Internet Appendix for

Playing favorites: Conflicts of interest in mutual fund management

(Del Guercio, Genc, and Tran)

This Internet Appendix provides supplementary details on the data sample and methodology for the paper "*Playing Favorites: Conflict of interests in the mutual fund management*". It also provides supplementary tables (Tables IA.1 to IA.6).

1. SEC client account categories

We verify that the SEC account category names used in the paper are accurate in several ways. The term registered investment company is a well-defined legal term referring to open-end mutual funds, closed-end funds, and unit investment trusts.[1] We confirm that "pooled investment vehicle with PBFs" is synonymous with hedge funds through the use of the sample in Nohel et al (2010). Specifically, we take the list of 90 side-by-side domestic equity mutual funds in 2005 and 2006 from Nohel et al (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.[2]

The SEC refers to the third category as "other accounts," but we call them "separate accounts" to better define the nature of these other accounts and differentiate them from the other categories used by the SEC (registered investment companies and pooled investment vehicles). Since we also have data on the number of accounts, we verify that the mean assets under

[1] See: https://www.sec.gov/answers/mfinvco.htm
[2] We thank Tom Nohel, Z. Jay Wang, and Lu Zheng for generously sharing their data.

management per client account in this category are $197 million, suggesting that this category serves clients large enough to warrant a separate account and not be pooled with other investors. This is consistent with our statement in the paper that the typical client in this category is an institution or high-net worth individual.

2. Mutual fund and manager sample details

We include all funds in CRSP that exist from 2005 to 2011 that meet our data filters from the top 30 families ranked by assets in March 2005. We identify domestic equity funds by relying on Lipper objective codes (CA, EI, G, GI, I, MC, MR, and SG). In cases where the Lipper code is missing in a quarter we use the codes from surrounding quarters. We add funds to the sample as the top 30 families start new funds or acquire existing funds from other families during the sample period, and retain funds until they merge or liquidate. 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).

For each manager-fund-year observation, we record the number of other accounts concurrently managed along with their assets under management in each of three categories: mutual funds, pooled investment vehicles, and separate accounts, along with the subset of the assets that are subject to performance-based fees (PBFs). Pooled investment vehicle assets subject to performance-based fees are hedge fund assets. In reporting the manager's assets in other mutual funds, 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.

To obtain fund-year observations, we first average manager-level data across all members of a team. 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. For example, if the effective date of the manager information is November 30, 2008, we match this observation to CRSP fund-month observations from December 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 occasionally these year-end dates change.

3. Mutual fund performance measures

We used four performance measures throughout the paper. The first two performance measures we use are abnormal returns after adjusting for the factor loadings using the one factor model (CAPM) and the Carhart (1997) four-factor model. 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. All factors are obtained from Kenneth French's data library. To calculate the risk-adjusted return of a fund in each month, we first estimate the factor loadings of unconditional models using two years of past monthly fund returns.[3] We then subtract the expected return, calculated using factor estimates, from the fund return in order to determine the risk-adjusted return. The risk-adjusted return based on the Carhat (1997) model will be:

$$\alpha_{i,t}^{CARHART} = \left(R_{i,t} - r_{f,t}\right) - \left(\hat{\beta}_{i,mkt} Mkt_t + \hat{\beta}_{i,smb} Smb_t + \hat{\beta}_{i,hml} Hml_t + \hat{\beta}_{i,mom} MOM_t\right) \quad (1)$$

where $\hat{\beta}$ are estimated from the past returns. Since our sample begins in 2005, we estimate our regressions starting from 2002 to obtain abnormal returns in 2005.

[3] We require at least 18 months of valid return to estimate the loadings.

The third measure used in our tests is the characteristic-adjusted returns (CS) developed by Daniel, Grinblatt, Titman, and Wermers (1997). To compute DGTW returns of a fund, we first take each stock holding'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:

$$CS_{j,t} = R_{j,t} - R_{,t}^{b,t-1} \qquad (2)$$

where $R_{j,t}$ is the month t returns of the stock j, and $R_{,t}^{b,t-1}$ is the month t return of the benchmark portfolio that matched to stock j in month t-1.[4] We then calculate the fund's DGTW return by taking the weighted average of the benchmark-adjusted returns of its holdings:

$$CS_{i,t} = \sum_{i=1}^{N}(w_{j,t-1}\, CS_{j,t}) \qquad (3)$$

Our final measure is the return gap of Kacperczyk, Sialm, and Zheng (2008) which is the difference between the fund's actual gross return and the gross return implied by the fund's lagged reported holdings:

$$RG_{i,t} = R_{i,t} - (RH_{i,t} - EXP_{i,t}) \qquad (4)$$

where $RH_{i,t} = \sum_{i=1}^{N} w_{j,t-1} * R_{j,t}$ is the gross return of a buy and hold portfolio that invest in the most recent stock holdings, $EXP_{i,t}$ and $R_{i,t}$ are the fund's return and expense ratio respectively. 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.

4. Replicating the Cici et al (2010) sampling methodology

Given that we do not have access to all of the hedge fund data sources and directories used by Cici et al (2010), we use our SEC list of advisory firms offering both mutual funds and hedge

[4] 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.

funds and assume that they would identify these same firms. We match this list of side-by-side advisory firms to the same advisory firms in the CRSP mutual fund database by using the mapping in the s12type5 database of mutual fund holdings (s12) provided by Thomson Reuters (by firm name and year). Specifically, 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 and consider all the mutual funds managed by these advisory firms in that year to be side-by-side mutual funds. The *Cici et al SBS* is equal to 1 for these fund-months and equal to 0 otherwise.

5. Supplementary Tables

Table IA.1: This table presents regression results of mutual fund performance onto SBS indicator as in the paper's Table 5, except the sample now includes target date funds and variable annuities. SBS indicator takes the value of 1 if the mutual fund's managers also have hedge funds regardless of they also have performance-based fees (PBFs) in other type of accounts. The definitions of all controls can be found in Appendix B of the paper.

Table IA.2: This table examines the impact of simultaneously managing pooled investment vehicles and separate accounts with no PBFs on mutual fund performance. We add three additional indicator variables to the specifications in the paper's Table 5: *PIV – no sep acct – no PBF, Sep acct – no PIV – no PBF, and Both PIV and sep acct – no PBF*. The omitted category in the main paper includes the observations where the indicator variables mentioned in the previous sentence are equal to one. By including these additional indicator variables, the omitted category contains funds with managers who only manage other mutual funds, all without any PBFs. They do not manage any assets outside the mutual fund industry.

Table IA.3: This table presents regression results of mutual fund performance with an alternative measure of side-by-side management: the percentage of the fund's managers who also manage hedge funds.

Table IA.4: This table presents regression results of mutual fund performance with the size of other account types as the main independent variables.

Table IA.5: This table presents regression results of mutual fund performance onto SBS indicator as in the paper's Table 5, except the sample now includes only index funds. SBS indicator takes the value of 1 if the mutual fund's managers also have hedge funds regardless of they also have performance-based fees (PBFs) in other type of accounts. The omitted group in these regression are index funds with fund managers who do not have any account that is subject to performance based fees. The definitions of all controls can be found in Appendix B of the paper.

Table IA.6: Gaspar, Massa, and Matos (2006) find that families transfer performance from their "low value" funds to their "high value" funds to maximize overall family profits. Gaspar et al. consider three types of low-value funds: (1) low-fee funds (2) funds with low year-to-date performance, and (3) older funds. Our paper shows that funds whose managers simultaneously manage hedge funds (i.e., SBS funds) strongly underperform their peers whose managers have no side-by-side arrangements (i.e., no-SBS funds). One explanation for our results is that SBS funds are synonymous with low-value funds within the family. To investigate this possibility, we define low-value funds in our sample as in Gaspar et al. and analyze the overlap between low-value funds and SBS funds. Specifically, we independently rank funds within each family into quartiles based on expense ratio (including loads), year-to-date return raw returns (the returns of the fund since January of the current year), and fund age. We then categorize funds in the bottom quartile as low-value funds when the ranking is based on fees and year-to-date returns, and in the top quartile when the ranking is based on fund age (i.e. lowest fee and year-to-date returns, and the oldest funds). We find that 27%, 27%, and 20% of SBS funds are also "low-value" funds according to the independent ranking by fee, year-to-date, and age within family, respectively, which is close to the expected value of 25%. If anything, older funds are underrepresented among SBS funds. This table shows the results of a regression of fund performance on the SBS indicator as in the paper's Table 5, with three additional control variables that indicate three low-

value fund groups. We find that the year-to-date measure of "low-value" fund is also negative and significant, and the negative coefficients and t-statistics on the SBS indicator is largely unaffected in every specification. These results suggest that while low value funds potentially subsidize their more lucrative peers (i.e. high-value funds), our phenomenon is distinct.

Table IA.7: In Table 9 of our paper, we use the Agency Cost Trading (ACT) measure of Casavecchia and Tiwari (2016) to explore if the underperformance of SBS funds we document is influenced by the opportunities for cross-subsidization. The measure is calculated by the percentage of affirmative answers to the questions in Item 8 Section B of Form ADV. These questions are indented to disclose if the advisory firm allows agency cross-trades, in which the firm, acting as an agent (i.e. broker-dealer) with financial interest, arranges cross-trades between multiple clients. In this table, we instead use the Total Cross Trading (TCT) measure of Casavecchia and Tiwari (2016). We define *High total cross trading* as equal to 1 if the percentage of affirmative answers to questions regarding both principal and agency cross trades in sections A & B of Item 8 in Form ADV (six questions in total), averaged across the managers of the same fund in a year, is above the median percentage across all funds in a given month. Different from agency cross-trades, principal cross-trades occur between the clients of an advisory firm and the advisory firm's own inventory. The list of questions that measure both principal and agency cross-trades are provided in Table 3 of Casavecchia and Tiwari (2016).

Table IA.8: This table shows the impact of the direct distribution channel on the underperformance of SBS funds as in Table 10 of the paper with two modifications: (1) we define *Direct-sold* as equal to 1 if at least 50% of the fund's TNA is distributed through the direct-sold segment, and (2) we control for funds in which the largest percentage of assets is sold through the institutional channel. Results on the effect of the Direct channel are very similar qualitatively and quantitatively to those in Table 10 in both cases.

Table IA.1: Impact of side-by-side hedge fund management on mutual fund performance (target date funds and variable annuities included)

This table is similar to Table 5 in our paper, except that in these regressions we use observations for variable annuities and target date funds instead of excluding them. 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 of the main text. 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	-0.182	-0.105	-0.079	-0.071	-0.197	-0.130	-0.127	-0.053
	(-6.8)***	(-4.4)***	(-3.3)***	(-4.2)***	(-4.8)***	(-3.7)***	(-3.6)***	(-2.3)**
Mutual fund w/ PBF only	-0.067	-0.022	0.010	0.004	-0.092	-0.050	-0.001	0.011
	(-2.6)***	(-1.0)	(0.4)	(0.2)	(-3.1)***	(-1.9)*	(-0.0)	(0.6)
Sep acct w/ PBF – no hedge fund	-0.026	-0.035	-0.011	-0.014	-0.029	-0.020	-0.022	0.010
	(-1.0)	(-1.6)	(-0.5)	(-1.1)	(-0.9)	(-0.8)	(-0.7)	(0.7)
Log (Fund TNA)	-0.010	-0.011	-0.007	-0.006	-0.017	-0.017	-0.011	-0.008
	(-1.6)	(-2.0)**	(-1.2)	(-1.8)*	(-2.9)***	(-3.1)***	(-2.1)**	(-2.3)**
Log (Family TNA)	-0.024	-0.023	-0.033	-0.004	-0.240	-0.179	-0.173	-0.038
	(-3.0)***	(-3.0)***	(-3.8)***	(-0.9)	(-5.2)***	(-5.1)***	(-3.5)***	(-1.7)*
Flow	0.360	0.619	-0.012	0.087	0.213	0.498	-0.071	0.096
	(1.4)	(2.6)***	(-0.1)	(0.5)	(0.8)	(2.1)**	(-0.3)	(0.6)
Log (Fund age)	0.041	0.039	0.009	0.021	0.045	0.043	0.014	0.024
	(3.1)***	(3.5)***	(0.7)	(2.8)***	(3.4)***	(3.6)***	(1.2)	(3.2)***
Expense ratio	-12.237	-15.375	-5.438	-3.395	-6.231	-8.916	-4.327	-1.298
	(-4.6)***	(-6.3)***	(-1.9)*	(-1.8)*	(-2.4)**	(-3.8)***	(-1.4)	(-0.6)
Turnover	0.058	0.052	-0.027	0.016	0.057	0.052	-0.021	0.009
	(3.8)***	(3.8)***	(-1.7)*	(2.1)**	(4.0)***	(3.8)***	(-1.3)	(1.0)
Load	0.009	-0.070	-0.023	-0.063	1.525	1.198	1.049	0.151
	(0.0)	(-0.2)	(-0.1)	(-0.2)	(2.6)**	(2.2)**	(1.9)*	(0.4)
Return	-0.202	-0.300	-0.476	0.226	-0.184	-0.286	-0.486	0.222
	(-3.6)***	(-6.0)***	(-8.5)***	(7.5)***	(-3.3)***	(-5.8)***	(-9.0)***	(7.6)***
Volatility	1.910	1.726	3.329	4.253	1.010	1.154	2.232	4.174
	(2.5)**	(2.2)**	(4.6)***	(8.3)***	(1.6)	(1.8)*	(3.6)***	(7.9)***
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	42,005	42,005	34,835	34,846	42,005	42,005	34,835	34,846
R-squared	0.015	0.013	0.007	0.015	0.016	0.015	0.009	0.015

Table IA.2: The impact of different types of accounts on mutual fund performance

This table is similar to Table 5 in our paper, except that in these regressions we add three indicator variables to examine the impact of simultaneously managing pooled investment vehicles and separate accounts with no PBFs 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. *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. *PIV – no sep acct – no PBF* is equal to 1 if the fund's managers have pooled investment vehicles but no separate accounts and no PBF accounts. *Sep acct – no PIV – no PBF* is equal to 1 if the fund's managers have separate accounts but no pooled investment vehicles and no PBF accounts. *Both PIV and sep acct – no PBF* is equal to 1 if the fund's managers have pooled investment vehicles and separate accounts but no PBF accounts. All other variable definitions are presented in Appendix B of the main text. 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	-0.188	-0.085	-0.113	-0.083	-0.198	-0.109	-0.157	-0.072
	(-5.1)***	(-2.7)***	(-3.4)***	(-3.7)***	(-3.8)***	(-2.5)**	(-3.7)***	(-2.6)***
Mutual fund w/ PBF only	-0.045	0.013	-0.008	-0.002	-0.076	-0.022	-0.017	0.006
	(-1.2)	(0.4)	(-0.3)	(-0.1)	(-1.9)*	(-0.6)	(-0.5)	(0.3)
Sep acct w/ PBF – no hedge fund	-0.026	-0.023	-0.034	-0.026	-0.026	-0.004	-0.039	0.001
	(-1.0)	(-1.6)	(-0.5)	(-1.1)	(-0.9)	(-0.8)	(-0.7)	(0.7)
PIV – no sep acct – no PBF	0.027	0.020	-0.012	0.004	-0.010	-0.013	-0.034	-0.006
	(0.7)	(0.6)	(-0.3)	(0.2)	(-0.3)	(-0.4)	(-0.9)	(-0.3)
Sep acct – no PIV – no PBF	-0.001	0.028	-0.037	-0.024	0.000	0.030	-0.035	-0.014
	(-0.0)	(0.9)	(-1.1)	(-1.3)	(0.0)	(0.9)	(-1.0)	(-0.7)
Both PIV and sep acct – no PBF	-0.015	0.004	-0.029	-0.018	-0.008	0.000	-0.021	-0.011
	(-0.6)	(0.2)	(-1.2)	(-1.1)	(-0.3)	(0.0)	(-0.8)	(-0.7)
Controls	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	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 IA.3: 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. *Average SBS* is the percentage of the fund's managers who also manage 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 of the main text. Standard errors are clustered at the fund level.

Variables	CAPM alpha	Carhart alpha	DGTW	Return gap
Average SBS	-0.201	-0.103	-0.118	-0.072
	(-5.6)***	(-3.5)***	(-3.6)***	(-3.6)***
Mutual fund w/ PBF only	-0.041	0.005	0.011	0.009
	(-1.4)	(0.2)	(0.4)	(0.6)
Sep acct w/ PBF – no hedge fund	-0.015	-0.029	-0.009	-0.009
	(-0.5)	(-1.3)	(-0.4)	(-0.8)
Log (Fund TNA)	-0.013	-0.012	-0.007	-0.007
	(-1.9)*	(-2.1)**	(-1.2)	(-2.2)**
Log (Family TNA)	-0.027	-0.025	-0.033	-0.004
	(-3.0)***	(-3.0)***	(-3.7)***	(-0.8)
Flow	0.374	0.663	0.029	-0.041
	(1.3)	(2.5)**	(0.1)	(-0.3)
Log (Fund age)	0.043	0.037	0.011	0.014
	(3.0)***	(3.1)***	(0.9)	(1.8)*
Expense ratio	-14.477	-17.052	-6.024	-3.125
	(-4.6)***	(-6.0)***	(-2.1)**	(-1.6)
Turnover	0.059	0.050	-0.028	0.010
	(3.7)***	(3.5)***	(-1.8)*	(1.3)
Load	0.141	-0.017	-0.009	-0.117
	(0.3)	(-0.0)	(-0.0)	(-0.4)
Return	-0.127	-0.266	-0.469	0.206
	(-2.1)**	(-5.1)***	(-8.2)***	(6.9)***
Volatility	2.102	1.799	3.479	4.161
	(2.6)**	(2.2)**	(4.8)***	(7.7)***
Year and style FEs	0.808	0.637	0.471	-0.108
Observations	38,459	38,459	34,349	34,015
R-squared	0.014	0.012	0.007	0.013

Table IA.4: Impact of side-by-side management assets 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	34,015
R-squared	0.014	0.012	0.007	0.013

Table IA.5: Impact of side-by-side hedge fund management on index fund performance

This table is similar to Table 5 in our paper, except that in these regressions we only use index fund observations from the top 30 fund families. In this sample of index funds, SBS = 1 for 10.2% of fund-month observations. 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 of the main text.

Variables	CAPM alpha	Carhart alpha	DGTW	Return gap	CAPM alpha	Carhart alpha	DGTW	Return gap
SBS indicator	-0.099	-0.038	0.059	-0.001	-0.062	0.008	0.107	-0.011
	(-0.8)	(-0.4)	(1.1)	(-0.1)	(-0.3)	(0.1)	(1.4)	(-0.5)
Mutual fund w/ PBF only	0.090	-0.008	0.055	-0.019	0.156	0.034	0.099	-0.029
	(0.8)	(-0.1)	(1.1)	(-1.4)	(0.9)	(0.3)	(1.5)	(-1.5)
Sep acct w/ PBF – no hedge fund	-0.040	-0.033	-0.076	0.034	-0.042	-0.041	-0.048	0.018
	(-0.2)	(-0.3)	(-1.1)	(1.5)	(-0.3)	(-0.4)	(-0.6)	(0.7)
Log (Fund TNA)	-0.017	0.009	-0.013	-0.002	-0.008	0.022	-0.008	-0.004
	(-0.6)	(0.4)	(-1.0)	(-0.6)	(-0.3)	(0.9)	(-0.5)	(-1.2)
Log (Family TNA)	-0.027	-0.025	-0.011	0.009	-0.186	0.065	-0.002	0.017
	(-0.5)	(-0.7)	(-0.5)	(1.7)*	(-0.9)	(0.5)	(-0.0)	(0.7)
Flow	-0.102	-0.491	-0.472	0.057	0.060	0.047	-0.197	-0.047
	(-0.1)	(-0.6)	(-1.1)	(0.4)	(0.1)	(0.1)	(-0.5)	(-0.3)
Log (Fund age)	0.065	0.009	0.023	0.002	0.019	-0.017	0.002	0.004
	(0.8)	(0.1)	(0.7)	(0.2)	(0.3)	(-0.3)	(0.0)	(0.4)
Expense ratio	-23.438	3.248	-14.488	2.530	-14.605	21.484	5.996	-5.505
	(-0.7)	(0.2)	(-1.4)	(0.8)	(-0.4)	(1.0)	(0.5)	(-1.4)
Turnover	0.063	0.096	-0.056	-0.001	0.070	0.087	-0.095	0.018
	(0.9)	(1.5)	(-1.4)	(-0.0)	(0.9)	(1.3)	(-2.0)*	(0.8)
Load	-1.616	-5.781	0.922	-0.070	-4.705	-8.437	-0.807	0.592
	(-0.3)	(-1.7)*	(0.5)	(-0.1)	(-0.7)	(-2.2)**	(-0.4)	(0.8)
Return	0.452	0.228	0.018	-0.010	0.484	0.232	-0.001	-0.000
	(1.9)*	(1.4)	(0.2)	(-0.4)	(2.1)**	(1.6)	(-0.0)	(-0.0)
Volatility	4.147	2.097	-0.383	-0.622	4.387	3.101	-0.972	-0.358
	(1.1)	(0.7)	(-0.2)	(-1.2)	(1.4)	(1.2)	(-0.8)	(-0.9)
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	2862	2862	2691	2678	2862	2862	2691	2678
R-squared	0.006	0.004	0.001	0.011	0.005	0.003	-0.002	0.004

Table IA.6: Effect of side-by-side management – with Gaspar et al (2006) controls

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. *Total fees – Low value* is equal to 1 if a fund's total fees are below the 25th percentile of total fees of all funds belonging to the same family. *Year-to-date return – Low value* is equal to 1 if a fund's year-to-date return is below the 25th percentile of year-to-date returns of all funds belonging to the same family. *Age – Low value* is equal to 1 if a fund's age is above the 75th percentile of ages of all funds belonging to the same family. Standard errors are clustered at the fund level.

Variables	CAPM alpha	Carhart alpha	DGTW	Return gap
SBS indicator	-0.186	-0.099	-0.090	-0.067
	(-6.4)***	(-3.9)***	(-3.7)***	(-3.9)***
Total fees – Low value	-0.034	-0.037	-0.053	0.010
	(-1.6)	(-1.9)*	(-2.8)***	(0.9)
Year-to-date return – Low value	-0.070	-0.104	-0.064	-0.013
	(-3.3)***	(-5.5)***	(-3.3)***	(-1.1)
Age – Low value	0.029	0.025	0.031	-0.004
	(1.1)	(1.0)	(1.4)	(-0.3)
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	0.015	0.013	0.007	0.013

Table IA.7: Effect of investment adviser's policies on SBS management

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 total cross trading* is equal to 1 if the percentage of affirmative answers to questions regarding both principal and agency cross trades in Sections A and 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.

Variables	CAPM alpha	Carhart alpha	DGTW	Return gap
SBS indicator	-0.165	-0.058	-0.051	-0.055
	(-4.9)***	(-1.9)*	(-1.9)*	(-2.8)***
High total cross trading	0.005	0.013	0.014	-0.006
	(0.3)	(0.8)	(0.8)	(-0.6)
SBS*High total cross trading	-0.062	-0.130	-0.133	-0.041
	(-0.9)	(-2.4)**	(-2.2)**	(-1.2)
Control variables	Yes	Yes	Yes	Yes
Year and style FEs	Yes	Yes	Yes	Yes
Observations	37,919	37,919	33,916	33,577
R-Squared	0.015	0.013	0.007	0.013

Table IA.8: The effect of distribution channel

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. *Direct-sold* indicator is equal to 1 if 50% or more of the TNA of the fund is distributed through the direct-sold segment. *Institutional-sold* indicator is equal to 1 if the fund's largest percentage of assets is sold through the institutional channel. 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	-0.181	-0.126	-0.121	-0.082	-0.147	-0.105	-0.087	-0.107
	(-5.1)***	(-4.4)***	(-4.4)***	(-3.9)***	(-3.2)***	(-2.7)***	(-2.9)***	(-3.6)***
Direct-sold indicator	0.061	0.042	0.046	-0.002	0.087	0.063	0.074	-0.022
	(2.4)**	(1.8)*	(2.2)**	(-0.1)	(2.5)**	(2.0)**	(2.5)**	(-1.3)
SBS*Direct-sold indicator	0.026	0.147	0.152	0.056	-0.010	0.123	0.112	0.086
	(0.4)	(2.6)***	(3.4)***	(1.9)*	(-0.1)	(2.0)**	(2.4)**	(2.4)**
Institutional-sold indicator					0.075	0.051	0.057	-0.036
					(1.9)*	(1.5)	(1.6)	(-1.8)*
SBS*Institutional-sold indicator					-0.108	-0.066	-0.100	0.068
					(-1.6)	(-1.2)	(-1.7)*	(1.9)*
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	0.013	0.015	0.013	0.007	0.013