

**For Better or Worse? Mutual Funds in
Side-by-Side Management Relationships with Hedge Funds[§]**

Gjergji Cici,^a Scott Gibson,^{b,*} and Rabih Moussawi^a

^a *Wharton Research Data Services, The Wharton School, Philadelphia, PA 19104, USA*

^b *Mason School of Business, The College of William & Mary, Williamsburg, VA 23187, USA*

^{*} *Corresponding author: 757/221-1673, scott.gibson@business.wm.edu*

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Abstract

Institutional managers claim that mutual fund investors in side-by-side management relationships with hedge funds are better off because the more complex and intellectually stimulating environment attracts more talented money managers. Regulators counter that they may be worse off because conflicts of interest motivate side-by-side managers to strategically transfer performance to hedge funds. Our evidence shows that regulators' concerns are justified. Based on return gaps, which measure the impact of unobservable managerial actions, side-by-side mutual funds significantly underperformed matched mutual funds that were not in such relationships. Alpha estimates confirm that side-by-side mutual fund investors are worse off. Moreover, consistent with favoritism, side-by-side mutual funds were allocated significantly fewer underpriced IPO shares.

For Better or Worse? Mutual Funds in Side-by-Side Management Relationships with Hedge Funds

Institutional managers who engage in the simultaneous, or “side-by-side”, management of mutual funds and hedge funds rely on common research staffs to form valuation beliefs for both portfolios. Although the information used to make stock picks may be the same, regulators have raised concerns that structural differences in fees and ownership may motivate managers to make portfolio decisions that favor hedge fund investors at the expense of mutual fund investors. In contrast to mutual funds that charge fees based on a fixed percentage of assets under management, hedge funds typically levy additional performance-based fees equal to 20 percent or more of realized capital gains and capital appreciation. Moreover, hedge fund investors often insist that managers invest a significant percentage of their net worth to ensure an alignment of interests. The resulting incentives for managers to strategically transfer performance to hedge funds from mutual funds has recently attracted the attention of the U.S. Securities and Exchange Commission (SEC) which, despite a lack of empirical evidence, is considering measures designed to protect mutual fund investors.¹

Institutional managers counter that such regulatory measures may actually harm mutual fund investors, who benefit from side-by-side management. Mutual fund investors profit, they argue, because better money managers can be attracted when offered joint appointments with hedge funds. The argument’s premise being that the best money managers demand a more complex and intellectually stimulating environment

¹ U.S. Securities and Exchange Commission (September 2003). Measures proposed by the SEC range from requiring investment managers to disclose side-by-side management to mutual fund investors to the outright prohibition of side-by-side management.

than mutual funds can offer independently. Writing in response to the SEC's proposed ban of side-by-side management, Joseph Sack, executive director of the Asset Managers Forum, voices managers' position: "The talent drain [from mutual funds] would occur because qualified portfolio managers generally want to be professionally challenged; accordingly, they would be inclined to accept positions with hedge funds or similar investor entities where a sophisticated skill set might be needed to manage more complex portfolios."²

In this study, we examine whether the conjectures of regulators and institutional managers find empirical support. Over 1994 to 2004, we identify 71 managers who simultaneously ran 457 actively-managed equity mutual funds side-by-side hedge funds. The dollar amounts involved are substantial: During 2004, investors delegated an average of \$448 billion to side-by-side mutual funds to manage on their behalf.

Our first set of tests compares return gaps of side-by-side mutual funds with those of unaffiliated mutual funds that are matched on investment objective, total assets, and portfolio turnover. The return gap is defined as a fund's actual return less its anticipated return, calculated as the buy-an-hold return on a portfolio comprised of the most recently disclosed securities. The return gap appears in other studies, recently in Kacperczyk, Sialm, and Zheng (2006) as a measure of the impact of unobserved manager actions on mutual fund returns.³ We use the return gap in a similar way. As we argue below, manager favoritism of hedge funds negatively impacts return gaps of side-by-side mutual funds. Conversely, superior money management skills positively impact return gaps.

² Quote from the Asset Managers Forum public letter to the SEC dated May 25, 2004 regarding release nos. 33-8396; 34-49398; IC-26383; file no. s7-12-04.

³ Studies that examine actual mutual fund returns and anticipated mutual fund returns based on previously disclosed holdings include Grinblatt and Titman (1989); Wermers (2000); Frank, Poterba, Shackelford, and Shoven (2004); and Meier and Schaumburg (2005).

Manager favoritism that transfers return from mutual funds to hedge funds can take many forms. First, side-by-side managers can allocate underpriced IPOs disproportionately to hedge funds. Second, managers can front run hedge fund trades ahead of mutual fund trades. Third, in a practice known as ‘cherry-picking’, managers can wait to decide how a trade is allocated based on subsequent price movements, allocating trades with favorable movements to hedge funds. Fourth, managers may fail to use the average price paid in a bunched trade, allocating to hedge funds shares bought at the lowest price and shares sold at the highest price. The fifth example in our non-exhaustive list occurs when managers allocate trade execution commissions and soft dollars such that hedge fund investors benefit at mutual fund investors expense. These managerial acts of favoritism negatively affect the side-by-side mutual fund’s actual returns during the period they occur, but not anticipated returns which are based on previously disclosed holdings. Thus favoritism negatively impacts return gaps for side-by-side mutual funds. If regulators’ concerns of favoritism are justified, then *ceteris paribus* we ought to observe lower return gaps for side-by-side mutual funds than for the matched sample of unaffiliated mutual funds.

Superior money management ability affects return gaps in an opposite manner. Superior stock picking and asset allocation decisions during the period generate incremental trading profits that are not reflected in return calculations based on previously disclosed holdings. Hence if institutional managers’ claims of being able to attract better money management talent to side-by-side funds are true, then *ceteris paribus* we ought to observe higher return gaps for side-by-side mutual funds than for the matched sample of unaffiliated mutual funds.

We find strong empirical evidence that regulators' concerns about managerial conflicts of interest are justified. Side-by-side funds exhibit return gaps that underperform those of matched funds by economically and statistically significant margins. Robustness checks show that the return-gap underperformance of side-by-side funds is not explainable by differences in expenses or sensitivities to common factors. Evidence on the returns of disclosed holdings strikes another blow against the notion that side-by-side funds are able to attract more talented money managers. We document significantly lower holdings returns for side-by-side funds, suggesting either sub-par money management skills or managerial cross-fund favoritism that manifests itself over longer time periods than is captured in the return gap window. The return gap and holdings return underperformance of side-by-side funds combine to make their investors significantly worse off. Alpha estimates generated by using the Carhart (1997) four-factor model show that side-by-side funds underperform matched funds by a significant 10.3 basis points per month, or 124.3 basis points per year, with 3.9 basis points of the monthly underperformance attributable to return gap underperformance and the 6.4 basis point balance to holdings return underperformance.

We also find evidence that side-by-side managers strategically transfer performance from mutual funds to hedge funds in a persistent manner. Side-by-side funds with more negative return gaps relative to matched funds tend to subsequently exhibit more negative relative return gaps. The return gap also shows predictive power for returns. Side-by-side funds with the least favorable relative return gaps subsequently underperform by the greatest margins. Unfortunate investors in side-by-side funds in the

lowest relative return gap quintile subsequently experience four-factor alphas of 26.1 basis points per month, or 313.2 basis points per year.

Our second set of empirical tests examines how side-by-side managers allocate shares of underpriced initial public offerings (IPOs). Presuming that managers can identify underpriced IPO shares and have some allocation discretion, least favored funds ought to receive smaller allocations and exhibit smaller post-issue holdings. We first examine the post-issue IPO holdings of side-by-side and matched mutual funds. The measure we use is the contribution to performance from IPO underpricing that Gasper, Massa, and Matos (2006) use in their study of whether mutual fund families play favorites when allocating IPOs. Consistent with managers allocating fewer underpriced shares to side-by-side mutual funds than their matched counterparts, IPO underpricing contributes on average a significant 1.6 basis points per month of added return for matched funds versus side-by-side funds. The contribution of IPO underpricing to differential performance is more striking when we condition on hot and cold IPO markets. During months categorized as hot, the difference grows to 3.7 basis points of added return. We next examine the post-issue IPO holdings of side-by-side mutual funds and the hedge funds with which they are affiliated. Again we find a similar pattern: side-by-side mutual funds capture less IPO underpricing than affiliated hedge funds, particularly in hot IPO markets.

Our research makes a contribution to the literature examining factors that influence the portfolio decisions of delegated money managers. Managers have been shown to rebalance their portfolios in order to control liquidity,⁴ mark-up or window-

⁴ See, e.g., Chordia (1996); Edelen (1999); and Nanda, Narayanan, and Warther (2000); and Alexander, Cici, and Gibson (2006).

dress portfolios just before reporting dates,⁵ trade to minimize taxable distributions heading into the tax year-end,⁶ modify portfolio risk characteristics mid-year to capitalize on flow-performance convexity,⁷ and alter portfolios because of behavioral biases.⁸ Perhaps our study is most closely related to Gasper, Massa, and Matos (2006), who investigate whether mutual fund families seek to increase profits by strategically transferring performance across member funds. They find evidence of favoritism towards ‘high family value’ funds with the highest fees or strong past performers best positioned to take advantage of the convex flow-return relation. We present evidence that side-by-side managers seek to increase profits by strategically transferring performance from mutual funds to favored hedge funds to take advantage of higher fees and self ownership.

Our results also provide a potential explanation for the documented persistence among the worst performing mutual funds. After controlling for expenses and sensitivity to common risk factors including stock-return momentum, Carhart (1997) finds evidence of strong underperformance by the worst-return mutual funds. Kacperczyk, Sialm, and Zheng (2006) document persistence in mutual fund return gaps for both the best and worst performers. Kacperczyk, Sialm, and Zheng interpret the return gap persistence as an indication that unobserved managerial actions that affect returns, such as stale price arbitrage or cross-subsidization, tend to be repeated from period to period. Our evidence of persistence for the worst performing side-by-side funds supports this interpretation.

⁵ See, e.g., Haugen and Lakonishok (1988); Lakonishok, Shleifer, Thaler, and Vishny (1991); Musto (1999); O’Neal (2001); Carhart, Kaniel, Musto, and Reed (2002); and Meier and Schaumburg (2005).

⁶ See, e.g., Gibson, Safieddine, and Titman (2000) and Huddart and Narayanan (2002).

⁷ See, e.g., Brown, Harlow, and Starks (1996); Chevalier and Ellison (1997); Sirri and Tufano (1998); Elton, Gruber, and Blake (2003); Nanda, Wang, and Zheng (2004); Hu, Kale, and Subramanian (2005); and Pagani (2005).

⁸ See, e.g., Cici (2006); Frazzini (2006); and Jin and Scherbina (2006).

Finally, our results have important normative implications for the debate concerning side-by-side management. To get a sense of the magnitude of the potential wealth transfer away from side-by-side mutual fund investors, we can apply our estimated 124.3 basis point investor-return underperformance to the average \$448 billion under management by side-by-side mutual funds during 2004. In doing so, we obtain a one-year \$5.6 billion estimate of lost return for side-by-side mutual fund investors. Our study provides empirical evidence suggesting that regulatory concerns about conflicts of interest in side-by-side arrangements are justified.

The remainder of the paper is organized in five sections. Section 1 describes the data and the construction of the side-by-side mutual fund sample and matched sample. Section 2 explains the methodology for tests based on return gaps, holdings returns, and investor returns; empirical results are also presented and interpreted. Section 3 discusses the methodology and evidence from tests based on the allocation of IPOs. Concluding remarks are made in Section 5.

1. Data and Sample Construction

We identify institutional managers (advisors) that simultaneously run actively managed equity mutual funds side-by-side hedge funds using a three-step procedure.⁹ First, we identify all managers that run mutual funds. Second, we identify the subset of mutual fund managers who are in side-by-side arrangements with hedge funds. Third, we identify the subset of side-by-side managers with at least one actively-managed U.S. equity mutual fund. The three-step procedure, detailed below, identifies a sample of 71 managers who simultaneously ran 457 actively-managed equity mutual funds side-by-

⁹ Advisors that file 13F forms are referred to as institutional managers by the SEC. Following the SEC's lead, hereafter we refer to them in the same way.

side hedge funds between 1994 and 2004. We also describe below the methodology used to construct the matching mutual fund sample and provide sample descriptive statistics.

A. Identifying Mutual Fund Managers

We identify mutual fund managers using an identification variable that is present in both Thomson's 13F and Thomson's CDA/Spectrum mutual fund holdings datasets. The variable is named differently in the two datasets: MGRNO in Thomson's 13F dataset and MGRCOCD in Thomson's CDA/Spectrum mutual fund dataset. MGRCOCD maps a given mutual fund identified by variable FUNDNO in Thomson's CDA/Spectrum mutual fund database to the corresponding institutional manager in the 13F dataset that manages that fund. Since Thomson provides the manager identification mapping only after 1994, we restrict our sample to the period 1994 to 2004. The procedure identifies 619 institutional managers that ran mutual funds between 1994 and 2004.

We make several checks for the accuracy and consistency of the MGRCOCD-FUNDNO link. We first run an algorithm that checks the validity of the map for the entire time series of a fund by calculating an average match rate of the security holdings of each fund with those of the parent 13F institutional managers and flags the cases with a low match rate (lower than 10%). We then run a consistency check for mutual funds with an established link to a 13F institutional manager in some quarters, but not in others. We identify quarters with holdings data but with missing links, and fill in the appropriate institutional manager code whenever the same fund is linked to the same advisor in the prior and subsequent quarters.

B. Identifying Managers Who Run Mutual Funds Side-by-Side Hedge Funds

Among the 619 managers that ran mutual funds between 1994 and 2004, we identify those who simultaneously ran hedge funds. Given the lack of legal disclosure requirements for hedge funds, hedge fund databases may suffer from selection bias as data are reported to vendors only on a voluntary basis. To mitigate potential selection bias, we use three sources to identify hedge fund managers. The first is the CISDM hedge fund database, a historical database covering our entire sample period that associates each hedge fund with its corresponding management company name. This database covers 3,939 hedge funds with 1,979 corresponding managers. Running a name matching algorithm on the mutual fund manager database created in the prior step and the CISDM hedge fund database, we identify 72 U.S. managers who simultaneously ran mutual funds side-by-side hedge funds between 1994 and 2004. The second source we use is the InvestmentSeek Hedge Fund Manager Directory, an online directory of 308 hedge fund managers. The InvestmentSeek Hedge Fund Manager Directory incrementally adds 14 side-by-side managers, bringing the total to 86. The last source we use is the HedgeCo Directory, a directory containing the names of over 4,853 U.S hedge funds. The HedgeCo Directory incrementally adds 18 side-by-side managers, bringing the total to 104.

C. Identifying Actively Managed Equity Funds in Side-by-Side Relationships

We next identify the subset of side-by-side managers who ran at least one actively-managed U.S. equity mutual fund. We start by matching the Thomson's CDA/Spectrum mutual fund holdings data for all funds managed by the 104 side-by-side

managers identified in the previous step with the CRSP mutual fund database using MFLINKS dataset obtained from WRDS. Funds with multiple share classes are combined to form a single fund. We then exclude all index funds and require funds to have an aggregate position in common stocks between 50% and 105%. Finally, using the S&P fund investment objective classification code (sp_obj_cd) from the CRSP mutual fund database, we require funds to have an investment objective that falls in one of the following classes: aggressive growth, mid cap, growth and income, growth, equity income and growth, or small cap. After applying the filters detailed above, we end up with a sample of 457 U.S. equity mutual funds run by 71 institutional managers who are in side-by-side arrangements.¹⁰

D. Constructing the Matching Sample of Mutual Funds

We match each of the 457 mutual funds in side-by-side relationships with mutual funds that pursue the same investment objective, have similar total assets under management and portfolio turnover rates, but that are not affiliated with hedge funds. For each sample fund in each month of the sample period, we identify a portfolio of matching funds using the MFLINKS dataset.¹¹ Our matching procedure begins with all actively-managed U.S. equity mutual funds that share an investment objective: aggressive growth, mid cap, growth and income, growth, equity income and growth, or small cap. Each month, all actively managed funds that share an investment objective are ranked on total assets and sorted to form size quintiles. Funds are then ranked separately on

¹⁰ To reduce any biases due to the presence of “incubator” funds in our sample, we removed observations with assets in the previous month less than \$5 million.

¹¹ The MFLINKS dataset is comprised of all the funds from the Thomson’s CDA/Spectrum mutual fund holdings dataset that have been linked to the CRSP Mutual Fund Database.

portfolio turnover and sorted to form turnover quintiles. The procedure produces 25 size and turnover portfolios each month for each investment objective. Finally, we remove side-by-side funds, with the 25 matching portfolios comprising remaining funds.

E. Sample Descriptive Statistics

In Table 1 we report summary characteristics of the 457 side-by-side mutual funds and the 1,488 actively-managed equity mutual funds that were not affiliated with hedge funds over 1994 to 2004. Panel A shows that side-by-side funds were somewhat larger than unaffiliated funds, but otherwise similar in terms of portfolio turnover rates and expense ratios. Panel B shows that our sample of side-by-side funds is made up of a slightly higher proportion of growth and income, equity income and growth, and small cap funds and a slightly lower proportion of aggressive growth, mid cap, and growth funds than unaffiliated funds.

2. Tests Based on the Return Gap

Our first set of tests compares return gaps of side-by-side and matched mutual funds. The return gap is defined as a fund's actual investor return less the buy-and-hold return on a portfolio comprised of the most recently disclosed securities (holdings returns). Managerial actions during the return-gap calculation period can alter investor returns but not holdings returns. Thus, the return gap provides a measure of the impact of unobserved manager actions on investor returns. As we argue above, favoritism of hedge funds by side-by-side managers ought to manifest itself in lower return gaps for side-by-side mutual funds than for the matched mutual funds. Conversely, superior money

management skills of side-by-side managers ought to have an opposite effect on return gaps.

A. Calculating the Return Gap

We calculate monthly return gaps using return data from the CRSP Mutual Fund Database and holdings returns estimated from Thomson CDA/Spectrum Mutual Fund Holdings Database. Investor returns reflect capital appreciation and any distributions made by the fund during the month. For each fund portfolio, we average the actual returns across all share classes belonging to that same portfolio, weighted by share class assets at the beginning of the month.

Holdings returns are calculated as a weighted average of the return on the most recently disclosed equity and cash positions. As in Kacperczyk, Sialm, and Zheng (2006), we use fund holdings as far back as six months. If a fund has not reported holdings in the past six months, then the observation is coded as missing. The equity holdings return is computed using the latest equity holdings information available from Thomson CDA/Spectrum Mutual Fund Holdings Database:¹²

$$Equity\ Holdings\ Return_{it} = \sum_j \frac{Shares_{i,t-k}^j \times Price_{i,t-k}^j}{\sum_j Shares_{i,t-k}^j \times Price_{i,t-k}^j} \times Ret_{it}^j$$

where $t - k$ denotes the most recent holdings date for fund i ; $Price_{i,t-k}^j$ and $Shares_{i,t-k}^j$, respectively, denote the price per share and number of shares of security j held by fund i at the end of period $t - k$; and Ret_{it}^j denotes the return realized by security j during month

¹² We use the report date (RDATE) from Thomson CDA/Spectrum Database as the effective date of the holdings because this is the date for which the holdings are valid.

t .¹³ The cash holdings return is computed using the latest cash equivalent holdings, obtained from the CRSP Mutual Fund Database, and the risk-free rate of return.¹⁴ The holdings return is a weighted average of the equity and cash holdings returns.

The return gap is calculated as the difference between the investor return and the holdings return. To isolate any effects of differential management expenses, we report investor returns and return gaps net and gross of expenses. Monthly expenses are calculated by dividing a fund's annual expense ratio by 12.

The differential return gap is calculated by differencing the return gap of each side-by-side fund and an equally-weighted portfolio comprising unaffiliated funds matched on characteristics as described above.

B. Return Gap Results

Table 2 provides evidence that regulators' concerns about managerial conflicts of interest are justified. Return gap statistics are reported for portfolios constructed in three different ways: Panel A reports results when each side-by-side fund each month is treated as a separate observation, Panel B when all side-by-side funds run by the same manager are value weighted each month, and Panel C when all side-by-side funds are value weighted each month.

Regardless of how portfolios are constructed, side-by-side funds exhibit return gaps that underperform those of matched funds by economically and statistically significant margins. Consider, for example, the results reported in Panel A. Side-by-side

¹³ Share holdings and security prices are adjusted for stock splits using the CRSP share and price adjustment factors.

¹⁴ The risk-free rate is the one-month Treasury bill rate obtained from Kenneth R. French's website http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

funds experienced investor returns net and gross of expenses of 84.9 and 95.8 basis points per month, respectively. Subtracting the 94.1 basis point per month holdings return yields return gaps net and gross of expenses equal to -9.2 and 1.7 basis points per month, respectively. The same calculation for matched funds yields return gaps net and gross of expenses equal to -6.0 and 4.4 basis points per month, respectively. Comparing return gaps gross of expenses, side-by-side funds underperformed by a significant 2.7 basis points per month, or 24.8 basis points per year. Net of expenses, underperformance was a significant 3.1 basis points per month, or 37.2 basis points per year.

C. Robustness Check: Return Gap Regressions

Our results show that return gaps of side-by-side funds underperform those of unaffiliated funds that are matched on investment objective, total assets, and portfolio turnover. As a robustness check, we estimate the differential return gap using a pooled regression with time fixed effects of the return gap on a broader set of fund characteristics than those controlled for in the matching procedure.

Table 3 presents results for model specifications with the return gap net of expenses and gross of expenses as the dependent variable. The key result is reported in the second row: The loading on the side-by-side mutual fund dummy, which represents the differential return gap, is negative and significant for both specifications. The economic interpretation is that, controlling for a broad set of fund characteristics, the return gap net and gross of expenses for side-by-side funds is lower than unaffiliated funds by 2.4 and 2.6 basis points per month, respectively. Adding confidence to the estimate of the economic magnitude of the side-by-side fund return gap

underperformance, the loading values are close to the 3.1 and 2.7 basis point underperformance, respectively, reported in Panel A of Table 2.

Reading down the rows, we next observe results for variables used in our matching procedure: investment-objective dummies, log of total assets, and portfolio turnover. Mid cap and small cap funds exhibit higher return gaps, suggesting that smaller cap stocks afford managers greater mispricing opportunities to exploit. The turnover loading is positive and significant, suggesting that managers' trading generates profits in excess of transaction costs. Consistent with the argument of Perold and Salomon (1991), the total asset loading is negative and significant, suggesting that funds with smaller asset bases can more nimbly exploit security mispricing opportunities.

We also control for a fund's expense ratio and age relative to the average for the associated fund family. Gaspar, Massa, and Matos (2006) argue that fund families are motivated to boost overall profitability by transferring performance to high expense funds from low expense funds and to young funds from old funds.¹⁵ We find support for intra-family favoritism, as the loading on family normalized expense ratio is positive and significant. We do not find consistent evidence, however, that funds with higher loads experience higher return gaps. Nor do we find support for age-based favoritism, as the loadings on age and family normalized age differ insignificantly from zero.¹⁶ Consistent with the "smart money" effect documented by Gruber (1996) and Zheng (1999), the

¹⁵ The Gaspar, Massa, and Matos (2006) age argument is based on Chevalier and Ellison (1997) who show that younger funds exhibit greater inflow sensitivity to good performance. The idea is that young funds' immediate performance is more informative to investors who are trying to learn the ability of the fund's unproven manager.

¹⁶ Alternative model specifications with age and family normalized age included individually as dependent variables also generate insignificant loadings.

loading on lagged net flows is positive and significant.¹⁷ Finally, consistent with the Chen, Hong, Huang, and Kubik (2004) finding that members of larger fund families outperform, the loading on the log of family assets is positive and significant, suggesting scale economies associated with trading commissions and trading fees.

D. Robustness Check: Return Gap Sensitivity to Common Factors

To check whether the return-gap underperformance of side-by-side funds is explainable by differences in sensitivities to common risk factors, we regress return gaps on the Carhart (1997) four common factors: the return differential between the market portfolio and risk-free rate (*RMRF*), small cap and large cap stocks (*SMB*), high and low book-to-market stocks (*HML*), and positive and negative return-momentum stocks (*UMD*).¹⁸ We run time series regressions, with the dependent variable being the return gap as calculated in Panel C of Table 2 where all side-by-side funds are value weighted each month.

Panels A and B of Table 4 present results for the regressions of the return gap net and gross of expenses, respectively, on the four common risk factors. The results show that return-gap underperformance of side-by-side funds is not explainable by differences in sensitivities to common risk factors. The alphas for the differential return gap regressions are negative and significant for the net-of-expenses and gross-of-expenses

¹⁷ As in Gruber (1996); Sirri and Tufano (1998); Zheng (1999); and Chen, Hong, Huang, and Kubik (2004), net flows are estimated as the change in assets over the month that is not attributable to fund asset returns normalized by the fund assets at the beginning of the month. We assume that flows occur at the end of the month.

¹⁸ Data on the four common factors were obtained from Kenneth R. French's website http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

specifications, with side-by-side funds underperforming by 3.9 and 3.5 basis points per month, respectively.

E. Investor Returns

To understand how investors who delegate their money to side-by-side mutual fund managers fare relative to investors who entrust their money to unaffiliated fund managers, we compare the risk-adjusted performance of side-by-side funds to that of matched unaffiliated funds. We estimate risk-adjusted performance using the Carhart (1997) four-factor model.

Table 5 presents results. The alpha estimates in Panel A, obtained by regressing net investor returns on the four common factors, show that side-by-side funds underperform matched funds by a significant 10.3 basis points per month, or 124.3 basis points per year. Going back to Table 4, we see that 3.9 basis points of the monthly underperformance is attributable to return gap underperformance. Panel C of Table 5 shows us that the 6.4 basis point balance of monthly underperformance is attributable to holdings return underperformance. The lower holdings returns for side-by-side funds suggests either sub-par money management skills or managerial cross-fund favoritism that manifests itself over longer time periods than is captured in the return gap window.

Overall, the evidence shows that the return gap and holdings return underperformance of side-by-side funds combine to make their investors significantly worse off. We find no support for the notion that side-by-side funds are able to attract more talented money managers.

F. Persistence of the Return Gap

We next investigate whether side-by-side managers strategically transfer performance from mutual funds to hedge funds in a persistent manner. We rank all side-by-side funds every month based on their average relative return gap net of expenses over the past year. We then sort side-by-side funds into quintiles based on their relative return gap ranking. We repeat the ranking process for the relative return gap gross of expenses. For each side-by-side fund, the relative return gap is measured as the difference between its return gap and that of the matched unaffiliated portfolio of funds.

Table 6 presents the subsequent monthly relative return gap and Carhart alpha for each of the quintiles. Side-by-side funds with more negative return gaps relative to matched funds tend to subsequently exhibit more negative relative return gaps. For example, side-by-side funds in the lowest quintile based on relative return gaps net of expenses subsequently experience 12.6 basis points of return gap underperformance per month.

The relative return gap also shows predictive power for returns. Side-by-side funds with the least favorable relative return gaps subsequently underperform by the greatest margins. For example, unfortunate investors in side-by-side funds in the lowest quintile based on relative return gaps net of expenses subsequently experience Carhart alphas of 26.1 basis points per month, or 313.2 basis points per year of underperformance.

3. Tests Based on Post-Issue IPO Holdings

Our second set of empirical tests examines how side-by-side managers allocate shares of underpriced initial public offerings (IPOs). Presuming that managers can identify underpriced IPO shares and are able to exercise some allocation discretion, least favored funds ought to receive smaller allocations and exhibit smaller post-issue holdings. We first examine the post-issue IPO holdings of side-by-side mutual funds and matched mutual funds, then the post-issue IPO holdings of side-by-side mutual funds and affiliated hedge funds. If favoritism plays a role in the allocation of IPOs by side-by-side managers, we should observe a lower contribution to side-by-side mutual fund returns due to IPO underpricing than for either matched mutual funds or affiliated hedge funds.

A. Calculating the IPO Contribution to Performance

The measure we analyze is the contribution to performance from IPO underpricing that Gasper, Massa, and Matos (2006) use in their study of whether mutual fund families play favorites. Intuitively, the measure estimates the contribution to a fund's return from the first-day underpricing (or overpricing) of all IPOs that occurred during the period.

Using data from SDC, we identify all common stock IPOs that took place each month from 1994 to 2004. In order to make meaningful comparisons, we focus on common holdings report dates. That is, we only include instances when the side-by-side fund and at least one matched fund report their holdings on the same date. If two or more matched funds report holdings on the same date as the side-by-side fund, we aggregate all the holdings of the matched funds to construct an aggregate matching portfolio. For each

report date, we identify side-by-side and matched fund holdings of all IPOs that took place during the last three months. Then for each of these three months, we calculate the monthly contribution to each fund's return from IPO underpricing. The IPO contribution to performance is calculated as the dollar value of IPO underpricing allocated to the fund each month divided by fund assets as of the beginning of that month:

$$IPO\ Contribution\ to\ Performance_{i,j}^t = \frac{\sum_{i=1}^{K_i} (\# shares_{i,j}^t \times \Delta price_{i,j}^{Day-1})}{assets_{i,j}^{t-1}},$$

where $\# shares_{i,j}^t$ represents the number of IPO i shares allocated to fund j in month t , $\Delta price_{i,j}^{Day-1}$ represents the price change for IPO i shares calculated as the difference between the offer price and the price at the end of the first trading day, and $assets_{i,j}^t$ represents the assets of fund j at the end of month $t-1$.

B. Side-by-Side versus Matched Fund IPO Results

Table 7 presents the IPO contribution to performance for side-by-side funds and matched funds. Panel A shows that side-by-side mutual funds are allocated less IPO underpricing than their matched counterparts. IPO underpricing contributes an average of 3.2 basis points to the monthly return of side-by-side funds versus 4.8 basis points to the monthly return of matched funds. The 1.6 basis point differential of added monthly return for matched funds versus side-by-side funds is highly significant.

To understand how the differential IPO contribution to performance varies with hot and cold IPO markets, we rank all months in the sample period by the number of IPOs that occurred. We categorize months in the top quintile as hot IPO months. Panel

B shows that the contribution of IPO underpricing to differential performance is more striking when we condition on hot and cold IPO markets. Providing further evidence that favoritism plays a role in the allocation of IPOs by side-by-side managers, the difference grows to 3.7 basis points of added return for matched funds relative to side-by-side funds during months categorized as hot.

C. Side-by-Side Mutual Fund versus Associated Hedge Fund IPO Calculations

We next examine the IPO contribution to performance for side-by-side mutual funds and associated hedge funds. To identify post-issue IPO holdings, we use quarterly 13F holdings reports filed subsequently to each IPO between 1994 and 2004. Given that 13F reports combine mutual fund and hedge fund IPO holdings, we need to separate IPO holdings. We do this by forming an aggregate mutual fund portfolio each quarter for each side-by-side manager and then subtracting mutual fund IPO holdings from 13F holdings to obtain hedge fund IPO holdings. The Appendix describes the data and procedural details used to estimate mutual fund and hedge fund IPO holdings. The IPO contribution to performance is calculated as before: For each month and each side-by-side manager's mutual fund and hedge fund portfolio, we divide the dollar value of estimated IPO underpricing by beginning-of-month assets.

Notably, the available data does not allow us to separate exchange traded fund (ETF) assets from hedge fund assets. Thus, we exclude the eight side-by-side managers who run ETFs.¹⁹ Also, unlike mutual funds, the available data does not allow us to identify hedge fund assets that are passively managed as part of indexing or enhanced

¹⁹ ETF managers are identified using the ETF Center Directory (available at <http://finance.yahoo.com/etf>), etfguide directory (available at <http://www.etfguide.com/etfdirectory.htm>), and investment manager websites.

indexing strategies. To address this issue, we rank hedge funds based on their turnover ratio. Hedge funds in the top turnover quintile most likely have the smallest proportion of passively managed assets, whereas the bottom turnover quintile most likely has the largest proportion of passively managed assets.

D. Side-by-Side Mutual Fund versus Associated Hedge Fund IPO Allocation Results

Table 8 presents the IPO contribution to performance for side-by-side mutual funds and the hedge funds with which they are affiliated. Overall, the pattern of results shows that side-by-side mutual funds capture less IPO underpricing than affiliated hedge funds, particularly in hot IPO markets.

Panel A presents results for side-by-side managers excluding those who run ETFs. IPO underpricing contributed on average 3.2 basis points per month to mutual fund returns, and 4.4 basis points per month to hedge fund returns. The 1.2 basis point differential is statistically significant.

Panel B shows results for the turnover stratified quintiles. Hedge funds most likely to have a smaller proportion of passively managed assets experienced the greatest differential in IPO contribution to performance: A significant 4.1 basis points of added return relative to affiliated mutual funds.

Panel C presents results stratified by hot and cold IPO markets for the top three turnover quintiles (i.e., excluding hedge funds most likely to have the largest proportion of passively managed assets). As in earlier results, the contribution of IPO underpricing to differential performance is greatest during hot IPO markets, with the difference

growing to 3.7 basis points of added return for hedge funds relative to affiliated mutual funds.

Our evidence is consistent with side-by-side managers using IPO allocations to transfer performance from mutual funds to hedge funds. Gasper, Massa, and Matos (2004) find a similar result in their examination favoritism within fund families: Specifically, certain mutual funds are favored in IPO allocations over the rest of the funds in the family to take advantage of the convex flow-return relation. Our evidence shows another instance in which IPO allocations are used to transfer performance: Specifically, hedge funds are favored in IPO allocations over mutual funds to take advantage of higher fees and self-ownership.

4. Conclusion

Our evidence supports regulatory concerns that conflicts of interest motivate side-by-side managers to strategically transfer performance from mutual funds to hedge funds. We do not find support for institutional managers' contention that mutual fund investors in side-by-side management relationships with hedge funds are better off because the more complex and intellectually stimulating environment attracts more talented money managers. Based on return gaps, side-by-side mutual funds significantly underperformed matched mutual funds that were not in such relationships. Risk-adjusted investor returns show that side-by-side mutual fund investors are significantly worse off. Moreover, consistent with favoritism, we present evidence that side-by-side mutual funds were allocated significantly fewer underpriced IPO shares than either matched unaffiliated mutual funds or the hedge funds with which they were affiliated.

To get a sense of the magnitude of the wealth transfer away from side-by-side mutual fund investors, we apply our estimates of investor-return underperformance to the total asset base of side-by-side mutual funds and find that during 2004 alone side-by-side mutual fund investors lost approximately \$5.6 billion. Our evidence suggests that recent increased disclosure requirements introduced by the SEC to protect mutual fund investors are justified.²⁰ Effective October 1, 2004, the SEC now requires institutional managers of mutual funds to disclose side-by-side management relationships with other accounts, including hedge funds, in the Statement of Additional Information (SAI).²¹ A stated objective of the new SEC disclosure requirement is to “enable [mutual fund] investors to assess conflicts of interest to which a portfolio manager may be subject as a result of managing the [mutual] fund and other portfolios, such as hedge funds.”²² Some may question, however, the effectiveness of the new disclosure requirement, given the investment sophistication of the typical mutual fund investor and the fact that investors must explicitly request the SAI. Whether disclosure of side-by-side management relationships in the SAI proves to sufficiently protect mutual fund investors, or whether additional measures are warranted, remains to be seen.

²⁰ See U.S. Securities and Exchange Commission (August 2004).

²¹ The SAI is part of a mutual fund’s registration statement and contains additional information not contained in the mutual fund’s prospectus. Although mutual fund investors do not receive the SAI report by default, mutual fund managers are required to deliver the SAI to investors upon request. The SAI can also be found on the SEC Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system.

²² Quote from U.S. Securities and Exchange Commission (August 2004), page 52796.

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Table 1
Sample Descriptive Statistics

This table reports summary characteristics of our sample of side-by-side mutual funds and the sample of actively-managed equity mutual funds that were not affiliated with hedge funds over 1994 to 2004. Panel A reports the mean and median total assets, portfolio turnover ratio, management expenses, and average number of observations per fund. Panel B reports fund investment objectives. Reported statistics are compiled from the CRSP mutual fund database.

Panel A: Mutual Fund Characteristics

	<i>Side-by-Side Funds</i>		<i>Unaffiliated Funds</i>	
	<i>Mean</i>	<i>Median</i>	<i>Mean</i>	<i>Median</i>
Total Assets	\$956 million	\$253 million	\$707 million	\$104 million
Portfolio Turnover Rate	98.72%	82.40%	114.09%	73.00%
Expense Ratio	1.35%	1.30%	1.37%	1.30%
Number of Observations per Fund	88	96	65	58

Panel B. Mutual Fund Investment Objectives

	<i>Side-by-Side Funds</i>						
	<i>Aggressive Growth</i>	<i>Mid Cap</i>	<i>Growth & Income</i>	<i>Growth</i>	<i>Equity Income & Growth</i>	<i>Small Cap</i>	<i>Total</i>
Number	29	41	95	155	28	109	457
Percent	6.35%	8.97%	20.79%	33.92%	6.13%	23.85%	100%

	<i>Unaffiliated Funds</i>						
	<i>Aggressive Growth</i>	<i>Mid Cap</i>	<i>Growth & Income</i>	<i>Growth</i>	<i>Equity Income & Growth</i>	<i>Small Cap</i>	<i>Total</i>
Number	100	154	293	575	62	304	1,488
Percent	6.72%	10.35%	19.69%	38.64%	4.17%	20.43%	100%

Table 2
Return Gaps

This table reports mean investor return and return gap differences between the side-by-side funds and the matched unaffiliated funds. Investor returns are reported net and gross of expense ratios. Holding returns are calculated as a weighted average of the returns on the most recently disclosed equity and cash positions. Panel A treats each side-by-side fund in each month as a separate observation. In Panel B, returns of all side-by-side funds run by the same manager are value weighted each month. In Panel C, returns of all side-by-side funds are value weighted each month. Returns are reported in percentages and *t*-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Each fund each month (N = 38,932)

<i>Portfolio</i>	Investor Return		<i>Holdings Return</i>	Return Gap	
	<i>Net of Expenses</i>	<i>Gross of Expenses</i>		<i>Net of Expenses</i>	<i>Gross of Expenses</i>
Side-by-Side	0.8490*** (29.91)	0.9576*** (33.73)	0.9406*** (33.09)	-0.0916*** (-11.73)	0.0170** (2.18)
Matched	0.8744*** (32.89)	0.9790*** (36.83)	0.9347*** (35.00)	-0.0603*** (-12.41)	0.0443*** (9.12)
Difference	-0.0254* (-1.73)	-0.0214 (-1.45)	0.0059 (0.39)	-0.0313*** (-3.66)	-0.0273*** (-3.19)

Panel B: All funds run by same manager aggregated each month (N = 7,886)

<i>Portfolio</i>	Investor Return		<i>Holdings Return</i>	Return Gap	
	<i>Net of Expenses</i>	<i>Gross of Expenses</i>		<i>Net of Expenses</i>	<i>Gross of Expenses</i>
Side-by-Side	0.8801*** (14.62)	0.9871*** (16.39)	0.9730*** (16.05)	-0.0929*** (-6.75)	0.0142 (1.03)
Matched	0.9145*** (16.73)	1.0171*** (18.61)	0.9766*** (17.76)	-0.0621*** (-8.01)	0.0406*** (5.23)
Difference	-0.0344 (-1.24)	-0.0300 (-1.08)	-0.0036 (-0.13)	-0.0308** (-2.18)	-0.0264* (-1.87)

Panel C: All funds aggregated each month (N = 132)

<i>Portfolio</i>	Investor Return		<i>Holdings Return</i>	Return Gap	
	<i>Net of Expenses</i>	<i>Gross of Expenses</i>		<i>Net of Expenses</i>	<i>Gross of Expenses</i>
Side-by-Side	0.7923** (1.99)	0.8851** (2.22)	0.9133** (2.31)	-0.1210*** (-3.74)	-0.0283 (-0.87)
Matched	0.9012** (2.36)	0.9896*** (2.59)	0.9782** (2.55)	-0.0770** (-2.49)	0.0114 (0.37)
Difference	-0.1090*** (-2.82)	-0.1045*** (-2.71)	-0.0649* (-1.81)	-0.0441** (-2.36)	-0.0397** (-2.12)

Table 3
Regression Results

This table reports loading estimates from pooled regressions with time fixed effects of the return gap on a set of fund characteristics. The key variable, side-by-side dummy, takes the value one if the fund is in a side-by-side arrangement and zero if it is not. With the exception of Growth and Income, dummy variables are included for each investment objective. Other independent variables include the log of fund total net assets (measured as of the beginning of the month), portfolio turnover ratio, expense ratio, net flows (measured during the previous month), age of the fund, and log of the assets of family to which the fund belongs (measured as of the beginning of the month). Expense ratios and age of the fund normalized by the average value for the family are also included as additional independent variables. Associated *t*-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively

<i>Variable</i>	<i>Dependent Variable</i>			
	<i>Return Gap Net of Expenses</i>		<i>Return Gap Gross of Expenses</i>	
	<i>Coefficient</i>	<i>t-value</i>	<i>Coefficient</i>	<i>t-value</i>
Intercept	0.00077	(1.30)	0.00062	(1.05)
Side-by-Side Dummy	-0.00024 **	(-2.39)	-0.00026 ***	(-2.58)
Objective Dummies:				
Aggressive Growth	0.00014	(0.68)	0.00007	(0.32)
Mid Cap	0.00063 ***	(3.52)	0.00061 ***	(3.40)
Growth	0.00005	(0.43)	0.00004	(0.31)
Equity Income & Growth	0.00021	(0.99)	0.00022	(1.01)
Small Cap	0.00100 ***	(6.98)	0.00097 ***	(6.85)
Log Net Assets	-0.00025 ***	(-6.32)	-0.00024 ***	(-6.12)
Turnover Ratio	0.00012 ***	(2.85)	0.00010 **	(2.53)
Expense Ratio	-1.36938 ***	(-8.51)		
Normalized Expense Ratio	0.00085 ***	(3.03)	0.00053 **	(2.19)
Load Dummy	-0.00008	(-0.82)	-0.00016 *	(-1.66)
Age of Fund	0.00000	(-0.02)	0.00000	(-0.04)
Normalized Age of Fund	-0.00002	(-0.23)	-0.00002	(-0.24)
Net Flows	0.00578 ***	(5.27)	0.00578 ***	(5.26)
Log Family Assets	0.00017 ***	(6.24)	0.00019 ***	(6.84)
R-Square	4.51%		4.47%	

Table 4
Return Gap Sensitivity to Common Factors

This table reports alpha estimates and factor loadings from time-series regressions of return gaps on the Carhart (1997) four factors representing the return differential between the market portfolio and risk-free rate (*RMRF*), small cap and large cap stocks (*SMB*), high and low book-to-market stocks (*HML*), and positive and negative return-momentum stocks (*UMD*). Estimation is done separately for the side-by-side funds and the matched unaffiliated funds. The times series of the return gaps is constructed by value-weighting the returns of the side-by-side funds and matched unaffiliated funds each month. Return gaps and alpha estimates are reported in percentages and *t*-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Return gap net of expenses

<i>Portfolio</i>	Carhart Four-Factor Model						<i>Adjusted R²</i>
	<i>Raw Return Gap</i>	<i>Alpha</i>	<i>RMRF</i>	<i>SMB</i>	<i>HML</i>	<i>UMD</i>	
Side-by-Side	-0.1210*** (-3.74)	-0.1440*** (-5.08)	0.00 (0.35)	0.02** (2.56)	-0.02* (-1.76)	0.03*** (5.50)	31.88
Matched	-0.0770** (-2.49)	-0.1050*** (-3.80)	0.00 (-0.22)	0.02*** (3.10)	0.00 (0.17)	0.03*** (5.72)	28.99
Difference	-0.0441** (-2.36)	-0.0390** (-2.07)	0.00 (0.85)	0.00 (-0.7)	-0.02*** (-2.90)	0.00 (-0.11)	10.09

Panel B: Return gap gross of expenses

<i>Portfolio</i>	Carhart Four-Factor Model						<i>Adjusted R²</i>
	<i>Raw Return Gap</i>	<i>Alpha</i>	<i>RMRF</i>	<i>SMB</i>	<i>HML</i>	<i>UMD</i>	
Side-by-Side	-0.0283 (-0.87)	-0.0517* (-1.82)	0.00 (0.35)	0.02*** (2.60)	-0.02* (-1.73)	0.03*** (5.49)	31.86
Matched	0.0114 (0.37)	-0.0171 (-0.62)	0.00 (-0.21)	0.02*** (3.13)	0.00 (0.20)	0.03*** (5.73)	29.10
Difference	-0.0397** (-2.12)	-0.0345* (-1.83)	0.00 (0.84)	0.00 (-0.67)	-0.02*** (-2.89)	0.00 (-0.14)	10.05

Table 5
Performance Comparison

This table reports alpha estimates and factor loadings from time-series regressions of different return measures on the Carhart (1997) four factors representing the return differential between the market portfolio and risk-free rate (*RMRF*), small cap and large cap stocks (*SMB*), high and low book-to-market stocks (*HML*), and positive and negative return-momentum stocks (*UMD*). Estimation is done separately for the side-by-side funds and the matched unaffiliated funds. The times series of investor returns and holdings returns are constructed by value-weighting the returns of the side-by-side funds and matched unaffiliated funds each month. In Panels A and B, estimation is done using returns net and gross of expenses, respectively. In Panel C, holdings returns are used for the estimation. Returns and alpha estimates are reported in percentages and *t*-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Net Investor Returns

Portfolio	Raw Returns	Carhart Four-Factor Model					Adjusted R ²
		<i>a</i>	<i>RMRF</i>	<i>SMB</i>	<i>HML</i>	<i>UMD</i>	
Side-by-Side	0.7923** (1.99)	-0.2010*** (-4.52)	0.99*** (85.85)	0.10*** (8.19)	0.01 (0.67)	0.02** (2.49)	98.89%
Matched	0.9012** (2.36)	-0.0981** (-2.14)	0.98*** (81.67)	0.10*** (8.43)	0.07*** (4.42)	0.01* (1.75)	98.72%
Difference	-0.1090*** (-2.82)	-0.1030*** (-3.09)	0.02** (2.10)	-0.01 (-0.69)	-0.06*** (-5.20)	0.01 (0.92)	34.43%

Panel B: Gross Investor Returns

Portfolio	Raw Returns	Carhart Four-Factor Model					Adjusted R ²
		<i>a</i>	<i>RMRF</i>	<i>SMB</i>	<i>HML</i>	<i>UMD</i>	
Side-by-Side	0.8851** (2.22)	-0.1080** (-2.43)	0.99*** (85.88)	0.10*** (8.21)	0.01 (0.69)	0.02** (2.49)	98.90%
Matched	0.9896*** (2.59)	-0.0099 (-0.22)	0.98*** (81.70)	0.10*** (8.45)	0.07*** (4.44)	0.01* (1.75)	98.72%
Difference	-0.1045*** (-2.71)	-0.0982*** (-2.95)	0.02** (2.09)	-0.01 (-0.68)	-0.06*** (-5.20)	0.01 (0.90)	34.43%

Panel C: Holdings Returns

Portfolio	Raw Returns	Carhart Four-Factor Model					Adjusted R ²
		<i>a</i>	<i>RMRF</i>	<i>SMB</i>	<i>HML</i>	<i>UMD</i>	
Side-by-Side	0.9133** (2.31)	-0.0564 (-1.12)	0.99*** (75.28)	0.08*** (5.76)	0.03 (1.58)	-0.01 (-0.90)	98.55%
Matched	0.9782** (2.55)	0.0072 (0.14)	0.98*** (70.53)	0.08*** (5.66)	0.07*** (-3.72)	-0.01 (-1.47)	98.30%
Difference	-0.0649* (-1.81)	-0.0637* (-1.86)	0.01 (1.57)	0.00 (-0.28)	-0.04 (-3.46)	0.01 (0.95)	19.38%

Table 6
Persistence of the Return Gap

This table reports subsequent monthly relative return gaps and Carhart alphas for quintiles of side-by-side funds formed from rankings on relative return gaps. All side-by-side funds are ranked every month based on their average relative return gap over the past year. Side-by-side funds are then sorted into quintiles based on their relative return gap ranking. For each side-by-side fund, the relative return gap is measured as the difference between its return gap and that of the matching unaffiliated portfolio of funds. The relative return gaps and returns of all funds making up a given quintile are equally weighted each month to create a time-series of relative return gaps and returns for each quintile. The Carhart four-factor model is used to estimate alphas from the return time-series of each quintile. Relative return gaps and alpha estimates are reported in percentages and *t*-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

<i>Ranking Portfolio</i>	<i>Return Gap Net of Expenses</i>		<i>Return Gap Gross of Expenses</i>	
	<i>Subsequent Relative Return Gap</i>	<i>Subsequent Carhart Alpha</i>	<i>Subsequent Relative Ret Gap</i>	<i>Subsequent Carhart Alpha</i>
Q [1]	0.0523 (1.46)	-0.1310 (-1.52)	0.0587 (1.62)	-0.0327 (-0.38)
Q [2]	-0.0119 (-0.64)	-0.1190* (-1.84)	-0.0132 (-0.73)	-0.0379 (-0.60)
Q [3]	-0.0227 (-1.61)	-0.1440** (-2.15)	-0.0183 (-1.18)	-0.0181 (-0.27)
Q [4]	-0.0910*** (-4.97)	-0.1930*** (-2.96)	-0.0794*** (-4.38)	-0.0619 (-0.94)
Q [5]	-0.1260*** (-3.76)	-0.2610*** (-2.92)	-0.1261*** (-3.70)	-0.1600* (-1.79)
Q [1] - Q [5]	0.1783*** (3.63)	0.1300** (2.14)	0.1848*** (3.71)	0.1280** (2.09)

Table 7
IPO Contribution to Performance for Side-By-Side and Matched Mutual Funds

This table reports the IPO contribution to performance for the side-by-side funds and the matched unaffiliated portfolio of funds. The IPO contribution to performance is calculated as the dollar value of IPO underpricing allocated to the fund each month divided by fund assets as of the beginning of that month. Panel A reports overall IPO contribution to performance results. Panel B reports IPO contribution to performance results stratified by “hot” and “cold” IPO markets. To identify hot and cold IPO markets, we rank all months in the sample period by the number of IPOs that occurred. We categorize months in the top quintile as hot IPO months. IPO contribution to performance is reported in percentages and *t*-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Contribution to Performance of IPO Holdings

<i>Portfolio</i>	<i>Side-by-Side Funds</i>	<i>Matched Funds</i>	<i>Difference</i>
Contribution to Performance	0.0318 *** (28.00)	0.0477 *** (50.95)	-0.0160 *** (-11.49)
	N = 21,603		

Panel B: Differential Contribution to Performance of IPO Holdings in Hot vs. Cold IPO Markets

<i>IPO Markets</i>	<i>Side-by-Side Funds</i>	<i>Matched Funds</i>	<i>Difference</i>
Q [1] Hottest	0.0542 *** (15.60) N = 3,702	0.0909 *** (27.41)	-0.0366 *** (-7.80)
Q [2]	0.0587 *** (16.44) N = 4,962	0.0863 *** (30.09)	-0.0276 *** (-6.38)
Q [3]	0.0232 *** (11.81) N = 4,624	0.0328 *** (36.80)	-0.0096 *** (-4.60)
Q [4]	0.0118 *** (13.81) N = 5,085	0.0171 *** (42.36)	-0.0051 *** (-5.73)
Q [5] Coldest	0.0084 *** (8.35) N = 3,230	0.0087 *** (8.65)	-0.0005 (-0.25)
Q [1] - Q [5]	0.0458 *** (12.68)	0.0822 *** (23.71)	-0.0361 *** (-7.41)

Table 8
IPO Contribution to Performance for
Side-By-Side Mutual Funds and Affiliated Hedge Funds

This table reports the IPO contribution to performance for the side-by-side mutual fund portfolio and the affiliated hedge fund portfolio. The IPO contribution to performance is calculated as the dollar value of IPO underpricing allocated to the portfolio each month divided by portfolio assets as of the beginning of that month. To identify post-issue IPO holdings, we use quarterly 13F holdings reports filed subsequently to each IPO between 1994 and 2004. Given that 13F reports combine mutual fund and hedge fund IPO holdings, we need to separate IPO holdings. We do this by forming an aggregate mutual fund portfolio each quarter for each side-by-side manager and then subtracting mutual fund IPO holdings from 13F holdings to obtain hedge fund IPO holdings. Panel A reports overall IPO contribution to performance results for all side-by-side managers excluding ETF providers. Panel B reports IPO contribution to performance results stratified by the portfolio turnover ratio of the hedge fund portfolio. Panel C reports results stratified by “hot” and “cold” IPO markets. To identify hot and cold IPO markets, we rank all months in the sample period by the number of IPOs that occurred. We categorize months in the top quintile as hot IPO months. IPO contribution to performance is reported in percentages and *t*-statistics are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Managers Excluding ETF Providers

	<i>Side-by-Side Mutual Funds</i>	<i>Hedge Funds</i>	<i>Mutual Funds – Hedge Funds</i>
Managers Excluding ETFs	0.0322 *** (13.45)	0.0438 *** (13.36)	-0.0116 *** (-3.82)
	N = 3,372		

Panel B: Managers Excluding ETF Providers Stratified by Turnover Ratio of the Hedge Fund Portfolio

<i>Turnover Ratio</i>	<i>Side-by-Side Mutual Funds</i>	<i>Hedge Funds</i>	<i>Mutual Funds – Hedge Funds</i>
Q [1] Highest	0.0335 *** (5.57) N = 707	0.0742 *** (6.85)	-0.0407 *** (-4.06)
Q [2]	0.0498 *** (7.67) N = 766	0.0630 *** (6.95)	-0.0133 * (-1.96)
Q [3]	0.0297 *** (6.58) N = 742	0.0374 *** (9.67)	-0.0077 (-1.41)
Q [4]	0.0255 *** (5.08) N = 616	0.0229 *** (6.37)	0.0026 (0.55)
Q [5] Lowest	0.0168 *** (7.85) N = 541	0.0094 *** (6.51)	0.0074 *** (3.42)
Q [1] - Q [5]	0.0166 *** (2.60)	0.0647 *** (5.93)	-0.0481 *** (-4.69)

Table 8-continued

Panel C. Managers Excluding ETF Providers Stratified by Hot vs. Cold IPO Markets

<i>IPO Markets</i>	<i>Side-by-Side Mutual Funds</i>	<i>Hedge Funds</i>	<i>Mutual Funds – Hedge Funds</i>
Q [1] Hottest	0.0531 *** (6.97) N = 509	0.0897 *** (6.99)	-0.0365 *** (-3.12)
Q [2]	0.0598 *** (6.31) N = 588	0.0864 *** (7.29)	-0.0266 *** (-2.53)
Q [3]	0.0241 *** (5.67) N = 455	0.0396 *** (4.17)	-0.0155 * (-1.67)
Q [4]	0.0169 *** (4.34) N = 422	0.0253 *** (6.38)	-0.0084 *** (-2.64)
Q [5] Coldest	0.0146 *** (3.74) N = 241	0.0139 *** (3.56)	0.0007 (0.18)
Q [1] - Q [5]	0.0385 *** (4.50)	0.0758 *** (5.65)	-0.0372 *** (-3.03)

Appendix: Estimating Mutual Fund and Affiliated Hedge Fund IPO Holdings

In order to identify post-issue IPO holdings for mutual funds and affiliated hedge funds, we merge holding reports filed at the institutional manager level (13F filings) with similar reports filed by all mutual funds (N-30D, N-30B-2, N-CSR, N-CSRS, and N-Q filings) managed by the same managers. The institutional and mutual fund ownership databases are obtained from Thomson Financial. Both databases are free of survivorship bias. To better clarify the structure of these two datasets, we first discuss regulation pertaining to security holding reports that managers and mutual funds are required to file.

In 1975, the Congress amended section 13(f) of the Securities Exchange Act in order to increase the public awareness and availability of information on the securities holdings of institutional investors. The new rule required all advisors with investment discretion over \$100 million or more in exchange-traded or NASDAQ-quoted equity securities to file form 13F with the SEC within 45 days of the end of each calendar quarter. Managers are required to report all equity positions greater than either 10,000 shares or \$200,000 in market value. CDA/Spectrum, later acquired by Thomson Financial, was hired by the SEC to process these quarterly filings and Thomson's CDA/Spectrum maintains a historical database of all 13F reports filed with the SEC since 1980.

Thomson Financial also compiles holding reports filed at the mutual fund level. Under Section 30 of the Investment Company Act of 1940, institutional managers who manage mutual funds are required to file N-30D reports that detail complete portfolio holdings at the end of each fiscal semiannual period for each individual fund that they manage.

Prior to 1985 they were required to file fund holding reports on a quarterly basis. After 1985, although funds were required to report their holdings only semiannually, a majority of managers chose to report mutual fund holdings on a quarterly basis through N-30B-2 filings. Although funds were required to report their holdings only semiannually after 1985, Wermers (1999) points out that the majority of funds choose to report holdings to Thomson's CDA/Spectrum on a quarterly basis. One possible incentive to provide these reports, suggested by Frank, Poterba, Shackelford, and Shoven (2003), is a clientele effect whereby some investors who value more frequent disclosure are willing to pay higher fees.

After 2003 and following Sarbanes-Oxley Act of 2002, the SEC adopted new rules that require mutual funds and other registered management investment companies to file holding reports on new forms: Form N-CSR and Form N-CSRS, for annual and semiannual reports respectively. Such reports must be filed within 10 days after the transmission of any annual or semi-annual report to shareholders. Investment management companies are no longer required to submit N-30D holding reports. In May 2004, the SEC decided to adopt a new disclosure rule requiring investment companies to report holdings in the first and the third quarters of each fiscal year through N-Q filings, in addition to the annual and semiannual reports. These additional reports shall be filed not later than 60 days after the close of the first and third quarters of each fiscal year. The SEC expects that "by June 30, 2005, all funds will have begun to file reports on Form N-Q" for the first and third quarters in addition to forms N-CSR and N-CSRS for the second and fourth quarters (semiannual and annual filings). Form N-Q must be filed electronically with EDGAR, but is not be required to be delivered to shareholders.

To construct an estimate of the IPO allocation for the aggregate portfolio of mutual funds run by the same manager, we aggregate all IPO holdings that appear in the nearest holdings report filed within six months of the IPO by all mutual funds affiliated with the manager. Our estimate of the affiliated hedge fund IPO allocation is then computed as the total institutional manager IPO holdings (from the closest subsequent 13F report) minus the aggregated mutual fund IPO allocation. Note that once we remove the mutual fund holdings, the 13F reports detail the holdings of not only hedge funds but also other similar institutional investment vehicles (e.g., private equity funds). For expository tractability, we refer to holdings in hedge funds and other similar institutional investment vehicles as simply ‘hedge fund’ holdings.