Playing favorites: Conflicts of interest in mutual fund management

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Abstract: We examine the performance of mutual funds whose managers simultaneously manage portfolios with performance-based incentive fees for three account types: mutual funds, hedge funds, and separate accounts. Importantly, our dataset is free of selection bias because it is hand collected from mandatory SEC filings. We find that *only* funds whose managers also manage hedge funds significantly underperform peer mutual funds. Moreover, underperformance begins only after fund managers begin to manage a hedge fund. We find that managerial incentives and opportunities for cross-subsidization explain variation in underperformance across funds, supporting the conflicts of interest hypothesis in the debate on "side-by-side management."

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1 Introduction

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 when opportunities arise, such as when allocating trade prices to individual client accounts or conducting cross-trades across different funds (Ben-Rephael and Israelsen, 2015; Gaspar, Massa, and Matos, 2006). 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 a concern that the differences in compensation structure across these portfolios would induce a manager to favor hedge fund investors at the expense of mutual fund investors. In addition, recent literature suggests that indirect incentives arising from future inflows and the strategic use of leverage can further induce favoritism towards hedge funds at the expense of mutual funds (Lim, Sensoy, and Weisbach, 2016).

Concerns about potential harm to mutual fund investors from the practice of side-by-side management has naturally led to regulatory scrutiny and academic study. Cici, Gibson and Moussawi (2010) find evidence supportive of regulatory concerns that mutual fund performance suffers as a result of side-by-side management. Nohel, Wang, and Zheng (2010) and Chen and Chen (2009), however, 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, and from the effective internal controls of advisory firms that deter cross-subsidizing actions. The contradicting evidence suggests that this issue remains unresolved.

Despite pressure from members of Congress to ban the practice, the SEC opted instead to mandate new disclosures in annual fund prospectuses beginning in 2005 to alert investors to potential conflicts of interest in side-by-side management and the fund's policies on mitigating them.[1] Specifically, for each fund manager with day-to-day responsibilities for the fund the SEC requires disclosure of the number of other accounts concurrently managed along with their assets under management, as well as the subset of accounts and assets that pay performance-based fees (PBFs). In this paper, we exploit these detailed SEC disclosures to investigate whether side-by-side management harms or benefits mutual fund performance, and whether there are managerial incentives or advisory firm policies that either exacerbate or mitigate the inherent conflicts of interest.

Importantly, the mandatory SEC disclosure requirements imply a comprehensive mutual fund sample free of selection bias, and therefore we are able to avoid the data limitations in the prior literature that relies on name matches between hedge fund and mutual fund databases. Nohel et al and Chen and Chen identify side-by-side managers by matching mutual fund and hedge fund manager names. Due to the self-reported and incomplete nature of hedge fund databases, and the prevalence of unnamed manager teams in mutual fund databases, this method underestimates the total number of side-by-side managers and oversamples from hedge funds that choose to report to commercial databases. On the other hand, Cici et al identify mutual fund families (advisory firms) that also offer hedge funds and assume that all mutual fund managers of these matched firms are side-by-side managers. This method overestimates the number of side-by-side managers, especially in families with only a small percentage of funds with side-by-side managers. Using a comprehensive and unbiased sample, we are able to definitively test for the effect of side-by-side management on mutual fund performance and show how the sampling methodologies in the literature lead to conflicting inferences.

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

Using fund prospectuses from 2005 to 2011, we hand-collect data on other accounts managed at the *manager level* for each active domestic equity mutual fund in the top 30 largest fund families, which account for 74% of total assets under management in the mutual fund industry as of March 2005. These accounts need to be reported in three different categories, specified by the SEC as registered investment companies, pooled investment vehicles, and separate accounts.[2] 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 with PBFs indicate hedge funds, whereas pooled investment vehicles without PBFs capture other categories of investments, such as commingled trusts. Separate accounts typically include accounts managed on behalf of large clients, such as defined benefit and defined contribution pension plans or other institutional clients.

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 know the performance-sensitivity of each account type, the detailed SEC disclosures allow us to cleanly measure the account type for each manager of the fund and which accounts have PBFs. The comprehensiveness of the data allows us to test whether concurrent management of other account types has an effect on mutual fund performance, beyond a focus on just hedge funds.

Aggregating manager-level account data to the fund level, we find 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

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

economically significant, and similar using other performance measures, including holdings-based measures. Our tests also reveal that negative performance effects are unique to funds with side-by-side hedge fund managers; concurrent management of mutual funds or separate accounts with PBFs have no such negative impact.

We perform further tests of the effects of side-by-side management by using a sample of funds that switch from having no side-by-side hedge fund managers to having side-by-side hedge fund managers during the sample period. The results confirm our initial findings, and are larger in magnitude. Specifically, we find that switcher funds underperform no-side-by-side funds by 21 bps a month (252 bps per year) in Carhart alpha after the switch, whereas performance did not significantly differ before the switch. Moreover, analogous tests for funds that switch to having managers with separate accounts with PBFs do not show underperformance after the switch, consistent with our earlier results. Together, these results support the focus on hedge funds in the side-by-side literature, as these are the only account type consistent with a conflict of interest. Moreover, we can rule out the alternative explanation that simply adding more assets under management leads to underperformance. Rather, the results specifically point to a performance decline only when the manager begins simultaneous management of a hedge fund.

Because the SEC does not require disclosure of the identity or performance of accounts outside the mutual fund industry, we are unable to test whether side-by-side hedge funds directly benefit from performance transfers or favorable treatment.[3] We can, however, use a variety of data sources to explore possible channels for the documented mutual fund underperformance. We first distinguish whether the performance effects are driven by the managers or by the organizations that employ the managers. We find that none of the other mutual funds managed by the same family are measurably affected. Moreover, we exploit the fact that 12.2% of funds in our sample are outsourced to external subadvisers who are hired by the fund family to manage

[3] Using the 2006 HFR dataset and the 2006, 2012, and 2014 TASS datasets, we are only able to match 32.5% of the side-by-side mutual funds in our sample to hedge funds managed by the same manager. In section 3.6, we show how using this incomplete sample may lead to faulty inference, which is the primary reason for why we do not examine hedge fund returns in our investigation.

the fund. We find that other funds managed by the same advisory firm that employs the manager (the subadviser) are similarly unaffected. Thus, if underperformance of the side-by-side mutual fund is driven by favoritism toward hedge funds, this finding appears to rule out that costs are borne by other mutual funds within the same advisory firm or family. This finding also suggests that any favoritism is directed by the fund manager.

Given the manager-level effects we find, we explore whether either stronger managerial incentives or greater opportunities for cross-subsidization can explain the pattern of underperformance we find. First, we exploit manager-level data on assets under management to test for the influence of managerial incentives on the level of underperformance in side-by-side mutual funds. Because we have a breakdown of all of a manager's assets by account type, we are able to measure the percentage of her assets that are within the mutual fund industry. A high percentage indicates that the bulk of the manager's compensation and presumably her loyalties and career concerns are focused on mutual funds. We find that the underperformance of side-by-side management is effectively mitigated if the manager has an above-median percentage of assets within the mutual fund industry. We also find a similar result if the manager's fund has a greater percentage of direct-sold assets, or a lower percentage of broker-sold assets. Del Guercio and Reuter (2014) find that direct-sold funds have a clientele sensitive to past risk-adjusted performance. In addition, Chevalier and Ellison (1998) show that flows influence manager firing decisions. Managers are presumably reluctant to shift performance away from the mutual fund if poor performance is likely to result in significant outflows and potential career consequences. In sum, our results suggest that counteracting incentives can help alleviate conflicts of interest due to side-by-side management.

Next, we investigate if side-by-side funds have greater underperformance when the manager has greater opportunities or discretion to cross-subsidize. We consider two types of opportunities: the degree of discretionary transactions allowed by the advisory firm, and whether a side-by-side fund is managed by either a single manager or a team of managers who all manage the same hedge fund accounts. The SEC requires advisory firms to disclose in ADV forms

whether they engage in transactions where there is potential to benefit themselves or particular clients at the expense of others (e.g., conduct agency cross-trades between different client accounts). Advisors with such policies provide managers with more trade discretion and opportunities to favor the interests of more profitable clients (i.e., hedge funds) over those of other clients such as mutual funds. Moreover, if not all managers on a team share in the benefits accruing to a favored hedge fund, it might be more difficult for the hedge fund manager(s) to gain the tacit cooperation of their fellow mutual fund managers. Thus, we posit that there are more opportunities for cross-subsidization in either a single-manager fund or in a team-managed fund where every member also manages the same hedge fund accounts. We find stronger underperformance in a side-by-side fund if its advisory firm allows greater discretionary transactions, or if the fund is managed by either a single manager or same-team managers. Together, the results suggest that managers do not favor hedge funds if it is more difficult to do so or if they have greater concerns about the negative consequences of poor mutual fund performance. These results are also suggestive of deliberate cross-subsidization on the manager's part, rather than a more benign explanation.

Nonetheless, we also 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. Under the assumption that active management requires more time and resources than passive management, we test whether the degree of active management of the mutual fund declines after the manager adds a hedge fund. Using both tracking error and the active share measure of Cremers and Petajisto (2009) and fund turnover, we do not find support for this alternative, suggesting that manager distraction or effort diversion cannot be the full explanation.

We make several contributions to the literature on fund performance and conflicts of interest in asset management. First, the comprehensive nature of our SEC disclosure-based sample allows us to reconcile the conflicting prior evidence on the performance effect of side-by-

side management and accurately measure the prevalence of this practice in the industry. Not only do we find that the effect is negative, it is much larger in magnitude than previously found. The top 30 fund families comprising our sample employ about 700 domestic equity portfolio managers in any given year, and approximately 7% of these managers simultaneously manage hedge funds, representing 12.4% of fund-months. Second, the previous literature typically focuses on side-by-side management of hedge funds. Since managers have PBFs in other types of accounts simultaneously, it is important to disentangle the confounding effects of other accounts in order to accurately identify the impact of side-by-side management. We find that the larger segment of mutual fund managers who simultaneously manage separate accounts with PBFs do not appear to succumb to conflicts of interest. Third, we study the interaction between conflicts of interests and managerial incentives and opportunities. We show that conflicts of interest for side-by-side hedge fund managers is strongly mitigated if the manager cares more about retaining assets within the mutual fund industry or the advisory firm has strict internal control policies intended to limit opportunities for cross-subsidization across client portfolios. Our results suggest that investors should pay most attention to SEC disclosures of funds with managers reporting both assets in pooled investment vehicles with PBFs and also fewer assets in mutual funds relative to peer managers.

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. Due to the non-standardized nature of the account

disclosures within mutual fund regulatory filings, we can most accurately collect data by fund family.[4] We choose to focus on the largest families for two reasons. First, because these 30 largest families account for 74% of total assets under management in the mutual fund industry as of March 2005, we capture most of the economic activity in the industry. Second, this should lead to more powerful tests given that previous studies find greater evidence of conflicts of interest within the largest families in the industry (Gaspar et al, 2006; Casavecchia and Tiwari, 2016).

For these 30 families, we hand collect accounts under management information for all managers of active domestic equity mutual funds available in the *CRSP Survivor-Bias-Free U.S. Mutual Fund Database* from 2005 to 2011. 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 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.[5] 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.[6]

[4] 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 employ numerous data checks that give us a high degree of confidence in the integrity of the data.

[5] Our results are qualitatively and quantitatively similar if we include variable annuities and target date funds in the sample. These results are included in our online appendix.

[6] 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 were acquired by Blackrock, which was not in our original list of top 30, and therefore not added to the sample).

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.[7] The matches are implemented based on exact name or ticker matches.[8] 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 vehicles, or separate accounts. The SEC also requires the separate reporting of the subset of these accounts and assets that are subject to performance-based fees (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. We provide a sample filing in Appendix A.

The SEC-required categories allow us to paint a comprehensive 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. We will use the more common term of mutual funds instead of registered investment companies throughout the rest of the paper, and distinguish between mutual funds with and without PBFs. Pooled investment vehicles include hedge funds, but can also include commingled trusts or funds

[7] Available at ftp://ftp.sec.gov/edgar/full-index/

[8] Since February 6, 2006, the SEC requires 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.

managed for sale to investors outside the U.S. Thus, we use the label hedge funds only when pooled investment vehicles have PBFs, and use the more general term of pooled investment vehicles otherwise.[9] Separate accounts are typically 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. We distinguish between separate accounts with and without PBFs.

2.2 Side-by-side management

Regulators have been concerned about serious conflicts of interest inherent in the simultaneous management of mutual fund and hedge fund assets since at least 1971.[10] Both regulators and the academic literature naturally focus on side-by-side management of mutual funds and hedge funds given the stark differences in the typical fee structure. Because the typical incentive fee component of hedge fund compensation is large (e.g., 20%), managers have an incentive to favor the fund that will pay a large bonus for outperformance, to the potential detriment of their other clients.

While side-by-side hedge fund and mutual fund management has received the most attention, the final SEC rules addressing potential conflicts of interest have taken a much more general view. Conceptually a manager has an incentive to favor whichever type of client offers

[9] We verify that the SEC category "pooled investment vehicle with PBFs" is synonymous with hedge funds in the following way. We take the list of 90 side-by-side domestic equity mutual funds in 2005 and 2006 from Nohel, Wang, and Zheng (2010) and retrieve the SEC prospectus filings (while some funds are already in our sample, others are in smaller families outside the top 30). These are the two years of their sample that coincide with the availability of SEC-required disclosures. We confirm that 87.8% (79 out of 90) of the mutual funds that they report as having side-by-side hedge fund managers are also listed in the SEC filing as having "pooled investment vehicle accounts with PBFs." One possible reason for the 11 cases where the filings explicitly state that their managers do not have any other accounts with PBFs is if the managers reported in the hedge fund databases are principals of the hedge funds but do not necessarily assume the day-to-day operation of the funds. The SEC prospectus only requires disclosures of other accounts in which the mutual fund manager assumes day-to-day responsibility. We thank Tom Nohel, Z. Jay Wang, and Lu Zheng for generously sharing their data.

[10] "In most instances the compensation arrangements provided by unregistered hedge funds are far more favorable to the investment manager per dollar of assets managed than the compensation provided for similar services by registered investment companies or other classes of accounts within an advisory complex. Here, as in other situations where differing compensation arrangements exist, there are potentially serious conflicts of interest." (Institutional Investor Study Report of the Securities and Exchange Commission, Summary Volume, Part Two, Chapters IV-IX, 1971. Available at www.sechistorical.org)

him the greatest compensation, or potential for future compensation. This logic manifests in the required new disclosures the SEC instituted in 2005 and in 2011. The final rule effective in 2005 requires mutual fund managers to disclose information on any assets under management with PBFs, not just hedge fund assets. Similarly, in 2011 the SEC requires investment advisers to file a supplement to Form ADV disclosing whether the adviser charges PBFs. In cases where the adviser charges PBFs to some client accounts and not to others, the adviser must disclose the potential conflicts of interest, as well as the procedures and controls the adviser uses to address these conflicts.[11] Thus, in both of these disclosures, any managed accounts with PBFs are subject to disclosure, rather than limiting disclosure to simultaneous management of hedge fund and non-hedge fund assets.

Because PBFs for mutual funds are required by regulation to be symmetric (fulcrum fees) and are not particularly lucrative for funds (Elton, Gruber, and Blake, 2003), we would not expect this type of account to provide a strong incentive to favor. In contrast, Rule 205-3 under the Investment Advisers Act of 1940 gives investment advisers discretion to privately negotiate the structure of PBFs 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 the clients meet a $2 million net worth minimum. Due to the confidential nature of these fee arrangements, we cannot confirm whether separate account incentive fees are more similar to those of hedge funds or mutual funds. Therefore, it is an open question as to whether a mutual fund manager simultaneously managing separate account assets with PBFs would favor them over the mutual fund.

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. Detailed SEC disclosures, which cleanly disaggregate a mutual fund manager's accounts by both client type

[11] Specifically, in Part 2A of Form ADV (Investment Adviser Brochure), "Item 6. Performance-Based Fees and Side-By-Side Management" is a required item disclosure. See SEC Release No. IA-3060.

and whether they charge PBFs, allow us to test whether a mutual fund manager has the strongest incentive to favor his hedge fund clients, relative to his other types of clients. In contrast, the previous literature assumes that hedge funds are the only client type to induce a conflict of interest for the manager or investment adviser.

Moreover, because the previous literature's sample period pre-dates the availability of mandatory disclosures that begin in 2005, they were limited to identifying side-by-side managers by matching names in mutual fund and hedge fund databases. Nohel et al (2010) and Chen and Chen (2009) compare fund manager names in CRSP or Morningstar Principia to names in a hedge fund database. As these authors acknowledge, the resulting sample may be incomplete or biased given that hedge fund databases are well known to be populated with managers who opt in voluntarily and self-report data, and tend to have 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 incomplete and prone to error (Patel and Sarkissian, 2014). For example, whereas all funds in our sample list managers by name in the SEC filings, 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.

Cici et al (2010) identify overlap at the advisory firm level between mutual fund and hedge fund databases. They consider all of the mutual funds from an adviser offering a hedge fund to be classified as side-by-side funds. This method likely overstates the extent of side-by-side relationships, as most families have much less than 100% of their funds managed by side-by-side managers. For example, Franklin Templeton appears in hedge fund databases, and thus simultaneously manages 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.

In section 3.6, we revisit the previous literature that arrives at opposite conclusions regarding the effect of side-by-side management on mutual fund performance. We discuss how their sampling procedures likely lead to the differences in results.

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

Our hand-collected dataset consists of 9,996 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 the effective date (fund fiscal year-end date) rather than the year of the filing date. Funds report information on accounts managed at the manager level and exclude the assets of the fund itself in assets under management.[12] 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.[13] 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 mutual funds, 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

[12] 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 mutual funds.

[13] 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.

pooled investment vehicles and 67% manage other separate accounts. Of these managers with some outside assets, the pooled investment vehicle assets average $1.9 billion and the separate account assets average $5.4 billion. On average, 76% of a manager's total assets under management are mutual funds, and therefore 24% are outside the fund industry in pooled investment vehicles and separate accounts. The year by year averages suggest that these percentages 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 mutual funds and in separate accounts, where approximately 12.5% and 15.4% of managers have them, respectively. Only 7% of all managers manage hedge funds. Note that the three categories sum to over 26.5%, the percentage of managers with any type of PBFs, indicating that there are managers who concurrently have multiple types of assets with PBFs.

The average assets in the hedge fund category ($262 million) are relatively small compared to the mutual funds ($3.1 billion) and separate 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 (2016). The similarity of these numbers suggests that the SEC category of pooled investment vehicles with PBFs correctly captures side-by-side hedge fund assets. In terms of relative significance, the percent of hedge fund assets relative to a manager's total assets under management is only 3.6%, on average, for managers with this type of account.

Even though the size of hedge fund assets 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 (2016). 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. However, the present value of expected rewards for performance accruing to the manager from inflows and growth in future investments (indirect incentives) 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 those 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, Reuter, and Zitzewitz (2010) and Bar, Kempf, and Ruenzi (2011) document that the percentage of mutual funds with a single-manager declines, while the percentage with a team of managers rises, from 1994 to 2004. Patel and Sarkissian (2014) show that this trend continues until their sample ends 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.[14] Since Evans (2010) shows that fund performance is subject to incubation bias, we eliminate fund months with less than 12 months since inception and with total net assets below $5 million in the previous month. We eliminate all observations with missing values in fund-level characteristics used as control variables in our regressions. Our final sample consists of 38,459 fund-month observations from 2005 to 2011.

To generate our main variables of interest indicating that a mutual fund's managers simultaneously manage other accounts with PBFs, we divide funds into four mutually exclusive categories, which allow us to test whether the incentives provided by PBFs in certain types of accounts have any impact on the performance of the reporting fund. *Mutual fund w/ PBF only* is equal to 1 if any of the fund's managers have PBFs only in mutual funds and not in any other category of accounts, and equal to 0 otherwise. *Separate acct w/ PBF – no hedge fund* is equal to 1 if any of the fund's managers have PBFs in separate accounts but not in hedge funds. *Hedge fund – no separate acct w/ PBF* is equal to 1 if any of the fund's managers have hedge funds, but do not have PBFs in separate accounts. The last mutually exclusive category, *Hedge fund + separate acct w/ PBF* is equal to 1 if any of the fund's managers have both hedge funds and separate accounts with PBFs.

The summary statistics in Table 3 indicate that the largest category of account type within these mutually exclusive types is separate account PBFs with no hedge funds. Nearly 12% of fund-months are in this category. The category for funds with managers that only have mutual funds with PBFs, and thus have only symmetric incentive fees in their other accounts comprise 10.8% of fund-months. Finally, 12.4% of fund-months have managers who also manage hedge funds: 6.5% with hedge funds and no separate account PBFs, and 5.8% with both hedge funds and separate accounts with PBFs. These statistics suggest that a significant percentage of funds

[14] For example, if the effective date of the manager 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, whichever is earlier. 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.

have managers who simultaneously manage assets with incentive fees that could potentially present a conflict of interest. In the next section, we examine the evidence for whether any of these incentives affect fund performance.

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. We also include summary statistics for the control variables in Table 3.

$$
\begin{aligned}
Performance_{i,t} &= \alpha + \beta_1(Variable - of - interest)_{i,t-1} + \beta_2\big(Log(TNA)\big)_{i,t-1} \\
&+ \beta_3\big(Log(Family\ TNA)\big)_{i,t-1} + \beta_4(Flow)_{i,t-1} + \beta_5\big(Log(Age)\big)_{i,t-1} \\
&+ \beta_6(Expenses)_{i,t-1} + \beta_7(Turnover)_{i,t-1} + \beta_8(Total\ Load)_{i,t-1} \\
&+ \beta_9(Return)_{i,t-1} + \beta_{10}(Volatility)_{i,t-1} + Year\ Fixed\ Effects \\
&+ Style\ Fixed\ Effects\ + \epsilon_{i,t}
\end{aligned}
$$

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.[15] 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,

[15] 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.

from the fund return in order to determine the factor-adjusted return.[16] 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.[17] 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 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 lagged 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 fund 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. The standard errors for all panel regressions are clustered at the fund level. Table 4 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. We use the four mutually exclusive indicator variables to evaluate whether a particular type of PBFs in a manager's other accounts has a greater effect on fund performance. The omitted category in the regression is funds with no PBFs at all.

Of the four indicator variables, only the coefficient estimates of the categories with hedge funds are negative and statistically significant, consistent across all four performance measures. In contrast, the coefficients for *Mutual fund w/ PBF only* and *Separate acct w/ PBF – no hedge fund* are insignificant and close to zero. These results suggest that only hedge fund client

[16] We estimate our regressions starting from 2002 to obtain abnormal returns in 2005.
[17] Stock assignments and benchmark returns are obtained from Prof. Russ Wermers' website (http://terpconnect.umd.edu/~wermers/ftpsite/Dgtw/coverpage.htm). See Wermers (2003) for details about the construction of the measure.

accounts have a negative impact on mutual fund performance, consistent with the idea that the high-powered incentive fees present in hedge funds 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 Table 5, we combine the two variables *Hedge fund – no separate acct w/ PBF* and *Hedge fund + separate acct w/ PBF* into one indicator variable, *SBS*, which is equal to 1 if the mutual fund's managers also have hedge funds (side-by-side, or SBS, from here forward), regardless of whether they also have PBFs in other types of accounts. Once again, we control for the other mutually exclusive categories of accounts with PBFs, so the omitted group is funds with no PBFs. The results confirm our prior finding that SBS hedge fund management harms mutual fund performance. The first four columns of Table 5 show that mutual funds with SBS hedge funds underperform peer funds with no PBFs by 18.3 bps per month (CAPM alpha), 9.6 bps (Carhart alpha), 8.7 bps (DGTW), and 6.7 bps (return gap). Across all four performance measures, the effects are large in economic magnitude (between 80.4 and 219.6 bps per year) and statistically significant at the 1% level.

Even though on average 12.4% of fund-months in our sample have managers with SBS hedge funds, there is significant variation across families with regards to how many funds are managed by side-by-side managers. Appendix C shows the names of families ranked by percent of SBS funds. In three families the percent of funds with SBS managers ranges between 90% and 100%, whereas eight families have no funds with SBS managers. Fidelity has a single domestic equity fund with SBS managers. In some families there is substantial within-family variation with regards to the *SBS* variable, and only 9 families have no variation. The final four columns of Table 5 contain the same regressions, but also include family fixed effects. The results are similar in sign and significance, and for three of the performance measures the magnitude of the underperformance is even larger than without family fixed effects. In sum, mutual funds with SBS managers appear to significantly underperform both peer funds without PBF accounts, and non-SBS funds within the same family.

For ease of interpretation and exposition, we use indicator variables in the regressions to capture side-by-side management by mutual fund managers. However, our data also allow us to examine the effect of the size of side-by-side hedge fund assets on mutual fund underperformance. In Appendix D, we report the results of regressions using continuous variables indicating the size of other accounts concurrently managed. We use three variables corresponding with the three client types: Log (TNA of hedge funds), Log (TNA of mutual funds w/ PBF), and Log (TNA of separate accounts w/ PBF). These variables are not mutually exclusive. The results again confirm our prior finding that only the side-by-side management of hedge funds is associated with mutual fund underperformance. Additionally, larger hedge funds have more significant underperformance, consistent with the idea that managers have stronger incentives to shift performance away from mutual funds when the potential payoff on the hedge fund side is greater.

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 SBS managers to having SBS managers during the sample period. We compare the performance of this group, the "switchers," to the group of funds with no SBS 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 switch* is equal to 1 for switcher funds in all fund-months before the switch date, whereas the variable *Post-SBS switch* is equal to 1 for switcher funds in all fund-months after the switch date. Once again, we control for the other mutually exclusive categories of accounts with PBFs, so the omitted group is funds with no PBFs. 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 6 Panel A presents the results of our tests. Note that the coefficients of the control variables are qualitatively similar to those in earlier tables, and are omitted from the table to enhance readability. The first four specifications in this table include style and year fixed effects, while the last four specifications include year and family fixed effects. We find that the coefficients on *Post-SBS switch* are negative and statistically significant at the 1% level across all four performance measures, indicating that continuing managers who begin to manage hedge funds underperform their peer funds post-switch. The economic magnitudes are even larger than our earlier finding. Funds with continuing managers that switch status to SBS underperform non-SBS funds by about 21 bps per month in Carhart alpha and range from 6.7 to 31 bps per month underperformance for the other measures. The indicator variable *New manager* is equal to 1 if the cause of the switch is due to adding hedge fund managers as managers new to the fund. Interaction terms allow us to capture the differential effects of the two types of switch on fund performance. The non-significance of the interaction term *Post-SBS switch * New manager* shows that the group of switcher funds with new managers also experience similar levels of underperformance after the switch.

The coefficients for *Pre-SBS switch* and the interaction term with *New manager* show that funds do not underperform before the switch (with the exception of return gap). Moreover, we can reject the hypothesis that the coefficient on the *Pre-SBS switch* is equal to the coefficient on the *Post-SBS switch* variable at the 10% level or better across performance measures (with the exception of return gap). Overall, these results confirm our prior finding that high-powered incentives inherent in hedge fund management lead to underperformance for SBS mutual funds. We draw similar inferences in specifications with and without family fixed effects.

We also perform an analogous test for performance effects within a sample of funds that switch from having no separate accounts with PBFs to having separate accounts with PBFs and report the results in Table 6 Panel B. 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 with no PBF accounts. Because both the hedge funds and the separate accounts have PBFs in these samples of switchers, in comparing Panel A to Panel B we are testing whether the account type is what matters. Of course, the account type in this case is also likely correlated with the amount of compensation a manager receives per unit of performance.

Table 6 Panel B contains the results of the separate account switcher analysis, with the same set of fixed effects as in Panel A. In contrast to SBS hedge fund switchers, we do not find any underperformance after the switch for funds with separate account PBFs. In contrast, these switcher funds underperform non-PBF funds before the switch, but not after the switch. Importantly, Panel B contrasts sharply with the statistically significant decrease in performance observed for mutual funds with managers adding hedge funds. In sum, the switcher analysis confirms our cross-sectional findings from Table 5. Namely, mutual fund underperformance appears to be isolated to funds where managers simultaneously manage hedge funds. Managers with other account types, including mutual funds with PBFs or separate accounts with PBFs, are not associated with underperformance.

3.3 Is the underperformance of SBS mutual funds driven by family, investment adviser, or fund manager effects?

One explanation for our results is that SBS managers strategically shift performance from the mutual funds they manage to their more lucrative hedge funds via some deliberate cross-subsidization practices. Before exploring alternative explanations for the observed return patterns, we test whether underperformance is also detectable at other mutual funds managed within the same family. For example, under the hypothesis supported in the tests in Gaspar et al (2006), families direct managers to maximize the family's profits by favoring the more lucrative funds, such as the ones that provide the most fee income. Using this same logic, if families obtain higher profits from their hedge fund business, one might expect favoritism toward hedge funds and away from either all of their mutual funds, or away from the "low-value" funds in the family. We explore these possibilities in this section.

The analysis in Tables 5 and 6 consistently show that the underperformance of mutual funds with SBS hedge fund managers is either similar or larger when family fixed effects are included, implying that the results are not driven by an unobserved family characteristic. This result also suggests that the underperformance is concentrated in the particular mutual fund managed by a SBS hedge fund manager, as opposed to being spread across other funds in the same family. To explore this further, we add a new variable to the main panel specification of Table 5. Namely, we define the indicator variable *SBS at the family level* as equal to 1 if any fund in that family is a SBS fund that month (i.e., if the family has a SBS fund in some other time period but not in the current month this variable would equal 0).

To further distinguish whether the performance effects are driven by manager effects versus by the organizations the managers work for, we exploit the fact that 12.2% of fund-months in our sample are managed by subadvisers.[18] In these cases, the advisory firm

[18] We obtain information on the name of the investment advisory firm that employs the portfolio manager directly from the same fund prospectus filing where we obtain the manager-level information on other managed accounts. Thus, we have very accurate information on the identity of the adviser and subadviser of the fund (if subadvised).

employing the portfolio manager (e.g., Wellington) differs from the family (e.g., Hartford) distributing the fund (e.g., Hartford Capital Appreciation) to the investing public. We define the indicator variable *SBS at the adviser level* as equal to 1 for any fund managed by the same advisory firm employing at least one SBS hedge fund manager that month (e.g., Wellington). In this example, other funds in the Hartford family would have a 0 value for *SBS at the adviser level* and have a 1 for *SBS at the family level.*

Table 7 repeats the specifications in the first four columns of Table 5, with the addition of the variables defined above *SBS at the family level* and *SBS at the adviser level.* For completeness, in Appendix E we include summary statistics for these and other variables for the sub-samples of fund-months where SBS is equal to one, versus where SBS is equal to 0. While the SBS indicator continues to be significant and large in magnitude in Table 7, neither of the additional indicator variables is significant, which implies that underperformance is isolated to the SBS fund itself, and other funds at the same family or advisory firm are not measurably affected. The results suggest that any potentially deliberate cross-subsidization is occurring at the direction of the fund manager rather than the advisory firm.

To rule out that the underperformance of SBS funds is because they are the "low value" funds within the family, we use the definitions in Gaspar et al and examine the overlap between SBS funds and "low value" funds. Specifically, we independently rank funds within each family on fund expense ratio (including loads), year-to-date raw returns (since January of the current year), and fund age. We categorize the bottom quartile of funds in fees and year-to-date returns and top quartile of funds in age as "low-value" funds (i.e., the lowest fee funds, the lowest year-to-date return funds, and the oldest funds). Since we find the strongest underperformance after a fund switches from a non-SBS fund to a SBS fund, we examine the overlap between "low-value" funds and SBS funds in the month prior to the switch. Using the three measures of "low-value" funds, we find that 27%, 27%, and 20% of SBS funds are also "low-value" funds according to the fee, year-to-date, and age measures, respectively. These percentages are similar to the expected value of 25%, suggesting little overlap between the two groups. If anything, older

funds are underrepresented among SBS funds. In addition, we repeat the specifications in Table 5 after adding indicator variables for "low-value" funds. With no change in inferences; we continue to find quantitatively similar underperformance of SBS funds. These results are reported in the online appendix.

3.4 What explains the underperformance? Evidence from manager incentives and opportunities to favor hedge funds

We have documented that the significant underperformance of SBS mutual funds is primarily driven by SBS portfolio managers, rather than the advisers or families. Because we cannot observe a SBS manager's concurrently managed hedge fund, we cannot directly test whether hedge funds benefit from underperformance on the mutual fund side. However, we posit that if the underperformance results from deliberate and intentional acts of favoritism toward hedge fund clients, we expect to observe greater underperformance when managers have stronger incentives and opportunities to favor hedge funds over mutual funds. In the next two sections, we investigate whether variation in managerial incentives and opportunities for cross subsidization can explain variation in underperformance in SBS mutual funds.

3.4.1 Manager-level incentives to not engage in favoritism

In this section, we consider two types of counteracting managerial incentives expected to mitigate the underperformance of SBS mutual funds. First, we hypothesize that if a management team receives the bulk of their compensation from mutual fund management and are consequently relatively more concerned about their reputation as mutual fund managers, there are fewer incentives to allocate effort and performance toward their SBS hedge funds. The SEC data allow us to calculate the percentage of a manager's total assets under management held in mutual funds (including the TNA of the fund itself). We then average this percentage across all members of the fund's management team to arrive at a fund-month level measure. This is our first measure of the managers' incentives to avoid harming mutual fund performance.

Second, managers may want to avoid underperformance in their mutual funds if they consequently suffer a large loss of flow. Del Guercio and Reuter (2014) find that direct-sold mutual funds tend to have a clientele that is significantly more sensitive to past risk-adjusted performance relative to that of broker-sold mutual funds. Consequently, they find evidence supporting the hypothesis that managers of direct-sold funds have a greater incentive to generate alpha on behalf of mutual fund investors. In our context, we would expect that managers of direct-sold mutual funds have much weaker incentives to shift performance away from mutual funds and toward hedge funds.

Table 8 provides supportive evidence that counteracting incentives help to mitigate the underperformance of SBS funds. The first four columns contain regressions of fund performance on the degree of importance of the mutual fund business to the managers' reputation. We define the indicator variable *Above-median percent of assets in mutual funds* as equal to 1 if the percentage of total assets under management held in mutual funds, averaged across all managers of the same fund, is higher than the median percentage across all funds in that month. We then interact *SBS* with this indicator variable. The coefficient on the interaction term is positive, large in magnitude, and statistically significant (with the exception of the return gap measure). The coefficients indicate that for some performance measures, SBS underperformance is completely offset when its fund managers are more focused on the mutual fund industry, relative to the focus of managers in the median fund. This suggests that managers who receive more of their compensation from the mutual fund industry relative to their peers have the least incentive to favor hedge funds. Given that this measure varies substantially within families, this is also consistent with the relative importance of manager-level incentives to favor certain clients.

The last four columns of Table 8 present results of the analysis using our second measure of counteracting incentives, whether the fund is sold through the direct distribution channel. We define the indicator variable *Direct-sold* as equal to 1 if the fund distributes the largest

percentage of its assets through the direct-sold segment.[19] The interaction term *SBS*Direct Sold* is the variable of interest. We find this term is positive and significant at the 5% level or better for all performance measures except for CAPM alpha. Similar to the *SBS*Above-median percent of assets in mutual funds* interaction, we find that the positive effect completely offsets the negative performance effect of side-by-side management. In sum, we find that two proxies for a manager's incentive to avoid jeopardizing their mutual fund performance or reputation explain variation in underperformance of SBS mutual funds.

3.4.2 Opportunities for managers to engage in favoritism

We now explore whether underperformance also varies with the opportunities for managers to engage in favoritism. We focus on two types of opportunities for cross-subsidization that allow managers to more easily shift performance from one client account to another: the degree of transaction discretion allowed by the manager's employer (investment adviser), and whether a SBS manager would need the cooperation of their co-managers in the mutual fund.

An advisory firm with strict policies that remove any discretion or trading-related opportunities for cross-subsidization should prevent the favoring of one client over another. Ben Rephael and Israelsen (2015) use Ancerno transaction-level data to identify bunched trades where an advisory firm trades the same stock in the same direction (e.g., "buy") on the same day on behalf of many different clients. They find that some advisory firms assign the same average transaction price to each client account, while others assign different prices. At the firms that allow this discretion, they find supportive evidence that certain clients systematically receive better prices than others. Moreover, they find a high degree of persistence over time regarding

[19] We also run the same analysis using another definition of *Direct-sold*, which is equal to 1 if at least 50% of the fund's TNA is distributed through the direct-sold segment. In addition, we include a specification where we control for the percentage of a fund's TNA distributed through the institutional channel. Results on the effect of the Direct channel are very similar qualitatively and quantitatively in both cases. They are presented in an online appendix to this paper.

which of the firms' clients are favored. Interestingly, they show that mutual fund clients are less likely to be favored relative to other client types.

Casavecchia and Tiwari (2016) have consistent related evidence using SEC ADV disclosures of advisory firms. In Item 8 of Form ADV, advisers must disclose whether they participate in client transactions where they have a financial interest (e.g., principal or agency cross-trades), and as a result, have a potential conflict of interest. Advisers disclose yes or no answers to six questions related to their cross-trading policies, with a greater percentage of yes answers indicating that the adviser engages in greater cross-trading.[20] Casavecchia and Tiwari (2016) relate mutual fund performance averaged across the advisory firm to these disclosed practices. While adviser discretion could be also be used fairly and appropriately, or cross-trades could be used only when it benefits all clients, they instead find that greater cross-trading, and especially greater agency (brokered) cross-trades, is associated with worse adviser-level mutual fund performance. One example of an agency cross-trade is when a trade on behalf of the advisory firm's mutual fund is crossed with a customer of the firm's affiliated brokerage (i.e., the fund family is also a broker-dealer.)

We use the Agency Cross Trading (ACT) measure in Casavecchia and Tiwari to proxy for the availability of opportunities to engage in favoritism.[21] We define *High agency cross trading* as equal to 1 if the percentage of affirmative answers to questions regarding agency cross trades in Section B of Item 8 in Form ADV, averaged across managers of the same fund in a year, is higher than the median percentage across all funds in that month.[22] We interact this variable with our *SBS* indicator variable to examine whether the negative impact of side-by-side

[20] See Table 3 of Casavecchia and Tiwari (2016) or an ADV form Item 8 for the list of questions regarding principal and agency interest in client transactions.
[21] We use the ACT measure because it is a more direct measure of the opportunities to favor one client over another. We also perform similar regressions using the Total Cross Trading (TCT) measure from Casavecchia and Tiwari. Results are slightly weaker in magnitude but qualitatively similar. We report these results in our online appendix.
[22] We obtain investment advisers' answers to ADV forms from the SEC website http://www.sec.gov/foia/iareports/inva-archive.htm. Data are only available since 2009, so we use 2009 data for all observations in 2009 and prior years.

management is exacerbated when managers have more discretion in cross-trading opportunities to engage in favoritism.

Another possible opportunity to engage in performance shifting is when the mutual fund is managed by a single manager or by the same team that manages both mutual funds and hedge funds, given that strategically transferring performance would likely require the coordination or at least the tacit approval of co-managers. As such, we hypothesize that the underperformance of SBS funds would be stronger in single-managed or same-team-managed funds than in different-team-managed funds. If there is a different management team across the two types of clients, we hypothesize that the managers who do not benefit on the hedge fund side would be reluctant to give up mutual fund performance. We define *Single manager or same team* as equal to 1 if the SBS fund is managed by a single manager or a team of managers with the same hedge fund(s), identified as those having the same exact non-zero hedge fund assets according to SEC data. We interact this variable with our *SBS* indicator variable to test whether mutual fund underperformance is exacerbated by the ability to more easily shift performance from one client to another. We note that the *Single manager or same team* variable is only defined for SBS funds, and thus the stand-alone term will be subsumed by the interaction term *SBS*Single manager or same team*.

Table 9 contains the results of this analysis. In the first four columns, the coefficients on the interaction term *SBS*High agency cross trading* are negative and significant at the 10% level for CAPM alpha, and significant at the 1% level for Carhart alpha and DGTW return. These results suggest that when firm policies allow for opportunities to favor one client over another, managers take advantage and shift more performance away from the mutual funds. In the last four columns of Table 9, the coefficients on the interaction term *SBS*Single manager or same team* are negative and significant at the 10% level for three of our performance measures except return gap. Again, we observe that when it is easier for a manager to engage in favoritism, when he manages a mutual fund by himself or in a team with others who manage the same hedge funds, the underperformance of that manager's mutual funds worsens.

Taken together, our analysis using incentives and opportunities for managers to engage in favoritism suggests that the underperformance of SBS mutual funds is driven by deliberate actions by the SBS managers to favor hedge funds over mutual funds. Nonetheless, we explore an explicit alternative explanation in the next section.

3.5 Alternative explanation: Manager distraction

A potential explanation for our results 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 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 may still be consistent with a distraction 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.

Under the assumption that active management requires more time, resources and trading than passive management or closet indexing, we compare the degree of active management of switcher funds relative to non-SBS 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), a tracking error measure, and fund turnover to conduct this test.[23]

Table 10 contains the results in which we regress active management proxies onto *Pre-SBS switch*, *Post-SBS switch*, and the interactions of these variables with the *New manager* variable, which is equal to 1 if the cause of the switch is due to adding hedge fund managers as new mutual fund managers, similar to Table 6. In the first two columns, the dependent variables are the average active share measure and the average tracking error measure, both in the subsequent 12 months. Active share and tracking error might capture different dimensions of active management (Cremers and Petajisto, 2009). In column 3, 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. In the final column, we use the average 12-month fund turnover.[24]

[23] We thank Martijn Cremers for providing us with the data on tracking error and active share measures.

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

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 all of the differences from pre- to post-switch are positive and some changes are significant at conventional levels. 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.

3.6 Reconciling the findings of the previous SBS literature

The previous literature has arrived at different conclusions on the effect of side-by-side management on mutual fund performance. Because our sample period does not overlap with that of the previous literature, we cannot directly compare results. Nevertheless, we believe our sample of SEC mandated disclosures can provide new insights as to how differences in sampling methodologies can lead to different results. To understand this, we replicate the sampling methodologies in Cici et al (2010) and Nohel et al (2010) within the universe of funds from the 30 largest families in the 2005 to 2011 period, and compare results using these samples. Specifically, we create two indicator variables *Nohel et al SBS* and *Cici et al SBS* that are designed to replicate the definitions of a SBS mutual fund used in their papers within the universe of our sample of funds and families.[25]

Cici et al (2010) identify their sample at the advisory firm level, and consider all mutual funds at advisory firms that offer hedge funds as SBS funds in order to avoid the bias induced by the selective reporting of only certain funds in hedge fund databases. They identify whether advisory firm names in one of several commercial hedge fund databases or directories match advisory firm names in the CRSP mutual fund database.[26] Given that we do not have access to all of their hedge fund data sources, we use our SEC list of advisory firms offering both mutual

[25] Both of these papers identify hedge fund and mutual fund database matches without any restrictions on the size of the family. Nohel et al also consider all types of mutual funds and do not restrict to domestic equity funds. We believe we are accurately capturing their sampling methodologies within our sample period and universe of funds.

[26] The mapping from the CRSP mutual fund database to advisory firm name comes from the Thomson Reuters Mutual fund holdings (s12) database. The s12type5 file contains a mapping from fund-level identifiers to advisory firm name. We use this file to replicate the *Cici et al SBS* variable.

funds and hedge funds and assume that they would identify these same firms. *Cici et al SBS* is equal to 1 for every mutual fund offered by the same advisory firm in the list of firms offering hedge funds. This definition labels funds with managers who do not manage hedge funds as SBS funds, and therefore overstates the extent of side-by-side management, especially at advisory firms with only a small percentage of SBS mutual funds. We find that 73% of fund-months where *Cici et al SBS* is equal to 1 are actually not SBS funds according to the SEC data. The indicator variable *Cici et al SBS – Not actual SBS* is equal to 1 for these fund-month observations. The indicator variable *Cici et al SBS – Actual SBS* is equal to 1 for fund-months in which SBS funds are accurately classified as SBS by the Cici et al methodology.

In Panel A of Table 11, we repeat our main panel specification using the *Cici et al SBS* variable. Using the return gap performance measure used in Cici et al (2010), we find similar results to those reported in their paper. We find underperformance of SBS mutual funds by 2.8 bps per month in return gap using the *Cici et al SBS* indicator variable. They report 3.3 bps per month underperformance of SBS mutual funds relative to peer funds in 1994-2004. Notably, this is about half of the magnitudes we find for the same return gap measure in Table 5. The last four columns of Panel A illustrate the reason for this difference. The funds incorrectly identified as SBS by the Cici et al methodology underperform other similar funds by only 1.9 bps a month based on the return gap measure, whereas the actual SBS funds underperform by 5.4 bps a month, statistically significant at the 1% level. Identifying non-SBS funds as SBS funds attenuates the magnitude of the underperformance, leading to an underestimation of the effect of side-by-side management.

Next, we replicate the Nohel et al methodology with our sample. *Nohel et al SBS* is equal to 1 if a fund manager name in either the Lipper/TASS or Hedge Fund Research databases (2006, 2012, and 2014 versions of these databases) match a fund manager name in the CRSP mutual fund database. Thus, managers who deliberately choose not to self-report to one of these commercial hedge fund databases, or mutual fund managers at funds listed in the CRSP database as "team managed," will not be identified as SBS fund managers using this method. Moreover,

this method will miss any manager who precedes the manager listed in the last period of the database when names are provided, as historical manager changes are unobservable. Relative to the SEC disclosures, we find that these limitations lead to an incomplete sample that underestimates the extent of side-by-side management. Only 42% of SBS fund-months, according to SEC data, are identified using this sampling methodology. We define the indicator variable *Actual SBS – Not Nohel SBS* as equal to 1 for actual SBS funds not identified by the Nohel et al methodology.

Panel B of Table 11 presents our analysis of the Nohel et al sampling methodology. Using the Carhart alpha performance measure, which is the main measure in Nohel et al, we find that the *Nohel et al SBS* indicator is not significantly different from zero over our full sample period. The last four columns of the panel indicate that underperformance is strongest for the actual SBS funds that are not identified by the Nohel et al methodology. These funds underperform non-SBS funds by 12.3 bps a month (significant at the 1% level). On the other hand, the SBS funds identified by Nohel et al do not underperform non-SBS funds during our sample period (the coefficient of -3.7 bps is not statistically significant), consistent with their conclusion that fund investors are not harmed. Given our finding that the negative effects of SBS hedge fund management are mitigated when the manager is focused on the mutual fund industry (*Above-median percent of assets in mutual funds*), when the fund has a performance-sensitive clientele (*Direct-sold*), and when their advisory firm does not allow agency cross trades, we check whether their methodology oversamples these types of funds.

Dividing actual SBS funds into two groups: SBS funds identified by the Nohel et al methodology and those not identified, we find large differences between these two groups, consistent with systematic oversampling of funds with managers focused on the mutual fund industry and managers of direct-sold funds. Specifically, within actual SBS funds, *Above-median percent of assets in mutual funds* indicator variable has a mean of 37.2% when *Nohel et al SBS* equals 1, and a mean of 6.5% when *Nohel et al SBS* equals 0. Similarly, for the *Direct-sold* indicator variable, the means are 37.7% and 17.5% for the two groups, respectively.

Finally, the *High agency cross-trading* indicator has a mean of 16.1% when *Nohel et al SBS* equals 1, and a mean of 46.9% when *Nohel et al SBS* equals 0.[27] T-tests reveal that the differences in means between the two groups (Nohel et al SBS equals 1 vs. 0) are significant at the 1% level for all three indicator variables. These results suggest that there are systematic differences between hedge funds that report funds or manager names to commercial hedge fund databases and those that do not. Specifically, the managers who choose to report to hedge fund databases are more likely to be focused on mutual fund management, to manage direct-sold funds, and to work for an advisor that does not conduct agency cross trades. This, in turn, leads to a different inference regarding the effect on mutual fund performance.

If SBS managers strongly favor hedge funds at the expense of mutual funds, we would expect that hedge fund performance improves after the manager commences simultaneous management of a mutual fund, especially a mutual fund where the loss in performance is not expected to strongly affect flows. Using the 2006 HFR dataset and the 2006, 2012, and 2014 TASS datasets, we are only able to match 32.5% of the SBS mutual funds in our sample to hedge funds managed by the same manager. This low match rate is not surprising, and even if we were to match to additional hedge fund databases, the final sample would not necessarily be complete and would still suffer from selection bias given the voluntary nature of hedge fund reporting. Aiken, Clifford, and Ellis (2013) examine a comprehensive list of constituent hedge funds reported by hedge fund-of-funds. They find that approximately 50% of nearly 1500 constituent hedge funds are disclosed in one of five commercial databases and the other half are not. Importantly, they document that the performance of the undisclosed half is significantly worse than the half that voluntarily report to the databases. The possibility for reaching a faulty conclusion when using an incomplete or biased sample is one reason we do not pursue examining hedge fund returns in our investigation. In Table 11 we find that the coefficient on the *Nohel et al SBS* indicator is not significantly different from zero, suggesting that

[27] We find that the means for the *Single manager or same team* variable are 48.5% (*Nohel et al SBS* equals 1) and 40.9% (*Nohel et al SBS* equals 0). We have no reason to expect hedge funds that report to databases would be more likely or less likely to be managed by a single manager or by the same team of managers.

underperformance is concentrated in mutual funds with SBS managers who do not report to commercial databases. Consequently, the only hedge funds available for analysis is precisely the same sub-sample where we would not expect an effect on hedge fund performance.

4 Conclusion

The potential conflicts of interests arising from side-by-side management evoke some debate in the recent literature. Papers focusing on the simultaneous management of mutual funds and hedge funds (Nohel et al, 2010, Cici et al, 2010) have come to opposite conclusions regarding whether this practice is harmful or beneficial to mutual fund investors. Nohel et al (2010) 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 (2010) 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 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's manager has a greater percentage of their assets under management outside the fund industry or has a relatively performance-insensitive mutual fund clientele. Overall, our results cast doubt on the effectiveness of the monitoring and governance mechanisms that advisory 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

The following disclosures are obtained from the Statement of Additional Information that accompanies the prospectus of AllianceBernstein Value Fund for the fiscal year ended November 30, 2010. The filing is available at http://www.sec.gov/Archives/edgar/data/910036/000091957411001864/d1170239_485-b.txt

The management of, and investment decisions for, the Fund's portfolio are made by the Adviser's U.S. Value 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	$10,608,000,000	1	3,768,000,000
Joseph G. Paul	153	$28,747,000,000	3	6,492,000,000
John D. Phillips, Jr.	61	$10,608,000,000	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

	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
Mutually exclusive SEC client type indicator variables:	
Mutual fund w/ PBF only	Equal to 1 if the fund's managers have PBFs only in registered investment companies
Hedge fund – no separate acct w/ PBF	Equal to 1 if the fund's managers have PBFs in pooled investment vehicles but not in separate accounts
Separate acct w/ PBF – no hedge fund	Equal to 1 if the fund's managers have PBFs in separate accounts but not in pooled investment vehicles
Hedge fund + separate acct w/ PBF	Equal to 1 if the fund's managers have PBFs in both pooled investment vehicles and separate accounts
Main variables of interest:	
SBS indicator	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 at the adviser level	Equal to 1 if the fund's investment adviser employs at least one SBS manager (with hedge funds)
SBS at the family level	Equal to 1 if the fund's family has at least one fund managed by a SBS manager (with hedge funds)
Percent of TNA in mutual funds	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
Direct-sold indicator	Equal to 1 if the fund distributes the largest percentage of its assets through the direct-sold segment
Agency cross trading	The percentage of affirmative answers to three questions related to agency cross trades in Section B of Item 8 of form ADV
Single manager or same team	Equal to 1 if the SBS fund is managed by a single manager or a team of managers with the same hedge funds, identified as managers having the same exact non-zero hedge fund assets according to SEC data
Fund-level control variables	
Fund TNA	Total net assets of a fund
Family TNA	Sum of total net asset of funds that belong to the same family
Family 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.
Fund age	Number of months since a fund's inception
Expense 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
Number of managers	The number of managers in the fund management team

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 managing mutual funds and hedge funds simultaneously. 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%

Appendix D: 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. *Log (TNA of hedge funds)* is the log of the total net assets of hedge funds managed by the fund's managers, averaged across managers of the same fund. *Log (TNA of mutual funds w/ PBF)* is the log of total net assets of mutual funds with PBF managed by the fund's managers, averaged across managers of the same fund. *Log (TNA of separate accounts w/ PBF)* is the log of total net assets of separate accounts with PBF managed by the fund's managers, averaged across managers of the same fund. All other variable definitions are presented in Appendix B. Standard errors are clustered at the fund level.

Variables	CAPM alpha	Carhart alpha	DGTW	Return gap
Log (TNA of hedge funds)	-0.010	-0.004	-0.005	-0.003
	(-5.7)***	(-3.2)***	(-3.3)***	(-3.8)***
Log (TNA of mutual funds w/ PBF)	-0.001	0.001	0.001	0.001
	(-0.5)	(1.0)	(1.0)	(1.3)
Log (TNA of separate accounts w/ PBF)	0.001	-0.002	-0.001	-0.001
	(0.4)	(-1.5)	(-1.0)	(-1.3)
Log (Fund TNA)	-0.012	-0.012	-0.007	-0.007
	(-1.8)*	(-2.1)**	(-1.3)	(-2.2)**
Log (Family TNA)	-0.032	-0.028	-0.034	-0.006
	(-3.5)***	(-3.4)***	(-4.0)***	(-1.1)
Flow	0.379	0.651	0.021	-0.047
	(1.3)	(2.5)**	(0.1)	(-0.3)
Log (Fund age)	0.043	0.038	0.013	0.015
	(3.1)***	(3.2)***	(1.0)	(1.9)*
Expense ratio	-14.239	-17.208	-5.779	-3.210
	(-4.5)***	(-6.1)***	(-2.0)**	(-1.7)*
Turnover	0.059	0.052	-0.027	0.010
	(3.7)***	(3.6)***	(-1.7)*	(1.4)
Load	0.112	0.001	0.002	-0.112
	(0.2)	(0.0)	(0.0)	(-0.4)
Return	-0.131	-0.265	-0.469	0.206
	(-2.2)**	(-5.1)***	(-8.2)***	(6.9)***
Volatility	2.031	1.784	3.438	4.160
	(2.5)**	(2.2)**	(4.8)***	(7.8)***
Year and style FEs	Yes	Yes	Yes	Yes
Observations	38,459	38,459	34,349	34015
R-squared	0.014	0.012	0.007	0.013

Appendix E: Comparison between SBS funds and non-SBS funds

This table compares the characteristics of side-by-side funds against non-side-by-side funds. A fund is defined as side-by-side if any of the fund's managers have hedge funds, regardless of whether they also have PBFs in mutual funds or separate accounts. 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.

	Side-by-side funds (N=4,762)		Non-side-by-side funds (N=33,697)	
Variable	Mean	Median	Mean	Median
Mutually exclusive categories of clients:				
Mutual fund w/ PBF only	0.0%	0.0%	12.4%	0.0%
Separate acct w/ PBF – no hedge fund	0.0%	0.0%	13.7%	0.0%
Hedge fund – no separate acct w/ PBF	52.9%	100.0%	0.0%	0.0%
Hedge fund + separate acct w/ PBF	47.1%	0.0%	0.0%	0.0%
Main variables of interest				
SBS indicator	100.0%	100.0%	0.0%	0.0%
SBS at the adviser level	100.0%	100.0%	18.7%	0.0%
SBS at the family level	100.0%	100.0%	43.3%	0.0%
Percent of TNA in mutual funds	71.2%	78.4%	81.6%	93.7%
Direct-sold indicator	26.0%	0.0%	34.8%	0.0%
Agency cross trading	34.2%	33.3%	55.3%	53.3%
Single manager or same team	44.1%	0.0%	0.0%	0.0%
Fund-level control variables				
Fund TNA ($Mil)	2,183	794	4,066	844
Family TNA ($Mil)	160,265	98,872	397,159	172,883
Family TNA (Equity) ($Mil)	40,754	29,991	129,849	48,962
Flow	0.6%	-0.4%	0.3%	-0.5%
Fund age	175.1	136.0	212.4	146.0
Expense ratio	1.0%	1.1%	1.1%	1.0%
Turnover	79.8%	48.0%	79.0%	61.0%
Load	1.9%	1.0%	2.4%	2.4%
Return	4.7%	9.7%	6.5%	10.2%
Volatility	5.2%	4.7%	4.6%	4.2%
Number of managers	2.7	2.0	2.3	2.0

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 separate accounts. The SEC also requires funds to disclose if any of the other managed accounts are subject to performance-based fees (PBFs), and the assets under management in each category subject to this incentive fee. In all our tables, we use the more common term "mutual funds" for registered investment companies. We also use the term "hedge funds" for pooled investment vehicles with PBFs and use the more general term of pooled investment vehicles otherwise. 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 accounts and average assets under management by mutual fund managers

Year	Total number of unique managers	Percent of all mutual fund managers with:				For managers with non-zero accounts: Average assets under management ($MM) in:			For all managers:
		any additional accounts	other mutual funds	pooled investment vehicles	separate accounts	other mutual funds	pooled investment vehicles	separate accounts	Percent of TNA in all mutual funds
2005	701	94.7%	87.4%	54.5%	67.9%	12,536	881	5,533	77.5%
2006	744	94.5%	86.4%	56.0%	64.1%	14,831	1,941	6,382	77.3%
2007	752	94.9%	88.8%	56.6%	67.2%	17,754	2,951	8,673	75.5%
2008	737	95.1%	88.5%	59.6%	67.2%	13,417	2,255	4,938	74.4%
2009	773	95.6%	89.0%	57.6%	68.2%	13,130	1,496	3,649	73.6%
2010	751	95.6%	89.3%	57.3%	65.4%	16,150	1,584	5,140	77.3%
All manager -years	5,073	95.0%	88.2%	56.5%	66.9%	14,493	1,880	5,444	75.9%

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 additional accounts	other mutual funds	hedge funds	separate accounts	other mutual funds	hedge funds	separate accounts
2005	701	19.8%	7.6%	5.0%	12.8%	3,545	180	1,298
2006	744	23.7%	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	751	29.3%	15.4%	6.8%	16.0%	2,706	227	993
All manager-years	5,073	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 singer-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.

			% of funds with:			
Year	Total number of funds	Average number of managers	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	2.63	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. *Mutual fund w/ PBF only* is equal to 1 if the fund's managers have PBFs only in mutual funds. *Hedge fund – no separate acct w/ PBF* is equal to 1 if the fund's managers have hedge funds but no separate accounts with PBFs. *Separate acct w/ PBF – no hedge fund* is equal to 1 if the fund's managers have PBFs in separate accounts but no hedge funds. *SBS* is an indicator variable equal to 1 if the fund has at least one manager with hedge funds. Appendix B contains the definitions for all other variables.

Variable	Mean	Median	Standard Deviation	P25	P75
Mutually exclusive SEC client type indicator variables:					
Mutual fund w/ PBF only	10.8%	0.0%	31.1%	0.0%	0.0%
Separate acct w/ PBF – no hedge fund	12.0%	0.0%	32.5%	0.0%	0.0%
Hedge fund – no separate acct w/ PBF	6.5%	0.0%	24.7%	0.0%	0.0%
Hedge fund + separate acct w/ PBF	5.8%	0.0%	23.4%	0.0%	0.0%
Main variables of interest					
SBS indicator	12.4%	0.0%	32.9%	0.0%	0.0%
SBS at the adviser level	28.8%	0.0%	45.3%	0.0%	100.0%
SBS at the family level	50.3%	100.0%	50.0%	0.0%	100.0%
Percent of TNA in mutual funds	80.3%	91.9%	24.6%	69.4%	99.5%
Direct-sold indicator	33.7%	0.0%	47.3%	0.0%	100.0%
Agency cross trading	52.6%	33.3%	34.6%	33.3%	100.0%
Single manager or same team	5.5%	0.0%	22.7%	0.0%	0.0%
Fund-level control variables					
Fund TNA ($Mil)	3,833	839	11,308	218	2,888
Family TNA ($Mil)	367,827	157,532	467,183	82,277	297,395
Family TNA (Equity) ($Mil)	118,818	44,648	159,223	28,067	122,447
Flow	0.4%	-0.4%	3.6%	-1.4%	0.9%
Fund age	207.8	144.0	192.0	82.0	255.0
Expense ratio	1.0%	1.1%	0.4%	0.8%	1.3%
Turnover	79.1%	60.0%	71.5%	29.9%	107.0%
Load	2.4%	2.2%	2.1%	0.0%	4.2%
Return	6.3%	10.2%	22.5%	-4.2%	18.9%
Volatility	4.6%	4.3%	2.4%	2.8%	6.0%
Number of managers	2.3	2.0	1.8	1.0	3.0

Table 4: Impact of different types of PBF accounts 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. *Mutual fund w/ PBF only* is equal to 1 if the fund's managers have PBFs only in mutual funds. *Hedge fund – no separate acct w/ PBF* is equal to 1 if the fund's managers have hedge funds but no separate accounts with PBFs. *Separate acct w/ PBF – no hedge fund* is equal to 1 if the fund's managers have separate accounts with PBFs but no hedge funds. *Hedge fund + separate acct w/ PBF* is equal to 1 if the fund's managers have both hedge funds and separate accounts with PBFs. All other variable definitions are presented in Appendix B. Standard errors are clustered at the fund level.

Variables	CAPM alpha	Carhart alpha	DGTW	Return gap
Mutually exclusive SEC client type indicator variables:				
Mutual fund w/ PBF only	-0.040	0.004	0.010	0.008
	(-1.4)	(0.1)	(0.4)	(0.5)
Separate acct w/ PBF – no hedge fund	-0.022	-0.033	-0.010	-0.012
	(-0.8)	(-1.5)	(-0.4)	(-1.0)
Hedge fund – no separate acct w/ PBF	-0.233	-0.089	-0.073	-0.057
	(-5.2)***	(-2.1)**	(-2.1)**	(-2.4)**
Hedge fund + separate acct w/ PBF	-0.130	-0.103	-0.103	-0.079
	(-3.7)***	(-3.9)***	(-3.5)***	(-4.2)***
Log (Fund TNA)	-0.012	-0.012	-0.007	-0.007
	(-1.8)*	(-2.1)**	(-1.2)	(-2.1)**
Log (Family TNA)	-0.031	-0.027	-0.032	-0.005
	(-3.4)***	(-3.2)***	(-3.7)***	(-0.9)
Flow	0.418	0.663	0.026	-0.043
	(1.5)	(2.5)**	(0.1)	(-0.3)
Log (Fund age)	0.044	0.037	0.012	0.014
	(3.1)***	(3.1)***	(1.0)	(1.9)*
Expense ratio	-13.780	-16.790	-5.434	-2.956
	(-4.4)***	(-6.0)***	(-1.9)*	(-1.6)
Turnover	0.057	0.051	-0.026	0.011
	(3.6)***	(3.5)***	(-1.7)*	(1.4)
Load	0.053	-0.029	-0.000	-0.117
	(0.1)	(-0.1)	(-0.0)	(-0.4)
Return	-0.135	-0.267	-0.470	0.205
	(-2.3)**	(-5.1)***	(-8.3)***	(6.9)***
Volatility	2.082	1.790	3.426	4.154
	(2.5)**	(2.2)**	(4.7)***	(7.8)***
Year and style FEs	Yes	Yes	Yes	Yes
Observations	38,459	38,459	34,349	34,015
R-squared	0.015	0.012	0.007	0.013

Table 5: Impact of side-by-side hedge fund management on 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. *SBS* is an indicator variable equal to 1 if any of the fund's managers have hedge funds, regardless of whether they also have PBFs in mutual funds or separate accounts. *Mutual fund w/ PBF only* is equal to 1 if the fund's managers have PBFs only in mutual funds. *Separate acct w/ PBF – no hedge fund* is equal to 1 if the fund's managers have separate accounts with PBFs but no hedge funds. All other variable definitions are presented in Appendix B. Standard errors are clustered at the fund level.

Variables	CAPM alpha	Carhart alpha	DGTW	Return gap	CAPM alpha	Carhart alpha	DGTW	Return gap
SBS indicator	-0.183	-0.096	-0.087	-0.067	-0.193	-0.115	-0.134	-0.062
	(-6.2)***	(-3.7)***	(-3.5)***	(-4.0)***	(-4.3)***	(-3.0)***	(-3.7)***	(-2.6)***
Mutual fund w/ PBF only	-0.043	0.004	0.011	0.008	-0.072	-0.026	-0.001	0.012
	(-1.5)	(0.2)	(0.4)	(0.5)	(-2.2)**	(-0.9)	(-0.0)	(0.7)
Sep acct w/ PBF – no hedge fund	-0.022	-0.033	-0.010	-0.012	-0.022	-0.010	-0.018	0.010
	(-0.8)	(-1.5)	(-0.4)	(-1.0)	(-0.6)	(-0.4)	(-0.6)	(0.6)
Log (Fund TNA)	-0.012	-0.012	-0.007	-0.007	-0.021	-0.019	-0.011	-0.008
	(-1.8)*	(-2.1)**	(-1.2)	(-2.1)**	(-3.3)***	(-3.2)***	(-2.1)**	(-2.6)**
Log (Family TNA)	-0.030	-0.027	-0.032	-0.005	-0.245	-0.187	-0.169	-0.041
	(-3.3)***	(-3.2)***	(-3.7)***	(-1.0)	(-5.1)***	(-5.1)***	(-3.5)***	(-2.1)**
Flow	0.383	0.668	0.036	-0.036	0.312	0.580	-0.036	-0.064
	(1.3)	(2.5)**	(0.1)	(-0.2)	(1.1)	(2.3)**	(-0.1)	(-0.4)
Log (Fund age)	0.044	0.037	0.012	0.014	0.046	0.039	0.016	0.019
	(3.1)***	(3.1)***	(1.0)	(1.9)*	(3.3)***	(3.2)***	(1.5)	(2.6)**
Expense ratio	-13.897	-16.775	-5.403	-2.930	-8.374	-11.560	-3.431	-1.754
	(-4.4)***	(-6.0)***	(-1.9)*	(-1.6)	(-2.8)***	(-4.2)***	(-1.1)	(-0.8)
Turnover	0.061	0.051	-0.027	0.010	0.050	0.047	-0.020	0.005
	(3.8)***	(3.5)***	(-1.7)*	(1.4)	(3.1)***	(3.1)***	(-1.2)	(0.6)
Load	0.107	-0.037	-0.014	-0.129	1.453	1.150	1.074	0.076
	(0.2)	(-0.1)	(-0.0)	(-0.4)	(2.3)**	(1.9)*	(1.9)*	(0.2)
Return	-0.131	-0.268	-0.472	0.204	-0.117	-0.250	-0.485	0.201
	(-2.2)**	(-5.1)***	(-8.3)***	(6.9)***	(-2.0)**	(-4.8)***	(-8.9)***	(7.1)***
Volatility	2.078	1.791	3.430	4.155	1.138	1.292	2.264	4.084
	(2.6)**	(2.2)**	(4.7)***	(7.8)***	(1.7)*	(1.9)*	(3.7)***	(7.4)***
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Style FEs	Yes	Yes	Yes	Yes	No	No	No	No
Family FEs	No	No	No	No	Yes	Yes	Yes	Yes
Observations	38,459	38,459	34,349	34,015	38,459	38,459	34,349	34,015
R-squared	0.014	0.012	0.007	0.013	0.016	0.014	0.009	0.013

Table 6 Panel A: Analysis of change in side-by-side management status (hedge fund switchers)

This table contains estimates from regressions examining funds that switch from having no side-by-side managers (no managers with hedge funds) to having side-by-side managers (with hedge funds) during the sample period. 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. *Pre-SBS switch* is an indicator variable equal to 1 for switcher funds in all fund-months before the switch. *Post-SBS switch* 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 manager* 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 hedge fund accounts. Standard errors are clustered at the fund level.

Variables	CAPM alpha	Carhart alpha	DGTW	Return gap	CAPM alpha	Carhart alpha	DGTW	Return gap
Pre-SBS switch	-0.031	0.000	-0.032	-0.040	-0.072	-0.033	-0.061	-0.032
	(-0.5)	(0.0)	(-0.7)	(-1.5)	(-1.1)	(-0.7)	(-1.3)	(-1.2)
Pre-SBS switch * New manager	-0.047	-0.151	-0.065	-0.001	-0.034	-0.126	-0.050	-0.002
	(-0.6)	(-2.0)*	(-1.0)	(-0.0)	(-0.4)	(-1.6)	(-0.9)	(-0.1)
Post-SBS switch	-0.212	-0.191	-0.188	-0.098	-0.313	-0.214	-0.207	-0.067
	(-2.9)***	(-3.6)***	(-3.4)***	(-3.2)***	(-3.9)***	(-3.7)***	(-3.9)***	(-2.4)**
Post-SBS switch * New manager	-0.188	-0.066	0.068	0.037	-0.118	-0.044	0.080	-0.004
	-0.031	0.000	-0.032	(0.6)	(-0.9)	(-0.5)	(1.0)	(-0.4)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Style FEs	Yes	Yes	Yes	Yes	No	No	No	No
Family FEs	No	No	No	No	Yes	Yes	Yes	Yes
Observations	33,560	33,560	30,083	29,710	33,560	33,560	30,083	29,710
R-squared	0.014	0.013	0.006	0.013	0.015	0.013	0.008	0.013
P-value of Wald test: Pre-SBS switch = Post-SBS switch	0.080*	0.006***	0.050**	0.135	0.027**	0.013**	0.054*	0.356

Table 6 Panel B: Analysis of switches from having no separate accounts with PBFs to having separate accounts with PBF

This table contains estimates from regressions examining funds that switch from having no managers separate accounts with PBFs to having managers with separate accounts with PBFs during the sample period. 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. *Pre-sep acct w/ PBF switch* is an indicator variable equal to 1 for switcher funds in all fund-months before the switch. *Post-sep acct w/ PBF switch* 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 manager* is an indicator variable equal to 1 if a fund switches from having no separate accounts w/ PBF to having separate accounts with PBF due to adding new managers with these accounts. Standard errors are clustered at the fund level.

Variables	CAPM alpha	Carhart alpha	DGTW	Return gap	CAPM alpha	Carhart alpha	DGTW	Return gap
Pre-sep acct w/ PBF switch	-0.105	-0.153	-0.072	-0.033	-0.045	-0.117	-0.072	-0.037
	(-2.2)**	(-2.8)***	(-1.8)*	(-1.3)	(-0.8)	(-1.8)*	(-1.4)	(-1.1)
Pre-sep acct w/ PBF *New manager	-0.125	-0.020	-0.206	-0.024	-0.164	-0.026	-0.209	-0.022
	(-1.3)	(-0.2)	(-2.5)**	(-0.5)	(-1.9)*	(-0.3)	(-2.6)***	(-0.5)
Post-sep acct w/ PBF switch	-0.027	-0.029	-0.029	-0.013	-0.001	-0.021	-0.055	-0.007
	(-0.7)	(-1.1)	(-0.8)	(-1.0)	(-0.0)	(-0.6)	(-1.2)	(-0.3)
Post-sep acct w/ PBF *New manager	0.005	0.002	0.007	0.002	0.017	0.043	0.036	0.012
	(0.1)	(0.0)	(0.1)	(0.1)	(0.2)	(0.6)	(0.6)	(0.4)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Style FEs	Yes	Yes	Yes	Yes	No	No	No	No
Family FEs	No	No	No	No	Yes	Yes	Yes	Yes
Observations	33,496	33,496	29,951	29,687	33,496	33,496	29,951	29687
R-Squared	0.015	0.013	0.007	0.012	0.016	0.014	0.009	0.013
P-value of Wald test:								
Pre-switch = Post-switch	0.224	0.054*	0.439	0.482	0.485	0.145	0.757	0.344

Table 7: The influence of the family vs the adviser vs the manager

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. *SBS* is an indicator variable equal to 1 if any of the fund's managers have hedge funds, regardless of whether they also have PBFs in mutual funds or separate accounts. *SBS at the adviser level* is equal to 1 if the fund's investment adviser employs at least one SBS manager (with hedge funds). *SBS at the family level* is equal to 1 if the fund's family has at least one fund managed by a SBS manager (with hedge funds). Standard errors are clustered at the fund level.

Variables	CAPM alpha	Carhart alpha	DGTW	Return gap
SBS indicator	-0.165	-0.082	-0.063	-0.052
	(-4.6)***	(-2.5)**	(-2.1)**	(-2.6)***
SBS at the adviser level	0.004	-0.005	-0.012	-0.007
	(0.1)	(-0.2)	(-0.5)	(-0.5)
SBS at the family level	-0.031	-0.015	-0.020	-0.014
	(-1.3)	(-0.7)	(-0.9)	(-1.2)
Control variables	Yes	Yes	Yes	Yes
Year and style FEs	Yes	Yes	Yes	Yes
Observations	38,459	38,459	34,349	34,015
R-squared	0.014	0.012	0.007	0.013

Table 8: The mitigating effects of counteracting incentives

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. *SBS* is an indicator variable equal to 1 if the fund has at least one manager with hedge funds. *Above-median percent of assets in mutual funds* indicator is equal to 1 if the percentage of total assets under management held in mutual funds (including the reporting fund itself), averaged across managers of the same fund in a year, is higher than the median percentage across all funds in that month. *Direct-sold* indicator is equal to 1 if the fund distributes the largest percentage of its assets through the direct-sold segment. Standard errors are clustered at the fund level.

Variables	CAPM alpha	Carhart alpha	DGTW	Return gap	CAPM alpha	Carhart alpha	DGTW	Return gap
SBS indicator	-0.205	-0.133	-0.138	-0.062	-0.183	-0.127	-0.119	-0.084
	(-6.1)***	(-4.9)***	(-4.8)***	(-3.2)***	(-5.2)***	(-4.4)***	(-4.3)***	(-4.0)***
Above-median % of assets in mutual funds indicator	0.010	0.025	-0.007	0.041				
	(0.5)	(1.5)	(-0.4)	(4.0)***				
SBS*Above-median % of assets in mutual funds indicator	0.152	0.267	0.254	0.046				
	(2.6)**	(4.5)***	(5.6)***	(1.5)				
Direct-sold indicator					0.058	0.042	0.053	-0.009
					(2.2)**	(1.8)*	(2.5)**	(-0.7)
SBS*Direct-sold indicator					0.028	0.146	0.146	0.062
					(0.5)	(2.6)***	(3.2)***	(2.1)**
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and style FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	38,459	38,459	34,349	34,015	38,459	38,459	34,349	34,015
R-squared	0.015	0.013	0.007	0.014	0.015	0.013	0.007	0.013

Table 9: The exacerbating effects of opportunities to engage in favoritism

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. *SBS* is an indicator variable equal to 1 if the fund has at least one manager with hedge funds. *SBS* is an indicator variable equal to 1 if the fund has at least one manager with hedge funds. *High agency cross trading* is equal to 1 if the percentage of affirmative answers to questions regarding only agency cross trades in Section B of Item 8 in Form ADV, averaged across managers of the same fund in a year, is higher than the median percentage across all funds in that month. *Single manager or same team* is an indicator variable equal to 1 if the SBS fund is managed by a single manager or a team of managers with the *same* hedge funds, identified as managers having the same exact non-zero hedge fund assets according to SEC data. Standard errors are clustered at the fund level.

Variables	CAPM alpha	Carhart alpha	DGTW	Return gap	CAPM alpha	Carhart alpha	DGTW	Return gap
SBS indicator	-0.147	-0.035	-0.034	-0.053	-0.138	-0.059	-0.040	-0.076
	(-4.2)***	(-1.0)	(-1.2)	(-2.6)**	(-3.6)***	(-1.6)	(-1.3)	(-3.2)***
High agency cross trading	0.028	0.042	0.032	-0.013				
	(1.5)	(2.5)**	(1.8)*	(-1.3)				
SBS*High agency cross trading	-0.102	-0.175	-0.165	-0.041				
	(-1.7)*	(-3.4)***	(-3.0)***	(-1.3)				
SBS*Single manager or same team					-0.105	-0.087	-0.120	0.023
					(-2.0)**	(-1.8)*	(-2.6)***	(0.8)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and style FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	37,919	37,919	33,916	33,577	38,459	38,459	34,349	34,015
R-Squared	0.015	0.013	0.007	0.013	0.015	0.013	0.007	0.013

Table 10: Analysis of active management (hedge fund switchers)

This table contains regression estimates from regressions examining funds that switch from having no side-by-side managers (no hedge funds) to having side-by-side managers (with hedge funds) during the sample period. 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. The dependent variable in column (1) is the average Active Share in the subsequent 12 months, whereas in column (2) it is the average of Tracking Error in the subsequent 12 months. In column (3), the dependent variable (AsTE) is an indicator variable equal to 1 if a fund's active share and tracking error are above their respective medians, where the median value is measured within each investment style. In the last column, the dependent variable is the fund's average 12-month turnover. *Pre-SBS switch* is an indicator variable equal to 1 for switcher funds in all fund-months before the switch. *Post-SBS switch* 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 manager* 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. Standard errors are clustered at the fund level.

Variables	Active Share	Tracking Error	AsTe	Turnover
Pre-SBS switch	-5.352	-0.073	-6.355	-0.551
	(-1.2)	(-3.1)***	(-0.8)	(-0.3)
Pre-SBS switch * New manager	-2.348	0.007	-22.228	11.283
	(-0.5)	(0.2)	(-2.3)**	(1.2)
Post-SBS switch	-1.666	0.029	5.859	8.743
	(-0.4)	(0.7)	(0.6)	(2.0)**
Post-SBS switch * New manager	-5.910	-0.057	-23.292	-14.665
	(-1.1)	(-1.3)	(-2.0)**	(-1.1)
Control variables	Yes	Yes	Yes	Yes
Year and style FEs	Yes	Yes	Yes	Yes
Observations	30,483	30,316	30,362	34,295
R-Squared	0.453	0.399	0.086	0.861
P-value of Wald test:				
Pre-switch = Post-switch	0.445	0.015**	0.228	0.058*

Table 11: Effect of side-by-side management using Nohel et al (2010) and Cici et al (2010) sampling methodologies

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. *Cici et al SBS* is an indicator variable equal to 1 if the fund has at least one side-by-side manager according to the sampling methodology in Cici et al (2010). *Cici et al SBS- Not actual SBS* is an indicator variable equal to 1 if the fund is side-by-side according to the Cici et al methodology, but the fund does not actually have side-by-side managers according to SEC data. *Cici et al SBS- Actual SBS* is an indicator variable equal to 1 if the fund is side-by-side according to both the Cici et al methodology and SEC data. *Nohel et al SBS* is an indicator variable equal to 1 if the fund has at least one side-by-side manager according to the sampling methodology in Nohel et al (2010). *Actual SBS-Not Nohel SBS* is an indicator variable equal to 1 if the fund is side-by-side according to SEC data but not side-by-side according to the sampling methodology in Nohel et al.

Variables	CAPM alpha	Carhart alpha	DGTW	Return gap	CAPM alpha	Carhart alpha	DGTW	Return gap
Panel A: Cici et al methodology								
Cici et al SBS	-0.068	-0.025	-0.027	-0.028				
	(-3.7)***	(-1.6)	(-1.8)*	(-3.0)***				
Cici et al SBS- Not actual SBS					-0.022	-0.000	-0.003	-0.019
					(-1.1)	(-0.0)	(-0.2)	(-1.9)*
Cici et al SBS- Actual SBS					-0.197	-0.097	-0.099	-0.054
					(-6.1)***	(-3.4)***	(-3.6)***	(-4.1)***
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and style FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	38,459	38,459	34,349	34,015	38,459	38,459	34,349	34,015
R-squared	0.014	0.012	0.007	0.013	0.014	0.012	0.007	0.013
Panel B: Nohel et al. methodology								
Nohel et al SBS	-0.140	-0.022	-0.020	-0.000	-0.163	-0.037	-0.036	-0.014
	(-2.9)***	(-0.5)	(-0.5)	(-0.0)	(-3.4)***	(-0.8)	(-0.9)	(-0.8)
Actual SBS-Not Nohel SBS					-0.186	-0.123	-0.119	-0.101
					(-5.2)***	(-4.7)***	(-4.4)***	(-4.6)***
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year and style FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	38,459	38,459	34,349	34,015	38,459	38,459	34,349	34,015
R-squared	0.014	0.012	0.007	0.012	0.014	0.013	0.007	0.013