Why is There So Much Side-by-Side Management in the ETF Industry?

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Abstract

As of 2018, around 60% of individual ETF managers manage mutual funds in a "side-by-side" arrangement, most of which are active mutual funds. Mutual fund managers with institutional clients but exposed to strong ETF competition are most likely to adopt such dual roles. Side-by-side initiations lead to discretionary institutional outflows from mutual funds and contemporaneous inflows in the manager's ETFs. These results are driven by institutional clients with likely stronger relationships with the manager. Side-by-side ETFs charge higher expenses than competing ETFs suggesting that exploiting manager-client loyalty allows mutual fund firms to soften and manage the rise of ETFs.

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The rise of exchange traded funds (ETFs) is a disruptive force in global money management. According to the 2020 ICI Factbook, Total Net Assets (TNA) of global ETFs had grown to $6.3 trillion by 2019. According to the same publication, a large proportion of this growth seems to have come at the expense of traditional mutual funds. For example, domestic US equity mutual funds have registered cumulative outflows of $1.7 trillion over the period 2010 to 2019 with almost matching inflows to domestic US equity ETFs and index funds. This tectonic shift can be expected to have major implications for money management and financial markets in general.

In this paper, we focus on how the rise of ETFs affects the career trajectories of active open-end mutual fund (OEF) managers. We posit that these fund managers (and the firms they work for) are particularly exposed to flow pressure from rising ETF competition and that this competitive threat will affect how firms employ their existing mutual fund managers. Specifically, we speculate that some traditional OEF fund managers play an important role in the strategies of mutual fund firms to meet and address the competitive threat from ETFs: mutual fund managers with strong client relationships may help firms preserve firm-level TNA if those client relationships allow the fund managers to "direct" mutual fund TNA at risk of withdrawal towards its own ETFs, thereby mitigating the competitive threat that ETFs pose to traditional mutual fund firms.

Several observations motivate our hypothesis. First, we notice a remarkable shift in the occupational scope of the typical ETF fund manager over our sample period. While about 70% of individual ETF fund managers were managing exclusively ETFs in the 2000s, we witness a shift towards side-by-side ("SbS") management over the sample period. By the end of our sample period in 2018, about 60% of all individual ETF fund managers manage both open-end mutual funds and ETFs side-by-side, out of which about 40% are transitioning towards ETFs from a background of managing predominantly active mutual funds with the remaining 20% transitioning towards ETFs from a background of managing predominantly passive index mutual funds. A priori, it is not clear why we should expect so

much side-by-side management in the ETF industry, not least because we expect significant differences between the job requirements of an active OEF versus an ETF fund manager: the former performs active portfolio management while the latter primarily replicates a benchmark. In addition, there are important institutional differences in how ETFs are managed and traded relative to OEF products which could give rise to more differences in job requirements for ETF versus OEF managers. However, if client relationships constitute an important part of the human capital of some traditional OEF fund managers, firms may seek to re-deploy such fund managers in the face of the competitive threat from ETFs.

Second, over 70% of the ETFs managed by such SbS managers are in fact launched in the quarter (or shortly after) in which the mutual fund manager begins the SbS arrangement. In other words, SbS arrangements do not seem driven by mutual fund managers taking over roles at existing ETFs but rather by mutual fund managers playing an important role in the firms' transition towards a new ETF product portfolio.

Third, prior literature establishes the important role of trust and loyalty for portfolio allocations. Gennaioli, Shleifer, and Vishny (2015) propose a theory in which investors delegate funds based on trust. Empirical studies by Cohen (2009), Kostovetsky (2016), Gurun, Stoffman, and Yonker (2018) and Gurun, Stoffman, and Yonker (2021) confirm the importance of trust and loyalty in portfolio choice and flows in different settings (retirement accounts, mutual funds, or investment advisory relationships). If so, mutual fund firms may seek to exploit the loyalty of some of their customers to meet the competitive threat that ETFs pose to their traditional products, giving a potentially important role to those traditional OEF fund managers with strong client relationships.

We test our hypothesis in a global sample of open-end mutual fund and ETF managers from the Morningstar Direct database over the 2000 to 2018 sample period. Our analysis covers 1,864 individual ETF managers and 50,347 individual OEF managers with an overlapping 1,175 "SbS managers" who at some point manage ETFs and OEFs in parallel.

A key element in our empirical analysis is the identification of OEF managers with

a priori possible client relationships. We posit that OEF managers with exposure to institutional clients are prime candidates as such managers are more likely to have formed professional relationships with (some) clients via e.g., direct client interactions. In contrast, we do not expect strong client relationships for OEF managers who manage primarily retail share classes, because such managers have little to no contact with their small and dispersed retail investors. We therefore expect exposure to institutional clients to be a key determinant for an OEF manager to become a SbS ETF manager.

We document several main results. First, we examine the determinants that are associated with an active mutual fund manager transitioning to a SbS role. We find revenue from institutional share classes to be the strongest predictor that determines if an OEF manager becomes a SbS ETF manager: for each additional $1 million in institutional revenue, the probability that the OEF manager starts a SbS arrangement increases by 67% relative to the unconditional mean.[1] In contrast, neither the mangers' retail revenue nor her past performance or flows predict a transition towards a SbS role, substantiating that (a) firms prioritize OEF managers with possibly important client relationships to transition to such dual roles and (b) that the observed transitions are not a response to poor managerial performance or realized outflows.

Building on this first result, we find that among the OEF managers with high institutional revenue, those that are exposed to strong ETF competition experience the highest probability of transitioning to a dual SbS role. We define several measures of "ETF Pressure" that an OEF manager might face (all based on the universe of ETFs that are benchmarked to the same indices as the managers OEFs) and show that strong ETF competition most imminently affects OEF managers with strong institutional client exposure to assume dual SbS roles. We interpret this result as first evidence that firms re-deploy

[1] A managers' institutional (retail) revenue is defined as the product of institutional (retail) TNA multiplied by the respective share class expense ratio. Our argument for this variable builds on Berk and Van Binsbergen (2015) who argue that value added is the relevant metric to evaluate a manager from an investor's perspective. In that case, manager revenue is the part of value added extracted by the firm and should therefore be an important determinant to evaluate the manager from the firm's perspective. We discuss this argument in more detail in Section 1.

not only those mutual fund managers with strong client relationships but especially those whose TNA is most "at risk" from competing ETF products (i.e., whose TNA the firm is most likely to lose to competing ETF providers).

To substantiate this conjecture, our second set of tests examines if the initiation of SbS arrangements leads to discretionary outflows in the managers mutual funds and discretionary inflows in the same managers new ETFs. We indeed find a significant drop in institutional (but not retail) OEF flows for SbS managers in the quarters immediately following the manager's transition. Discretionary institutional outflows amount to 4% of institutional TNA per quarter. This result is robust to controlling for many known determinants of mutual fund flows as well as a comparison to a control group of otherwise similar mutual fund managers without SbS roles. The drop in institutional flows is only detectable after the manager assumes the SbS role, not in the periods before that, confirming again that it is not realized outflows that lead to SbS assignments.

We then test if some of these institutional mutual fund outflows likely flow back into the manager's ETFs. First, among SbS managers, we estimate a negative correlation between a manager's contemporaneous institutional mutual fund flows and her ETF flows, again controlling for many determinants of mutual fund and ETF flows. Our estimates suggest that for every 1% institutional outflows in a manager's mutual funds, there are an additional 0.10% ETF inflows in the same managers ETFs. We again find no correlation between the SbS manager's retail mutual fund flows and her ETF flows. Second, we find that SbS managers with above-median institutional revenues in their mutual funds prior to the SbS arrangements attract, on average, 8% higher ETF flows per quarter relative to a control group of matching ETF managers who started their ETF careers in the same quarter, who work for firms of similar total TNA, and whose ETFs have similar expense ratios. Both tests suggest that SbS managers have an important impact on the portfolio allocations of at least some institutional clients and the flow patterns we document point to the role these SbS managers play in preserving TNA at the firm level.

To better identify this proposition, our third and final set of tests changes focus and directly examines the portfolio allocations of the institutional clients of those SbS managers. We identify the SbS managers' institutional clients by searching for institutions in the FactSet Ownership database that report holdings of the SbS manager's mutual funds prior to the initiation of the managers' SbS arrangements (i.e., holdings of "fund of funds"). We show that these institutional clients significantly reduce their holdings in the SbS manager's mutual funds in the half-year in which the SbS arrangement is initiated relative to positions in other mutual funds that are held at the same time. Moreover, these clients also have a significantly higher propensity to report a position in the SbS managers' ETF in the period following the SbS initiation compared to positions in ETFs of the same matching ETF managers we have employed in the prior flow tests. Finally, both results are concentrated among "large" and "close" institutional clients who we respectively define as clients who had large TNA allocations to the SbS managers mutual funds or clients located in the same city as the SbS manager. A priori, we except stronger client relationships with large and close clients and our results confirm that especially those clients show the largest propensity to change their portfolio allocations from a SbS manager's mutual fund to her new ETFs around the SbS initiation events.

In the remaining part of the paper, we examine follow-up questions and possible alternative interpretations. First, we move beyond an analysis of quantities (i.e., flows) and examine related aspects of firm strategies to meet rising ETF competition. For example, we find that firms also engage in product differentiation as their collection of new ETFs is tilted towards ETFs with different investment objectives as well as newly emerging "active ETFs". Second, we investigate the pricing of SbS ETFs and find their annual expenses to be on average 3 basis points (bps) higher compared to competing ETFs that track the same benchmarks. This expense premium is most pronounced for "active ETFs" where it amounts to 5 bps or about 8% of the annual expense ratio, suggesting that exploiting client loyalty not only allows firms to preserve TNA at the firm level but also to soften the

impact of ETF competition on prices. Third, we examine if our findings are possibly driven by agency conflicts documented in past literature rather than manager-client loyalty. We directly test for negative performance effects of SbS arrangements on other funds overseen by the same manager or by possible quid-pro-quo behavior where the SbS manager directly invests in the funds of her clients. Overall, we find no evidence that would point to agency conflicts between the manager and some clients to drive our main findings.

We contribute to three strands of the asset management literature. First, a growing literature examines how the rise of ETFs is impacting financial markets. This literature has frequently focussed on the impact of ETFs on stock prices, volatility (e.g., Ben-David, Franzoni, and Moussawi (2018)), price informativesness (e.g., Israeli, Lee, and Sridharan (2017), Bhattacharya and O'Hara (2018)), comovement (Da and Shive (2018)), or liquidity (Saglam, Tuzun, and Wermers (2019), Karmaziene and Sokolovski (2019)). A related literature examines how the rise of ETFs affects the active asset management industry on expenses or activeness (e.g., Sun (2021), Cremers, Ferreira, Matos, and Starks (2016)). We are aware of only two contemporaneous studies that examine how the rise of ETFs affects the careers of mutual fund managers. Del Guercio, Genc, and Tran (2020) examine how the growth of passive fund managers lags the growth in the number of ETFs, which has resulted in what looks like a high workload and a surge in revenue per manager in the ETF industry. Aiken, Sherrill, and Upton (2019) examine a sample of 123 mutual fund manages that manage mutual fund and active ETFs in parallel and argue that such SbS arrangements are driven by underperforming mutual fund managers who seek to attract new clients. In contrast, our analysis of the global universe of ETF managers indicates that SbS arrangements are part of a broader firm strategy to manage the competitive threat from ETFs and to exploit manager-client relationships to retain existing clients and to help the firms' transition to a new product portfolio. In that sense, we contribute to the literature that examines the role of firms in assigning fund managers to their most productive use (e.g., Fang, Kempf, and Trapp (2014), Zambrana and Zapatero (2021)).

Second, we contribute to the growing literature on loyalty and trust in money management (e.g., Gennaioli, Shleifer, and Vishny (2015), Cohen (2009), Kostovetsky (2016), Gurun, Stoffman, and Yonker (2018), Gurun, Stoffman, and Yonker (2021)). However, these studies link their findings mostly to the behavior of retail investors whereas our findings document the importance of client loyalty in the context of institutional relationships. It is also unique to our study to show that exploiting manager-client loyalty is part of a firm strategy to respond to a competitive threat (the rise of ETFs), underlining the importance of relationships even among sophisticated institutional investors.

Third, we contribute to a broader literature on SbS management. This literature has frequently examined potential conflicts of interest that can arise in such arrangements, especially as some fund managers (e.g., mutual fund managers) venture to manager other fund types (e.g., hedge funds). While Nohel, Wang, and Zheng (2010) find no evidence that such SbS arrangements are prone to conflicts of interest, Chen and Chen (2009) as well as Del Guercio, Genc, and Tran (2018) uncover instances where such conflicts of interests do arise, depending on the direction of the SbS arrangement or the presence of performance-based compensation in some funds but not others. We add a new motivation to SbS arrangements in that we postulate that such arrangements are specifically set up to exploit professional relationships of fund manager in an effort to manage and preserve firm TNA. As such, the determinants that predict a transition to a SbS role with ETFs are different from the ones that past literature has identified as predicting a transition to a SbS role with hedge funds (Deuskar, Pollet, Wang, and Zheng (2011)).

At the firm level, several studies suggest that such SbS arrangements are associated with differential performance across different fund types: Cici, Gibson, and Moussawi (2010) document such performance differences in firms that manage mutual and hedge funds in parallel, Chen, Hong, Jiang, and Kubik (2013) and Chuprinin, Massa, and Schumacher (2015) document such performance difference between inhouse and outsourced managed mutual funds. A related literature on "multi-tasking" reports declining fund performance

when fund manages are assigned additional tasks (Agarwal, Ma, and Mullally (2018)). Chen, Chen, Hwang, and Yu (2020) also document declining mutual fund performance when firms start to launch ETFs. In contrast, we find no evidence of declining mutual fund performance either prior or following the SbS initiations and no evidence that realized flows predict a manager's transition towards an SbS role, substantiating that SbS arrangements are not directly linked to manager performance or flows but instead a forward-looking response to the changes in the competitive threat from ETFs.

The paper proceeds as follows. We describe the data, main variables, and hypotheis in Section 1. Section 2 presents our first set of tests on the determinants that are associated with a mutual fund managers' transition to a SbS role. Section 3 examines flow responses around SbS initiation events and Section 4 examines changes in portfolio allocations of institutional clients around those same events. Section 5 presents additional tests and discussion of alternative interpretations of our results. Section 6 concludes.

1 Hypothesis, Data and Main Variables

1.1 Hypothesis and Testable Predictions

Our main hypothesis states that firms re-assign mutual fund managers with (a) professional client relationships but (b) strong exposure to ETF competition to manage the firms' ETFs in an effort to preserve TNA at the firm level. As such, our hypothesis links the rise of SbS arrangement between OEFs and ETFs to a forward-looking firm strategy: rising ETF competition puts the firms' mutual fund assets "at risk" of withdrawal as clients become inclined to reallocate their more expensive mutual fund holdings away towards cheaper ETF alternatives.

We hypothesize that institutional mutual fund assets might be particularly prone to withdrawal as institutional clients are known to be more fee (and performance) sensitive (Evans and Fahlenbrach (2012)). In such an environment, mutual fund firms will respond

to the risk of facing large withdrawals and will seek ways to manage that risk at the firm level. One important tool in that respect might be the professional relationships some of their mutual fund managers have. If some institutional clients have close relationships with their mutual fund managers, it may allow these fund managers to "direct" mutual fund TNA at risk of withdrawal towards the firms' own ETFs. This hypothesis is based on the established literature on the importance of loyalty and trust for portfolio choice as well as the newly established descriptive evidence on the extent of SbS arrangements in the ETF industry introduced in the introduction.

This reasoning translates into the following testable preditions.

1. At the manager level, we expect transitions to a SbS role to be predictable by the managers' exposure to institutional clients and the extent of ETF competition her mutual funds face.

2. At the manager level, we expect SbS initiations to lead to predictable flow patterns between the manager's mutual funds and ETFs. Specifically, as SbS managers seek to "direct" institutional mutual fund TNA that was "at risk" of being withdrawn, we expect discretionary outflows from institutional (but not retail) mutual fund share classes and contemporaneous discretionary inflows into the managers' ETFs.

3. At the institutional client level, we expect these flow patterns to be reflected in a higher propensity to (a) reduce a position in a SbS mutual fund and (b) initiate a popsition in a SbS ETF around the SbS initiation event. We expect both changes in portfolio allocations to be pronounced for institutional clients with likely stronger relationship with the SbS manager.

We now describe how we map these predictions to our data and define the key variables for our empirical tests.

1.2 Sample and Data

Our primary data source is the Morningstar Direct database. From this database, we first obtain all funds from two different sub-databases within Morningstar Direct: we obtain all mutual funds including their characteristics, benchmarks, and manager information from the global OEF database and we obtain all exchange traded funds including their characteristics, benchmarks, and manager information from the global ETF database. The sample period for all our data starts in 2000 and ends in 2018.

We apply a few filters to both universes. As we ultimately focus on manager career trajectories, we only include mutual funds and ETFs with non-missing manager information. That means we exclude all funds with missing manager information or in case of team-managed funds, where the manager information only states "team managed" without disclosing the actual managers that form part of the management team.

As Ibert, Kaniel, Van Nieuwerburgh, and Vestman (2018), we remove money market funds but otherwise keep all other investment objectives. As such, our sample includes funds with diverse investment objectives including equity funds, fixed income funds, and others. We also keep index mutual funds and classify a mutual fund as a "index mutual fund" based on the respective Morningstar indicator or if the fund names contain one of the substrings "index", "idx", "indx", "ETF", "iShares", or "S&P500" as identified by Pástor, Stambaugh, and Taylor (2015). For each open-end mutual fund, we also identify if the fund has an institutional share class using the corresponding Morningstar indicator and we treat all other share classes as retail share classes. For each fund, we then download share class level information for TNA, expenses, returns before expenses, its broad asset class categorization (the variable "Broad Category Group"), its Morningstar style classification (the variable "Global Category"), the identifier of the firm and the fund complex (the variable "Firm Name ID" and "Branding Name ID"), as well as individual manager information.

We complement this data with the FactSet ownership database to examine institution-

level portfolio holdings in mutual funds and ETFs. From the FactSet database, we obtain the management company for institutions, as well as the geographical location information of the management company. We match institutions (e.g., funds, or funds of funds) and securities (e.g., OEFs and ETFs) in FactSet to the corresponding funds in Morningstar Direct using either a linking table provided by FactSet or the following order of priority whenever possible: ISIN, CUSIP, ticker, and name.

1.3 Individual Manager Classification

Central to our empirical approach is an identification of side-by-side management arrangements between mutual funds and ETFs. For this, we need to identify overlap in individual fund managers between the ETF and open-end databases in Morningstar Direct. We proceed in two broad steps. First, we identify all individual fund managers in the OEF and ETF databases separately. Second, we search for overlapping fund managers between the two databases. We describe both steps in detail.

In a first step, we establish the population of individual OEF and ETF managers separately. Historical manager information in Morningstar is associated with a fund and includes, for each fund, its manager names as well as start and end dates for each manager managing the fund. However, it is well known that many fund managers "multi-task" because they manage several funds at the same time (e.g., Agarwal, Ma, and Mullally (2018)). Historically, Morningstar maintained a separate database on individual fund managers that would assign a unique identifier to each manager and provide a link to the fund databases. We are able to obtain these unique manager identifiers up until the point when they were discontinued in 2015. Given our sample period, these identifiers already identify about 78% of all mutual fund managers in the open-end database, allowing us to build a manager's collection of funds s/he is associated with at any point.

For the remaining 22% of OEF managers and the entire database of ETF managers without a unique Morningstar manager ID, we first assign individuals with the same name

the same ID and then complement and verify this with Morningstar firm information these managers are associated with through time via the funds they manage. 20% OEF managers and 93% ETF managers are unique in the sense that the manager's name is either exclusively associated with funds of only one Morningstar firm over the entire period, or when the manager's name is associated with several Morningstar firms, the appearance is in consecutive, non-overlapping time periods suggesting that the manager changed firms.

In a second step, we identify overlap in the individual mutual fund and ETF manager populations. Using management company information, the start and end date for each manager-fund pair, we classify a manager as a Side-by-Side (SbS) manager if she appears in both the OEF and ETF manager population with the same name and working for the same firm at the same point in time. For managers that have the same names but work for different employers in different point of time, we manually verify whether these managers perform a career switch from managing only mutual funds to only ETFs or vice versa, by browsing the fund prospectuses and professional bios whenever available.

While the identification of SbS arrangements involves manual checking of manager identities, we believe that measurement error is likely (a) small overall and (b) stacking the cards against us. First, most individual managers are still identified by the Morningstar manager ID variable, so our manual procedure is only applied to a fraction of the manager population. Second, our manual procedure likely overstates the number of individual managers because our main identification is based on names, which may vary regarding the inclusion of middle names or not, as well as variations of name abbreviations. However, it is possible that we mistakenly treat 2 different individual managers with the exact same name as the same individual, thus overstating the true extent of SbS management. To minimize this possibility, we exclude managers with the number of OEFs or ETFs under management above the 99 percentiles of the universe throughout our analysis and perform a robustness test by excluding managers that are associated with multiple Morningstar firms in overlapping periods. The results do not change.

Overall, out of the 1,864 individual ETF managers we identify, we find that 1,175 are acting in a SbS role at some point, 106 are performing a complete switch from managing exclusively mutual to managing exclusively ETFs or vice versa, while 689 are only managing ETFs in our data throughout.

1.4 Main Variables

Most variables we employ are defined following standard practice in the literature and we provide a full list of variable definitions in the Appendix Table A.1. We limit this section to the description of the main variables that are central to testing our main hypothesis.

For each manager, we define several manager level characteristics. For all OEF managers, we define the manager's revenue contribution to the firm from either institutional or retail TNA as follows: we compute the revenue per share class s for all mutual funds of manager m in period t as the product of share class TNA times share class expense ratio during the period. We designate a share class as an institutional share class if Morningstar classifies it as such and treat it as a retail share class otherwise. A manager's OEF institutional revenue is then defined as:

$$Institutional\,Revenue_{mt} = \log(1 + \sum_{s=Inst.} Share\,Class\,Revenue_{smt}) \tag{1}$$

and likewise for retail revenue where we sum across all retail share classes managed by manager m in period t. In case a manager's fund is team-managed, we pro-rate all share class TNA equally to all managers.

We postulate that a mutual fund manager's revenue contribution from institutional share classes to the firm is a key determinant for a possible transition to a SbS role. First, a manager's revenue contribution in general should be a key determinant in how the manager is evaluated by the firm as it aggregates both quantity (i.e., TNA) and price (i.e., expenses) information. Indeed, it is a direct dollar measure of the portion of the manager's value-added (Berk and Van Binsbergen (2015)) that is appropriated by the firm. If value added

is an important metric to evaluate a manager from an investor perspective, then manager revenue is the counterpart to evaluate a manager from a firms' perspective. Furthermore, Ibert, Kaniel, Van Nieuwerburgh, and Vestman (2018) show that manager compensation is tightly linked to manager revenue, further corroborating our conjecture.

Second, overall manager revenue is readily decomposed into manager revenue from institutional versus retail clients based on the share class designations from Morningstar. As described, we expect mutual fund managers with significant institutional share class exposure to have stronger client relationships a priori compared to mutual fund managers of predominantly retail TNA as fund managers are much more likely to directly interact with institutional clients compared to retail clients. Empirically, we put substantial emphasis on this distinction because it allows us to implement falsification tests that sharpen our identification: from a firms' perspective, two fund managers with equal overall revenue contribution might be equally valuable but under our hypothesis, if one of those managers creates revenues from clients with whom she has a professional relationship and the other one from anonymous retail clients, only the manager with client relationships will be allocated to a dual SbS role if the purpose is preserve TNA at the firm level.

Third, our focus on managers with institutional clients is also of particular interest in the context of rising ETF competition because we expect institutional mutual fund TNA to be more "at risk" of withdrawel compared to retail TNA everything else equal. We base this expectation on Evans and Fahlenbrach (2012) who show that institutional flows are more fee and performance sensitive compared to retail flows. As such, and in an overall environment of rising ETF competition that is known to put pressure on mutual fund fees,[2] we again expect firms to prioritize mutual fund managers with institutional clients to transition to dual SbS roles.

Beyond manager revenue, we construct several manager level control variables by aggregating across the manager's individual funds. $OEF\,1\text{-}Year\,Performance_{mt}$ is defined

[2]For example, see the discussion of ICI Research Perspective on the trends in the expenses and fees of mutual funds, issued in March, 2021.

as the TNA-weighted average style-adjusted fund monthly returns over the last 12 months across all mutual funds of manager m, and similarly for manager m's $OEF\ Lagged\ Flows_{mt}$ or $OEF\ Tracking\ Error_{mt}$. $OEF\ Experience_{mt}$ is the logarithm of the number of years since the first date in the Morningstar database when the manager starts managing active OEFs. All these variables, including their counterparts for the ETFs of manager m, are defined in the Appendix Table A.1.

The next group of variables measures a manager's exposure to rising ETF competition. We label this variable $ETF\ Pressure_{mt}$ and define three versions of it based on (1) the total ETF TNA ($Agg\ ETF\ TNA$), (2) the total number of ETFs ($\#\ of\ ETF$), or (3) the average expense ratio across all ETFs ($Avg.\ ETF\ Expense$). In all three measures, we benchmark the ETFs to the same investment styles as the mutual funds of manager m, and exclude the ETFs offered by the manager's firm to better capture the ETF competitive pressure from the industry. We first measure these alternate versions of $ETF\ Pressure$ for every investment style and then form the TNA weighted average for each manager across all mutual funds the manager is managing in period t in each style to arrive at a manager level measure of $ETF\ Pressure_{mt}$. For the versions based on ETF TNA or the number of ETFs, we transform the final measure by adding 1 and taking the natural logarithm. For these two versions, higher values of $ETF\ Pressure_{mt}$ indicate more ETF pressure, but for the version based on ETF expenses, we interpret that lower ETF expenses correspond to more competitive ETF pressure for the mutual funds of manager m.

1.5 Descriptive Statistics

We start our examination with a description of the ETF manager population. Panel A of Figure 1 displays the growth of individual ETF managers we have in our data. Consistent with the strong overall growth in ETF TNA, the number of individual ETF managers grows substantially from less than 10 at the end of 2000 to more than 1,000 individual managers at the end of our sample in 2018.

In Panel B of Figure 1, we decompose the ETF manager population every year into "ETF only" managers and "Side-by-Side" managers. We emphasize that we only investigate SbS management between ETFs and open-end funds and we label an ETF manager as an "ETF only" manager in a year if s/he does not manage open-end funds in parallel, recognizing that the manager could manager other fund types that we do not observe. That issue aside, the first observation we make in Panel B of Figure 1 is that the relative contribution of "ETF only" managers steadily declines over the sample period from around 70% in the early 2000s to around 40% in 2018. Correspondingly, the contribution of SbS managers grows strongly – from about 30% in the early 2000s to about 60% in 2018.

In the same panel, we further decompose the population of SbS ETF managers into 2 mutually exclusive groups: we label a manager "SbS active OEF" if more than 50% of the mutual fund TNA of the manager is contributed by "active" (i.e., non-index) mutual funds. Likewise, we label a manager "SbS index OEF" if more than 50% of the mutual fund TNA of the manager is contributed by passive index mutual funds. Panel B of Figure 1 clearly shows that the growth in SbS ETF managers is driven by "SbS active OEF" managers: the red bars, while virtually absent in the early 2000s, grow to 40% in 2018 while the green bars that measure "SbS index OEF" managers fluctuate around 30% in the early sample years and decline towards 20% at the end of the sample. This first inspection of the data indicates that the growth in SbS management in the ETF industry is driven by SbS arrangements of ETFs and active mutual funds, which is why we center most of our subsequent analysis on these SbS arrangements between active mutual funds and ETFs. At the same time, we use the population of passive OEF managers (i.e., managers of index mutual funds) as a control group for additional falsification tests.

In Table 1, we present additional summary statistics of the full population of active OEF managers including OEF managers of all categories (i.e., Equity, Fixed Income, and others). The sheer size of this population (48,866 managers)[3] relative to the population of ETF managers (1,864 managers) indicates that as an active OEF manager, it is still

[3]The remaining 1,481 OEF managers are passive index fund OEF managers.

rare to begin a SbS arrangement – the unconditional sample probability of an active OEF manager beginning an SbS arrangement is about 0.06% per quarter. Beyond that, we find that the typical active OEF manager generates most of her revenue from retail TNA (on average, $1.8 million per quarter) versus institutional TNA (on average, $0.3 million per quarter). In the whole population, funds of the average OEF manager charge 1.4% in annual expenses and are still registering average moderate inflows over the sample period (but moderate outflows for the median manager), a result we attribute to the growth of fixed income funds as we find outflows for the average equity fund in the later part of the sample (unreported). The summary statistics also indicate that the average OEF manager is facing significant competition from ETFs. According to our different measures for "ETF Pressure", the average OEF manager faces competition from about 63 ETFs in the same investment objectives as her OEFs that manage about $48 billion in ETF TNA and charge about 47 basis points per year, i.e., that are substantially cheaper than her OEFs.

2 Which Mutual Fund Managers Start Side-by-Side Arrangements?

2.1 Baseline Result

We test our first empirical prediction with an analysis of the determinants that are associated with the start of a SbS arrangement for active mutual fund managers (i.e., for the entire population of mutual fund managers that manage more than 50% of their TNA in non-index OEFs).[4] Specifically, we estimate linear probability models to predict a switch of an active OEF manager towards a SbS role with ETFs. These linear probability models

[4]We exclude managers with the number of active OEFs under management above the 99 percentiles of the universe, as well as managers with less than $5 million of manager OEF TNA.

take the following form:

$$\begin{aligned} Start\,SbS_{mt} = \alpha_{jct} + \beta_1 Institutional\,Revenue_{mt-1} \\ + \beta_2 Retail\,Revenue_{mt-1} + \delta X_{mt-1} + \varepsilon_{mt} \end{aligned} \tag{2}$$

where $Start\,SbS_{mt}$ is an indicator equal to 1 if manager m begins a SbS arrangement in quarter t or 0 if the manager continues to only manage open-end mutual funds. Our main coefficient of interest in this baseline specification is β_1 as we postulate that managers with a high instiutional revenue (i.e., from clients with whom they are more likely to have professional relationships) are more likely to assume SbS role because these relationships may be important means to preserve firm TNA by directing mutual fund TNA at risk of being withdrawn towards its own ETFs.

As an important control, we include $Retail\,Revenue_{mt-1}$ in the specification because we expect that it is not revenue contribution of the manager per se that would lead to a SbS role but only institutional revenue. In fact, two mutual fund managers with the same revenue contribution may be equally valuable to the firm a priori but if one of those generates her revenue from institutional clients and the other from retail clients, the two managers may be different in their ability to preserve firm TNA in the face of ETF competition. Indeed, this control also helps us rule out that firms simply prioritize managers of large mutual funds to transition to SbS roles.

Furthermore, and following Deuskar, Pollet, Wang, and Zheng (2011), we include additional determinants in the vector X_{mt-1} that might explain manager m's switch towards a SbS arrangement. These include measures of the manager's past performance and past flows to understand if any switch is directly related to poor performance or realized outflows. We view especially these two variables as important controls as they constitute alternative metrics based on which the firm might re-assign its managers to alternative tasks. We also include measures of the managers overall OEF experience, the managers tracking error (to capture potential closet indexing), as well as overall firm size. We fur-

ther augment the specification with several alternate fixed effects, all summarized in the vector α_{jct}. These include fixed effects for year-quarter t, firm j, investment category c, or combinations thereof.[5]

We report the results of this first test in Table 2. Column 1 starts with a specification including manager level variables, as well as category, time and firm fixed effects. We find that the coefficient on $Institutional\,Revenue_{mt-1}$ is positive and highly significant as expected – mutual fund managers who generate more revenue from institutional TNA are more likely to start a SbS arrangement. In contrast, a manager's revenue from retail TNA shows no association with the beginning of a SbS role for the manager, providing first evidence that it is not revenue generation per se that leads to SbS role for active mutual fund managers but only revenue generation from institutional clients.

The remaining columns saturate the specification with more stringent fixed effects. Column 2 and 3 adds firm $\times$ time fixed effects and firm $\times$ time $\times$ category fixed effects respectively to examine which managers within a particular firm–period or firm–category–period are transitioning towards a SbS role. Across all, a manager's institutional revenue remains a robust predictor of the manager adopting a SbS role. This also confirms that SbS roles are not confined to funds in specific investment categories or a phenomenon of selected time periods or the practices of some firms. Furthermore, across all columns, a manager's retail revenue does not predict a manger's transition to a SbS role.

The effect of $Institutional\,Revenue_{mt-1}$ on $Start\,SbS_{mt}$ is not only statistically but also economically highly significant. By the estimates in column 3, for a manager who generates US \$0.5 million (US \$1 million) in institutional revenue, the probability that the manager starts a SbS arrangement in a given quarter increases by about 0.025% (0.043%) in the next quarter.[6] While this may seem small, we iterate that our specifications only predict the switch of a manager from the vey large incumbent population of OEF managers

[5]Following Ibert, Kaniel, Van Nieuwerburgh, and Vestman (2018), we classify funds into the following investment categories: Equity, Fixed Income, Allocation, Alternatives and Rest and define the investment category for a given manager as the one with the largest manager TNA.

[6]The effect is computed from the estimate in column 3 as $Ln(1 + Institutional\,Revenue_{mt-1}) \times 0.062$.

only to the much smaller population of SbS ETF managers in which these managers are ultimately in the majority. As such, and given that in the overall OEF manager population, the probability of a random manager to start a SbS role in any given quarter is only about 0.056%, this is a very meaningful impact. An alternative interpretation is to measure the economic effect by comparing a 1 standard-deviation change in the explanatory variable to the expected change in the outcome variable – this statistic is indicated at the bottom of each column and it amounts to about 40% in column 3, which is economically very large.

We further point out that the two competing measures to predict a manager's transition towards a SbS role show no statistical association in our tests: both $OEF\ Lagged\ Flows_{mt-1}$ and $OEF\ 1\text{-}Year\ Performance_{mt-1}$ are statistically and economically insignificant throughout, suggesting that a manager's move towards a SbS role is not predicted by poor past performance or realized past outflows. In the Internet Appendix IA.A, we include additional measures for past performance, as well as their interactions with $Institutional\ Revenue$, and detect neither economically nor statistically significant associations between past performance and the SbS transition. We interpret these two insignificant coefficients as further support of our hypothesis that the move towards SbS arrangements is driven by anticipated rather than realized outflows and in that sense, a defensive and forward-looking strategy. We will discuss this piece of evidence further in the Section 5.

We provide robustness tests on this first main result in the Internet Appendix IA.A. We show that our main coefficient of interest is positive and significant if we add more granular investment objective fixed effects, or we add additional manager characteristics that relate to the manager's team structures (e.g., if the manager was mostly managing single- versus team-managed OEFs). We also perform sub-sample tests by excluding e.g., the top 5 ETF providers per country or only focussing on managers with non-zero institutional revenue. Our main result remains intact.

2.2 Interacting with "ETF Pressure"

We continue and augment equation (2) with our measures of $ETF\,Pressure_{mt-1}$ that measure the competitive threat from ETFs manager m is subject to, given the collection of mutual funds s/he manages and the competing ETFs that are available from other firms but that are benchmarked to the same indices. Under our hypothesis, managers with high institutional revenue and subject to rising ETF competition should be particularly prone to transitioning to a SbS role because their TNA is most at risk of being withdrawn as their institutional clients migrate towards more ETF allocations.

We capture this logic by simply interacting a manager's institutional revenue with our three alternative measures of $ETF\,Pressure_{mt-1}$ and present the results in Table 3. We present the most stringent fixed effect specification (the one from Table 2, column 3) and all the other control variables remain the same. We find that across all three measures, the interaction term between $Institutional\,Revenue_{mt-1}$ and $ETF\,Pressure_{mt-1}$ is highly significant and with the expected direction: active mutual fund managers with high institutional revenue and subject to high ETF pressure are most likely to start a SbS role. In terms of economic magnitude, these estimates suggest that exposure to ETF pressure is a significant moderator for an active OEF manager with institutional clients to transition to a SbS role. For example, from the estimates in column 2, an active OEF manager who (hypothetically) faces zero ETF pressure but generates $1 million in institutional revenue would in fact be about 0.11% less likely to transition to a SbS role. However, if that manager experiences a 1 standard deviation increase in ETF pressure, she would be about 0.11% more likely to start a SbS role in the next quarter. Compared to the baseline quarterly transition probability of 0.056%, this is indeed economically meaningful.

In Appendix Table A.2, we repeat the tests presented in Tables 2 and 3 but use the remaining population of passive index fund OEF managers (i.e., those OEF managers with more than 50% of manager TNA coming from index mutual funds). We view this as a useful falsification test as these managers already manage passive products and as such,

should not feel the same competitive pressure from the rise of ETF investing compared to their peers managing active mutual funds. Confirming our conjecture, we find that neither the institutional revenue of those managers nor their exposure to ETF Pressure predicts a passive OEF manager's adoption of a SbS role with ETFs.

In the Internet Appendix IA.A, we interact $ETF\,Pressure_{mt-1}$ with the remaining manager controls but find no effects, suggesting that ETF competition very specifically affects SbS arrangements of managers with institutional clients but not managers with retail clients or managers with e.g., poor past performance and outflows.

3 Flow Responses of Side-by-Side Arrangements

We now turn to the second empirical prediction and examine discretionary outflows from a SbS manager's institutional OEF share classes and contemporaneous inflows in the ETFs of the same manager. In doing so, we are careful in interpreting our results as we are cognizent of the fact that SbS initiations are endogenous events: indeed, our hypothesis states that they are driven by anticipated but not yet realized outflows and predictable by specific manager characteristics.

To improve on identification, we offer several empirical remedies including falsification tests using retail flows instead of institutional flows. We also introduce external control groups of comparable mutual fund managers without SbS arrangements (or comparable ETF managers when investigating ETF flows) and we benchmark the flows of SbS managers around SbS initiations against these control groups in difference-in-difference type tests. In doing so, we follow other studies in the literature that use a matching sample to examine how endogenous firm choices affect fund outcomes.[7] Finally, we test how our results are

[7]Examples include Cooper, Gulen, and Rau (2005) who examine how fund name changes affect fund flows; Nohel, Wang, and Zheng (2010) and Cici, Gibson, and Moussawi (2010) who examine how mutual fund performance changes around side-by-side arrangement with hedge funds, or Evans and Fahlenbrach (2012) who examine how fund characteristics change around the introduction of funds' institutional twins. Similar approaches are implemented in corporate finance studies that examine how endogenous events such as mergers or buyouts affect corporate outcomes. Examples there include Bena and Li (2014), Bernstein and Sheen (2016), or Davis, Haltiwanger, Handley, Jarmin, Lerner, and Miranda (2014).

mediated by what we view as a largely exogenous market development to each mutual fund firm (the rise of ETFs) and we implement within-firm tests to understand if such SbS intiations (and the flow patterns they are associated with) are pronounced for those mutual funds managers that are most exposed to this external competitive threat.

3.1 OEF Flows

We begin and test for discretionary outflows of a manager's institutional share classes around the transition of the manager to a SbS arrangement. To alleviate the endogeneity in these events, for each "SbS event" in which an active mutual fund manager begins a SbS arrangement by managing ETFs in parallel, we construct a control group of matching OEF managers that did not start an SbS role.

For each "treated" SbS OEF manager, we find 5 "control" OEF managers as follows: we first define the pool of plausible control managers as those active OEF managers that (1) belong to the same Morningstar investment style in the same investment category, (2) have the same institutional share class structure (i.e., with or without institutional revenue), (3) and work in firms in the same size decile as the treated manager. Among those, we select the 5 closest managers based on the sum of squared standardized differences of the manager level control variables $Fund\,Size_{mt-1}$, $OEF\,Experience_{mt-1}$, $OEF\,1\text{-}Year\,Performance_{mt-1}$, $OEF\,Expenses_{mt-1}$, and $Firm\,Size_{mt-1}$.[8] The construction of the closeness score is similar to Kostovetsky (2016) and we present the customary tests for equality of means between the treated and control samples in the Internet Appendix IA.B.

We then estimate the following difference-in-difference (DiD) specification:

$$\begin{aligned} OEF\,Flow_{emt} = \alpha_{em} + \alpha_{et} + \beta_1 Treat_{em} \times Post_{et} \\ + \beta_2 Treat_{em} + \beta_3 Post_{et} + \delta X_{mt-1} + \varepsilon_{emt} \end{aligned} \tag{3}$$

[8] We use 5 closest matches to have a more stable control group which is not overly influenced by any one match. The use of the single closest match delivers similar results, see Internet Appendix IA.B.

where e indicates the SbS event, m the different managers that are either from the treated or control samples, and t indicates time. We consider a symmetric two-year event window (i.e., 8 quarters before and after) around each event. The dependent variable is $OEF\,Flow_{emt}$ and we use different versions of it: flows from the managers institutional share classes, retails share classes, or all share classes, $Post_{et}$ and $Treat_{em}$ are indicator variables separating the pre-event and post-event and the treated from the control managers in each event respectively, α_{em} and α_{et} are event $\times$ manager and event $\times$ time fixed effects respectively, and the vector X_{mt-1} includes manager level control variables that may impact future flows.

We present the results in Table 4. Columns 1 and 2 show a strong and significant negative coefficient on the interaction effect on $Treat_{em} \times Post_{et}$ (the level effects are absorbed by the fixed effects) on a managers' institutional flows. In the fully saturated specification in column 2, the estimate suggests that treated managers register 4% lower flows per quarter in their institutional share classes following the transition to a SbS role, relative to the control group and controlling for past manager performance and lagged manager flows, the effect significant at the 1% level.

In columns 3 and 4, we again perform a falsification test to understand if the same effect is detectable for overall manager flows (i.e., institutional and retail flows) and directly for retail flows only. In both columns, we find no evidence of discretionary outflows, confirming that SbS arrangements only affect a manager's institutional flows.

To better understand the timing of the discretionary institutional outflows, we re-estimate equation (3) but use a full suite of interaction terms between the treat indicator and granular quarter-effects to precisely identify when the discretionary outflows occur. We plot the differences in institutional flows between treated and control OEF managers in Figure 2. We find no significant differences between institutional flows of treated and control managers in any quarter prior to the adoption of the SbS role but a discrete and sharp drop in institutional flows for treated managers in the quarter in which the manager

starts the SbS assignment. Institutional flows of treated managers are then markedly lower in all subsequent quarters over the next 2 years.

One concern might be that these flow results are driven by deteriorating fund performance around the adoption of a SbS role. Past studies suggest that this might be the case due to multi-tasking or other reasons (Agarwal, Ma, and Mullally (2018), Chen, Chen, Hwang, and Yu (2020)). Since institutional investors are known to be more sensitive to fund performance (Evans and Fahlenbrach (2012)), they may simply be more responsive to such declining performance compared to retail investors. We address this concern head-on by investigating if OEF fund performance changes around SbS initiations. We present the results in the Appendix Table A.3. We find no changes in OEF fund performance around these events for a variety of fund performance measures (i.e., risk-adjusted returns, value-added), giving no reason to indicate that these flow patterns are the result of declining fund performance. We present additional robustness tests in the Internet Appendix IA.B where we employ alternative methods to select the control group based on propensity score matching or selecting all other managers instead of the 5 closest ones. The results hold.

3.2 ETF Flows

Discretionary outflows of a treated manager's institutional share class are only the first of the two flow predictions that we test. Our hypothesis also predicts that mutual fund outflows should be associated with contemporaneous discretionary ETF inflows of those same managers. We provide two tests in this respect.

We first test for a contemporaneous (negative) correlation between a SbS manager's institutional mutual fund and ETF flows. If SbS arrangements are a firm level effort to preserve firm TNA in the face of ETF competition by exploiting the professional relationships of some mutual fund managers to "direct" TNA from the manager's mutual fund to the manager's ETFs, then we expect a contemporaneous negative correlation between that manager's institutional mutual fund flows and her ETF flows.

We estimate the following panel regressions using the population of SbS managers (i.e., the treated managers from Table 4) over the first 2-years of their ETF tenure:

$$\begin{aligned} ETF\,Flow_{emt} = \alpha_{qt} + \beta_1 OEF\,Institutional\,Flow_{mt} \\ + \beta_2 OEF\,Retail\,Flow_{mt} + \delta X_{mt-1} + \varepsilon_{mt} \end{aligned} \tag{4}$$

where the dependent variable are the manager's quarterly ETF flows and the main explanatory variables of interests are the contemporaneous institutional and retail mutual fund flows of the same manager. The vector X_{mt-1} further includes determinants of both the manager's ETF and mutual fund flows.[9]

We highlight that we focus this test on the post-SbS period only for the simple reason that these mutual fund managers do not have ETFs under management before the SbS event (i.e., there are no ETF flow observations in the pre-SbS periods). In addition, we observe that about 70% of the ETFs that we associate with SbS managers are launched in the same quarter (or shortly after) in which the manager begins the SbS arrangements. This is in itself evidence that the initiation of SbS arrangements is part of a firm level strategy to manage the threat from ETF competition and the firm's effort to transition to ETFs itself. At the same time, this also precludes us from testing if any correlation between manager level ETF and institutional flows changes around the SbS initiations. Furthermore, it also means we are limited in the number of ETF control variables that could determine ETF flows because there is no history to compute e.g., the managers past ETF tracking error or past ETF flows. And given that all SbS managers start their ETF career at those points, their "ETF experience" is co-linear with the event quarter $\times$ time fixed effects α_{qt} that compare ETF flows of SbS managers that started their ETF careers at the same quarter in each time point.

The results are presented in Table 5. Across all columns, we find a negative coefficient

[9]We exclude ETF managers that fall below the bottom decile in manager ETF TNA to avoid that modest dollar flows translate into very large flow numbers due to small manager TNA. Since we focus on the initial 2 years after these managers start their ETF careers, their ETFs are smaller than the average ETF in our sample.

on $OEF\ Institutional\ Flow_{mt}$. Across columns, we saturate the specification with different control variables but find that the estimated coefficient on $OEF\ Institutional\ Flow_{mt}$ does not change much. Importantly, we find no evidence of a contemporaneous correlation between a manager's ETF flows and her retail mutual fund flows in column 3. Interpreting the economic magnitude of these results, our estimate in column 3 suggests that for every 1% institutional outflows in a manager's mutual funds, there are an additional 0.10% additional ETF inflows in the same managers ETFs.

The second test we present compares the flows of active SbS ETF managers to the flows of other ETF managers that began managing ETFs in the same quarter. This test should give us another indication if SbS ETF managers attract more ETF TNA compared to an otherwise similar control group of ETF managers. As before in Table 4, we first select a control group for each treated SbS manager consisting of 5 other ETF managers who start their ETF career in the same quarter as SbS manager m and are closest in terms of firm TNA and average expense ratio across their ETFs. These 3 selection criteria capture what might be important characteristics for manager flows: the control managers have similar "ETF experience" and are subject to the same time effects in aggregate ETF flows because they start their ETF careers at the same time; they work for firms of similar overall size which helps control for firm level factors that could impact flows; and they manage ETFs that are similarly priced to the ones of the treated SbS managers. As in the previous tests, we focus this test on the post-SbS quarters because neither the treated nor the control managers have "pre-SbS" ETF flows that would allow us to estimate a full DiD specification. Instead, we seek to measure if treated SbS managers register stronger ETF flows in the first 2 years of their ETF careers relative to control managers. The specification is as follows:

$$\begin{aligned} ETF\ Flow_{emt} = \alpha_{et} + \beta_1 Treat_{em} \left(\beta_2 Treat_{em,High\ IR} + \beta_3 Treat_{em,Low\ IR}\right) \\ + \delta X_{mt-1} + \varepsilon_{mt} \end{aligned} \tag{5}$$

where $Treat_{em}$ is an indicator equal to 1 if manager m is a treated SbS ETF manager and 0 otherwise. We subsequently break up the treat indicator into 2 mutually exclusive indicators: $Treat_{em,High\,IR}$ equals 1 if manager m is a treated SbS ETF manager with above-median institutional OEF revenue prior to the SbS switch and 0 otherwise, and $Treat_{em,Low\,IR}$ equals 1 if manager m is a treated SbS ETF manager with below-median institutional OEF revenue prior to the SbS switch and 0 otherwise. α_{et} denotes the event $\times$ time fixed effects which compare the ETF flows of treated managers with matched control managers at the same point of time. The vector X_{mt-1} includes manager level ETF control variables that could affect ETF flows.

Table 6 presents the results. Columns 1 simply separates the treated from the control managers via the indicator variable $Treat_{em}$ and it suggests that treated managers register significantly higher ETF flows per quarter compared to control managers as evidenced by the positive and significant coefficient on $Treat_{em}$. In column 2, we separate the treated managers into those with above and those with below median OEF institutional revenue in the quarter prior to the SbS initiation and find that the result is driven by those SbS managers with high institutional revenue prior to their SbS role. Economically, those managers with above median institutional revenue register almost 8% higher ETF flows per quarter on average relative to the control group. In contrast, SbS managers with below-median institutional revenue prior to their SbS role do not generate significantly higher ETF flows than the control group.

Overall, the combined evidence in this section supports the differentiated flow predictions of our hypothesis that SbS arrangements are a firm effort to preserve firm TNA by directing mutual fund TNA at risk of withdrawal because of high ETF competition to the firm's newly launched ETFs by exploiting the professional relationships that mutual fund managers have formed with institutional clients.

4 Client Level Tests

We now turn to the third empirical prediction and change the unit of analysis from the manager level to the institutional client level. We examine if institutional clients rebalance their portfolios away from the SbS manager's mutual funds and towards the SbS managers new ETFs around the SbS initiation events to provide more direct evidence on the importance of client relationships in the adoption of SbS arrangements.

To accomplish this, we first identify institutional clients of SbS managers. We proceed as follows: we use holdings information from the FactSet Ownership database and look for institutional investors that report holdings in the active OEFs of our SbS managers in the 2 years prior to the SbS initiation (i.e., holdings of "fund of funds"). Overall, we identify 3,964 different institutional clients for 468 active OEFs that are affected by a SbS event because their managers assume a SbS role.

Having identified these institutional clients, we collect their semi-annual portfolio holdings for all their reported OEF and ETF holdings (SbS funds and others) – that is, we only focus on portfolio holding changes of positions in funds and do not consider how those institutional clients trade other securities such as e.g., common stocks. As such, we ultimately investigate how institutional clients rebalance their positions in SbS funds relative to other fund holdings. The average institutional fund in our sample has $617 million TNA and 82% of its total portfolio invested in fund positions. The average dollar value of a mutual fund position in those portfolios is $25 million which is large relative to the typical minimum investment requirement of around US $200,000 for the typical mutual fund institutional share class (i.e., these are likely clients of the institutional share classes of our SbS mutual funds, not the retail share classes).

4.1 OEF Holding Changes

As before, we begin with tests on the OEF holdings of these institutional clients. We conduct similar event-study tests but at the institutional client level. Specifically, we estimate the following specification:

$$\begin{aligned} Net\,Purchase_{ieft} = \alpha_{ief} + \alpha_{iet} + \beta_1 Treat_{ef} \times Post_{et} \\ + \beta_2 Post_{et} + \beta_3 Treat_{ef} + \delta X_{ft-1} + \varepsilon_{ieft} \end{aligned} \tag{6}$$

where i indexes the institutions (i.e., the "clients"), e the different SbS initiation events, f the different mutual funds held in the portfolio of the institution i, and t semi-annual time periods. $Post_{et}$ indicates the post-SbS periods, and $Treat_{ef}$ is an indicator equal to 1 if fund f is a treated OEF fund managed by the SbS manager in event e and 0 if it is an OEF managed by other managers. As dependent variable, we use $Net\,Purchase_{ieft}$ that measures the change in portfolio weight of institution i in mutual fund f between periods $t-1$ and t net of price appreciation, following Kacperczyk, Sialm, and Zheng (2005). We further augment the specification with stringent institution $\times$ event $\times$ fund (α_{ief}) and institution $\times$ event $\times$ time (α_{iet}) fixed effects that absorb all time-invariant determinants of how institution i trades fund f over the 4-year event window and all determinants that affect how institution i trades all positions in period t as well as fund-level time-varying control variables for fund f in the vector X_{ft-1}. We draw inference from standard errors clustered by institutions.

We report the results in Table 7, Panel A. The estimates in column 1 only include institution $\times$ event $\times$ time fixed effects (i.e., compare holdings changes within each institutional portfolio at each point in time) and already show a significant negative interaction effect on the $Treat_{ef} \times Post_{et}$ indicator: net purchases of treated SbS mutual funds are 0.25% lower per semi-annual period after the initiation of an SbS arrangement compared to before and other mutual fund holdings. In column 2, we add institution $\times$ event $\times$ fund

fixed effects that allow us to focus on the time-series of how institution i trades its position in SbS fund f and column 3 further adds time-varying controls of fund f that could induce a position change (i.e., the funds past performance, size, lagged flow, etc). Across all, we estimate a significantly higher propensity of institutional client i to sell/reduce its position in SbS fund f after the initiation of the SbS arrangement, consistent with our OEF flow results from Section 3.1.

To illustrate again the timing of the drop in the net purchases, we plot the coefficient estimates of equation (6) for every semi-annual period in the event-window in Figure 3. The estimates show no statistical difference in the position changes of SbS and control funds in any semi-annual period in the 2 years prior to the SbS initiation but a significant negative difference starting precisely in the periods in which the SbS arrangements begin (indicated as period "0" in the figure). The differences remain negative for about 3 semesters (i.e., 1.5 years) and then revert back to 0 (i.e., giving no indication that these clients re-establish their positions at a future date).

In Table 7, Panel B, we supplement equation (6) with 2 different measures that should increase the chance of a professional relationship between institution i and fund f and, as a result, a higher degree of loyalty of institution i to fund f and its management. If so, we would expect a stronger propensity of institutional client i to reduce its position in SbS fund f following the SbS initiation. The first measure $Position\,Size_{ife}$ is simply the average TNA allocation of institution i to fund f over the 2 years prior to SbS initiation – if institution i is a "large client" of fund f, we expect a higher chance that there is a professional relationship between the respective fund managers. The second measure seeks to proxy for client-manager "proximity": $Same\,City_{if}$ is an indicator equal to 1 if institution i and the fund f are managed in the same city and 0 otherwise. This proximity measure is a classical measure of geographic proximity and the impact of geography on professional networks including portfolio choice is supported by past literature (e.g., Pool, Stoffman, and Yonker (2012)). We include both measures via triple-interaction terms and

find that both of them are highly statistically significant: the drop in net purchases is strongest in SbS funds for which institution i is likely a "large" client and in SbS funds that are "close" to institution i in terms of geographical proximity.

In the Internet Appendix IA.C, we conduct robustness tests by including additional fixed effects (fund style $\times$ event $\times$ time or firm $\times$ event $\times$ time) which account for any differences in the fund styles or fund management firms that might explain institutions' allocation decisions. The drop in the net purchase in SbS funds is present regardless of the types of institutions (e.g., OEF or not), and is stronger for institutions with higher portfolio allocation to funds. We find a similar effect if we use the net dollar change instead of net purchase as the dependent variable.

4.2 ETF Holding Changes

As before, we complement these holdings-based tests for ETF positions of the same institutional clients. We seek to establish that the institutional clients of a SbS manager are more likely to begin investing in the manager's ETFs following the initiation of the SbS arrangement. As a control group of other comparable ETFs that these institutional clients might have considered relative to the ETFs of the SbS managers, we select the ETFs managed by the same control group of ETF managers already established in Section 3.2 – these are the ETFs that are similarly priced to the ETFs of SbS managers, that are managed in similarly-sized firms, and that are managed by other ETF managers who started their ETF careers at the same time as the SbS manager.[10] To further ensure that these ETFs are indeed considered by other institutional investors, we only include those control ETFs that at least 1 institution in the FactSet database invests in. We then estimate linear probability models if institutional client i is more likely to report holdings in the SbS ETFs in

[10]In the main analysis, we consider control ETFs managed by the 5 closest matching managers. We report results using the control ETFs managed by the closest matching manager in the Internet Appendix IA.C. Results remain similar.

the post-SbS periods compared to control ETFs. Specifically, we estimate:

$$Invest_{ieft} = \alpha_{iet} + \beta_1 Treat_{ef} + \delta X_{ft-1} + \varepsilon_{ieft} \tag{7}$$

where we include the same ETF control variables as before.

We report the estimates in Table 8. Panel A shows, across specifications, that institutional clients are more likely to invest in a treated SbS ETF compared control ETFs. The estimates in column 3 suggest that the probability to invest is about 1.4% higher per semi-annual period which is large compared to an unconditional probability to invest in any of these ETFs of just 0.2%.

In Panel B of the same table, we again add the same interaction terms that proxy for different dimensions of the possible client-manager relationship as in Table 7, Panel B. We find corresponding effects for the two measures: institutional clients are much more likely to start investing in the ETF of a SbS manager if they used to be a large client in the active mutual fund of the SbS manager of if they are "close" to the SbS manager in terms of geographical proximity. In the Internet Appendix IA.C, we construct alternative samples of control ETFs by matching based on ETF fund investment categories and styles, the half-year when ETFs are launched, firm size and fund expenses. We obtain similar results throughout.

Taken together, these client level tests not only map directly to the manager level flow tests of Section 3, but also identify particular clients with which SbS managers most likely have a professional relationship (i.e., those that are "large" and "close") as the ones most likely to divest from the SbS mutual funds and start investing in the SbS ETFs, consistent with our hypothesis.

5 Discussion and Additional Tests

In this section, we provide extended tests of our main hypotheses and discuss alternative interpretations of our results.

5.1 ETF Offering of Side-by-Side Managers

One related question to our hypothesis asks what kind of ETFs SbS managers oversee. If SbS arrangements are motivated by an effort to preserve firm TNA, then what kind of ETFs are most appealing to a manager's institutional OEF clients and therefore most promising to support the manager's effort to direct TNA from her mutual funds to her newly launched ETFs? On the one hand, one might expect that firms offer the direct passive counterparts to the mutual funds their SbS managers already manage, effectively providing very similar risk-exposure to institutional clients, but at a lower price. On the other hand, such passive substitutes are presumably already offered by other incumbent ETF providers. In fact, our ETF pressure variables aim to measure exactly that. If so, a better strategy to complement the SbS arrangement may be to engage in product differentiation and offer ETFs that are different from the ones offered by other incumbent ETF providers.

We explore this conjecture by measuring the collection of ETFs overseen by SbS managers. We measure the "similarity" of a SbS manager's ETFs to her mutual funds by computing the fraction of her ETFs that Morningstar designates as "active ETFs". Offering emerging "active" rather than more traditional "passive" ETFs indicates that the manager/firm is trying to further differentiate her ETF offerings from existing and established ETF products. We measure it based on the collection of ETFs overseen by each SbS manager in her first quarter, when the SbS arrangement is initiated, to capture the selection of ETFs that the manager immediately offers once the SbS arrangement is formed.

We test this question using the specification introduced in Table 3 but restricting the sample to the cross-section of SbS managers in the quarter when the SbS arrangement is

initiated. We present the results in Table 9. They show that the higher ETF pressure and higher institutional revenue at the time of the SbS initiation, the more differentiated the SbS manager's collection of ETFs in terms of a higher fraction of "active" ETFs.

In the Internet Appendix IA.D, we present results using an alternative measure for product differentiation: the managers fraction of ETFs in different Morningstar investment styles compared to any of her mutual funds, and find similar results. A placebo test also shows no evidence of product differentiation for SbS managers with high retail revenue and exposure to ETF competition, suggesting again that the ETF product portfolio of SbS managers is tailored to appeal to institutional clients and that product differentiation is used as a complementary tool to preserve firm TNA.

5.2 Pricing of Side-by-Side ETFs

Another follow-up question then asks about the pricing of side-by-side ETFs. We investigate if side-by-side arrangements can help soften the competitive pressure on fees and if the loyalty of some institutional clients fruther extends to a willingness to pay higher fees on SbS ETFs compared to other available products. In other words, we ask if SbS ETFs can charge a price premium.

As a first step, we simply compute the differentials in expense ratios of SbS managers between their traditional mutual funds, their ETFs, as well as the competing ETFs that are benchmarked to the same indices. We report those summary statistics in Table 10, Panel A. Average mutual fund expense ratios for SbS ETF managers amount to slightly above 1% in expenses on average (row 1). More relevant to our hypothesis, the average expense ratios of the institutional share classes (in which institutional clients typically invest), amount to 75 basis points per year on average (row 2). In row 3, we compute the expense ratios of the ETFs overseen by those same SbS managers – these amount to about 54 basis points per year, showing that the transition to ETFs entails a significant fee reduction for SbS managers. Decomposing those ETF expenses into the expenses of

active ETFs – which firms tend to offer when ETF pressure is higher as shown in Table 9 – and passive ETFs in rows 4 and 5, we find that, not surprisingly, active ETFs charge higher fees. In the remaining rows 6 to 8, we tabulate the average expense differentials between SbS ETFs and all other ETFs that track the same benchmarks and find that SbS ETFs manage to charge, on average, 3 basis points per year more, suggesting that the loyalty of institutional clients allows SbS managers to soften the impact ETFs have on fee competition. This expense difference is mainly driven by "active" ETFs for which the premium amounts to 5 basis points per year.

In Panel B of Table 10, we test if the managers' institutional revenue is associated with her ETF expense premium. We find that, indeed, SbS managers with higher institutional revenue prior to the SbS initiation charge higher ETF expenses, as well as higher ETF expense premia.

5.3 Alternative Explanations

In this section, we discuss a possible alternative interpretation of our results. It might be that our results are not driven by manager-client loyalty but instead by agency problems in the money management industry (e.g., Ferreira, Matos, and Pires (2018), Gil-Bazo, Hoffmann, and Mayordomo (2020)). In Section 2.1, we have shown that past performance and past flows are not determinants for SbS initiation, which rules out that possibility that underperforming managers might be more likely to start SbS arrangement as a resort to attract new clients.

Another possibility is that there might be tangible performance differences due to preferential treatment within the firms or differential manager effort after the SbS events. In Section 3.1, we show that even though institutional flows decrease for SbS managers after the SbS initiation, we do not find any evidence suggesting that the performance of mutual funds managed by SbS managers deteriorates after the events.

Another dimension along which we might expect agency issues to arise could relate to

potential quid-pro-quo behavior where the funds of SbS managers also invest in the funds of their institutional clients. In other words, one might suspect "cross-holdings" between the funds of SbS managers and those of their institutional clients in which case the flow patterns we document could relate to sustaining a collusive relationship. Therefore, we examine whether SbS managers invest in their institutional client funds and find that on average SbS managers only invest about 0.001% of their TNA directly into the institutional client funds, giving again no reason to suspect that our results are driven by agency conflicts in money management.

6 Concluding Remarks

We document the dramatic rise of side-by-side management in the global ETF industry. As of 2018, about 60% of individual ETF managers manage ETFs and mutual funds in parallel, most of these active mutual funds. Such arrangements are part of a firm level strategy to exploit OEF fund manager's relationships with institutional clients to "direct" mutual fund TNA at risk of withdrawal towards the firms newly launched ETFs and therefore help traditional mutual fund firms soften the rising competitive pressure from ETFs. Our hypothesis is supported by both manager and client level evidence that show the highest probability of OEF managers to transition to a SbS role if the manager generates revenue from institutional TNA and is subject to more ETF competition. SbS initiations are followed by discretionary institutional outflows from the manager's mutual funds and contemporaneous inflows into her ETFs. Client level tests on position changes confirm that these flows are linked to large and close clients of the SbS manager, who are also willing to pay above-market expense ratios for SbS ETFs. Our results shed important light not only on how the rise of ETFs changes the career trajectories and occupational scope of traditional mutual fund managers but also indicate how mutual fund firms use the client relationships of their key employees to transition towards a new product portfolio in the face of the competitive threat that the rise of ETFs poses to their traditional products.

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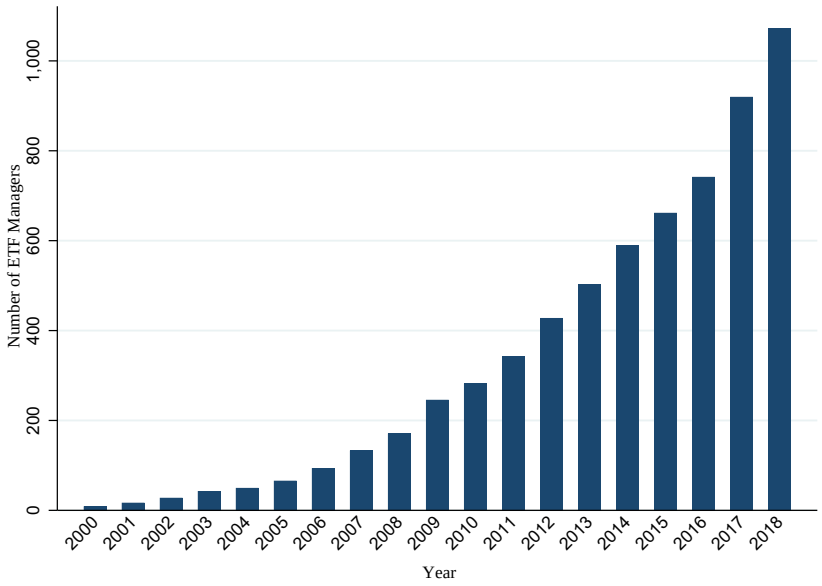
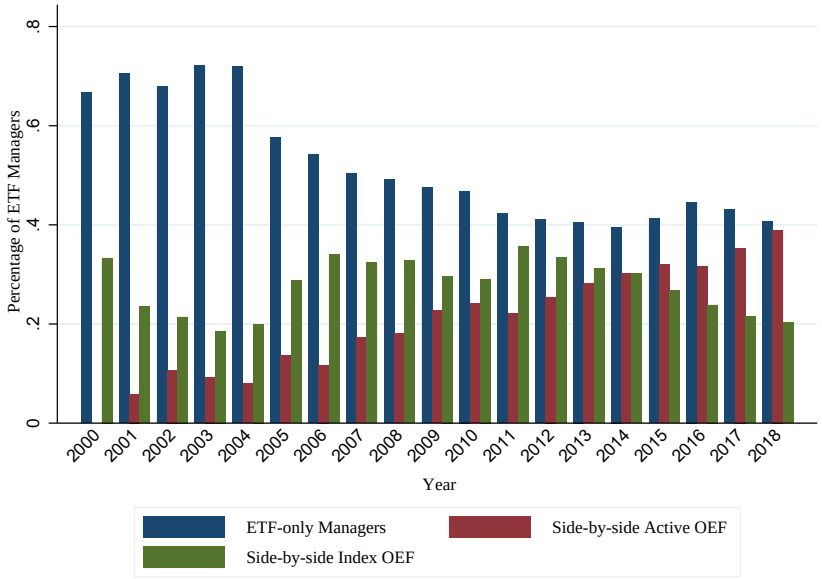


A. Total Number of ETF Managers Over Time



B. Percentage of "ETF-only" and Side-by-Side Managers

Figure 1: **ETF managers and Side-by-Side management over time**

Panel A of this figure displays the total number of individual ETF managers at the end of each year in our data. Panel B of this figure decomposes the ETF manager population into "ETF-only" and "Side-by-Side" ETF managers every year.

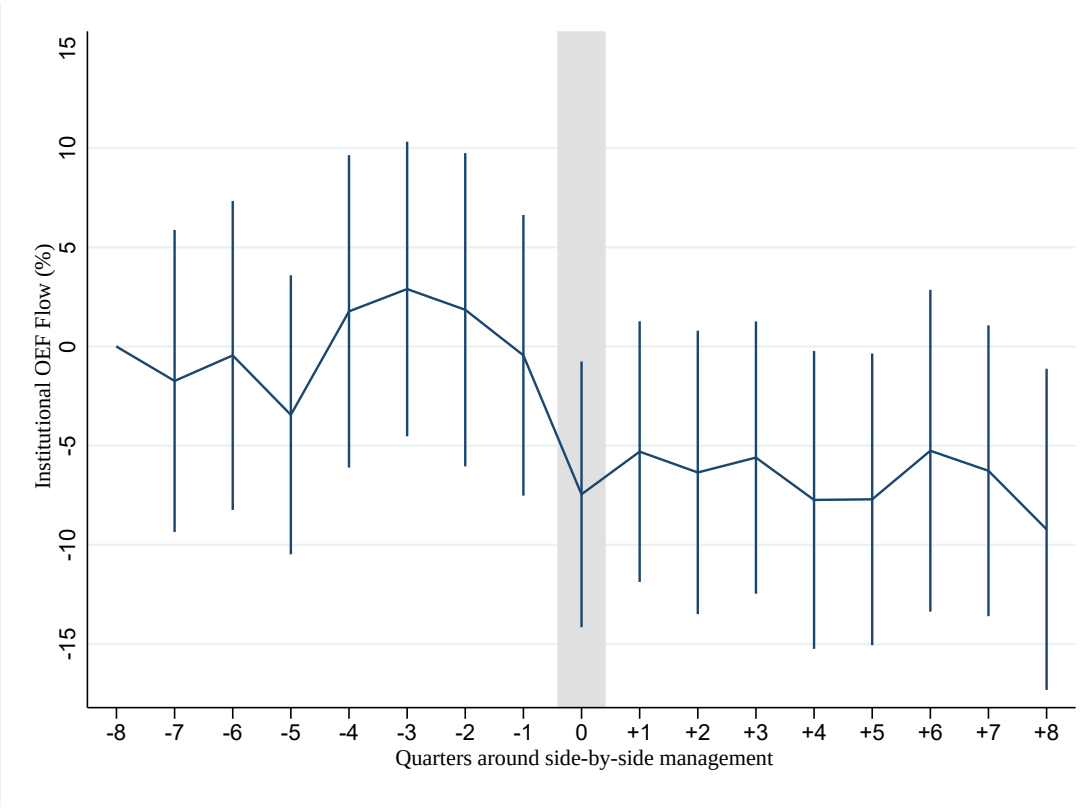


Figure 2: **Institutional OEF Flows around Side-by-Side Events**

This figure plots the difference-in-difference estimates from Table 4 of the response of institutional OEF flows to the adoption of an active OEF manager's Side-by-Side (SbS) for every quarter around the SbS initiation quarter. We include event × manager and event × time fixed effects.

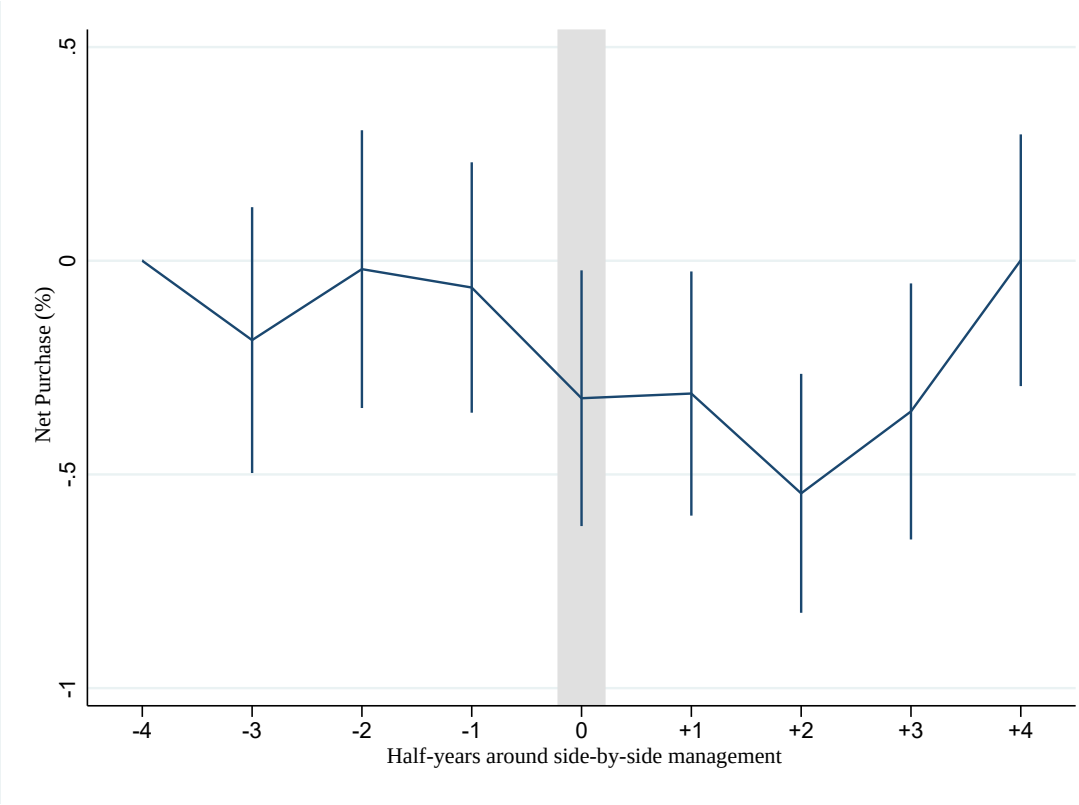


Figure 3: **Changes in OEF holdings by institutional clients around Side-by-Side Events**

This figure plots the difference-in-difference estimates from Table 7 of the response of institutional net purchases of treated SbS funds relative to control funds held by the same institutions around Side-by-Side (SbS) initiations seperately for each half-year period in the event window. We include institution × event × time and institution × event × fund fixed effects.

Table 1: **Summary Statistics**

This table presents summary statistics of main variables for the population of active OEF managers. All variables are defined in Appendix Table A.1.

	Count	Mean	SD	P25	Median	P75
	(1)	(2)	(3)	(4)	(5)	(6)
Main dependent variables						
Start SbS (%)	852,947	0.056	2.36	0.000	0.000	0.000
Institutional Flow (%, p.q.)	438,771	7.412	42.95	-3.819	0.006	6.422
Retail Flow (%, p.q.)	808,449	1.901	19.90	-4.639	-1.026	3.316
Total Flow (%, p.q.)	838,565	1.418	15.98	-4.284	-0.743	3.525
Main independent variables						
Institutional Revenue ($, million p.q.)	874,734	0.309	1.42	0.000	0.000	0.130
Retail Revenue ($, million p.q.)	874,707	1.776	5.49	0.084	0.350	1.335
OEF 1-Year Performance (%, p.m.)	852,990	0.041	0.60	-0.240	0.018	0.295
OEF Lagged Flow (%, p.q.)	864,046	1.889	17.28	-4.243	-0.675	3.732
OEF Tracking Error (%)	822,957	1.565	1.08	0.850	1.298	1.937
Firm TNA ($, billion)	840,549	41.448	118.13	0.887	5.588	32.419
OEF Expense (%, p.a.)	875,116	1.393	0.66	0.975	1.321	1.730
OEF Fund TNA ($, million)	875,116	823.656	2,748.46	44.021	165.038	603.632
OEF Experience (years)	875,116	8.111	6.83	2.843	6.431	11.703
ETF Pressure variables						
# of ETF	863,965	63.224	76.92	9.000	34.000	85.000
Agg. ETF TNA ($, billion)	855,594	48.016	73.09	1.786	17.616	63.326
Avg. ETF Expense (%, p.a.)	796,254	0.468	0.18	0.357	0.454	0.561

Table 2: **Institutional Revenue and Side-by-Side Initiations**

The table reports the estimates of linear probability models that predict the transition of an active OEF manager to a Side-by-Side role, according to equation (2). The dependent variable is *Start SbS*, an indicator equal to 1 if the manager assumes an SbS role in the quarter and 0 if the manager continues managing mutual funds only. All other explanatory variables are as defined in Appendix A.1 and lagged by one quarter. For ease of interpretation, we multiply the estimated coefficients by 100. *, **, and *** denote statistical significance at 10%, 5%, and 1% level computed from standard errors clustered by manager.

	Dependent Variable: Start SbS		
	(1)	(2)	(3)
Institutional Revenue	0.100***	0.065***	0.062***
	(6.02)	(3.66)	(3.09)
Retail Revenue	-0.005	0.003	0.004
	(-1.01)	(0.45)	(0.68)
OEF 1-Year Performance	0.001	-0.002	0.000
	(0.32)	(-0.38)	(0.07)
Lagged OEF Flow	-0.000	0.000	-0.000
	(-0.00)	(0.60)	(-0.30)
OEF Experience	-0.006	-0.001	-0.001
	(-1.59)	(-0.16)	(-0.25)
OEF Tracking Error	-0.004	-0.009**	-0.015***
	(-1.26)	(-2.28)	(-3.46)
Firm Size	-0.001		
	(-0.31)		
Economic Effect (%)	67.00	42.87	39.87
Category fe	Yes	Yes	No
Time fe	Yes	No	No
Firm fe	Yes	No	No
Firm × Time fe	No	Yes	No
Firm × Time × Category fe	No	No	Yes
R^2	0.023	0.237	0.311
N	771,878	734,636	692,524

Table 3: **ETF Pressure and Side-by-Side Initiations**

This table presents estimates of the same liner probability models of Table 2 but modify the specification with additional interaction term between the manager's *Institutional Revenue* and *ETF Pressure*. All other specifications are as in Table 2, column 3. We use the 3 different versions of *ETF Pressure* as indicated in the column headings. *, **, and *** denote statistical significance at 10%, 5%, and 1% level computed from standard errors clustered by manager.

	Dependent Variable: Start SbS		
ETF Pressure measured by	Agg. ETF TNA	# of ETF	Avg. ETF Expense
	(1)	(2)	(3)
Institutional Revenue × ETF Pressure	0.028***	0.058***	-0.528***
	(3.99)	(3.67)	(-4.37)
Institutional Revenue	-0.229***	-0.163***	0.302***
	(-3.64)	(-3.18)	(4.41)
ETF Pressure	0.005***	0.012**	-0.102***
	(2.75)	(2.40)	(-2.86)
Manager Controls	Yes	Yes	Yes
Firm × Time × Category fe	Yes	Yes	Yes
R^2	0.311	0.311	0.314
N	687,595	692,524	647,125

Table 4: **OEF Flows Around Side-by-Side Initiations**

This table presents difference-in-difference estimates of OEF flow responses around Side-by-Side (SbS) initiation events. In particular, we examine a 2-year event window around the quarter when OEF managers begin SbS management, and *Post* is equal to one for the 2 years during the post-event periods (including the event quarter), and zero for the pre-event periods. The sample includes flows to treated SbS OEF managers as well as the closest 5 matching control managers as described in the text. The unit of observations is at the manager–event–quarter level. The use of fixed effects is indicated at the bottom of each column and *, **, and *** denote statistical significance at 10%, 5%, and 1% level computed from standard errors clustered by manager.

Dependent Variable:	Institutional Flow		Total Flow	Retail Flow
	(1)	(2)	(3)	(4)
Treat × Post	-6.758***	-4.011***	-0.417	-0.093
	(-3.87)	(-2.83)	(-0.88)	(-0.15)
Firm Size		1.260	-0.754**	-1.786***
		(0.96)	(-2.04)	(-3.34)
OEF Fund Size		-6.619***	-3.500***	-2.982***
		(-5.84)	(-8.86)	(-7.07)
OEF 1-Year Performance		4.686***	1.807***	2.119***
		(3.90)	(5.02)	(4.68)
OEF Lagged Flow		0.179***	0.138***	0.138***
		(4.82)	(8.46)	(7.24)
OEF Experience		-3.083	-0.502	1.636
		(-0.65)	(-0.39)	(1.01)
OEF Tracking Error		-1.393	0.526	-0.183
		(-1.12)	(1.32)	(-0.34)
OEF Expense		-1.789	-0.570	0.137
		(-0.54)	(-0.46)	(0.09)
Event × Manager fe	Yes	Yes	Yes	Yes
Event × Time fe	Yes	Yes	Yes	Yes
R^2	0.394	0.410	0.472	0.452
N	29,669	29,048	34,675	33,985

Table 5: **Correlation Between ETF and OEF Flows After Side-by-Side Initiations**

This table presents panel estimates that relate ETF flows of Side-by-Side (SbS) managers to contemporaneous institutional and retail OEF flows of those same managers. In particular, We examine a 2-year event window after the quarter when OEF managers begin their ETF career with SbS management. All other explanatory variables are lagged by 1 quarter and include other possible determinants of both ETF and OEF flows. The unit of observations is at the manager–event–quarter level. The use of fixed effects is indicated at the bottom of each column and *, **, and *** denote statistical significance at 10%, 5%, and 1% level computed from standard errors clustered by manager.

	Dependent Variable: ETF Flow		
	(1)	(2)	(3)
Institutional Flow	-0.089***	-0.107***	-0.093**
	(-2.73)	(-2.81)	(-2.55)
Retail Flow			-0.015
			(-0.21)
Firm Size	0.978	0.730	1.056
	(1.26)	(0.80)	(1.16)
ETF Fund Size	-0.042	0.243	0.740
	(-0.05)	(0.30)	(0.88)
ETF Expense	-1.241	7.971	6.577
	(-0.15)	(0.95)	(0.81)
OEF Fund Size		-1.806**	-2.410**
		(-2.03)	(-2.46)
OEF 1-Year Performance		-7.089***	-7.407**
		(-2.63)	(-2.44)
OEF Lagged Flow		-0.083	0.007
		(-0.90)	(0.07)
OEF Experience		0.737	0.530
		(0.39)	(0.29)
OEF Tracking Error		-4.119**	-4.002*
		(-2.06)	(-1.87)
OEF Expense		-14.733**	-15.898**
		(-2.34)	(-2.54)
Event quarter × Time fe	Yes	Yes	Yes
R^2	0.268	0.298	0.310
N	1,338	1,308	1,261

Table 6: **ETF Flow and Institutional Revenue After Side-by-Side Initiations**

This table presents panel regressions to estimate differences in ETF flows for Side-by-Side ETF managers relative to a control group of matching ETF managers as described in the text. In particular, We examine a 2-year event window *after* the quarter when OEF managers begin their ETF career with SbS management. $Treat$ is an indicator equal to one for SbS managers, and 0 for matching managers. For SbS ETF managers, $High\,Institutional\,Revenue$ ($Low\,Institutional\,Revenue$) is an indicator equal to one if the SbS manager has above (below) median OEF $Institutional\,Revenue$ immediately prior to the SbS initiation, and 0 otherwise. All ETF control variables remain the same as in Table 5, column 1. The unit of observations is at the manager–event–quarter level. The use of controls and fixed effects is indicated at the bottom of each column and *, **, and *** denote statistical significance at 10%, 5%, and 1% level computed from standard errors clustered by manager.

	Dependent Variable: ETF Flow		
	(1)	(2)	(3)
Treat	4.762***		
	(2.88)		
Treat × High Institutional Revenue		7.847***	4.000*
		(3.40)	(1.70)
Treat × Low Institutional Revenue		1.870	-0.181
		(0.91)	(-0.08)
ETF Control	No	No	Yes
Event × Time fe	Yes	Yes	Yes
R^2	0.291	0.296	0.281
N	13,973	13,736	12,389

Table 7: **Changes in OEF Holdings by Institutional Clients Around Side-by-Side Initiations**

This table presents difference-in-difference estimates of changes in OEF holdings of institutional clients around Side-by-Side (SbS) initiation events. Institutional clients are identified by their reported holdings of SbS OEFs and the sample includes all institutional clients and all their OEF fund holdings (i.e., the control group includes all fund holdings that are not subject to an SbS initiation). The dependent variable is the institutional clients net purchase of each fund over the previous period and we examine a 2-year event window before and after the period of the SbS initiation. The set of OEF fund control variables remains the same as in Table 4, though constructed at the fund level instead of manager level. Panel A presents the baseline estimates. Specifications in Panel B augment the regression with additional interaction terms that capture if the institution is either a "large" or a "close" client to the fund holdings reported in its portfolio. The unit of observations is at the institution–event–half-year–fund level. The use of controls and fixed effects is indicated at the bottom of each column, and *, **, and *** denote statistical significance at 10%, 5%, and 1% level computed from standard errors clustered by institution.

Panel A: Net Purchases Around Side-by-Side Initiations

	Dependent Variable: Net Purchase		
	(1)	(2)	(3)
Treat × Post	-0.252***	-0.270***	-0.189***
	(-4.92)	(-4.64)	(-3.20)
Firm Size			-0.049
			(-1.13)
Fund Size			-0.884***
			(-19.80)
Fund 1-Year Performance			0.048**
			(2.00)
Fund Lagged Flow			0.008***
			(8.02)
Fund Age			-0.616***
			(-5.24)
Fund Expense			-0.033
			(-0.69)
Fund Tracking Error			-0.013
			(-0.59)
Institution × Event × Time fe	Yes	Yes	Yes
Institution × Event × Fund fe	No	Yes	Yes
R^2	0.168	0.284	0.306
N	1,047,057	1,044,046	871,330

Panel B: Net Purchase and Client Relationships Around Side-by-Side Initiations

	Dependent Variable: Net Purchase		
	(1)	(2)	(3)
Treat × Post × Position Size	-0.146***		-0.126***
	(-6.33)		(-5.30)
Treat × Post × Same City		-0.584***	-0.376***
		(-4.65)	(-2.87)
Treat × Post	0.005	-0.003	0.111
	(0.09)	(-0.04)	(1.59)
OEF Fund Controls	Yes	Yes	Yes
Institution × Event × Time fe	Yes	Yes	Yes
Institution × Event × Fund fe	Yes	Yes	Yes
R^2	0.313	0.306	0.313
N	863,571	870,278	862,529

Table 8: **Probability of Institutional Clients' Investment in SbS ETFs**

The table reports the estimates of linear probability models that predict the establishment of a position in an ETF of a SbS manager by the manager's institutional clients relative to establishing a position in a sample of control ETFs after the SbS initiations. The control ETFs include all ETFs of the same matching control ETF managers introduced in Table 6 that at least 1 institution in the FactSet universe invests in. The dependent variable is an indicator equal to one if the institutional clients have established a position in the given fund, and zero otherwise, and we examine a 2-year event window after the period of the SbS initiation. All ETF control variables remain the same as in Table 5, column 1, though constructed at the fund level instead of manager level. Panel A presents the baseline estimates and specifications in Panel B augment the regression with additional interaction terms that capture if the institution is either a "large" or a "close" OEF client to the SbS manager. For ease of interpretation, we multiply the estimated coefficients by 100. The unit of observations is at the institution–event–half-year–fund level. The use of controls and fixed effects is indicated at the bottom of each column, and *, **, and *** denote statistical significance at 10%, 5%, and 1% level computed from standard errors clustered by institution.

Panel A: Likelihood of Investing in SbS ETF

	Dependent Variable: Invest		
	(1)	(2)	(3)
Treat	1.315***	1.177***	1.337***
	(3.76)	(5.73)	(6.06)
Firm Size			-0.020*
			(-1.69)
Fund Size			0.043***
			(4.19)
Fund Expense			0.039
			(0.70)
Institution × Event × Time fe	No	Yes	Yes
R^2	0.007	0.348	0.216
N	693,500	691,870	592,484

Panel B: Relationship Strength and Likelihood of Investing in SbS ETF

	Dependent Variable: Invest		
	(1)	(2)	(3)
Treat × SbS Position Size	0.713***		0.551***
	(4.29)		(4.22)
Treat × Same City		4.226***	3.103***
		(3.95)	(3.50)
Treat	1.333***	0.575***	0.757***
	(6.09)	(4.63)	(5.18)
ETF Fund Controls	Yes	Yes	Yes
Institution × Event × Time fe	Yes	Yes	Yes
R^2	0.224	0.220	0.227
N	568,500	591,986	568,002

Table 9: **ETF Offerings of Side-by-Side Managers**

This table uses as dependent variable the measure of ETF product differentiation for each SbS manager. In particular, the dependent variable measures the fraction of her ETFs that Morningstar designates as "active" ETFs. Observations are restricted to the quarter of SbS initiation to capture the composition of the first ETF product portfolio of each SbS manager. *Institutional Revenue* and all other OEF controls are as in Table 2, defined based on the one quarter prior to SbS initiations. Standard errors are clutered by time. The use of controls and fixed effects is indicated at the bottom of each column, and *, **, and *** denote statistical significance at 10%, 5%, and 1% level.

	Dependent Variable: % of Active ETF		
ETF Pressure measured by	Industry TNA	# of ETF	Industry Expense
	(1)	(2)	(3)
Institutional Revenue × ETF Pressure	0.054***	0.115***	-0.694**
	(2.78)	(3.58)	(-2.71)
Institutional Revenue	-0.634**	-0.558***	0.227***
	(-2.61)	(-3.18)	(2.78)
ETF Pressure	-0.024	-0.060	0.098
	(-1.20)	(-1.50)	(0.35)
OEF Controls (1-qrt prior to event)	Yes	Yes	Yes
Event quarter × Time fe	Yes	Yes	Yes
R^2	0.405	0.414	0.396
N	335	335	333

Table 10: **Fund Expenses of Side-by-Side Managers**

This table presents results regarding fund expenses. In Panel A, we report the average value of fund expenses for SbS ETF managers. The first row indicates the average OEF expenses and the second row for the average OEF expenses of the institutional share classes before the SbS initiation. The third row indicates the average ETF expenses, with the fourth row and the fifth row decomposing into the ETF expenses of active ETFs and passive ETFs respectively. The sixth row shows the average ETF expense difference relative to the group of ETFs belonging to the same investment style and being active (or passive) as the ETFs under side-by-side management. The last two rows further decompose into the expense difference of active ETFs and passive ETFs respectively. In Panel B, the dependent variable is the ETF expenses of SbS managers in columns 1 to 2, and the ETF expense difference relative to peer ETFs in columns 3 and 4. *Institutional Revenue* and all other OEF controls are the same as in Table 9, and ETF controls are the same as in Table 6, excluding ETF expense from the set of control variables. *, **, and *** denote statistical significance at 10%, 5%, and 1% level computed from standard errors clustered by managers.

Panel A: Simple Averages of Fund Expenses of SbS Managers

	Mean	t-stat
	(1)	(2)
OEF Expense	1.095	(53.69)
OEF Institutional Share Class Expense	0.751	(57.66)
ETF Expense	0.538	(58.94)
Active ETF Expense	0.632	(25.36)
Passive ETF Expense	0.421	(53.74)
ETF Expense Difference	0.027	(3.80)
Active ETF Expense Difference	0.051	(2.91)
Passive ETF Expense Difference	0.019	(3.28)

Panel B: ETF Expense Difference and Institutional Revenue

	ETF Expense		ETF Expense Difference	
	(1)	(2)	(3)	(4)
Institutional Revenue	0.061***	0.077***	0.034**	0.039***
	(4.03)	(4.97)	(2.59)	(2.92)
OEF Controls (1-qrt prior to event)	Yes	Yes	Yes	Yes
ETF Controls	No	Yes	No	Yes
Event quarter × Time fe	Yes	Yes	Yes	Yes
R^2	0.430	0.455	0.366	0.373
N	1,794	1,733	1,743	1,684

Appendix

Table A.1: **Variable Descriptions**

Variable	Description
Main dependent variables	
Start SbS	An indicator variable equal to 1 if mutual fund manager m assumes a side-by-side role of managing ETFs and OEFs in parallel in quarter t, and 0 if the manager manages OEF only.
Institutional Flow	Value-weighted average of funds' institutional flows at the manager level whereas the weights are in proportion to lagged funds' AUM per capita following Berk, Van Binsbergen, and Liu (2017) and Ibert, Kaniel, Van Nieuwerburgh, and Vestman (2018). It is calculated as: $$Inst\,Flow_{mt} = \frac{1}{AUM_{mt-1}} \sum_{f \in \Omega^f_{mt-1}} \frac{AUM_{ft-1}}{N_{ft-1}} Inst\,Flow_{ft},$$ where AUM_{mt} is the manager m's assets under management at quarter t, calculated as: $AUM_{mt} = \sum_{f \in \Omega^f_{mt}} \frac{AUM_{ft}}{N_{ft}}$ following Berk, Van Binsbergen, and Liu (2017). Ω^f_{mt} indicates the set of funds managed by manager m at time t and N_{ft} is the number of managers managing fund f at time t. Following Sialm and Zhang (2020) and Berk, Van Binsbergen, and Liu (2017), we construct fund-level quarterly institutional flows as: $$Inst\,Flow_{ft} = \frac{Inst\,TNA_{ft} - Inst\,TNA_{ft-1} \times (1 + R^{Inst}_{ft})}{Inst\,TNA_{ft-1} \times (1 + R^{Inst}_{ft})},$$ where $Inst\,TNA_{ft}$ denotes the fund's total net assets of institutional share classes at the end of quarter t and R^{Inst}_{ft} denotes the fund's net returns of institutional share classes during the quarter t.
Retail Flow	Value-weighted average of funds' retail flows at the manager level. It is calculated in analogy to *Institutional Flow* variable, while using fund TNA and net returns over retail share classes.
ETF Flow	Value-weighted average of funds' ETF flows at the manager level. It is calculated in analogy to *Institutional Flow* variable, while using ETF fund TNA and net returns.

Table A.1 – continued

Variable	Description
Net Purchase	The change in portfolio weight in fund f net of price appreciation from $t-1$ to t following Kacperczyk, Sialm, and Zheng (2005). It is calculated as: $$Net\,Purchase_{if,t} = \omega_{if,t} - \frac{\omega_{if,t-1}(1+R_{f,t})}{\sum_f \omega_{if,t-1}(1+R_{f,t})}$$ where $\omega_{ik,t}$ indicates the portfolio weight of fund f at the end of half-year t and $R_{f,t}$ is the return of fund f during the half-year t.
Invest	An indicator equal to 1 if the institution invests in the given position, and 0 otherwise.
% of Active ETF	The fraction of actively-managed ETFs by SbS managers.
ETF Expense Difference	The ETF expenses minus the average expenses of ETFs belonging to the same investment style and same active-passive designation as the ETFs of SbS managers.
Main independent variables	
Institutional Revenue	The logarithm of one plus the fee revenue from institutional share classes, calculated as the sum of the quarterly expense ratio multiplied by TNA over institutional share classes.
Retail Revenue	The logarithm of one plus the fee revenue from retail share classes, calculated as the sum of the quarterly expense ratio multiplied by TNA over retail share classes.
# of ETF	A measure proxy for ETF pressure. It is calculated as $$\#\,of\,ETF_{mt} = \frac{1}{AUM_{mt-1}} \sum_{s \in \Omega^s_{mt-1}} AUM_{mst-1} \times \#\,of\,ETF_{st}, \quad (8)$$ where Ω^s_{mt} indicates the set of investment styles managed by manager m at time t. AUM_{mst} is the AUM in the investment style s of manager m at the quarter t, calculated as $\sum \frac{AUM_{ft-1}}{N_{ft-1}}$, using all OEFs belonging to the given style. $\#\,of\,ETF_{st}$ refers the number of ETFs that belong to the same investment style s as the OEFs under management, excluding the ETFs managed by the managers' employers. In the regressions, we take the logarithm of one plus the raw value.
Agg. ETF TNA	Similar to the construction of $\#\,of\,ETF_{mt}$ while replacing $\#\,of\,ETF_{st}$ with $Agg.\,ETF\,TNA_{st}$, calculated as the total fund TNA of ETFs that belong to the same investment style s as the OEFs under management, excluding the ETFs managed by the managers' employers. In the regressions, we take the logarithm of one plus the raw value.

Table A.1 – continued

Variable	Description
Avg. ETF Expense	Similar to the construction of $\#\,of\,ETF_{mt}$ while replacing $\#\,of\,ETF_{st}$ with $Avg.\,ETF\,Expense_{st}$, calculated as the average fund expense ratio of ETFs that belong to the same investment style s as the OEFs under management, excluding the ETFs managed by the managers' employers.
Position Size	The logarithm of the average TNA invested in the given OEF position by institutions over the 2 years prior to the SbS events.
SbS Position Size	The logarithm of the average total TNA invested in SbS OEF positions by institutions over the 2 years prior to the SbS events.
Same City	An indicator equal to 1 if the institution's management firm locates in the same city as the management firm of the fund, and 0 otherwise.
Manager-level control variables	
OEF 1-Year Performance	Value-weighted average of funds' average monthly style-adjusted returns over the past 1 year at the manager level. Funds' style-adjusted returns are calculated as the funds gross returns (before expenses) minus the average returns of all active OEFs belonging to the same investment style.
OEF Lagged Flow	Value-weighted average of funds' total flows at the manager level.
OEF Tracking Error	Value-weighted average of funds' tracking error at the manager level. Funds' tracking error is calculated as the standard deviation of funds' style-adjusted returns over the previous 1 year.
OEF Expense	Value-weighted average of OEF funds' annual expense ratios at the manager level.
OEF Fund Size	The logarithm of the manager-level total assets under management of OEFs, indicated as AUM_{mt} which is calculated as above.
OEF Experience	The logarithm of the number of years since the first time the given manager starting managing OEFs.
ETF Expense	Value-weighted average of ETF funds' annual expense ratios at the manager level.
ETF Fund Size	The logarithm of the manager-level total assets under management of ETFs.
Fund-level control variables	
Fund 1-Year Performance	The average monthly style-adjusted returns over the past 1 year. Style-adjusted returns are calculated as the funds gross returns (before expenses) minus the average returns of all active OEFs belonging to the same investment style.
Fund Lagged Flow	The quarterly fund flows in previous period.
Fund Tracking Error	The standard deviation of funds' style-adjusted returns over the previous 1 year.

Table A.1 – continued

Variable	Description
Fund Expense	Fund annual expense ratios.
Fund Size	The logarithm of the fund TNA.
Fund Age	The logarithm of the number of years since the earliest inception date of funds' share classes.
Firm-level variables	
Firm Size	The logarithm of the total TNA across all active OEFs and ETFs at the firm level.
Other variables	
Treat	For manager-level results, $Treat$ is an indicator equal to one if the given manager is a SbS manager, and zero if the manager is a matching manager. For institution-level results, $Treat$ is an indicator equal to one if the given fund (OEF or ETF) is a fund managed by SbS manager, and zero for other OEFs or ETFs.
Post	An indicator equal to one for periods (including and) after the SbS initiation, and zero for periods before.

Table A.2: **Side-by-Side Initiations of Passive OEF Managers**

The table repeats Table 2 and Table 3 but uses the sample of passive OEF managers who predominatly manage passive index OEFs. All other specifications are unchanged.

Panel A: Institutional Revenue and Side-by-Side Initiations

	Dependent Variable: Start SbS		
	(1)	(2)	(3)
Institutional Revenue	-0.073	-0.125	-0.346
	(-0.31)	(-0.41)	(-1.16)
Retail Revenue	0.073	0.098	0.143
	(0.54)	(0.64)	(0.93)
OEF 1-Year Performance	-0.084	-0.203	-0.342*
	(-0.74)	(-1.24)	(-1.65)
Lagged OEF Flow	0.004	0.000	-0.017
	(0.74)	(0.01)	(-1.45)
OEF Experience	0.196**	0.118	0.168*
	(2.55)	(1.21)	(1.78)
OEF Tracking Error	0.079	0.002	-0.002
	(1.08)	(0.02)	(-0.01)
Firm Size	0.069		
	(0.85)		
Category fe	Yes	Yes	No
Time fe	Yes	No	No
Firm fe	Yes	No	No
Firm × Time fe	No	Yes	No
Firm × Time × Category fe	No	No	Yes
R^2	0.040	0.527	0.609
N	14,586	10,275	9,321

Panel B: ETF Pressure and Side-by-Side Initiations

	Dependent Variable: Start SbS		
ETF Pressure measured by	Agg. ETF TNA	# of ETF	Avg. ETF Expense
	(1)	(2)	(3)
Institutional Revenue × ETF Pressure	0.272	-0.016	6.767
	(1.35)	(-0.06)	(1.41)
Institutional Revenue	-3.477	-0.306	-3.213*
	(-1.49)	(-0.22)	(-1.66)
ETF Pressure	0.060	0.186	-0.669
	(0.49)	(0.99)	(-0.66)
Retail Revenue	0.112	0.125	0.154
	(0.70)	(0.82)	(0.97)
Manager Controls	Yes	Yes	Yes
Firm × Time × Category fe	Yes	Yes	Yes
R^2	0.609	0.609	0.609
N	9,297	9,321	9,264

Table A.3: **OEF Performance Around Side-by-Side Events**

The table repeats the same specification in Table 4 by replacing flows with performance measures. In columns 1 and 2, we use style-adjusted returns. In columns 3 and 4, we use value added which is calculated as the style-adjusted returns multiplied by lagged TNA. Standard errors are clutered by manager. *, **, and *** denote statistical significance at 10%, 5%, and 1% level.

Dependent Variable:	Style-Adjusted Returns		Value-Added	
	(1)	(2)	(3)	(4)
Treat × Post	-0.027	-0.004	-0.086	-0.128
	(-0.44)	(-0.06)	(-0.07)	(-0.10)
Manager Controls	No	Yes	No	Yes
Event × Manager fe	Yes	Yes	Yes	Yes
Event × Time fe	Yes	Yes	Yes	Yes
R^2	0.464	0.477	0.506	0.511
N	35,877	34,688	35,877	34,688

Internet Appendix to

"Why is there so much Side-by-Side Management in the ETF Industry?"

The Internet Appendix presents additional results to accompany the main results. The contents are as follows:

Internet Appendix IA.A presents additional analysis to accompany our results on the career moves towards SbS roles of managers.

Internet Appendix IA.B presents additional analysis to accompany the manager level flow results.

Internet Appendix IA.C presents additional analysis to accompany the institution level trading results.

Internet Appendix IA.D presents additional analysis on other manager level outcome variables.

IA.A Side-by-Side Initiations

Table IA.1: **Institutional Revenue and Side-by-Side Initiations of Active OEF Managers: Robustness**

This table presents robustness tests to Table 2. The baseline refers to column 3 of Table 2.

	Coefficient	t-stat	Economic Effect	N
	(1)	(2)	(3)	(4)
Baseline	0.062	3.09	39.87%	692,524
Panel A: Additional fixed effects				
Replace with Firm × Category × Time × Style fe	0.120	3.98	75.41%	580,565
Panel B: Additional controls				
Adding Team-Related Variables	0.047	2.36	30.54%	692,524
Panel C: Subsamples				
Exclude Top 5 OEF Firms per Country	0.069	2.96	43.92%	544,486
Managers with positive institutional revenue	0.072	3.19	36.23%	367,345

Table IA.2: **Institutional Revenue and Side-by-Side Initiations of Active OEF Managers: Additional Performance Measures**

The table repeats column 3 of Table 2 by including additional performance measures.

	Dependent Variable: Start SbS			
	(1)	(2)	(3)	(4)
Institutional Revenue	0.062***	0.062***	0.063***	0.062***
	(3.09)	(3.09)	(3.08)	(3.09)
Lagged OEF Performance	0.002		0.002	0.002
	(1.49)		(1.20)	(1.41)
OEF 1-Year Performance	-0.004		-0.005	-0.002
	(-0.43)		(-0.52)	(-0.28)
OEF 3-Year Performance	-0.001		0.002	-0.003
	(-0.10)		(0.16)	(-0.34)
High Lagged OEF Performance		-0.005		
		(-0.18)		
High OEF 1-Year Performance		-0.006		
		(-0.17)		
High OEF 3-Year Performance		-0.023		
		(-0.73)		
Low Lagged OEF Performance		0.049		
		(1.31)		
Low OEF 1-Year Performance		-0.005		
		(-0.12)		
Low OEF 3-Year Performance		0.019		
		(0.50)		
Institutional Revenue × Lagged OEF Performance			0.002	
			(0.26)	
Institutional Revenue × OEF 1-Year Performance			0.005	
			(0.11)	
Institutional Revenue × OEF 3-Year Performance			-0.022	
			(-0.32)	
Lagged OEF Performance (Squared)				0.000
				(0.74)
OEF 1-Year Performance (Squared)				-0.004
				(-0.74)
OEF 3-Year Performance (Squared)				0.009
				(1.17)
Other Manager Controls	Yes	Yes	Yes	Yes
Firm × Time × Category fe	Yes	Yes	Yes	Yes
R^2	0.311	0.311	0.311	0.311
N	692,489	692,489	692,489	692,489

Table IA.3: **ETF Pressure and Side-by-Side Initiations of Active OEF Managers: Interacting with Other Characteristics**

The table repeats Table 3 by including the interaction terms between all the other manager-level control variables with *ETF Pressure*.

	Dependent Variable: Start SbS		
ETF Pressure measured by	Agg. ETF TNA	# of ETF	Avg. ETF Expense
	(1)	(2)	(3)
Institutional Revenue × ETF Pressure	0.028***	0.056***	-0.530***
	(3.92)	(3.54)	(-4.37)
Retail Revenue × ETF Pressure	0.001	0.002	0.027
	(0.71)	(0.54)	(0.76)
OEF 1-Year Performance × ETF Pressure	-0.001	-0.002	0.048
	(-0.80)	(-0.63)	(1.46)
OEF Lagged Flow × ETF Pressure	0.000	-0.000	-0.001
	(0.02)	(-0.52)	(-1.00)
OEF Experience × ETF Pressure	-0.000	-0.001	-0.001
	(-0.36)	(-0.42)	(-0.06)
OEF Tracking Error × ETF Pressure	-0.002*	-0.004	0.092***
	(-1.81)	(-1.58)	(3.53)
Manager Controls	Yes	Yes	Yes
Firm × Time × Category fe	Yes	Yes	Yes
R^2	0.311	0.311	0.314
N	687,595	692,524	647,125

IA.B Manager-Level Flows

Table IA.4: **Additional Manager-Level Summary Statistics**

The table reports the main manager characteristics between "treated" SbS managers and the 5 closest matched "control" OEF managers one year prior to the event quarter.

Characteristics	Treatment	Control	Difference	t-stat (Dif)
	(1)	(2)	(3)	(4)
Firm Size	3.151	3.054	0.097	0.72
OEF Fund Size	6.310	6.242	0.068	0.66
OEF 1-Year Performance	-0.003	0.015	-0.018	-0.66
OEF Lagged Flow	1.555	1.970	-0.416	-0.51
OEF Experience	1.982	2.040	-0.058	-1.25
OEF Tracking Error	1.095	1.106	-0.012	-0.27
OEF Expense	1.073	1.082	-0.009	-0.35

Table IA.5: **OEF Flow Around Side-by-Side Initiations: Closest Match**

The table repeats the estimation in Table 4 by using the closest matching manager.

Dependent Variable:	Institutional Flow		Total Flow	Retail Flow
	(1)	(2)	(3)	(4)
Treat × Post	-8.605***	-5.848***	-0.676	-0.346
	(-3.40)	(-3.54)	(-1.11)	(-0.47)
Manager Controls	No	Yes	Yes	Yes
Event × Manager fe	Yes	Yes	Yes	Yes
Event × Time fe	Yes	Yes	Yes	Yes
R^2	0.655	0.674	0.709	0.688
N	8,316	8,012	9,380	9,222

Table IA.6: **OEF Flow Around Side-by-Side Initiations: Alternative Control Sample**

The table repeats the estimation in Table 4 by comparing treated SbS managers with alternative control groups. In Panel A, we select all other active OEF managers that: 1) belong to the same investment style in the same investment category; 2) have the same institutional share class structure (with or without institutional TNA); 3) have the same firm size decile. In Panel B, we select the 5 closest active OEF managers at the event quarter using propensity score matching based on firm size, fund size, OEF experience, fund expense and fund past performance from the OEF managers that meet the above 3 criteria.

Panel A: All Candidate Managers

Dependent Variable:	Institutional Flow		Total Flow	Retail Flow
	(1)	(2)	(3)	(4)
Treat × Post	-5.649***	-4.037***	-0.769	-0.540
	(-3.69)	(-3.16)	(-1.62)	(-0.91)
Manager Controls	No	Yes	Yes	Yes
Event × Manager fe	Yes	Yes	Yes	Yes
Event × Time fe	Yes	Yes	Yes	Yes
R^2	0.187	0.193	0.298	0.246
N	2,060,812	1,998,148	2,326,566	2,298,929

Panel B: 5 Closest Managers Based on Propensity Score Matching

Dependent Variable:	Institutional Flow		Total Flow	Retail Flow
	(1)	(2)	(3)	(4)
Treat × Post	-6.061***	-4.314**	0.333	0.777
	(-2.91)	(-2.43)	(0.54)	(1.02)
Manager Controls	No	Yes	Yes	Yes
Event × Manager fe	Yes	Yes	Yes	Yes
Event × Time fe	Yes	Yes	Yes	Yes
R^2	0.398	0.405	0.497	0.466
N	25,180	24,428	29,511	28,939

IA.C Institution-Level Results

Table IA.7: **Changes in OEF Holdings by Institutional Clients Around Side-by-Side Initiations: Robustness**

This table presents robustness tests to Panel A in Table 7. The baseline refers to column 3.

	Coefficient	t-stat	N
	(1)	(2)	(3)
Baseline	-0.189	-3.20	871,330
Panel A: Additional fixed effects			
Fund Style × Event × Time fe	-0.177	-2.59	863,218
Fund Firm × Event × Time fe	-0.442	-5.60	832,435
Panel B: Alternative investment measures			
Net Dollar Change	-0.894	-2.12	1,000,072
Panel C: Subsamples			
Institution with > 70% fund TNA	-0.347	-5.83	618,644
OEF institution	-0.156	-2.69	832,654
Non-OEF Institution	-0.700	-1.91	38,676

Table IA.8: **Probability of Institutional Clients' Investment in SbS ETFs: Closest Match**

The table repeats the same specification in Table 8 by restricting to the closest matching manager.

	Dependent Variable: Invest				
	(1)	(2)	(3)	(4)	(5)
Treat	1.566***	1.925***	1.769***	1.097***	1.220***
	(4.50)	(4.66)	(4.94)	(4.74)	(4.80)
Treat × SbS Position Size			0.970***		0.806***
			(3.47)		(3.64)
Treat × Same City				3.083***	1.627*
				(2.75)	(1.85)
ETF Fund Controls	No	Yes	Yes	Yes	Yes
Institution × Event × Time fe	Yes	Yes	Yes	Yes	Yes
R^2	0.430	0.329	0.339	0.332	0.341
N	382,838	338,710	325,938	338,333	325,561

Table IA.9: **Probability of Institutional Clients' Investment in SbS ETFs: Alternative Control ETF Sample**

The table repeats the same specification in Table 8 with alternative control ETF samples. In Panel A, we use all ETFs that have been invested by institutions, are in the same investment style in the given category and are launched within the same half-year as the SbS ETFs. In Panel B, we select 5 closest ETFs from Panel A in terms of firm size and fund expenses.

Panel A: All Candidate ETFs

	Dependent Variable: Invest				
	(1)	(2)	(3)	(4)	(5)
Treat	0.910***	0.949***	0.783***	0.777***	0.627***
	(4.46)	(4.66)	(4.89)	(4.02)	(3.86)
Treat × SbS Position Size			0.116**		0.108**
			(2.16)		(2.14)
Treat × Same City				0.885**	0.864**
				(2.58)	(2.36)
ETF Fund Controls	No	Yes	Yes	Yes	Yes
Institution × Event × Time fe	Yes	Yes	Yes	Yes	Yes
R^2	0.267	0.196	0.197	0.201	0.202
N	276,182	193,799	186,621	191,602	184,469

Panel B: 5 Closest Candidate ETFs

	Dependent Variable: Invest				
	(1)	(2)	(3)	(4)	(5)
Treat	1.079***	1.009***	0.842***	0.825***	0.675***
	(4.27)	(4.38)	(4.54)	(3.76)	(3.61)
Treat × SbS Position Size			0.129**		0.120**
			(2.20)		(2.17)
Treat × Same City				0.884***	0.857**
				(2.59)	(2.35)
ETF Fund Controls	No	Yes	Yes	Yes	Yes
Institution × Event × Time fe	Yes	Yes	Yes	Yes	Yes
R^2	0.321	0.239	0.241	0.245	0.246
N	180,932	145,228	139,993	143,684	138,459

IA.D Manager-Level Other Outcomes

Table IA.10: **ETF Offerings of Side-by-Side Managers: Alternative Product Differentiation Measure**

This table repeats Table 9 by using alternative measure of ETF product differentiation for each SbS manager. In particular, the dependent variable measures the fraction of the SbS manager's ETFs that are in different Mornignstar investment styles compared to any of her previous mutual funds.

	Dependent Variable: % of Distinct-Style ETF		
ETF Pressure measured by	Industry TNA	# of ETF	Industry Expense
	(1)	(2)	(3)
Institutional Revenue × ETF Pressure	0.050**	0.080**	-0.713**
	(2.21)	(2.18)	(-2.27)
Institutional Revenue	-0.583*	-0.387*	0.238**
	(-1.97)	(-1.89)	(2.30)
ETF Pressure	-0.092***	-0.148***	1.142***
	(-5.36)	(-4.68)	(5.41)
OEF Controls (1-qrt prior to event)	Yes	Yes	Yes
Event quarter × Time fe	Yes	Yes	Yes
R^2	0.523	0.490	0.506
N	335	335	333

Table IA.11: **ETF Offerings for Side-by-Side Managers: Interacting with Retail Revenue**

The table repeats Table 9 by adding *Retail Revenue* and its interaction term with *ETF Pressure*.

	Dependent Variable: % of Active ETF		
ETF Pressure measured by	Industry TNA	# of ETF	Industry Expense
	(1)	(2)	(3)
Institutional Revenue × ETF Pressure	0.059**	0.122**	-0.827**
	(2.16)	(2.57)	(-2.49)
Retail Revenue × ETF Pressure	-0.007	-0.011	0.200
	(-0.29)	(-0.25)	(0.67)
Institutional Revenue	-0.694**	-0.588**	0.281**
	(-2.13)	(-2.46)	(2.42)
ETF Pressure	-0.021	-0.054	0.019
	(-1.10)	(-1.54)	(0.06)
Retail Revenue	0.161	0.132	-0.006
	(0.55)	(0.64)	(-0.05)
OEF Controls (1-qrt prior to event)	Yes	Yes	Yes
Event quarter × Time fe	Yes	Yes	Yes
R^2	0.405	0.414	0.398
N	335	335	333