

Asset Management Within Commercial Banking Groups: International Evidence*

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Abstract

We study the performance of equity mutual funds run by asset management divisions of commercial banking groups using a worldwide sample. We show that bank-affiliated funds underperform unaffiliated funds by 70 basis points per year. Consistent with conflicts of interest, the underperformance of affiliated funds is more pronounced among funds with larger stock holdings of the bank's lending clients. Disinvestments of asset management divisions by banking groups and placebo tests using international and passive funds support a causal interpretation of the results. Our findings suggest that affiliated funds support their lending division operations at the expense of fund investors.

JEL classification: G11, G23, G32

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1. Introduction

Mutual fund companies manage trillions of dollars, but many of these companies are not stand-alone entities. About 40% of mutual funds domiciled outside the United States are run by asset management divisions of groups whose primary activity is commercial banking. This phenomenon is less prevalent in the United States largely as a result of the Glass-Steagall Act, which kept banking and asset management as separate activities for many decades. However, since the repeal of Glass-Steagall by the Gramm-Leach-Bliley Act in 1999, many U.S. banking groups have developed asset management divisions.¹

There are reports that bank-affiliated funds underperform funds operated by independent fund management companies, particularly in Europe (Financial Times (2011)), although there is little academic research about the potential spillover effects between the commercial banking and asset management divisions. While fund managers have a fiduciary responsibility to the fund's investors, managers are also employees of banking groups for which the revenue generated by bank lending usually dominates revenue from asset management.

In this paper, we examine the potential conflict of interest when fund management companies are owned by commercial banking groups, which may lead fund managers to benefit the bank's interests at the expense of fund investors.² Commercial banks may use affiliated funds to boost their voting rights and hence increase influence over the borrower's board of directors. This influence could help to build long-term relationships that lead to future loan business. In this case, we would expect affiliated funds to systematically overweight the stock of the bank's lending clients. Moreover, affiliated funds could also be used to temporarily support the stock

¹ As of the end of 2010, according to the Investment Company Institute (2011), mutual funds managed about \$25 trillion. Equity funds had about \$10 trillion in assets under management or 20% of the world market capitalization.

² See Mehran and Stulz (2007) for a review of the literature on conflicts of interest in financial institutions.

price of the bank's lending clients and hence gain the favor of the borrower's management.³

The alternative hypothesis (information advantage hypothesis) is that bank lending generates private information about borrowers via credit origination, monitoring, and renegotiation that is valuable for the affiliated fund manager. Thus, commercial banking groups gain an information advantage on their borrowing firms, which can have positive spillover effects for bank-affiliated funds. The null hypothesis (Chinese walls hypothesis) is that groups impose "Chinese walls" to prevent communication between the asset management and the lending divisions, so that bank-affiliated funds operate independently of other parent bank divisions.

We test these hypotheses using a comprehensive sample of open-end equity mutual funds domiciled in 28 countries over 2000-2010. We focus our tests on actively managed equity funds that invest in domestic equities because banks typically have stronger lending relationships with local firms. We identify the fund management company's ultimate owner to determine whether a fund is affiliated with a commercial bank. We define as "bank-affiliated" mutual funds that belong to a management company that is either majority-owned by a commercial parent bank or that is part of a group that owns a commercial bank. For example, funds managed by Wells Fargo Fund Management (the asset management arm of Wells Fargo & Co) and funds managed by DWS Investments (the asset management arm of Deutsche Bank) are classified as bank-affiliated. Fidelity Funds (parent company is FMR LLC, a stand-alone management company) and Pictet & Cie Funds (a Swiss private bank with no lending arm) are classified as unaffiliated.

We find that, on average, bank-affiliated funds underperform unaffiliated funds by about 70 basis points per year as measured by four-factor alphas. This result is consistent with the conflict

³ Bank-run funds could also impact borrowing firms' stock volatility and liquidity. Assuming the equity-debt link as predicted by structural credit risk models (e.g., Merton (1974)), interventions on the stock would positively impact credit spreads in the secondary loan (and bond) market and the mark-to-market pricing of the loans on the bank's balance sheet.

of interest hypothesis, and holds when we use different risk-adjustment methods, samples, and regression specifications. We use fund fixed effects to address the concern that the decision to operate a fund management company as affiliated might be related to some unobserved fund characteristics that explain performance. We also use quasi-natural experiments (disinvestments of asset management divisions and regulatory reforms) to address the concern that past performance might affect the current organizational form of a management company.

There is a trade-off if the parent bank uses its affiliated funds to support their lending business by overweighting the stock of the bank's clients. On the one hand, using fund resources may help build long-term relationships with the borrowers and increase the likelihood of acting as lead arranger in future loans. Following Bharath, Dahiya, Saunders, and Srinivasan (2007, 2011) and Ferreira and Matos (2012), we show that banks are more likely to act as lead arrangers in loans when they exert control over borrowers by holding shares through their asset management divisions. Ownership by the banks's fund family increases both the probability of initiating a new lending relation and the probability of continuing an existing lending relation.

On the other hand, this biased portfolio allocation may impose a cost. If bank-affiliated funds underperform their peers, they can experience significant outflows and erosion of asset management revenues. Therefore, we expect affiliated management companies to be more conflicted when the benefits outweigh the costs, namely, when lending division revenue dominates asset management division revenue. We find that bank-affiliated funds underperform more when the ratio of outstanding loans to assets under management is higher. This evidence is consistent with the conflict of interest hypothesis.

To examine more directly whether the parent bank's lending activity is directly linked to fund underperformance, we measure the overlap between lending clients and fund stock holdings

using the parent bank’s activity in the global syndicated loan market. A “client stock” is a firm that obtained a syndicated loan from the parent bank in the previous three years and whose shares are held in the portfolio of a fund affiliated with the parent bank. We show that bank-affiliated funds’ portfolio holdings are biased toward client stocks over non-client stocks. We find that bank-affiliated funds with higher portfolio exposure to client stocks tend to underperform more. The results are robust when we measure the bank-affiliated fund’s portfolio bias in excess of the average weight of peer funds and also when we restrict the analysis to the top ten parent bank lending clients.

We also consider alternative explanations for our results. It could be that bank-affiliated funds underperform because they have a captive investor clientele, as stand-alone fund providers find it difficult to establish a distribution network in countries where banks have a strong presence. Banks also have a competitive advantage in their brand recognition that allows them to cross-sell by offering mutual funds jointly with other financial products. Therefore, bank-affiliated funds could exploit their market power and charge higher fees, resulting in lower net-of-fees performance of bank-affiliated funds.⁴ These alternatives are unlikely to explain our findings, because we find similar underperformance when we examine gross-of-fees returns and buy-and-hold returns based on portfolio holdings. Additionally, if investor clienteles were captive, we would expect flows to bank-affiliated funds to be less responsive to poor performance. We find, however, that flow-performance relationships do not differ significantly between bank-affiliated and unaffiliated funds.

To further rule out these alternative channels, we repeat the tests using placebo samples.

⁴ A similar argument explains the underperformance of broker-sold mutual funds in the United States, which could result from conflicts of interest between brokers and their clients or from substantial non-tangible benefits offered by brokers (Bergstresser, Chalmers, and Tufano (2009)). Christoffersen, Evans, and Musto (2013) document other biases with broker-intermediated funds.

First, we find that index-tracking funds run by bank-affiliated management companies do not underperform unaffiliated funds. We would not expect significant conflicts of interest stemming from bank lending activity in the case of passive funds that have little discretion to overweight client stocks. Second, we find that the underperformance of bank-affiliated funds is much less pronounced for international funds than domestic funds. This is consistent with the idea that fund managers' portfolio decisions in international funds are less distorted by lending relationships, as any conflict should be more important in the case of local borrowers. Our results also do not appear to be driven by systematic differences in managerial skill between bank-affiliated and unaffiliated funds. Finally, we find less pronounced underperformance of affiliated funds for U.S. domiciled funds. This is consistent with the idea that "Chinese walls" between bank lending and asset management are more strictly enforced and fund investors' rights are better protected in the United States than elsewhere in the world (Khorana, Servaes, and Tufano (2005, 2009)).

Examination of year-by-year regressions reveals more pronounced conflicts of interest in bear-market periods when bank clients are more likely to benefit from stock price support. Fund managers' compensation incentives are more likely to dominate in bull markets, while employment incentives are more likely to dominate in bear markets when manager career concerns are higher. Thus, fund managers are more likely to be team players within the fund management company during periods of market downturns.⁵

We test more formally whether the price support to client stocks is concentrated in bear markets using calendar-time portfolios. The evidence shows that bank-affiliated funds tend to follow a contrarian (rather than a momentum) strategy on their client stocks. Additionally, the

⁵ During bear markets net inflows into mutual funds are generally weak (Karczeski (2002)) and fund family profitability is lower. Both effects lead to lower compensation incentives for fund managers in bear markets, as compensation is linked to fund size and fund family profitability (Farnsworth and Taylor (2006)). Moreover, the probability of job loss for fund managers is generally higher in bear markets (Chevalier and Ellison (1999)) when there are more fund closures and managers have fewer employment options (Kempf, Ruenzi, and Thiele (2009)).

strategy that goes long client stocks and shorts non-client stocks held by bank-affiliated funds produces negative abnormal returns in bear markets.

An important concern with our results is reverse causality. Past performance may affect the decision on whether to operate a fund management company as a bank-affiliated or stand-alone company. To strengthen the causal interpretation of the results, we exploit two quasi-natural experiments. The first consists of exogenous disinvestments of asset management divisions by commercial banking groups in the aftermath of the 2007-2009 financial crisis due to the need of banks to improve their regulatory capital ratios (The Economist (2009)). We find that funds that switch from bank-affiliated to unaffiliated due to these disinvestments subsequently reduce their holdings of client stocks, particularly their exposure to top lending clients. As a second identification strategy, we explore whether the fund regulatory overhaul mandated by the U.S. Securities and Exchange Commission (SEC) after the 2003 trading scandals reduced conflicts of interest in U.S. funds vis-à-vis non-U.S. funds. Using a difference-in-differences regression, we show that U.S. funds improve performance more than non-U.S. funds after the 2004 SEC reform, and this differential effect is more pronounced among bank-affiliated funds.

Our work contributes to the literature examining agency conflicts in fund complexes in U.S. markets (Massa (2003), Nanda, Wang, and Zheng (2004), Gaspar, Massa, and Matos (2006), Cohen and Schmidt (2009)). In particular, there is a recent line of research that studies spillover effects that other businesses have on asset management companies affiliated with financial groups. In the United States, Massa and Rehman (2008) find that bank-affiliated funds overweight lending client holdings around new loan announcements and that this strategy has a short-term positive effect on funds' performance. This evidence is consistent with the information edge hypothesis that bank-affiliated fund managers have access to private

information from their parent company. Other studies, however, find conflicts of interest within investment banks between their underwriting and asset management businesses (Ritter and Zhang (2007), Johnson and Marietta-Westberg (2009), Hao and Yan (2012), Berzins, Liu, and Trzcinka (2013)). Most recently, Sialm and Tham (2014) study the spillover effects across business segments of publicly traded fund management companies.

Our contribution is to study the effects of lending relationships on mutual fund performance within commercial banking groups. We use a worldwide sample, as commercial banks with affiliated asset management divisions are more prevalent outside the United States. Using Spanish data, Golez and Marin (2015) show that bank-affiliated funds support the prices of their own-parent stock and Gil-Bazo, Hoffman and Mayordomo (2015) show that bank-affiliated funds hold parent banks' bond issues after the onset of the 2007-08 financial crisis and European sovereign debt crisis. Ghosh, Kale, and Panchapagesan (2014) find conflicts of interest in business group affiliated funds in India. These papers, however, do not examine funds' holdings of lending clients. To the best of our knowledge, we are the first to provide evidence of conflicts of interest between the lending and equity asset management divisions within commercial banking groups.

2. Data

2.1 Sample of Equity Mutual Funds

Data on equity mutual funds come from the Lipper survivorship bias-free database, which covers many countries worldwide in the 1997-2010 period.⁶ Although multiple share classes are listed as separate observations in Lipper, they have the same holdings and the same returns before

⁶ Ferreira, Keswani, Miguel, and Ramos (2013) and Cremers, Ferreira, Matos, and Starks (2015) provide a detailed description of this data source. Lipper's worldwide data coverage is comprehensive when compared to aggregate statistics from the Investment Company Institute (2011).

expenses. Thus, we keep the primary share class as our unit of observation, and aggregate fund-level variables across different share classes. We exclude funds-of-funds, closed-end funds, and index tracking funds, which reduces the sample to 38,400 open-end actively managed equity funds (23,653 funds that managed over \$7.5 trillion as of December 2010).

To classify each mutual fund as either affiliated or unaffiliated with a commercial bank, we follow two steps. First, we collect information on each fund's ultimate owner from FactSet/LionShares. In order to do this, we match each Lipper fund with the fund's portfolio holdings data provided by LionShares using ISIN and CUSIP fund identifiers, as well as management company and fund names.⁷ Second, we match the fund's ultimate parent obtained from LionShares with the ultimate owners of banks from the Bureau van Dijk's BankScope database. A fund is classified as bank-affiliated if: (1) the fund's ultimate owner is a commercial bank (the entity is classified in BankScope as either *Bank Holding & Holding Companies*, *Cooperative Bank*, *Commercial Bank*, *Savings Bank*, or *Specialized Governmental Credit Institution*) with total assets over \$10 billion; or (2) there is a commercial bank within the fund's ultimate owner group.⁸ After the match, the sample includes 19,969 funds (13,801 funds that managed \$6.9 trillion as of December 2010).

For our main tests, the sample includes a total of 7,220 domestic funds in 28 countries over the 2000-2010 period. We focus on domestic funds (i.e., funds that invest in their local market), but we also perform placebo tests using international funds and index-tracking funds. Table 1 presents the number and total net assets (TNA) of the sample of domestic funds by country as of December 2010. There are 4,981 domestic funds that managed \$3.6 trillion of assets in 2010.

⁷ While the Lipper data are survivorship bias-free, the LionShares data provide only the current header on the fund's ultimate owner. Therefore, we use historical ultimate owner information from LionShares backfiles to capture changes on the funds' ultimate owner due to mergers and acquisitions in the financial industry.

⁸ For insurance groups, we consider only commercial bank subsidiaries with significant assets relative to the total assets of the group. For example, funds affiliated with Allianz SE are not considered bank-affiliated.

Funds affiliated with a commercial banking group represent 32% of the number of funds and 18% of TNA. There is considerable variation in the market share of bank-affiliated funds across countries. While bank-affiliated funds represent only 11% of TNA in the United States, they represent 40% outside the United States. The market share of bank-affiliated funds exceeds 50% of TNA in the majority of continental European countries such as Germany, Italy, Spain, and Switzerland. Figure 1 shows the time series of the number and TNA of unaffiliated and affiliated funds, where we see a downward trend in the share of affiliated funds.

Table IA.1 in the Internet Appendix provides a list of the top five fund management companies per country and whether they are bank affiliated. In the United States, none of the top five fund companies is part of a commercial banking group, while in major countries in continental Europe most of the top five fund companies are bank affiliated.

2.2 Measuring Risk-Adjusted Performance

We estimate the fund's risk-adjusted returns (alphas) in U.S. dollars using the Carhart (1997) four-factor model. Following Bekaert, Hodrick, and Zhang (2009), we estimate four-factor alphas using regional factors based on a fund's investment region in the case of domestic, foreign country, and regional funds. We use world factors in the case of global funds.⁹

For each fund-quarter, we estimate factor loadings using the previous 36 months of return data (we require a minimum of 24 months of return data) using the regression:

$$R_{i,t} = \alpha_i + \beta_{1i}MKT_{i,t} + \beta_{2i}SMB_{i,t} + \beta_{3i}HML_{i,t} + \beta_{4i}MOM_{i,t} + \varepsilon_{i,t} \quad (1)$$

where $R_{i,t}$ is the return in U.S. dollars of fund i in month t in excess of the one-month U.S.

⁹ We construct country-level factors using individual stock returns in U.S. dollars obtained from Datastream, following closely the method of Fama and French (1993). The regional and world factors are value-weighted averages of country factors. The regions are Asia Pacific, Europe, North America, Emerging Markets, and World. Ferreira, Keswani, Miguel, and Ramos (2013) provide a detailed description of the factors

Treasury bill rate; $MKT_{i,t}$ (market) is the excess return on the fund's stock investment region in month t ; $SMB_{i,t}$ (small minus big) is the average return on the small-capitalization stock portfolio minus the average return on the large-capitalization stock portfolio in the fund's investment region; $HML_{i,t}$ (high minus low) is the difference in return between the portfolio with high book-to-market stocks and the portfolio with low book-to-market stocks in the fund's investment region; $MOM_{i,t}$ (momentum) is the difference in return between the portfolio with the past 12-month stock winners and the portfolio with the past 12-month stock losers in the fund's investment region. Next, using the estimated factor loadings, we subtract the expected return from the realized fund return to obtain the fund's abnormal return in each quarter (alpha). In an alternative approach, we perform robustness checks using benchmark-adjusted returns (i.e., the difference between the fund's return and the return on its benchmark).

2.3 Measuring Conflicts of Interest

We use several proxies for conflicts of interest within the commercial banking group based on the relative importance of the lending and asset management divisions. First, we use the ratio of the parent bank's total loans outstanding from BankScope over the total net assets (TNA) managed by the asset management division (*Loans/TNA*). Second, we use the ratio of total syndicated loans outstanding arranged by the parent bank from DealScan over the TNA (*Syndicated Loans/TNA*). Finally, we use the ratio of the U.S. dollar value of all-in drawn interest rate spreads (including fees) on outstanding syndicated loans over the total annual U.S. dollar value of fees of the asset management division (*Lending/Asset Mgmt. Revenues*).¹⁰

To test more directly the lending channel, we use fund holdings data to analyze whether the

¹⁰ The TNA is given by the sum of all open-end active domestic equity funds managed by the management companies owned by the parent bank.

portfolio choices of bank-affiliated funds are biased toward client stocks. We obtain data on funds' portfolio holdings from the LionShares database.¹¹ We classify each fund's holdings as either a lending client stock or non-client stock using the Thomson Reuters Dealscan database, which provides information on the global syndicated loan market. We use all loans initiated between 1997 and 2010 with facility amounts above \$25 million. A fund's stock holding is classified as a client stock if the fund's parent bank, subsidiary or branch acted as lead arranger for the firm's loans in the previous three years. To measure the intensity of the bank-firm relationship we define an additional measure that classifies a stock holding as a client stock only if a firm is among the top ten borrowers of the fund's parent bank in terms of the total amount of syndicated loans in the previous three years.

To better understand how fund portfolio holdings are classified as client or non-client stocks, consider the following example of two selected funds (as of December 2010):

DWS Investa Fund				JPMorgan U.S. Equity Fund			
Ultimate Owner	Deutsche Bank AG			Ultimate Owner	JPMorgan Chase & Co.		
Management Company	DWS Investments			Management Company	JPMorgan Asset Mgmt.		
Country of Domicile	Germany			Country of Domicile	United States		
Fund Benchmark	DAX 30 TR			Fund Benchmark	S&P 500 TR		
Number of Holdings	43			Number of Holdings	217		
%TNA in Client Stocks	56.9			%TNA in Client Stocks	40.4		
Bias in Client Stocks (%)	11.6			Bias in Client Stocks (%)	11.0		
Top 5 Holdings:				Top 5 Holdings:			
Stock	Country	Client	Weight (%)	Stock	Country	Client	Weight (%)
BASF SE	Germany	Yes	10.92	Apple	U.S.	No	3.70
Siemens AG	Germany	Yes	9.81	Exxon Mobil	U.S.	Yes	2.51
Daimler AG	Germany	Yes	7.72	Microsoft	U.S.	Yes	2.42
E.ON SE	Germany	Yes	5.35	Procter & Gamble	U.S.	Yes	2.19
Allianz SE	Germany	No	4.46	Chevron	U.S.	No	2.07

In the first case, the DWS Investa fund, which is domiciled in Germany, invests primarily in domestic firms and is managed by DWS Investments (the asset management arm of Deutsche

¹¹ Ferreira and Matos (2008) provide a detailed description of this database.

Bank). Deutsche Bank acted as lead arranger in the syndicated loan market over the previous three years for BASF, Siemens, Daimler, and E.ON, which are among the top five fund holdings of DWS Investa. Overall, 56.9% of the fund's TNA is invested in client stocks, which corresponds to an overweight of 11.6 percentage points compared to peer funds. The second example is the JPMorgan U.S. Equity Fund, which is domiciled in the United States and is managed by JPMorgan Asset Management (the asset management division of JPMorgan Chase & Co). Three of its top five holdings are classified as client stocks for which JPMorgan acted as lead arranger over the previous three years. The fund has 40.4% of its TNA invested in client stocks, corresponding to an overweight of 11.0 percentage points compared to peer funds.

We construct several variables based on client stocks. First, we measure the fund's investment in client stocks as a percentage of TNA (*%TNA Invested in Client Stocks*). Second, we measure whether a bank-affiliated fund overweights client stocks compared to peer funds with the same benchmark (*Bias in Client Stocks*).¹² We also compute both measures using only the holdings of the top ten borrowers of the parent bank (*%TNA Invested in Top 10 Client Stocks*, *Bias in Top 10 Client Stocks*). Finally, for some of the falsification tests, we measure the fund bias on client stocks not held by computing the average weight in the stocks of lending clients that are not held by the fund (*Bias in Client Stocks Not Held*, *Bias in Top 10 Client Stocks Not Held*).

2.4 Summary Statistics

Panel A of Table 2 reports summary statistics on funds' risk-adjusted performance, bank-affiliated dummy, and other proxies for conflicts of interest, as well as fund-level control variables (*Fund TNA*, *Fund Family TNA*, *Age*, *Total Expense Ratio*, *Total Load*, *Fund Flow*, *Nr.*

¹² In unreported tests, we find similar results if we define these ratios in terms of number of shares held, rather than TNA.

of Countries of Sale, Team Managed Dummy, Past Performance). Table A.1 in the Appendix provides variable definitions.

Panel B of Table 2 reports the sample means of the variables separately for unaffiliated and affiliated funds as well as univariate tests of the equality of coefficients between the groups. Panel C of Table 2 reports summary statistics on the proxies for conflicts of interest in bank-affiliated funds. The average *Loans/TNA* is above 100 with a median of 22.75. The average *Syndicated Loans/TNA* is 17.1 with a median of 4.2. On average, affiliated funds have about 15% of their holdings in client stocks, which corresponds to 6.5 percentage points more than peer funds hold of the same stocks.

Deutsche Bank is a good example of a commercial banking group with a large asset management division, DWS Investments. Deutsche Bank was the second-largest commercial bank worldwide, with total assets of \$2,500 billion (outstanding loans of \$545 billion), and second in the league table of syndicated loan arrangers in Europe with \$183 billion in 2008-2010. DWS is the largest fund management company in Germany and the third-largest in Europe, with TNA of \$90 billion in equity funds (\$24 billion in domestic equity funds). Thus, the lending business is several times the size of the asset management business. DWS funds' equity holdings show a strong average bias to client stocks, with 25% of TNA invested in client stocks compared to 17% among their peer funds.

3. Performance of Bank-Affiliated Funds

3.1 Baseline Test

We start by comparing the performance of bank-affiliated funds relative to unaffiliated funds. We estimate fund-quarter panel regressions of four-factor alphas on the commercial bank-

affiliated dummy variable and a set of control variables (measured with a one-quarter lag). The regressions include quarter fixed effects and country of domicile fixed effects. Standard errors are clustered at the ultimate-owner level.

The main results are reported in Table 3. Column (1) of Table 3 shows that bank-affiliated funds underperform unaffiliated funds, as indicated by the negative and significant bank-affiliated dummy coefficient. The effect is economically significant. Using four-factor alphas, affiliated funds underperform by about 17.5 basis points per quarter (which corresponds to about 70 basis points per year). The coefficients on the control variables are in line with other studies that find that performance is negatively related to fund size and total expense ratio, but positively related to family size and flows (e.g., Chen, Hong, Huang, and Kubik (2004)).

To investigate further why commercial bank-run funds underperform, we replace the bank-affiliated dummy with the variables *Loans/TNA*, *Syndicated Loans/TNA*, and *Lending/Asset Mgmt. Revenues*, which measure the relative size of the lending division versus the asset management division within a banking group. Columns (2), (3), and (4) show negative and statistically significant coefficients on these three variables. We conclude that the underperformance of bank-affiliated funds is more pronounced when the lending activity dominates the asset management division.¹³

A legitimate concern with our results so far is an omitted-variables problem. To address this concern, we include fund fixed effects in our regressions to control for unobserved sources of fund heterogeneity. By using fund fixed-effects regressions, we analyze only the within-fund changes in the bank-affiliated dummy (i.e., disinvestments or acquisition of asset management divisions by banking groups in which the other party is not a commercial banking group). This

¹³ These effects are economically significant. For example, a one-standard deviation increase to the proxy for conflicts of interest, *Loans/TNA*, is associated with a decline in four-factor alphas of 10 basis points per quarter.

solves a “joint determination” problem in which an unobserved fund-level time-invariant variable determines both performance and affiliation with a banking group.

Columns (5)-(8) of Table 3 report our main results using a fund fixed-effects model. There is a significant negative relation between performance and the bank-affiliated dummy (column (5)). The affiliated funds underperformance gap relative to unaffiliated funds is 28.3 basis points per quarter, which is stronger than the estimate in column (1). Because this specification focuses on the effects of within-fund changes in bank affiliation, fund-specific omitted variables cannot explain the observed relation between bank affiliation and performance. Moreover, columns (6)-(8) of Table 3 show negative and significant coefficients on the measures of the relative size of the lending and asset management divisions are, with the exception of the *Syndicated Loans/TNA* variable, which is estimated with less precision.

We also explore the time series by running our baseline regression year-by-year. Figure 2 plots the evolution of the coefficients on the bank-affiliated dummy and our three proxies for conflict of interests (*Loans/TNA*, *Syndicated Loans/TNA*, and *Lending/Asset Mgmt. Revenues*) over the sample period. The left top panel shows the coefficient on the bank-affiliated dummy. The underperformance of bank-affiliated funds was more pronounced in the 2000-2002 period (the dot-com bubble burst); underperformance lessened during the 2003-2006 bull market, but again became more pronounced during the 2007-2009 financial crisis. The other panels of Figure 2 show that coefficients on the more direct proxies for conflicts of interest follow a similar time pattern. The evidence suggests that conflicts of interest are more pronounced in bear market periods when we expect bank clients to need more stock price support.¹⁴

¹⁴ We test this more formally running multivariate regressions on affiliated funds’ performance gap in market downturns (as proxied by the bear market dummy or the market return of fund’s geographic focus region). The estimates in Table IA.2 in the Internet Appendix show that the underperformance of affiliated funds is more pronounced during market downturns.

3.2 Benefits to the Bank

We examine the trade-off between the lending and asset management divisions when the parent bank uses its affiliated funds to support their lending business by overweighting the stock of the bank's clients. On the one hand, this biased portfolio allocation may impose a cost as the affiliated funds may underperform their peers and therefore experience significant outflows and erosion of asset management revenues. On the other hand, using fund resources may help build long-term relationships with the borrowers and increase the likelihood of the bank acting as lead arranger in future loans.

We start by examining whether affiliated fund holdings in lending client stocks (borrowing firms) makes it more likely that the bank will be chosen as a lead arranger for future loans.¹⁵ To perform this test, we follow a methodology similar to Bharath, Dahiya, Saunders, and Srinivasan (2007, 2011) and Ferreira and Matos (2012). For each facility, we pair borrowing firms with each of the top 20 banks in a country in terms of loan volume in U.S. dollars. We then estimate a logit model in which the dependent variable is a dummy variable that takes the value of 1 if the bank acted as a lead arranger and zero otherwise.

Table 4 reports the results. The results in column (1) indicate that commercial banks tend to obtain more loans from firms in which their affiliated funds hold stock (*Fund Ownership Dummy*). On average, banks that hold stock of the borrower firms are 3.2% more likely to be chosen as lead arrangers than banks without affiliated institutional holdings in borrower firms (the probability increases from 12.6% to 15.8%). The relative importance of affiliated fund holdings to increase the bank's lending business depends on whether or not the bank has already

¹⁵ Conflicts of interest between bank's asset management and lending divisions are not unnoticed in the mutual fund industry. In a recent article (Financial Times, 2011), Guillaume Prache, managing director of the European Federation of Investors, stated: "*Banks tend to double up their shares, combining the ones they hold directly with the proxy votes from shares owned by asset management arms. Banks invariably vote in ways that suit their commercial lending or investment banking arms, not in ways that reflect the interests of end-investors*".

a past lending relationship (over the preceding three years) with the borrower firm. While for new lending relationships, holding affiliated institutional holdings in the borrower stock, increases the likelihood of the bank being chosen as lead arranger by 2.6% (the probability increases from 9.4% to 12%), for past lending relationships, banks are 6.6% more likely to be chosen as lead arrangers (the probability increases from 41.3% to 47.9%).

It is likely that the bank is chosen as lead arranger increases with the size of the affiliated funds ownership in the borrowing firm. Thus, we repeat our analysis using a dummy that takes the value of one if the bank's affiliated funds, on aggregate, hold at least 1% of the borrowing firm's shares. The results in column (3) show that, on average, banks that hold at least 1% of the borrower firm's shares are 4.6% more likely to be chosen as lead arrangers than banks that hold less than 1% of the firm's shares. While for new relationships the probability of being chosen as lead bank increases by 3.7% for past lending clients this probability increases by 8.6%.

Columns (3) and (4) show that the results are robust when we include bank fixed-effects, bank-specific controls (assets, return on assets) and borrower-specific controls (market capitalization, book-to-market ratio, leverage, tangibility, stock volatility, and stock return).

In short, we find that banks are more likely to act as lead arrangers in loans when they exert control over borrowers by holding stock through their asset management divisions. Ownership by the lender's fund family increases both the probability of initiating a new lending relation and amplifies the probability of continuing a past lending relationship with lending clients.

3.3 Alternative Explanations

There are alternative hypotheses that could explain why bank-affiliated funds underperform unaffiliated funds. A first alternative hypothesis is that funds affiliated with commercial banking groups must offer competitive compensation packages to attract top talent in fund management.

Our regression tests already control for other factors that could explain the underperformance of bank-affiliated funds such as manager skill. To control for different organizational structure or managerial skill we use the *Team Managed Dummy* variable. If fund managers' personal names are featured, then career concerns are higher and the portfolio manager may be more reluctant to be a "team player" and cooperate with the fund family strategy.¹⁶

A second alternative hypothesis is that bank-affiliated funds underperform because they have a captive investor clientele that is less sophisticated (Frye (2001)).¹⁷ We control for this alternative in our baseline regressions using several proxies (*Total Expense Ratio*, *Total Loads*, *Number of Countries of Sale*). To further rule out the investor clientele explanation, we implement three additional tests.

The first strategy is to run our regressions using gross-of-fees returns by adding back expense ratios. Table 5 reports the results. Column (1) of Table 5 shows that bank-affiliated funds underperform unaffiliated funds when we use gross returns. The extent of the performance gap remains practically unchanged at 17.3 basis points per quarter. The coefficients on the other proxies of conflicts of interest in columns (2)-(4) of Table 5 are also negative and significant. This result suggests that the ability of bank-affiliated funds to charge higher expense ratios does not explain the underperformance of affiliated funds.

The second strategy consists of estimating our regressions using the funds' buy-and-hold return in excess of the benchmark return, as the performance gap could come from higher loads, wrap fees, and other hidden costs. The results are reported in columns (5)-(8) of Table 5. We

¹⁶ In the U.S. mutual fund industry, Massa, Reuter, and Zitzewitz (2010) study the choice between named and anonymous management. These authors show that funds with named managers are less likely to engage in cross-fund subsidization (Gaspar, Massa, and Matos (2006)).

¹⁷ This argument is similar to that of Del Guercio and Reuter (2014) for why U.S. retail mutual funds sold through brokers face weaker incentives to generate alpha than mutual funds sold directly. These authors build their work on the prior findings by Bergstresser, Chalmers, and Tufano (2009) and Christoffersen, Evans, and Musto (2013).

continue to find that bank-affiliated funds underperform unaffiliated funds by a similar difference at 15.6 basis points per quarter. Results for the other three proxies of conflicts of interest are also robust.

The third strategy is to estimate the sensitivity of fund flows to past fund performance (e.g., Sirri and Tufano (1998), James and Karceski (2006)). In each quarter and country, fractional performance ranks ranging from zero (poorest performance) to one (best performance) are assigned to funds according to their returns in the past four quarters. We estimate both a linear regression using the performance ranks (*Rank*) and a piecewise linear regression with three performance rank segments: $Low_{i,t-1} = \min(0.2, Rank_{i,t-1})$, $Mid_{i,t-1} = \min(0.6, Rank - Low_{i,t-1})$, and $High_{i,t-1} = Rank - (Low_{i,t-1} + Mid_{i,t-1})$. We then test whether the sensitivity of flows to past performance is statistically different between affiliated and unaffiliated funds by including interaction variables of the *Bank-Affiliated Dummy* with *Rank* or with *Low*, *Mid*, and *High*.

Table 6 reports the results. Column (1) shows the estimates of the linear specification and column (2) of the piecewise linear specification. The interaction variable coefficients with the bank-affiliated dummy are statistically insignificant in both columns (1) and (2). Thus, there is no evidence that the clientele of bank-affiliated funds is less responsive to fund performance and exerts less monitoring efforts.

3.4 Placebo Tests

We also perform falsification tests of our main results using alternative samples of funds. First, we use index-tracking funds, because we expect that bank-affiliated fund managers of passive products do not have discretion to overweight client stocks. These index fund managers have their “hands tied” in terms of portfolio holdings as they need to closely follow a benchmark.

Panel A of Table 7 reports the results of these falsification tests using the bank-affiliated dummy and the three other proxies for conflicts of interest. Columns (1)-(4) of Table 7, Panel A, show the results for the sample of index-tracking funds. The coefficient on the bank-affiliated dummy is statistically insignificant. As expected, we do not find evidence of conflicts of interest with the lending division in the sample of passive funds.

We also use international equity funds (i.e., funds that invest outside their local market) because we expect bank lending relationships to be less important in the international syndicated loan market than in the domestic market. Columns (5)-(8) of Table 7, Panel A, show the results for the sample of international funds. The performance gap between bank-affiliated and unaffiliated funds is statistically insignificant in column (5) and weakly significant in columns (6)-(8). The results support a conclusion that the source of underperformance of bank-affiliated domestic funds seems to be the conflict of interest, which is stronger for the local bank lending activity, rather than inherent differences in skill across bank-affiliated and unaffiliated funds.

Panel B of Table 7 presents the results of an additional test that compares the underperformance of bank-affiliated funds in the United States versus other countries. The intuition is that “Chinese walls” between bank lending and asset management are more strictly enforced in the United States due to the legacy effect of the Glass-Steagall Act and stronger fund investors’ rights. In columns (1) and (5) of Table 7, Panel B, we find much less pronounced underperformance by bank-affiliated U.S. funds (11.9 basis points per quarter) than for non-U.S. funds (24.9 basis points per quarter). The difference between U.S. and non-U.S. funds is even more striking in columns (3) and (4) versus columns (7) and (8) when we use other proxies for conflicts associated with lending (*Syndicated Loans/TNA*, *Lending/Asset Mgmt. Revenues*). This indicates that conflicts of interest are more pronounced in markets with weaker fund regulation.

4. Portfolio Holdings Tests

4.1 Fund Performance

We next use portfolio holdings data to test more directly whether fund manager investment decisions favor the parent bank's lending business over the interests of fund investors. In particular, we assess the cost from the portfolio exposure to client stocks.

Panel C of Table 2 shows that bank-affiliated funds hold, on average, about 14.9% of the fund's TNA in client stocks (*%TNA Invested in Client Stocks*). This compares with about 8.5% when we consider the average weight on the same stocks among peer funds (i.e., funds that track the same benchmark). This corresponds to a 6.5 percentage point overweighting of client stocks by bank-affiliated funds relative to peer funds (*Bias in Client Stocks*). The allocation bias to client stocks is 0.44 percentage points when we consider the top ten borrowers of the fund's parent bank (*Bias in Top 10 Client Stocks*).¹⁸

The fact that fund managers have biased allocations toward client stocks does not necessarily imply that these portfolio choices are detrimental to performance, as funds might have acquired private information through the lending business. To test which hypothesis (conflicts of interest or information edge) dominates, we estimate our baseline regressions of fund performance using these more direct portfolio holdings measures.

Table 8 presents the results. Columns (1) and (3) show negative and statistically significant coefficients on both *%TNA Invested in Client Stocks* and *%TNA Invested in Top 10 Client Stocks*. The effects are also economically significant. For example, a one-standard deviation increase in the affiliated fund's allocation to client holdings is associated with a decline in performance of 8 basis points per quarter (11 basis points in the case of top ten clients). This explains about half

¹⁸ We also find that affiliated funds overweight client stocks using fund-stock-quarter regression tests (see Table IA.3 in the Internet Appendix).

the size of the bank-affiliated dummy in the baseline tests in Table 3. The evidence shows that bank-affiliated funds with greater portfolio exposure to client stocks tend to underperform more, which supports the conflicts of interest hypothesis.

Next, we re-estimate our regressions when we measure the bank-affiliated fund's excess allocations to client stocks over peer funds. We find negative and statistically significant coefficients on both *Bias in Client Stocks* and *Bias in Top 10 Client Stocks*. For example, a one-standard deviation increase in the bias in client holdings is associated with a decline in performance of 4 basis points per quarter (10 basis points in the case of top ten clients).

Figure 3 reports the yearly estimates of the coefficients on *%TNA Invested in Client Stocks*, *%TNA Invested in Top 10 Client Stocks*, *Bias in Client Stocks*, and *Bias in Top 10 Client Stocks*. The results are robust when we use gross returns (Panel B) and buy-and-hold returns (Panel C) as dependent variables.

We also conduct a falsification test using portfolio holdings. We investigate whether the excess allocation to client stocks not held by affiliated funds produces the same results as the client stocks held. For this test, we use the average weights by peer funds on client stocks not held by the affiliated fund. Table 9 reports the results.

We find that the coefficient on *Bias in Top 10 Client Stocks Not Held* is positive and statistically significant, but the coefficient on *Bias in Client Stocks Not Held* is statistically insignificant. The conclusion is that funds would have outperformed had they held these stocks. These results show that affiliated funds are more biased toward the worse-performing client stocks within the investable universe of stocks of their lending clients. This is consistent with the price support hypothesis.

4.2 Calendar-Time Stock Portfolios

As an alternative approach, we use calendar-time portfolios to study how much of the bank-affiliated funds' underperformance is due to portfolio allocation to client holdings. At the beginning of each quarter, we assign stock holdings of bank-affiliated funds to client or non-client portfolios. Stocks are weighted by the fund's U.S. dollar holdings, and portfolios are rebalanced every calendar quarter. We then compute value-weighted monthly returns by averaging across funds, weighting individual fund portfolios by the fund's TNA at the end of the previous quarter. This approach has the advantage of corresponding to a simple investment strategy of investing in client and non-client securities in proportion to the amount held by the universe of affiliated funds.¹⁹

We analyze the risk-adjusted returns of calendar-time portfolios using the four-factor model. Since Figure 2 suggests that there is some time-series variation in bank-affiliated funds' price support to client stocks, we define as bear markets the years associated with the dot-com bubble burst (2000, 2001, 2002) and the global financial crisis (2008, 2009). We expect client firms to need more price support from bank-affiliated funds in bear markets (i.e., when the majority of stock prices drop substantially).

Table 10 shows the results. The strategy of going long affiliated funds' client stocks has a negative factor loading on momentum (*MOM*), while the factor loading on momentum for the portfolio of non-client stocks is statistically insignificant. This suggests that bank-affiliated funds tend to follow a contrarian strategy, which is evidence of price support of the parent bank's client stocks. Additionally, the zero-cost strategy that goes long client stocks and short non-client stocks held by bank-affiliated funds earns 12 basis points per month in bull markets (the intercept of the regression is the alpha in bull markets), but the estimate is statistically

¹⁹ These tests measure buy-and-hold returns and are not able to pick-up the effect of any interim trading between quarter ends.

insignificant. The *BEAR* dummy coefficient is -0.344 and statistically significant indicating that the long-short strategy returns are different in bear markets and bull markets. The long-short strategy loses 23 basis points ($= 0.119 - 0.344$) per month in bear markets, which suggests that, during market downturns, price support activities of client stock holdings have an adverse effect on the wealth of bank-affiliated funds' investors.²⁰

5. Identification and Robustness

An important concern with our results is reverse causality. Strong past performance may prompt a fund management company to operate as unaffiliated, while poorly performing funds may not be able to operate as stand-alone. Another concern is the possibility of confounding effects. In order to strengthen the causal interpretation of the effect of a fund affiliation with a commercial banking group, we exploit variation generated by two quasi-natural experiments.

5.1 Disinvestment of Asset Management Divisions

The first identification strategy uses asset management division disinvestments by commercial banking groups to identify changes in fund bank affiliation that are exogenous to fund performance. While disinvestment decisions of fund management companies in general are not exogenous, we focus our analysis on the eight quarters of the global financial crisis period from 2007:Q3 through 2009:Q2. During this period, several commercial banking groups were forced to divest non-core business assets to improve their regulatory capital ratios (The Economist (2009)) rather than for other factors such as fund underperformance. Some high-profile deals include the divestitures of the asset management division of Credit Suisse to Aberdeen, Barclays Global Investors to Blackrock, and Cominvest (owned by Commerzbank) to Allianz.

²⁰ In untabulated tests, we find similar results when we allow the loadings on the four factors to shift with the market regime using an interaction with the bear market dummy.

We expect to find that switches of fund management companies from bank affiliated to unaffiliated due to disinvestments will lead to reduction in the holdings of lending client stocks and improvement in performance. For comparison, we also analyze acquisitions of fund management companies by commercial banking groups, where we expect to find the opposite effects. The sample includes 10 disinvestments of fund management companies (9 unique ultimate owners and 16 domestic equity funds) and 4 acquisitions (4 ultimate owners and 20 domestic equity funds) by commercial banking groups when the other party is not a commercial banking group. This is an unusually high level of M&A transactions when compared to other years in our sample.

Figure 4 shows the portfolio holdings of client stocks in the four quarters before and after the disinvestment of fund management companies. The top panel shows the evolution of the *%TNA Invested in Client Stocks* and the bottom panel shows the evolution of the *%TNA Invested in Top 10 Client Stocks*. The switch of a company from affiliated to unaffiliated is accompanied by significant reductions in the holdings of client stocks. The switch of a fund from unaffiliated to affiliated, however, is accompanied by significant increases in the holdings of client stocks.²¹

We estimate regressions to examine whether portfolio holdings of client stocks and performance change after a fund management company switches from affiliated to unaffiliated or vice-versa. The dependent variable is the portfolio holding (or performance) four quarters before and four quarters after each event. The explanatory variable is a dummy variable (*After Dummy*) that takes a value of one in the four quarters after the event.

Columns (1)-(4) of Table 11 report estimates for the sample of disinvestments (i.e.,

²¹ In the case of a switch from affiliated to unaffiliated, we take the real (fictitious) list of client stocks associated with a parent bank when the fund management company is still affiliated (versus afterward when it is not). In the case of a switch from unaffiliated to affiliated, we do the opposite and take the fictitious (real) client stocks before (and after) it is affiliated with a parent bank.

management companies that switch from bank-affiliated to unaffiliated). Columns (1) and (2) of Table 11 show that fund managers reduce their holdings of stocks of clients of the parent bank after a switch from affiliated to unaffiliated. On average, the holdings of lending client stocks (*%TNA Invested in Client Stocks*) decline by 5.28 percentage points of TNA (with a t-statistic of -2.45), and the holdings of top ten lending clients (*%TNA Invested in Top 10 Client Stocks*) decline by 1.13 percentage points (with a t-statistic of -1.76). Column (3) of Table 11 shows evidence that benchmark-adjusted returns increase after a switch from affiliated to unaffiliated, but the evidence is weaker for the four-factor alphas in column (4).

Columns (5)-(8) of Table 11 report estimates for the sample of acquisitions (i.e., switches from unaffiliated to bank-affiliated). Columns (5) and (6) show that portfolio managers increase exposure to stocks of the lending clients of the new fund's parent bank following the acquisition. The allocation to top ten client stocks, on average, increases by 2.08 percentage points of TNA (with a t-statistic of 3.52). Columns (7) and (8) show a negative effect on fund performance of a switch from unaffiliated to affiliated, but the effect is imprecisely estimated.

Overall, the results of disinvestments of fund management companies suggest that affiliated fund portfolio managers act as team players and place larger bets in lending client stocks. We also find some evidence that fund performance improves following a disinvestment of a management company by a commercial banking group.

5.2 SEC 2004 Regulatory Reform

The second identification strategy explores the fund regulatory overhaul mandated by the SEC in the aftermath of the 2003 late trading and market timing scandals.²² We hypothesize that SEC fund governance reforms may have reduced conflicts of interest in U.S. funds vis-à-vis non-U.S.

²² Zitzewitz (2006) finds significant evidence of widespread late trading by fund families.

funds.

While U.S. open-end mutual funds share many similarities with equivalent financial products offered in other parts of the world, namely, with UCITS in Europe, U.S. mutual fund governance differs. U.S. funds have a board of directors, while funds in Europe are overseen by senior managers with no independence requirement. Prior to repeal of the Glass-Steagall Act in 1999, independent board chairs were required for bank-affiliated funds, but this mandate disappeared with enactment of the Gramm-Leach-Bliley Act (Investment Company Institute (2009)). In 2004 the SEC enacted more stringent requirements for board of directors of mutual funds imposing that boards are composed of more than 75% independent directors and have an independent chairman (Securities and Exchange Commission (2006)). The intent was to reduce potential conflicts of interest with affiliated parties and to protect fund investors.²³ Mutual fund companies consented to the reforms, as the compliance rate with the percentage of independent directors rule increased from 59% in 2002 to 88% in 2006 and up to 91% by 2010 (Investment Company Institute (2013)).²⁴

We test whether the exogenous SEC reforms to U.S. funds' governance improved their performance over the performance of non-U.S. funds using a difference-in-differences regression. The 2001-2007 sample period includes the three-year period before and the three-year period after the SEC reforms. *Treated Dummy* is a dummy variable that takes a value of one if a fund is domiciled in the United States, and zero otherwise. *After Dummy* is a dummy variable that takes a value of one in 2005 and thereafter. The explanatory variable of interest is the

²³ These reforms were controversial. The U.S. Chamber of Commerce sued and a Federal appeals court invalidated the requirements in 2006, but mutual fund board structures had already changed considerably. The SEC reviewed a number of academic papers in its economic analysis of board independence (Securities and Exchange Commission (2006)) and the Investment Company Institute (2007) provides a critique. Tufano and Sevick (1997) show the impact of boards on fee-setting while Ding and Wermers (2012) find that independent boards affect pre-expense performance.

²⁴ There were also other regulatory initiatives in other issues such as commissions bundling (Edelen, Evans, and Kadlec (2012)).

interaction *Treated Dummy* \times *After Dummy*, which compares changes in performance between U.S. funds and non-U.S. funds around the reform date. The regression also includes fund-level characteristics, year and country of domicile fixed effects; the coefficients on *Treated Dummy* and *After Dummy* are not separately identified.

Table 12 presents the results. Column (1) shows that the interaction term coefficient is positive and significant at the 1% level, which indicates that the performance of U.S. funds relative to non-U.S. funds improves after the reforms. Columns (2) and (3) present estimates separately for the samples of affiliated and unaffiliated funds. The differential effect is more pronounced in the sample of affiliated funds than in the sample of unaffiliated funds. Column (4) shows that the difference between these two groups of 0.338 percentage points (as indicated by the triple interaction *Bank-Affiliated Dummy* \times *Treated Dummy* \times *After Dummy* coefficient) funds is statistically significant at the 10% level. In short, we find that governance reforms had a positive impact on the performance of U.S. funds versus non-U.S. funds, especially among bank-affiliated funds where there is a greater potential for conflicts of interest.

One concern about inferences from this treatment-effects framework is whether the treatment and control groups follow parallel trends prior to the treatment. Figure 5 shows no differential pre-trends in performance between U.S. and non-U.S. funds.

5.3 Robustness

Table 13 presents some robustness checks of our primary finding that bank-affiliated funds underperform unaffiliated funds in Table 3. First, column (1) shows that the results are robust when we use benchmark-adjusted returns in alternative to four-factor alphas. In untabulated tests, we also find similar results when we use market model alphas.

Second, we use alternative estimation methods such as Fama and MacBeth (1973) and

weighted least squares (WLS) using fund's TNA as weights. Columns (2) and (3) of Table 13 show that these alternative estimation methods provide estimates of the *Bank-Affiliated Dummy* coefficient that are comparable to the baseline results in Table 3.

Third, we check for the sensitivity of the estimates to the inclusion of small funds and earlier sample years with lower coverage of the population of mutual funds. Columns (4) and (5) indicate that results are robust when we exclude funds with assets under management below \$10 million or exclude the first year of the sample (2000).

Finally, we check for the robustness of the findings when we control for the fund's *Active Share* measure (Cremers and Petajisto (2009), Cremers, Ferreira, Matos, and Starks (2015)). Active share is an additional proxy for managerial skill, we include it to alleviate concerns that bank-affiliated funds hire less skilled fund managers. Column (6) shows a similar estimate of the *Bank-Affiliated Dummy* coefficient to that of Table 3, which indicates that our results are not driven by systematic differences in fund manager skills between bank-affiliated and unaffiliated funds.

6. Conclusion

We show that mutual fund performance is negatively affected when a management company is owned by a commercial banking group. We find that bank-affiliated funds underperform unaffiliated funds by about 70 basis points per year. The underperformance is more pronounced, the larger the size of the lending division relative to the asset management division, and the higher the funds' direct exposure to the stock of the bank's lending clients. We interpret this to indicate that the bank-affiliated fund underperformance seems to be driven by a conflict of interest between the bank's lending business and the asset management division. Our findings suggest that affiliated funds systematically overweight stocks of borrowing firms that help their

parent bank build long-term relationships with borrowers and future lending business. We also find that affiliated funds are used to temporarily support the lending clients' stock price, particularly during market downturns.

Alternative explanations such as differences in investor clientele, cross-selling of financial products, and fund manager skill do not seem to explain our findings. We use fund fixed effects to address the concern that the decision to operate a fund management company as affiliated might be related to some unobserved fund characteristics that explain performance. We use quasi-natural experiments involving disinvestments of asset management division and U.S. regulatory reforms to address the concern that past performance might affect the organizational form of a management company. To validate our interpretation further, we also perform falsification tests using passive and international funds in which conflicts of interests are not expected to play an important role.

Overall, our results suggest that the underperformance of bank affiliated funds results from a double agency problem in that portfolio managers put aside the interests of one principal (fund investors) in order to benefit another principal (the parent bank). Our findings have important implications, as about a third of mutual funds worldwide do not operate as stand-alone entities, but rather as divisions of commercial banking groups.

Future research should examine other spillover effects on asset managers run by financial groups that go beyond just commercial bank lending studies in this paper, which can come from other banking operations such as underwriting, advising, and brokerage.

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Table 1
Number of Funds and Total Net Assets by Country

This table presents number of funds, total net assets (TNA), and number of ultimate owners (parents) by domicile country as of December 2010. The table also presents the percentage of bank-affiliated funds. The sample consists of open-end actively managed equity mutual funds in the 2000-2010 period.

Country	Domestic Equity Funds			Bank-Affiliated Funds		
	Number of Funds	TNA (\$ billion)	Number of Parents	Number of Funds (%)	TNA (%)	Number of Parents (%)
Australia	98	32.6	28	27.6	16.5	14.3
Austria	13	1.4	11	61.5	81.0	54.5
Belgium	23	1.7	8	73.9	78.6	50.0
Brazil	48	42.0	17	79.2	78.4	58.8
Canada	366	194.6	66	28.4	44.5	21.2
China	69	76.0	35	11.6	8.0	8.6
Denmark	22	3.1	15	54.5	70.0	46.7
Finland	28	5.5	14	71.4	89.8	50.0
France	180	42.2	48	48.9	57.8	27.1
Germany	47	34.8	20	51.1	71.7	45.0
India	242	37.4	31	18.6	17.7	25.8
Israel	37	0.8	15	2.7	1.8	6.7
Italy	30	4.5	15	60.0	55.0	60.0
Japan	515	36.6	43	45.6	36.8	30.2
Malaysia	91	6.4	20	62.6	92.3	45.0
Netherlands	12	4.3	7	66.7	69.9	57.1
Norway	58	15.7	15	58.6	60.2	46.7
Poland	29	5.8	15	58.6	71.0	53.3
Portugal	19	0.5	11	84.2	72.4	81.8
Singapore	13	1.6	10	61.5	28.6	50.0
South Africa	109	21.8	27	38.5	42.3	14.8
Spain	63	2.3	31	65.1	72.4	58.1
Sweden	101	63.2	20	71.3	77.1	40.0
Switzerland	77	20.7	31	55.8	52.1	32.3
Taiwan	147	10.2	31	43.5	26.8	35.5
Thailand	118	5.3	16	62.7	86.0	56.3
United Kingdom	406	215.3	90	17.7	18.0	14.4
United States	2,020	2,683.2	365	20.3	10.9	11.0
Total	4,981	3,569.7	831	32.2	18.1	18.2
Total (ex-U.S.)	2,961	886.5	513	40.3	39.8	25.7
	Domestic and International Equity Funds			Bank-Affiliated Funds		
Total	13,801	6,868.2	1,151	41.1	22.3	16.7
Total (ex-U.S.)	10,955	2,923.2	879	46.6	39.3	20.3

Table 2
Summary Statistics

Panels A and C present mean, median, standard deviation, 1st percentile, 99th percentile and number of observations for each variable. Panel B presents mean and number of observations for the samples of unaffiliated funds and bank-affiliated funds, and the associated mean difference p-value. The sample consists of actively managed domestic equity mutual funds in the 2000-2010 period.

Panel A: Fund Characteristics

	Mean	Median	Standard Deviation	1 st Percentile	99 th Percentile	Number of Observations
Bank-Affiliated Dummy	0.34	0.00	0.47	0.00	1.00	127,880
Loans/TNA	36.22	0.00	428.03	0.00	548.92	126,782
Syndicated Loans/TNA	5.82	0.00	220.57	0.00	54.59	127,880
Lending / Asset Mgmt. Revenues	8.23	0.00	113.03	0.00	106.2	127,880
%TNA Invested in Client Stocks	5.10	0.00	12.92	0.00	61.23	127,880
Bias in Client Stocks	2.21	0.00	6.82	-1.01	37.90	127,238
%TNA Invested in Top 10 Client Stocks	0.56	0.00	2.49	0.00	12.83	127,880
Bias in Top 10 Client Stocks	0.15	0.00	0.97	-0.64	4.11	127,238
Four-Factor Alpha (%)	0.25	-0.18	5.88	-15.34	19.05	127,880
Gross Four-Factor Alpha (%)	0.51	0.09	5.43	-13.73	18.45	116,554
Buy and Hold Benchmark Adj. Return (%)	0.45	0.28	4.12	-12.36	14.78	123,174
Benchmark Adjusted Return (%)	0.06	-0.09	4.18	-12.28	13.61	125,988
TNA (\$ million)	909	158	3,980	1	12,522	127,880
Family TNA (\$ million)	35,581	5,501	104,401	15	58,8055	127,880
Age (years)	12.46	9.25	11.16	2.33	59.25	127,880
Total Expense Ratio (%)	1.44	1.38	0.57	0.31	3.50	127,880
Total Load (%)	2.42	2.00	2.40	0.00	10.84	127,880
Flow (%)	0.61	-1.45	15.45	-33.70	69.92	127,880
Number of Countries of Sale	1.16	1.00	0.84	1.00	4.00	127,880
Team Managed Dummy	0.61	1.00	0.49	0.00	1.00	127,880

Panel B: Fund Characteristics of Unaffiliated and Bank-Affiliated Funds

	Unaffiliated Funds		Bank-Affiliated Funds		Difference
	Mean	Number of Observations	Mean	Number of Observations	p-value
Four-Factor Alpha (%)	0.26	84,227	0.22	43,653	0.26
Gross Four-Factor Alpha (%)	0.53	78,536	0.48	38,018	0.19
Buy and Hold Benchmark Adj. Return (%)	0.49	81,481	0.38	41,693	0.00
Benchmark Adjusted Return (%)	0.11	83,189	-0.04	42,799	0.00
TNA (\$ million)	1,122	84,227	499	43,653	0.00
Family TNA (\$ million)	47,024	84,227	13,501	43,653	0.00
Age (years)	12.54	84,227	12.30	43,653	0.00
Total Expense Ratio (%)	1.44	84,227	1.45	43,653	0.04
Total Load (%)	2.52	84,227	2.24	43,653	0.00
Flow (%)	1.02	84,227	-0.17	43,653	0.00
Number of Countries of Sale	1.16	84,227	1.16	43,653	0.31
Team Managed Dummy	0.59	84,227	0.65	43,653	0.00

Table 2: continued

Panel C: Conflicts of Interest Variables – Sample of Bank-Affiliated Funds

	Mean	Median	Standard Deviation	1st Percentile	99 th Percentile	Number of Observations
Loans/TNA	107.90	22.75	733.56	0.17	1,148.47	42,555
Syndicated Loans/TNA	17.05	4.20	377.26	0.00	89.82	43,653
Lending/Asset Mgmt. Revenues	24.12	8.25	192.46	0.00	169.09	43,653
%TNA Invested in Client Stocks	14.94	6.70	18.49	0.00	69.83	43,653
Bias in Client Stocks	6.46	2.38	10.44	-3.52	49.15	43,400
%TNA Invested in Top 10 Client Stocks	1.65	0.00	4.05	0.00	19.24	43,653
Bias in Top 10 Client Stocks	0.44	0.00	1.62	-2.07	6.52	43,400

Table 3
Mutual Fund Performance and Bank-Affiliated Funds

This table presents ordinary least squares (OLS) and fund fixed effects regressions of fund risk-adjusted performance. The dependent variable is the alpha from the Carhart four-factor model in each quarter. *Bank Affiliated* is a dummy that takes a value of one if the ultimate owner of the fund's management company is a commercial banking group, and zero otherwise. The regressions also include domicile country and quarter fixed effects. All control variables are lagged by one period. Variable definitions are provided in Table A.1 in the Appendix. The sample consists of actively managed domestic equity mutual funds in the 2000-2010 period. Robust *t*-statistics adjusted for clustering at the ultimate owner level are reported in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	OLS				Fixed Effects			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Bank Affiliated	-0.1750*** (-3.98)				-0.2830** (-1.97)			
Loans/TNA (log)		-0.0582*** (-4.90)				-0.1050** (-2.12)		
Syndicated Loans/TNA (log)			-0.0490*** (-2.60)				-0.0946 (-1.28)	
Lending/Asset Mgmt. Revenues (log)				-0.0452*** (-2.95)				-0.1310** (-2.06)
TNA (log)	-0.0509*** (-4.63)	-0.0524*** (-4.71)	-0.0496*** (-4.44)	-0.0496*** (-4.45)	-0.6180*** (-15.61)	-0.6180*** (-15.50)	-0.6190*** (-15.61)	-0.6210*** (-15.61)
Family TNA (log)	0.0423*** (3.83)	0.0404*** (3.55)	0.0409*** (3.48)	0.0411*** (3.52)	-0.0974 (-1.25)	-0.1110 (-1.41)	-0.1060 (-1.36)	-0.1130 (-1.44)
Age (log)	-0.0322 (-1.18)	-0.0279 (-1.01)	-0.0348 (-1.27)	-0.0346 (-1.27)	-0.3170* (-1.69)	-0.3380* (-1.78)	-0.3130* (-1.66)	-0.3160* (-1.67)
Total Expense Ratio	-0.0299 (-0.61)	-0.0297 (-0.60)	-0.0268 (-0.55)	-0.0286 (-0.58)	-0.0727 (-0.47)	-0.0793 (-0.51)	-0.0790 (-0.51)	-0.0791 (-0.51)
Total Load	-0.0233** (-2.06)	-0.0256** (-2.25)	-0.0221* (-1.95)	-0.0221* (-1.95)	-0.0228 (-0.53)	-0.0255 (-0.58)	-0.0202 (-0.46)	-0.0210 (-0.48)
Flow	0.0073*** (5.35)	0.0074*** (5.38)	0.0074*** (5.41)	0.0074*** (5.41)	0.0054*** (3.65)	0.0054*** (3.61)	0.0054*** (3.65)	0.0054*** (3.67)
Number Countries of Sale	-0.0054 (-0.28)	-0.0068 (-0.37)	-0.0055 (-0.29)	-0.0055 (-0.29)				
Team Managed	-0.1020** (-2.53)	-0.1070*** (-2.61)	-0.1070** (-2.58)	-0.1060** (-2.56)				
Past Performance	0.0260*** (3.79)	0.0260*** (3.77)	0.0261*** (3.80)	0.0261*** (3.80)	-0.0174** (-2.43)	-0.0171** (-2.39)	-0.0173** (-2.43)	-0.0173** (-2.43)
Number of Observations	127,880	126,782	127,880	127,880	127,880	126,782	127,880	127,880
R-squared	0.145	0.146	0.145	0.145	0.192	0.192	0.192	0.192

Table 4

Probability of Getting Future Lending Business and Mutual Fund Ownership

This table presents results for a logit model of whether the existence of a bank-firm(*i, j*) link through equity fund holdings prior to the loan affects the probability that the firm *j* chooses bank *i* as lead arranger in the syndicated loan market. For each facility, we create a choice set of 20 potential lead arrangers (top 20 lenders ranked by U.S. dollar volume of loans in each country). The dependent variable is a dummy variable that takes the value of one if bank *i* acted as a lead arranger and zero otherwise. *Fund Ownership Dummy* is a dummy that takes the value of one if the fund families affiliated with bank *i* own equity of the borrowing firm at the end of the previous year. *Fund Ownership >1% Dummy* is a dummy that takes the value of one if the fund families affiliated with bank *i* own at least 1% of the borrower's shares at the end of the previous year. *Lender Market Share* is the fraction of bank *i* on the U.S. dollar volume of loans in each country in the previous year. *Lending Relationship* is a dummy that takes the value of one if firm *j* chose bank *i* as lead arranger in a loan in the three years preceding the quarter of the loan. Borrower-specific controls include stock market capitalization (log), book-to-market ratio, leverage, tangibility, stock volatility and stock return (coefficients not shown). The sample consists of syndicated loans by publicly listed borrowers in the 2000-2010 period. Robust *t*-statistics adjusted for clustering at the firm- and bank-level are reported in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
Fund Ownership Dummy	0.268*** (5.70)		0.192*** (3.00)	
Fund Ownership >1% Dummy		0.347*** (3.53)		0.344*** (3.89)
Lender Market Share	13.272*** (22.72)	13.525*** (23.56)	13.593*** (16.70)	13.825*** (15.99)
Lending Relationship	1.909*** (27.35)	1.944*** (29.08)	1.745*** (24.63)	1.747*** (24.79)
Lender Assets (log)			0.120 (1.28)	0.109 (1.12)
Lender ROA			0.096 (1.15)	0.105 (1.32)
Year Fixed Effects	Yes	Yes	Yes	Yes
Loan Purpose Fixed Effects	Yes	Yes	Yes	Yes
Borrower Industry Fixed Effects	Yes	Yes	Yes	Yes
Borrower Country Fixed Effects	Yes	Yes	Yes	Yes
Borrower Controls	No	No	Yes	Yes
Lender Fixed Effects	No	No	Yes	Yes
Number of Observations	499,615	499,615	403,133	403,133
Pseudo R-squared	0.21	0.21	0.23	0.23
<i>Probability of being chosen as the lead lender using the column (1) specification</i>				
		Average	Existing lending relationship	
			No	Yes
Fund Ownership Dummy = 0		0.126	0.094	0.413
Fund Ownership Dummy = 1		0.158	0.120	0.479
Change in Probability		0.032	0.026	0.066
<i>Probability of being chosen as the lead lender using the column (2) specification</i>				
		Average	Existing lending relationship	
			No	Yes
Fund Ownership >1% Dummy = 0		0.135	0.101	0.441
Fund Ownership >1% Dummy = 1		0.181	0.138	0.527
Change in Probability		0.046	0.037	0.086

Table 5

Mutual Fund Performance and Bank-Affiliated Funds: Gross Returns and Buy and Hold Returns

This table presents ordinary least squares (OLS) regressions of fund risk-adjusted performance. The dependent variable are the alpha from the Carhart four-factor model using gross fund returns, and the buy and hold benchmark-adjusted return using fund's stock holdings in each quarter. *Bank Affiliated* is a dummy that takes a value of one if the ultimate owner of the fund's management company is a commercial banking group, and zero otherwise. The regressions also include domicile country and quarter fixed effects. All control variables are lagged by one period. Variable definitions are provided in Table A.1 in the Appendix. The sample consists of actively managed domestic equity mutual funds in the 2000-2010 period. Robust *t*-statistics adjusted for clustering at the ultimate owner level are reported in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Gross Returns				Buy and Hold Benchmark-Adjusted Returns			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Bank Affiliated	-0.1730*** (-4.02)				-0.1560*** (-3.36)			
Loans/TNA (log)		-0.0589*** (-5.12)				-0.0337*** (-2.96)		
Syndicated Loans/TNA (log)			-0.0586*** (-3.28)				-0.0464*** (-2.70)	
Lending/Asset Mgmt. Revenues (log)				-0.0428*** (-2.85)				-0.0405*** (-2.89)
TNA (log)	-0.0629*** (-5.97)	-0.0643*** (-6.04)	-0.0615*** (-5.74)	-0.0614*** (-5.74)	-0.0641*** (-3.24)	-0.0644*** (-3.18)	-0.0630*** (-3.13)	-0.0630*** (-3.14)
Family TNA (log)	0.0409*** (3.77)	0.0390*** (3.50)	0.0398*** (3.46)	0.0398*** (3.45)	0.0171 (0.84)	0.0152 (0.71)	0.0160 (0.75)	0.0161 (0.76)
Age (log)	-0.0230 (-0.91)	-0.0187 (-0.72)	-0.0252 (-0.99)	-0.0253 (-0.99)	0.0721** (2.40)	0.0722** (2.37)	0.0695** (2.29)	0.0696** (2.30)
Total Expense Ratio	0.158*** (3.09)	0.158*** (3.05)	0.162*** (3.16)	0.161*** (3.13)	-0.00413 (-0.09)	0.00308 (0.07)	-0.00102 (-0.02)	-0.00259 (-0.06)
Total Load	-0.0203* (-1.74)	-0.0225* (-1.92)	-0.0194* (-1.65)	-0.0191 (-1.62)	-0.0263** (-2.29)	-0.0268** (-2.32)	-0.0253** (-2.19)	-0.0252** (-2.19)
Flow	0.0065*** (5.01)	0.0065*** (5.04)	0.0065*** (5.07)	0.0066*** (5.08)	0.0024** (2.13)	0.0025** (2.18)	0.0025** (2.18)	0.0025** (2.17)
Number of Countries of Sale	-0.00900 (-0.50)	-0.0103 (-0.59)	-0.00974 (-0.56)	-0.00917 (-0.53)	0.0320* (1.73)	0.0320* (1.78)	0.0317* (1.76)	0.0319* (1.77)
Team Managed	-0.1130*** (-2.76)	-0.1170*** (-2.80)	-0.1160*** (-2.73)	-0.1160*** (-2.74)	-0.0239 (-0.54)	-0.0263 (-0.59)	-0.0279 (-0.62)	-0.0272 (-0.61)
Past Performance	0.0317*** (4.96)	0.0317*** (4.93)	0.0318*** (4.96)	0.0318*** (4.97)	0.0611*** (12.56)	0.0613*** (12.57)	0.0612*** (12.60)	0.0612*** (12.60)
Number of Observations	116,266	115,172	116,266	116,266	120,198	119,156	120,198	120,198
R-squared	0.174	0.175	0.174	0.174	0.051	0.051	0.051	0.051

Table 6
Flow-Performance Relationship and Bank Affiliated Funds

This table presents ordinary least squares (OLS) regressions of fund flows (net growth in total net assets) on lagged performance. Fractional performance ranks ranging from zero to one are assigned to funds according to their average Carhart four-factor model in the past four quarters in a given quarter and country. Column (1) uses a linear specification and column (2) uses a piecewise linear specification using three performance rank segments: $Low_{i,t-1} = \min(0.2, Rank_{i,t-1})$, $Mid_{i,t-1} = \min(0.6 Rank_{i,t-1} - Low_{i,t-1})$, and $High_{i,t-1} = Rank_{i,t-1} - (Low_{i,t-1} + Mid_{i,t-1})$. *Bank Affiliated* is a dummy takes a value of one if the ultimate owner of the fund's management company is a commercial banking group, and zero otherwise. The regressions include the same control variables (coefficients not shown) as in Table 3. The regressions also include domicile country and quarter fixed effects. Variable definitions are provided in Table A.1 in the Appendix. The sample consists of actively managed domestic equity mutual funds in the 2000-2010 period. Robust t-statistics adjusted for clustering at the ultimate owner level are reported in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Linear	Piecewise
	(1)	(2)
Bank Affiliated	-0.2670 (-0.84)	-0.8240 (-1.42)
Rank	6.0070*** (21.26)	
Bank Affiliated × Rank	-0.9040 (-1.60)	
Low		6.8270*** (3.55)
Bank Affiliated × Low		2.3710 (0.80)
Mid		4.7290*** (12.76)
Bank Affiliated × Mid		-0.7880 (-1.27)
High		14.470*** (6.96)
Bank Affiliated × High		-3.9660 (-1.14)
Number of Observations	119,424	119,424
R-squared	0.095	0.096

Table 7**Falsification Tests: Passive Funds, International Funds, U.S. and Non-U.S. Funds**

This table presents ordinary least squares (OLS) of fund risk-adjusted performance. The dependent variable is the alpha from the Carhart four-factor model in each quarter. *Bank Affiliated* is a dummy that takes a value of one if the ultimate owner of the fund's management company is a commercial banking group, and zero otherwise. The regressions include the same control variables (coefficients not shown) as in Table 3. The regressions also include domicile country and quarter fixed effects. Variable definitions are provided in Table A.1 in the Appendix. The sample consists of passive and active international equity mutual funds in Panel A and U.S.-domiciled and non-U.S.-domiciled active domestic equity mutual funds in Panel B in the 2000-2010 period. Robust *t*-statistics adjusted for clustering at the ultimate owner level are reported in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Passive and International Funds

	Passive Funds				International Funds			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Bank Affiliated	0.0651 (1.13)				-0.0646 (-1.30)			
Loans/TNA (log)		-0.0020 (-0.18)				-0.0248* (-1.78)		
Syndicated Loans/TNA (log)			-0.0034 (-0.24)				-0.0374* (-1.83)	
Lending/Asset Mgmt. Revenues (log)				-0.0043 (-0.39)				-0.0381** (-2.04)
Number of Observations	23,083	23,033	23,083	23,083	114,637	113,991	114,637	114,637
R-squared	0.117	0.117	0.117	0.117	0.062	0.063	0.062	0.062

Panel B: U.S and Non-U.S. Funds

	U.S. Funds				Non-U.S. Funds			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Bank Affiliated	-0.1190** (-2.08)				-0.2490*** (-3.52)			
Loans/TNA (log)		-0.0410** (-2.47)				-0.0664*** (-4.21)		
Syndicated Loans/TNA (log)			-0.0441 (-1.56)				-0.0478* (-1.85)	
Lending/Asset Mgmt. Revenues (log)				-0.0276 (-1.23)				-0.0646*** (-2.75)
Number of Observations	77,016	76,061	77,016	77,016	50,864	50,721	50,864	50,864
R-squared	0.246	0.247	0.246	0.246	0.088	0.088	0.087	0.087

Table 8
Mutual Fund Performance and Portfolio Allocation to Client Stocks

This table presents ordinary least squares (OLS) of fund risk-adjusted performance. The dependent variable are the alpha from the Carhart four-factor model using net returns (Panel A) and gross returns (Panel B), and the buy and hold benchmark-adjusted return using fund's stock holdings in each quarter (Panel C). *%TNA Invested in Client Stocks* is percentage invested in stocks of firms that borrow from the fund's affiliated bank and are held by the fund. *Bias in Client Stocks* is the portfolio bias in stocks of firms that borrow from the fund's affiliated bank versus the average weight of active peer funds. *%TNA Invested in Top 10 Client Stocks* and *Bias in Top 10 Client Stocks* are similarly defined for the set of top ten borrowers of the fund's affiliated bank. All these variables are zero if the fund is unaffiliated. The regressions include the same control variables (coefficients not shown) as in Table 3. The regressions also include domicile country and quarter fixed effects. Variable definitions are provided in Table A.1 in the Appendix. The sample consists of actively managed domestic equity mutual funds in the 2000-2010 period. Robust *t*-statistics adjusted for clustering at the ultimate owner level are reported in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: 4-Factor Alphas				
	(1)	(2)	(3)	(4)
%TNA Invested in Client Stocks	-0.0042*** (-3.58)			
Bias in Client Stocks		-0.0042* (-1.76)		
%TNA Invested in Top 10 Client Stocks			-0.0265** (-2.13)	
Bias in Top 10 Client Stocks				-0.0639** (-2.17)
Number of Observations	127,880	127,238	127,880	127,238
R-squared	0.145	0.145	0.145	0.145
Panel B: 4-Factor Alpha - Gross Returns				
	(1)	(2)	(3)	(4)
%TNA Invested in Client Stocks	-0.0054*** (-3.74)			
Bias in Client Stocks		-0.0042* (-1.74)		
%TNA Invested in Top 10 Client Stocks			-0.0329** (-2.24)	
Bias in Top 10 Client Stocks				-0.0757** (-2.20)
Number of Observations	116,266	115,649	116,266	115,649
R-squared	0.174	0.174	0.174	0.174
Panel C: Buy and Hold Benchmark-Adjusted Returns				
	(1)	(2)	(3)	(4)
%TNA Invested in Client Stocks	-0.0028** (-2.52)			
Bias in Client Stocks		-0.0040** (-2.02)		
%TNA Invested in Top 10 Client Stocks			-0.0102* (-1.82)	
Bias in Top 10 Client Stocks				-0.0177 (-1.02)
Number of Observations	120,198	120,198	120,198	120,198
R-squared	0.051	0.051	0.051	0.051

Table 9**Mutual Fund Performance and Portfolio Allocation to Client Stocks Not Held**

This table presents ordinary least squares (OLS) of fund risk-adjusted performance. The dependent variable is the alpha from the Carhart four-factor model in each quarter. *Bias in Client Stocks Not Held* is the portfolio bias in stocks of firms that borrow from the fund's affiliated bank but not held by the bank-affiliated fund. *Bias in Top 10 Client Stocks Not Held* is similarly defined for the set of top ten borrowers. All these variables are zero if the fund is unaffiliated. The regressions also include domicile country and quarter fixed effects. All control variables are lagged by one period. Variable definitions are provided in Table A.1 in the Appendix. The sample consists of actively managed domestic equity mutual funds in the 2000-2010 period. Robust *t*-statistics adjusted for clustering at the ultimate owner level are reported in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
Bias in Client Stocks Not Held	0.00207 (0.83)	
Bias in Top 10 Client Stocks Not Held		0.0979** (2.43)
TNA (log)	-0.0544*** (-4.90)	-0.0550*** (-4.98)
Family TNA (log)	0.0394*** (3.23)	0.0402*** (3.39)
Age (log)	-0.0265 (-0.98)	-0.0261 (-0.97)
Total Expense Ratio	-0.00574 (-0.12)	-0.00742 (-0.16)
Total Load	-0.0227** (-2.03)	-0.0234** (-2.10)
Flow	0.0073*** (5.38)	0.0073*** (5.37)
Number of Countries of Sale	-0.00287 (-0.15)	-0.00236 (-0.13)
Team Managed Dummy	-0.0954** (-2.26)	-0.0959** (-2.28)
Past Performance	0.0253*** (3.65)	0.0252*** (3.63)
Number of Observations	127,238	127,238
R-squared	0.145	0.145

Table 10
Performance of Client Stocks and Non-Client Stocks Portfolios

This table shows risk-adjusted performance and loadings of client and non-client stock portfolios, and the associated difference, using the Carhart four-factor model. Calendar time monthly portfolio returns are constructed using the sample of bank-affiliated funds' portfolio holdings. Every quarter, stocks are assigned to the client or non-client stock portfolio. Client stocks include holdings of firms that borrow from the fund's affiliated bank over the past three years, and non-client stocks include holdings of firms that have not borrowed from the fund's affiliated bank over the past three years. The U.S. dollar-weighted average monthly return of these portfolios are computed for each fund every month and then averaged across all funds (value-weighted by total net assets at the beginning of the quarter). *Bear Market* is a dummy that takes a value of one in the 2000-2002 and 2008-2009 periods, and zero otherwise. *MKT* is the excess return on the fund's stock investment region. *SMB* is the average return on the small-capitalization stock portfolio minus the average return on the large-capitalization stock portfolio on the fund's investment region. *HML* is the difference in return between the portfolio with high book-to-market stocks and the portfolio with low book-to-market stocks on the fund's investment region. *MOM* is the difference in return between the portfolio with the past 12-month stock winners and the portfolio with the past 12-month stock losers on the fund's investment region. The sample consists of actively managed domestic equity mutual funds in the 2000-2010 period. *t*-statistics are reported in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Constant	Bear Market	MKT	SMB	HML	MOM	R-squared
Client Stocks	0.0464 (0.34)	0.3000 (1.44)	1.1700*** (51.55)	0.0082 (0.16)	-0.1690*** (-4.39)	-0.0467** (-2.03)	0.969
Non-Client Stocks	-0.0721 (-0.57)	0.6450*** (3.29)	1.1500*** (54.00)	-0.0286 (-0.58)	-0.1380*** (-3.81)	-0.0003 (-0.01)	0.970
Client Stocks – Non-Client Stocks	0.1190 (1.09)	-0.3440** (-2.05)	0.0196 (1.07)	0.0369 (0.87)	-0.0313 (-1.01)	-0.0464** (-2.50)	0.143

Table 11**Disinvestments and Acquisitions of Fund Management Companies by Commercial Banking Groups**

This table presents fund's holdings and risk-adjusted performance (benchmark-adjusted return and four-factor alpha) in the four quarters before and after the disinvestment or acquisition of a fund management company. The sample of events is from the third quarter of 2007 to the second quarter of 2009. *%TNA Invested in Client Stocks* is percentage invested in stocks of firms that borrow from the fund's affiliated bank and are held by the fund. *%TNA Invested in Top 10 Client Stocks* is similarly defined for the set of top ten borrowers of the fund's affiliated bank. The sample of disinvestments includes funds of management companies affiliated to commercial banking groups that are sold to unaffiliated management companies. The sample of acquisitions includes funds of unaffiliated management companies that are sold to fund management companies affiliated to commercial banking groups. *After* is a dummy variable that takes a value of one after the disinvestment or acquisition, and zero otherwise. The sample consists of actively managed domestic equity mutual funds. Robust *t*-statistics adjusted for clustering at the ultimate owner level are reported in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Sample of Disinvestments				Sample of Acquisitions			
	%TNA Invested in Client Stocks	%TNA Invested in Top 10 Client Stocks	Benchmark- Adjusted Return	Four-Factor Alpha	%TNA Invested in Client Stocks	%TNA Invested in Top 10 Client Stocks	Benchmark- Adjusted Return	Four-Factor Alpha
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
After	-5.28** (-2.45)	-1.13* (-1.76)	1.12* (1.77)	-0.68 (-0.49)	1.90 (1.39)	2.08*** (3.52)	-0.41 (-0.58)	-1.76 (-1.63)
Constant	27.86*** (4.46)	4.06** (2.19)	-0.18** (-0.24)	1.12 (1.20)	18.69*** (4.13)	1.60** (2.30)	-0.39 (-0.88)	1.20 (1.35)
Number of Observations	144	144	144	132	180	180	180	178
R-squared	0.014	0.008	0.013	0.002	0.002	0.063	0.002	0.020

Table 12
Differences-in-Differences Tests Around 2004 SEC Fund Regulatory Reforms

This table presents difference-in-difference regressions of the quarterly risk-adjusted performance around the SEC mutual fund regulatory reform in 2004. The dependent variable is the alpha from the Carhart four-factor model in each quarter. *Treated* is a dummy variable that takes a value of one if a fund is domiciled in the United States, and zero otherwise. *After* is a dummy variable that takes a value of one in 2005 and thereafter, and zero otherwise. The regressions include the same control variables (coefficients not shown) as in Table 3. The regressions also include domicile country and quarter fixed effects. Variable definitions are provided in Table A.1 in the Appendix. The sample consists of actively managed domestic equity mutual funds in the 2001-2007 period. Robust *t*-statistics adjusted for clustering at the ultimate owner level are reported in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	All Funds	Bank-Affiliated Funds	Unaffiliated Funds	All Funds
	(1)	(2)	(3)	(4)
Treated × After	1.2450*** (12.14)	1.3980*** (9.13)	1.1030*** (7.83)	1.0950*** (7.89)
Bank Affiliated × Treated × After				0.3380* (1.71)
Bank Affiliated × Treated				-0.2770* (-1.74)
Bank Affiliated × After				-0.2190 (-1.28)
Bank Affiliated				0.0235 (0.17)
Number of Observations	77,083	27,559	49,524	77,083
R-squared	0.046	0.059	0.041	0.046

Table 13
Robustness

This table presents ordinary least squares (OLS) regressions of fund risk-adjusted performance. The dependent variable is the benchmark-adjusted return (the difference between the fund net return and its benchmark return) in column (1) and the alpha from the Carhart four-factor model in columns (2)-(6) in each quarter. Column (2) uses the Fama-MacBeth method. Column (3) use weighted least squares (WLS) regressions using funds' TNA as weights. Column (4) excludes funds with assets under management below \$10 million. Column (5) excludes the first year of the sample. Column (6) includes the fund's *Active Share* as a control variable. *Bank Affiliated* is a dummy takes a value of one if the ultimate owner of the fund's management company is a commercial banking group, and zero otherwise. The regressions also include domicile country and quarter fixed effects. All control variables are lagged by one period. Variable definitions are provided in Table A.1 in the Appendix. The sample consists of actively managed domestic equity mutual funds in the 2000-2010 period. Robust *t*-statistics adjusted for clustering at the ultimate owner level are reported in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Benchmark- Adjusted Return	Fama-MacBeth	WLS	TNA above \$10 million	2001-2010	Active Share
	(1)	(2)	(3)	(4)	(5)	(6)
Bank Affiliated	-0.1880*** (-4.19)	-0.1790*** (-3.10)	-0.2300*** (-3.97)	-0.1650*** (-3.56)	-0.1910*** (-4.13)	-0.1620*** (-3.69)
TNA (log)	-0.0828*** (-3.98)	-0.0441 (-1.29)	-0.0321 (-1.42)	-0.0504*** (-3.93)	-0.0736*** (-5.65)	-0.0589*** (-5.17)
Family TNA (log)	0.0390* (1.76)	0.0357*** (3.45)	0.0349* (1.82)	0.0465*** (4.13)	0.0425*** (3.60)	0.0488*** (4.26)
Age (log)	0.0819*** (2.70)	-0.0460 (-0.83)	-0.0434 (-0.64)	-0.0071 (-0.27)	0.0323 (1.11)	-0.0114 (-0.43)
Total Expense Ratio	-0.1980*** (-4.08)	-0.1520 (-1.28)	-0.0125 (-0.10)	-0.0014 (-0.03)	-0.0528 (-1.03)	-0.0388 (-0.79)
Total Load	-0.0262** (-2.21)	-0.0176 (-1.17)	-0.0201 (-1.07)	-0.0299*** (-2.62)	-0.0244** (-2.12)	-0.0270** (-2.41)
Flow	0.0022** (2.22)	0.0059 (1.36)	0.0219*** (4.41)	0.0080*** (5.55)	0.0036*** (2.68)	0.0059*** (4.56)
Number of Countries of Sale	0.0412** (2.06)	-0.0644 (-1.15)	-0.0241 (-1.45)	-0.0075 (-0.41)	-0.0003 (-0.01)	-0.0091 (-0.49)
Team Managed	-0.0375 (-0.76)	-0.1180*** (-2.97)	-0.1260** (-2.34)	-0.0991** (-2.39)	-0.0731* (-1.75)	-0.0827** (-2.00)
Past Performance	0.0806*** (16.60)	0.0395 (1.28)	0.0503*** (4.49)	0.0234*** (3.36)	0.00679 (0.96)	0.0214*** (2.88)
Active Share						0.6770*** (5.75)
Number of Observations	125,920	127,880	127,880	118,316	122,972	124,369
R-squared	0.034	0.400	0.275	0.154	0.098	0.145

Figure 1
Market Share of Bank-Affiliated Mutual Funds

This figure shows the number of funds (top panel) and total net assets (bottom panel) of bank-affiliated and unaffiliated mutual funds by year. A fund is classified as bank affiliated if the ultimate owner of the fund's management company is a commercial banking group. The sample consists of actively managed domestic equity mutual funds in the 2000-2010 period.

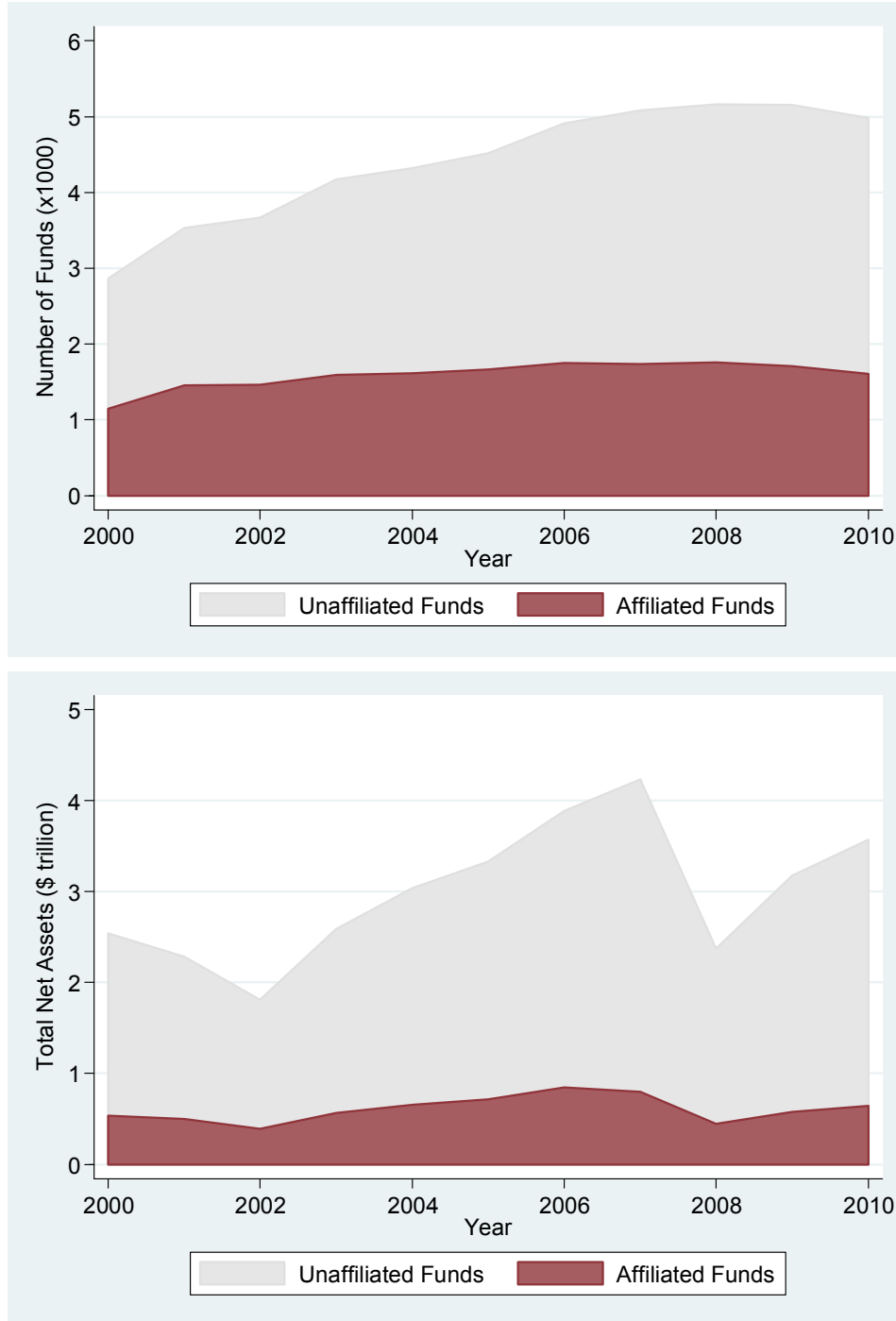


Figure 2

Time Series of the Effect of Bank Affiliation on Mutual Fund Performance

This figure shows point estimates and associated 90% confidence interval (shaded area) of ordinary least squares (OLS) regressions of fund risk-adjusted performance. Regressions are separately estimated for each year. The dependent variable is the alpha from the Carhart four-factor model in each quarter. Coefficients are scaled to an annual basis by multiplying by four. The sample consists of actively managed domestic equity mutual funds in the 2000-2010 period.

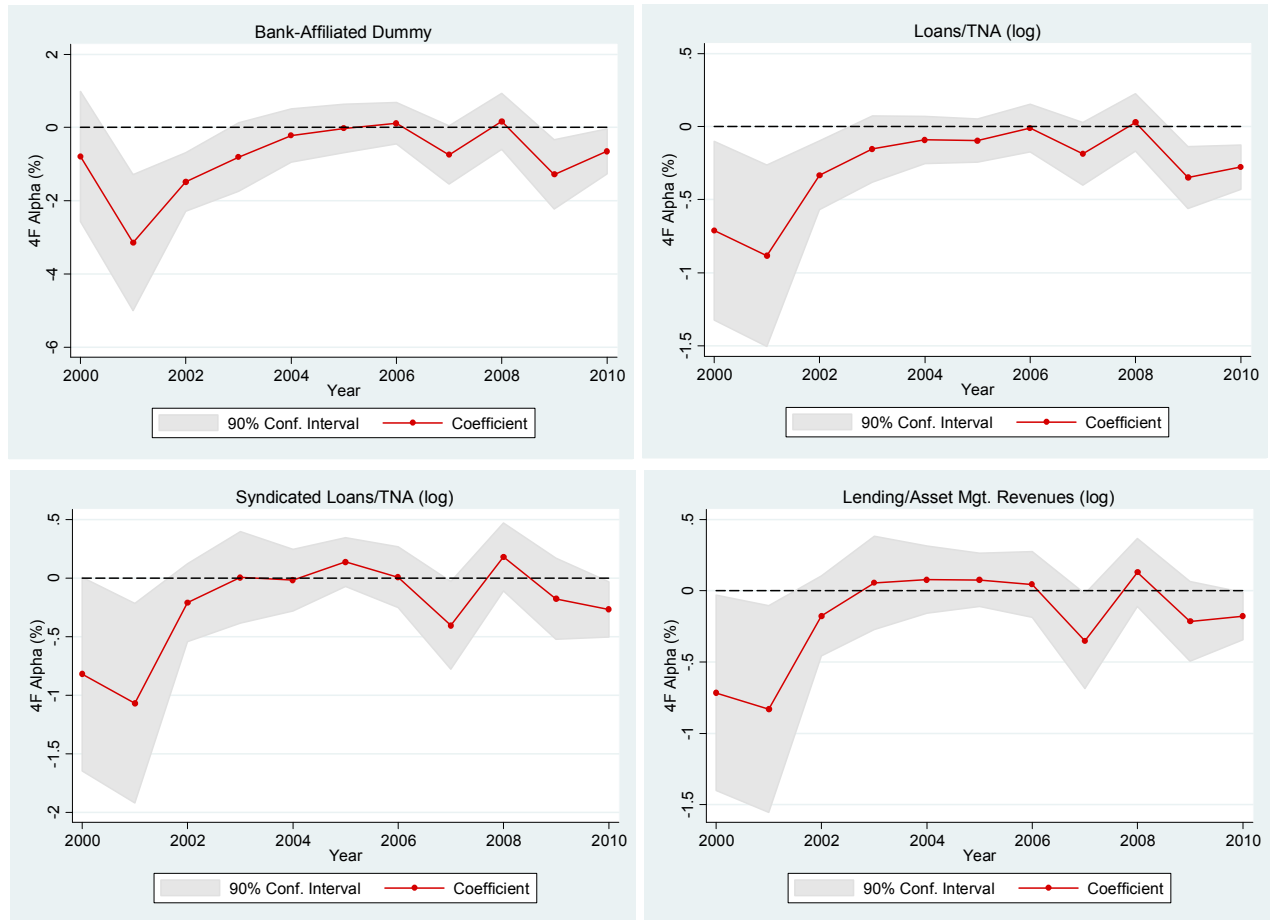


Figure 3

Time Series of the Effect of Client Holdings on Mutual Fund Performance

This figure shows point estimates and associated 90% confidence interval (shaded area) of ordinary least squares (OLS) regressions of fund risk-adjusted performance. Regressions are separately estimated for each year. The dependent variable is the alpha from the Carhart four-factor model in each quarter. Coefficients are scaled to an annual basis by multiplying by four. The sample consists of actively managed domestic equity mutual funds in the 2000-2010 period.



Figure 4

Portfolio Allocation to Client Stocks Around Disinvestments and Acquisitions

This figure shows fund's holdings around disinvestment and acquisitions of fund management companies during the global financial crisis from the third quarter of 2007 to the second quarter of 2009. *%TNA Invested in Client Stocks* is percentage invested in stocks of firms that borrow from the fund's affiliated bank and are held by the fund. *%TNA Invested in Top 10 Client Stocks* is similarly defined for the set of top ten borrowers of the fund's affiliated bank. The sample of disinvestments includes funds of management companies affiliated to commercial banking groups that are sold to an unaffiliated management companies. The sample of acquisitions includes funds of unaffiliated management companies that are sold to fund management companies affiliated to commercial banking groups. The sample consists of actively managed domestic equity mutual funds in the 2000-2010 period.

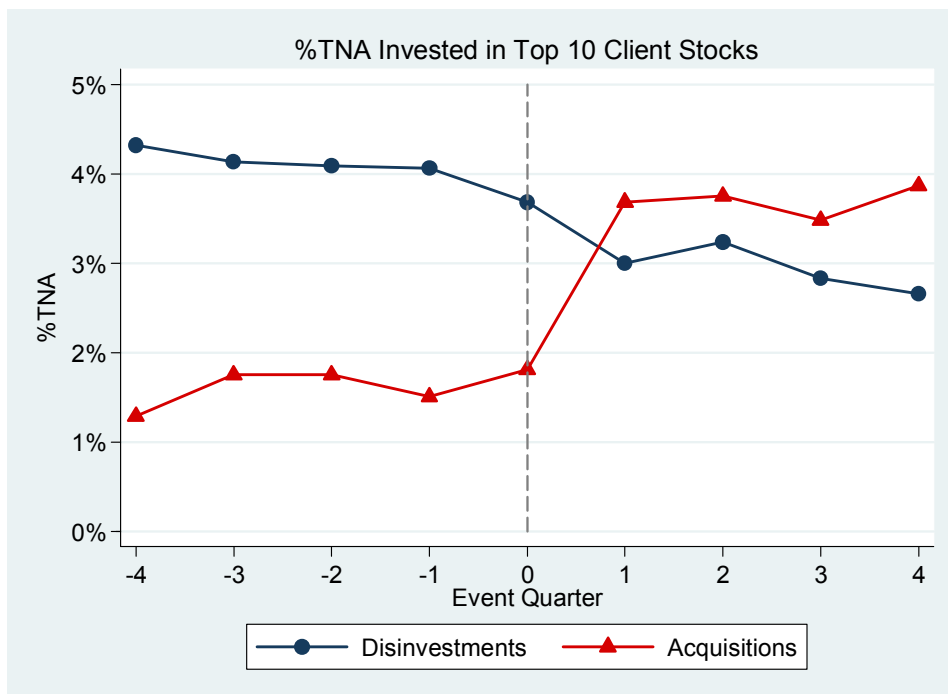
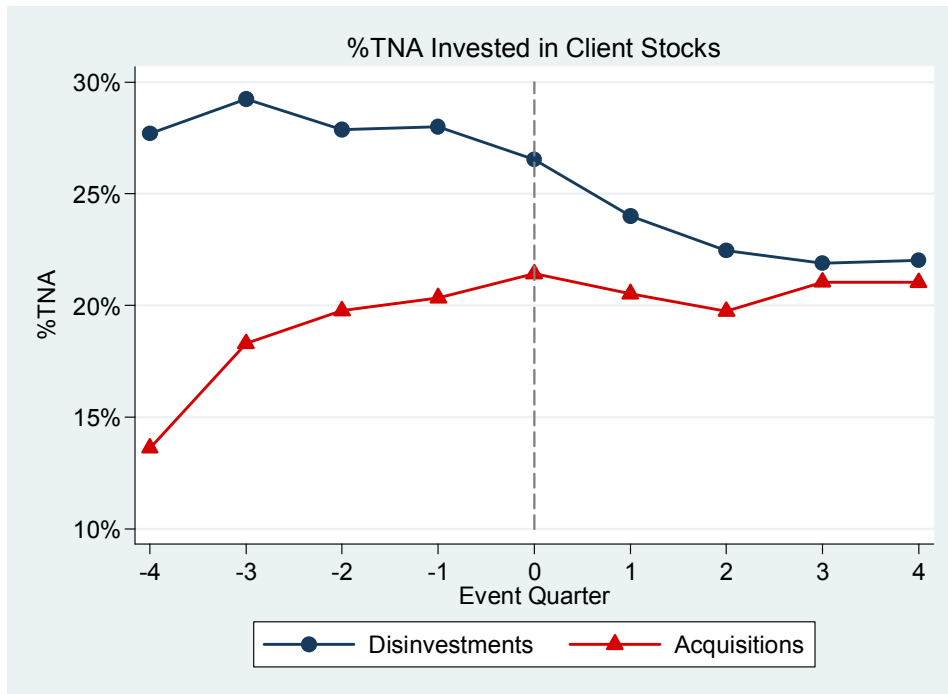


Figure 5

Mutual Fund Performance Around 2004 SEC Fund Regulatory Reforms

This figure shows point estimates and associated 90% confidence interval of differences in risk-adjusted performance (four-factor alpha) around the SEC mutual fund regulatory reform in 2004. Treated group contains funds domiciled in the United States, and control group contains domiciled outside of the United States. The sample consists of actively managed domestic equity mutual funds in the 2001-2007 period.

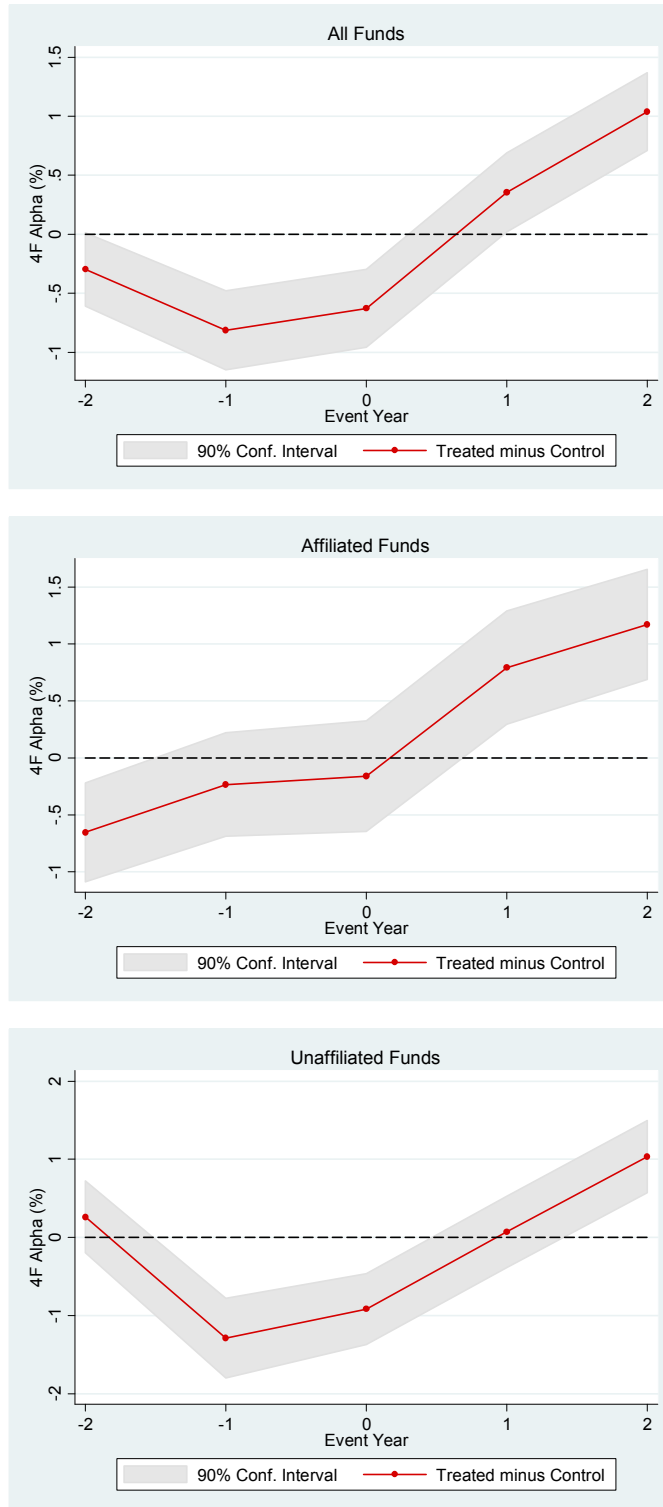


Table A.1
Variable Definitions

Variable	Definition
Bank-Affiliated Dummy	Dummy that takes a value of one if the ultimate owner of the fund's management company is a commercial banking group, and zero otherwise.
Loans/TNA	Loans outstanding of fund's parent bank divided by total net assets (in equity funds) of fund management company.
Syndicated Loans/TNA	Syndicated loans outstanding of fund's parent bank divided by total net assets (in equity funds) of fund management company.
Lending/Asset Mgmt. Revenues	Fund's parent bank syndicated loan revenue, defined as the sum of loans outstanding times all-in drawn spread, divided by revenues of fund management company, defined as the sum of TNA times the total expense ratio (in equity funds).
%TNA Invested in Client Stocks	Sum of portfolio holdings in stocks of firms that are among the fund's parent bank lending clients over the past three years.
Bias in Client Stocks (%TNA)	Sum of portfolio bias in stocks of firms that are among the fund's parent bank lending clients over the past three years.
%TNA Invested in Top 10 Client Stocks	Sum of portfolio holdings in stocks of firms that are among the top ten lending clients of the fund's parent bank over the past three years.
Bias in Top 10 Client Stocks	Sum of portfolio bias in stocks of firms that are among the top ten lending clients of the fund's parent bank over the past three years.
Bias in Client Stocks Not Held	Sum of portfolio holdings in stocks of firms that are among the fund's parent bank lending clients and are not held by the fund.
Bias in Top10 Client Stocks Not Held	Sum of portfolio bias in stocks of firms are among the top ten lending clients of the fund's parent bank over the past three years and are not held by the fund.
Four-Factor Alpha	Four-factor alpha (percentage per quarter) estimated with three years of past monthly fund net returns in U.S. dollars and regional factors (Asia, Europe, North America or Emerging Markets) or world factors in the case of world funds.
Gross Four-Factor Alpha	Four-factor alpha (percentage per quarter) estimated with three years of past monthly fund gross returns in U.S. dollars and regional factors (Asia, Europe, North America, or Emerging Markets) or world factors in the case of world funds.
Buy and Hold Benchmark-Adjusted Return	Difference between the fund buy-and-hold return and its benchmark return (percentage per quarter).
Benchmark-Adjusted Return	Difference between the fund net return and its benchmark return (percentage per quarter).
TNA	Total net assets (in U.S. dollar millions) of fund.
Family TNA (\$ million)	Total net assets (in U.S. dollar millions) of funds managed by the fund management company to which the fund belongs.
Age	Number of years since the fund launch date.
Total Expense ratio	Total annual expenses as a fraction of total net assets.
Total Load	Sum of front-end and back-end loads as a fraction of new investments.
Flow	Percentage growth in TNA in a quarter, net of internal growth (assuming reinvestment of dividends and distributions).
Number of Countries of Sale	Number of countries where the fund is sold.
Team Managed	Dummy variable that takes a value of one if the fund is managed by a team, and zero otherwise.
Active Share	Share of portfolio holdings that differs from the benchmark index holdings computed as $\frac{1}{2} \sum_{i=1}^N W_{fund,i} - W_{benchmark,i} $

Internet Appendix to
“Asset Management within Commercial Bank Groups:
International Evidence”

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Table IA.1
Top Management Companies by Country

This table presents number of funds and total net assets of the top five management companies by fund domicile in terms of total net assets (TNA) in U.S. dollars as of 2010. *Bank Affiliated* is a dummy takes a value of one if the ultimate owner of the fund's management company is a commercial banking group, and zero otherwise. The sample consists of actively managed domestic and international equity mutual funds in the 2000-2010 period.

Country	Ultimate Owner	Bank Affiliated	TNA (\$billion)	Number of Funds
Australia	Platinum Asset Management Ltd.	0	14.70	8
Australia	Perpetual Ltd.	0	5.81	9
Australia	Schroders Plc	0	5.20	10
Australia	AMP Ltd.	0	4.54	7
Australia	Westpac Banking Corp.	1	4.16	24
Austria	Raiffeisen Zentralbank Österreich AG	1	3.21	13
Austria	Erste Group Bank AG	1	3.16	32
Austria	UniCredit SpA (Pioneer)	1	2.00	20
Austria	Investec Plc (Investec Bank Ltd.)	1	0.99	3
Austria	Wellington Management Co. LLP	0	0.51	5
Belgium	KBC Groupe SA	1	17.21	393
Belgium	Petercam SA/NV	0	2.59	14
Belgium	Dexia SA	1	2.56	24
Belgium	BNP Paribas SA	1	2.52	66
Belgium	Banque Degroof SA	0	1.56	13
Brazil	Government of Brazil (Banco do Brasil)	1	24.63	17
Brazil	The Bank of New York Mellon Corp.	1	7.97	1
Brazil	Banco Opportunity SA	0	5.88	4
Brazil	Credit Suisse Group AG	1	1.03	4
Brazil	Dynamo Administração de Recursos Ltda.	0	0.85	1
Canada	Power Corp. of Canada (IGM Financial)	0	56.73	111
Canada	Royal Bank of Canada	1	40.66	54
Canada	Bank Of Nova Scotia (The) - Scotiabank	1	21.91	41
Canada	Macquarie Group Ltd.	1	16.29	21
Canada	FMR LLC (Fidelity)	0	12.74	34
China	China Merchants Securities Co. Ltd.	0	6.02	3
China	Invesco Great Wall Fund Management Co. Ltd.	0	5.90	7
China	China Post & Capital Fund Management Co., Ltd.	0	5.43	2
China	Yinhua Fund Management Co. Ltd.	0	4.54	4
China	Lion Fund Management Co. Ltd.	0	4.33	2
Denmark	Nordea Bank AB	1	5.31	21
Denmark	Danske Bank A/S	1	4.51	28
Denmark	BI Holding A/S	0	2.90	11
Denmark	Sparinvest Holdings A/S	0	2.83	13
Denmark	Aberdeen Asset Management Plc	0	2.83	6
Finland	Nordea Bank AB	1	8.54	20
Finland	Pohjola Bank Plc	1	4.33	14
Finland	Danske Bank A/S	1	2.69	23
Finland	FIM Group Oyj	0	1.66	17
Finland	Svenska Handelsbanken AB	1	1.24	8
France	Rue de la Boetie SAS (Crédit Agricole)	1	34.76	149
France	Carmignac Gestion SA	0	16.77	4
France	BPCE SA - Banque Populaire, Caisse d'Epargne (Natixis)	1	16.23	119
France	BNP Paribas SA	1	12.99	89
France	LCF Rothschild Group	0	12.75	35
Germany	Deutsche Bank AG	1	50.59	69
Germany	Allianz SE	0	20.23	42
Germany	Union Asset Management Holding AG / Union Gruppe	0	19.15	21
Germany	DekaBank Deutsche Girozentrale	1	13.54	27
Germany	Lingohr & Partner Asset Management GmbH	0	2.99	9

Table IA.1: continued

Country	Ultimate Owner	Bank Affiliated	TNA (\$billion)	Number of Funds
India	Reliance Capital Ltd.	0	7.69	15
India	Housing Development Finance Corp. Ltd.	1	4.30	10
India	UTI Asset Management Co. Ltd.	0	3.58	20
India	Franklin Resources, Inc. (Franklin Templeton)	0	3.18	15
India	Birla Sun Life Asset Management Co. Ltd.	0	2.61	21
Italy	Intesa Sanpaolo SpA (Eurizon Financial Group)	1	8.59	25
Italy	Asset Management Holding SpA (Anima Holding)	0	8.13	19
Italy	Unione Di Banche Italiane Sepa-Ubi Banca	1	3.17	8
Italy	UniCredit SpA (Pioneer)	1	2.97	8
Italy	Arca SGR SpA	0	2.95	13
Japan	Daiwa Securities Group Inc	0	16.05	96
Japan	Nomura Holdings Inc	1	12.80	95
Japan	FMR LLC (Fidelity)	0	7.68	36
Japan	HSBC Holdings Plc	1	5.65	12
Japan	Sumitomo Mitsui Trust Holdings, Inc.	1	5.59	65
Malaysia	Public Bank Bhd.	1	5.59	14
Malaysia	CIMB-Principal Asset Management Bhd.	1	1.27	18
Malaysia	Oversea-Chinese Banking Corp. Ltd. (Pacific Mutual Fund Bhd.)	1	0.32	11
Malaysia	OSK Holdings Bhd.	0	0.25	10
Malaysia	Hong Leong Co. Malaysia Bhd.	1	0.25	14
Netherlands	Cooperatieve Centrale Raiffeisen-Boerenleenbank (Rabobank Group)	1	10.19	8
Netherlands	BNP Paribas SA	1	8.38	12
Netherlands	ING Groep NV	1	5.97	25
Netherlands	Delta Lloyd NV	0	3.61	6
Netherlands	Van Lanschot NV	1	1.83	6
Norway	Skagen AS	0	15.40	3
Norway	DnB NOR ASA	1	7.44	44
Norway	SpareBank 1 Gruppen AS	1	5.04	13
Norway	Storebrand ASA	0	3.93	24
Norway	Government of Norway (KLP / KBN)	1	2.42	8
Poland	Aviva Plc	0	2.02	2
Poland	BZ WBK Asset Management SA	0	1.25	3
Poland	UniCredit SpA (Pioneer)	1	1.19	4
Poland	ING Groep NV	1	1.13	5
Poland	Legg Mason, Inc.	0	0.53	1
Portugal	Banco BPI SA	1	0.59	6
Portugal	Caixa Geral de Depósitos SA	1	0.58	10
Portugal	F&C Asset Management Plc	0	0.45	8
Portugal	Santander AM Holding SL / Banco Santander SA	1	0.27	10
Portugal	Banco Espírito Santo SA	1	0.23	7
Singapore	Schroders Plc	0	1.67	12
Singapore	United Overseas Bank Ltd. (Singapore)	1	1.47	24
Singapore	Aberdeen Asset Management Plc	0	1.01	10
Singapore	Oversea-Chinese Banking Corp. Ltd.	1	0.96	20
Singapore	Deutsche Bank AG	1	0.70	6
South Africa	Insite Service Management Ltd. (Orbis)	0	3.90	1
South Africa	Nedbank Group Ltd.	1	3.74	17
South Africa	Standard Bank Group Ltd.	1	2.73	19
South Africa	Investec Ltd. (Investec Bank Ltd.)	1	2.64	8
South Africa	Coronation Fund Managers Ltd.	0	2.12	8
Spain	Grupo Entrecanales SA / Acciona (Bestinver)	0	3.29	3
Spain	Santander AM Holding SL / Banco Santander SA	1	2.44	23
Spain	Banco Bilbao Vizcaya Argentaria SA	1	1.56	18
Spain	Caja de Ahorros y Monte de Piedad de Madrid / Caja Madrid (Bankia)	1	0.83	45
Spain	Caja de Ahorros y Pensiones de Barcelona / La Caixa (Invercaixa)	1	0.74	20

Table IA.1: continued

Country	Ultimate Owner	Bank Affiliated	TNA (\$billion)	Number of Funds
Sweden	Swedbank AB	1	44.76	75
Sweden	Skandinaviska Enskilda Banken AB	1	11.27	25
Sweden	Svenska Handelsbanken AB	1	9.92	17
Sweden	Nordea Bank AB	1	9.87	19
Sweden	AMF Pensionsförsäkring AB	0	6.27	7
Switzerland	UBS AG	1	11.20	45
Switzerland	Swisscanto Holding AG	0	6.83	22
Switzerland	Credit Suisse Group AG	1	6.82	24
Switzerland	Pictet & Cie	0	2.19	10
Switzerland	Bank Sarasin & Cie. AG	0	2.05	7
Taiwan	JPMorgan Chase & Co., Inc.	1	2.47	19
Taiwan	Yuanta Financial Holding Co. Ltd.	0	1.63	17
Taiwan	Prudential Financial, Inc.	0	1.54	18
Taiwan	Cathay Securities Investment Trust Co. Ltd.	0	1.53	8
Taiwan	Allianz SE	0	1.40	7
Thailand	Kasikornbank Public Co. Ltd.	1	1.61	15
Thailand	Siam Commercial Bank Public Co. Ltd.	1	1.44	15
Thailand	Bangkok Bank Public Co. Ltd.	1	0.42	9
Thailand	Aberdeen Asset Management Plc	0	0.35	7
Thailand	TMB Bank Public Co., Ltd.	1	0.34	4
United Kingdom	Prudential Plc	0	44.98	36
United Kingdom	Invesco Ltd.	0	44.52	31
United Kingdom	FMR LLC (Fidelity)	0	32.16	31
United Kingdom	Schroders Plc	0	27.48	38
United Kingdom	Ameriprise Financial, Inc.	0	25.12	31
United States	The Capital Group Cos., Inc.	0	673.39	16
United States	FMR LLC (Fidelity)	0	535.26	165
United States	T. Rowe Price Group, Inc.	0	191.38	59
United States	Franklin Resources, Inc. (Franklin Templeton)	0	127.02	48
United States	Wellington Management Co. LLP	0	121.80	59

Table IA.2**Mutual Fund Performance and Bank-Affiliated Funds: Market Downturns**

This table presents ordinary least squares (OLS) of fund risk-adjusted performance. The dependent variable is the alpha from the Carhart four-factor model in each quarter. *Bank Affiliated* is a dummy that takes a value of one if the ultimate owner of the fund's management company is a commercial banking group, and zero otherwise. *Bear Market* is a dummy that takes a value of one in the 2000-2002 and 2008-2009 periods, and zero otherwise. *Investment Region Return* is the stock market return in the fund's investment region. The regressions also include domicile country and quarter fixed effects. All control variables are lagged by one period. Variable definitions are provided in Table A.1 in the Appendix. The sample consists of actively managed domestic equity mutual funds in the 2000-2010 period. Robust *t*-statistics adjusted for clustering at the ultimate owner level are reported in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
Bank-Affiliated	-0.1170*** (-2.91)	-0.1850*** (-5.82)
Bank-Affiliated × Bear Market	-0.1420* (-1.81)	
Bank-Affiliated × Investment Region Return		0.0184*** (2.61)
Investment Region Return		-0.1680*** (-9.55)
TNA (log)	-0.0509*** (-4.73)	-0.0517*** (-4.79)
Family TNA (log)	0.0423*** (4.74)	0.0419*** (4.69)
Age (log)	-0.0327 (-1.32)	-0.0337 (-1.36)
Total Expense Ratio	-0.0306 (-0.78)	-0.0330 (-0.84)
Total Load	-0.0231*** (-2.78)	-0.0234*** (-2.82)
Flow	0.0073*** (5.95)	0.0070*** (5.72)
Number of Countries of Sale	-0.0053 (-0.39)	-0.0047 (-0.34)
Team Managed	-0.1020*** (-3.22)	-0.1020*** (-3.22)
Past Performance	0.0260*** (6.06)	0.0262*** (6.12)
Number of Observations	127,880	127,880
R-squared	0.145	0.146

Table IA.3
Portfolio Weight Regressions

This table presents ordinary least squares (OLS) of fund portfolio weights. The dependent variable in the regressions is the fund's U.S. dollar investment in a stock as a percentage of total net assets of the fund. *Bank Affiliated* is a dummy that takes a value of one if the ultimate owner of the fund's management company is a commercial banking group, and zero otherwise. *Client Stock* is a dummy that takes a value of one if the stock holding is from a fund's parent bank lending client. The regressions also include domicile country and quarter fixed effects. Fund-level controls include size, family size, age, total expense ratio, total load, flow, number of countries of sale, team managed, and past performance. Stock-level control variables include firm size, book-to-market, stock return, stock volatility, and leverage. All control variables are lagged by one period. Variable definitions are provided in Table A.1 in the Appendix. The sample consists of actively managed domestic equity mutual funds in the 2000-2010 period. Robust *t*-statistics adjusted for clustering at the ultimate owner level are reported in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Bank Affiliated	0.1800*	0.2090**	-0.0722**	-0.0536	-0.0648***	-0.0466**	-0.0474	-0.0381
	(1.78)	(1.99)	(-1.98)	(-1.45)	(-3.07)	(-2.36)	(-1.20)	(-0.95)
Client Stock	0.3390*		0.1980**		0.2050***		0.1010*	
	(1.94)		(2.19)		(3.30)		(1.77)	
Top 10 Client Stock		1.6890***		0.9060***		0.8380***		0.4940***
		(11.44)		(5.93)		(5.79)		(6.33)
Size (Log)			0.3090***	0.3100***	0.3090***	0.3100***	0.2360***	0.2350***
			(21.99)	(22.02)	(18.13)	(18.11)	(20.10)	(20.09)
Book-to-Market			0.0219	0.0230	0.0277**	0.0291**	-0.0285***	-0.0286***
			(1.40)	(1.48)	(2.14)	(2.25)	(-3.14)	(-3.16)
Stock Return			0.0010***	0.0010***	0.0012***	0.0012***	0.0013***	0.0013***
			(4.76)	(4.75)	(5.54)	(5.53)	(9.38)	(9.38)
Stock Volatility			-0.0002	-0.0002	-0.0002	-0.0002	-0.0005***	-0.0005***
			(-1.08)	(-1.23)	(-1.42)	(-1.61)	(-4.16)	(-4.22)
Leverage			-0.1360***	-0.1310***	-0.1130***	-0.1080***	0.0305**	0.0303**
			(-7.94)	(-7.74)	(-9.30)	(-9.05)	(2.37)	(2.36)
Fund-Level Controls	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Quarter Fixed Effects	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Domicile Country Fixed Effects	No	No	Yes	Yes	No	No	Yes	Yes
Fund Benchmark Fixed Effects	No	No	Yes	Yes	No	No	No	No
Stock Industry Fixed Effects	No	No	Yes	Yes	Yes	Yes	No	No
Fund Fixed Effects	No	No	No	No	Yes	Yes	No	No
Stock Fixed Effects	No	No	No	No	No	No	Yes	Yes
Number of Observations	14,094,422	14,094,422	11,168,224	11,168,224	13,541,533	13,541,533	11,216,462	11,216,462
R-squared	0.006	0.007	0.303	0.303	0.488	0.489	0.364	0.364