

Conflicts of Interest and Mutual Fund Performance: Evidence from Investment Banking Relationships

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Abstract

This paper examines the impact of conflicts of interest on the performance of investment bank affiliated mutual funds. We find robust evidence that affiliated funds underperform unaffiliated funds. An important source of this underperformance is the disproportionately large holdings of investment banking clients' stocks by affiliated mutual funds. The average holding of client stocks by affiliated funds is more than twice as large as their average holding of non-client stocks. More importantly, the client holdings of affiliated funds underperform both their benchmarks and non-client holdings, consistent with the long-run underperformance of equity issuers and acquirers documented in prior literature. The underperformance of affiliated funds cannot be explained by lack of investor monitoring. Nor is it mitigated by investment bank reputation. Our results are consistent with the idea that investment banks use affiliated funds as a tool to support underwriting and advising business at the expense of fund shareholders.

Conflicts of Interest and Mutual Fund Performance: Evidence from Investment Banking Relationships

Conflicts of interest stemming from investment banking relationships have received considerable attention from the media, regulators, and academics.¹ In particular, there is now substantial evidence that underwriting relationships cause sell-side analysts to issue overly optimistic stock recommendations (e.g., Lin and McNichols (1998) and Michaely and Womack (1999)). While numerous studies focus on the conflict between investment banking and equity research, relatively few studies have examined the potential conflict between investment banking relationships and fund management.² In particular, affiliation with an investment bank may cause funds to pursue the interests of the bank at the expense of fund shareholders. The purpose of this paper is to empirically examine whether the potential conflict of interest between investment banking and fund management impacts the performance of investment bank affiliated mutual funds.

There are at least two reasons why investment banking relationships might cause affiliated funds to underperform. First, affiliated funds may face implicit or explicit pressure to buy their investment banking clients' shares to help support prices or win future underwriting and merger deals (Dietz and Levy (2004)). Since the stocks of equity issuers and acquirers underperform in the long run (Loughran and Ritter (1995), Spiess and Affleck-Graves (1995), and Andrade, Mitchell, and Stafford (2001)), affiliated funds that overweight their clients' shares will tend to underperform. Second, even in the absence of long-run underperformance of investment banking clients' stocks, affiliated funds might still underperform because investment banking relationships may interfere with the fund manager's objective decision making. The role

¹ See Mehran and Stulz (2007) for a review of the literature on conflicts of interest in financial institutions.

² Johnson and Marietta-Westberg (2005), Massa and Rehman (2007), and Ritter and Zhang (2007) are notable exceptions.

of a fund manager is to make decisions about which securities to hold and in what proportions. His objective is to select securities that are consistent with the fund's investment objectives and have good potential for high returns. However, considerations associated with investment banking relationships may constrain the activities of the fund manager and hamper his ability to implement optimal investment strategies.

The conflict of interest hypothesis makes three predictions regarding the holdings and performance of investment bank affiliated mutual funds. First, affiliated funds overweight the investment banking clients' shares in their portfolios. Second, the client holdings of affiliated funds underperform the benchmarks and non-client holdings. Third, affiliated funds earn lower returns than unaffiliated funds.

An alternative hypothesis regarding the effect of investment banking relationships on affiliated fund performance is that investment banks, through the process of due diligence, might possess superior information about their investment banking clients (informational advantage hypothesis). If managers of affiliated funds are shared with this superior information and use it to the benefit of fund investors, then affiliated funds will tend to outperform. Moreover, to the extent that stocks of equity issuers and acquirers underperform in the long-run, the informational advantage hypothesis predicts that affiliated funds will on average underweight their investment banking clients' shares. However, because of inside information, the client stocks that affiliated funds do choose to hold will either outperform or at least do not underperform their benchmarks. Therefore, the conflict of interest hypothesis and the informational advantage hypothesis make diametrically opposed predictions regarding the holdings and performance of investment bank affiliated funds.

We test the predictions of the conflict of interest and informational advantage hypotheses by using a comprehensive sample of U.S. equity and hybrid mutual funds over the period 1992-2004. We first compare the performance of affiliated funds with unaffiliated funds. We find strong evidence that affiliated funds significantly underperform unaffiliated funds. Depending on which performance evaluation model is used, the average annualized risk-adjusted returns of affiliated funds are between 0.96% and 1.68% lower than that of unaffiliated funds. The magnitude is smaller but remains statistically significant after we control for various fund characteristics in a cross-sectional regression framework.

We then examine the client and non-client holdings of affiliated mutual funds to determine whether affiliated funds overweight their clients' shares. Consistent with the conflict of interest hypothesis, we find that affiliated funds hold a disproportionately large amount of their investment banking clients' shares. On average, affiliated funds hold more than twice as much of their clients' stocks as non-client stocks.

Next, we compare the performance of client and non-client stocks held by affiliated funds. Consistent with the long-run stock underperformance of IPOs, SEOs, and acquirers documented in prior literature, we find that the client holdings of affiliated funds underperform the Daniel, Grinblatt, Titman, and Wermers (1997 DGTW) benchmark by 0.62% per quarter. The client holdings also underperform non-client holdings by 0.7% per quarter. These results, combined with the finding that affiliated funds overweight their client stocks, provide an explanation for the underperformance by affiliated mutual funds.

Chen, Jegadeesh, and Wermers (2000) argue that trades reflect stronger opinions of fund managers than holdings. To provide additional evidence on the informational advantage hypothesis, we also examine the performance of client and non-client stocks traded by affiliated

funds. For non-client stocks, we find that purchases made by affiliated funds earn significantly higher subsequent returns than sales. This result is consistent with Chen, Jegadeesh, and Wermers (2000) and suggests that fund managers of affiliated funds possess superior information about those non-client stocks that they trade. However, we find no evidence that those client stocks that affiliated funds buy outperform those they sell. This finding is inconsistent with the informational advantage hypothesis and suggests that it is unlikely that affiliated funds trade client stocks for informational reasons.

Overall, our results are consistent with the conflict of interest hypothesis while inconsistent with the informational advantage hypothesis. Results are consistent with the idea that investment banks use their mutual funds as a tool to support client stock prices or to win future underwriting and merger deals. Furthermore, this conflict of interest has a significant negative impact on the performance of affiliated mutual funds.

Fama and Jensen (1983) argue that the agency problem in mutual funds is mitigated by the ability of investors to redeem shares at net asset value. This redeemable feature imposes market discipline and limits the extent of the conflict of interest problem in mutual funds. Therefore, a potential alternative explanation for the underperformance of affiliated funds is the lack of investor monitoring. Specifically, shareholders of affiliated funds may be not as sensitive to fund performance (especially poor performance) as shareholders of unaffiliated funds. We test this hypothesis but fail to find any evidence that flow-performance sensitivity is significantly different between affiliated funds and unaffiliated funds.

In our final analysis, we examine whether investment bank reputation helps mitigate the adverse effect of conflicts of interest on fund performance. We obtain underwriter rankings from

Jay Ritter's Website³ and classify those investment banks with a ranking of 9 as top-tier investment banks. We then repeat our analyses by examining funds affiliated with top-tier investment banks. We find similar results. We continue to find that affiliated mutual funds underperform, that they overweight their client stocks in their portfolios, and that client holdings of affiliated funds perform poorly. These results suggest that investment bank reputation was not effective in mitigating the conflict of interest between investment banking and fund management. This finding should perhaps not come as a surprise. After all, the ten investment banks involved in the global settlement in 2002 were mostly reputable investment banks.⁴

Our study is closely related to Johnson and Marietta-Westberg (2005), Ritter and Zhang (2007), and Massa and Rehman (2007). Johnson and Marietta-Westberg analyze a group of IPO underwriters that also manage institutional funds and find that underwriting relationships benefit investors of the institutional funds. Our study differs from Johnson and Marietta-Westberg in several important ways. We study a broader range of investment banking relationships by also including SEOs and mergers and acquisitions in our analyses. In addition, Johnson and Marietta-Westberg do not examine the overall fund performance and focus only on the performance of stock holdings. Ritter and Zhang examine the allocation of IPOs by investment banks to affiliated mutual funds. Specifically, they examine whether investment banks use affiliated funds as a “dumping ground” for cold IPOs or allocate hot IPOs to affiliated funds to boost fund performance. While Ritter and Zhang also analyze the conflict of interest between underwriting and fund management, they do not examine the impact of this conflict on the performance of affiliated mutual funds. Massa and Rehman (2007) investigate the effect of lending behavior of

³ <http://bear.cba.ufl.edu/ritter/ipodata.htm>.

⁴ The ten banks involved in the Global Settlement are Bear, Stearns, Credit Suisse First Boston, Goldman Sachs, Lehman Brothers, J.P. Morgan, Merrill Lynch, Morgan Stanley, Citigroup Salomon Smith Barney, UBS Warburg, and Piper Jaffray.

affiliated banks has on the portfolio choice of the mutual funds belonging to the same conglomerate. They find funds increase their stakes in the firms that borrow from the affiliated banks in the period following the lending deal. This result is consistent with the conflict of interest hypothesis. However, in their analysis of trades they find evidence consistent with funds exploiting inside information about borrowing firms.

The rest of the paper is organized as follows. We develop our hypotheses in Section 1. In Section 2, we discuss our data and sample. In Section 3, we present our empirical results. Section 4 concludes.

1. Hypothesis Development

Anecdotal evidence suggests that the Chinese walls between various departments of a financial conglomerate do not work as well as one might expect. The problem is particularly acute with affiliated mutual funds because a fund adviser wears so many hats: managing and promoting their funds, acting as brokers, and working for the bank. This clearly raises conflict of interest questions. Mehran and Stulz (2007) define a conflict of interest as “a situation in which a party to a transaction can potentially gain by taking actions that adversely affect the counterparty” (p.268). In our context, affiliation with an investment bank may cause mutual funds to pursue the interests of the bank at the expense of fund shareholders. This allows us to posit our first hypothesis (conflict of interest hypothesis):

H1a: All else equal, investment bank affiliated mutual funds underperform the unaffiliated funds.

An alternative hypothesis regarding the effect of investment banking relationships on affiliated fund performance is that managers of affiliated funds might possess superior

information about their investment banking clients. If fund managers use this informational advantage to the benefit of fund investors, then affiliated funds are likely to outperform (informational advantage hypothesis).

H1b: All else equal, investment bank affiliated mutual funds outperform the unaffiliated funds.

An important reason why investment banking relationships might cause affiliated funds to underperform is that affiliated funds may face implicit or explicit pressure to buy their investment banking clients' shares to help support prices or to win future underwriting and merger deals. For example, Dietz and Levy (2004) presents evidence that five biggest securities firms (Citigroup, Credit Suisse First Boston, Goldman Sachs, Merrill Lynch, and Morgan Stanley) may be pressuring their fund managers to invest in banking clients. Edward Siedle, a former SEC attorney, argues that as an investment bank, "you want to show that you are not only able to sell the deal, but you're able to put away the product... the more you can do that, the more your clients are going to be attracted to you" Dietz and Levy (p.43). Since the stocks of equity issuers and acquirers underperform in the long run, affiliated funds that overweight their clients' shares will tend to underperform.

H2a: Investment bank affiliated mutual funds overweight the stocks of their investment banking clients in their portfolios. Furthermore, the client holdings of affiliated mutual funds underperform the benchmarks and the non-client holdings.

In contrast, the informational advantage hypothesis predicts that affiliated funds underweight their clients' shares because these stocks tend to underperform. However, because

of inside information, the client stocks that affiliated funds do choose to hold either outperform or at least do not underperform their benchmarks and non-client holdings.

H2b: Investment bank affiliated mutual funds underweight the stocks of their investment banking clients in their portfolios. Furthermore, the client holdings of affiliated mutual funds do not underperform the benchmarks or the non-client holdings.

The conflict of interest between fund shareholders and the fund management company is a classic principal-agent problem.⁵ While fund shareholders desire high risk-adjusted returns after cost, the fund management company is interested in maximizing its own profit. Fama and Jensen (1983) argue that this agency problem is mitigated by the redeemable feature of mutual funds. Specifically, mutual funds are required by law to redeem their shares on a daily basis. When shareholders “vote with their feet” and redeem their shares, the fund management company will suffer from lower revenues because management fees are typically a fixed percentage of the total assets under management.

Therefore, a potential alternative explanation for the underperformance of affiliated funds is that there is less investor monitoring among affiliated funds.⁶ In particular, because affiliated funds tend to be sold through brokers or investment advisors, the shareholders of affiliated funds might be considered more “captured”. In contrast, unaffiliated funds tend to be sold through either the direct channel or supermarket channel (Reid and Rea (2003)). Also, shareholders of affiliated funds may be less sophisticated because they tend to rely more on the advice of

⁵ See, e.g., Tufano and Sevick (1997), Mahoney (2004), Khorana and Servaes (2004), Khorana, Tufano, and Wedge (2007), and Ferris and Yan (2007) for a few studies that have examined the conflict of interest in mutual funds and the role of fund boards in fund governance.

⁶ James and Karceski (2006) find that institutional funds subject to less investor oversight tend to underperform. Chen, Yao, and Yu (2007) find that funds offered by insurance companies underperform in part because the lack of investor monitoring.

investment advisors. Consequently, one might argue that shareholders of affiliated funds do not monitor fund performance closely. Consistent with James and Karceski (2006) and Chen, Yao, and Yu (2007), we test this hypothesis by examining the flow-performance sensitivity.

H3: Investment bank affiliated mutual funds have lower flow-performance sensitivity (especially with respect to poor performance) than unaffiliated funds.

One potential mitigating factor for the conflict of interest between investment banking relationship and fund management is investment bank reputation. Specifically, one might argue that reputable investment banks may be less inclined to take advantage of the shareholders of affiliated funds due to concerns about their reputation. This leads to our final hypothesis.

H4: The adverse effect of conflict of interest on the performance of investment bank affiliated funds is mitigated by the reputation of investment banks.

2. Data, Sample, and Descriptive Statistics

2.1. Data and Sample

The data for this study come from several sources. We obtain all US new common stock issues (including both IPOs and SEOs) for the period 1989-2004 from the Thomson SDC New Issues Database. We exclude ADRs, closed-end funds, units, REITs, limited partnerships, financial firms, and IPOs with an offer price below \$5. For each IPO or SEO, we obtain the offer date, the CUSIP number of the equity issue, and the name of the bookrunners.

We obtain all completed domestic mergers and acquisitions that were announced during 1989-2004 from Thomson SDC Mergers and Acquisitions Database. We exclude deals in which the shares are not completely owned by the acquirer after the transaction, and deals in which the

acquirer is a financial firm or not traded on New York Stock Exchange, American Stock Exchange, or Nasdaq. For each merger or acquisition, we obtain the effective date, the CUSIP number of the acquiring firm, and the name of the advisor.

The CRSP Mutual Fund Database provides information on fund returns, total net assets (TNA), fees, investment objectives, and other fund characteristics. We include all domestic equity and hybrid funds that exist in the CRSP mutual fund database during the period 1992-2004. We include hybrid funds because these funds have substantial holdings in stocks. We begin our sample in 1992 because this is the first year the CRSP mutual fund database reports information about fund management companies. For funds with multiple share classes, we combine all share classes.

Thomson mutual fund holdings database contains quarterly or semi-annual stock holdings for all U.S. mutual funds.⁷ We include all funds in the Thomson mutual fund holdings database that have an investment objective code (IOC) of 2 (Aggressive growth), 3 (Growth), or 4 (Growth and Income). We merge the CRSP mutual fund database with the Thomson mutual fund holdings database by using the MFLINK linking file obtained from Wharton Research Data Service (WRDS).

We obtain from CRSP stock database stock returns, share prices, SIC codes, and total shares outstanding. We obtain book value of equity from the COMPUSTAT. We obtain Fama-French factors and momentum factors from Kenneth French's website and benchmark bond index returns from Lehman Brother.⁸ Stocks or firms in Thomson mutual fund holdings database, the SDC databases, and COMPUSTAT are matched with the CRSP stock database based on 8-digit CUSIP numbers.

⁷ A detailed description of this database can be found in Wermers (2000).

⁸ We thank W.D. Allen for providing us this data set.

2.2. Investment Bank Affiliated Funds

We manually identify investment bank affiliated mutual funds by matching the names of fund management companies with the names of investment banks, and by using a variety of sources including *Moody's Bank and Finance Manual*, *Nelson's Directory of Institutional Money Managers*, *Securities Industry Yearbook*, and company websites. Names of fund management companies are from the CRSP mutual fund database. Names of investment banks are from the SDC New Issues Database and Mergers and Acquisitions Database.

There were a large number of mergers and acquisitions in the financial industry over our sample period. When determining whether a fund family is affiliated with an investment bank, we paid special attention to mergers and acquisitions among investment banks and fund companies. In particular, for each fund management company that is involved in a merger or acquisition, we carefully determine the period during which the fund company is affiliated with an investment bank.

We classify a stock as a client stock for a fund family if the fund family's affiliated investment bank has underwritten an IPO or SEO, or advised on a merger or acquisition for the firm during the past three years. A stock is classified as a non-client stock if it is not a client stock and the stock is held by at least one fund family.

2.3. Descriptive Statistics for Fund Sample

Table 1 present the descriptive statistics for our fund sample. We present summary fund characteristics for equity funds in Panel A and hybrid funds in Panel B. In each panel, we present results for all funds (column one), affiliated funds (column two), unaffiliated funds (column

three), as well as the difference between affiliated funds and unaffiliated funds. For each fund characteristic, we first calculate the cross-sectional average fund characteristic in each year and then report the yearly averages.

Results in Panel A indicate that affiliated funds are smaller and younger than unaffiliated funds. Interestingly, the average expense ratio is identical between affiliated funds and unaffiliated funds. However, affiliated funds charge a higher 12b-1 fee and a higher load than their counterparts. Affiliated funds, on average, trade less actively than unaffiliated funds. The cash, stock, and bond holdings are very similar between affiliated funds and unaffiliated funds. Results in Panel B for hybrid funds are similar to those in Panel A. Affiliated funds tend to be smaller, younger, and they charge higher loads and have lower turnover rates.

3. Empirical Results

We present our empirical results in this section. In Section 3.1, we compare the performance of affiliated funds and unaffiliated funds. In Section 3.2, we examine whether affiliated funds overweight their clients' stocks in their portfolios. Section 3.3 examines the subsequent performance of client stocks and non-client stocks held by affiliated funds. Section 3.4 examines the performance of client and non-client stocks traded by affiliated funds. In Section 3.5, we compare the flow-performance sensitivity of affiliated funds versus unaffiliated funds. In Section 3.6, we address the question whether investment bank reputation mitigates the effect of conflict of interest on the performance of affiliated funds.

3.1. Performance of Affiliated and Unaffiliated Mutual Funds

3.1.1. Portfolio Analysis

The conflict of interest hypothesis predicts that affiliated funds underperform unaffiliated funds, while the informational advantage hypothesis predicts the opposite. To distinguish between these two alternative hypotheses, we start by comparing the performance of affiliated funds with unaffiliated funds. We first use a portfolio approach. Specifically, each month we divide all equity (or hybrid) funds into affiliated or unaffiliated funds. Within each category, we compute the TNA-weighted portfolio returns for each month. We then evaluate the performance of these two portfolios based on the time-series of monthly portfolio returns.

Following prior literature, we use the Fama and French three-factor model and the Carhart (1997) four-factor model to evaluate equity fund performance. The Fama-French three-factor model is given by:

$$r_{p,t} = \alpha_p + \beta_{1,p}RMRF_t + \beta_{2,p}SMB_t + \beta_{3,p}HML_t + e_{p,t} \quad (1)$$

Here, $r_{p,t}$ is the monthly return on a portfolio of equity funds in excess of the one month T-bill return; RMRF is the excess return on a value-weighted market portfolio; and SMB and HML are returns on zero-investment factor-mimicking portfolios for size and book-to-market. Similarly, the Carhart four-factor model is given by:

$$r_{p,t} = \alpha_p + \beta_{1,p}RMRF_t + \beta_{2,p}SMB_t + \beta_{3,p}HML_t + \beta_{4,p}UMD_t + e_{p,t} \quad (2)$$

Here, $r_{p,t}$, RMRF, SMB, and HML are as defined in the Fama-French three-factor model. UMD is return on the zero-investment factor-mimicking portfolio for momentum.

Since hybrid funds have substantial holdings in both stocks and bonds, we expand the Fama-French three-factor model and Carhart's four-factor model by adding three bond factors.

$$r_{p,t} = \alpha_p + \beta_{1,p}RMRF_t + \beta_{2,p}SMB_t + \beta_{3,p}HML_t + \beta_{4,p}GOV_t + \beta_{5,p}CORP_t + \beta_{6,p}JUNK_t + e_{p,t} \quad (3)$$

$$r_{p,t} = \alpha_p + \beta_{1,p}RMRF_t + \beta_{2,p}SMB_t + \beta_{3,p}HML_t + \beta_{4,p}UMD_t + \beta_{5,p}GOV_t + \beta_{6,p}CORP_t + \beta_{7,p}JUNK_t + e_{p,t} \quad (4)$$

Here, $r_{p,t}$ is the monthly return on a portfolio of hybrid funds in excess of the one month T-bill return; RMRF, SMB, HML and UMD are as defined earlier in the Carhart four-factor model; GOV, CORP, and JUNK are Lehman Brothers index excess returns for government bonds, corporate bonds, and high-yield bonds respectively. The bond factors included in the above model are similar to those used by Elton, Gruber, and Blake (1995). For ease of exposition, we refer to the model in equation (3) as the six-factor model and the model in equation (4) as the seven-factor model.

Table 2 reports the results for equity funds. Specifically, we present raw returns in Panel A, Fama-French three-factor alphas in Panel B, and Carhart four-factor alphas in Panel C. Results in Panel A indicate that affiliated funds underperform unaffiliated funds. The average return of affiliated funds over our sample period is 0.78% per month while the corresponding return for unaffiliated funds is 0.86% per month. The return difference of 8 basis point per month (0.96% per year) is both economically and statistically significant ($t=2.46$). Further examination shows that affiliated funds underperform unaffiliated funds in all three categories of equity funds, and the underperformance is the strongest among “Growth and Income” funds.

While Panel A shows evidence of underperformance by affiliated equity funds, it is possible that these funds take different levels of risk or follow different investment styles, which may justify their lower returns. In Panels B and C, we examine Fama-French three-factor alphas and Carhart four-factor alphas. Results based on these risk-adjusted returns continue to suggest that affiliated funds underperform unaffiliated funds. In Panel B, we find that both affiliated funds and unaffiliated funds underperform their benchmarks. This result is consistent with prior findings that actively managed mutual funds as a whole do not outperform the market after fees (e.g., Jensen (1968), Gruber (1996), and Carhart (1997)). More importantly, we find that

affiliated funds underperform unaffiliated funds by 8 basis points per month and this difference statistically significant at the 5 percent level. The results are similar in Panel C when we examine the Carhart four-factor alpha. Affiliated funds underperform unaffiliated funds by 12 basis points a month and it is highly statistically significant. Furthermore, this result holds in each of the three investment objective categories, “aggressive growth,” “growth and income,” and “long-term growth.” Results based on Fama-French or Carhart alphas suggest that our finding in Panel A is not driven by affiliated funds following different investment styles or taking less risk. In fact, we find our results to be stronger, both economically and statistically, after adjusting for exposures to the market, size, value, and momentum factors.

Table 3 reports the results for hybrid mutual funds, which include “balanced”, “total return”, and “income” funds. These funds typically have substantial holdings in both stocks and bonds. Similar to our results on equity funds, we find that affiliated hybrid funds significantly underperform unaffiliated hybrid funds. The average monthly return is 0.69% for affiliated funds and is 0.80% for unaffiliated funds. The difference of 0.11% per month is statistically significant at 1 percent level. Adjusting for systematic factors make the results even stronger. Affiliated funds underperform unaffiliated funds by 0.14% using the six-factor alphas, and by 0.13% using the seven-factor alphas. Further, this finding is robust across the three categories of hybrid funds.

Overall, we find strong evidence that affiliated funds underperform unaffiliated funds using a portfolio approach. This result holds for both equity funds and hybrid funds, and is robust to various models of risk adjustment. Next, we examine the performance of investment affiliated funds using a multivariate cross-sectional regression framework.

3.1.2. Cross-Sectional Regressions

We showed in Table 1 that affiliated funds tend to be smaller, younger, and they charge higher loads. Therefore, one might be concerned that our univariate portfolio results in the previous section are driven by the systematic differences in these fund characteristics. To mitigate this concern, we examine fund performance using a cross-sectional regression framework. We follow Chen, Hong, Huang, and Kubik (2004) to estimate the following regression model each month:

$$r_{i,t} = a + b_1AFFUND + b_2LOGTNA_{i,t-1} + b_3LOGFAM_{i,t-1} + b_4EXP_{i,t-1} + b_5LOGAGE_{i,t-1} + b_6TURNOVER_{i,t-1} + b_7LOAD_{i,t-1} + b_8LAGFLOW_{i,t-1} + b_9LAGFUNDRET_{i,t-1} + e_{i,t} \quad (5)$$

Where $r_{i,t}$ is one-month-ahead investment objective-adjusted fund return. *AFFUND* is the dummy variable for investment bank affiliated mutual funds. *LOGTNA* is the logarithm of total net assets of the fund. *LOGFAM* is the logarithm of the total net assets of the fund family that the fund belongs to. *EXP* is the fund expense ratio. *LOGAGE* is the logarithm of the fund age. *TURNOVER* is the fund's turnover rate. *LOAD* is the fund's total load charge. *LAGFLOW* is the fund flow in the past year. *LAGFUNDRET* is the fund return over the past year. We calculate both lagged fund flow and lagged fund return using the past one year's data. In particular, the lagged one-year fund flow is defined as follows:

$$FLOW_t = \frac{TNA_t - TNA_{t-1}(1 + R_t) - MGTNA_t}{TNA_{t-1}} \quad (6)$$

where R_t is the fund return and $MGTNA_t$ is the assets acquired from a merger. We estimate regression equation (5) each month using weighted least square where the weight for each observation is the fund's lagged total net assets. We use Fama-MacBeth method to calculate standard errors while adjusting for possible serial correlation with the Newey-West method.

Table 4 reports the regression results. Consistent with Chen, Hong, Huang, and Kubik (2004), we find that fund performance is negatively related to fund size while positively related to fund family size. We find fund performance, especially net fund returns, to be negatively related to fund expense ratio. This result is consistent with Carhart (1997). Similar to Chen, Hong, Huang, and Kubik, we find fund returns to be persistent and negatively related to past fund flows.

Most importantly, we find that fund performance is significantly negatively related to the affiliated fund dummy. Specifically, the coefficient on the affiliated fund dummy is -0.05, which suggests that after controlling for other fund characteristics an affiliated fund underperforms relative to an unaffiliated fund by about 5 basis points per month. This magnitude is smaller than the 8-14 basis points underperformance reported in Tables 2 and 3, but is still statistically significant at the 5 percent level and is robust to whether we examine gross returns or net returns. Overall, the results in Table 4 confirm our earlier finding based on portfolio analysis that affiliated fund significantly underperform unaffiliated funds. This finding suggests that the underperformance of affiliated funds is not driven by other fund characteristics.

Overall, we find strong and robust evidence of underperformance by affiliated funds using both a portfolio approach and a cross-sectional approach. This finding provides support for the conflict of interest hypothesis while is inconsistent with the informational advantage hypothesis.

3.2. Client and non-Client Holdings of Affiliated Mutual Funds

We show in the previous section that affiliated funds significantly underperform unaffiliated funds. We hypothesize that an important source of this underperformance is that

affiliated funds holds a disproportionately large amount of their clients' stocks. In this section, we provide direct evidence on the relative size of holdings of client versus non-client stocks by investment bank affiliated funds.

Recall that we classify a stock as a client stock for a fund family if the fund family's affiliated investment bank has underwritten an IPO or SEO, or advised on a merger or acquisition for the firm during the past three years. A stock is classified as a non-client stock if it is not a client stock and the stock is held by at least one fund family in our sample. We aggregate the holdings of the same stock across all funds within a family. For any given quarter, if a client or non-client stock is not held by the fund family, we set the holdings to be zero. We scale dollar holdings in two ways. In the first measure, we scale the dollar holdings by the stock's market capitalization. In the second measure, we scale the dollar holdings by the total net assets of the fund family.

Table 5 reports the results. In column (1) we report the average holdings of client stocks and in column (2) we report the average holdings of non-client stocks. In column (3), we report the difference. Consistent with the conflict of interest hypothesis, we find that the average holding of client stocks is significantly higher than the average holding of non-clients stocks. On average, the client stock holding is 0.08% of the firm's market capitalization, while the non-client stock holding is only 0.028% of the firm's market capitalization. The difference is statistically significant at the 1 percent level. Similarly, when we express holdings as a percentage of the fund family's total net assets, we continue to find that the average holding of client stocks is significantly higher than the average holding of non-clients stocks (0.042% versus 0.017%). Further, we show that the probability of an affiliated fund holding a client stock in a given quarter is 19.17%, which is much higher than the probability of 6.35% for holding a

non-client stock. Our probability of holding a client stock is in line with that reported in Ritter and Zhang (2007).⁹

Overall, these results are consistent with the conflict of interest hypothesis and suggest that investment banks use affiliated funds to support prices of client stocks or as “dumping ground” for IPO or SEO shares. Our results are inconsistent with the informational advantage hypothesis because it is well documented that the long-run performance of IPOs, SEOs, and acquirers is poor on average, and as a result one might expect to find relatively low holdings of client stocks if funds use this information to the benefit of fund shareholders.

3.3. Performance of Client and non-Client Stocks Held By Affiliated Mutual Funds

In the previous section, we document evidence that affiliated funds overweight their clients’ stocks in their portfolios. In this section, we compare the subsequent performance of client holdings versus non-client holdings. In addition to raw returns, we also use the risk adjustment method of Daniel, Grinblatt, Titman, and Wermers (1997) to evaluate the performance of fund holdings. Specifically, we subtract from the return of each stock the return of a well-diversified portfolio with similar size, book-to-market ratio, and momentum attributes. These stock characteristics have been shown to explain the cross-section of average stock returns (Fama and French (1992) and Jegadeesh and Titman (1993)).

Table 6 reports the results. We find evidence that the client holdings of affiliated funds significantly underperform the non-client holdings in the next quarter. The mean raw return in the subsequent quarter is on average 2.23% for client holdings but is much higher at 3.44% for non-client holdings. The difference of 1.21% a quarter is both economically and statistically

⁹ Ritter and Zhang (2007) report in their Table 3 that during 1990-2001 IPO lead underwriters’ affiliated funds invested in 12.5% of their IPO stocks within six months of the IPO offer date.

significant. To mitigate the effect of outliers, we also examine median returns and find very similar results. Client holdings underperform non-client holdings by 1.14% in the subsequent quarter and this difference is statistically significant at 1 percent level.

We also examine the DGTW-adjusted returns. We find evidence that client holdings earn significantly negative benchmark-adjusted returns. This result is consistent with existing literature on the long-run performance of equity issuers and acquirers. In contrast, there is no evidence that non-client holdings underperform. For example, client holdings have an abnormal return of -0.62% ($p < 0.01$) while the abnormal return of non-client holdings (0.08%) is statistically indistinguishable from zero. The difference of 0.7% per quarter is statistically significant at the 1 percent level. The median DGTW-adjusted returns are substantially more negative than the mean DGTW-adjusted returns, suggesting that individual stock returns are more negatively skewed than the DGTW benchmark returns. Importantly, we find that the subsequent abnormal performance of client holdings continues to be negative (-1.39% per quarter) and is 0.95% ($p < 0.01$) lower than that of non-client holdings using the medians. Overall, the evidence suggests that the client stocks are held by the affiliated funds primarily because of conflict of interest consideration. This result, combined with our earlier finding that affiliated funds overweight their clients' stocks in their portfolios, provides an explanation for the underperformance by affiliated mutual funds.

3.4. Performance of Client and non-Client Stocks Traded by Affiliated Mutual Funds

Our evidence so far strongly supports the conflict of interest hypothesis and is inconsistent with the informational advantage hypothesis. To provide more evidence on the informational advantage hypothesis, we examine the performance of trades of affiliated funds in

this section. Chen, Jegadeesh and Wermers (2000) argue that fund trades reflect stronger opinions of the fund managers about the stock than fund holdings.

We report the results in Table 7. In Panel A we present the results for client stocks and in Panel B we present the results for non-client stocks. In each panel, we separate all trades into buys and sells. We report the subsequent performance of buys, sells, as well as the difference between buys and sells. Following Chen, Jegadeesh, and Wermers (2000), we use the return difference between buys and sells as a measure to gauge whether funds have superior information.

Results in Panel A indicate that affiliated funds do not possess (or use) superior information about client stocks in their trades. In particular, the client stocks they buy (2.5%) do not significantly outperform the client stocks they sell (2.46%) in the subsequent quarter. This result is robust to DGTW risk adjustment and to the use of median returns, and suggests that the trades of client stocks are unlikely to be motivated by informational reasons.

In contrast, we find in Panel B that when affiliated funds trade non-client stocks, they seem to possess superior information. In particular, their buys earn 4.24% in the next quarter but their sells earn only 3.29%. The return difference of 0.95% per quarter is statistically significant at the 1 percent level. After adjusting for DGTW benchmark returns, these return differences become much lower but is still statistically significant at the 10 percent level. This result is consistent with Chen, Jegadeesh and Wermers (2000) and suggests that fund managers possess valuable information about the non-client stocks they trade. Overall, our results are consistent with the idea that the trades of non-client stocks are based on information, while trades of client stocks are driven by non-informational considerations.

3.5. Flow-Performance Sensitivity

Mutual funds are required by law to redeem shares on a daily basis. Fama and Jensen (1983) argue that this redeemable feature imposes market discipline and limits the extent of the conflict-of-interest problem in mutual funds. Therefore, a potential alternative explanation for the underperformance of affiliated mutual funds is that there is less investor monitoring among affiliated funds.

To test this hypothesis, we compare the fund flow–fund performance sensitivity of affiliated funds versus unaffiliated funds. Consistent with James and Karceski (2006) and Chen, Yao, and Yu (2007), we view flow-performance sensitivity as reflecting the monitoring effort by fund shareholders. In particular, high flow-sensitivity (especially with respect to poor performance) puts pressure on fund managers to improve performance.

We construct fund flows as in equation (6) for each fund year. We then estimate the following regression:

$$\begin{aligned}
FLOW_{i,t} = & \alpha + \beta_0 \times AFFUND + \beta_1 LOGTNA_{i,t-1} + \beta_2 FLOWCAT_t + \beta_3 RETSTD_{i,t-1} + \beta_4 FEES_{i,t-1} \\
& + \beta_5 PERF1_{i,t-1} + \beta_6 PERF2_{i,t-1} + \beta_7 PERF3_{i,t-1} + \beta_8 PERF4_{i,t-1} + \beta_9 PERF5_{i,t-1} \\
& + \beta_{10} PERF1_{i,t-1} \times AFFUND + \beta_{11} PERF2_{i,t-1} \times AFFUND + \beta_{12} PERF3_{i,t-1} \times AFFUND \\
& + \beta_{13} PERF4_{i,t-1} \times AFFUND + \beta_{14} PERF5_{i,t-1} \times AFFUND + e_{i,t}
\end{aligned} \tag{7}$$

The independent variables include the dummy variable for affiliated funds (AFFUND), the natural log of the fund’s total net assets at the end of the prior year (LOGTNA), the growth rate of net new cash flow to all funds with the same investment objective in the same year (FLOWCAT), the standard deviation of monthly returns in the prior year (RETSTD), total fees in the prior year (FEES) calculated as expense ratio plus amortized load, where amortized load is amortized over seven years, and fund performance quintiles (PERF). We construct past performance rankings similarly to Sirri and Tufano (1998). Specifically, we divide funds into

five performance groups based on fractional performance ranks (RANK). The performance quintiles are then defined as below.

$$\text{PERF1} = \text{Min}[0.2, \text{RANK}]$$

$$\text{PERF2} = \text{Min}[0.2, \text{RANK} - \text{PERF1}]$$

$$\text{PERF3} = \text{Min}[0.2, \text{RANK} - \text{PERF1} - \text{PERF2}]$$

$$\text{PERF4} = \text{Min}[0.2, \text{RANK} - \text{PERF1} - \text{PERF2} - \text{PERF3}]$$

$$\text{PERF5} = \text{Min}[0.2, \text{RANK} - \text{PERF1} - \text{PERF2} - \text{PERF3} - \text{PERF4}]$$

We estimate the regression equation (7) using the Fama and MacBeth (1973) method. Specifically, we estimate the regression annually and report the yearly average regression coefficients. We report our results in Table 8. Consistent with Sirri and Tufano (1998) and many other prior studies, we find that fund flows are negatively related to total fund fees. More importantly, we find strong evidence that fund investors chase performance. Specifically, the coefficients on all performance quintiles are positive and statistically significant. Furthermore, the fund flow-performance sensitivity is convex, i.e., the coefficients are significantly higher for the top performance quintiles than for the bottom performance quintiles.

However, we fail to find evidence that shareholders of investment affiliated funds are less sensitive to fund performance than those of unaffiliated funds. None of the ten coefficients on the interaction terms between affiliated fund dummy and performance quintiles are statistically significant. In particular, the coefficient on the interaction term $\text{PERF1} \times \text{AFFUND}$ is indistinguishable from zero, suggesting that shareholders of affiliated funds are not less sensitive to poor performance than those of unaffiliated funds. This result does not support the hypothesis that the underperformance of affiliated funds is driven by lack of investor monitoring.

3.6. Does Reputation Mitigate the Effect of Conflicts of Interests?

We have shown that conflicts of interest exert a significant impact on the portfolio choice of affiliated funds, and more importantly it has a negative impact on welfare of shareholders of affiliated funds. Given the above results, a natural question to ask is whether there exist factors that may mitigate the adverse impact of conflicts of interest. In this section, we examine the role of investment bank reputation as such a mitigating factor.¹⁰ In particular, one might argue that reputable investment banks may be less inclined to take advantage of the shareholders of affiliated funds due to concerns about their reputation.

We define a top-tier investment bank as one with a Carter and Manaster (1990) rank of 9.¹¹ The data on investment bank rankings are from Jay Ritter's website. We exclude those funds that are affiliated with an investment bank whose reputation rank is lower than 9. We then repeat our analyses using only funds affiliated with the top-tier investment banks. Tables 9 through 11 contain the results.

In Table 9, we repeat our fund performance analysis using a portfolio approach. For brevity, we report our results based on Carhart four-factor alphas in Panel A (for equity funds) and seven-factor alphas in Panel B (for hybrid funds). Similar to Tables 2 and 3, we find that funds affiliated with the top-tier investment banks significantly underperform unaffiliated funds. In particular, affiliated equity funds have a monthly abnormal return of -0.23% while unaffiliated equity funds earn a monthly abnormal return of -0.09%. The difference of 0.14% (1.68% per year) is highly economically significant as well as statistically significant ($t=3.50$). Further, this

¹⁰ Our examination of investment bank reputation is motivated by two papers (Jackson (2005) and Fang and Yasuda (2006)) that examine the role of analyst reputation. Jackson (2005) shows that an analyst with good reputation will be leery of tainting his or her advice and forecasts solely to help the investment bankers. Fang and Yasuda (2006) examine the role of reputation as a disciplinary mechanism and find that all-star analysts do not see a degradation of their forecast accuracy during hot markets while other analysts do.

¹¹ The results are similar if we define a top-tier investment bank as one with a Carter and Manaster (1990) rank of 8 or higher.

result holds for each of the three sub-categories of equity funds. We find similar results for hybrid funds.

Table 10 presents the results for the cross-sectional regression analysis. We find similar results to those contained in Table 4. We find that fund performance is negatively related to fund size, fund fees, past fund flows, but positively related to family size and past fund performance. Most importantly, we continue to find that fund returns are negatively related to the dummy for top-tier investment bank affiliated mutual funds. The economic magnitude of this result is actually higher than that contained in Table 4. Specifically, controlling for other fund characteristics the fund return is 7-8 basis points lowered for top-tier investment bank affiliated funds. Whereas in Table 5, the effect is 5 basis points per month.

Panel A of Table 11 examines the holdings of client and non-client stocks of funds affiliated with the top-tier investment banks. Consistent with our earlier results, we find that affiliated funds overweight their clients' stocks in their portfolios. Specifically, their holdings of client stocks is on average 0.081% of the firm's market capitalization whereas this percentage is only 0.041% for non-client stocks. Similarly, we find the holdings of client stocks to be much higher when we scale by total net assets of the fund family. Panel B of Table 11 examines the performance of client versus non-client holdings. Consistent with our prior results, we find that the subsequent performance for client holdings is much worse than their benchmarks and non-client holdings.

Overall, we find that our results based on funds affiliated with top-tier investment banks to be qualitatively identical to our results based on all affiliated funds. There is no evidence that the adverse effect of conflicts of interest is less severe for funds affiliated with the most reputable investment banks. This result suggests that investment bank reputation is not an effective

mechanism to mitigate conflicts of interest in financial conglomerates. This finding is not surprising. After all, the ten investment banks with whom the global settlement was reached are mostly reputable investment banks. Alternatively, one might argue that the reputational concerns are balanced by the fact that reputable investment banks, due to their large market shares in the investment banking business, have perhaps the most to gain from exploiting fund shareholders.

4. Conclusions

Conflicts of interest stemming from investment banking relationships have received considerable attention from the media, regulators, and academics. However, few academic studies have examined the potential conflict between investment banking relationships and fund management. The purpose of this paper is to empirically examine whether the conflict of interest between investment banking and fund management impacts the portfolio choice and more importantly the performance of investment bank affiliated mutual funds by using a comprehensive sample of U.S. equity and hybrid mutual funds over the period 1992-2004.

We find strong evidence that affiliated mutual funds significantly underperform unaffiliated funds. The average annualized risk-adjusted returns of the portfolio of affiliated funds are 0.96% –1.68% lower than the portfolio of unaffiliated funds. The magnitude is smaller but remains statistically significant after controlling for various fund characteristics in a cross-sectional regression framework. We examine the client and non-client holdings of affiliated mutual funds and find that affiliated funds hold a disproportionately large amount of their investment banking clients' shares. We further provide evidence that the client holdings of affiliated funds on average underperform their non-client holdings. This result is consistent with the finding of long-run stock underperformance of IPO, SEO, and acquirers documented in prior

literature. We also examine the performance of trades by affiliated funds and find no evidence that affiliated funds trade client stocks for informational reasons. We do not find evidence that shareholders of investment affiliated funds are less sensitive to fund performance than those of unaffiliated funds. This result does not support the hypothesis that the underperformance of affiliated funds is driven by the lack of investor monitoring. We repeat our analyses by using funds affiliated with top investment banks and continue to find that affiliated mutual funds underperform. This result suggests that investment bank reputation does not help alleviate the effect of conflicts of interest.

Overall, our results are consistent with the idea that investment banks use affiliated mutual funds as a tool to support or to win future underwriting and advising business at the expense of fund shareholders. This study contributes to our understanding of the nature and scope of conflicts of interest in financial institutions. This study also adds to the literature on mutual fund performance. Studies of mutual fund performance generally find that actively managed mutual funds as a whole underperform the market and other passive benchmark portfolios (e.g., Jensen (1968), Gruber (1996), and Carhart (1997)). In this study, we uncover a potential source of this underperformance. In particular, we show that conflicts of interest stemming from investment banking relationships adversely affect the performance of investment bank affiliated mutual funds. Since affiliated funds represent a sizeable portion of the fund industry, our finding provides a partial explanation for the previously documented underperformance of actively managed mutual funds.

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Table 1

Descriptive Statistics for Affiliated and Unaffiliated Mutual Funds, 1992-2004

This table presents the descriptive statistics for our sample funds. The sample includes all domestic equity and hybrid funds that exist any time between 1992 and 2004 in the CRSP Survivor-bias Free Mutual Fund Database. Affiliated funds are funds that are affiliated with an investment bank. Unaffiliated funds are funds that are not affiliated with any investment bank. We obtain the list of fund management companies from the CRSP mutual fund database and the list of investment banks from the SDC New Issues Database and Mergers and Acquisitions Database. We identify investment bank affiliated mutual fund families by matching the names of fund management companies with the names of investment banks, and by using a variety of sources including *Moody's Bank and Finance Manual*, *Nelson's Directory of Institutional Money Managers*, *Securities Industry Yearbook*, and company Websites. Fund characteristics are from the CRSP Mutual Fund Database. We first calculate the total net assets (TNA)-weighted average fund characteristics across all funds in each fund category for each year. We then report the yearly average fund characteristics over 1992-2004. Numbers in parentheses are *t*-statistics.

<i>Panel A: Equity Funds</i>				
	All Funds (1)	Affiliated Funds (2)	Unaffiliated Funds (3)	(2) – (3) (<i>t</i> -stat)
Total Net Assets (\$ million)	503.66	285.45	571.86	-286.41 (-10.62)
Age (years)	8.72	7.16	9.22	-2.06 (-4.81)
Expense Ratio (%)	1.41	1.41	1.41	-0.01 (-1.21)
12b-1 Fee (%)	0.33	0.37	0.31	0.07 (5.75)
Turnover (%)	93.44	81.53	97.11	-15.58 (-6.61)
Total Load (%)	2.26	2.46	2.20	0.26 (5.52)
Holdings - Stocks (%)	90.15	90.27	90.11	0.15 (0.55)
Holdings - Bonds (%)	1.12	1.01	1.15	-0.14 (-1.50)
Holdings - Cash (%)	6.14	5.78	6.24	-0.46 (-1.87)

<i>Panel B: Hybrid Funds</i>				
	All Funds (1)	Affiliated Funds (2)	Unaffiliated Funds (3)	(2) – (3) (<i>t</i> -stat)
Total Net Assets (\$ million)	450.94	271.27	517.89	-246.62 (-9.62)
Age (years)	8.96	6.64	9.82	-3.18 (-4.88)
Expense Ratio (%)	1.34	1.30	1.35	-0.05 (-8.15)
12b-1 Fee (%)	0.36	0.40	0.35	0.05 (6.33)
Turnover (%)	82.54	76.56	85.15	-9.59 (-8.21)
Total Load (%)	2.51	2.84	2.39	0.45 (8.10)
Holdings - Stocks (%)	52.32	51.98	52.44	-0.50 (-0.46)
Holdings - Bonds (%)	26.58	26.83	26.49	0.33 (0.85)
Holdings - Cash (%)	6.80	6.81	6.80	0.11 (0.03)

Table 2

Performance of Affiliated and Unaffiliated Equity Mutual Funds

This table compares the performance of affiliated versus unaffiliated equity mutual funds. The sample period is from 1992 to 2004. The sample includes all domestic equity funds that exist any time between 1992 and 2004 in the CRSP Survivor-bias Free Mutual Fund Database. Fund returns and investment objectives are from CRSP Survivor-bias Free Mutual Fund Database. Investment objectives are based on the ICDI objective reported in the CRSP mutual fund database. Affiliated funds are funds that are affiliated with an investment bank. Unaffiliated funds are funds that are not affiliated with any investment bank. We obtain the list of fund management companies from the CRSP mutual fund database and the list of investment banks from the SDC New Issues Database and Mergers and Acquisitions Database. We identify investment bank affiliated mutual fund families by matching the names of fund management companies with the names of investment banks, and by using a variety of sources including *Moody's Bank and Finance Manual*, *Nelson's Directory of Institutional Money Managers*, *Securities Industry Yearbook*, and company Websites. We first calculate the total net assets (TNA)-weighted average returns across all funds in each fund category for each month. We then estimate the risk-adjusted returns using the time-series of these monthly average returns. In addition to raw returns, we report Fama-French three-factor and the Carhart (1997) four-factor alphas. The Fama-French three-factor model and the Carhart four-factor model are described in Section 3.1.1. Fund returns are expressed in percent. Numbers in parentheses are *t*-statistics.

<i>Panel A: Raw Return (%)</i>			
	Affiliated Funds	Unaffiliated Funds	(1) - (2)
	(1)	(2)	
All Equity Funds	0.78 (2.28)	0.86 (2.54)	-0.08 (-2.46)
Aggressive Growth	0.89 (1.88)	0.91 (2.03)	-0.02 (-0.24)
Growth and Income	0.80 (2.66)	0.90 (3.03)	-0.10 (-3.10)
Long-term Growth	0.76 (2.19)	0.84 (2.32)	-0.08 (-1.51)

<i>Panel B: Fama-French Three-factor Alpha (%)</i>			
	Affiliated Funds	Unaffiliated Funds	(1) - (2)
	(1)	(2)	
All Equity Funds	-0.20 (-4.46)	-0.07 (-2.00)	-0.08 (-2.45)
Aggressive Growth	-0.12 (-0.91)	-0.08 (-0.88)	-0.04 (-0.61)
Growth and Income	-0.22 (-4.09)	-0.08 (-2.15)	-0.14 (-4.41)
Long-term Growth	-0.18 (-3.42)	-0.04 (-0.60)	-0.14 (-3.05)

<i>Panel C: Carhart Four-factor Alpha (%)</i>			
	Affiliated Funds	Unaffiliated Funds	(1) - (2)
	(1)	(2)	
All Equity Funds	-0.22 (-4.59)	-0.09 (-2.52)	-0.12 (-4.11)
Aggressive Growth	-0.30 (-2.44)	-0.17 (-1.87)	-0.13 (-2.17)
Growth and Income	-0.14 (-3.07)	-0.03 (-0.81)	-0.11 (-3.73)
Long-term Growth	-0.18 (-3.37)	-0.09 (-1.53)	-0.09 (-2.11)

Table 3

Performance of Affiliated and Unaffiliated Hybrid Mutual Funds

This table compares the performance of affiliated versus unaffiliated hybrid mutual funds. The sample period is from 1992 to 2004. The sample includes all domestic hybrid funds that exist any time between 1992 and 2004 in the CRSP Survivor-bias Free Mutual Fund Database. Fund returns and investment objectives are from CRSP Survivor-bias Free Mutual Fund Database. Investment objectives are based on the ICDI objective reported in the CRSP mutual fund database. Affiliated funds are funds that are affiliated with an investment bank. Unaffiliated funds are funds that are not affiliated with any investment bank. We obtain the list of fund management companies from the CRSP mutual fund database and the list of investment banks from the SDC New Issues Database and Mergers and Acquisitions Database. We identify investment bank affiliated mutual fund families by matching the names of fund management companies with the names of investment banks, and by using a variety of sources including *Moody's Bank and Finance Manual*, *Nelson's Directory of Institutional Money Managers*, *Securities Industry Yearbook*, and company Websites. We first calculate the total net assets (TNA)-weighted average returns across all funds in each fund category for each month. We then estimate the risk-adjusted returns using the time-series of these average returns. We use the following models to evaluate the risk-adjusted performance: (1) a six-factor model, where the six factors are market excess returns, size factor, value factor, Lehman Brothers government bond index excess returns, corporate bond index excess returns, and high-yield bond index excess returns; and (2) a seven-factor model, where the seven factors are market excess returns, size factor, value factor, momentum factor, Lehman Brothers government bond index excess returns, corporate bond index excess returns, and high-yield bond index excess returns. The six-factor model and the seven-factor model are described in Section 3.1.1. Fund returns are expressed in percent. Numbers in parentheses are *t*-statistics.

<i>Panel A: Raw returns</i>			
	Affiliated Funds	Unaffiliated Funds	(1) - (2)
	(1)	(2)	
All Hybrid Funds	0.69 (3.04)	0.80 (3.87)	-0.11 (-3.56)
Balanced	0.67 (3.22)	0.78 (4.09)	-0.09 (-2.48)
Total Return	0.62 (3.00)	0.69 (4.23)	-0.07 (-1.20)
Income	0.80 (2.82)	0.90 (3.42)	-0.10 (-2.27)

<i>Panel B: Six-factor Alpha (%)</i>			
	Affiliated Funds (1)	Unaffiliated Funds (2)	(1) - (2)
All Hybrid Funds	-0.24 (-4.88)	-0.10 (-2.27)	-0.14 (-5.16)
Balanced	-0.16 (-3.37)	-0.07 (-2.03)	-0.09 (-2.04)
Total Return	-0.24 (-5.79)	-0.12 (-3.61)	-0.12 (-2.82)
Income	-0.28 (-3.27)	-0.11 (-1.66)	-0.17 (-3.69)

<i>Panel C: Seven-factor Alpha (%)</i>			
	Affiliated Funds (1)	Unaffiliated Funds (2)	(1) - (2)
All Hybrid Funds	-0.19 (-4.30)	-0.06 (-1.54)	-0.13 (-4.78)
Balanced	-0.14 (-2.91)	-0.05 (-1.40)	-0.09 (-2.04)
Total Return	-0.21 (-5.29)	-0.10 (-3.09)	-0.11 (-2.56)
Income	-0.21 (-2.56)	-0.05 (-0.83)	-0.15 (-3.30)

Table 4
Cross-sectional Regressions of Fund Performance

This table presents results for the cross-sectional regressions of fund performance for equity and hybrid mutual funds. The sample period is 1992-2004. Fund returns and investment objectives are from the CRSP Survivor-bias Free Mutual Fund Database. Investment objectives are based on the ICDI objective reported in the CRSP mutual fund database. Affiliated fund dummy is a dummy variable that takes the value of 1 if the fund belongs to a fund family that is affiliated with an investment bank. We obtain the list of fund management companies from the CRSP mutual fund database and the list of investment banks from the SDC New Issues Database and Mergers and Acquisitions Database. We identify investment bank affiliated mutual fund families by matching the names of fund management companies with the names of investment banks, and by using a variety of sources including *Moody's Bank and Finance Manual*, *Nelson's Directory of Institutional Money Managers*, *Securities Industry Yearbook*, and company Websites. We report the average coefficients from regressions of one-month-ahead investment objective-adjusted fund returns on various fund characteristics. Gross returns are calculated by adding back one-twelfth of annual expense ratio to the net return. We calculate both lagged fund flow and lagged fund return using past one year's data. We use weighted least squares regressions where the weight is the fund's lagged total net assets. We use the Fama and MacBeth (1973) method. Numbers in parentheses are *t*-statistics, which are based on Newey-West standard errors.

	Dependent Variable:	
	One-month-ahead Investment Objective-adjusted Fund Return	
	Gross Return (%)	Net Return (%)
Intercept	0.02 (0.27)	0.13 (1.48)
Affiliated Fund Dummy	-0.05 (-2.30)	-0.05 (-2.33)
Log Fund TNA	-0.02 (-1.14)	-0.02 (-1.14)
Log Family TNA	0.01 (1.44)	0.01 (1.43)
Expense Ratio	-0.01 (-0.18)	-0.08 (-2.35)
Log Fund Age	0.00 (0.27)	0.00 (0.27)
Total Load	0.00 (0.48)	0.00 (0.40)
Lagged Fund Flow	-0.06 (-2.38)	-0.06 (-2.38)
Lagged Fund Return	0.02 (2.92)	0.02 (2.92)
Avg. R-squared	0.18	0.18

Table 5

Holdings of Client and Non-client Stocks by Affiliated Funds

This table presents the holdings of client and non-client stocks by investment bank affiliated fund families. The sample period is from 1992 to 2004. Stockholdings are from the Thomson Mutual Fund Stockholdings Database. Our fund sample includes all domestic equity funds that are affiliated to an investment bank and have an investment objective code of “Aggressive growth,” “Growth,” or “Growth and Income” in the Thomson stockholdings database. We obtain the list of fund management companies from the CRSP mutual fund database and the list of investment banks from the SDC New Issues Database and Mergers and Acquisitions Database. We identify investment bank affiliated mutual fund families by matching the names of fund management companies with the names of investment banks, and by using a variety of sources including *Moody’s Bank and Finance Manual*, *Nelson’s Directory of Institutional Money Managers*, *Securities Industry Yearbook*, and company Websites. A stock is classified as a client stock for a fund family if the company has issued an IPO, or SEO, or has made an acquisition in the past three years which were underwritten or advised by the fund family’s affiliated investment banking firm. A fund family is assigned a zero holding on a stock if the fund stockholdings database does not show positive holdings. The sample of IPOs, SEOs, and mergers and acquisitions and the associated underwriters and advisors are from the Thomson SDC New Issues Database and Mergers and Acquisitions Database. Total shares outstanding and share prices are from the CRSP stock database. Numbers in parentheses are *p*-values.

	Client Stocks (1)	Non-client Stocks (2)	(1) – (2) (<i>p</i> -value)
Holdings as a percentage of the stock’s market capitalization	0.080	0.028	0.052 (<0.01)
Holdings as a percentage of the fund family’s total net assets	0.042	0.017	0.025 (<0.01)
Percentage of stocks with positive holdings	19.17	6.35	12.82

Table 6

Performance of Client and Non-client Stocks Held by Affiliated Funds

This table presents the performance of client stocks and non-client stocks held by investment bank affiliated fund families. The sample period is from 1992 to 2004. Stockholdings are from the Thomson Mutual Fund Stockholdings Database. Our fund sample includes all domestic equity funds that are affiliated to an investment bank and have an investment objective code of “Aggressive growth,” “Growth,” or “Growth and Income” in the Thomson stockholdings database. We obtain the list of fund management companies from the CRSP mutual fund database and the list of investment banks from the SDC New Issues Database and Mergers and Acquisitions Database. We identify investment bank affiliated mutual fund families by matching the names of fund management companies with the names of investment banks, and by using a variety of sources including *Moody’s Bank and Finance Manual*, *Nelson’s Directory of Institutional Money Managers*, *Securities Industry Yearbook*, and company Websites. The sample of IPOs, SEOs, and mergers and acquisitions and the associated underwriters and advisors are from the Thomson SDC New Issues Database and Mergers and Acquisitions Database. A stock is classified as a client stock for a fund family if the company has issued an IPO, or SEO, or has made an acquisition in the past three years which were underwritten or advised by the fund family’s affiliated investment banking firm. “Client holdings” are holdings of clients’ shares. “Non-client holdings” are holdings of firms that are not clients of the affiliated investment bank. Total shares outstanding and share prices are from the CRSP stock database. Stock returns and Daniel, Grinblatt, Titman, and Wermers (1997 DGTW) benchmark returns are computed using data from the CRSP stock database and the Compustat database. Differences in means are tested by *t* tests. Differences in medians are tested by Wilcoxon two-sample tests (two-sided *p*-values are reported). Numbers in parentheses are *p*-values.

One-quarter-ahead Returns (%)	Client holdings (1)	Non-client holdings (2)	(1) – (2)
Mean raw returns	2.23 (<0.01)	3.44 (<0.01)	-1.21 (<0.01)
Median raw returns	1.88 (<0.01)	3.02 (<0.01)	-1.14 (<0.01)
Mean DGTW-adjusted returns	-0.62 (<0.01)	0.08 (<0.01)	-0.70 (<0.01)
Median DGTW-adjusted returns	-1.39 (<0.01)	-0.44 (<0.01)	-0.95 (<0.01)

Table 7

Performance of Client and Non-client Stocks Traded by Affiliated Funds

This table presents the performance of client stocks and non-client stocks traded by investment bank affiliated fund families. The sample period is from 1992 to 2004. Stockholdings are from the Thomson Mutual Fund Stockholdings Database. Our fund sample includes all domestic equity funds that are affiliated to an investment bank and have an investment objective code of “Aggressive growth,” “Growth,” or “Growth and Income” in the Thomson stockholdings database. We obtain the list of fund management companies from the CRSP mutual fund database and the list of investment banks from the SDC New Issues Database and Mergers and Acquisitions Database. We identify investment bank affiliated mutual fund families by matching the names of fund management companies with the names of investment banks, and by using a variety of sources including *Moody’s Bank and Finance Manual*, *Nelson’s Directory of Institutional Money Managers*, *Securities Industry Yearbook*, and company Websites. The sample of IPOs, SEOs, and mergers and acquisitions and the associated underwriters and advisors are from the Thomson SDC New Issues Database and Mergers and Acquisitions Database. A stock is classified as a client stock for a fund family if the company has issued an IPO, or SEO, or has made an acquisition in the past three years which were underwritten or advised by the fund family’s affiliated investment banking firm. Total shares outstanding and share prices are from the CRSP stock database. Stock returns and Daniel, Grinblatt, Titman, and Wermers (1997 DGTW) benchmark returns are computed using data from the CRSP stock database and the Compustat database. We first compute the fraction of the market capitalization of each stock that is held by all the affiliated fund families and then compute the change in that fraction during each quarter. Next, we compute the mean and median one-quarter-ahead return (both raw return and DGTW-adjusted return) on the portfolios of all client stocks vs. non-client stocks bought or sold by all the affiliated fund families. Differences in means are tested by *t* tests. Differences in medians are tested by Wilcoxon two-sample tests (two-sided *p*-values are reported). Numbers in parentheses are *p*-values.

Panel A: Client Stocks

One-quarter-ahead returns (%)	Buys	Sells	Buys - Sells
Mean raw returns	2.50 (<0.01)	2.46 (<0.01)	0.04 (0.96)
Median raw returns	2.45 (<0.01)	1.63 (<0.01)	0.82 (0.25)
Mean DGTW-adjusted returns	-0.53 (0.18)	-0.28 (0.50)	-0.25 (0.67)
Median DGTW-adjusted returns	-0.86 (<0.01)	-1.19 (<0.01)	0.33 (0.98)

Panel B: Non-Client Stocks

One-quarter-ahead returns (%)	Buys	Sells	Buys - Sells
Mean raw returns	4.24 (<0.01)	3.29 (<0.01)	0.95 (<0.01)
Median raw returns	3.25 (<0.01)	2.30 (<0.01)	0.95 (<0.01)
Mean DGTW-adjusted returns	0.06 (0.56)	-0.18 (0.07)	0.24 (0.09)
Median DGTW-adjusted returns	-0.80 (<0.01)	-1.05 (<0.01)	0.25 (<0.01)

Table 8

Flow-Performance Relationships for Affiliated and Unaffiliated Mutual Funds

This table presents the results for the flow-performance relationships. The sample includes equity and hybrid mutual funds. The sample period is 1992-2004. Fund returns and investment objectives are from the CRSP Survivor-bias Free Mutual Fund Database. Investment objectives are based on the ICDI objective reported in the CRSP mutual fund database. Cross-sectional regressions are run year by year, and t -statistics are calculated from the annual coefficients as in Fama and MacBeth (1973). The dependent variable (FLOW) is annual percentage new money growth, which is defined as $(TNA_{i,t} - TNA_{i,t-1}) / TNA_{i,t-1}$, where $R_{i,t}$ is the raw return of fund i in year t . We remove those observations where FLOW is greater than 1000% or lower than -100%. The independent variables include the natural log of the fund's total net assets at the end of the prior year (LOGTNA), the growth rate of net new cash flow to all funds with the same investment objective in the same year (FLOWCAT), the standard deviation of monthly returns in the prior year (RETSTD), total fees in the prior year (FEES) calculated as expense ratio plus amortized load, where amortized load is amortized over seven years, and fund performance quintiles (PERF). We divide funds into five performance quintiles based on fractional performance ranks relative to other funds in the same investment category in the prior one year (RANK). The bottom performance quintile (PERF1) is defined as $\text{Min}(0.2, \text{RANK})$. PERF2 is defined as $\text{Min}(0.2, \text{RANK} - \text{PERF1})$. PERF3 is defined as $\text{Min}(0.2, \text{RANK} - \text{PERF1} - \text{PERF2})$. PERF4 is defined as $\text{Min}(0.2, \text{RANK} - \text{PERF1} - \text{PERF2} - \text{PERF3})$. PERF5 is defined as $\text{Min}(0.2, \text{RANK} - \text{PERF1} - \text{PERF2} - \text{PERF3} - \text{PERF4})$. AFFUND is a dummy variable that is equal one if the fund is an investment bank affiliated fund, and is zero otherwise. We obtain the list of fund management companies from the CRSP mutual fund database and the list of investment banks from the SDC New Issues Database and Mergers and Acquisitions Database. We identify investment bank affiliated mutual fund families by matching the names of fund management companies with the names of investment banks, and by using a variety of sources including *Moody's Bank and Finance Manual*, *Nelson's Directory of Institutional Money Managers*, *Securities Industry Yearbook*, and company Websites. Numbers in parentheses are t -statistics.

	Dependent Variable: FLOW			
Intercept	0.24 (3.43)	0.25 (3.54)	0.25 (3.37)	0.25 (3.45)
AFFUND			-0.01 (-0.07)	0.01 (0.06)
LOGTNA	-0.10 (-12.69)	-0.10 (-12.99)	-0.10 (-12.85)	-0.10 (-12.97)
FLOWCAT	1.04 (4.07)	1.04 (4.12)	1.03 (4.06)	1.03 (4.13)
RETSTD	-0.28 (-0.20)	-0.33 (-0.24)	-0.32 (-0.22)	-0.33 (-0.23)
FEES	-0.27 (-0.21)	-0.41 (-0.32)	-0.34 (-0.26)	-0.41 (-0.31)
PERF1 – Low	0.98 (6.52)	0.99 (6.87)	0.98 (6.63)	1.02 (6.63)
PERF2	0.53 (4.40)	0.50 (3.71)	0.53 (4.47)	0.50 (3.60)
PERF3	0.64 (7.24)	0.69 (9.44)	0.65 (7.30)	0.69 (9.38)
PERF4	0.40 (2.08)	0.46 (2.37)	0.40 (2.08)	0.46 (2.37)
PERF5 – High	3.11 (10.08)	2.90 (10.12)	3.11 (9.94)	2.90 (10.11)
PERF1×AFFUND		-0.01 (-0.03)		-0.02 (-0.06)
PERF2×AFFUND		0.05 (0.25)		0.05 (0.22)
PERF3×AFFUND		-0.13 (-0.65)		-0.13 (-0.63)
PERF4×AFFUND		-0.25 (-0.79)		-0.25 (-0.79)
PERF5×AFFUND		1.03 (1.49)		1.03 (1.49)
R-squared	0.14	0.15	0.14	0.15

Table 9

Performance of Affiliated and Unaffiliated Mutual Funds – Top-tier Investment Banks

This table presents the risk-adjusted performance of equity and hybrid mutual funds affiliated with top-tier investment banks. Top-tier investment banks are defined as investment banks with a Carter and Manaster (1990) rank of 9. Reputation ranks are downloaded from Jay Ritter's website. The sample period is from 1992 to 2004. The sample includes all domestic equity funds that exist any time between 1992 and 2004 in the CRSP Survivor-bias Free Mutual Fund Database. Fund returns and investment objectives are from CRSP Survivor-bias Free Mutual Fund Database. Investment objectives are based on the ICDI objective reported in the CRSP mutual fund database. IB funds are funds that are affiliated with an investment bank with a reputation rank of 9. Reputation ranks are downloaded from Jay Ritter's website. Non-IB funds are funds that are not affiliated with any investment bank. We obtain the list of fund management companies from the CRSP mutual fund database and the list of investment banks from the SDC New Issues Database and Mergers and Acquisitions Database. We identify investment bank affiliated mutual fund families by matching the names of fund management companies with the names of investment banks, and by using a variety of sources including *Moody's Bank and Finance Manual*, *Nelson's Directory of Institutional Money Managers*, *Securities Industry Yearbook*, and company Websites. We first calculate the total net assets (TNA)-weighted average returns across all funds in each fund category for each month. We then estimate the risk-adjusted returns using the time-series of these monthly average returns. We use the Carhart (1997) four-factor model in Panel A and the seven-factor model in Panel B to evaluate the risk-adjusted performance. Fund returns are expressed in percent. Numbers in parentheses are *t*-statistics.

<i>Panel A: Equity Funds</i>			
	Affiliated Funds	Unaffiliated Funds	(1) - (2)
	(1)	(2)	
All Equity Funds	-0.23 (-4.44)	-0.09 (-2.52)	-0.14 (-3.50)
Aggressive Growth	-0.31 (-2.33)	-0.17 (-1.87)	-0.14 (-1.78)
Growth and Income	-0.15 (-2.36)	-0.03 (-0.81)	-0.12 (-2.69)
Long-term Growth	-0.22 (-3.42)	-0.09 (-1.53)	-0.13 (-2.26)

Panel B: Hybrid Funds

	Affiliated Funds (1)	Unaffiliated Funds (2)	(1) - (2)
All Hybrid Funds	-0.25 (-4.65)	-0.06 (-1.54)	-0.19 (-4.97)
Balanced	-0.16 (-3.34)	-0.05 (-1.40)	-0.11 (-2.39)
Total Return	-0.27 (-5.07)	-0.10 (-3.09)	-0.17 (-3.09)
Income	-0.24 (-2.51)	-0.05 (-0.83)	-0.19 (-2.68)

Table 10

Cross-sectional Regressions of Fund Performance – Top-tier Investment Banks

This table presents results for the cross-sectional regressions of fund performance. Affiliated funds are restricted to those affiliated with top-tier investment banks, which are defined as investment banks with a Carter and Manaster (1990) rank of 9. Reputation ranks are downloaded from Jay Ritter's website. The sample period is 1992-2004. Fund returns and investment objectives are from the CRSP Survivor-bias Free Mutual Fund Database. Investment objectives are based on the ICDI objective reported in the CRSP mutual fund database. Affiliated funds are funds that are affiliated with an investment bank with a reputation rank of 9. Reputation ranks are downloaded from Jay Ritter's website. Unaffiliated funds are funds that are not affiliated with any investment bank. Affiliated fund dummy is a dummy variable that takes the value of 1 if the fund belongs to a fund family that is affiliated with an investment bank. We identify investment bank affiliated mutual fund families by matching the names of fund management companies with the names of investment banks, and by using a variety of sources including *Moody's Bank and Finance Manual*, *Nelson's Directory of Institutional Money Managers*, *Securities Industry Yearbook*, and company Websites. We report the average coefficients from regressions of one-month-ahead investment objective-adjusted fund returns on various fund characteristics. Gross returns are calculated by adding back one-twelfth of annual expense ratio to the net return. We calculate both lagged fund flow and lagged fund return using past one year's data. We use weighted least squares regressions where the weight is the fund's total net assets. We use the Fama and MacBeth (1973) method. Numbers in parentheses are *t*-statistics, which are based on Newey-West standard errors.

	Dependent Variable:	
	One-month-ahead Investment Objective-adjusted Fund Return	
	Gross Return (%)	Net Return (%)
Intercept	0.02 (0.16)	0.13 (1.23)
Affiliated Fund Dummy	-0.08 (-2.30)	-0.07 (-2.28)
Log Fund TNA	-0.02 (-1.28)	-0.02 (-1.27)
Log Family TNA	0.01 (1.64)	0.01 (1.63)
Expense Ratio	-0.01 (-0.38)	-0.09 (-2.27)
Log Fund Age	0.00 (0.30)	0.00 (0.30)
Total Load	0.00 (0.92)	0.00 (0.84)
Lagged Fund Flow	-0.06 (-2.31)	-0.06 (-2.32)
Lagged Fund Return	0.02 (2.84)	0.02 (2.84)
Avg. R-squared	0.19	0.19

Table 11**Holdings and Performance of Affiliated Funds – Top-tier Investment Banks**

This table presents the holdings and the performance of holdings of fund families affiliated with top-tier investment banks. Top-tier investment banks are defined as investment banks with a Carter and Manaster (1990) rank of 9. Reputation ranks are downloaded from Jay Ritter’s website. The sample period is from 1992 to 2004. Stockholdings are from the Thomson Mutual Fund Stockholdings Database. Our fund sample includes all domestic equity funds that are affiliated to an investment bank and have an investment objective code of “Aggressive growth,” “Growth,” or “Growth and Income” in the Thomson stockholdings database. The sample of IPOs, SEOs, and mergers and acquisitions and the associated underwriters and advisors are from the Thomson SDC New Issues Database and Mergers and Acquisitions Database. We identify investment bank affiliated mutual fund families by matching the names of fund management companies with the names of investment banks, and by using a variety of sources including *Moody’s Bank and Finance Manual*, *Nelson’s Directory of Institutional Money Managers*, *Securities Industry Yearbook*, and company Websites. A stock is classified as a client stock for a fund family if the company has issued an IPO, or SEO, or has made an acquisition in the past three years which were underwritten or advised by the fund family’s affiliated investment banking firm. A fund family is assigned a zero holding on a stock if the fund stockholdings database does not show positive holdings. Total shares outstanding and share prices are from the CRSP stock database. Stock returns and Daniel, Grinblatt, Titman, and Wermers (1997 DGTW) benchmark returns are computed using data from the CRSP stock database and the Compustat database. Differences in means are tested by t tests. Differences in medians are tested by Wilcoxon two-sample tests (two-sided *p*-values are reported). Numbers in parentheses are *p*-values.

<i>Panel A: Holdings</i>			
	Client Stocks (1)	Non-client Stocks (2)	(1) – (2) (<i>p</i> -value)
Holdings as a percentage of the stock’s market capitalization	0.081	0.041	0.040 (<0.01)
Holdings as a percentage of the fund family’s total net assets	0.042	0.017	0.025 (<0.01)
Percentage of fund families with positive holdings	21.60	8.12	13.48

Panel B: Performance of Holdings

One-quarter-ahead Returns (%)	Client Holdings (1)	Non-client Holdings (2)	(1) – (2) (<i>p</i> -value)
Mean raw returns	1.98 (<0.01)	3.64 (<0.01)	-1.66 (<0.01)
Median raw returns	1.90 (<0.01)	3.09 (<0.01)	-1.19 (<0.01)
Mean DGTW-adjusted returns	-0.73 (<0.01)	0.12 (<0.01)	-0.85 (<0.01)
Median DGTW-adjusted returns	-1.29 (<0.01)	-0.49 (<0.01)	-0.80 (<0.01)
