Playing favorites: Conflicts of interest in mutual fund management

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Abstract: It is common for mutual fund managers to concurrently manage assets on behalf of clients outside the mutual fund industry. If these other accounts are more lucrative in terms of current or potential manager compensation, this provides an incentive for managers to favor these other accounts at the expense of mutual fund investors. Using a new dataset hand collected from mandatory SEC filings and therefore free of selection bias, we examine the performance of funds with managers who receive performance-based incentive fees in three different types of accounts: registered investment companies, pooled investment vehicles, and separately managed accounts. We find that *only* funds with managers who receive incentive fees in pooled investment vehicles (e.g., hedge funds) underperform other peer funds by an economically and statistically significant 9.6 bps per month in Carhart alpha, or 1.15% per year. Further tests using a sample of mutual fund managers who begin to manage a hedge fund during the sample period confirm our prior finding of the negative impact on mutual fund performance. Our evidence provides support for the conflicts of interest hypothesis in the debate on "side-by-side management" of mutual funds and hedge funds.

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1 Introduction

The nature of delegated asset management is that investors contract with an advisory firm to provide portfolio management services in exchange for a fee. The scale economies inherent in portfolio management suggest that advisory firms commonly contract with many different clients simultaneously. As has long been recognized, advisory firms and portfolio managers may have incentives to self-deal or to favor their most lucrative clients over others. The recent literature has found direct evidence of this. For example, Gaspar et al (2006) find that mutual fund families are able to strategically transfer performance to the funds that generate more profits for the family, such as those offering higher fee rates or attracting greater assets under management. Chaudhuri et al (2013) provide similar evidence for the segment of asset managers serving institutional clients with separate accounts. Ben-Rephael and Israelsen (2015), using a proprietary dataset from Ancerno Ltd. of executed trades, find direct evidence of favoritism in trade allocation across different clients of the same advisory firm (fund family). This literature provides evidence that managers are able to boost the returns of portfolios offering greater profits to the advisory firm through cross-subsidization from less profitable portfolios. Other examples of opportunities for cross-subsidization include cross-trades across client portfolios and strategic allocations of underpriced IPO shares.

One of the more acute settings for cross-subsidization incentives that has garnered the most attention is the simultaneous management of both mutual fund and hedge fund portfolios, referred to in the academic literature as "side-by-side management." Because of the large incentive fee component of manager compensation that is standard in the hedge fund industry, there is naturally a concern that the differences in compensation structure across these portfolios

would induce a manager to favor hedge fund clients at the expense of mutual fund clients. Evidence from Lim et al (2015) suggest that management and incentive fees are only one aspect of a hedge fund manager's compensation, and in fact, the indirect incentives arising from future inflows and the strategic use of leverage comprise the larger part of their compensation. They estimate that these indirect incentives are 1.6 to over 6-times larger for hedge funds than for mutual funds. Together, the differences in direct and indirect incentives imply a powerful incentive for managers with both types of portfolios to favor their hedge fund clients.[1]

Evidence on whether side-by-side managers transfer performance from mutual funds to hedge funds has been studied by Nohel et al (2010), Cici et al (2010), and Chen and Chen (2009) with mixed results. Nohel et al and Chen and Chen find that mutual funds with side-by-side managers actually outperform otherwise similar peer funds. They interpret this benefit for fund investors as possibly arising from the ability of the mutual fund industry to retain skilled managers by allowing them to also manage lucrative hedge funds, or from the effective policies and internal controls of advisory firms that deter cross-subsidizing actions. However, Cici et al find evidence consistent with favoritism and conclude that mutual fund investors are harmed by side-by-side management. The contradicting evidence suggests that this issue remains unresolved.

As these studies point out, the potential harm to fund investors from managers' side-by-side arrangements has captured the attention of legislators and regulators. While outright bans have been considered, the SEC opted instead to mandate new fund disclosures beginning in 2005 to alert investors to these potential conflicts of interest and the fund's policies on mitigating

[1] While portfolio manager behavior should be driven by the compensation he receives from the advisory firm that employs him, this compensation, as well as its structure, is not observable. We make the assumption, as is common in the literature, that the manager's compensation is correlated with that accruing to the advisory firm.

them.[2] Specifically, the SEC requires funds to disclose the number of other accounts concurrently managed along with their assets under management for each fund manager with day-to-day responsibilities for the fund. The SEC also requires the separate reporting of the subset of these accounts and assets that have performance-based fees (PBFs). In addition, these accounts need to be divided into three different categories, specified by the SEC as registered investment companies, pooled investment vehicles, and separately managed accounts.[3] Registered investment companies typically mean mutual funds, not only those managed for the fund family but also those managed on behalf of another family through a sub-advisory contract. Pooled investment vehicles include hedge funds, but also other categories of investments, such as commingled trusts. However, pooled investment vehicles with PBFs indicate hedge funds. Separately managed accounts typically include separate accounts managed on behalf of defined benefit and defined contribution pension plans or other institutional clients.

These mandated disclosures allow us to investigate whether the presence of performance-based fees in other accounts outside the mutual fund industry creates potential conflicts of interest for managers. While the focus of the literature has been specifically on side-by-side management of mutual funds and hedge funds, conceptually a manager has an incentive to favor whichever type of client offers him the greatest compensation, or potential for future compensation. While we cannot observe the details of the fee contracts or directly estimate the flow-performance relation by client type, the detailed SEC disclosures allow us to know precisely the client base for each manager of the fund, which should allow for a clean test of

[2] For example, see footnote 4 in Nohel et al (2010) for examples of congressional legislators advocating bans on the practice.

[3] The exact wording used by the SEC is "other accounts," but we call them "separately managed accounts" or "separate accounts" to better differentiate them from the other categories of assets used by the SEC, registered investment companies and pooled investment vehicles. We show later in section 2 that the mean assets under management per client in this category is $197 million, suggesting this category serves clients large enough to warrant a separately managed account and not be pooled with other investors.

whether the type of client affects a mutual fund's performance. Because registered investment companies are required by regulation to have symmetric incentive fees, where performance below a benchmark index is punished to the same degree that performance above the benchmark is rewarded, we would not expect managers with this type of client to have as strong an incentive to transfer performance away from the fund as managers with hedge funds.

A prediction regarding mutual fund managers who also manage separately managed accounts is less obvious, as it is unclear whether their direct and indirect incentives more closely resemble mutual funds or hedge funds. While there is anecdotal evidence to suggest that some separate accounts adopt hedge-fund-style asymmetric incentive fees, their fees are the result of private negotiations between the advisory firm and each client and are not generally observable. Thus, we are unable to find large sample evidence on the structure of incentive fees for separately managed accounts. As a result, whether manager incentives for separate accounts with PBFs are significant enough to create conflicts of interest is an open empirical question.

From these mandated SEC filings we hand-collect details at the *manager level* for each actively-managed domestic equity mutual fund from 2005 to 2011 from the top 30 largest fund families, which account for 74% of total assets under management in the mutual fund industry as of March 2005. Aggregating to the fund level, tests of performance effects reveal that mutual funds with at least one side-by-side hedge fund manager underperform funds with no side-by-side managers by 9.6 bps a month, or 115.2 bps a year, using Carhart alpha. This effect is statistically and economically significant, and similar using other performance measures. Our tests also reveal that negative performance effects are unique to funds with managers concurrently managing hedge funds; as concurrent management of registered investment companies or separately managed accounts with PBFs have no such negative impact.

Further tests using a sample of funds that switch from having no side-by-side managers to having side-by-side managers during the sample period confirm our findings. Specifically, we find that mutual funds that switch from having no managers who manage hedge funds to having one or more managers with a hedge fund underperform no-side-by-side funds by 20.4 bps a month in Carhart alpha after the switch, whereas they did not underperform before the switch. Moreover, analogous tests for funds that switch to have managers with separate accounts with PBFs do not show underperformance after the switch. These results support the focus on hedge funds in the side-by-side literature, as these are the only client type consistent with a conflict of interest.

While we can cleanly measure client type and isolate that the effect is due to hedge funds, due to data limitations we are unable to definitively isolate the cause of the mutual fund underperformance. Because the SEC does not require disclosure of the identity or performance of accounts outside the mutual fund industry, we are unable to examine directly whether side-by-side hedge funds benefit from performance transfers or favorable treatment.[4] We can, however, explore whether a manager distraction story can provide an alternative explanation for our results. Specifically, a conflict of interest might arise simply because a new hedge fund account competes for the managers' limited time and attention, and it is this new distraction that causes mutual fund performance to suffer. This potential conflict of interest might be particularly relevant because hedge funds employ investment strategies that differ considerably from the typical mutual fund, and may require more manager time and effort as a result. Under the assumption that active management requires more time and resources than more passive management or closet indexing, we test whether the degree of active management of the mutual

[4] We are currently exploring whether we can identify enough hedge fund matches to provide direct evidence on the performance transfer hypothesis.

funds declines after the manager adds a hedge fund. Using both tracking error and the active share measure of Cremers and Petajisto (2009), we do not find support for this alternative, suggesting that manager distraction or effort diversion cannot be the full explanation. We also find that the negative effect of side-by-side performance is stronger in funds managed by a single manager or managers on the same portfolio management team in both the mutual fund and hedge fund. Given that it is easier for these managers to strategically shift returns to other accounts than it is for managers on different teams, this is also more consistent with deliberate favoritism than with limited attention.

Because we have a breakdown of all of a manager's assets by client type, we are able to measure the percentage of his/her assets that are within the mutual fund industry. A high percentage indicates that the bulk of the manager's compensation and presumably their loyalties and career concerns are focused on the mutual funds. We find that funds of managers who receive more of their compensation from the mutual fund industry, defined as the percentage of the manager's total assets under management that are registered investment companies, tend to perform better than other funds. This relation is robust across various performance measures and specifications, albeit more modest in magnitude than the incentive fee effect. A one standard deviation increase in this percentage leads to 4bps per month improvement in performance (Carhart alpha).

We also investigate whether the negative impact of side-by-side arrangements are mitigated when the mutual fund itself has a PBF. Elton et al (2003) find that mutual funds with PBFs modestly outperform those with only asset-based fees. We find consistent evidence in that these own-fund PBFs do seem to mitigate the negative impact of side-by-side management, but this effect is not consistently statistically significant across all performance measures. This

finding is consistent with PBFs paid by mutual funds providing weaker incentives than PBFs offered by hedge funds.

Our comprehensive manager-level data offers several advantages over those used in previous studies, allowing us to provide a more complete picture of the extent of side-by-side arrangements in the industry. Because our hand-collected data are from required SEC regulatory filings, it should be both reasonably accurate and complete, and more importantly, free of bias from the selective reporting of fund information or manager names. This aspect of our dataset stands in contrast to previous studies that match mutual fund databases to hedge fund databases, which are widely known to be incomplete and self-reported, in addition to having only end-of-period manager names and not historical names. We find that the top 30 families employ a little over 700 domestic equity portfolio managers in any given year of our 2005 to 2011 sample period, and that approximately 7% of mutual fund managers in our sample simultaneously manage hedge funds, and these managers handle the day-to-day management in 13.2% of fund-months.

We make several contributions to the fund literature. First, our novel dataset allows us to provide new evidence in the debate on the impact of side-by-side management that support the hypothesis that the new SEC disclosures are useful in revealing conflicts of interest. Given the significant underperformance that we find, fund investors should avoid funds with managers who disclose assets in pooled investment vehicles with PBFs. Second, our analyses take into account the features of asset management that are most often ignored in the literature. Previous studies examining favoritism either only consider possible cross-subsidization within the mutual fund industry (e.g., Gaspar et al), or restrict the sample to funds reporting named managers (thus excluding many team-managed funds). Because the majority of fund managers simultaneously

manage assets outside the fund industry and in recent years approximately two-thirds of funds are managed by teams, ignoring these pervasive organizational structures of asset management could affect inferences. Third, we provide new evidence regarding the prevalence of the fulcrum variety of incentive fees offered by mutual funds and how these interact with the asymmetric incentives arising from the manager's other assets in determining fund performance.

2 Data

2.1 Data collection

We obtain data on a fund manager's other accounts under management from the Statement of Additional Information, which is a required supplementary document to the fund's prospectus filed with the SEC (form N-1A with form type 485BPOS or 485APOS). The SEC requires all funds to report this information every fiscal year starting with filings after February 28, 2005. Because of the complexity of the data collection effort required, we focus on the funds from the largest 30 fund families in CRSP, ranked by total assets of domestic equity funds under management, as of March 31, 2005.[5] Specifically, for these 30 families we hand collect accounts managed information for all actively-managed domestic equity mutual funds available in the *CRSP Survivor-Bias-Free U.S. Mutual Fund Database* from 2005 to 2011. These families represent 74% of actively-managed domestic equity industry assets. We identify domestic equity funds by relying on Lipper objective codes (CA, EI, G, GI, I, MC, MR, and SG) and eliminate index funds based on the funds' names. In cases where the Lipper code is missing in a

[5] Hand-collection by family results in the most accurate data due to differences across families in reporting conventions. For example, some families report information on other managed accounts and whether the manager has accounts with PBFs in easy-to-collect tabular form, while other families report this information in text form, including in footnotes. Collecting the data by family minimizes omissions and errors due to families' tendencies to use the same format for all of their funds. We also employed numerous data checks that give us a high degree of confidence in the integrity of the data.

quarter we use the codes from surrounding quarters. We further drop variable annuities and target date funds from our sample, since these funds include a large component of fixed income investments in their portfolios.[6] We include all funds in CRSP that exist from 2005 to 2011 that meet our data filters from these 30 families. Thus, we add funds as these families start new funds or acquire existing funds from other families during the sample period, and retain funds until they merge or liquidate.[7]

In order to match CRSP mutual funds to their corresponding SEC filings, we obtain the links to fund prospectuses through quarterly indexes provided by the SEC.[8] The matches are implemented based on exact name or ticker matches.[9] For any remaining unmatched funds, we identify close name matches and manually verify whether they are correct. Our matching procedures result in a success rate of 97% of the CRSP funds in our sample.

For each fund-year observation, we hand collect the names of all portfolio managers "responsible for the day-to-day management of the fund" as required by the SEC and reported in the filings. For each manager-fund-year observation, we record the number of other accounts concurrently managed along with their assets under management, both of which are required by the SEC to be put in one of three categories: *registered investment companies, pooled investment*

[6] Our regression results are actually stronger if we include variable annuities and target date funds in our final sample.
[7] We use MGMT_CD in CRSP to assign funds to families (or if missing, mgmt_name). When a family in the original list of top 30 merges with another family in the top 30 we include those funds under the surviving family's brand (e.g., Smith Barney Funds were acquired by Legg Mason Funds in 2006 and both were in our original list in 2005). But, when a family merges with a family outside our original list of top 30, we follow those funds only until the merger becomes effective (e.g., Merrill Lynch funds are acquired by Blackrock, which was not in our original list of top 30, and therefore not added to the sample).
[8] Available at ftp://ftp.sec.gov/edgar/full-index/
[9] Since February 6, 2006, the SEC required mutual funds to include tickers in their filings. We use a computer script to obtain tickers directly from the SEC Edgar website. Note that even though the SEC provides a listing of fund tickers on its website, this listing does not contain historical data.

vehicles, or separately managed accounts.[10] The SEC also requires the separate reporting of the subset of these accounts and assets that are subject to PBFs. Families typically include an explicit statement that no accounts have PBFs if this is the case. We also record the effective date at which the information on accounts managed is applicable, as we rely on this date to match to the corresponding data from CRSP.[11] The effective date is typically three to four months before the filing date, which is why our final sample includes observations for partial years in 2004 and 2011. We provide a sample filing in Appendix A.

The SEC-required categories allow us to paint a picture as to the nature of the assets each manager controls (possibly jointly with other managers as part of a team), and via the information on PBFs, whether their incentives might differ across their managed accounts (clienteles). Registered investment companies typically mean mutual funds, but they could be mutual funds managed for the fund family or managed on behalf of another family through a sub-advisory contract, or as the underlying funds in variable annuity contracts. Pooled investment vehicles include hedge funds, but can also include commingled trusts or funds managed for sale to investors outside the U.S. Other accounts typically include separate accounts managed on behalf of defined benefit and defined contribution pension plans, insurance companies, foundations, high-net-worth individuals, trusts, wrap account clients or other institutional clients.

[10] We change the term "other accounts" used by the SEC to "separately managed accounts" or "separate accounts" in our paper to clearly define the nature of these other accounts.
[11] For example, if the effective date of the account and ownership information is November 2008, we match this observation to CRSP observations that run from November 2008 to November 2009 or the next available effective date.

2.2 Side-by-side management

Cici et al (2010), Nohel et al (2010), and Chen and Chen (2009) examine whether mutual fund investors are harmed by the simultaneous management of mutual funds and hedge funds. They each identify their sample by a comparison of the CRSP mutual fund database with one or more hedge fund databases. The nature of our data allows us to capture, at the manager level, all non-mutual fund assets under management subject to PBFs, which provide a more complete picture of manager conflicts for several reasons.

Conceptually, the reason the literature has focused on side-by-side mutual funds and hedge funds is because the difference in the typical fee structure provides an incentive for the manager to favor the fund that will pay a large bonus for outperformance. Given that it is well known that the typical incentive fee component of hedge fund compensation is large (e.g., 20%), the literature has naturally focused on side-by-side hedge funds. We are able to identify assets likely to be hedge funds within our pooled investment vehicle category. Unlike prior studies, however, we are also able to examine whether incentive fees in the mutual fund manager's other types of accounts, namely registered investment companies and separately managed accounts, have an impact on fund performance.

PBFs for registered investment companies (mutual funds) are required by regulation to be symmetric (fulcrum fees) and are not particularly lucrative for funds (Elton et al., 2003). In contrast, the fee structures of separately managed accounts are privately negotiated between the advisory firms and their clients, and thus we cannot observe the level or structure of these incentive fees. Some sources suggest that the incentive compensation structure may be similar to hedge funds. ADV forms filed with the SEC by several asset management firms in our sample state that compensation under performance-based fee arrangements comply with Rule 205-3

under the Investment Advisers Act of 1940. This rule gives investment advisers discretion to privately negotiate the structure of performance-based fees with their institutional and high net worth individual clients without regulation, explicitly allowing them to charge fees based on a share of account capital appreciation, provided that clients meet a $2 million net worth minimum.[12] Some advisers have disclosed in their ADV forms that the PBFs for separately managed accounts range from 10% to 20% of the account's performance over a stated benchmark. A report prepared by Callan Associates for the North Dakota Investment Board reveals that some asset managers are paid as high as 35% of excess returns.[13] However, due to the confidential nature of these fee arrangements, we cannot obtain large sample confirmation that this type of hedge-fund-like fee structure is applicable to the majority of separate accounts. We also are unable to estimate whether their indirect incentives resemble those of hedge funds. Therefore, it is an open empirical question as to whether they have an effect on mutual fund performance.

Because of the mandatory nature of the SEC filings and the comprehensiveness of our sample of managers within the top 30 families, we believe our sample provides an accurate picture of the prevalence of side-by-side management in the fund industry. As acknowledged in the literature, samples selected based on a comparison of manager names in CRSP or Morningstar Principia to names in a hedge fund database may be incomplete or biased. Hedge fund databases are populated with managers who opt in voluntarily and the data is self-reported, in addition to having only end-of-period manager names and not historical names (Nohel et al, 2010). Moreover, mutual fund manager names in CRSP and Morningstar Principia are also

[12] The Department of Labor has also advised that ERISA fiduciaries fall under Rule 205-3 regarding negotiating performance fees in the management of pension plan assets.
[13] Memo available at http://www.nd.gov/rio/SIB/Publications/CallanAssoc2010.pdf

incomplete and prone to error (Patel and Sarkissian, 2014). For example, whereas all funds in our sample list managers by name in the SEC filing, in the CRSP database 27% of these funds only have 'team-managed' listed in the manager field. Thus, a significant number of side-by-side managers could potentially be missed by comparing names in databases, suggesting the number of funds with side-by-side relationships is likely underestimated by this sampling method. In fact, 31% of our sample funds with PBFs are listed in CRSP as 'team-managed' and therefore would not be identified as side-by-side managers using the name-matching methodology.

Due to concerns about the selection bias inherent in self-reported hedge fund databases, Cici et al (2010) identify overlap at the advisory firm level for families offering both mutual funds and hedge funds. They consider all of the mutual funds from a family offering a hedge fund to be classified as side-by-side funds. This method likely overstates the extent of side-by-side relationships within that family. While some families report that every fund in the family has a fund manager concurrently managing portfolios that are subject to PBFs (e.g., Calamos Advisors), in most families the percentage of funds with side-by-side managers is much lower. For example, we identify Franklin Templeton as providing both mutual funds and hedge funds, but our sample shows that only 6% of Franklin Templeton mutual funds are managed by side-by-side managers.

While this case illustrates the issue of overestimating the number of side-by-side funds, the methodology of identifying overlap at the advisory firm level can also underestimate the number of side-by-side funds in other instances. This happens when mutual funds are subadvised by side-by-side managers employed at other families, and the hiring family does not offer any hedge fund. For example, while Vanguard does not have any in-house managers who

are concurrently managing assets with PBFs, the family outsources management to subadvisors who do. One such manager is Joseph G. Paul, who is employed by AllianceBernstein, a family that Vanguard hires to manage the Windsor fund. In our data this manager is listed as managing pooled investment vehicles and separate accounts with PBFs under both AllianceBernstein and Vanguard. The sampling method used by Cici et al would miss any subadvised funds employing side-by-side managers from other families.

We undertake two different exercises to validate the accuracy and reliability of our data. First, we focus on the fund families with no PBFs according to our dataset. We then collect the ADV forms filed with the SEC by these fund management companies. In Item 5 of the ADV form, question E asks whether "you are compensated for your investment advisory services by …" with performance-based fees as one of the possible answers. We verify that none of these management companies choose "performance-based fees" as an answer to question E. Second, we examine observations from Nohel et al's sample to validate that the SEC filings accurately provide data on mutual fund managers who also manage hedge funds. Because disclosures on other accounts and PBFs are only required by the SEC starting in 2005, we focus on 2005 and 2006 observations at the end of Nohel et al's sample period.[14] Their sample includes a significant number of equity funds in smaller families as well as bond funds. We collect all SEC filings of actively managed equity funds in their sample that meet our criteria, including families outside our sample of the top 30. In these filings, we focus on the disclosure of PBFs in pooled investment vehicles.

[14] We thank Tom Nohel, Z. Jay Wang, and Lu Zheng for providing us with the data on side-by-side management used in their 2010 paper. Since their sample ends in 2006, we are only able to examine the two years of their sample that coincided with the mandatory SEC filing availability.

We confirm that for 81% of observations in Nohel et al's sample in 2005 and 2006, the corresponding SEC filings also report that the mutual fund managers have pooled investment vehicles with PBFs. In another 12% of observations, the filings explicitly state that their managers do not have any other accounts with PBFs. A possible reason for this difference is if the managers reported in hedge fund databases are principals of the hedge funds but do not necessarily assume the day-to-day operation of the funds. The SEC only requires disclosures of other accounts in which the mutual fund manager assumes day-to-day responsibility. In the remaining 7% of Nohel et al's sample, SEC filings do not clearly indicate the existence or lack of other accounts with PBFs. Our conclusion from this exercise is that the SEC filings generally provide accurate data on side-by-side arrangements. In some cases, disagreement on what constitutes a side-by-side relationship may arise. One might argue that hedge fund principals still retain some influence on day-to-day managers and that they also suffer from conflicts of interests due to the significant incentive fees charged by hedge funds. However, for the purpose of our analysis, we strictly rely on the SEC definition that the same fund manager with day-to-day responsibility for the mutual fund also manages the day-to-day operations of an account outside the industry subject to PBFs.

2.3 Summary statistics on side-by-side management and fund characteristics

Our hand-collected dataset consists of 13,117 manager-fund-year observations. Table 1 contains summary statistics on the prevalence of side-by-side management in this sample. We report summary statistics each year for the set of unique fund managers. All summary statistics in Table 1 are reported as of the year of effective date (fund fiscal year-end date) rather than the

year of the filing date.[15] Funds report information on accounts managed at the manager level and exclude the assets of the fund itself in assets under management.[16] Thus, by including unique managers in each year we avoid double-counting since for a manager of multiple funds the information on the other accounts and assets should be the same at all his reporting funds.[17] Table 1 Panel A contains a summary of the percentage of managers who manage portfolios other than the reporting fund itself and the assets under management of these other portfolios. Note that the assets under management include assets assigned to the manager as part of a team and may not be his sole responsibility.

The first column of Table 1 Panel A shows that the top 30 fund families by assets employed over 700 unique domestic equity actively managed fund managers in any given year in our sample period. The next column shows that it is quite rare for any manager to just manage a single fund. About 95% of fund managers have additional accounts, and 88% of all fund managers manage additional registered investment companies, averaging $14.5 billion in mutual fund assets on average. Interestingly, it is reasonably common for managers to have day-to-day responsibility for assets outside the mutual fund industry. Fifty-seven percent of fund managers manage other pooled investment vehicles and 67% manage other separately managed accounts. Of these managers with some outside assets, the pooled investment vehicle assets average $1.9 billion and the separately managed account assets average $5.4 billion. On average, 24% of total assets under management are held in pooled investment vehicles and separate accounts. The

[15] For example, the filing date of the disclosure can be February, 2009, while the effective date of the data is November, 2008. Generally speaking, filings disclosed in the first couple of months in a year include data from the previous year.

[16] Some families state that the reported assets include the fund itself. In this case we subtract the fund's assets from the total assets managed in registered investment companies.

[17] There may be slight differences in data for a manager in a year, due to differences in timing as well as in the sizes of reporting funds. We average all observations for a manager in a year to arrive at manager-year level data for this table.

year by year numbers suggest that management activities outside the fund industry are fairly stable throughout our sample period.

Table 1 Panel B contains manager-level information on the prevalence of PBFs and the assets under management for accounts with PBFs. We find that a little over one-quarter of the managers manage any assets with PBFs. The next three columns show that PBFs are more common in registered investment companies and in separately managed accounts, where approximately 12.5% and 15.4% of managers have them, respectively. Only 7% of all managers manage pooled investment vehicles with PBFs. The average assets in this category ($262 million) are relatively small compared to the registered investment companies ($3.1 billion) and separately managed accounts ($1.62 billion) with PBFs, but are relatively close to the average side-by-side hedge fund assets of $292 million in 2005 reported by Nohel et al (2010) and the average hedge fund assets in TASS from 1995-2010 ($211 million) reported by Lim et al (2015). The similarity of these numbers suggests that the category of pooled investment vehicles with PBFs correctly captures side-by-side hedge fund assets. In terms of relative significance, the average percent of a manager's total assets under management subject to PBFs in pooled investment vehicles is only 2.5%, on average, for managers with this type of account.

Even though the size of assets managed in pooled investment vehicles with PBFs is relatively small compared to other accounts, a manager's incentive to favor hedge fund clients over mutual fund investors may still be significant. These incentives are driven not only by the explicit high-powered compensation structure but also by the implicit indirect incentive structure identified in Lim et al (2015). For example, they estimate that for each incremental dollar earned by hedge fund investors, the average manager expects to receive 16 cents from incentive fees and the increase in value of their managerial ownership stake. The present value of expected rewards

for performance accruing to the manager from inflows and growth in future investments (indirect incentives), however, is an even larger component of their compensation. Here, an incremental dollar earned by hedge fund investors translates into 23 cents for the average manager. Notably, they also estimate the indirect incentives for mutual fund managers and find that they range from 12% to 63% as large as that for hedge fund managers, depending on model and parameter choices. These estimates imply that a manager with both types of clients would gain a much larger reward per unit of performance in the hedge fund than in the mutual fund.

Massa et al (2010) and Bar et al (2011) document that the percentage of mutual funds with a single-manager declined, while the percentage with a team of managers rose, from 1994 to 2004. Patel and Sarkissian (2014) show that this trend continued until their sample ended in 2010, when 71% of funds have multiple managers. Table 2 contains a summary of our sample where we also find pervasive team management. Unlike Table 1 which uses data at the unique manager-year level, Table 2 uses fund-manager-year observations to document trends in single-manager funds and team-managed funds over time. The typical fund in our sample has 2.4 managers and only 40% of funds have a single manager. Comparing our numbers to those of Patel and Sarkissian (2014) who examine a broader sample of funds suggests that the top 30 families in our sample have similar rates of team management to the full sample. In 2010 we find that 35% of funds have a single manager, whereas they report 29%. Similarly, they report that 25% of funds have four or more managers, while we find that 23% of funds of the top 30 families have four or more managers.

Table 3 reports summary statistics at the fund level after we match our hand-collected data with CRSP. To arrive at this sample, we first average manager-level data across all members of a team to obtain fund-year observations. We then merge these yearly data to CRSP

monthly returns by matching the effective date (fiscal year-end date) to the following 12 months of CRSP returns, or until the next effective date, whichever is earlier.[18] Since Evans (2010) shows that fund performance is subject to incubation bias, we eliminate fund months with less than 24 months since inception and with total net assets below $1M in the previous month. Our final sample consists of 47,452 fund-month observations from 2005 to 2011.

We generate several variables based on the SEC data. ANY_PBF is equal to 1 if any of the fund's managers has PBFs in any category of assets, including registered investment companies. The next set of four indicator variables capture four mutually exclusive groups in order to evaluate whether the incentives provided by PBFs in certain types of accounts have any impact on the performance of the reporting fund. RIC_PBF_ONLY (i.e., mutual funds) is equal to 1 if the fund's managers have PBFs *only* in registered investment companies. PIV_PBF_NOT_SMA is equal to 1 if the fund's managers have PBFs in pooled investment vehicles (i.e., hedge funds) but not in separately managed accounts (SMA). SMA_PBF_NOT_PIV is equal to 1 if the fund's managers have PBFs in separately managed accounts but not in pooled investment vehicles. Lastly, PIV_SMA_PBF_BOTH is equal to 1 if the fund's managers have PBFs in both pooled investment vehicles and separately managed accounts.

The variable OWN_PBF is an indicator variable equal to 1 if the reporting fund pays its own managers PBFs to incentivize them to increase performance. The data for this variable are from N-SAR forms filed with the SEC. Specifically, we use a computer script to pull data from the SEC Edgar database and focus on the fund's answer to Question 51 of the NSAR form: "Was

[18] Mutual funds typically have the same fiscal year end date every year, but sometimes these year-end dates can be changed, and thus the effective date for reporting data may be different across years.

your advisory fee during the period based in whole or in part on its investment performance?" The indicator variable OWN_PBF is constructed based on the fund's answer to this question. We find that 15% of fund-months in our sample have PBFs for the fund itself, suggesting a higher rate than reported in the prior literature.

Elton et al (2003) report that only 2% of funds representing 10% of industry mutual fund assets have PBFs in 1999. Golec (1992) finds that around 6% of the funds in his 1980s sample have PBFs, while Deli (2002) reports that 7% of funds for the fiscal year 1997 have advisory contracts with performance fees. Papini (2006) reports that 5% of mutual funds in 2005 have PBFs, but that they are more prevalent in certain large families, such as Fidelity and Vanguard according to Strategic Insight of New York. Given that our sample contains the 30 largest families, the greater prevalence in our sample is expected. In our sample, a high percentage of the funds with PBFs belong to three families - Riversource, Fidelity, and Vanguard.[19] As an additional check of our N-SAR data, we examine all equity funds with N-SAR filings between 2005 and 2011 and find that roughly 5% of all funds have PBFs, a rate consistent with the previous literature. The definitions for all other variables are presented in Appendix B.

3 Results

3.1 Impact of side by side management on mutual fund performance

We explore the performance of mutual funds with side-by-side managers in a regression setting. For each performance measure, we estimate the following panel regression using a set of control variables standard in the literature:

[19] In Riversource, we find that 83% of the funds use performance fees in their advisory contracts. In Fidelity and Vanguard, the percentages of funds with PBFs are 47% and 24% respectively.

$$Performance_{i,t}$$

$$= \alpha + \beta_1(Variable - of - interest)_{i,t-1} + \beta_2\big(Log(TNA)\big)_{i,t-1}$$

$$+ \beta_3\big(Log(Family\ TNA)\big)_{i,t-1} + \beta_4(Flow)_{i,t-1} + \beta_5\big(Log(Age)\big)_{i,t-1}$$

$$+ \beta_6(Expenses)_{i,t-1} + \beta_7(Turnover)_{i,t-1} + \beta_8(Total\ Load)_{i,t-1}$$

$$+ \beta_9(Return)_{i,t-1} + \beta_{10}(Volatility)_{i,t-1} + Year\ Fixed\ Effects$$

$$+ Style\ Fixed\ Effects\ + \epsilon_{i,t}$$

We use four different performance measures in our tests. The first two measures are abnormal returns after adjusting for the factor loadings using the one factor model (CAPM) and the Carhart (1997) four-factor model.[20] To calculate the factor-adjusted return of a fund in each month, we first estimate the factor loadings of unconditional models using 2 years of past monthly fund returns. We then subtract the expected return, calculated using factor estimates, from the fund return in order to determine the factor-adjusted return.[21] The third measure used in our tests is the characteristic-adjusted returns developed by Daniel et al (1997). To compute DGTW returns of a fund, we first take each stock's raw return minus the return of a benchmark portfolio consisting of firms in the same size, market-to-book ratio, and momentum quintile as the stock.[22] We then calculate the fund's DGTW returns based on the returns of its holdings. Our final measure is the return gap of Kacperczyk et al (2008), which is the difference between the fund's actual gross return and the gross return implied by the fund's lagged reported

[20] In the one factor model, we use the excess returns on the market portfolio as the sole factor. The Carhart (1997) model includes the excess return on the market portfolio plus three mimicking factor portfolios: SMB (small minus large capitalization stocks), HML (high B/M minus low B/M stocks), and MOM (the return difference between stocks with high and low returns.

[21] We estimate our regressions starting from 2002 to obtain abnormal returns in 2005.

[22] Stock assignments and benchmark returns are obtained from Prof. Russ Wermers' website (http://alex2.umd.edu/wermers/ftpsite/Dgtw/coverpage.htm).

holdings. This measure is intended to capture unobservables, such as the value added by skillfully timed stock picks or the value destroyed by poor trade executions or agency costs.

Our regressions include the following control variables: the logarithm of fund size, the logarithm of family assets, past 12 month average fund flows, the logarithm of fund age, expense ratio, turnover, total load fees, 12-month past fund returns, and 12 month volatility of funds returns. Among others, Chen et al. (2004), Sirri and Tufano (1997), Wermers (2003), Pollet and Wilson (2008) show that these fund characteristics influence future fund performance. All of our control variables are lagged at least one month. The standard errors for all panel regressions are clustered at the fund level. Table 4 Panel A presents the coefficient estimates of these regressions with our four performance measures as the dependent variables: CAPM alpha, Carhart alpha, DGTW return, and return gap. As an exploratory step, we first use ANY_PBF as the independent variable of interest to investigate the performance of mutual funds with at least one manager with any type of PBFs. The results shown in Panel A indicate that these funds underperform the no-PBF funds by 8.3 bps per month in CAPM alpha and 4.3 bps in Carhart alpha.

In untabulated statistics, we find there is overlap among the managers with assets subject to PBFs, such that some managers have PBFs in more than one type of account simultaneously. As a result, in the second iteration, we use four different indicator variables to capture the four mutually exclusive groups defined earlier in order to evaluate which type of PBFs incentivizes mutual fund managers: RIC_PBF_ONLY, PIV_PBF_NOT_SMA, SMA_PBF_NOT_PIV, and PIV_SMA_PBF_BOTH. The omitted category is funds with no PBFs at all. Panel B of Table 4 presents the results of this exercise. Of the four indicator variables, only the coefficient estimates for PIV_PBF_NOT_SMA and PIV_SMA_PBF_BOTH, the categories with hedge

funds, are negative and statistically significant, consistent across all four performance measures. The coefficients on RIC_PBF_ONLY and SMA_PBF_NOT_PIV are insignificant and close to zero. These results suggest that only PBFs in pooled investment vehicles have a negative impact on mutual fund performance, consistent with the idea that these high-powered incentive fees lead managers to strategically shift returns from mutual funds to hedge funds. The results also imply that separate accounts appear to induce direct and indirect incentives more similar to mutual funds than to hedge funds.

In the third iteration, we combine the two variables PIV_PBF_NOT_SMA and PIV_SMA_PBF_BOTH into one indicator variable, SBS_PBF, which is equal to 1 if the fund's managers have PBFs in pooled investment vehicles (side-by-side (SBS) from here forward), regardless of whether they also have PBFs in registered investment companies or separately managed accounts. The results in Panel C of Table 4 confirm our prior finding that side-by-side management harms mutual fund performance. Side-by-side mutual funds underperform other funds with no PBFs by 18.3 bps per month (CAPM alpha) and 9.6 bps (Carhart alpha), or 219.6 and 115.2 bps per year, respectively. These effects are large in economic magnitude and statistically significant at the 1% level.

Even though on average 13.2% of fund-months in our sample have managers with side-by-side arrangements, there is significant variation across families with regards to how many funds are managed by side-by-side managers. In some families, over 90% of funds have one or more side-by-side managers. In contrast, other families have no funds with side-by-side managers. Appendix C shows the names of families ranked by percent of side-by-side funds. In short, for three families, the percent of funds with side-by-side managers ranges between 90% and 100%, whereas eight other families have no funds with side-by-side managers. Fidelity has

a single fund with side-by-side managers. In nine families, there is no within-family variation with regards to the SBS_PBF variable. These nine families either have 100% of funds with side-by-side managers or have no side-by-side fund at all. As a result, our regressions need to utilize the variation across families to identify the impact of side-by-side management.

3.2 Evidence from funds that change side-by-side management status

To provide more convincing evidence on the effect of side-by-side management, we focus on the sample of funds that switch from having no side-by-side managers to having side-by-side managers during the sample period. We compare the performance of this group, the "switchers," to the group of funds with no side-by-side managers, both before and after the switch.

We identify a total of 45 switcher funds during the sample period. We define the date of the switch as the effective date listed in the SEC filing in which the fund's status changes from that of the previous effective date. The variable PRE_SBS_PBF is equal to 1 for switcher funds in all fund-months before the switch date, whereas the variable POST_SBS_PBF is equal to 1 for switcher funds in all fund-months after the switch date. Indicator variables RIC_PBF_ONLY and SMA_PBF_NOT_PIV are also included in the regressions, and funds that switch multiple times or are SBS throughout the entire sample period are deleted, implying that the omitted category and control group are funds with managers without any type of PBF account. Note that since we only have annual observations of the side-by-side status of fund managers, the switch might actually occur before the effective date, in which case we would underestimate the magnitude of any effect.

We also classify the switchers into two groups based on the cause of the change in status; 31 funds switch because the current mutual fund managers add one or more hedge funds to the

assets they manage, whereas the remaining 14 funds switch because the funds add hedge fund managers as new mutual fund managers. While we expect to see differences in fund performance associated with both types of events, the change in side-by-side status of the continuing management team is likely to be a cleaner test. In these cases, presumably the only change is that one or more of the mutual fund managers now manage hedge funds that offer more lucrative incentive fees. Testing for a separate effect for continuing managers allows for a comparison of performance relative to the peer group before and after the switch for the same group of funds and managers.

Table 5 presents the results of our tests. In the first specification, we focus on the pre- and post-switch fund performance. The coefficients on POST_SBS_PBF are negative and statistically significant at the 1% level across all four performance measures. The economic magnitudes are even larger than our earlier finding. Funds that switch to side-by-side status underperform non-side-by-side funds by 20.4 bps per month in Carhart alpha. In contrast, with the exception of return gap, we find no significant difference in performance between the switcher funds and control funds during the pre-switch period. In the second specification, we interact the PRE_SBS_PBF and POST_SBS_PBF variable with the NEW_MGR variable, which is equal to 1 if the cause of the switch is due to adding hedge fund managers as new mutual fund managers. This specification allows us to capture the differential effects of the two types of switch on fund performance. The coefficients on the POST_SBS_PBF stand-alone terms are negative and statistically significant at the 1% level, suggesting that the group of switcher funds with continuing managers underperform significantly after the switch, whereas these same funds do not underperform before the switch (with return gap being the exception again). The non-significance of the interaction term POST_SBS_PBF*NEW_MGR shows that the group of

switcher funds with new managers also experience similar levels of underperformance after the switch. These results confirm our prior finding that high-powered incentives inherent in hedge fund management lead to underperformance for side-by-side mutual funds.

We also perform an analogous test for performance effects within a sample of funds that switch from having no separately managed accounts with PBFs to having separately managed accounts with PBFs during our sample period. Similar to the above analysis, we test for differences in the performance of this group before and after the switch relative to the control group of funds with managers without any type of PBF account. Because both the hedge funds and the separate accounts have PBFs in these samples of switchers, we are testing whether the client type is what matters. Of course, client type in this case, is also likely correlated with the amount of compensation a manager receives per unit of performance.

Table 6 contains the results of the separate account (SA) switcher analysis. In contrast to SBS hedge fund switchers, we do not find any underperformance after the switch due to an addition of separate accounts with PBFs. In contrast, these switcher funds underperform non-PBF funds before the switch, but not after the switch, and in seven out of the eight specifications, the improvement in performance from before to after the switch is statistically significant (not reported). Because these switches are defined as mutual fund managers adding new separate accounts, these switches coincide with the manager adding a new type of clientele (institutional investor separate account clients). Thus, the relative increase in performance might be due to the reduction of agency problems at the mutual fund from greater monitoring by new institutional clients, consistent with results in Evans and Fahlenbrach (2012). Importantly, the increase in performance contrasts sharply with the decrease in performance observed for mutual funds with managers adding hedge funds. We explore explanations for this in the next section.

3.3 Channels of favoritism

One explanation for our results is that managers strategically shift performance from the mutual funds they manage to their more lucrative hedge funds via some deliberate cross-subsidization practices. An alternative explanation is that the addition of other accounts may compete for the managers' time and attention, and it is simply this new distraction that causes fund performance to suffer. This potential conflict of interest might be particularly relevant if simultaneously managed accounts have different objectives, benchmarks, and time horizons as the management team must allocate its time across diverse multiple accounts. For example, Agarwal et al (2015) investigate fund managers that switch from single-tasking (i.e., managing one open-end fund) to multi-tasking (i.e., managing multiple open-end funds). If spreading time, attention, and effort across more funds induces underperformance, one would expect both the managers' original incumbent fund and the newly managed funds' performance to suffer after multi-tasking begins. Instead, they find that the performance of the incumbent fund deteriorates after the switch, while the new or acquired fund's performance improves, suggesting a deliberate diversion of effort.

While we cannot observe the performance of the manager's newly acquired hedge fund in our sample, we can explore a manager distraction and effort diversion hypothesis in other ways. While our switcher analysis suggests that only the addition of hedge fund clients, and not separate accounts with PBFs, leads to mutual fund underperformance, this still might be consistent with an attention story. For example, it may be that a new separate account will be managed in a much more similar manner to the existing mutual fund, relative to a new hedge fund.

The greater distraction and effort required to implement hedge fund strategies might account for the difference in the performance effect between the two client types. Note that the distraction we have in mind is more than simply the effects of getting more assets to manage. We show in Table 1 that only 5% of sample fund managers do not manage any other fund or account and that managers with other separate accounts with PBFs have larger assets under management in these accounts, on average, than they do in hedge funds they manage. If mutual fund underperformance is solely driven by managers' effort diversion due to additional accounts, we should observe some level of underperformance for these funds that gain separate accounts after the switch. In addition, we should also be able to detect whether the manager allocates less effort toward managing the fund after adding a new hedge fund to their activities.

To provide further evidence on this alternative, we test the hypothesis that the addition of a side-by-side hedge fund will result in the manager devoting less time and effort to the active management of the mutual fund. Specifically, under the assumption that active management requires more time and resources than more passive management or closet indexing, we compare the degree of active management of switcher funds relative to non-side-by-side funds before and after the switch. We expect to see a decrease in the fund's active management if the management teams of switchers focus their efforts primarily on SBS accounts after the switch. We use the active share measure of Cremers and Petajisto (2009) and a fund tracking error measure to conduct this test.

Table 7 contains the results in which we regress active management proxies onto PRE_SBS_PBF, POST_SBS_PBF, and other control variables as in section 3.2. In the first four columns, the dependent variables are the average active share measure in the subsequent 12

months, and the average tracking error measure in the subsequent 12 months.[23] Active share and tracking error might capture different dimensions of active management (Cremers and Petajisto, 2009). In addition, in the final two columns we follow Del Guercio and Reuter (2014) and construct an indicator that takes the value of 1 if both the average 12-month active share and tracking error of a fund are above their respective medians and zero otherwise, where the median value is measured within each investment style. We find that active management of switcher funds does not significantly decrease after the addition of hedge funds to the managers' accounts, inconsistent with an effort diversion story. If anything, our results support an increase in active management as some of the differences from pre- to post-switch are positive and significant (not reported in the tables). An increase in active management is possibly due to fund managers mimicking some of the hedge fund active bets and taking similar positions in their mutual fund portfolios.

To provide further evidence consistent with a deliberate action by SBS managers that affects mutual fund performance, we exploit that the fact that team management has become much more prevalent in the mutual fund industry in recent years. Given that strategically transferring performance would require either the explicit coordination with or the tacit approval of co-managers, we would expect that managers of single-manager funds or managers on the exact same team in both mutual funds and hedge funds will find it easier to shift returns than managers on different teams. As such, we expect that the underperformance of side-by-side funds would be stronger in single-managed or same-team-managed funds than in different-team-

[23] We use the average of lead 12 months because active share and tracking error are slow moving variables. However, using 1-month, 3-month, 6-month, and 12-month lead values of these variables as dependent variables instead does not change inferences.

managed funds. We identify managers on the same team in both segments as having the same exact (non-zero) assets held in pooled investment vehicles with PBFs.

Table 8 documents the results of our tests. The SBS_PBF_SINGLE_SAME_TEAM variable is equal to 1 for side-by-side funds managed by a single manager or a group of managers on the same team. The coefficients on this variable are negative and statistically significant for all four performance measures. The SBS_PBF_DIFF_TEAM is equal to 1 for side-by-side funds managed by a group of managers on different teams. The coefficients on this variable are negative and statistically significant for only two of the four performance measures, CAPM alpha and return gap. In addition, Wald tests reveal that the coefficients on SBS_PBF_DIFF_TEAM are less negative and statistically different from the coefficients on SBS_PBF_SINGLE_SAME_TEAM for three out of four specifications. The results here are consistent with our conjecture that single managers or managers on the same team will find it easier to strategically shift returns than managers on different teams.

In sum, even though managers' time allocation problem might contribute to a deterioration in fund performance, our evidence supports the interpretation that neither distraction nor effort diversion on the part of the switcher managers can be the full explanation.

3.4 The relative importance of the mutual fund industry and performance

In this section, we investigate another source of incentives for mutual fund managers, the relative importance of the mutual fund industry in the manager's total portfolio of assets under management. We measure this relative importance by calculating the percentage of a manager's total assets under management held in registered investment companies (including the TNA of the fund itself). We average this percentage across all managers of the same fund in a year and

call this variable AVG_MGR_RIC_PCT. We hypothesize that if a manager receives the bulk of their compensation from mutual funds and are consequently relatively more concerned about their reputation as a mutual fund manager (proxied by a higher percentage of assets held in registered investment companies), he has a greater incentive to allocate effort and performance to these mutual fund assets.

Table 9 provides evidence consistent with this conjecture. In our regressions, we standardize the AVG_MGR_RIC_PCT variable to have a mean of 0 and a standard deviation of 1 for easier interpretation. The coefficient on this variable is positive and statistically significant across all four performance measures. The effect is also economically significant: a one-standard deviation increase in the percent of a manager's assets held in the mutual fund industry is associated with 4 bps increase in Carhart alpha. The effect of side-by-side management also seems to be attenuated in this regression, with the negative impact on Carhart alpha dropping from 9.6 bps in the previous regression to 7.3 bps in this regression.

3.5 Impact of own-fund PBFs

In this section, we evaluate the performance of mutual funds that pay their own managers incentive fees. As we discuss previously, the PBFs in mutual funds, called fulcrum fees, are small in magnitude and also required to be symmetric. As such, we do not expect the existence of own-fund PBFs to provide enough counteracting incentives to offset the conflicts of interest for managers with side-by-side arrangements.

Table 10 presents the results of our analysis. The coefficients on SBS_PBF are negative and statistically significant in all four specifications, suggesting that when there are no own-fund PBFs (OWN_PBF equals 0) side-by-side management hurts fund performance. This is

consistent with our earlier finding reported in Table 4 Panel C. The coefficients on the interaction term are positive in all four specifications, which suggest that the PBFs offered by mutual funds for their own managers seem to mitigate the negative effects of side-by-side management, but the impact is statistically significant for only CAPM alpha and Carhart alpha. Interestingly, the stand-alone effect of OWN_PBF is not statistically significant, suggesting that when there is no side-by-side management, own-fund PBFs do not help to increase mutual fund performance.

4 Conclusion

The potential conflicts of interests arising from the side-by-side management evoke some debate in the recent literature. Papers focusing on the simultaneous management of mutual funds and hedge funds (Nohel, Wang, Zheng (2010), Cici, Gibson and Moussawi (2010)) have come to opposite conclusions regarding whether this practice is harmful or beneficial to mutual fund investors. Nohel et al find superior performance in funds with managers who also manage hedge funds, suggesting that side-by-side management is a way to keep talented managers within the family. However, Cici et al find that side-by-side management leads to underperformance by the mutual funds, suggesting that managers favor more lucrative hedge funds at the expense of mutual funds.

To shed additional light on this unresolved question, in this paper, we investigate the performance effect of side-by-side management using the SEC mandated disclosures beginning in 2005. According to the SEC, the rationale behind this mandate is to enable investors to assess the potential conflicts of interests as a result of side-by-side management. Advisor firms share similar concerns in fund prospectuses and argue that they implement various policies to eliminate them. Our results show that these concerns are warranted. We find that funds with

side-by-side managers underperform its peers without side-by-side managers, particularly when a fund is managed by a single manager or with the same team in both mutual funds and hedge funds. Mutual funds with PBFs seem to be able to mitigate the negative impact of side-by-side management, albeit the effect is weak. The most important and dominant factor that mitigates the effects of side-by-side management is the relative importance of the mutual fund industry in the manager's total portfolio of assets under management. Overall, our results cast doubt on the effectiveness of the monitoring and governance mechanisms that advisor firms put in place to mitigate the conflicts of interests due to side-by-side management.

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Appendix A. Sample SEC Filing containing information on management of other portfolio accounts by fund managers

AllianceBernstein Value Funds Prospectus (Statement of Additional Information)[24]

EQUITY INCOME FUND.
The management of, and investment decisions for, the Fund's portfolio are made by the Adviser's U.S. Equity Senior Investment Management Team. Mr. Christopher W. Marx, Mr. Joseph G. Paul, Mr. John D. Phillips, Jr. and Mr. Greg L. Powell are the investment professionals with the most significant responsibility for the day-to-day management of the Fund's portfolio.

The following tables provide information regarding registered investment companies other than the Fund, other pooled investment vehicles and other accounts over which the Fund's portfolio managers also have day-to-day management responsibilities. The tables provide the numbers of such accounts, the total assets in such accounts and the number of accounts and total assets whose fees are based on performance. The information is provided as of the Fund's fiscal year ended November 30, 2010.

REGISTERED INVESTMENT COMPANIES
(excluding the Fund)

Portfolio Manager	Total Number of Registered Investment Companies Managed	Total Assets of Registered Investment Companies Managed	Number of Registered Investment Companies Managed with Performance-based Fees	Total Assets of Registered Investment Companies Managed with Performance-based Fees
Christopher W. Marx	61	$10,880,000,000	1	3,768,000,000
Joseph G. Paul	153	$29,019,000,000	3	6,492,000,000
John D. Phillips, Jr.	61	$10,880,000,000	1	3,768,000,000
Greg L. Powell	151	$29,015,000,000	3	6,492,000,000

POOLED INVESTMENT VEHICLES

Portfolio Manager	Total Number of Pooled Investment Vehicles Managed	Total Assets of Pooled Investment Vehicles Managed	Number of Pooled Investment Vehicles Managed with Performance-based Fees	Total Assets of Pooled Investment Vehicles Managed with Performance-based Fees
Christopher W. Marx	50	$ 1,495,000,000	None	None
Joseph G. Paul	237	$13,665,000,000	9	365,000,000
John D. Phillips, Jr.	50	$ 1,495,000,000	None	None
Greg L. Powell	223	$11,978,000,000	6	318,000,000

[24] This filing available at http://www.sec.gov/Archives/edgar/data/910036/000091957411001864/d1170239_485-b.txt

OTHER ACCOUNTS

Portfolio Manager	Total Number of Other Accounts Managed	Total Assets of Other Accounts Managed	Number of Other Accounts Managed with Performance-based Fees	Total Assets of Other Accounts with Performance-based Fees
Christopher W. Marx	32,647	$18,376,000,000	5	166,000,000
Joseph G. Paul	33,024	$62,015,000,000	43	4,732,000,000
John D. Phillips, Jr.	32,647	$18,376,000,000	5	166,000,000
Greg L. Powell	33,024	$62,015,000,000	43	4,732,000,000

Appendix B: Variable Definitions

Variable Name	Definition
TNA	Total net assets of a fund
FAM. TNA	Sum of total net asset of funds that belong to the same family
FAM. TNA (EQUITY)	Sum of total net asset of equity funds that belong to the same family
FLOW	Average percentage flow over a 12-month period.
AGE	Number of months since a fund's inception
EXP. RATIO	The percentage of the total investment that investors pay for the mutual fund's operating expenses
TURNOVER	Minimum of total sales or purchases of securities divided by the average 12-month Total net assets of the fund.
LOAD	Total of maximum front, deferred, and redemption fees as a percentage total of assets
RETURN	The cumulative fund return over the previous 12 months
VOLATILITY	The standard deviation of monthly fund returns over the previous 12 months
# OF MANAGERS	The number of managers in the fund management team
ANY_PBF	Equal to 1 if any of the fund's managers has PBFs in any category of assets
RIC_PBF_ONLY	Equal to 1 if the fund's managers have PBFs only in registered investment companies
PIV_PBF_NOT_SMA	Equal to 1 if the fund's managers have PBFs in pooled investment vehicles but not in separately managed accounts
SMA_PBF_NOT_PIV	Equal to 1 if the fund's managers have PBFs in separately managed accounts but not in pooled investment vehicles
PIV_SMA_PBF_BOTH	Equal to 1 if the fund's managers have PBFs in both pooled investment vehicles and separately managed accounts
SBS_PBF	Equal to 1 if the fund's managers have PBFs in pooled investment vehicles, regardless of whether they have PBFs in any other type of account.
SBS_PBF_SINGLE_SAME_TEAM	Equal to 1 if the fund's managers have PBFs in pooled investment vehicles and the fund is managed by a single manager or a team of managers that is the same across the mutual fund and pooled investment vehicle.
SBS_PBF_DIFF_TEAM	Equal to 1 if the fund's managers have PBFs in pooled investment vehicles and the fund is managed by a team of managers that is different across the mutual fund and pooled investment vehicle.
AVG_MGR_RIC_PCT	The percentage of total assets under management held in registered investment companies (including the reporting fund itself), averaged across managers of the same fund in a year.
OWN_PBF	Equal to 1 if the reporting fund pays its own managers PBFs

Appendix C: Across-family variation of side-by-side management

This table illustrates the variation across families with regards to the percentage of funds with side-by-side managers. Side-by-side managers are defined as those charging PBFs in pooled investment vehicles. We use data from the Statement of Additional Information, which is a required supplementary document to the fund's prospectus filed with the SEC (form N-1A with form type 485BPOS or 485APOS) to identify other accounts with PBFs managed by mutual fund managers.

Fund family's name	Percent of funds in the family with side-by-side managers
CALAMOS ADVISORS LLC	100.0%
DIMENSIONAL FUND ADVISORS INC	98.4%
ROYCE & ASSOCIATES LLC	94.4%
ALLIANCEBERNSTEIN LP	49.4%
SCUDDER INVESTMENTS	36.8%
PIMCO ADVISORS	33.3%
HARTFORD MUTUAL FUNDS	22.4%
LEGG MASON/WESTERN ASSET MGMT	16.2%
PUTNAM INVESTMENT MANAGEMENT LLC	14.1%
RIVERSOURCE INVESTMENTS LLC	11.6%
VANGUARD GROUP INC	8.5%
FEDERATED INVESTORS	6.7%
FRANKLIN TEMPLETON INVESTMENTS	6.1%
SMITH BARNEY FUND MGMT	6.0%
COLUMBIA FUNDS	5.5%
MERRILL LYNCH INV MANAGERS	5.3%
DREYFUS CORPORATION	4.6%
AIM INVESTMENTS	4.0%
MFS INVESTMENT MANAGEMENT	2.1%
JANUS CAPITAL MANAGEMENT LLC	1.8%
VAN KAMPEN ASSET MANAGEMENT	1.0%
FIDELITY MANAGEMENT & RESEARCH COMPANY	0.7%
AMERICAN CENTURY INVESTMENT MGMT INC	0.0%
AMERICAN FUNDS	0.0%
BANK OF NEW YORK	0.0%
DODGE & COX	0.0%
DAVIS SELECTED ADVISERS LP	0.0%
LORD ABBETT & COMPANY LLC	0.0%
OPPENHEIMERFUNDS INC/CENTENNIAL	0.0%
T ROWE PRICE ASSOCIATES INC	0.0%

Table 1: The prevalence of assets under management outside the mutual fund industry by fund managers

We use data from the Statement of Additional Information, which is a required supplementary document to the fund's prospectus filed with the SEC (form N-1A with form type 485BPOS or 485APOS) to identify other managed accounts disclosed by mutual fund managers. The sample includes all managers of actively-managed domestic equity mutual funds in the CRSP Mutual Fund Database that belong to the largest 30 fund families in CRSP, ranked by total domestic equity mutual fund assets in March 2005. For these 30 families, we include each manager listed as having day-to-day responsibility for managing the fund in the Statement of Additional Information. Funds are required to disclose every fiscal year the number of accounts and the assets under management in three categories: registered investment Companies, pooled investment vehicles, and separately managed accounts. The SEC also requires funds to disclose if any of the other managed accounts are subject to PBFs, and the assets under management in each category subject to this incentive fee. In each panel, we report statistics as of the effective date of the information listed in the prospectus. The sample contains some observations with effective dates in 2004 and 2011, but we exclude these partial years in the table below. However, in the row "All manager-years" we include observations from these partial years as well. The data collected are manager-fund-year observations, but we average observations across all funds for a manager in a year to arrive at the manager-year dataset used for this table. Panel A contains the percentage of all manager-years disclosing any of these account types, as well as the percentage disclosing accounts under the three SEC-required categories. Panel A also contains the average assets under management for each category, for those manager-years that have non-zero assets in each of these categories. Panel B contains the percentage of manager-years with any accounts subject to PBFs, as well as the percentage of manager-years of each account category type subject to PBFs. Panel B also contains the average assets under management subject to PBFs for each category, for those manager-years that have non-zero assets with PBFs in these categories.

Panel A: Management of additional managed accounts and average assets under management by mutual fund managers

Year	Total number of unique managers	Percent of all managers with				For all managers:	For managers with non-zero accounts Average assets under management ($MM) in:		
		any additional managed accounts	other registered investment companies	other pooled investment vehicles	other separately managed accounts	Percent of total AUM in pooled investment vehicles and separately managed accounts	other registered investment companies	other pooled investment vehicles	other separately managed accounts
2005	701	94.7%	87.4%	54.5%	67.9%	22.5%	12,536	881	5,533
2006	745	94.5%	86.4%	56.1%	64.0%	22.7%	14,810	1,936	6,382
2007	752	94.9%	88.8%	56.6%	67.2%	24.5%	17,754	2,951	8,673
2008	737	95.1%	88.5%	59.6%	67.2%	25.6%	13,417	2,255	4,938
2009	773	95.6%	89.0%	57.6%	68.2%	26.4%	13,130	1,496	3,649
2010	752	95.6%	89.4%	57.3%	65.4%	22.7%	16,147	1,581	5,130
All manager -years	5,075	95.0%	88.2%	56.5%	66.9%	24.1%	14,490	1,879	5,442

Panel B: Outside accounts and assets under management with performance-based Fees (PBFs) by mutual fund managers

Year	Total number of managers	Percent of all managers with PBFs in:				For managers with non-zero accounts: Average assets under management ($MM) with PBFs in:		
		any outside accounts	other registered investment companies	other pooled investment vehicles	other separately managed accounts	other registered investment companies	other pooled investment vehicles	other separately managed accounts
2005	701	19.8%	7.6%	5.0%	12.8%	3,545	180	1,298
2006	745	23.6%	10.9%	7.0%	15.2%	3,206	375	2,138
2007	752	25.5%	13.0%	6.3%	15.6%	3,797	304	2,866
2008	737	28.5%	13.2%	8.0%	16.3%	2,976	313	1,774
2009	773	31.7%	14.1%	9.2%	18.0%	2,544	143	1,010
2010	752	29.3%	15.4%	6.8%	16.0%	2,706	227	993
All manager-years	5,075	26.5%	12.5%	7.0%	15.4%	3,123	262	1,621

Table 2: Number of funds and managers per fund by year

Data on manager names are collected from the Statement of Additional Information, which is a required supplementary document to the fund's prospectus filed with the SEC (form N-1A with form type 485BPOS or 485APOS). The sample includes all managers of actively-managed domestic equity mutual funds in the CRSP Mutual Fund Database that belong to the largest 30 fund families in CRSP, ranked by total domestic equity mutual fund assets in March 2005. This table uses data at the fund-manager level to document trends in single-manager funds and team-managed funds. The sample contains some observations with effective dates in 2004 and 2011, but we exclude these partial years in the table below. However, in the row "All years" we include observations from these partial years as well.

Year	Total number of funds	Average number of managers	% of funds with: 1 manager	2 managers	3 managers	4 or more managers
2005	592	2.19	45.9%	25.3%	13.5%	15.2%
2006	626	2.26	43.6%	25.7%	12.6%	18.1%
2007	635	2.34	40.3%	29.6%	10.4%	19.7%
2008	638	2.34	40.4%	28.8%	11.4%	19.3%
2009	642	2.54	36.6%	29.8%	10.7%	22.9%
2010	616	2.64	34.7%	29.7%	12.7%	22.9%
All years	4,172	2.40	40.0%	28.3%	12.0%	19.6%

Table 3: Summary statistics at the fund-month level

We use data from the Statement of Additional Information, which is a required supplementary document to the fund's prospectus filed with the SEC (form N-1A with form type 485BPOS or 485APOS) to identify other managed accounts disclosed by mutual fund managers. The sample includes all managers of actively-managed domestic equity mutual funds in the CRSP Mutual Fund Database that belong to the largest 30 fund families in CRSP, ranked by total domestic equity mutual fund assets in March 2005. Data on fund returns and characteristics are obtained from the CRSP Mutual Fund Database. SEC data are averaged across managers of the same fund in a year to arrive at fund-year observations. These yearly observations are matched to CRSP monthly returns and characteristics based on SEC effective dates. ANY_PBF is an indicator variable equal to 1 if any of the fund's managers has PBFs in any category of assets. SBS_PBF is an indicator variable equal to 1 if the fund has at least one manager with PBFs in pooled investment vehicle. RIC_PBF_ONLY is equal to 1 if the fund's managers have PBFs only in registered investment companies. SMA_PBF_NOT_PIV is equal to 1 if the fund's managers have PBFs in separately managed accounts but not in pooled investment vehicles. AVG_MGR_RIC_PCT is the percentage of total assets under management held in registered investment companies (including the reporting fund itself), averaged across managers of the same fund in a year. SBS_PBF is equal to 1 if the fund's managers have PBFs in pooled investment vehicles, regardless of whether they have PBFs in any other type of account. SBS_PBF_SINGLE_SAME_TEAM take the value of 1 for a SBS fund if the fund is managed by either a single manager or a team of managers with the exact *same* reported pooled investment account assets under management. SBS_PBF_DIFF_TEAM is equal to 1 for a team-managed SBS fund, in which members of the team manage different amounts of pooled investment account assets. OWN_PBF is equal to 1 if the reporting fund pays its own managers PBFs. The data for this variable are collected from N-SAR forms filed with the SEC.

Variable	Mean	Median	Standard Deviation	P25	P75
TNA	3,630.9	768.5	10,903.6	185.1	2712.7
FAM. TNA	372,110	155,483	475,379	-4.0%	18.7%
FAM. TNA (EQUITY)	118,226	44,648	157,767	2.8%	6.0%
FLOW	0.5%	-0.4%	3.9%	75	249
AGE	200.9	139.0	191.8	-1.4%	1.1%
EXP. RATIO	1.0%	1.0%	0.4%	29.0%	104.0%
TURNOVER	77.6%	59.0%	71.8%	0.8%	1.3%
LOAD	2.3%	2.0%	2.1%	0.0%	4.2%
RETURN	6.2%	9.9%	22.2%	81,452.2	299,428.4
VOLATILITY	4.6%	4.3%	2.3%	28,084.2	124,345.1
# OF MANAGERS	2.4	2.0	1.8	1	3
ANY_PBF	35.7%	0%	47.9%	0%	100%
RIC_PBF_ONLY	10.6%	0%	30.7%	0%	0%
PIV_PBF_NOT_SMA	7.2%	0%	25.9%	0%	0%
SMA_PBF_NOT_PIV	11.9%	0%	32.4%	0%	0%
PIV_SMA_PBF_BOTH	6.0%	0%	23.7%	0%	0%
SBS_PBF	13.2%	0%	33.8%	0%	0%
SBS_PBF_SINGLE_SAME_TEAM	5.8%	0%	23.5%	0%	0%
SBS_PBF_DIFF_TEAM	7.3%	0%	26.1%	0%	0%
AVG_MGR_RIC_PCT	80.2%	91.7%	24.7%	69.9%	99.5%
OWN_PBF	15.2%	0.0%	35.9%	0.00%	0.00%

Table 4: Impact of side-by-side management on mutual fund performance

We use data from the Statement of Additional Information, which is a required supplementary document to the fund's prospectus filed with the SEC (form N-1A with form type 485BPOS or 485APOS) to identify other managed accounts disclosed by mutual fund managers. The sample includes all managers of actively-managed domestic equity mutual funds in the CRSP Mutual Fund Database that belong to the largest 30 fund families in CRSP, ranked by total domestic equity mutual fund assets in March 2005. Data on fund returns and characteristics are obtained from the CRSP Mutual Fund Database. SEC data are averaged across managers of the same fund in a year to arrive at fund-year observations. These yearly observations are matched to CRSP monthly returns and characteristics based on SEC effective dates. ANY_PBF is an indicator variable equal to 1 if any of the fund's managers has PBFs in any category of assets. RIC_PBF_ONLY is equal to 1 if the fund's managers have PBFs only in registered investment companies. PIV_PBF_NOT_SMA is equal to 1 if the fund's managers have PBFs in pooled investment vehicles but not in separately managed accounts. SMA_PBF_NOT_PIV is equal to 1 if the fund's managers have PBFs in separately managed accounts but not in pooled investment vehicles. PIV_SMA_PBF_BOTH is equal to 1 if the fund's managers have PBFs in both pooled investment vehicles and separately managed accounts. SBS_PBF is an indicator variable equal to 1 if any of the fund's managers have PBFs in pooled investment vehicles, regardless of whether they also have PBFs in registered investment companies or separately managed accounts. Regressions include year and style fixed effects. Standard errors are clustered at the fund level.

Panel A: Impact of any PBF account on fund performance

Variables	CAPM alpha	Carhart alpha	DGTW	Return gap
ANY_PBF	-0.083	-0.043	-0.029	-0.023
	(-4.5)***	(-2.6)***	(-1.9)*	(-2.6)**
LOG(TNA)	-0.014	-0.012	-0.007	-0.006
	(-2.1)**	(-2.2)**	(-1.3)	(-1.9)*
LOG(FAM TNA)	-0.018	-0.018	-0.023	0.006
	(-2.2)**	(-2.3)**	(-3.3)***	(1.3)
FLOW	0.380	0.665	0.033	0.029
	(1.3)	(2.5)**	(0.1)	(0.2)
LOG(AGE)	0.047	0.038	0.014	0.016
	(3.4)***	(3.2)***	(1.1)	(2.2)**
EXP. RATIO	-12.475	-15.765	-4.128	0.166
	(-4.1)***	(-5.7)***	(-1.5)	(0.1)
TURNOVER	0.061	0.051	-0.024	0.009
	(3.8)***	(3.5)***	(-1.5)	(1.1)
LOAD	0.183	0.000	-0.016	-0.402
	(0.4)	(0.0)	(-0.0)	(-1.2)
RETURN	-0.131	-0.269	-0.472	0.126
	(-2.2)**	(-5.1)***	(-8.3)***	(4.3)***
VOLATILITY	1.965	1.733	3.381	4.005
	(2.4)**	(2.1)**	(4.6)***	(8.4)***
Constant	0.678	0.536	0.331	-0.281
	(5.2)***	(4.6)***	(2.9)***	(-4.0)***
Observations	38,459	38,459	34,349	34,355
R-squared	0.014	0.012	0.007	0.011

Panel B: Impact of different types of PBF accounts on fund performance

Variables	CAPM alpha	Carhart alpha	DGTW	Return gap
RIC_PBF_ONLY	-0.040	0.004	0.010	0.003
	(-1.4)	(0.1)	(0.4)	(0.2)
PIV_PBF_NOT_SMA	-0.233	-0.089	-0.073	-0.062
	(-5.2)***	(-2.1)**	(-2.1)**	(-2.7)***
SMA_PBF_NOT_PIV	-0.022	-0.033	-0.010	-0.005
	(-0.8)	(-1.5)	(-0.4)	(-0.5)
PIV_SMA_PBF_BOTH	-0.130	-0.103	-0.103	-0.072
	(-3.7)***	(-3.9)***	(-3.5)***	(-4.0)***
LOG(TNA)	-0.012	-0.012	-0.007	-0.005
	(-1.8)*	(-2.1)**	(-1.2)	(-1.7)*
LOG(FAM TNA)	-0.031	-0.027	-0.032	-0.000
	(-3.4)***	(-3.2)***	(-3.7)***	(-0.0)
FLOW	0.418	0.663	0.026	0.029
	(1.5)	(2.5)**	(0.1)	(0.2)
LOG(AGE)	0.044	0.037	0.012	0.015
	(3.1)***	(3.1)***	(1.0)	(2.0)**
EXP. RATIO	-13.780	-16.790	-5.434	-0.777
	(-4.4)***	(-6.0)***	(-1.9)*	(-0.4)
TURNOVER	0.057	0.051	-0.026	0.006
	(3.6)***	(3.5)***	(-1.7)*	(0.8)
LOAD	0.053	-0.029	-0.000	-0.400
	(0.1)	(-0.1)	(-0.0)	(-1.2)
RETURN	-0.135	-0.267	-0.470	0.126
	(-2.3)**	(-5.1)***	(-8.3)***	(4.3)***
VOLATILITY	2.082	1.790	3.426	4.048
	(2.5)**	(2.2)**	(4.7)***	(8.5)***
Constant	0.846	0.648	0.447	-0.198
	(6.2)***	(5.2)***	(3.4)***	(-2.5)**
Observations	38,459	38,459	34,349	34,355
R-squared	0.014	0.012	0.007	0.011

Panel C: Impact of side-by-side management on fund performance

Variables	CAPM alpha	Carhart alpha	DGTW	Return gap
SBS_PBF	-0.183	-0.096	-0.087	-0.066
	(-6.2)***	(-3.7)***	(-3.5)***	(-4.1)***
RIC_PBF_ONLY	-0.043	0.004	0.011	0.003
	(-1.5)	(0.2)	(0.4)	(0.2)
SMA_PBF_NOT_PIV	-0.022	-0.033	-0.010	-0.005
	(-0.8)	(-1.5)	(-0.4)	(-0.5)
LOG(TNA)	-0.012	-0.012	-0.007	-0.005
	(-1.8)*	(-2.1)**	(-1.2)	(-1.7)*
LOG(FAM TNA)	-0.030	-0.027	-0.032	-0.000
	(-3.3)***	(-3.2)***	(-3.7)***	(-0.0)
FLOW	0.383	0.668	0.036	0.032
	(1.3)	(2.5)**	(0.1)	(0.2)
LOG(AGE)	0.044	0.037	0.012	0.015
	(3.1)***	(3.1)***	(1.0)	(2.0)**
EXP. RATIO	-13.897	-16.775	-5.403	-0.766
	(-4.4)***	(-6.0)***	(-1.9)*	(-0.4)
TURNOVER	0.061	0.051	-0.027	0.006
	(3.8)***	(3.5)***	(-1.7)*	(0.8)
LOAD	0.107	-0.037	-0.014	-0.405
	(0.2)	(-0.1)	(-0.0)	(-1.2)
RETURN	-0.131	-0.268	-0.472	0.126
	(-2.2)**	(-5.1)***	(-8.3)***	(4.3)***
VOLATILITY	2.078	1.791	3.430	4.048
	(2.6)**	(2.2)**	(4.7)***	(8.5)***
Constant	0.828	0.650	0.451	-0.196
	(6.1)***	(5.3)***	(3.4)***	(-2.5)**
Observations	38,459	38,459	34,349	34,355
R-squared	0.014	0.012	0.007	0.011

Table 5: Analysis of change in side-by-side management status (Pooled investment vehicles switchers)

This table contains regression estimates from regressions examining funds that switch from having no side-by-side managers (no PIV with PBFs) to having side-by-side managers (PIV with PBFs) during the sample period. We use the effective date reported in the Statement of Additional Information as the date of the switch if the previous filing for that fund did not disclose that the fund's manager(s) had a PIV with PBFs. PRE_SBS_PBF is an indicator variable equal to 1 for switcher funds in all fund-months before the switch. POST_SBS_PBF is an indicator variable equal to 1 for switcher funds in all fund-months after the switch. For all other funds these indicator variables are 0. NEW_MGR is an indicator variable equal to 1 if a fund changes its side-by-side management status due to adding new managers with side-by-side accounts. RIC_PBF_ONLY is equal to 1 if the fund's managers have PBFs only in registered investment companies. SMA_PBF_NOT_PIV is equal to 1 if the fund's managers have PBFs in separately managed accounts but not in pooled investment vehicles. Regressions include year and style fixed effects. Standard errors are clustered at the fund level.

Variables	CAPM alpha	CAPM alpha	Carhart alpha	Carhart alpha	DGTW	DGTW	Return gap	Return gap
PRE_SBS_PBF	-0.044	-0.031	-0.049	0.000	-0.056	-0.032	-0.043	-0.055
	(-0.9)	(-0.5)	(-1.1)	(0.0)	(-1.5)	(-0.7)	(-1.8)*	(-1.9)*
PRE_SBS_PBF*NEW_MGR		-0.047		-0.151		-0.065		0.032
		(-0.6)		(-2.0)*		(-1.0)		(0.7)
POST_SBS_PBF	-0.249	-0.212	-0.204	-0.191	-0.175	-0.188	-0.077	-0.078
	(-3.9)***	(-2.9)***	(-4.3)***	(-3.6)***	(-3.7)***	(-3.4)***	(-2.8)***	(-2.8)***
POST_SBS_PBF*NEW_MGR		-0.188		-0.066		0.068		0.003
		(-1.4)		(-0.7)		(0.8)		(0.0)
RIC_PBF_ONLY	-0.054	-0.054	-0.018	-0.018	-0.005	-0.007	-0.001	-0.002
	(-1.8)*	(-1.8)*	(-0.7)	(-0.7)	(-0.2)	(-0.2)	(-0.1)	(-0.1)
SMA_PBF_NOT_PIV	-0.020	-0.018	-0.024	-0.025	-0.003	-0.007	0.006	0.006
	(-0.6)	(-0.6)	(-1.0)	(-1.0)	(-0.1)	(-0.2)	(0.5)	(0.5)
LOG(TNA)	-0.014	-0.014	-0.014	-0.014	-0.008	-0.007	-0.005	-0.006
	(-1.9)*	(-2.1)**	(-2.4)**	(-2.4)**	(-1.3)	(-1.2)	(-1.7)*	(-1.9)*
LOG(FAM TNA)	-0.020	-0.020	-0.010	-0.009	-0.021	-0.020	0.003	0.004
	(-2.2)**	(-2.1)**	(-1.2)	(-1.1)	(-2.3)**	(-2.3)**	(0.7)	(0.7)
FLOW	0.529	0.551	0.941	0.991	0.042	0.059	0.197	0.199
	(1.6)	(1.6)	(3.5)***	(3.7)***	(0.1)	(0.2)	(1.0)	(1.1)
LOG(AGE)	0.046	0.047	0.038	0.038	0.009	0.010	0.019	0.020
	(3.1)***	(3.1)***	(3.1)***	(3.1)***	(0.7)	(0.7)	(2.5)**	(2.5)**
EXP. RATIO	-13.012	-12.982	-14.608	-14.381	-5.545	-5.004	-0.056	-0.174
	(-3.7)***	(-3.7)***	(-4.8)***	(-4.7)***	(-1.9)*	(-1.7)*	(-0.0)	(-0.1)
TURNOVER	0.062	0.060	0.065	0.064	-0.018	-0.018	0.013	0.012
	(3.5)***	(3.3)***	(4.4)***	(4.3)***	(-1.1)	(-1.0)	(1.5)	(1.5)
LOAD	-0.078	-0.109	0.046	0.012	0.136	0.084	-0.196	-0.178

	(-0.1)	(-0.2)	(0.1)	(0.0)	(0.3)	(0.2)	(-0.7)	(-0.7)
RETURN	-0.151	-0.152	-0.259	-0.261	-0.476	-0.479	0.104	0.101
	(-2.5)**	(-2.5)**	(-4.6)***	(-4.6)***	(-7.9)***	(-8.0)***	(3.2)***	(3.1)***
VOLATILITY	2.363	2.417	0.980	0.942	3.483	3.397	3.772	3.761
	(2.6)***	(2.7)***	(1.1)	(1.1)	(4.4)***	(4.2)***	(7.2)***	(7.1)***
Constant	0.642	0.648	0.411	0.408	0.317	0.302	-0.248	-0.245
	(4.7)***	(4.7)***	(3.4)***	(3.4)***	(2.3)**	(2.2)**	(-3.0)***	(-2.9)***
Observations	33,694	33,560	33,694	33,560	30,191	30,083	30,075	29,982
R-squared	0.014	0.014	0.013	0.013	0.006	0.006	0.011	0.011
P-value of Wald test:								
PRE_SBS_PBF=PST_SBS_PBF	0.017	0.080	0.008	0.006	0.057	0.050	0.387	0.560

Table 6: Analysis of change in side-by-side management status (Separate account switchers)

This table contains regression estimates from regressions examining funds that switch from having no side-by-side managers (no SMA with PBFs) to having side-by-side managers (SMA with PBFs) during the sample period. We use the effective date reported in the Statement of Additional Information as the date of the switch if the previous filing for that fund did not disclose that the fund's manager(s) had a SMA with PBFs. PRE_SMA_PBF is an indicator variable equal to 1 for switcher funds in all fund-months before the switch. POST_SMA_PBF is an indicator variable equal to 1 for switcher funds in all fund-months after the switch. For all other funds these indicator variables are 0. NEW_MGR is an indicator variable equal to 1 if a fund changes its side-by-side management status due to adding new managers with side-by-side accounts. RIC_PBF_ONLY is equal to 1 if the fund's managers have PBFs only in registered investment companies. PIV_PBF_NOT_SMA is equal to 1 if the fund's managers have PBFs in pooled investment vehicles but not in separately managed accounts. Regressions include year and style fixed effects. Standard errors are clustered at the fund level.

Variables	CAPM alpha	CAPM alpha	Carhart alpha	Carhart alpha	DGTW	DGTW	Return gap	Return gap
PRE_SMA_PBF	-0.161	-0.136	-0.176	-0.178	-0.126	-0.072	-0.042	-0.050
	(-3.8)***	(-2.9)***	(-4.0)***	(-3.3)***	(-3.2)***	(-1.8)*	(-2.1)**	(-2.1)**
PRE_SMA_PBF*NEW_MGR		-0.102		0.008		-0.216		0.032
		(-1.1)		(0.1)		(-2.5)**		(0.8)
POST_SMA_PBF	-0.022	-0.028	-0.029	-0.035	-0.027	-0.028	-0.001	0.004
	(-0.7)	(-0.7)	(-1.1)	(-1.2)	(-1.0)	(-0.8)	(-0.1)	(0.3)
POST_SMA_PBF*NEW_MGR		0.010		0.015		0.004		-0.023
		(0.2)		(0.3)		(0.1)		(-0.7)
PIV_PBF_NOT_SMA	-0.188	-0.199	-0.035	-0.035	-0.035	-0.055	-0.053	-0.051
	(-4.2)***	(-4.4)***	(-0.8)	(-0.8)	(-1.0)	(-1.6)	(-1.9)*	(-1.8)*
RIC_PBF_ONLY	-0.037	-0.036	0.013	0.012	0.006	0.009	0.006	0.005
	(-1.3)	(-1.2)	(0.5)	(0.5)	(0.2)	(0.3)	(0.4)	(0.3)
LOG(TNA)	-0.016	-0.017	-0.014	-0.014	-0.007	-0.007	-0.007	-0.008
	(-2.5)**	(-2.5)**	(-2.4)**	(-2.4)**	(-1.2)	(-1.2)	(-2.2)**	(-2.3)**
LOG(FAM TNA)	-0.026	-0.027	-0.026	-0.026	-0.031	-0.031	0.001	0.002
	(-2.8)***	(-2.8)***	(-3.0)***	(-3.0)***	(-3.4)***	(-3.4)***	(0.2)	(0.3)
FLOW	0.492	0.491	0.612	0.642	0.252	0.231	0.026	0.032
	(1.6)	(1.6)	(2.3)**	(2.4)**	(1.0)	(0.9)	(0.1)	(0.2)
LOG(AGE)	0.046	0.047	0.038	0.038	0.014	0.017	0.022	0.022
	(3.3)***	(3.3)***	(3.2)***	(3.2)***	(1.1)	(1.2)	(2.7)***	(2.7)***
EXP. RATIO	-8.992	-8.514	-13.070	-12.987	-3.448	-1.994	0.315	0.151
	(-3.3)***	(-3.0)***	(-5.0)***	(-4.8)***	(-1.2)	(-0.7)	(0.2)	(0.1)
TURNOVER	0.047	0.045	0.045	0.044	-0.025	-0.028	0.005	0.006
	(2.6)***	(2.5)**	(2.9)***	(2.8)***	(-1.5)	(-1.7)*	(0.7)	(0.7)
LOAD	-0.621	-0.667	-0.625	-0.641	-0.382	-0.522	-0.555	-0.534

	(-1.4)	(-1.5)	(-1.5)	(-1.5)	(-0.9)	(-1.2)	(-1.5)	(-1.5)
RETURN	-0.172	-0.175	-0.371	-0.373	-0.484	-0.485	0.105	0.100
	(-2.6)***	(-2.7)***	(-7.2)***	(-7.2)***	(-8.4)***	(-8.4)***	(3.2)***	(3.1)***
VOLATILITY	0.988	0.978	0.992	0.960	3.623	3.583	3.760	3.733
	(1.2)	(1.1)	(1.1)	(1.1)	(4.7)***	(4.6)***	(7.1)***	(7.1)***
Constant	0.830	0.840	0.683	0.688	0.420	0.398	-0.219	-0.223
	(5.8)***	(5.8)***	(5.4)***	(5.4)***	(2.9)***	(2.7)***	(-2.7)***	(-2.7)***
Observations	34399	34262	34399	34262	30056	29951	30035	29951
R-Squared	0.015	0.015	0.014	0.014	0.007	0.007	0.011	0.011
P-value of Wald test: PRE_SMA_PBF = PST_SMA_PBF	0.004	0.025	0.050	0.428	0.072	0.039	0.004	0.025

Table 7: Analysis of active management (Pooled investment vehicles switchers)

This table contains regression estimates from regressions examining funds that switch from having no side-by-side managers (no PIV with PBFs) to having side-by-side managers (PIV with PBFs) during the sample period. We use the effective date reported in the Statement of Additional Information as the date of the switch if the previous filing for that fund did not disclose that the fund's manager(s) had a PIV with PBFs. PRE_SBS_PBF is an indicator variable equal to 1 for switcher funds in all fund-months before the switch. POST_SBS_PBF is an indicator variable equal to 1 for switcher funds in all fund-months after the switch. The dependent variable in columns (1) and (2) is the average ACTIVE SHARE in the subsequent 12 months, whereas, in columns (3) and (4), it is the average of TRACKING ERROR in the subsequent 12 months. In the last two columns, the dependent variable (AsTE) is an indicator that takes the value of 1 if a fund has an active share and tracking error are above their respective medians, where the median value is measured within each investment style. For all other funds these indicator variables are 0. NEW_MGR is an indicator variable equal to 1 if a fund changes its side-by-side management status due to adding new managers with side-by-side accounts. RIC_PBF_ONLY is equal to 1 if the fund's managers have PBFs only in registered investment companies. SMA_PBF_NOT_PIV is equal to 1 if the fund's managers have PBFs in separately managed accounts but not in pooled investment vehicles. Regressions include year and style fixed effects. Standard errors are clustered at the fund level.

Variables	Active Share	Active Share	Tracking Error	Tracking Error	AsTe	AsTe
PRE_SBS_PBF	-0.061	-0.054	-0.001	-0.001	-0.139	-0.063
	(-2.0)**	(-1.2)	(-3.7)***	(-3.1)***	(-2.3)**	(-0.8)
PRE_SBS_PBF*NEW_MGR		-0.017		0.000		-0.226
		(-0.4)		(0.7)		(-2.3)**
POST_SBS_PBF	-0.029	-0.023	0.000	0.000	0.010	0.059
	(-0.9)	(-0.5)	(0.5)	(0.2)	(0.1)	(0.6)
POST_SBS_PBF*NEW_MGR		-0.059		-0.001		-0.237
		(-1.1)		(-1.3)		(-2.0)**
RIC_PBF_ONLY	0.004	0.004	0.000	0.000	0.011	0.007
	(0.3)	(0.3)	(0.9)	(0.9)	(0.3)	(0.2)
SMA_PBF_NOT_PIV	-0.002	-0.002	0.000	0.000	-0.039	-0.039
	(-0.1)	(-0.1)	(0.9)	(0.8)	(-0.8)	(-0.8)
LOG(TNA)	0.007	0.007	0.000	0.000	0.017	0.017
	(2.0)*	(1.9)*	(2.2)**	(2.1)**	(1.5)	(1.5)
LOG(FAM TNA)	-0.000	0.000	0.000	0.000	0.020	0.021
	(-0.0)	(0.0)	(2.2)**	(2.2)**	(1.2)	(1.2)
FLOW	0.142	0.137	0.002	0.002	0.667	0.650
	(1.7)*	(1.7)*	(1.9)*	(1.9)*	(2.4)**	(2.3)**
LOG(AGE)	0.001	0.001	-0.000	-0.000	-0.019	-0.019
	(0.1)	(0.1)	(-0.9)	(-0.9)	(-0.8)	(-0.8)
EXP. RATIO	14.030	14.083	0.158	0.159	35.866	36.055
	(5.9)***	(5.9)***	(6.9)***	(6.9)***	(7.4)***	(7.3)***
TURNOVER	0.006	0.006	-0.000	-0.000	-0.004	-0.004
	(0.7)	(0.7)	(-0.5)	(-0.5)	(-0.1)	(-0.1)
LOAD	-0.106	-0.112	-0.005	-0.005	-0.164	-0.189
	(-0.4)	(-0.4)	(-1.4)	(-1.4)	(-0.2)	(-0.2)
RETURN	0.066	0.066	0.001	0.001	0.136	0.134
	(6.7)***	(6.7)***	(5.2)***	(5.2)***	(3.5)***	(3.5)***
VOLATILITY	1.891	1.896	0.007	0.007	5.050	5.032
	(6.7)***	(6.8)***	(1.7)*	(1.7)*	(5.3)***	(5.3)***
Constant	0.471	0.469	-0.001	-0.001	-0.480	-0.490
	(5.8)***	(5.7)***	(-0.7)	(-0.8)	(-2.0)**	(-2.0)**
Observations	30,614	30,483	30,429	30,316	30,482	30,361
R-Squared	0.453	0.453	0.399	0.399	0.082	0.086

Table 8: Impact of side-by-side management on funds managed by a single manager or same team vs. a different team

This table is similar to the specification in Table 4 Panel C, except the SBS_PBF variable is replaced with two variables that indicate whether the SBS_PBF fund is managed by a single manager or team. SBS_PBF_SINGLE_SAME_TEAM take the value of 1 for a SBS fund if the fund is managed by either a single manager or a team of managers with the exact *same* reported pooled investment account assets under management. SBS_PBF_DIFF_TEAM is equal to 1 for a team-managed SBS fund, in which members of the team manage different amounts of pooled investment account assets. RIC_PBF_ONLY is equal to 1 if the fund's managers have PBFs only in registered investment companies. SMA_PBF_NOT_PIV is equal to 1 if the fund's managers have PBFs in separately managed accounts but not in pooled investment vehicles. Regressions include year and style fixed effects. Standard errors are clustered at the fund level.

Variables	CAPM alpha	Carhart alpha	DGTW	Return gap
SBS_PBF_SINGLE_SAME_TEAM	-0.241	-0.144	-0.163	-0.049
	(-6.2)***	(-4.3)***	(-4.3)***	(-2.7)***
SBS_PBF_DIFF_TEAM	-0.138	-0.059	-0.036	-0.078
	(-3.5)***	(-1.6)	(-1.2)	(-3.4)***
RIC_PBF_ONLY	-0.044	0.003	0.010	0.003
	(-1.5)	(0.1)	(0.4)	(0.2)
SMA_PBF_NOT_PIV	-0.022	-0.033	-0.010	-0.005
	(-0.8)	(1.5)	(0.4)	(-0.5)
LOG(TNA)	-0.012	-0.012	-0.007	-0.005
	(-1.9)*	(-2.1)***	(-1.3)	(-1.6)
LOG(FAM TNA)	-0.029	-0.027	-0.033	-0.000
	(-3.3)***	(-3.2)***	(-3.8)***	(0.0)
FLOW	0.383	0.667	0.033	0.033
	(1.3)	(2.6)***	(0.1)	(0.2)
LOG(AGE)	0.042	0.036	0.010	0.016
	(3.0)***	(3.1)***	(0.8)	(2.1)**
EXP. RATIO	-15.155	-17.818	-7.175	-0.347
	(-4.7)***	(-6.1)***	(-2.4)**	(-0.2)
TURNOVER	0.062	0.052	-0.028	0.007
	(3.9)***	(3.6)***	(-1.8)*	(0.9)
LOAD	0.130	-0.018	0.028	-0.416
	(0.3)	(-0.0)	(0.1)	(-1.3)
RETURN	-0.127	-0.265	-0.468	0.125
	(-2.1)**	(-5.0)***	(-8.2)***	(4.2)***
VOLATILITY	2.171	1.868	3.540	4.021
	(2.7)***	(2.3)**	(4.9)***	(8.5)***
Constant	0.843	0.663	0.488	-0.205
	(6.2)***	(5.3)***	(3.6)***	(-2.6)**
Observations	38,459	38,459	34,349	34,355
R-squared	0.015	0.013	0.007	0.011
P-value of Wald test: SBS_PBF_SINGLE_SAME_TEAM = SBS_PBF_DIFF_TEAM	0.048**	0.073*	0.005***	0.291

Table 9: The relative importance of assets under management in registered investment companies and mutual fund performance

This table is similar to the specification in Table 4 Panel C, except we add the variable AVG_MGR_RIC_PCT, which is the percentage of total assets under management held in registered investment companies (including the reporting fund itself), averaged across managers of the same fund in a year. The variable is standardized to have a mean of 0 and a standard deviation of 1 for easier interpretation. RIC_PBF_ONLY is equal to 1 if the fund's managers have PBFs only in registered investment companies. SMA_PBF_NOT_PIV is equal to 1 if the fund's managers have PBFs in separately managed accounts but not in pooled investment vehicles. Regressions include year and style fixed effects. Standard errors are clustered at the fund level.

Variables	CAPM alpha	Carhart alpha	DGTW	Return gap
SBS_PBF	-0.165	-0.073	-0.077	-0.056
	(-5.5)***	(-2.8)***	(-3.0)***	(-3.6)***
AVG_MGR_RIC_PCT	0.031	0.040	0.018	0.020
	(3.1)***	(4.2)***	(2.1)**	(4.0)***
RIC_PBF_ONLY	-0.053	-0.007	0.006	-0.004
	(-1.8)*	(-0.3)	(0.2)	(-0.3)
SMA_PBF_NOT_PIV	0.006	0.003	0.006	0.012
	(0.2)	(0.1)	(0.2)	(1.0)
LOG(TNA)	-0.017	-0.019	-0.010	-0.009
	(-2.6)***	(-3.2)***	(-1.8)*	(-2.7)***
LOG(FAM TNA)	-0.027	-0.024	-0.031	0.001
	(-3.0)***	(-2.9)***	(-3.7)***	(0.2)
FLOW	0.398	0.695	0.033	0.040
	(1.4)	(2.7)***	(0.1)	(0.2)
LOG(AGE)	0.045	0.039	0.012	0.015
	(3.2)***	(3.2)***	(1.0)	(1.9)*
EXP. RATIO	-13.452	-16.361	-5.330	-0.643
	(-4.3)***	(-5.8)***	(-1.9)*	(-0.3)
TURNOVER	0.058	0.045	-0.030	0.005
	(3.6)***	(3.1)***	(-1.8)*	(0.7)
LOAD	0.116	-0.052	0.015	-0.376
	(0.2)	(-0.1)	(0.0)	(-1.2)
RETURN	-0.134	-0.279	-0.468	0.122
	(-2.2)**	(-5.3)***	(-8.3)***	(4.1)***
VOLATILITY	1.966	1.639	3.367	3.922
	(2.4)**	(2.0)**	(4.6)***	(8.3)***
Constant	0.738	0.536	0.408	-0.244
	(5.4)***	(4.3)***	(3.2)***	(-3.1)***
Observations	38,428	38,428	34,338	34,354
R-squared	0.015	0.013	0.007	0.012

Table 10: Side-by-side management vs. own-fund PBFs

This table is similar to the specification in Table 4 Panel C, except we add the variable OWN_PBF, which is equal to 1 if the reporting fund pays its own managers PBFs. The data for this variable are collected from N-SAR forms filed with the SEC. AVG_MGR_RIC_PCT is the percentage of total assets under management held in registered investment companies (including the reporting fund itself), averaged across managers of the same fund in a year. The variable is standardized to have a mean of 0 and a standard deviation of 1 for easier interpretation. Regressions include year and style fixed effects. Standard errors are clustered at the fund level.

Variables	CAPM alpha	Carhart alpha	DGTW	Return gap
SBS_PBF	-0.186	-0.087	-0.080	-0.060
	(-6.0)***	(-3.2)***	(-3.1)***	(-3.6)***
OWN_PBF	-0.040	-0.030	-0.030	0.030
	(-1.5)	(-1.1)	(-1.3)	(2.0)*
SBS_PBF * OWN_PBF	0.230	0.154	0.041	0.018
	(2.7)***	(2.0)**	(0.5)	(0.5)
AVG_MGR_RIC_PCT	0.031	0.040	0.018	0.020
	(3.2)***	(4.2)***	(2.1)**	(4.0)***
RIC_PBF_ONLY	-0.034	0.007	0.019	-0.016
	(-1.1)	(0.3)	(0.7)	(-1.0)
SMA_PBF_NOT_PIV	0.009	0.006	0.010	0.009
	(0.3)	(0.2)	(0.4)	(0.7)
LOG(TNA)	-0.016	-0.018	-0.010	-0.009
	(-2.4)**	(-3.1)***	(-1.7)*	(-2.8)***
LOG(FAM TNA)	-0.027	-0.024	-0.029	-0.002
	(-3.0)***	(-2.7)***	(-3.3)***	(-0.4)
FLOW	0.408	0.701	0.024	0.057
	(1.4)	(2.7)***	(0.1)	(0.3)
LOG(AGE)	0.044	0.038	0.011	0.016
	(3.2)***	(3.2)***	(0.9)	(2.1)**
EXP. RATIO	-13.797	-16.621	-5.730	-0.265
	(-4.3)***	(-5.9)***	(-2.0)**	(-0.1)
TURNOVER	0.058	0.046	-0.030	0.004
	(3.6)***	(3.1)***	(-1.8)*	(0.5)
LOAD	0.058	-0.093	0.006	-0.373
	(0.1)	(-0.2)	(0.0)	(-1.1)
RETURN	-0.133	-0.279	-0.469	0.124
	(-2.2)**	(-5.3)***	(-8.3)***	(4.1)***
VOLATILITY	2.015	1.672	3.378	3.927
	(2.5)**	(2.1)**	(4.6)***	(8.3)***
Constant	0.838	0.663	0.452	-0.156
	(6.2)***	(5.2)***	(3.4)***	(-2.0)*
Observations	38,428	38,428	34,338	34,354
R-squared	0.015	0.011	0.007	0.012