platforms. One of these platforms was excluded from the analysis, as critical data required for our analysis (such as revenue share data and investment flow data) were not available. The data was made available on condition that the identity of the platforms remained anonymous and that no per-platform results were presented in our analysis. The three platforms that form the basis of our study have a combined share in excess of 50% of the U.K. market for direct-to-consumer assets under administration. None of the smaller platforms, from which data was not obtained, has a market share in excess of 5%. Furthermore, most of them do not produce their own recommendations. Data was provided on a monthly basis by each platform for the period 2006-2015, or the period during which a recommendation list was available to clients.

Each of the platforms in our study makes available to their clients at least one internally produced recommendation list.<sup>8</sup> When a platform has more than one internally prepared recommendation list we aggregate them into a single list per platform. This data allows us to identify, for each platform, when a mutual fund appeared in a recommendation list, the period during which it remained on the list, and (if applicable) the date when the mutual fund was removed from the list. This information is typically not publicly available, as platforms are not required to disclose their historical fund recommendations.

The data requested by the FCA also provided us with information for the same three platforms on their annual core platform charges over time, expressed as a proportion of assets under administration. For each mutual fund share class available on the platforms in our sample we also have historical information on the revenue shared by the fund with platforms in the form of commission, as well as the revenue passed on to a platform's clients in the form of a rebate. The revenue passed on by the fund to the platform and any rebate to platform clients are expressed as a proportion of assets under management. We also have information at a share class level on fund initial charges, expressed as a proportion of initial investment.

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<sup>8</sup> Some platforms also make available to their clients recommendation lists produced by third parties not connected to the platform (these external recommendation lists may also be available elsewhere, such as on third party websites).

Before RDR, the principal source of revenue for investment platforms was a share of annual fees passed onto them by fund managers. This share of fees paid by funds to platforms used to vary by mutual fund and share class. Following RDR, the main source of revenue for platforms is a separate platform charge levied directly from investors. Platform charges are the same for all mutual funds offered on a platform, but vary from platform to platform. Platform charges in some cases vary according to an investor's portfolio size, with larger portfolios being rewarded with lower platform charges.

We carry out our analysis at the fund-platform level. This is because all fund research and recommendations relate to funds rather than individual share classes. Because of RDR, funds tend to have clean and bundled retail share classes (at least during part of our sample period). If a fund has multiple retail share classes within each of these two categories, we group them into a single clean or bundled group (or 'fund' as we call it) by averaging performance, fees, and other charges.<sup>9</sup> We analyze only the bundled group during the period when platforms offered bundled share classes for new investments and the clean group during the period when platforms offered clean share classes for new investments.<sup>10</sup> We label the first of these periods the 'pre-RDR period' and the second the 'post-RDR period'. The pre- and post-RDR periods are platform-specific and depend on when the platform implemented RDR for new investments.

These variables are combined with publicly available monthly data for 2006-2015 on returns, assets under management, and other variables of interest from Morningstar Direct, a third-party source for fund and share class information. Charges data is also sourced from Morningstar Direct, and is available only annually. The charges data is augmented with charges data obtained by the FCA from a sub-sample of asset managers.

Our sample comprises equity, fixed income, asset allocation, and alternative investment open-ended retail mutual funds available for sale in the U.K., with GBP-denominated share classes. We exclude mutual

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<sup>9</sup> We use share class information to construct aggregate, fund-level, observations. For each platform we use only the share classes distributed through that platform rather than all available fund share classes. This means that a mutual fund may have a different cost, revenue share agreement, and performance when acquired through different platforms.

<sup>10</sup> An exception to this rule is some mutual funds that were only available in clean share format before RDR. Those mutual funds are included in the pre-RDR analysis. Note that, during part of the 'post-RDR' period, platforms continued using bundled share classes and receiving a share of the funds' annual fees, but only for pre-existing investments.

funds in the following Morningstar asset classes: commodities, property, money market, convertible and miscellaneous, because none (or almost none) of the funds in these asset classes ever appeared in the platform recommendation lists in our sample. The excluded asset classes only represent a small percentage of the funds offered by these platforms. Our dataset contains both currently operating and closed/merged funds.

For our analysis it is important to determine which funds are offered on each platform, as these funds form the pool from which a platform's recommendation lists are drawn. We use two criteria to infer availability in a platform: the existence of revenue share agreements (we only have this information on an end-of-year basis); and within-platform fund flows (this information was obtained by the FCA for two platforms and is available on a monthly basis but only when funds experience flows). We designate a fund as being available on a platform in any given month if there is a revenue share agreement in place and/or if, within three months of the month in question, there are flows within the platform. Both indicators coincide in almost all cases.

Of the funds listed on the platforms in our sample, some are affiliated to the platform and others are not affiliated. We use two different Morningstar Direct data fields ('branding name' and 'advisor') to track affiliation. Branding name reflects the fund distributor, and advisor is the fund management company. A fund is considered affiliated to a platform if it shares branding name or advisor with the platform.

Platforms typically carry a large number of mutual funds. As Table 1 shows, on average each platform in our sample includes 1,595 different mutual funds. This represents 45.2% of the funds available in the U.K. each year during our sample period (in the four large asset classes we study). The assets under management of these funds are 74.9% of all assets under management by U.K. mutual funds, suggesting that most of the larger funds are available via the platforms. During our sample period, on average, 7.2% of the funds available in the platforms appeared on recommendation lists, a percentage that has shown a tendency to decrease over time. As shown in Table 2, funds offered on the platforms tend to be larger, older, and exhibit better past performance (percentage of Morningstar 5 Star rated funds) than those not available on the platforms. They are also marginally more expensive.

Table 3 contains further information about the sample of mutual funds offered and recommended by each platform. It shows that equity funds are the largest category both in terms of funds offered (an average of

1,015 funds per year, or 64% of the available funds) and in terms of recommendations (an average of 82 fund recommended per platform per year, or 74% of the recommendations made), followed by fixed income and asset allocation. Alternative investment mutual funds represent only a small fraction of their offering sample.

### 3. Platform incentives, recommendations, and fund flows

#### A. *What determines recommendations?*

In this section, we explore what determines platform recommendations. Table 4 describes the characteristics of mutual funds which are recommended and those which are not. Our sample contains 330,175 platform-fund-month observations, of which 231,524 are observations from before the implementation of RDR for new investments and 98,651 are from after RDR implementation. In the full sample, 20,461 platform-fund-month observations correspond to recommended funds and 309,714 to non-recommended funds.

Overall, recommended funds exhibit significantly better past performance. We compute fund performance percentile rankings using past one- and three-year platform-specific returns in excess of Morningstar chosen benchmarks, and we also calculate the percentage of 5-starred Morningstar funds in each group.<sup>11</sup> On the former measure, the average one-year (three-year) past performance percentile ranking of recommended funds is 55.8 (63.4), whereas the non-recommended funds average 49.0 (48.5).

The percentage of funds rated as gold, silver, or bronze by Morningstar analysts, a forward-looking measure of quality, is also significantly larger among recommended funds.<sup>12</sup> 18.0% of recommended funds

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<sup>11</sup> Returns used in the computation of performance ranks are adjusted to reflect all relevant charges and rebates levied by each platform in which the fund is offered. These charges and rebates are computed assuming a total combined investment in mutual funds of GBP 50,000 through the platform. When there are initial charges we take their impact on costs and returns into account by assuming a five-year holding period.

<sup>12</sup> The Morningstar Analyst rating is a qualitative, forward-looking measure of performance that reflects Morningstar analysts' expectation of a fund's future performance relative to its peers over a business cycle (see Armstrong, Genc, and Verbeek (2017)). The current Morningstar Analyst rating scale was introduced in November 2011 and consists of gold, silver, bronze, neutral and negative ratings. Before this, two different systems were used: elite, superior, standard, inferior,

have the gold rating, compared with only 1.4% of non-recommended funds. Indeed, over 60% (14%) of recommended (non-recommended) funds are rated as gold, silver or bronze, which suggests that platforms are either heavily influenced by Morningstar Analyst ratings when constructing their best-buy lists, or at least that they use similar information and criteria. Recommended funds also tend to be less costly to investors, they are significantly larger in terms of assets under management, possibly in part because of the recommendations, and exhibit higher standard deviations of monthly returns.

Table 4 also shows that a significantly higher percentage of affiliated than non-affiliated funds is recommended in these internal lists. Recommended funds also tend to contribute significantly higher revenues to the platforms listing them, per each pound individuals invest in through the platforms.

These characteristics of recommended and non-recommended funds, being univariate and observation weighted, do not necessarily imply any bias in favor of affiliated funds or funds that make larger contributions to platforms. Affiliated funds and funds that make larger revenue contributions to platforms may be better funds. After all, recommended funds in general exhibit better past performance, are more highly rated by Morningstar analysis (in principle an unbiased source), and are on average cheaper than non-recommended funds, and the same may be true of the subgroup of affiliated and high-contributing funds that are recommended. Even if that were not true, funds in these two categories might also exhibit other characteristics that the analysts preparing recommendations list also favor, like significant size or a long track-record.

To test whether mutual funds affiliated with the platforms and those which share more revenues with the platform are treated preferentially relative to non-affiliated funds or funds which share less of their revenues

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impaired, and an AAA, AA, A system inherited from the acquired business Old Broad Street Research. These were mapped together as follows: elite and AAA historical ratings mapped directly to the gold ratings cohort, and we labeled them together as “gold”. We also create a broader category capturing any level of positive recommendation, which we refer to as “gold, silver or bronze” (and so, in addition to our “gold” category, this includes funds rated as superior, AA, A, silver or bronze).

with the platform, we study alterations which platforms make to their recommendation lists.<sup>13</sup> Platforms adjust their recommendation lists from time to time by deleting some mutual funds and adding others. Similar to Pool, Sialm, and Stefanescu (2016), we use the following logit models separately to model fund addition and deletion probabilities:

$$P(ACT_{p,f,t} = 1) = \Lambda(AFF_{p,f,t-1}^{ACT}\beta_{AFF}^{ACT} + RS_{p,f,t-1}^{ACT}\beta_{RS}^{ACT} + \mathbf{Z}_{p,f,t-1}^{ACT}\boldsymbol{\beta}_Z^{ACT}), \quad (1)$$

where the function  $\Lambda(z)$  is defined as  $\Lambda(z) = \exp(z) / (1 + \exp(z))$ ,  $ACT_{p,f,t} = ADD_{p,f,t}$  (Addition) or  $DEL_{p,f,t}$  (Deletion) is an indicator variable that takes the value of 1 if mutual fund  $f$  is added to, or deleted from, (depending on the specification) the recommendation list in platform  $p$  during month  $t$  and 0 otherwise,  $AFF_{p,f,t-1}^{ACT}$  is an indicator for whether the fund  $f$  is affiliated with platform  $p$  at the end of month  $t-1$ ,  $RS_{p,f,t-1}^{ACT}$  is the revenue obtained by the platform  $p$  from each pound individuals invest in fund  $f$  through the platform at time  $t-1$ , and  $\mathbf{Z}_{p,f,t-1}^{ACT}$  is a vector of lagged control variables including the pro-rated total cost of the fund assuming a five-year investment or holding period (fund's total expense ratio, plus one fifth of the initial fund charge, plus associated platform charges minus any fund rebates), performance percentiles computed using platform-specific fund returns in excess of Morningstar category benchmarks over the previous one and three years (platform-specific returns take into account charges and rebates applied by platforms assuming a five-year investment or holding period), the turnover of the fund, the natural logarithm of the fund's size (in millions of GB pounds), fund age, the standard deviation of the fund's return, an indicator variable for whether Morningstar has assigned a five-star rating to the fund, indicator variables for whether Morningstar analysts have assigned a gold, or gold, silver, or bronze rating to the fund, and a full set of fund style (e.g., equity, fixed income, asset allocation, and alternative investments) by year indicator variables.

We estimate different logit regressions for additions to the recommendation lists and deletions from these lists. We also estimate different logit regressions for the full sample (of additions or deletions) as well as

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<sup>13</sup> At any point in time, list membership depends on these decisions, as well as the initial listing decisions made when a recommendation list is first launched. In our analysis we exclude initial listing decisions since we do not always observe them in our sample (some of them were made before the start of our sample period). Including initial listing as additions, for the platforms we have that information, does not significantly alter the results reported below.

for subsamples covering the periods before and after the implementation of RDR by each platform. In the post-RDR regressions we exclude  $RS_{p,f,t-1}^{ACT}$  from the set of explanatory variables, as the platform service charge fee (the revenue obtained by each platform from each pound individuals invest in funds) is the same across funds. In all cases we report coefficient estimates and z-scores based on standard errors clustered at the mutual fund level.

If there were favoritism toward affiliated funds then, all else equal, the percentage of affiliated funds recommended would be larger than the percentage of non-affiliated funds recommended. In the long run (steady state equilibrium) these percentages depend exclusively on the conditional probabilities of adding an affiliated fund to the recommendation list ( $P_{AFF}^{ADD}$ ), removing an affiliated fund from that list ( $P_{AFF}^{DEL}$ ), adding a non-affiliated fund to the recommendation list ( $P_{NAFF}^{ADD}$ ), and removing a non-affiliated fund from that list ( $P_{NAFF}^{DEL}$ ). As shown in the Appendix, favoritism toward affiliated funds implies that  $P_{AFF}^{ADD} / (P_{AFF}^{ADD} + P_{AFF}^{DEL}) > P_{NAFF}^{ADD} / (P_{NAFF}^{ADD} + P_{NAFF}^{DEL})$ . A sufficient (although not necessary) condition for this inequality to be satisfied is that  $P_{AFF}^{ADD} \geq P_{NAFF}^{ADD}$  and  $P_{AFF}^{DEL} \leq P_{NAFF}^{DEL}$ , with at least one of these two inequalities satisfied in a strict sense. That is, all else equal, affiliated funds have to be more, or at least as, likely to be added to recommendations lists ( $\beta_{AFF}^{ADD} \geq 0$ , using Equation (1) notation) and less, or at most as, likely to be delisted ( $\beta_{AFF}^{DEL} \leq 0$ ), with at least one of these two inequalities satisfied in a strict sense. Similarly, a sufficient condition for favoritism towards funds paying higher revenues to the platform is that, all else equal, funds contributing higher revenues be more, or at least as, likely to be added to recommendations lists ( $\beta_{RS}^{ADD} \geq 0$ ), and less, or at most as, likely to be delisted ( $\beta_{RS}^{DEL} \leq 0$ ), with at least one of these two conditions satisfied in strict sense.

Table 5 reports logit coefficient estimates for the various specifications. We find that addition probabilities differ significantly between affiliated and non-affiliated funds. For the full sample, the coefficient estimates on our *Affiliated* dummy in the additions model is significantly positive at the 1% level. This indicates that, at identical levels of past performance, external assessments of future performance, costs and other controlled for variables, affiliated funds are significantly more likely to be added to the recommendation list than non-affiliated funds. The sub-period analysis indicates that this effect is stronger in the post-RDR period. Before RDR there was a modest, but statistically insignificant, preference for own-brand funds. Since RDR,



the probability of being recommended is significantly higher for funds that are affiliated with the platform. These results are mirrored in the deletion models, where the coefficient estimates on our *Affiliated* dummy variable becomes negative and significant at the 1% level in the post-RDR period.<sup>14</sup> As shown in the Internet Appendix, similar results obtain if we replace all explanatory variables with within-investment style percentile rank versions of those variables.

To interpret the coefficient estimates we compute average marginal effects. The second part of Table 5 displays model-implied average marginal effects for the two main variables of interest: *Affiliation* and *Platform Revenue from the Fund*. Using data for the entire sample period, the results show that, all else equal, the predicted probability of being added to a recommendation list in any given month is 0.0020 greater for affiliated funds than for non-affiliated funds. As a result, average model-implied monthly addition probabilities for affiliated funds ( $P_{AFF}^{ADD} = 0.0031$ ) are three times as large as for otherwise identical non-affiliated funds ( $P_{NAFF}^{ADD} = 0.0011$ ).<sup>15</sup> At the same time, deletion probabilities are smaller for affiliated funds than for non-affiliated funds, with differences in deletion probabilities equal to -0.0088 per month for the full sample and a statistically significant -0.0290 per month for the post-RDR sample. To understand the impact of these differences in addition and deletion probabilities it is useful to think on their implications for the long-term percentage of affiliated and non-affiliated funds being recommended. Using average model-implied estimates of addition and deletion probabilities for all funds available in platform menus and clones of those funds that only differ in their affiliation status yields a long term, equilibrium, percentage of non-affiliated funds in recommendation lists of 3.90% ( $P_{NAFF}^{ADD} / (P_{NAFF}^{ADD} + P_{NAFF}^{DEL}) = 0.0011 / (0.0011 + 0.0270)$ ), compared to 14.56%

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<sup>14</sup> A possible explanation for the increased favoritism towards affiliated funds in the post-RDR period is that recommending non-affiliated funds became a less attractive proposition once revenue sharing agreements were banned. This is consistent with the observed decline in the fraction of non-affiliated funds receiving a recommendation in this period (in contrast, the percentage of affiliated funds receiving recommendations stayed relatively constant).

<sup>15</sup> Average model implied addition probabilities for affiliated funds,  $P_{AFF}^{ADD}$ , are computed as the average across our sample of  $\Lambda(\beta_{AFF}^{ADD} + RS_{p,f,t-1}^{ADD} \beta_{RS}^{ADD} + \mathbf{Z}_{p,f,t-1}^{ADD} \boldsymbol{\beta}_Z^{ADD})$ , whereas average model implied addition probabilities for non-affiliated funds,  $P_{NAFF}^{ADD}$ , are computed as the average across our sample of  $\Lambda(RS_{p,f,t-1}^{ADD} \beta_{RS}^{ADD} + \mathbf{Z}_{p,f,t-1}^{ADD} \boldsymbol{\beta}_Z^{ADD})$ . We follow a similar procedure for the computation of affiliated and non-affiliated fund deletion probabilities.

$(P_{AFF}^{ADD} / (P_{AFF}^{ADD} + P_{AFF}^{DEL})) = 0.0031 / (0.0031 + 0.0181))$  for otherwise identical affiliated funds. That is, these addition and deletion probabilities imply a long run percentage of affiliated funds being recommended that is 3.7 times larger, other things equal, than the percentage of non-affiliated funds receiving a recommendation. For comparison, the actual percentages of non-affiliated and affiliated funds being recommended during the full period were 6.09% and 11.09%, respectively. They are different from our conditional estimates, but not by a large margin, suggesting that much of the difference in recommendation propensities for these two groups of funds likely relates to their affiliation status and not to particular characteristics of the funds.<sup>16</sup>

Addition probabilities are also significantly larger for mutual funds paying a larger share of the assets they obtain through the platform back to the platforms. Our calculations indicate that, all else equal, an increase of 100 bps in *Platform Revenue from the Fund* increases the probability of the fund being added to the recommendation list by 0.0019 in any given month, with no discernible effect on deletion probabilities. As an illustration, this implies that an increase in *Platform Revenue from the Fund* equal to 42bps (the difference between the median revenue obtained from funds in the top 2% of this variable and those in the bottom 98%) will result in average addition probabilities that are 70% larger than the average model-implied addition probabilities for the observations in our sample. In turn this leads to an increase in the long term percentage of funds in recommendation lists from 4.16%, for funds with actual revenue share agreements  $(P_{Av}^{ADD} / (P_{Av}^{ADD} + P_{Av}^{DEL})) = 0.0011 / (0.0011 + 0.0265))$ , to 6.37% for otherwise identical funds with 42bps higher revenue share agreements  $(P_{Av+0.42}^{ADD} / (P_{Av+0.42}^{ADD} + P_{Av+0.42}^{DEL})) = 0.0019 / (0.0019 + 0.0287))$ .<sup>17</sup> That is,

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<sup>16</sup> If we use data from the post-RDR period only, the implied long term equilibrium percentages of non-affiliated and affiliated funds in recommendation lists stand at 0.39% and 12.40%, respectively. For comparison, the actual percentages of non-affiliated and affiliated funds being recommended during this period were 3.62% and 11.87%. The lower implied percentage for non-affiliated funds (compared to the full sample estimates) mirrors the decline in the numbers of these funds in recommendation lists in the post-RDR period but may include a transitory component as well (temporarily higher deletion probabilities, and lower addition probabilities, during a period of adjustment to a new regime).

<sup>17</sup> Average model implied addition probabilities at current revenue share levels,  $P_{Av}^{ADD}$ , are computed as the average across our sample of  $\Lambda(AFF_{p,f,t-1}^{ADD} \beta_{AFF}^{ADD} + RS_{p,f,t-1}^{ADD} \beta_{RS}^{ADD} + Z_{p,f,t-1}^{ADD} \beta_Z^{ADD})$ , whereas average model implied addition

these addition and deletion probabilities imply a long run percentage of recommended funds that is 53% larger than the percentage implied by actual revenue share agreements other things equal. The effect is larger, 97%, if we focus on estimates obtained for the pre-RDR period only. The effect is weaker, but still present, if instead of using revenue share as a regressor we use a percentile rank version of this (and all other) variables.

The additional control variables indicate that funds that are costlier to investors (higher *Total Fees and Charges Ratio*) are, other things equal, less likely to be added to recommendation lists, and as likely to be deleted once there. Thus, while platforms issuing these recommendations may favor funds that make higher payments to platforms, they do not certainly favor funds that are more expensive to their customers.<sup>18</sup> Additionally, funds with better prior performance (*Morningstar 5 Star*, *Prior 1-Yr. Perf.*, and/or *Prior 3-Yr. Perf.*) or expected future performance (*Morningstar Gold* or *Morningstar G., S., and B.*) are marginally more likely to be added to the recommendation list and/or less likely to be deleted from these lists. Morningstar five-star funds are more likely to be added to recommendation lists and are equally likely to be deleted from them once there (when simultaneously controlling for the funds past one and three year return in excess of Morningstar chosen benchmarks), whereas funds with recent one and three year good past performance are less likely to be deleted from these lists. At the same time, funds rated gold, silver, or bronze by Morningstar analysts, a measure of expected future performance and independent analysts' sentiment for the fund, are marginally more likely to be added to and less likely to be deleted from these lists.

Morningstar analyst ratings are produced by a team of analysts following processes that are similar to those used by the analysts that prepare platforms' internal lists (see Armstrong, Genc, and Verbeek, 2017). Morningstar analysts are likely drawn to some of the same features of mutual funds which, while unobservable to the econometrician, also attract platform analysts. However, they have no reason to be influenced by the

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probabilities at 42bpts higher revenue share agreements,  $P_{Av+42}^{ADD}$ , are computed as the average across our sample of  $\Lambda(AFF_{p,f,t-1}^{ADD}\beta_{AFF}^{ADD} + (RS_{p,f,t-1}^{ACT} + 0.42)\beta_{RS}^{ACT} + \mathbf{Z}_{p,f,t-1}^{ACT}\beta_Z^{ACT})$ . Average model implied deletion probabilities are computed in a similar way.

<sup>18</sup> This is less trivial than it seems, given the evidence that investors have trouble minimizing fees when left to their own devices (see, for instance, Barber, Odean and Zheng (2005), Choi, Laibson, and Madrian (2010), Anagol and Kim (2012), or Grinblatt, Ikaheimo, Keloharju, and Knüpfer (2015)).

affiliation or revenue share incentives that potentially distort platforms' internal recommendation lists. In the Internet Appendix (Table IA.4) we show that neither an affiliation between fund and the platform where it is offered, nor a revenue rebate has any significant impact on Morningstar analysts' addition and deletion decisions to gold, silver, or bronze lists, during the full sample or during any of the sample periods we study. These results suggest that Morningstar analysts do not see anything special in these funds, and reinforce the idea that platform recommendations exhibit favoritism towards such funds. Further tests included in the Internet Appendix, showing that funds added to the recommendation list after RDR (and available in platforms before RDR) on average paid significantly lower kickbacks to platforms in the pre-RDR period than those that were removed from the recommendation lists in the same period, point in the same direction.

Overall, our results for both addition and deletion decisions provide evidence that affiliated funds are treated differently than non-affiliated funds. Affiliated funds are more likely to be added to and, after RDR, are less likely to be deleted from, recommendation lists. We find similar results for funds that share more of the commission revenues with platforms before RDR. Together with the results that suggest that Morningstar analysts are not swayed by these funds, they provide evidence that platform recommendation lists favor affiliated mutual funds and funds with high revenue share to an extent that is difficult to justify by the qualities of those funds. These results are broadly consistent with, yet distinct from, the more indirect evidence provided by Christoffersen, Evans, and Musto (2013) for fund flows, and with the results reported by Reuter and Zitzewitz (2006) for the recommendations in personal finance publications. They also accord with the favoritism towards affiliated funds documented by Pool, Sialm and Stefanescu (2016) in the context of 401(k) menu formation.

*B. What effect do recommendations have on flows?*

To explore how asset flows respond to recommendations we expand a typical flow-performance regression (see, for instance, Ippolito (1992) and Sirri and Tufano (1998)) to include lagged recommendations as a regressor. We consider two flow measures: first, the platform-specific GBP flow into and out of a mutual fund, a variable obtained from the platforms themselves; and, second, the percentage flow computed as the

ratio of platform-specific GBP flows to the total net assets invested in the mutual fund (whether through the platform or not) as of the end of the previous year.<sup>19</sup>

We are interested in measuring how flows respond to recommendations, controlling for publicly available measures of past performance, as well as for other product attributes known to affect flows which could also affect recommendations. We therefore estimate the response of platform-specific flows to recommendation changes using the following regression on monthly data:

$$Flow_{p,f,t} = REC_{p,f,t-1}\beta_{REC} + RS_{p,f,t-1}\beta_{RS} + \mathbf{Z}_{p,f,t-1}\boldsymbol{\beta}_Z + \epsilon_{p,f,t}, \quad (2)$$

where  $Flow_{p,f,t}$  is either the platform-specific GBP flow or the percentage flow,  $REC_{p,f,t-1}$  is an indicator variable that captures whether fund  $f$  appears in the recommendation list of platform  $p$  at time  $t-1$ ,  $RS_{p,f,t-1}$  is the revenue obtained by platform  $p$  from each pound individuals invest in fund  $f$  through the platform at time  $t-1$ , and  $\mathbf{Z}_{p,f,t-1}$  is the same vector of lagged control variables that we used in the previous section, except that we also include a full set of fund-platform indicator variables, and in the GBP flows regressions we use, as regressors, the total net assets of product  $i$  on date  $t-1$  (fund size), rather than the log assets (see Del Guercio and Tkac (2002)).<sup>20</sup> To reduce the effect of outliers on the percentage flow regressions, we remove all funds with total net assets at time  $t-1$  below GBP 10 million from the sample (see, e.g., Chevalier and Ellison (1997)).

Columns (1) and (3) of Table 6 report the results of estimating this regression in the full sample using pooled time-series cross-sectional data with GBP flows and percentage flows as the dependent variables. The coefficients on the variable capturing the effect of lagged recommendation levels on flows are positive and statistically significant (in all cases  $t$ -statistics are based on standard errors clustered at the fund level). This suggests that individual investors respond to funds appearing in the recommendation list of a given platform by increasing their investment in the recommended fund through that platform. The estimate in column (1) indicates that recommended funds experience, on average, an increase in net flows of GBP 0.86 million per

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<sup>19</sup> An alternative normalization could be based on the total net assets invested in the mutual fund through each platform, but we do not have that information available.

<sup>20</sup> Notice that including a full set of fund-platform indicator variables renders the inclusion of the affiliated indicator variable unnecessary, since affiliation is a time invariant characteristic in our sample.

month (GBP 10.32 million once annualized) in every month following their appearance in the list. Qualitatively similar results obtain if we use percentage flows as the dependent variable.<sup>21</sup> The estimates in column (4) suggest that a mutual fund appearing in the recommendation list in the previous month receives, on average, extra net inflows equal to 0.16% (1.92% once annualized) of the overall assets managed by that mutual fund (and not just those invested through the platform), owing to that recommendation.<sup>22</sup>

The impact of recommendations on fund flows is further illustrated in Figure 1.A. This figure shows that additions to and deletions from recommendation lists have an immediate effect on flows. Recommended funds experience an increase in net flows in the month they are recommended and net flows stay high during the recommendation period. Net flows then experience a significant drop, even compared to pre-recommendation levels, when the fund is removed from the recommendation list. This may reflect investors attracted by those recommendations moving their money elsewhere once the fund is no longer recommended.

Our regressions also indicate that past (one and three year) performance and Morningstar five star ratings have a significant direct impact on asset flows, in addition to their indirect impact via recommendations. This is in line with the previous literature on the topic (see, for instance, Ippolito (1992), Chevalier and Ellison (1997), and Sirri and Tufano (1998) for the impact of past performance, and Bergstresser and Poterba (2002), Del Guercio and Tkac (2008), and Ivković and Weisbenner (2009) for the influence of Morningstar star ratings). However, appearing on a platform recommendation list has a significantly larger direct effect on net flows through the platform than receiving a five-star rating by Morningstar, or being included in Morningstar analysts'

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<sup>21</sup> Results are also similar if we use within-style fractional rank variables as regressors, or if we use fund-time fixed effects, instead of platform-fund fixed effects, as reported in Internet Appendix Tables IA.6 and IA.7.

<sup>22</sup> Because we divide flows through a single platform by total assets under management all coefficients in the percentage flows column look relatively small. To put the 0.16% figure in perspective, consider that the average platform in our sample has a 15%-20% market share (of the direct to consumer platform market), which means that if all the platforms were to recommend a mutual fund that would result in a 9.6% to 13.8% asset flow once annualized.

gold, silver, or bronze categories rating. The better-known Morningstar recommendations may influence platform recommendations but their direct effect on platform flows is insignificant.<sup>23</sup>

The sub-period analysis reveals that the impact of platform recommendations is present in the pre- and post-RDR periods, although it is stronger and more significant in the former. It also reveals that the payments funds made to platforms before RDR had a noticeable impact on flows, independently of their impact on recommendations. This could be the result of platforms separately promoting, advertising, or simply offering a better positioning to, funds that shared more of their commission revenue with them, and is another channel through which revenue share may impact overall fund flows. A further channel concerns whether a fund appears on the platform at all, something we turn our attention to in Section 5.

In Table 6 we also report the results of estimating a modified version of equation (2) that includes interaction variables for *Recommendation List* and *Affiliated* and for *Recommendation List* and *Platform Revenue from Fund*. These interactions should help us investigate whether investors offset the favoritism which platforms show towards affiliated funds and towards funds with high revenue share agreements in the recommendation lists.

The coefficients on the interaction effect between *Recommendation List* and *Affiliated* are negative and significant in the GBP and percentage flow regressions (specifications (2) and (4)), suggesting that investors are skeptical about recommendations of affiliated funds. In fact, the coefficients on the interaction are approximately equal in absolute value to the value of the coefficients on *Recommendation List* (plus the contribution of the *Recommendation List* and *Platform Revenue from Fund* interaction), indicating that affiliated recommendations have no noticeable net impact on flows. The coefficients on the interaction effect between *Recommendation List* and *Platform Revenue from Fund*, on the other hand, are not statistically different from zero in either the GBP or percentage flow regressions. This is the case in the full sample

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<sup>23</sup> Unlike platform recommendation lists, Morningstar star and analyst ratings can potentially reach investors in multiple platforms as well as investors who access mutual funds through other means. See the cited papers by Bergstresser and Poterba (2002), Del Guercio and Tkac (2008), and Ivković and Weisbenner (2009) and the paper by Armstrong, Genc, and Verbeek (2017) for an analysis of Morningstar star and analyst ratings impact on aggregate flows respectively.

(specifications (2) and (4), in which *Platform Revenue from Fund* is invariant across funds after RDR) and the pre-RDR sample (specifications (6) and (8)). To compare the magnitudes of the recommendation-affiliation and recommendation-revenue interactions, we split the funds in our sample 2% : 98% based on their sharing of commission revenue with platforms (to match the split between affiliated and non-affiliated funds). In the pre-RDR period, the bottom 98% of funds in terms of *Platform Revenue from Fund* reported platforms revenues of 60bps per pound invested (median), while the 2% most profitable funds reported them revenues of 102bps per pound invested (median). Using the estimates in the pre-RDR period specification (6) we see that an increase in *Platform Revenue from Fund* of 42bps, from 60bps to 102bps, results in only a small reduction in net flows following a recommendation: GBP 0.21 million per month (from GBP 0.83 million per month to GBP 0.62 million per month – for non-affiliated funds), which is not statistically significant.<sup>24</sup> If we look at percentage flows (specification (8)), there is not even an insignificant reduction. This suggests that investors, who are not privy to revenue share agreements, do not in general offset the favoritism towards these funds in recommendations lists.

These results allow us to expand on the findings of Christoffersen, Evans, and Musto (2013). They suggest that, in the context of investment platforms, some, but not all, of the effect of revenue share agreements on funds flows happens through the effect of the former on recommendations/advice. Our results also shed light on the ability of investors to undo the biases of financial intermediaries. In our study, investors heavily discount affiliated mutual fund recommendations, to the point where it almost makes no difference for flows, but they do not adjust for favoritism towards funds with high revenue share agreements with the platforms that recommend them. Previous research on 401(k) plans by Pool, Sialm, and Stefanescu (2016) finds no evidence that plan participants are able to undo the affiliation bias exhibited by fund families involved in plan design. However, while 401(k) plans usually offer very restrictive menus (on average, 12.6 mutual funds, of which 4.8

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<sup>24</sup> For reference, if we take the same group of funds and pre-RDR specification as a starting point, we see that moving from a situation where the recommendation is regarded as coming from a non-affiliated platform to one in which the platform is affiliated with the fund, results in a highly significant reduction in net flows of GBP 0.65 million per month (from GBP 0.83 million per month to only 0.18 million per month). And the effect is even stronger in the full sample, which seems more appropriate to gauge the effect of affiliation on recommendation flows.



are affiliated – see cited study), platforms offer a much richer choice set (on average, 1,595 funds of which only 28 are affiliated). As a result, it is much easier for investors to find non-affiliated alternatives to affiliated funds in investment platforms than it is on 401(k) plans. Thus the transparency or opacity of the conflict of interest seems to have a substantial effect on the way investors respond to recommendations, but also how much room for maneuver there is available.

#### **4. The performance of best buy recommendations**

We measure the value to investors of platforms' best buy recommendations by comparing the performance of recommended funds with the performance of other funds which are also available via the platforms but not recommended.

We carry out this comparison in three different ways. First, we compute the average returns in excess of Morningstar category benchmark returns of all recommended and, separately, all non-recommended funds available in each month. We do this platform by platform, and then average the results across platforms, with each platform receiving the same weight. Funds which are not available via any of the platforms do not enter into our calculations. This is because we evaluate recommendation lists, and lists can only recommend funds that are part of the platforms on which they appear.

Second, we match each recommended fund to all non-recommended funds which are classified in the same (level 2) Morningstar investment category (e.g., UK large-cap growth equity) and also available in the platform. For each recommended fund we compute the equal-weighted average return of all non-recommended funds in both the same category (our sample covers 160 such categories) and platform. We then create equal-weighted portfolio returns of the recommended funds and of the portfolios of non-recommended funds classified in the same Morningstar category, in excess of category benchmarks.

Third, to allow for possible differences in risk exposure within a given Morningstar category, we compute alphas for recommended and non-recommended funds classified in the same Morningstar category. These alphas are from single-factor models that use the 160 Morningstar category benchmarks as factors. We regress monthly fund returns in excess of the monthly short-term Treasury bill rate in the UK on the excess return of each benchmark. Following Gerakos, Linnainmaa, and Morse (2016), we first estimate these

regressions fund-by-fund and collect  $e_{it} = \hat{\alpha}_i + \hat{\varepsilon}_{it}$ . We then create equal-weighted portfolios of these residuals for the recommended funds and for the portfolios of non-recommended funds classified in the same Morningstar category.

In our calculations we alternatively assume that funds are held only for the period during which they are listed in the recommendations lists or, to allow for the possibility that investors may be inattentive or disinclined to rebalance their portfolios with the frequency that such a strategy assumes, for five years starting each listing month (or until the end of our sample period).<sup>25</sup> In all cases we use platform-specific net returns, which take into account charges and rebates applied by platforms assuming a notional investment of GBP 50,000 per account. Fund initial charges (front end loads), if any, are prorated assuming a five-year holding period.

The results in Panel A of Table 7 indicate that, over our 10-year sample period, the portfolio of all funds on the platforms' best buy lists delivered average net returns in excess of Morningstar benchmarks of 0.08% per year. These returns are, on average, a statistically significant 0.94% per year higher than the excess returns obtained by other funds available to investors in these platforms but not listed in recommendation lists. Similar results obtain if we compare the returns of recommended funds to the returns of non-recommended funds classified in the same Morningstar category (a closer comparison) or if we compare one-factor alphas of recommended and (Morningstar category-matched) non-recommended funds, thus controlling for different risk exposures, or leverage, within a given category. On this last basis, recommended funds outperform non-recommended funds by between 0.63% and 0.80% per year, depending on the holding period assumption. That outperformance extends to both the pre- and post-RDR periods.<sup>26</sup>

Platform recommendations, however, are highly correlated with Morningstar recommendations: 60.3% of platform recommendations are for funds classified as gold, silver, or bronze by Morningstar. Previous

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<sup>25</sup> Estimates of average holding periods for mutual fund retail investors in the U.K. vary between 4 and 6 years for the period under study. See Investment Association (2016).

<sup>26</sup> When using this last metric, the performance of recommended and non-recommended funds is typically higher than when just comparing to benchmarks. This is because the average fund in our sample has a beta with respect to its Morningstar category benchmark of 0.89 (significantly smaller than 1).

research by Armstrong, Genc, and Verbeek (2017), and our own analysis in the Internet Appendix, shows that Morningstar recommends funds that perform well on average. To gain insight into the incremental value of platform recommendations we next explore the performance of: (1) mutual funds that are recommended both by platforms and Morningstar, (2) funds recommended by platforms but not by Morningstar, and (3) funds recommended by Morningstar but not by platforms. Panel B of Table 7 shows that, during our ten-year sample period, funds recommended by both platforms and Morningstar outperform non-recommended funds by a statistically significant 1.06% to 1.62% per year, depending on the holding period assumption and on whether we look at gold, or gold, silver, and bronze recommendations. The table also shows that when platforms deviate in their recommendations from Morningstar that is no longer the case: funds recommended by platforms but not by Morningstar perform at the same level as non-recommended funds (their impact in Panel A masked by the large proportion of their recommendations that match Morningstar's). On the other hand, funds recommended by Morningstar but not by platforms outperform non-recommended funds by a statistically significant 0.70% to 1.44% per year.<sup>27</sup> This is true for the pre-RDR sample and, by extension, for the full sample (most of which belongs in the pre-RDR period), but not for the post-RDR sample. Post-RDR funds recommended by platforms but not by Morningstar significantly outperform non-recommended funds.

As shown in Panel C of Table 7, when platforms deviate from Morningstar they do so disproportionately to recommend funds that are own brands or, during the pre-RDR period, have high revenue share agreements with them. Morningstar also tends to recommend funds that generate more revenue for the platforms than those it does not recommend, by 3 basis points, but for platforms this number is three times as high. And Morningstar does not exhibit any inclination to recommend platform-affiliated funds. The percentage of Morningstar recommended affiliated and non-affiliated funds is indistinguishable from each other, while platforms recommend a significantly larger share of affiliated than non-affiliated funds.

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<sup>27</sup> Funds recommended by both platforms and Morningstar are benchmarked against funds in the same Morningstar category recommended by neither of the two. Funds recommended by either platforms or Morningstar but not the other are benchmarked against funds not recommended by platforms (in the first case) or Morningstar (in the second).

Overall, our results provide strong evidence that, on average, platform recommended funds perform better than funds chosen at random. However, during most of our sample period, when platforms deviate from Morningstar to recommend funds not endorsed by this rating service, which happens disproportionately in the case of funds that are affiliated and those that share a higher proportion of commission revenue, that outperformance disappears. Funds recommended by platforms but not by Morningstar perform at the same level as non-recommended funds. On the other hand, funds recommended by Morningstar but not by platforms outperform non-recommended funds significantly. Only in the post-RDR period, when some (revenue share), but not all (affiliation), of the conflicts affecting platform recommendations were tempered, do platform recommendations seem to provide value on top (or independently) of Morningstar recommendations.

#### **5. Regulatory changes limiting revenue sharing and their impact on platform menus and funds**

Our analysis covers the ten-year period from 2006 to 2015. As described in Section 2, towards the end of this period the Retail Distribution Review, introduced with the aim of improving clarity for investors and reducing conflicts of interest in the remuneration of financial advisers, effectively ended commission sharing between asset managers and platforms. Results presented in Table 4 indicate that RDR not only impacted platform recommendations but may also have affected the costs for retail investors of accessing mutual funds (total charges and fees faced by retail investors went down following RDR) and even the mutual funds made available by platforms.

In Table 8 and Figure 2 we offer a more detailed analysis of the impact of RDR on fees, platform revenues, and, by extension, platform menus. Table 8 shows the average change in the cost of mutual funds to platform investors (*Fees and Charges*) and revenues obtained by platforms from new investments (*Platform Revenue from Funds*) following the implementation of RDR for new investments. The results in this table were obtained by comparing funds before and after the implementation of RDR over our entire sample period, but similar results obtain if we look only at the two years before and after RDR implementation.

As shown in the first row of the table, taking into account all platform specific charges and rebates, as well as direct payments to platforms post-RDR, the average cost of investing in mutual funds for new investors went down by 33bps following RDR. If we look at all funds, not just those offered through platforms, the

difference (using average platform charges ignoring rebates and loads), at 17bps, is lower but still highly significant – the funds not offered through platforms, originally cheaper on average than those offered through platforms, experienced a smaller reduction in price. These results are broadly in line with the predictions of Stoughton, Wu, and Zechner (2011), according to which revenue share agreements (or ‘kickbacks’) are always associated with higher portfolio management fees and costs to investors. Results in Table 8 also suggest that part of the reduction in costs for new investments (15bps) was absorbed by asset managers and part (18bps) by platforms. In general, these patterns do not seem to be the result of a long term trend in funds costs (see Figure 2) or a shift towards cheaper asset classes (see within effects), but are likely related to RDR.<sup>28</sup>

The second and third rows in Table 8 decompose the cost and platform revenue differences before and after RDR between the part attributed to changes in costs and platform revenue for existing funds (second row) and the part attributed to new funds that replace old ones following RDR (third row). The second row shows the pre- vs post-RDR difference computed using only mutual funds available both before and after the implementation of RDR (i.e., a direct comparison of fees before and after RDR for the same funds). The drop in fees observed for what is essentially a comparison of bundled share class fees minus rebates (pre-RDR) with clean share class fees plus platform fees (post-RDR) for the same funds is smaller, at 26bps, than the drop in fees and charges from comparing funds that were only made available after RDR and funds that were only available before RDR, at 55bps. The drop in platform revenue obtained from funds mirrors this pattern: 16bps when looking at the same funds pre- and post-RDR versus 23bps when comparing funds offered only before RDR with those offered only after RDR.

As explained in section 2.A, post-RDR platform revenues from new investments are the same across funds. And, as we have just seen, the drop in revenues for funds retained in platforms following RDR is smaller than the drop in revenues between funds offered only before RDR and funds offered only after RDR. This

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<sup>28</sup> It is important to note that the cost and revenue changes reflected in Table 8 and Figure 2 are for new investments only. At least during part of our post-RDR period, costs and revenue share agreements stayed at their pre-RDR levels for existing investments. This means that average fees and revenues obtained by asset managers and platforms (an average of those for old and new investments) did not go down as markedly, at least initially.

means that retained funds had lower pre-RDR revenue share agreements in place, by 7bps, than those removed. Their overall cost to investors was also lower, by 29bps. In other words, in the months following the implementation of RDR for new investments, platforms were more likely to replace more expensive funds (typically paying larger percentages of assets under management to platforms) with less expensive ones once these agreements were no longer in place. This suggests that revenue share agreements (or the inclination or willingness to share revenues) affect what is offered via platforms, in addition to what is recommended.

## 6. Conclusions

Investment platforms are important intermediaries between mutual funds and their investors. We study investment platforms in the U.K., which has one of the largest mutual fund industries in the world and where platforms intermediate around half of mutual fund flows. Among the wide range of funds that platforms make available, they select some to recommend to investors, and these recommendations have a considerable impact on fund flows. In making these recommendations, platforms are subject to two potential conflicts of interest. First, platforms are affiliated with some of the funds they offer to investors, and second, platforms in the U.K. have been allowed, until recently, to receive from mutual funds a share of the asset management fees which the funds obtain from investors. Using a unique data set sourced through the U.K. financial regulator, which includes precise details of investment platforms' recommendations, fund flows through individual platforms, and the affiliation or revenue-sharing relationship that the platforms have with mutual funds, we examine the drivers, impact, and performance of investment platforms' recommendations of mutual funds. We also take advantage of an important regulatory change during our sample period which banned revenue-sharing, and so removed one of the potential conflicts of interest facing platforms.

We find that, on average, platforms recommend funds that have better historical performance and have lower fees. Recommended funds are also significantly more likely to be rated gold, silver, or bronze by Morningstar analysts. Importantly, our results also show that a significantly higher percentage of affiliated than non-affiliated funds is recommended, and that, per GBP invested, recommended funds share more of their revenues with the platforms than non-recommended funds.

Our results confirm that platform recommendations have a substantial impact on flows. However, when we confine ourselves to recommended funds which are affiliated with the platform, flows are less responsive, suggesting that investors discount such own brand recommendations. We also find that, although platforms often recommend funds that are also highly rated by Morningstar, it is the platform recommendations that drive flows. On the other hand, flows to recommended funds do not seem to depend on the revenue shared by these funds with the platforms, suggesting that investors (who in the U.K. do not see the revenue-sharing arrangements) do not offset platforms' favoritism towards such funds.

On average, funds recommended by platforms perform better (after the recommendation) than other funds. However, conflicts of interest seem to affect the quality of these recommendations, for when platform recommendations deviate from those of Morningstar, which happens disproportionately in favor of affiliated and high revenue share funds, those funds do not outperform. Only after a regulatory change in the U.K., which replaced revenue share arrangements from asset managers to platforms with separate platform charges, did these deviating recommendations start adding value. After that regulatory change, platforms tended to replace funds that had previously paid high kickbacks with funds that had (prior to the change) paid lower kickbacks in their recommendation lists. The change also resulted in a reduction in the costs faced by retail investors who use their services. The evidence is that this drop came about largely because platforms replaced more expensive with less expensive funds. The latter finding suggests that revenue share arrangements have an effect, not only on the funds recommended by platforms, but also on the funds which are offered by platforms.

## Appendix

We define favoritism towards affiliated funds as a situation where, all else equal, the percentage of affiliated funds recommended,  $R_{AFF}/N_{AFF}$ , is larger than the percentage of non-affiliated funds recommended,  $R_{NAFF}/N_{NAFF}$ .

**Proposition 1.** *In the long run (steady state equilibrium) the percentage of affiliated funds recommended and the percentage of non-affiliated funds recommended depend exclusively on the conditional probabilities of adding an affiliated fund to the recommendation list ( $P_{AFF}^{ADD}$ ), removing an affiliated fund from that list ( $P_{AFF}^{DEL}$ ), adding a non-affiliated fund to the recommendation list ( $P_{NAFF}^{ADD}$ ), and removing a non-affiliated fund from that list ( $P_{NAFF}^{DEL}$ ). Moreover, favoritism toward affiliated funds implies that  $P_{AFF}^{ADD}/(P_{AFF}^{ADD} + P_{AFF}^{DEL}) > P_{NAFF}^{ADD}/(P_{NAFF}^{ADD} + P_{NAFF}^{DEL})$ .*

**Proof.** With a constant number of affiliated funds ( $N_{AFF}$ ) available each period the expected number of affiliated funds recommended in period  $t+1$  ( $R_{AFF,t+1}$ ) is:

$$E_t(R_{AFF,t+1}) = R_{AFF,t} + (N_{AFF} - R_{AFF,t})P_{AFF}^{ADD} - R_{AFF,t}P_{AFF}^{DEL}, \quad (A.1)$$

or, rearranging terms,

$$E_t(R_{AFF,t+1}) = R_{AFF,t}[1 - P_{AFF}^{ADD} - P_{AFF}^{DEL}] + N_{AFF}P_{AFF}^{ADD}. \quad (A.2)$$

Similarly, the expected number of affiliated funds recommended in periods  $t+2$ ,  $t+3$ , ...,  $t+n$  is:

$$E_t(R_{AFF,t+2}) = R_{AFF,t}[1 - P_{AFF}^{ADD} - P_{AFF}^{DEL}]^2 + N_{AFF}P_{AFF}^{ADD}[1 - P_{AFF}^{ADD} - P_{AFF}^{DEL}] + N_{AFF}P_{AFF}^{ADD} \quad (A.3)$$

$$E_t(R_{AFF,t+3}) = R_{AFF,t}[1 - P_{AFF}^{ADD} - P_{AFF}^{DEL}]^3 + N_{AFF}P_{AFF}^{ADD}[1 - P_{AFF}^{ADD} - P_{AFF}^{DEL}]^2 + N_{AFF}P_{AFF}^{ADD}[1 - P_{AFF}^{ADD} - P_{AFF}^{DEL}] + N_{AFF}P_{AFF}^{ADD} \quad (A.4)$$

...

$$E_t(R_{AFF,t+n}) = R_{AFF,t}[1 - P_{AFF}^{ADD} - P_{AFF}^{DEL}]^n + N_{AFF}P_{AFF}^{ADD}[1 - P_{AFF}^{ADD} - P_{AFF}^{DEL}]^{n-1} + \dots + N_{AFF}P_{AFF}^{ADD}[1 - P_{AFF}^{ADD} - P_{AFF}^{DEL}] + N_{AFF}P_{AFF}^{ADD}. \quad (A.5)$$

Dividing (A.5) by  $N_{AFF}$ , the expected percentage of affiliated funds recommended in period  $t+n$  is:



$$E_t(R_{AFF,t+n}/N_{AFF}) = R_{AFF,t} [1 - P_{AFF}^{ADD} - P_{AFF}^{DEL}]^n / N_{AFF} + P_{AFF}^{ADD} [1 - P_{AFF}^{ADD} - P_{AFF}^{DEL}]^{n-1} + \dots + P_{AFF}^{ADD} [1 - P_{AFF}^{ADD} - P_{AFF}^{DEL}] + P_{AFF}^{ADD}. \quad (A.6)$$

And in the long run, as  $n \rightarrow \infty$ :

$$\lim_{n \rightarrow \infty} E_t(R_{AFF,t+n}/N_{AFF}) = \lim_{n \rightarrow \infty} R_{AFF,t0} [1 - P_{AFF}^{ADD} - P_{AFF}^{DEL}]^n / N_{AFF} + P_{AFF}^{ADD} \sum_{i=0}^{n-1} [1 - P_{AFF}^{ADD} - P_{AFF}^{DEL}]^i. \quad (A.7)$$

With non-zero addition and deletion probabilities  $[1 - P_{AFF}^{ADD} - P_{AFF}^{DEL}] < 1$  and as a result:

$$\lim_{n \rightarrow \infty} E_t(R_{AFF,t+n}/N_{AFF}) = P_{AFF}^{ADD} / (P_{AFF}^{ADD} + P_{AFF}^{DEL}). \quad (A.8)$$

A similar result obtains for the expected percentage of non-affiliated funds recommended. As a result, favoritism toward affiliated funds requires that:

$$P_{AFF}^{ADD} / (P_{AFF}^{ADD} + P_{AFF}^{DEL}) > P_{NAFF}^{ADD} / (P_{NAFF}^{ADD} + P_{NAFF}^{DEL}). \quad \square \quad (A.9)$$

**Proposition 2.** *A sufficient condition for relationship (A.9) to be satisfied is that  $P_{AFF}^{ADD} \geq P_{NAFF}^{ADD}$  and  $P_{AFF}^{DEL} \leq P_{NAFF}^{DEL}$ , with at least one of these two inequalities satisfied in a strict sense.*

**Proof.** Define  $P_{AFF}^{ADD} = P_{NAFF}^{ADD} + \alpha$  and  $P_{AFF}^{DEL} + \gamma = P_{NAFF}^{DEL}$ .  $P_{AFF}^{ADD} \geq P_{NAFF}^{ADD}$  and  $P_{AFF}^{DEL} \leq P_{NAFF}^{DEL}$  imply that  $\alpha \geq 0$  and  $\gamma \geq 0$ . Replacing these two expressions in (A.9):

$$(P_{NAFF}^{ADD} + \alpha) / (P_{NAFF}^{ADD} + \alpha + P_{AFF}^{DEL}) > P_{NAFF}^{ADD} / (P_{NAFF}^{ADD} + P_{AFF}^{DEL} + \gamma). \quad (A.10)$$

With non-negative  $\alpha$  and  $\gamma$  (and non-zero probabilities) this is the same as:

$$(P_{NAFF}^{ADD} + \alpha)(P_{NAFF}^{ADD} + P_{AFF}^{DEL} + \gamma) > P_{NAFF}^{ADD}(P_{NAFF}^{ADD} + \alpha + P_{AFF}^{DEL}). \quad (A.11)$$

After simplifying terms (A.11) becomes:

$$\alpha P_{AFF}^{DEL} + \gamma P_{NAFF}^{ADD} + \alpha\gamma \geq 0, \quad (A.12)$$

which is always satisfied when  $\alpha \geq 0$  and  $\gamma \geq 0$  with at least one of these inequalities satisfied in strict sense.  $\square$

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**Table 1: Platforms, Funds, and Recommendations - Descriptive Statistics by Year**

This table presents descriptive statistics on the sample of mutual funds and recommendation lists produced by and available through the platforms used in our study. It shows the number of GBP denominated equity, fixed income, asset allocation, and alternative investments retail mutual funds available in the UK, the average number and the percentage of available funds offered per platform, the assets under management of funds offered in the platforms as a percentage of the total assets under management of the funds available in the UK, and the average number and percentage of funds recommended in any of the recommendation lists which platforms make available to their clients. These statistics are presented for the full sample period as well as for each year during that period.

	Number of Equity, Fixed Income, Asset Allocation, and Alternative GBP Denominated Mutual Funds	Average Number of Funds per Platform	Average Percentage of Available Funds Offered in each Platform	Average Percentage of Available Funds Offered in each Platform by Assets under Management	Average Number of Funds Recommended per Platform	Percentage of Funds Recommended per Platform
2006	2,620	1,167	44.6	78.3	134	11.5
2007	2,899	1,361	46.9	77.3	149	11.0
2008	3,129	1,545	49.4	74.7	150	9.7
2009	3,298	1,705	51.7	76.4	132	7.7
2010	3,460	1,547	44.7	73.8	103	6.7
2011	3,711	1,655	44.6	75.2	102	6.1
2012	3,848	1,679	43.6	74.5	96	5.7
2013	3,989	1,743	43.7	74.9	103	5.9
2014	4,191	1,830	43.7	72.7	82	4.5
2015	4,438	1,717	38.7	71.0	61	3.5
Mean	3,558	1,595	45.2	74.9	111	7.2

**Table 2: Characteristics of Mutual Funds Offered and Not Offered through the Platforms**

This table presents descriptive statistics for funds offered, and not offered, through the platforms of our sample. The variables include: fund age, fund size (in billions of GBP) as measured by total assets under management, the volatility of monthly fund returns, turnover, the total fees and hypothetical distribution charges for the fund (computed using average platform charges for clean share classes post-RDR and excluding rebates and loads), and the percentage of five star rated funds by Morningstar. The figures reported are simple averages using all monthly observations for each fund. Each fund may enter into the sample up to three times (one per platform) in a single time period. It may enter as an in-platform fund for one of the platforms and not in platform for the other two. *p*-values for the differences are reported in square brackets and are based on standard errors clustered at the fund level. Significance levels for tests of the difference in means are denoted by \*, \*\*, and \*\*\*, which correspond to the 10%, 5%, and 1% levels, respectively.

	Fund Age (in Years)	Fund Size (in £B)	Return Std. Dev. (in %)	Turnover (in %)	Fees and Charges (Av.) (in %)	Morningstar 5 Star (in %)
Funds in Platform	12.63	0.25	3.46	112.94	1.58	12.77
Funds not in Platform	6.10	0.08	3.01	220.10	1.52	4.42
Difference	6.53 [<0.01]***	0.17 [<0.01]***	0.45 [<0.01]***	-107.16 [0.09]*	0.06 [<0.01]***	8.35 [<0.01]***

**Table 3: Mutual Funds Offered and Recommended by Asset Category**

This table presents descriptive statistics on the sample of mutual funds available through the platforms used in our study. It shows the average number of funds per platform, average number of Morningstar categories represented by those funds, the average number of funds recommended per platform, average assets under management per fund (in millions of GBP), and the average net fees and platform charges to investors (in % per year). Descriptive statistics are reported for the full sample of mutual funds and separately for each of the asset classes included in our study: equity, fixed income, asset allocation, and alternative investments. The numbers reported are averages per year.

	Average Number of Funds per Platform	Average Number of Morningstar Categories Represented	Average Number of Funds Recommended per Platform	Average Assets under Management per Fund (millions GBP)	Average Net Fees and Platform Charges to Investors (% per year)
All funds	1,595	103	111	238	1.56
Equity	1,015	69	82	242	1.59
Fixed income	215	25	15	327	1.17
Asset Allocation	310	8	11	187	1.74
Alternative Investments	55	1	3	99	1.73

**Table 4: Characteristics of Recommended and Non-Recommended Mutual Funds**

This table presents descriptive statistics for funds recommended and not recommended in the recommendation lists produced by and available through the platforms of our sample. Affiliated is the percentage of funds affiliated with the platform in each category. Platform Revenue from the fund is the revenue obtained by the platform from each pound individuals invest in the fund through the platform (in %). The remaining variables are mutual fund-level variables: fund age, fund size (in billions of GBP) as measured by total assets under management, the volatility of monthly fund returns, turnover, the total net fees and platform charges for the fund, the percentage of five star rated funds by Morningstar, the percentage of gold-rated and gold, silver, or bronze-rated funds by Morningstar and mean performance percentiles. Performance percentiles are calculated using funds returns in excess of Morningstar chosen benchmarks over the previous one and three years. The averages are reported for the full sample as well as for the period before and after the implementation of RDR for new investments by each platform. P-values for the differences are reported in square brackets and are based on standard errors clustered at the fund level. Significance levels for tests of the difference in means are denoted by \*, \*\*, and \*\*\*, which correspond to the 10%, 5%, and 1% levels, respectively.

	All			Pre-RDR			Post-RDR		
	Rec.	Not Rec.	Diff.	Rec.	Not Rec.	Diff.	Rec.	Not Rec.	Diff.
Affiliated (in %)	3.79	1.98	1.81 [0.03]**	2.56	1.65	0.91 [0.20]	9.16	2.73	6.43 [<0.01]***
Platform Revenue from Fund (in %)	0.59	0.54	0.05 [<0.01]***	0.64	0.60	0.04 [<0.01]***	0.40	0.40	-
Fund Age (in Years)	13.33	12.58	0.75 [0.26]	12.84	12.29	0.55 [0.45]	15.47	13.23	2.24 [<0.01]***
Fund Size (in £B)	1.09	0.21	0.88 [<0.01]***	1.05	0.19	0.86 [<0.01]***	1.21	0.24	0.97 [<0.01]***
Return Std. Dev. (in %)	3.81	3.44	0.37 [<0.01]***	4.05	3.83	0.22 [0.06]*	2.78	2.55	0.23 [0.09]*
Turnover (in %)	99.92	113.88	-13.96 [0.04]**	103.01	117.01	-14.00 [0.05]*	85.02	105.88	-20.86 [0.01]**
Total Fees and Charges Ratio (in %)	1.46	1.56	-0.10 [<0.01]***	1.52	1.64	-0.12 [<0.01]***	1.15	1.36	-0.21 [<0.01]***
Morningstar 5 Star (in %)	30.94	11.56	19.38 [<0.01]***	30.83	10.18	20.65 [<0.01]***	31.39	14.71	16.68 [<0.01]***
Morningstar Gold (in %)	18.04	1.41	16.63 [<0.01]***	18.84	1.43	17.41 [<0.01]***	14.53	1.35	13.18 [<0.01]***
Morningstar G., S., and B. (in %)	60.31	14.00	46.31 [<0.01]***	61.62	13.01	48.61 [<0.01]***	54.56	16.24	38.32 [<0.01]***
Prior 1-Yr. Perf. (in %)	55.76	49.06	6.70 [<0.01]***	55.61	49.00	6.61 [<0.01]***	56.29	49.19	7.10 [<0.01]***
Prior 3-Yr. Perf. (in %)	63.44	48.52	14.92 [<0.01]***	64.97	48.24	16.73 [<0.01]***	59.22	49.01	10.21 [<0.01]***
Observations	20,461	309,714		16,642	214,882		3,819	94,832	

**Table 5: Logit Model of Mutual Fund Additions to and Deletions from Recommendation Lists**

The first part of this table reports coefficient estimates for the logit model  $\text{Prob}(\text{ACT}_{p,f,t} = 1) = (\text{AFF}_{p,f,t-1}\beta_{\text{AFF}} + \text{RS}_{p,f,t-1}\beta_{\text{RS}} + \mathbf{Z}_{p,f,t-1}\beta_{\mathbf{Z}})$ , where  $\text{ACT}_{p,f,t}$  is an indicator variable that takes the value of 1 if mutual fund  $f$  is added to or deleted from (depending on the specification) the recommendation list in platform  $p$  during month  $t$  and 0 otherwise,  $\text{AFF}_{p,f,t-1}$  is an indicator for whether the fund  $f$  is affiliated with platform  $p$  at the end of month  $t-1$ , and  $\text{RS}_{p,f,t-1}$  is the revenue obtained by the platform  $p$  from each pound individuals invest in fund  $f$  through the platform at time  $t-1$ . The other lagged control variables in vector  $\mathbf{Z}$  include the fund age, the natural logarithm of the fund's size, the volatility of monthly fund returns, fund turnover, the total net fees and platform charges ratio for the fund, indicator variables for Morningstar five star-rated funds, Morningstar Analysts' gold-rated funds, and Morningstar Analysts' gold-, silver-, or bronze-rated funds, performance percentiles and a full set of investment style by year indicator variables (not reported). Performance percentiles are calculated using funds returns in excess of Morningstar chosen benchmarks over the previous one and three years. Different regressions are estimated for Additions and Deletions and for the full sample as well as for the period before and after the implementation of RDR for new investments by each platform. z-scores based on standard errors clustered at the mutual fund level are included in parenthesis. The second part of the table displays model-implied average marginal effects for the two variables of interest: Affiliation and Platform Revenue from the Fund. Significance levels are denoted by \*, \*\*, and \*\*\*, which correspond to the 10%, 5%, and 1% levels, respectively.

	Additions			Deletions		
	All	Pre-RDR	Post-RDR	All	Pre-RDR	Post-RDR
Affiliated	1.15 (2.87)***	0.75 (1.40)	2.95 (3.96)***	-0.57 (-1.17)	0.19 (0.37)	-2.47 (-2.14)**
Platform Revenue from Fund	1.92 (4.68)***	2.32 (5.79)***		0.27 (0.43)	-0.41 (-0.55)	
Fund Age	-0.01 (-1.05)	-0.01 (-0.63)	-0.08 (-2.29)**	-0.00 (-0.22)	0.00 (0.05)	-0.02 (-1.11)
Log (Fund Size)	0.29 (4.32)***	0.27 (3.83)***	0.36 (1.81)*	0.10 (0.98)	0.24 (1.63)	-0.23 (-1.36)
Return Std. Dev.	16.33 (1.83)*	18.37 (2.02)**	-40.02 (-0.88)	3.45 (0.61)	2.49 (0.33)	-8.72 (-0.69)
Turnover	-0.14 (-1.64)	-0.22 (-2.00)**	0.27 (1.65)*	0.07 (0.68)	0.23 (2.07)**	-0.45 (-1.67)*
Total Fees and Charges Ratio	-0.99 (-2.47)**	-1.37 (-3.11)***	0.25 (0.18)	-0.08 (-0.20)	0.11 (0.19)	0.10 (0.20)
Morningstar 5 Star	1.27 (5.05)***	1.30 (4.91)***	1.06 (1.40)	-0.13 (-0.60)	0.08 (0.30)	-0.37 (-0.87)
Morningstar Gold	-0.15 (-0.35)	-0.25 (-0.53)	0.67 (0.58)	-0.33 (-0.96)	-0.19 (-0.50)	-0.59 (-0.85)
Morningstar G., S., and B.	0.43 (1.90)*	0.46 (1.96)**	0.93 (1.01)	-0.52 (-2.27)**	-0.76 (-2.58)***	-0.11 (-0.25)
Prior 1-Yr. Perf.	-0.54 (-1.32)	-0.37 (-0.83)	-2.48 (-2.57)**	-0.62 (-2.07)**	-0.37 (-1.06)	-1.98 (-3.09)***
Prior 3-Yr. Perf.	0.31 (0.63)	0.19 (0.36)	1.03 (0.79)	-0.93 (-2.67)***	-1.69 (-3.82)***	0.98 (1.41)
<b>Average Marginal Effects</b>						
Affiliated	0.0020	0.0015	0.0032	-0.0088	0.0035	-0.0290
Platform Revenue from Fund	0.0019	0.0031	-	0.0052	-0.0068	-
Pseudo-R <sup>2</sup>	0.14	0.14	0.17	0.07	0.07	0.13
Investment Style by Year Indicators	Yes	Yes	Yes	Yes	Yes	Yes
Observations	100,474	66,090	34,017	8,308	5,895	2,354



**Table 6: Regressions of Asset Flows on Past Mutual Fund Recommendations**

This table reports the results of panel regressions of monthly platform specific GBP and percentage asset flows on past fund recommendations and interactions of this variable with other variables of interest. GBP flows are expressed in millions of GB pounds. Percentage flows are computed as the ratio of platform specific pound flows to total assets under management at the end of the previous year. Each column represents a separate regression. All regressions include a set of lagged control variables: the fund age, the fund size (the natural logarithm of the fund's size in the relative flow regressions), the volatility of monthly fund returns, fund turnover, the total expense ratio for the fund, indicator variables for Morningstar five star-rated funds, Morningstar Analysts' gold-rated funds (previously elite), and Morningstar Analysts' gold-, silver-, or bronze-rated funds (previously elite or superior), performance percentiles and indicator variables for calendar years (not reported) and platforms-individual fund absorbing fixed effects. Performance percentiles are calculated over the previous one and three years based on funds in the same Morningstar category. Results are presented for the full sample period as well as for the period before and after the implementation of RDR for new investments by each platform. t-statistics based on standard errors clustered at the mutual fund level are included in parentheses. Significance levels are denoted by \*, \*\*, and \*\*\*, which correspond to the 10%, 5%, and 1% levels, respectively.

	All				Pre-RDR				Post-RDR			
	GBP Flows		Percentage Flows		GBP Flows		Percentage Flows		GBP Flows		Percentage Flows	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Recommendation List	0.86 (5.13)***	0.80 (3.93)***	0.16 (5.42)***	0.14 (2.63)***	0.75 (3.88)***	1.14 (4.20)***	0.11 (3.16)***	0.10 (1.40)	0.25 (1.52)	0.31 (1.83)*	0.06 (1.91)*	0.08 (2.71)***
Rec. List × Affiliated		-0.85 (-3.69)***		-0.21 (-3.34)***		-0.65 (-2.37)**		-0.05 (-0.84)		-0.85 (-3.18)***		-0.27 (-1.72)*
Rec. List × Platform Revenue from Fund		0.16 (0.57)		0.06 (0.93)		-0.51 (-1.46)		0.01 (0.17)				
Platform Revenue from Fund	0.03 (0.85)	0.02 (0.72)	0.07 (1.07)	0.07 (1.03)	0.11 (2.38)**	0.14 (3.23)***	0.03 (1.00)	0.03 (0.99)				
Fund Age	-0.01 (-2.06)**	-0.01 (-2.05)**	0.00 (0.81)	0.00 (0.83)	-0.01 (-1.37)	-0.01 (-1.33)	-0.00 (-0.69)	-0.00 (-0.69)	0.01 (0.96)	0.01 (1.00)	-0.01 (-1.82)*	-0.01 (-1.79)*
Fund Size	-0.00 (-0.75)	-0.00 (-0.73)	-0.09 (-2.22)**	-0.09 (-2.21)**	-0.00 (-0.19)	-0.00 (-0.21)	-0.03 (-0.79)	-0.03 (-0.79)	0.00 (-2.24)**	0.00 (-2.23)**	-0.22 (-3.00)***	-0.22 (-3.00)***
Return Std. Dev.	-1.09 (-1.79)*	-1.13 (-1.86)*	-0.19 (-0.70)	-0.20 (-0.74)	-1.68 (-2.64)***	-1.71 (-2.67)***	-0.40 (-1.45)	-0.40 (-1.46)	-1.61 (-1.95)*	-1.63 (-1.97)**	-1.90 (-1.89)*	-1.91 (-1.90)*
Turnover	0.00 (0.02)	0.00 (0.05)	-0.01 (-0.98)	-0.01 (-0.98)	-0.00 (-0.30)	-0.00 (-0.37)	0.00 (0.17)	0.00 (0.17)	-0.02 (-1.17)	-0.02 (-1.30)	-0.07 (-2.01)**	-0.07 (-2.05)**
Total Expense Ratio	-0.01 (-0.26)	-0.01 (-0.27)	-0.04 (-0.94)	-0.04 (-0.96)	-0.11 (-2.52)**	-0.10 (-2.15)**	-0.04 (-1.23)	-0.04 (-1.22)	-0.10 (-1.99)**	-0.10 (-2.03)**	-0.00 (-0.07)	-0.00 (-0.09)
Morningstar 5 Star	0.07 (2.74)***	0.07 (2.71)***	0.02 (1.22)	0.02 (1.19)	0.03 (0.95)	0.03 (0.92)	0.01 (0.57)	0.01 (0.56)	0.04 (1.35)	0.04 (1.34)	0.02 (1.86)*	0.02 (1.85)*
Morningstar Gold	-0.15 (-0.63)	-0.16 (-0.65)	-0.02 (-0.66)	-0.02 (-0.71)	-0.27 (-0.72)	-0.27 (-0.71)	-0.03 (-0.63)	-0.03 (-0.63)	0.13 (0.62)	0.12 (0.61)	0.01 (0.90)	0.01 (0.85)
Morningstar G., S., and B.	0.02 (0.63)	0.02 (0.63)	0.01 (0.76)	0.01 (0.76)	0.04 (0.99)	0.04 (0.94)	-0.00 (-0.05)	-0.00 (-0.06)	-0.06 (-1.33)	-0.06 (-1.43)	-0.00 (-0.24)	-0.01 (-0.32)
Prior 1-Yr. Perf.	0.13 (3.83)***	0.13 (3.83)***	0.01 (0.51)	0.01 (0.51)	0.12 (3.35)***	0.12 (3.30)***	0.02 (0.65)	0.02 (0.64)	0.16 (4.54)***	0.16 (4.58)***	0.02 (0.83)	0.02 (0.87)
Prior 3-Yr. Perf.	0.10 (2.70)***	0.10 (2.68)***	0.13 (1.87)*	0.13 (1.86)*	0.08 (2.04)**	0.09 (2.12)**	0.10 (1.37)	0.10 (1.37)	-0.15 (-1.45)	-0.15 (-1.47)	0.04 (0.88)	0.04 (0.87)
Year and Platform-Fund Absorbing FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.03	0.03	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01
Observations	107,459	107,459	95,896	95,896	72,089	72,089	64,353	64,353	35,405	35,405	31,560	31,560

**Table 7: Performance of Recommended and Non-Recommended Mutual Funds**

Panel A of this table shows the performance of mutual funds that are listed as recommended by the platforms in our study. It also shows the performance of mutual funds not recommended in these lists, and the difference in performance between recommended and non-recommended mutual funds (for the full as well as the Pre- and Post- RDR samples). Performance is measured using returns in excess of benchmarks selected by Morningstar as well as alphas from a model that uses Morningstar category benchmarks as factors and expressed in % per year. Within category comparisons are made by pairing recommended funds with non-recommended mutual funds classified in the same (level 2) Morningstar category. Results are separately shown assuming mutual funds are held only for the period they are recommended as well as for five years starting each listing month (or until the end of our sample period). Panel B separately shows the performance (one factor alphas within category comparison) of mutual funds that are listed as recommended by platforms and Morningstar, by platforms but not by Morningstar, and by Morningstar but not by platforms. Panel C shows, for each of the three categories of funds mentioned above, the percentage of funds affiliated with the platform and the pre-RDR average revenue obtained by the platforms from each pound individuals invest in these funds. These statistics are compared to the same statistics for funds in the same Morningstar category but not recommended. The t-statistics in the Panels A and B, where we use portfolio methodologies, are based on standard errors, robust to conditional heteroscedasticity and serial correlation of up to two lags as in Newey and West (1987), and are reported in parentheses. The t-statistics in Panel C, where we use panel methods, are based on standard errors clustered at the fund level. \*\*\*, \*\*, \* denote statistical significance at 1%, 5%, and 10% levels, respectively.

<b>A) Platform Recommendations</b>						
	Holding Period for as long as Listed			Five-year Holding Period		
	Avg. Excess Ret. over Benchmark	Avg. Excess Ret. over Benchmark - Within Category Comparison	One Factor Alphas - Within Category Comparison	Avg. Excess Ret. over Benchmark	Avg. Excess Ret. over Benchmark - Within Category Comparison	One Factor Alphas - Within Category Comparison
Recommended Mutual Funds	0.08% (0.11)	0.06% (0.08)	0.58% (0.61)	-0.01% (-0.02)	-0.03% (-0.03)	0.45% (0.50)
Non-Recommended Mutual Funds	-0.86% (-1.35)	-0.54% (-0.81)	-0.22% (-0.28)	-0.84% (-1.32)	-0.51% (-0.76)	-0.18% (-0.22)
Recommended minus Non-Recommended (All)	0.94% (3.75)***	0.60% (2.88)***	0.80% (3.49)***	0.83% (4.32)***	0.48% (3.21)***	0.63% (3.56)***
Recommended minus Non-Recommended (Pre-RDR)	0.88% (3.13)***	0.61% (2.44)**	0.85% (3.06)***	0.76% (4.08)***	0.45% (2.95)***	0.59% (3.33)***
Recommended minus Non-Recommended (Post-RDR)	1.29% (2.39)**	0.63% (3.05)***	0.72% (3.11)***	1.11% (2.22)**	0.60% (3.40)***	0.66% (3.22)***

**B) Platform vs. Morningstar Recommendations: Performance**

		Platform and Morningstar Recommended		Platform Recommended but not Morningstar Recommended	Morningstar Recommended but not Platform Recommended	
		Morningstar Gold, Silver or Bronze	Morningstar Gold		Morningstar Gold, Silver or Bronze	Morningstar Gold
One Factor Alphas: Holding Period for as long as Listed	Recommended Mutual Funds	1.07% (1.26)	1.79% (2.14)**	-0.03% (-0.03)	0.34% (0.45)	0.92% (1.08)
	Non-Recommended Mutual Funds	-0.23% (-0.29)	0.02% (0.02)	-0.37% (-0.46)	-0.35% (-0.45)	-0.44% (-0.49)
	Recommended minus Non-Recommended (All)	1.29% (5.80)***	1.77% (4.30)***	0.34% (0.71)	0.70% (3.25)***	1.36% (2.78)***
	Recommended minus Non-Recommended (Pre-RDR)	1.43% (5.56)***	1.55% (3.54)***	0.25% (0.43)	0.75% (2.97)***	1.51% (2.59)**
	Recommended minus Non-Recommended (Post-RDR)	0.74% (2.16)**	2.77% (2.64)**	0.81% (2.17)**	0.46% (1.79)*	0.72% (1.32)
	Recommended Mutual Funds	1.04% (1.30)	1.47% (1.85)*	-0.46% (-0.43)	0.33% (0.44)	1.15% (1.38)
One Factor Alphas: Five-year Holding Period	Non-Recommended Mutual Funds	-0.17% (-0.21)	0.26% (0.30)	-0.30% (-0.38)	-0.51% (-0.67)	-0.37% (-0.46)
	Recommended minus Non-Recommended Mutual Funds	1.21% (5.70)***	1.21% (3.49)***	-0.16% (-0.43)	0.84% (4.47)***	1.52% (3.71)***
	Recommended minus Non-Recommended (Pre-RDR)	1.37% (5.62)***	1.20% (2.94)***	-0.29% (-0.63)	0.93% (4.24)***	1.64% (3.36)***
	Recommended minus Non-Recommended (Post-RDR)	0.66% (2.09)**	2.67% (2.63)**	0.87% (3.08)***	0.45% (1.72)*	0.57% (0.97)

**C) Platform vs. Morningstar Recommendations: Revenue from Funds and Affiliation Status**

		Platform and Morningstar Recommended		Platform Recommended but not Morningstar Recommended	Morningstar Recommended but not Platform Recommended	
		Morningstar Gold, Silver or Bronze	Morningstar Gold		Morningstar Gold, Silver or Bronze	Morningstar Gold
Platform Revenue from Fund (in %)	Recommended Mutual Funds	0.64 (66.88)***	0.63 (33.98)***	0.64 (58.39)***	0.68 (76.61)***	0.68 (21.70)***
	Non-Recommended Mutual Funds	0.60 (65.86)***	0.61 (46.45)***	0.56 (54.34)***	0.64 (116.46)***	0.64 (44.02)***
	Recommended minus Non-Recommended	0.04 (3.97)***	0.02 (1.22)	0.09 (8.41)***	0.03 (4.40)***	0.03 (1.23)
	Recommended Mutual Funds	2.30 (2.53)**	0.44 (1.01)	5.44 (3.90)***	2.27 (4.84)***	1.94 (1.34)
Affiliated (in %)	Non-Recommended Mutual Funds	1.09 (7.29)***	1.14 (5.16)***	1.66 (5.38)***	2.35 (11.64)***	2.05 (4.00)***
	Recommended minus Non-Recommended	1.21 (1.39)	-0.70 (-1.36)	3.78 (2.89)***	-0.08 (-0.17)	-0.11 (-0.07)

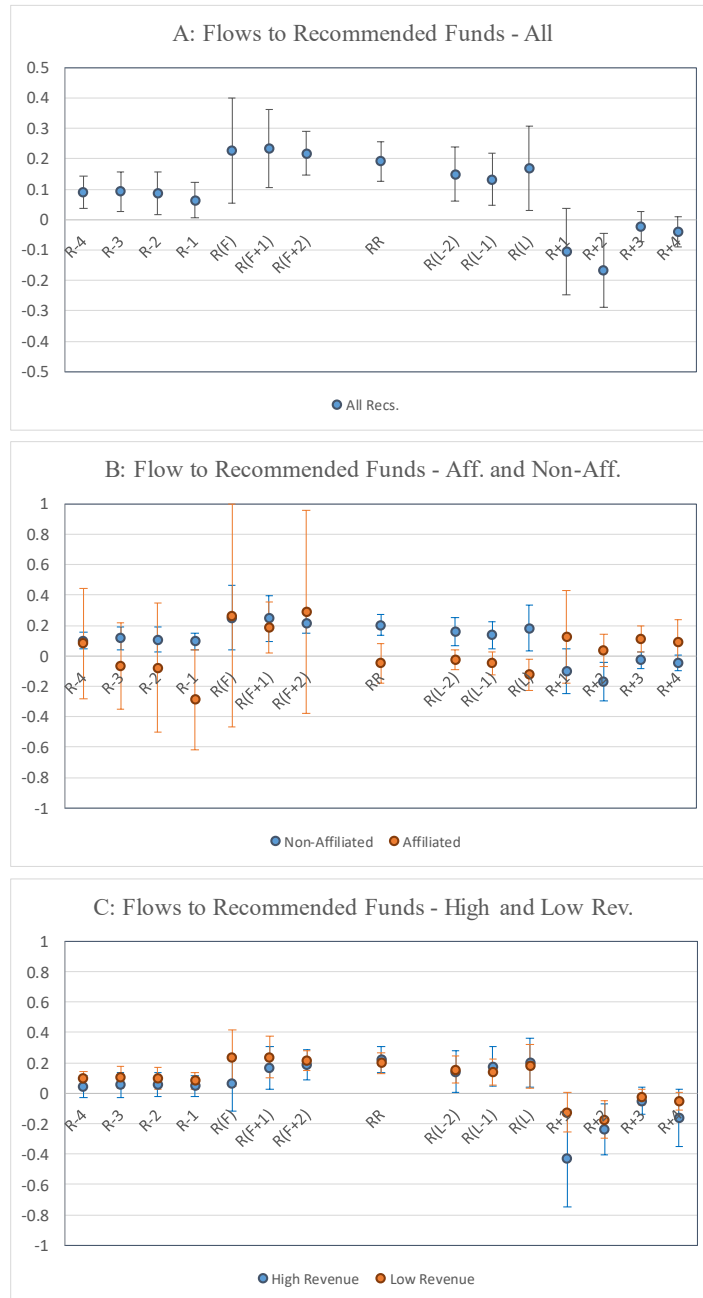
**Table 8: Changes in Fund Fees and Charges and Platform Revenue from Funds following RDR**

This table shows the average change in the cost of mutual funds to platform investors (Fees and Charges) and revenues obtained by platforms from investments (Platform Revenue from Funds) following the implementation of RDR. Fees and Charges are computed using information on platform specific charges and rebates (Platform Specific) and include direct payments to platforms after RDR. The first row in the table shows this difference computed using all funds offered in the platforms. The second row shows the difference computed using only mutual funds offered in platforms both before and after the implementation of RDR (i.e., a direct comparison of fees before and after RDR for the same funds). The third row shows the difference in Fees and Charges between funds that were only offered in platforms after RDR and funds that were only offered in platforms before RDR. The differences in the first and third rows, where funds before and after RDR may differ in terms of asset class and Morningstar category, are also reported using fixed effects for each of these classifications. For reference, the last column of the Table shows the differences in Fees and Charges (Average) for all mutual funds in the sample (whether they are offered in the platforms or not). For this last calculation, Fees and Charges are computed excluding rebates and loads and adding an average platform charge to clean shares after RDR. *p*-values for the differences are reported in square brackets and are based on standard errors clustered at the fund level. Significance levels for tests of the difference in means are denoted by \*, \*\*, and \*\*\*, which correspond to the 10%, 5%, and 1% levels, respectively.

	Funds in Platform			All Funds
	Fees and Charges (Platform Specific) (i)	Platform Revenue from Fund (ii)	Difference (i) - (ii)	Fees and Charges (Average) (iii)
A) All funds vs. all funds	-0.33	-0.18	-0.15	-0.17
	[<0.00]***	[<0.00]***	[<0.00]***	[<0.00]***
Within asset class	-0.33	-0.18		
	[<0.00]***	[<0.00]***		
Within Morningstar Category	-0.33	-0.18		
	[<0.00]***	[<0.00]***		
B) Same funds after RDR vs. before RDR	-0.26	-0.16	-0.10	-0.11
	[<0.00]***	[<0.00]***	[<0.00]***	[<0.00]***
C) Funds only available after RDR vs. funds only available before RDR	-0.55	-0.23	-0.32	-0.37
	[<0.00]***	[<0.00]***	[<0.00]***	[<0.00]***
Within asset class	-0.56	-0.22		
	[<0.00]***	[<0.00]***		
Within Morningstar Category	-0.63	-0.23		
	[<0.00]***	[<0.00]***		
Difference: (B) - (C)	0.29	0.07		
	[<0.00]***	[<0.00]***		

**Figure 1: Fund Flows in Response to Platform Recommendations**

This figure plots the marginal effect of receiving a platform recommendation on fund flows. Marginal effects are computed using a regression specification similar to that of equation (2) for percentage flows but including, in addition to all the variables included in that equation, a set of leads and lags for the start and end of the recommendation as well as interactions of these leads and lags with fund affiliation and platform revenue obtained from the fund (for Figures B and C). The marginal effects of receiving a platform recommendation, for the first three months of the recommendation,  $R(F)$  to  $R(F+2)$ , the last three months  $R(L-2)$  to  $R(L)$ , and the rest of the recommendation period,  $RR$ , as well as the effect of being about to receive a recommendation,  $R-4$  to  $R-1$ , and being dropped from the recommendation list,  $R+1$  to  $R+4$ , are computed: A) at the means of all explanatory variables; B) at the mean of all explanatory variables except affiliation which is evaluated at 0 (Non-Affiliated) and 1 (Affiliated); and C) at the mean of all explanatory variables except Platform revenue from funds which is evaluated at 1.025 (High revenue) and 0.6 (Low revenue). The figure shows point estimates of these marginal effects as well as 95% confidence bands.



**Figure 2: Fund Fees and Charges and Platform Revenue from Funds over Time**

Figure A shows the evolution over time of Fees and Charges alternatively computed using information on platform specific charges and rebates (Platform Specific) or average platform charges excluding rebates and loads (Average). It also shows the evolution over time of the yearly revenue (as a ratio) obtained by platforms from mutual fund held through the platform. Figure B shows the evolution over time of fund Fees and Charges (Funds in Platform, All Funds) computed using average platform charges excluding rebates and loads. In all cases Fees and Charges and Platform Revenue ratios are year-end numbers. The pre-RDR period is 2006-2013 whereas the post-RDR period (for new investments) is 2014-2015.

