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 92 basis points per year. Consistent with conflicts of interest, the underperformance is more pronounced among those affiliated funds that overweight more the stock of the bank's lending clients. Divestitures of asset management divisions by banking groups support a causal interpretation of the results. Our findings suggest that affiliated fund managers support their lending divisions' operations to reduce career concerns at the expense of fund investors.

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1. Introduction

Mutual fund companies manage trillions of U.S. dollars worldwide, but many of these companies are not stand-alone entities. About 40% of mutual funds are run by asset management divisions of groups whose primary activity is commercial banking. This phenomenon is less prevalent in the United States (only 20% of mutual funds) as a result of the Glass-Steagall Act, which kept banking and asset management as separate activities for many decades. Since the repeal of Glass-Steagall by the Gramm-Leach-Bliley Act in 1999, many U.S. banking groups have begun to develop asset management divisions. There are press reports that bank-affiliated funds underperform funds operated by independent fund management companies, particularly in Europe (Financial Times (2011a)). Yet, there is little academic research about the potential spillover effects between commercial banking and asset management divisions.

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 (conflict of interest hypothesis).[1] While fund managers have a fiduciary responsibility to fund investors, they are also employees of banking groups for which the revenue generated by lending usually dominates revenue from asset management. Commercial banks may use affiliated funds to boost their voting rights and thus increase influence over the borrower's board of directors. This influence could help to build 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. Affiliated funds could also be used to temporarily support the stock price of the bank's lending clients and thus gain favor with the borrower's management.

The alternative hypothesis (information advantage hypothesis) is that lending generates private information about borrowers via credit origination, monitoring, and renegotiation that is valuable for the bank-affiliated fund manager. Thus, banking groups gain an information advantage on their borrowing firms, which can have positive spillover effects for affiliated funds. The null hypothesis

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

(Chinese wall hypothesis) is that groups impose "Chinese walls" to prevent communication between the asset management and the lending divisions, so that affiliated funds operate independently of other 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 funds that invest in domestic equities, because banks typically have stronger lending relationships with domestic firms. We define commercial bank-affiliated funds as those 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. The other management companies are classified as either affiliated with investment banks or insurance companies, or as unaffiliated companies.[2]

We find that, on average, commercial bank-affiliated funds underperform unaffiliated funds by about 92 basis points per year as measured by four-factor alphas. We obtain similar results when we use alternative measures of performance such as benchmark-adjusted returns, gross returns, or buy-and-hold returns. If bank-affiliated funds underperform their peers (defined as funds that track the same benchmark), they can experience significant outflows and an erosion of revenues. Therefore, we expect affiliated management companies to be more conflicted when the benefits outweigh the costs, namely, when lending activity dominates asset management activity. We find that bank-affiliated funds underperform more when the ratio of outstanding loans to assets under management is higher.

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 bank's activity in the syndicated loan market. A "client stock" is a firm that obtained a syndicated loan from the bank in the previous three years and whose shares are held in the portfolio of a fund affiliated with the bank. We show that bank-affiliated funds' portfolio holdings are biased toward client stocks over non-client stocks. In addition, we find that bank-affiliated funds with

[2] We focus on the conflict of interest within commercial banking groups because net interest income represents the largest share of revenues among top banks in the world.

higher portfolio exposure to client stocks (in excess of the portfolio weights in passive funds that track the same benchmark) tend to underperform more.

We also examine cross-country differences in the performance of bank-affiliated funds. "Chinese walls" between bank lending and asset management activities are more strictly enforced and fund investors' rights are better protected in common-law countries such as the United States (Khorana, Servaes, and Tufano (2005, 2009)). In the sample of U.S.-domiciled funds, we find less pronounced underperformance, and no relation between performance and measures of conflicts of interest with the lending division. We also find less underperformance for bank-affiliated funds domiciled in countries with common-law legal origins, market-based financial systems, higher regulatory requirements for fund approval and disclosure, and more competitive banking and mutual fund industries. This is consistent with the idea that stronger regulations and competition mitigate conflicts of interest.

The endogeneity of the organizational form of a management company makes it difficult to identify a causal effect. The decision to operate a fund management company as bank affiliated might be related to unobserved fund characteristics that may explain performance. We implement two empirical strategies to address this concern. First, we use fund fixed effects to control for time-invariant unobserved fund heterogeneity. The estimated underperformance of bank-affiliated funds proves to be even more pronounced in this case. This fund fixed effects specification indicates that performance deteriorates after a fund switches from unaffiliated to bank-affiliated. Second, we exploit the exogenous variation generated by divestitures of asset management divisions by commercial banking groups during the 2000-2012 period as well as in the aftermath of the 2007-2009 financial crisis when banks improved their regulatory capital ratios by divesting their asset management units (The Economist (2009)). The evidence shows that funds that switch from bank-affiliated to unaffiliated through divestiture subsequently significantly reduce their holdings of client stocks and experience improved performance.

One remaining concern with our results is that bank-affiliated funds might hire less skilled portfolio managers. This could occur if talented managers view stand-alone management

companies as presenting more prestigious career paths. Bank-affiliated funds could also have fewer incentives to attract talent because of their competitive advantage in retaining investors, as banking groups can offer bundled services to their retail clients. Thus, when an asset management arm is spun off, the new stand-alone company may have to switch to a talent-based model and replace fund managers. To address this concern, we restrict the sample of divestitures to funds that do not experience fund manager turnover. We find similar results when we use this sample of divestitures (in this case skill would remain constant), which suggests that our results are not driven by systematic differences in skill.

To examine the manager skill hypothesis further, we examine the portfolio trading of bank-affiliated funds using calendar-time portfolio returns. In these tests, we compare manager skill exclusively within bank-affiliated funds on their holdings of client and non-client stocks. We find that the client stock a fund buys underperform the client stock a fund sells in the group of funds that overweight more client stocks. These funds, however, do not underperform in the trading of non-client stocks. Moreover, funds that overweight less client stocks do not underperform in the trading of client stocks. These results do not support the skill hypothesis.

Why do commercial bank-affiliated funds exist in equilibrium if they perform more poorly? We try to understand the motivation of the different agents by providing evidence of the benefits that accrue to the parent bank and fund manager, as well as to the borrower firm. First, we show that parent banks use affiliated fund resources to build lending relationships with borrowers (Bharath, Dahiya, Saunders, and Srinivasan (2007, 2011), Ferreira and Matos (2012)). We find that banks are more likely to act as lead arrangers in future loans when they exert control over borrowers by holding shares through their asset management divisions; these holdings increase the probability of initiating a new lending relationship and preserving a past lending relationship. Second, we find that fund managers that act as team players for their banking group employer by overweighting client stocks are less likely to lose jobs. Our findings suggest that career concerns help to explain the decision of fund managers to go along with the parent bank's interests. Third, we find that bank-affiliated funds' portfolio holdings of client stocks are associated with less

shareholder voting dissent on executive compensation proposals. This is consistent with the idea that affiliated funds attempt to curry favor with the borrower's management in an effort to promote a lending relationship.[3] Finally, we find that conflicts of interest are more pronounced during bear markets when borrowers are more likely to benefit from support, and fund managers have heightened career concerns.

The final question is to understand how funds earn lower returns without suffering significant investor outflows and reductions in market share. Bank-affiliated funds can have a captive investor clientele as unaffiliated fund providers may find it difficult to establish a distribution network in countries where banks have a strong presence.[4] In addition, banks have a competitive advantage in brand recognition, which allows them to cross-sell by offering mutual funds jointly with other financial products. Our tests show that captive investor clienteles are important in explaining the high market share of bank-affiliated funds outside the United States.

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)). Recent papers study the 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 stocks around new loan announcements, a strategy that has a short-term positive effect on fund performance. This is consistent with the information advantage hypothesis. Other authors, 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)). More recently, Sialm and Tham (2016) document spillover effects

[3] In a Financial Times (2011b) article, Guillaume Prache, managing director of the European Federation of Investors, states: "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."

[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), Del Guercio and Reuter (2014)). Christoffersen, Evans, and Musto (2013) document other biases in broker-intermediated funds.

across business segments of publicly traded fund management companies. Internationally, Golez and Marin (2015) show that Spanish bank-affiliated funds support the prices of their own-parent stock, while Gil-Bazo, Hoffmann, and Mayordomo (2016) show that these funds support parent banks' bond issues during the 2007-2009 global financial crisis and the 2010-2012 European sovereign debt crisis. In addition, Ghosh, Kale, and Panchapagesan (2014) find conflicts of interest in business group-affiliated funds in India.

Our main contribution is to provide evidence of conflicts of interest between the lending and asset management divisions within commercial banking groups using an international sample of mutual funds where these conflicts are more prevalent than in the United States.

2. The Conflict of Interest Hypothesis

The underlying economics in our conflict of interest hypothesis is that the parent entity (a banking group) can be thought of as a multi-division business whose objective function is to maximize the combined revenue from all its divisions. While commercial banking operations derive value from lending relationships with their borrower clients, the asset management division derives its revenues from fees on assets under management, which depend on attracting flows from end investors. The interest of the parent bank as creditor may conflict with that as equity holder via its affiliated funds. The fund manager is an employee of the banking group, and the manager's objectives are linked to both size of assets under management and continued employment.[5] As a result, instead of maximizing risk-adjusted returns of fund investors, the fund manager may be asked to make portfolio decisions that benefit the parent bank's interests. For example, the fund manager might be asked to overweight a bank's lending client's stock to increase voting rights and help build long-term relationships that generate loan business or to temporarily support the stock price of the bank's lending clients even if that will impair fund performance. Therefore, we expect

[5] Of course, portfolio decisions are ultimately in the hands of fund managers. However, fund managers have incentives to minimize the likelihood that the parent bank faces financial distress, which could lead to negative consequences such as salary cuts, layoffs, and liquidation of the asset management division.

a negative effect on the performance of bank-affiliated funds. The first testable proposition of the conflict of interest hypothesis is as follows:

H1: *Commercial bank-affiliated funds underperform unaffiliated funds, as well as funds that are affiliated with other types of financial conglomerates (e.g., investment banks and insurance companies).*

The extent of the conflict of interest in the multi-division banking group depends on the relative size of the commercial banking and asset management divisions. If the commercial bank balance sheet exposure (or loan interest income) dominates the assets (or revenues) from the asset management division, we expect a more pronounced conflict of interest. On the other hand, the conflict will be minimized if the asset management business dominates the commercial banking business. We expect the affiliated fund's portfolio to be tilted in favor of the lending client stocks, which we expect to increase the bank's influence over its client. It may also be perceived favorably by the client, particularly if the bank-affiliated funds help to support the stock price of the client. We test this implication as follows:

H2: *The extent of the underperformance of commercial-bank affiliated funds increases with the relative size of the lending division and the degree of overweighting of the bank's lending client stocks.*

One alternative hypothesis is that bank-affiliated fund managers overweight the bank's lending client stock because they have private information on clients acquired through the lending relationship. In this case, we would expect the trades on client stocks to be a source of outperformance for bank-affiliated funds. Another alternative is that bank-affiliated funds attract less skilled managers, in which case we would expect fund manager trading to be subpar in both client and non-client stocks. We can empirically separate our working hypothesis of conflict of interest because it predicts that affiliated funds underperform only in the trades of client stocks (but not in the trades of non-client stocks). We test the following hypothesis on fund trades:

H3: *The trades of the bank's lending client stocks explain the underperformance of commercial bank-affiliated funds. While managers of bank-affiliated funds show below-average skill in the trading of client stocks, they show average skill in the trading of non-client stocks.*

For the overweighting of client stocks and the underperformance of bank-affiliated funds to exist in equilibrium, we need to understand the motivation of the different agents. First, we need to see a benefit from the bank-affiliated funds' portfolio holdings of client stocks for the commercial bank business. We test whether affiliated funds' holdings increase the probability that a bank will retain or gain lending relationships. Second, the influence that comes from affiliated funds' holdings of client stocks must also generate benefits for the client's management, which is aligned with the bank's interests. We test whether clients' management benefits from less shareholder voting dissent on management proposals. Finally, we need to understand the incentives of fund managers to act as team players. We test whether fund managers who overweight client stocks have fewer career concerns by experiencing a lower probability of job loss.[6] Thus, we test the following equilibrium predictions:

H4: *The overweight of the bank's client stocks by affiliated fund managers is an equilibrium outcome with benefits for all agents involved: (1) the bank benefits from repeated lending relationships; (2) the client's management benefits from friendlier voting at shareholder meetings; and (3) fund managers benefit from lower job turnover.*

3. Data

3.1 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. Although multiple share classes are

[6] Fund managers have limited career opportunities in countries where the asset management industry is dominated by banks and investors mainly rely on the advice of bank branches to select funds. Thus, bank-affiliated fund managers are viewed as bank employees and they have few incentives to build a track record.

listed as separate observations in Lipper, they have the same holdings and the same returns before expenses. Thus, we keep the primary share class as our unit of observation, and aggregate fund-level variables across different share classes. We exclude offshore funds (e.g., funds domiciled in Luxembourg or Dublin), funds-of-funds, and closed-end funds, which reduces the sample to 29,872 open-end equity funds in 28 countries (18,918 funds that managed over $7.4 trillion as of December 2010).[7]

To classify a 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 the FactSet/ LionShares database. 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. 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 commercial 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 of over $10 billion; or (2) there is a commercial bank within the fund's ultimate owner group with total assets of over $10 billion.[8] After the match, the sample includes 16,245 funds (11,556 funds that managed $6.8 trillion as of December 2010).

We also classify each fund as affiliated either with an investment bank or an insurance company. We use the ultimate owner type from the Bureau van Dijk's BankScope and ISIS databases to classify a fund management company as affiliated with an insurance group. We use the top 20 banks in the Thomson Reuters Deal Analytics global equity league tables (by proceeds) for each year and region (Global, USA, EMEA, and Asia-Pacific) to classify a management

[7] Ferreira, Keswani, Miguel, and Ramos (2013) and Cremers, Ferreira, Matos, and Starks (2016) 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).

[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 commercial bank-affiliated.

company as affiliated with an investment 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 commercial bank-affiliated. Funds managed by MFS Investment Management (the asset management arm of Sun Life Financial) and funds managed by Allianz Global Investors (the asset management arm of Allianz SE) are classified as insurance-affiliated. Funds managed by Goldman Sachs Asset Management (the asset management arm of Goldman Sachs) and funds managed by Credit Suisse Funds (the asset management arm of Credit Suisse) are classified as investment bank-affiliated. Finally, funds managed by Fidelity Investments (parent company is FMR LLC, an American multinational fund management company) and funds managed by Schroders (a British multinational fund management company) are classified as unaffiliated.[9]

We focus on the conflict of interest with commercial lending because this is the dominant activity among the top banks in the world. The world's top 20 banks (as ranked by total assets) earned about 58% of their revenues from net interest income generated by loans in 2010. We also measure the relative importance of commercial lending versus investment banking in total revenues. Investment banking fees represent less than 4% of total revenues among the world's top banks. We conclude that most revenues are generated from interest income rather than underwriting and advisory services for the banks in our sample.[10]

For our main tests, we focus on actively managed domestic funds (i.e., funds that invest in their local market) because banks typically have stronger lending relationships with domestic firms. The sample includes a total of 7,220 domestic equity funds in 28 countries over the 2000-2010 period. We also perform placebo tests using international funds.

[9] Funds can be classified in more than one category simultaneously. For example, funds managed by DWS Investments (the asset management arm of Deutsche Bank) are classified as commercial bank-affiliated and investment bank-affiliated because Deutsche Bank is a universal banking group.

[10] We obtain data on net interest income and revenues (from BankScope) and investment banking fees (from the Thomson Reuters's Global Investment Banking Review league table) in 2010 for 14 out of the top 20 banks in the league table.

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. Domestic 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 European countries such as Germany, Italy, Spain, and Switzerland. Figure 1 shows the time series of the number and TNA of unaffiliated and bank-affiliated funds, where we see a downward trend in the market 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 affiliated with a commercial bank. 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 companies are affiliated with a bank.

3.2 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.[11]

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) in the regression:

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

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. Treasury

[11] We construct country-level factors using individual stock returns in U.S. dollars obtained from Datastream, closely following 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, and World. Ferreira, Keswani, Miguel, and Ramos (2013) provide a detailed description of the factors.

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; and $MOM_{i,t}$ (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), gross returns, buy and hold returns, and the information ratio (i.e., the ratio of the alpha by the standard deviation of the residuals of the four-factor model).[12]

3.3 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 over the TNA managed by the asset management division (*Loans/TNA*).[13] Second, we use the ratio of the parent bank's corporate and commercial loans outstanding over the TNA (*Corporate Loans/TNA*). Finally, we use the ratio of the parent bank's interest income on loans over the total annual U.S. dollar value of fees of the asset management division (*Interest Income/Fees*).

To test the lending channel more directly, we use fund holdings data to analyze whether the portfolio choices of commercial bank-affiliated funds are biased toward lending client stocks. We

[12] We use quarterly (instead of monthly) returns because this is the frequency of the fund portfolio holdings in subsequent tests.

[13] The TNA is given by the sum of open-end actively managed domestic equity funds managed by the parent bank's asset management divisions. We obtain similar estimates when we use the TNA across all funds.

obtain data on funds' portfolio holdings from the LionShares database.[14] We classify each fund's holdings as either a client stock or non-client stock using the DealScan database; 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.

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 passive funds that track the same benchmark (*Bias in Client Stocks*). Finally, we take into account the intensity of the bank-firm lending relationship by computing both measures using only the holdings of the top ten borrowers of the parent bank in terms of the total amount of syndicated loans in the previous three years (*%TNA Invested in Top 10 Client Stocks*, *Bias in Top 10 Client Stocks*).

To better understand how fund portfolio holdings are classified as client or non-client stocks, consider an example of two particular 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 (%)	17.1			Bias in Client Stocks (%)	7.2		
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

The first example is the DWS Investa fund, which is managed by DWS Investments. Deutsche

[14] Ferreira and Matos (2008) provide a detailed description of this database.

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 holdings of DWS Investa fund. Overall, 56.9% of the fund's TNA is invested in client stocks, which corresponds to an overweight of 17.1 percentage points compared to passive funds that track the DAX 30 index.

The second example is the JPMorgan U.S. Equity Fund, which is managed by JPMorgan Asset Management. 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 7.2 percentage points compared to passive funds that track the S&P 500 index.

3.4 Summary Statistics

Panel A of Table 2 reports summary statistics on the *Commercial Bank-Affiliated*, *Publicly Traded Parent*, *Insurance-Affiliated*, *Investment Bank-Affiliated* dummy variables; other proxies for conflicts of interest (*Loans/TNA*, *Corporate Loans/TNA*, *Interest Income/Fees*, *%TNA Invested in Client Stocks*, *Bias in Client Stocks*); risk-adjusted performance (*Four-Factor Alpha*); and fund-level control variables (*TNA*, *Family TNA*, *Age*, *Total Expense Ratio*, *Total Load*, *Flow*, *Number of Countries of Sale*, *Team Managed*). 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 commercial bank-affiliated funds, as well as univariate tests of the equality of coefficients between the groups. Panel C reports summary statistics on the proxies for conflicts of interest in bank-affiliated funds. The mean and median *Loans/TNA* and *Corporate Loans/TNA* well exceed one, indicating that banking groups' loan exposure is greater than their (equity) assets under management. In addition, on average, affiliated funds have about 14.7% of their holdings in client stocks, which corresponds to 5.9 percentage points more than comparable passive 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 as of December 2010, with total assets of over $2.5 trillion (outstanding loans of $545 billion), and second in the DealScan 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) as of December 2010. Thus, its lending business is several times the size of its asset management business. Interestingly, when we examine fund holdings, we find that DWS funds' equity holdings show a strong bias to client stocks, with 25% of TNA invested in client stocks compared to 15% for comparable passive funds.

4. Results

4.1 Baseline Test

We start by comparing the performance of management companies whose parent entities' primary activity is commercial banking and unaffiliated fund management companies. 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 control for different types of affiliation by including the *Insurance-Affiliated* dummy variable for management companies that belong to insurance groups, and the *Investment Bank-Affiliated* dummy variable for management companies that belong to investment banks. We also include the *Publicly Traded Parent* dummy to control for spillover effects associated with the listing of the parent company. The regressions also 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 Panel A of Table 3. Column (1) shows that commercial bank-affiliated funds underperform unaffiliated funds, as indicated by the negative and significant coefficient on the *Commercial Bank-Affiliated* dummy variable. The effect is economically significant. Bank-affiliated funds underperform unaffiliated funds by 23 basis points per quarter (or 92 basis points per year). The results also show that affiliation with commercial banking groups

is the most detrimental arrangement for fund performance.

Insurance-affiliated funds perform in line with unaffiliated funds (i.e., the coefficient on the *Insurance-Affiliated* dummy variable is not statistically significant). Funds affiliated with financial conglomerates with both relevant commercial and investment banking activity underperform unaffiliated funds by about 12.5 basis points ($-0.125 = -0.231 + 0.106$) basis points per quarter. The findings on investment banks are consistent with conflict of interest between the security underwriting business and the asset management division (Hao and Yan (2012), Berzins, Liu, and Trzcinka (2013)).[15]

Fund management companies whose ultimate owners are publicly traded perform similarly to companies whose ultimate owners are privately held. The coefficients on the remaining 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), Pastor, Stambaugh, and Taylor (2015)).

An important concern with our baseline results is endogeneity. We first address the potential endogeneity concerns using fund fixed effects methods that control for unobserved sources of fund heterogeneity. This solves a joint determination problem in which an unobserved fund-level time-invariant variable determines both performance and the decision to operate a fund management company in a commercial banking group. It is also equivalent to looking only at within-fund changes in the *Commercial Bank-Affiliated* dummy variable (i.e., divestitures or acquisitions of asset management divisions by commercial banking groups in which the other party is not a banking group).

Column (2) of Table 3 reports estimates of fund fixed effects regressions. The affiliated funds' underperformance gap relative to unaffiliated funds is 38 basis points per quarter, which is stronger than the estimate in column (1). The fund fixed effects specification indicates that fund

[15] In our sample, most of the top investment banks (e.g. JP Morgan, Bank of America, Citigroup, Barclays Capital, BNP Paribas, and Deutsche Bank) are also part of a wider financial conglomerate which earns significant revenues from commercial banking.

performance improves after a switch from affiliated to unaffiliated, while fund performance deteriorates after a switch from unaffiliated to affiliated.

To investigate further why commercial-bank affiliated funds underperform, we alternatively add to our baseline specification the logarithm of one plus the variables *Loans/TNA*, *Corporate Loans/TNA*, or *Interest Income/Fees*, which measure the relative size of the lending division versus the asset management division within a banking group. Columns (3)-(5) show negative and statistically significant coefficients on these three variables. Moreover, the *Commercial Bank-Affiliated* dummy variable coefficient becomes statistically insignificant, which suggests that most of the underperformance of bank-affiliated funds is explained by the size of the lending business of the banking group. The effect is economically significant. For example, funds affiliated with commercial banks with lending divisions of relative size close to zero underperform unaffiliated funds by 9 basis points, while affiliated funds with commercial banks with lending divisions of median relative size (i.e., ratio of *Loans/TNA* of 22.75) underperform unaffiliated funds by 25 basis points per quarter.

Panel B shows estimates of the *Commercial Bank-Affiliated* coefficient using alternative measures of risk-adjusted performance. Column (1) shows that the results are robust when we use benchmark-adjusted returns as an alternative to four-factor alphas. The extent of the underperformance remains practically unchanged at 20 basis points per quarter. Banks' larger foothold in fund distribution may allow affiliated funds to charge higher fees, which might be an alternative explanation behind the underperformance of affiliated funds. Column (2) shows that bank-affiliated funds underperform unaffiliated funds when gross returns are used as the dependent variable, and the performance gap remains unchanged at 22 basis points per quarter. Thus, the ability of bank-affiliated funds to charge higher expense ratios does not explain their underperformance. We also consider the funds' buy-and-hold return in excess of the benchmark return, as the performance gap could come from higher loads, wrap fees, or other hidden costs. Column (3) shows that bank-affiliated funds underperform unaffiliated funds by a similar difference at 17 basis points per quarter. As a portfolio deviates from the benchmark, it will be

exposed to idiosyncratic risk. To take into account the differences in idiosyncratic risk across funds, we also use as a performance measure the information ratio. Column (4) shows that the results are robust when we use the information ratio as a performance measure.

We also explore the time series variation of our results by analyzing the bank-affiliated funds' performance gap in market downturns as proxied by (1) a dummy variable that takes a value of one in bear markets (2000:Q1-2002:Q3 and 2007:Q4-2009:Q1); (2) the market return of a fund's investment region (Asia Pacific, Europe, North America, Emerging); and (3) a dummy variable that takes a value of one during the NBER recession periods (any quarter including at least one month classified as a recession month). The estimates in Table IA.2 in the Internet Appendix show that the underperformance of affiliated funds is more pronounced during market downturns when we expect a bank's balance sheet to suffer from deterioration in the valuation of borrower firms.

4.2 Cross-Country Variation

Our sample of funds domiciled in 28 countries allows us to examine the cross-country differences in the performance of commercial-bank affiliated funds. We consider several country characteristics that can help to explain the underperformance of affiliated funds. Table 4 reports the results. First, we compare the underperformance of 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 because of the legacy effect of the Glass-Steagal Act, and fund investors' rights are better protected (Khorana, Servaes, and Tufano (2005, 2009)). In columns (1) and (2), we find much less pronounced underperformance among U.S. affiliated funds (17 basis points per quarter) than among non-U.S. affiliated funds (33 basis points per quarter). This performance difference is statistically significant.

Second, we compare the performance gap of bank-affiliated funds in countries with civil-law legal origin versus countries with common-law legal origin (La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998)). In columns (3) and (4) of Table 4, we find that the underperformance of bank-affiliated funds is more pronounced in civil-law countries (32 basis points per quarter) than in

common-law countries (19 basis points per quarter). Taken together, the non-U.S. versus U.S. and the legal origin results suggest that conflicts of interest are less pronounced in markets with stronger laws and regulations.

Third, we compare the performance gap of bank-affiliated funds in countries with bank-based financial systems versus countries with market-based financial systems (Demirgüç-Kunt and Levine (2001)). The conflicts of interest between the lending and the asset management divisions should be exacerbated in countries where firms are more bank dependent and rely less on markets to raise capital. In columns (5) and (6), we find that the underperformance of bank-affiliated funds is more pronounced in bank-based countries (31 basis points per quarter) than in market-based countries (20 basis points per quarter).

Fourth, we compare the performance gap of bank-affiliated funds in countries with low concentration versus high concentration in the banking industry as proxied by the market share of the top five banks (Beck, Demirgüç-Kunt, and Levine (2000)). We expect that the conflicts of interest are more pronounced in countries with higher concentration. In columns (7) and (8), we find that the underperformance of bank-affiliated funds is more pronounced in the high bank concentration group (41 basis points per quarter) than in the low bank concentration group (20 basis points per quarter). This performance difference is statistically significant.

Fifth, we compare the performance gap of bank-affiliated funds in countries with low concentration versus high concentration in the mutual fund industry as proxied by the market share of the top five fund management companies. In columns (9) and (10), we find that the underperformance of bank-affiliated funds is more pronounced in the high concentration group (33 basis points per quarter) than in the low concentration group (17 basis points per quarter), and the difference is statistically significant.

Finally, we compare the performance gap of bank-affiliated funds in countries with low requirements versus high requirements with regard to regulatory approvals and disclosure (*Approvals*) in the fund industry (Khorana, Servaes, and Tufano (2005)). In columns (11) and (12) of Table 4, we find that the underperformance of bank-affiliated funds is more pronounced in the

low *Approvals* group (31 basis points per quarter) than in the high *Approvals* group (23 basis points per quarter).

Overall, the results suggest that better investor protection, a stricter regulatory environment, and more intense competition in the banking and mutual fund industry all mitigate conflicts of interest between the lending and asset management divisions within commercial banking groups.

4.3 Client Stocks Overweighting

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

Panel C of Table 2 shows that bank-affiliated funds hold, on average, about 14.7% of the fund's TNA in client stocks (*%TNA Invested in Client Stocks*). This compares with about 8.8% when we consider the average weight in the same stocks among passive funds that track the same benchmark. This corresponds to a 5.9 percentage point overweight of client stocks by bank-affiliated funds relative to comparable passive funds (*Bias in Client Stocks*). The overweight to client stocks is 0.22 percentage points when we consider the top ten borrowers of the fund's parent bank (*Bias in Top 10 Client Stocks*).[16]

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 parent's bank lending business. To test which hypothesis (conflict of interest or information advantage) dominates, we estimate our baseline regressions of fund performance using measures based on portfolio holdings.

We use four dummy variables to measure the extent to which a fund's holdings overweight client stocks. We define a *High Allocation Fund* dummy variable that takes a value of one if the fund's *%TNA Invested in Client Stocks* is above the median in each country and each quarter, and

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

a *High Bias Fund* dummy variable that takes a value of one if the fund's *Bias in Client Stocks* is above the median in each country and each quarter. We define two similar dummy variables (*High Allocation Fund in Top 10 Client Stocks, High Bias Fund in Top 10 Client Stocks*) based on the top 10 clients holdings-based measures. In the regressions, the *Commercial Bank-Affiliated* coefficient is an estimate of the difference in performance between funds with low exposure to client stocks and unaffiliated funds. The *High Allocation Fund* and *High Bias Fund* coefficients provide an estimate of the difference in performance between funds with high exposure to client stocks and funds with low exposure to client stocks, and therefore the degree to which fund performance is affected by conflicts of interest with the lending division.

Table 5 presents the results. Columns (1) and (2) show negative and statistically significant coefficients on the *High Bias Fund* and *High Bias Fund in Top 10 Client Stocks* dummy variables. The effects are also economically significant. For example, using the estimates in column (1), affiliated funds with low overweight of client stocks underperform unaffiliated funds by about 20 basis points per quarter. Affiliated funds with high overweight of client stocks underperform affiliated funds with low overweight of client stocks by about 12 basis points, which indicates that they underperform unaffiliated funds by 32 basis points. Thus, these estimates indicate that the exposure to client stocks represents about 40% of the underperformance of commercial bank-affiliated funds.

Columns (3) and (4) show negative and statistically significant coefficients on the *High Allocation Fund* and *High Allocation Fund in Top 10 Client Stocks* dummy variables. The effects are also economically significant. For example, affiliated funds with low exposure to client stocks underperform unaffiliated funds by 17.5 basis points per quarter. Affiliated funds with high exposure to client stocks underperform affiliated funds with low exposure to client stocks by 16 basis points, which indicate that they underperform unaffiliated funds by 33.5 basis points.

We also compare the effect on fund performance of overweighting client stocks for the sample of non-U.S. funds and U.S. funds separately. Columns (5) and (6) present estimates using the *Commercial Bank-Affiliated* and *High Bias Fund* dummy variables. We find that the *High Bias*

Fund coefficient is negative and significant in the sample of non-U.S. funds, and statistically insignificant in the sample of U.S. funds. This is consistent with the idea that the underperformance of non-U.S. affiliated funds is related to the extent of the portfolio's tilt toward client stocks. For the sample of U.S. funds, however, the performance gap of commercial bank-affiliated funds is unrelated to the fund exposure to client stocks.

Overall, the evidence indicates that commercial bank-affiliated funds with greater portfolio exposure and overweighting of client stocks tend to underperform more, which supports the conflict of interest hypothesis.[17]

4.4 Robustness Checks

Table IA.5 in the Internet Appendix presents additional robustness checks of our primary finding that commercial bank-affiliated funds underperform unaffiliated funds. First, we use alternative estimation methods such as Fama and MacBeth (1973) and weighted least squares (WLS) using fund TNA as weights. Columns (1) and (2) show that these alternative estimation methods provide estimates of the *Commercial Bank-Affiliated* coefficient that are comparable to the baseline results in Table 3. Second, 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 funds. Columns (3) and (4) indicate that results are robust when we exclude funds with assets under management below $10 million or exclude the first two years of the sample (2000-2001). Third, we check for the robustness of the findings when we control for the fund's *Active Share* (Cremers and Petajisto (2009), Cremers, Ferreira, Matos, and Starks (2016)), a proxy for managerial skill. This alleviates concerns that bank-affiliated funds might hire less skilled fund managers. Column (5) shows a similar estimate of the *Commercial Bank-Affiliated* coefficient to that of Table 3, which indicates that our results are not driven by systematic differences in fund manager skills between affiliated

[17] We also investigate whether affiliated funds would have performed better had they chosen to invest in other client stocks held by their peer funds (*Client Stocks Not Held*). The results in Table IA.4 in the Internet Appendix show that bank-affiliated funds are more biased toward the poorer-performing client stocks within the investable universe of stocks of their bank's lending clients.

and unaffiliated funds. Finally, we repeat our baseline test using a sample of passive funds run by bank-affiliated management companies. 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. Column (6) shows that passive funds run by bank-affiliated management companies do not underperform unaffiliated funds.

We also check whether sub-advisory arrangements across the different complexes affect our primary findings. Specifically, we follow the methodology in Chuprinin, Massa, and Schumacher (2015) to identify funds that are managed in an outsourcing relationship. We repeat our baseline tests either by restricting the sample to funds managed in-house or by including a dummy variable for outsourced funds as a control in our performance regressions. Table IA.6 of the Internet Appendix shows that the results are similar to those presented in Table 3.

5. Endogeneity

An important concern with our baseline results is endogeneity. A first concern is omitted variable bias, which we have addressed using fund fixed effects methods in Table 3. A second concern 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 unaffiliated. Another concern is the possibility that commercial bank-affiliated funds may have less skilled managers. We address these issues using several empirical strategies.

5.1 Divestitures of Asset Management Divisions

In order to strengthen the causal interpretation of our results, we exploit the variation in commercial bank affiliation generated by a quasi-natural experiment. We use asset management division divestitures by commercial banking groups to identify changes in bank affiliation that are exogenous to fund performance. We employ a difference-in-differences regression using the three quarters before and the three quarters after the announcement quarter of a fund divestiture by a commercial banking group (treated funds). The sample includes 22 divestitures by 19 commercial

banks for a total of 132 funds managed by companies sold by commercial banks to unaffiliated companies during the 2000-2010 period.[18]

We isolate treated funds, and then, from the population of non-treated (unaffiliated) funds, look for control funds that minimize the (Mahalanobis) distance between a vector of observed covariates (pre-event) across treated and non-treated funds. We select one matched control fund for each treated fund. The matching estimator produces exact matches on categorical variables, but less exact matches on continuous variables (although they should be close). The categorical variables include country and investment objective. The non-categorical variables (measured one quarter before the event) include *TNA*, *Family TNA*, and past year *Average Performance* (i.e., average four-factor alpha in the previous four quarters).

Panel A of Table 6 reports results of the equality of means and medians tests between the treatment and control groups. In general, we cannot reject the hypothesis of equal means or medians on the matching covariates between the treatment and control groups.

We estimate difference-in-differences regressions to examine whether funds' portfolio holdings of client stocks and performance change after a management company switches from affiliated to unaffiliated. In the case of the portfolio holdings tests, for each treated fund, we compute the *%TNA Invested in Client Stocks* using the pre-event list of client stocks of the parent bank with which the fund management company was affiliated before the event. For each control fund, we compute its allocation to client stocks using the same pre-event list of client stocks of the treated fund. The main explanatory variables are a dummy variable that takes a value of one if the fund is sold by a commercial bank to an unaffiliated company (*Treated*), a dummy variable that takes a value of one in the quarter of the divestiture and thereafter (*After*), and the interaction term *Treated* × *After*.[19]

[18] The events are identified combining information from several sources including LionShares, SDC Platinum, and web searches of press releases.

[19] The *Treated* dummy variable captures the difference in *%TNA Invested in Client Stocks* between the treated and the control fund in the same stock holding, which corresponds to the bias variables in Table 5 as treated and control fund share the same benchmark.

Panel B of Table 6 reports the results. Columns (1) and (2) report estimates for the sample of divestitures during the 2000-2010 period. Columns (1) and (2) show that fund managers significantly reduce their stock holdings of clients of the parent bank after a switch from affiliated to unaffiliated relative to control funds. On average, the holdings of client stocks (*%TNA Invested in Client Stocks*) in treated funds decline by 2.4 percentage points more (with a *t*-statistic of -4.75) than control funds following a divestiture.[20] Column (2) shows evidence that the treated funds improve *Average Performance* by 41 basis points more (with a *t*-statistic of 4.30) than control funds following a divestiture (the post-treatment period).

Columns (3) and (4) report the estimates when we restrict the sample to the 2007-2009 global financial crisis (2007:Q3-2009:Q2). During this period, several commercial banking groups were forced to divest non-core business assets to improve their regulatory capital ratios rather than because of other factors such as fund performance (The Economist (2009)). Some high-profile deals include the divestitures of the asset management division of Credit Suisse to Aberdeen, Barclays Global Investors to Blackrock, and Cominvest (Commerzbank) to Allianz. The results are similar to those in columns (1) and (2). We find that the differential effect on portfolio holdings of client stocks is 3.0 percentage points, and the differential effect on performance is positive at 35 basis points.

A potential concern with our results is that commercial-bank affiliated funds may hire less skilled managers. This could occur if talented managers view stand-alone management companies as presenting more prestigious career paths or because affiliated funds have less of an incentive to attract talent because banks can offer bundled services to clients. Thus, when an asset management arm is spun off, the new stand-alone entity may have to switch to a talent-based model to survive by replacing fund managers. To mitigate this concern, we restrict the sample of divestitures to funds that do not experience manager turnover (i.e., manager skill remains constant) around

[20] We repeat our difference-in-differences regressions using the fund benchmark weights (instead of the nearest-neighbor fund) as controls. The results reported in Table IA.7 in the Internet Appendix are similar to those presented in Table 6.

divestitures. Columns (5) and (6) report the estimates for the 2000-2010 period. The results are similar in magnitude to those in columns (1)-(4). Treated funds significantly reduce their portfolio holdings of client stocks by 2.7 percentage points relative to control funds after a divestiture. In addition, the differential effect on performance is positive at 38 basis points and statistically significant. These results suggest that differences in manager skill do not explain our results.

Figure 2 shows the evolution of the differences in portfolio holdings of client stocks (*%TNA Invested in Client Stocks*) and fund performance (*Average Performance*) between the treatment and control groups in the two quarters before and after a divestiture of an asset management company by a commercial banking group during the 2000-2010 period (Panel A) and during the global financial crisis (Panel B). This is based on the estimation with the treatment variable interacted with event quarter dummies. The divestitures occur between quarter -1 and quarter 0. The figure shows that the two groups follow parallel trends in the pre-treatment period. A switch of a company from affiliated to unaffiliated is accompanied by significant reductions in the holdings of client stocks. There is also evidence of an improvement in *Average Performance* following divestitures.

5.2 Calendar-Time Portfolio Return Tests

To further rule out alternative channels, we use a calendar-time portfolio approach to study the performance of affiliated funds in the trading of client and non-client fund holdings. In these tests, we compare manager skills for the same fund affiliation status (i.e., bank-affiliated funds) with regard to two groups of holdings (client stocks and non-client stocks). If fund managers face conflicts of interest with the lending division, then the client stocks a fund buys should underperform the client stocks the fund sells.[21] In addition, the non-client stocks a fund buys should have a performance similar to the non-client stocks a fund sells. Notice that significant underperformance for both client and non-client stocks would indicate that affiliated fund

[21] Alternatively, if fund managers have private information on lending clients, then the client stocks the fund buys should outperform the client stocks the fund sells.

managers have less skill than unaffiliated fund managers.

We compute the value-weighted monthly portfolio return in quarter *t* of client stocks in which a fund increased its holdings (in terms of number of shares) in quarter *t*–1. Similarly, we calculate the return to a portfolio of client stocks in which holdings decreased in quarter *t*–1. We average each return across funds in each month weighted by total net assets. Next, we compute the average return of the client stocks bought minus the client stocks sold in each month, and the corresponding risk-adjusted return using Carhart (1997) four-factor alphas with global factors. We follow the same steps to compute the risk-adjusted performance of the non-client stocks bought and sold, and compare performance on client stocks relative to non-client stocks.

Table 7 reports the average monthly four-factor alpha of client stocks and non-client stocks bought minus sold. Column (1) shows that client stocks bought underperform client stocks sold by 11.5 basis points per month, which is statistically insignificant. The non-client stock portfolio return (buys minus sells) is positive and statistically insignificant. The difference in portfolio returns between client stocks and non-client stocks is -15 basis points but statistically insignificant. This estimate indicates that the exposure to client stocks represents about 30% of the average underperformance of bank-affiliated funds.[22]

The source of the underperformance in the trading of client stocks is related to the decision to overweight client stocks. Thus, we expect the underperformance in the trading of client stocks to be concentrated in the group of bank-affiliated funds that overweight more client stocks (*High Bias Funds*). In addition, we do not expect to find underperformance in the group of affiliated funds with low bias in client stocks (*Low Bias Funds*). Column (2) shows that client stocks bought significantly *underperform* client stocks sold by 23 basis points in the group of *High Bias Funds,* while column (3) show that client stocks bought *outperform* client stocks sold by 17 basis points in the group of *Low Bias Funds*. In the case of non-client stocks, the alphas are neither statistically

[22] Bank-affiliated funds underperform by 15 basis points in the trading of client stocks versus non-client stocks using the estimate in column (1) of Table 7. Since these funds hold, on average, 14.7% of the TNA in client stocks, this implies that the underperformance due to this channel is 26 basis points per year (= 15 × 14.7% × 12). This corresponds to about 30% of the average underperformance of bank-affiliated funds.

nor economically significant. The difference in portfolio returns between client and non-client stocks is significant at -27 basis points in the group of *High Bias Funds*, and statistically insignificant in the group of *Low Bias Funds*. This estimate for the group of *High Bias Funds* indicates that the exposure to client stocks (23.8% of the fund's TNA on average) represents about 60% of the underperformance among affiliated funds that overweight more client stocks. These results are consistent with the idea that manager skill is similar in affiliated and unaffiliated funds, and thus the skill hypothesis does not explain the underperformance of affiliated funds.

We also examine the performance of client stocks bought and sold during bear market periods in the group of *High Bias Funds*. We find that client stocks bought significantly underperform client stocks sold at 50 basis points, while non-client stock portfolio returns are statistically insignificant. The difference in portfolio returns between client stocks and non-client stocks is -64 basis points (*t*-statistic is -2.55) in bear markets, while the difference is statistically insignificant in bull markets. We conclude that the underperformance in client stocks is driven by periods of market downturns when a bank's balance sheet would suffer the most from deterioration in the pricing of loans.

To shed light on the underlying reason behind the performance gap of bank-affiliated funds on client stocks, we examine the trading activity of affiliated fund managers on client stocks and non-client stocks. Table IA.8 in the Internet Appendix reports estimates of a fund-stock-quarter regression of fund holding turnover on the *Commercial Bank-Affiliated* dummy variable and the *Client Stock* dummy variable, which takes a value of one if the stock holding is from a fund's parent bank lending client. We find that bank-affiliated funds trade significantly more frequently in client stocks than in non-client stocks.

We also examine the affiliated funds behavior when it is more valuable to lending clients such as negative shocks to the clients. Following Cohen and Schmidt (2009), we look at downward price pressure events caused by widespread selling of the client stock using the *%Comp Sold>1* dummy variable, which takes a value of one when more than 1% of the shares outstanding of a stock are being sold in aggregate by all funds in a quarter (excluding funds from the own-

management company). Table IA.9 in the Internet Appendix reports estimates of a fund-stock-quarter regression of the logarithm of fund holding ownership on the *Commercial Bank-Affiliated, Client Stock,* and *%Comp Sold>1* dummy variables. We find that affiliated funds increase their ownership of client stocks in periods of high selling pressure by other funds, as indicated by the positive and significant coefficient on *Client Stock* × *%Comp Sold>1*. This effect is economically significant as bank-affiliated funds increase their holdings in client stocks by about 3% more than in non-client stocks following a negative shock. This is consistent with the idea that bank-affiliated funds provide price support at the time of negative shocks, which bias their portfolios toward poorer-performing client stocks. These results suggest that affiliated-fund managers act as liquidity providers for client stocks, which leads to higher turnover and poorer performance in their client stock portfolio holdings.

5.3 Placebo Tests

We perform a placebo test of our baseline regressions using a sample of international equity funds (i.e., funds that invest outside their local market) because we expect relationship lending to be less important and arm's-length (i.e., transactional) lending to be more important in the international syndicated loan market than in the domestic market.

Table IA.10 shows the estimates for the sample of international funds. Column (1) shows less of a pronounced performance gap of bank-affiliated funds relative to unaffiliated funds in the sample of international funds (11 basis points per quarter) than in the sample of domestic funds (23 basis points, as shown in Table 3). Columns (2) and (3) show estimates of regressions that include the *High Bias Fund* or *High Allocation Fund* dummy variables. While international funds affiliated with a commercial banking group underperform unaffiliated funds, the source of this underperformance is not driven by conflicts of interest with the lending division since the coefficients on both the *High Bias Fund* and *High Allocation Fund* dummy variables are statistically insignificant. Note that these same coefficients are statistically significant in the sample of domestic funds in Table 5. This is consistent with the idea that fund managers' portfolio

choices in international funds are less distorted by lending relationships, as conflicts of interest should be more important for local borrowers than foreign borrowers.

6. Equilibrium

In this section, we provide evidence that the decision to favor the stock of lending clients brings benefits to the different agents (the parent bank, the fund manager, and the client managers). We also provide evidence that bank-affiliated funds have a captive investor clientele, which explains why these funds hold important market shares despite their inferior performance.

6.1 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 its lending business by overweighting client stocks. On the one hand, this biased portfolio allocation may impose a cost as affiliated funds may underperform their peers and therefore experience significant outflows and erosion of fees. On the other hand, using fund resources may help build long-term relationships with borrowers and increase the likelihood that the bank may act as lead arranger in future loans.

To test for potential benefits to the banking group, we examine whether bank-affiliated fund holdings in client stocks make it more likely that the bank will be chosen as a lead arranger for future loans of the same client. We perform this test following the methodology in Bharath, Dahiya, Saunders, and Srinivasan (2007) and Ferreira and Matos (2012). For each loan facility, we pair borrowers 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 a value of one if the bank acted as a lead arranger, and zero otherwise.

Table 8 reports the results. The estimates in column (1) indicate that banks tend to arrange more loans for firms in which their affiliated funds hold stock (*Client Stock Holding*). On average, banks with affiliated fund holdings in borrowers are 3.2% more likely to be chosen as lead arrangers than banks without affiliated fund holdings in borrowers (the probability increases from

12.6% to 15.8%). The relative importance of affiliated fund holdings in increasing the bank's lending business depends on whether or not the bank has a past lending relationship (over the past three years) with the borrower. For new lending relationships, affiliated fund holdings in the borrower increase the likelihood that the bank will act 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 act as lead arrangers (the probability increases from 41.3% to 47.9%).

The probability that the bank acts as lead arranger should increase with the size of the affiliated fund holdings in the borrowing firm. Thus, we repeat our analysis using a dummy that takes a value of one if the bank's affiliated funds, on aggregate, hold at least 1% of the borrower firm's shares (*Client Stock Holdings>1%*). The results in column (2) show that, on average, banks with affiliated fund holdings in a borrower firm of at least 1% of shares outstanding are 4.5% more likely to be chosen as lead arrangers than other banks. While for new relationships the probability of being chosen as lead bank increases by 3.5%, for past lending clients it increases by 8.4%. Columns (3) and (4) show that the results are robust when we include bank (lender)-specific controls (assets, return on assets), bank fixed effects, firm (borrower)-specific controls (market capitalization, book-to-market ratio, leverage, tangibility, stock volatility, and stock return), and firm country and industry fixed effects.

6.2 Benefits to the Lending Client

Commercial banks may use affiliated funds to boost their voting rights and thus 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 client stocks to curry favor with the borrower's management. To examine this hypothesis, we estimate a firm-level regression of voting dissent in executive compensation proposals on ownership by funds affiliated with banks that acted as lead arrangers in the previous three years.

The sample consists of firms for which voting records are available in Institutional Shareholder

Services/RiskMetrics (ISS) from 16 countries in the 2008-2010 period.[23] The great majority of proposals are management sponsored, and there is close to 100% approval in mostly routine issues, with the exception of those related to executive compensation (i.e., votes on option plans, repricing of options, restricted stock, bonuses, and loans). We focus our analysis on voting dissent, defined as the percentage of votes against management's recommendation on compensation plans.

Table 9 reports the results. The results in column (1) show that ownership by funds affiliated with lenders reduces voting dissent in proposals related to executive compensation at shareholder meetings as indicated by the negative and significant coefficient on the *Lender-Affiliated Funds Ownership* variable. However, ownership by funds affiliated with banks that have not acted as lead arrangers for the firms' loans in the past three years (*Non-Lender-Affiliated Funds Ownership*) is not significantly associated with voting dissent. The effect is also economically significant. A one standard deviation increase in *Lender-Affiliated Funds Ownership* increases voting dissent by 0.54%, which corresponds to about 10% of the average voting dissent. In addition, ownership by unaffiliated fund is associated with more voting dissent in executive compensation proposals. The results in columns (2)-(4) show that the results are robust when we include total institutional ownership as a control or use tobit regressions.

6.3 Benefits to the Fund Manager

The results so far show that overweighting client stocks in the affiliated funds' portfolio can be beneficial from the perspective of the commercial banking group as a whole. It is not clear, however, why fund managers would go along with this strategy if it would hurt their track record. Might managers be rewarded by being less likely to be replaced? We entertain the hypothesis that favoring client stocks in portfolio choices lessens a fund manager's career concerns. To test for potential benefits to the fund manager, we test whether affiliated fund managers with a greater bias toward client stocks (*High Bias Fund*) are less likely to be replaced than affiliated managers with

[23] The sample consists of firms in major European stock indices (Austria, Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom) as well Australia, Canada, and Japan.

less of a bias toward client stocks (*Low Bias Fund*).

Our source for information on manager names and tenures (i.e., fund manager start dates) are historical annual files from Lipper. From these historical files, we assemble a data set on fund manager turnover in the 2004-2010 period. We estimate a fund-level probit regression of fund manager turnover-performance sensitivity in which the dependent variable is a dummy variable that takes a value of one if there is a turnover in a given quarter (given that the fund survived), and zero otherwise. The main explanatory variables are the *Commercial Bank-Affiliated* dummy and the *High Bias Fund* dummy. We also control for lagged performance rank and other fund and manager characteristics (Khorana (1996), Chevalier and Ellison (1999), and Kostovetsky and Warner (2015)). 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 (*Rank*).

Table 10 reports the estimates of probit regressions of fund manager turnover. We present the results separately for the samples of all funds, non-U.S. funds, and U.S. funds. In column (1), for the sample of all funds, the coefficient on the *High Bias Fund* dummy variable is negative but statistically insignificant. In column (2), for the sample of non-U.S. funds, the *High Bias Fund* coefficient is negative and statistically significant. The panel at the bottom of the table illustrates the economic significance of overweighting client stocks on the probability of fund manager turnover. The predicted probability of a fund manager turnover in a given quarter for a fund manager with more overweight on client stocks (other variables evaluated at their means) is 0.93% lower than that for a fund manager with lower bias on client stocks in the sample of non-U.S. funds; for an unconditional probability of observing a turnover in a given quarter of about 2%. Column (3) shows that the probability of a fund manager turnover is not associated with the decision to favor client stocks in portfolio choice in the sample for U.S. funds. Figure IA.1 in the Internet Appendix shows that fund manager turnover-performance sensitivity is different between high and low bias funds in the sample of all funds and non-U.S. funds, while it is similar between high and low bias funds in the sample of U.S. funds. In addition, Table IA.2 in the Internet

Appendix shows that conflicts of interest are more pronounced during bear markets when fund managers have heightened career concerns.[24]

In short, we find that fund managers who act as team players for the banking group by favoring client stocks benefit from a lower probability of turnover. This result does not hold for the sample of funds domiciled in the United States where there are fewer conflicts of interest between the lending and asset management divisions.

6.4 Investor Clienteles

We also examine the behavior of bank-affiliated fund end investors. We consider the possibility of different clienteles by studying the sensitivity of fund flows to past fund performance (e.g., Sirri and Tufano (1998), James and Karceski (2006)). We estimate both a linear regression using performance ranks (*Rank*) and a piecewise linear regression with three segments: $Low = \min(0.2, Rank)$, $Mid = \min(0.6, Rank - Low)$, and $High = Rank - (Low + Mid)$. We test whether the sensitivity of flows to past performance is different between affiliated and unaffiliated funds by including interaction variables of *Commercial Bank-Affiliated* with *Rank* or with *Low*, *Mid*, and *High*.

Panel A of Table 11 reports the estimates of fund flow-performance sensitivity regressions for the sample of all funds as well as for the samples of non-U.S. and U.S. funds. The estimates in columns (1) and (2), for the sample of all funds, suggest that investors of bank-affiliated funds are not captive. Yet, the estimates in columns (3) and (4) show that affiliated funds have less flow-performance sensitivity in the sample of non-U.S. funds, as indicated by the negative and significant coefficients on the interaction variables *Commercial Bank-Affiliated* × *Rank* and *Commercial Bank-Affiliated* × *Low*. This result suggests that the clientele of bank-affiliated funds outside the United States is less responsive to fund performance and exerts less monitoring. The

[24] During bear markets, net inflows into mutual funds are generally weak (Karceski (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)).

estimates using the sample of all funds appear to be driven by the sample of funds domiciled in the United States where fund investors are not captive (columns (5) and (6)).

Panel B of Table 11 reports the estimates of flow-performance regressions when we split the sample according to the type of investor (retail or institutional) each fund share class caters to. We define a fund share class as institutional if the minimum initial investment requirement is at least $100,000 and as retail in other cases. Retail investors are likely to be less informed than institutional investors, so we expect that evidence of captive investors is restricted to the sample of retail share classes. The results in columns (1) and (2) for the sample of all funds suggest that both retail and institutional investors of affiliated funds are not captive. These results, however, are masked by important differences in the samples of non-U.S. and U.S. funds.

The results in column (3) show that retail investors of bank-affiliated funds are captive outside the United States as indicated by the negative and statistically significant coefficient on the interaction variable *Commercial Bank-Affiliated* × *Low*. For the sample of U.S. funds, the results in column (5) show that retail investors of affiliated funds are not captive (the interaction variable *Commercial Bank-Affiliated* × *Low* coefficient is positive and statistically significant at the 10% level). However, the estimates for institutional share classes in columns (4) and (6) are less clear-cut. While the results in column (6) show that institutional investors of affiliated funds are not captive (the interaction variable *Commercial Bank-Affiliated* × *Low* is not statistically significant) in the sample U.S. funds, the results in column (4) are imprecisely estimated in the sample of non-U.S. funds due to the small sample size. In fact, institutional share classes amount to only 8% and 6% of the total number of share classes and TNA, respectively, in the sample of non-U.S. funds as of December 2010.

The conflict of interest hypothesis assumes that captive investors are unsophisticated. In alternative, investors may be aware but trading off performance for some other services at the bank, which would indicate an institutional arrangement between investors and the commercial banking group, rather than a conflict of interest. To address this concern, Table IA.11 in the Internet Appendix reports the estimates of fund performance regressions for a sample of funds that

cater exclusively to retail investors (i.e., funds without an institutional share class) and for a sample of funds that cater to both retail and institutional investors (i.e., funds with at least one institutional share class). The results in Panel A show that bank-affiliated funds that cater exclusively to retail investors significantly underperform unaffiliated funds. In contrast, the results in Panel B show that funds that cater to both retail and institutional investors do not significantly underperform unaffiliated funds. This is consistent with the notion that greater monitoring exerted by institutional investors reduces agency problems (e.g., Evans and Fahlenbrach (2012)). Overall, our results suggest that the underperformance of bank-affiliated funds is driven by funds that cater exclusively to unsophisticated retail investors, thus providing further support to the conflict of interest hypothesis.[25]

Overall, our results show that retail investors of bank-affiliated non-U.S. funds are captive and forgo performance. The underperformance may be at least in part compensated by benefits in bundled services offered by commercial banking groups (e.g., lower commissions, lower spread on mortgages). This result contrasts with those for the sample of U.S. funds in which retail investors of affiliated funds do not appear to be captive. Consistent with our results, commercial bank-affiliated funds have been losing market share in the United States, while outside the United States they still have an important market share.[26]

7. Conclusion

We show that mutual fund performance is negatively affected when a management company is owned by a commercial banking group. We find that commercial bank-affiliated funds underperform unaffiliated funds by about 92 basis points per year. Underperformance is more

[25] We also estimate the performance regressions in Table 5 and the flow-performance sensitivity regressions in Table 11 using the sample of funds that cater exclusively to retail investors. Table IA.12 in the Internet Appendix shows that bank-affiliated funds with greater overweighting of client stocks tend to underperform more, and Table IA.13 shows that investors of bank-affiliated funds are captive outside the United States.

[26] The results in Figure IA.2 in the Internet Appendix show that bank-affiliated domestic equity funds lost significant market share in both the United States (from 18% in 2000 to 11% in 2010) and outside the United States (from 60% in 2000 to 40% in 2010). However, while affiliated funds appear to be disappearing in the United States, outside the United States they are able to capture a significant market share of both incumbent and new funds.

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 bank-affiliated fund underperformance is driven by a conflict of interest between the bank's lending business and the asset management business.

We use divestitures of asset management divisions as a quasi-natural experiment to address the concern that past performance may affect the organizational form of a fund management company. To address the concern that our results might be driven by the possibility that affiliated funds attract less talented managers, we restrict our sample of divestitures to funds that do not experience managerial turnover. We also address the skill hypothesis by comparing the performance of bank-affiliated fund managers on the trading of client stocks and non-client stocks. While client stocks a fund buys underperform client stocks a fund sells, this is not the case for non-client stocks, which indicates that differences in manager skill are not likely to explain our findings.

The evidence shows that affiliated funds systematically overweight stocks of lending clients, which may help their parent banks build long-term relationships with borrowers that lead to future loan business. Our results also suggest a benefit to the borrower's management, as we find that ownership by lender-affiliated funds reduces voting dissent on executive compensation proposals at borrower shareholder meetings. We also find evidence that fund managers that favor client stocks in portfolio choices face a lower likelihood of turnover, for the same performance rank, than managers with a less of a bias toward client stocks. In equilibrium, bank-affiliated funds hold an important market share despite their inferior performance, especially outside the United States, because they have a captive investor clientele.

Overall, our results suggest that the underperformance of commercial bank-affiliated funds results from a double agency problem in that portfolio managers put aside the interests of one principal (the fund investor) in order to benefit another principal (the parent bank). Our findings have important implications, as about 40% of mutual funds worldwide do not operate as stand-alone entities, but rather as divisions of commercial banking groups.

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Table 1
Sample of Commercial Bank-Affiliated Funds

This table presents number of funds, total net assets (TNA), number of ultimate owners, percentage of commercial bank-affiliated funds, and number of parent (commercial) banks as of December 2010 for the sample of open-end actively managed domestic equity mutual funds, and for the sample of domestic and international equity mutual funds at the bottom of the table.

	Domestic Equity Funds			Commercial Bank-Affiliated Funds		
	Number of Funds	TNA ($ billion)	Number of Ultimate Owners	Number of Funds (%)	TNA (%)	Number of Parent Banks (%)
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			Commercial Bank-Affiliated Funds		
Total	10,644	5,842.4	987	40.2	19.9	17.0
Total (ex-U.S.)	7,798	1,897.4	690	47.7	41.2	22.2

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 commercial bank-affiliated funds, and the corresponding 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	1st Percentile	99th Percentile	Number of Observations
Commercial Bank-Affiliated	0.34	0.00	0.47	0.00	1.00	127,880
Publicly Traded Parent	0.64	1.00	0.48	0.00	1.00	127,880
Insurance-Affiliated	0.15	0.00	0.36	0.00	1.00	127,880
Investment Bank-Affiliated	0.22	0.00	0.42	0.00	1.00	127,880
Loans/TNA	36.22	0.00	428.03	0.00	548.92	126,782
Corporate Loans/TNA	26.53	0.00	253.28	0.00	445.74	126,673
Interest Income/Fees	106.56	0.00	792.31	0.00	1,677.93	110,641
%TNA Invested in Client Stocks	5.01	0.00	12.71	0.00	60.16	127,880
%TNA Invested in Top 10 Client Stocks	0.55	0.00	2.40	0.00	12.37	127,880
Bias in Client Stocks	2.01	0.00	7.25	-6.41	39.06	127,238
Bias in Top 10 Client Stocks	0.07	0.00	1.25	-3.14	3.97	127,238
Four-Factor Alpha (%)	0.25	-0.18	5.88	-15.34	19.05	127,880
Benchmark Adjusted Return (%)	0.06	-0.09	4.18	-12.28	13.61	125,988
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
Information Ratio	-0.038	-0.057	1.152	-2.825	2.852	127,880
TNA ($ million)	909	158	3,980	2	12,522	127,880
Family TNA ($ million)	35,581	5,501	104,401	15	588,055	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	0.61	1.00	0.49	0.00	1.00	127,880

Table 2: continued

Panel B: Unaffiliated and Commercial Bank-Affiliated Fund Characteristics

	Unaffiliated Funds		Commercial Bank-Affiliated Funds		
	Mean	Number of Observations	Mean	Number of Observations	Difference *p*-value
Publicly Traded Parent	0.49	84,227	0.92	43,653	0.00
Insurance-Affiliated	0.21	84,227	0.04	43,653	0.00
Investment Bank-Affiliated	0.08	84,227	0.50	43,653	0.00
Four-Factor Alpha (%)	0.26	84,227	0.22	43,653	0.26
Benchmark Adjusted Return (%)	0.11	83,189	-0.04	42,799	0.00
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
Information Ratio	-0.037	84,227	-0.040	43,653	0.74
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	0.59	84,227	0.65	43,653	0.00

Panel C: Commercial Bank-Affiliated Fund Characteristics

	Mean	Median	Standard Deviation	1st Percentile	99th Percentile	Number of Observations
Loans/TNA	107.90	22.75	733.56	0.17	1,148.47	42,555
Corporate Loans/TNA	79.18	10.24	432.77	0.10	977.45	42,446
Interest Income/Fees	446.36	120.81	1,574.14	2.18	6,307.21	26,414
%TNA Invested in Client Stocks	14.69	6.61	18.21	0.00	69.28	43,653
%TNA Invested in Top 10 Client Stocks	1.60	0.00	3.90	0.00	18.49	43,653
Bias in Client Stocks	5.89	1.51	11.46	-12.69	51.55	43,400
Bias in Top 10 Client Stocks	0.22	0.00	2.13	-6.94	7.26	43,400

Table 3
Performance of Commercial Bank-Affiliated Funds

This table presents estimates of ordinary least squares (OLS) regressions of fund risk-adjusted performance. Panel A presents results in which the dependent variable is the alpha from the Carhart four-factor model in each quarter. Panel B presents results using alternative measures of risk-adjusted performance. *Commercial Bank-Affiliated* is a dummy variable that takes a value of one if the ultimate owner of the fund's management company is a commercial banking group, and zero otherwise. 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.

Panel A: Four-Factor Alpha					
	(1)	(2)	(3)	(4)	(5)
Commercial Bank-Affiliated	-0.231***	-0.382**	-0.093	-0.121	0.126
	(-3.92)	(-2.35)	(-1.00)	(-1.35)	(0.63)
log(1+Loans/TNA)			-0.050**		
			(-2.14)		
log(1+Corporate Loans/TNA)				-0.051**	
				(-1.98)	
log(1+Interest Income/Fees)					-0.074**
					(-1.99)
Publicly Traded Parent	-0.002	-0.010	-0.006	-0.010	-0.004
	(-0.03)	(-0.05)	(-0.10)	(-0.17)	(-0.07)
Insurance-Affiliated	-0.055	-0.138	-0.062	-0.055	-0.057
	(-0.77)	(-0.52)	(-0.93)	(-0.81)	(-0.83)
Investment Bank-Affiliated	0.106*	0.172	0.103*	0.106*	0.146*
	(1.84)	(0.95)	(1.81)	(1.83)	(1.88)
log(TNA)	-0.052***	-0.617***	-0.054***	-0.054***	-0.045***
	(-4.82)	(-15.57)	(-4.94)	(-4.90)	(-3.82)
log(Family TNA)	0.041***	-0.097	0.040***	0.040***	0.040***
	(3.65)	(-1.24)	(3.47)	(3.51)	(3.15)
log(1+Age)	-0.030	-0.323*	-0.026	-0.025	-0.020
	(-1.09)	(-1.71)	(-0.93)	(-0.91)	(-0.69)
Total Expense Ratio	-0.035	-0.073	-0.035	-0.031	-0.010
	(-0.70)	(-0.47)	(-0.69)	(-0.62)	(-0.18)
Total Load	-0.022*	-0.021	-0.024**	-0.025**	-0.041***
	(-1.95)	(-0.49)	(-2.13)	(-2.14)	(-2.75)
Flow	0.007***	0.005***	0.007***	0.007***	0.007***
	(5.35)	(3.66)	(5.36)	(5.38)	(5.07)
Number of Countries of Sale	-0.002		-0.004	-0.004	0.002
	(-0.12)		(-0.19)	(-0.20)	(0.10)
Team Managed	-0.105***		-0.107***	-0.107***	-0.088**
	(-2.65)		(-2.71)	(-2.71)	(-2.02)
Past Performance	0.026***	-0.017**	0.026***	0.026***	0.027***
	(3.78)	(-2.44)	(3.76)	(3.75)	(3.74)
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	No	Yes	Yes	Yes
Fund Fixed Effects	No	Yes	No	No	No
Number of Observations	127,880	127,880	126,782	126,673	110,641
R^2	0.145	0.192	0.146	0.146	0.131

Table 3: continued

Panel B: Alternative Measures of Performance				
	Benchmark Adj. Return (1)	Gross Four-Factor Alpha (2)	Buy and Hold Benchmark Adj. Return (3)	Information Ratio (4)
Commercial Bank-Affiliated	-0.198***	-0.219***	-0.167***	-0.048***
	(-3.75)	(-3.93)	(-3.33)	(-3.79)
Controls	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes
Fund Fixed Effects	No	No	No	No
Number of Observations	125,920	116,266	120,198	127,880
R^2	0.034	0.174	0.052	0.089

Table 4
Performance of Commercial Bank-Affiliated Funds: Cross-Country Differences

This table presents estimates of ordinary least squares (OLS) regressions of fund risk-adjusted performance. The dependent variable is the alpha from the Carhart four-factor model in each quarter. *Commercial Bank-Affiliated* is a dummy variable that takes a value of one if the ultimate owner of the fund's management company is a commercial banking group, and zero otherwise. In columns (1) and (2), the non-U.S. and U.S. fund groups consist of those funds domiciled outside of the United States and domiciled in the United States. In columns (3) and (4), the civil and common-law fund groups consist of those funds domiciled in civil-law and common-law countries as defined in La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998). In columns (5) and (6), the bank-based and market-based fund groups consist of those funds domiciled in bank-based and market-based countries as defined in Demirgüç-Kunt and Levine (2001). In columns (7) and (8), the high and low bank concentration groups consist of those funds domiciled in countries that are above and below the 75th percentile of the distribution of the market share of the top five banks. In columns (9) and (10), the high and low fund management company concentration groups consist of those funds domiciled in countries that are above and below the 75th percentile of the distribution of the market share of the top five fund management companies. In columns (11) and (12), the low and high approvals fund groups consist of those funds domiciled in countries that have one and more than one regulatory approval and disclosure requirements in the fund industry as defined in Khorana, Servaes, and Tufano (2005). The regressions include the same control variables (coefficients not shown) as in Table 3. 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.

	Country of Domicile		Legal Origin	
	Non-U.S. Funds	U.S. Funds	Civil Law	Common Law
	(1)	(2)	(3)	(4)
Commercial Bank-Affiliated	-0.332***	-0.165**	-0.322***	-0.185***
	(-3.49)	(-2.55)	(-2.69)	(-2.83)
Controls	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	No	Yes	Yes
Number of Observations	50,864	77,016	24,723	103,157
R^2	0.088	0.246	0.147	0.167
	Financial System		Banking Industry	
	Bank Based	Market Based	High Concentration	Low Concentration
	(5)	(6)	(7)	(8)
Commercial Bank-Affiliated	-0.307**	-0.197***	-0.405***	-0.199***
	(-2.12)	(-3.18)	(-3.60)	(-3.13)
Controls	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	No	Yes	Yes
Number of Observations	22,250	105,630	31,821	96,059
R^2	0.136	0.182	0.117	0.191
	Mutual Fund Industry		Approvals	
	High Concentration	Low Concentration	Low	High
	(9)	(10)	(11)	(12)
Commercial Bank-Affiliated	-0.325**	-0.168***	-0.309**	-0.226***
	(-2.56)	(-2.80)	(-2.42)	(-3.53)
Controls	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	No	Yes	Yes
Number of Observations	32,094	95,786	28,234	99,646
R^2	0.150	0.199	0.095	0.185

Table 5
Performance of Commercial Bank-Affiliated Funds and Portfolio Allocation to Client Stocks

This table presents estimates of ordinary least squares (OLS) regressions of fund risk-adjusted performance. The dependent variable is the alpha from the Carhart four-factor model in each quarter. *Commercial Bank-Affiliated* is a dummy variable that takes a value of one if the ultimate owner of the fund's management company is a commercial banking group, and zero otherwise. *High Bias Fund* is a dummy variable that takes a value of one if an affiliated fund *Bias in Client Stocks* is above the median in a given country and quarter, and zero otherwise. *Bias in Client Stocks* is the portfolio bias in stocks of firms that borrow from the fund's parent bank versus the average weight of comparable passive funds. *High Allocation Fund* is a dummy variable that takes a value of one if an affiliated fund *%TNA Invested in Client Stocks* is above the median in a given country and quarter, and zero otherwise. *%TNA Invested in Client Stocks* is the percentage of TNA invested in stocks of firms that borrow from the fund's parent bank. *High Bias Fund in Top 10 Client Stocks* and *High Allocation Fund in Top 10 Client Stocks* are dummy variables similarly defined for the set of top ten borrowers of the fund's parent bank. All these variables are set to zero if the fund is unaffiliated. The regressions include the same control variables (coefficients not shown) as in Table 3. 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.

	All Funds				Non-U.S. Funds	U.S. Funds
	(1)	(2)	(3)	(4)	(5)	(6)
Commercial Bank-Affiliated	-0.201***	-0.210***	-0.175***	-0.170***	-0.264**	-0.182**
	(-3.17)	(-3.50)	(-2.70)	(-2.72)	(-2.55)	(-2.53)
High Bias Fund	-0.120*				-0.198*	-0.005
	(-1.65)				(-1.87)	(-0.05)
High Bias Fund in Top 10 Client Stocks		-0.182**				
		(-2.38)				
High Allocation Fund			-0.160**			
			(-2.12)			
High Allocation Fund in Top 10 Client Stocks				-0.258***		
				(-2.98)		
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	No
Number of Observations	127,238	127,238	127,880	127,880	50,810	76,428
R^2	0.15	0.15	0.15	0.15	0.088	0.247

Table 6
Divestitures of Fund Management Companies by Commercial Banking Groups

This table presents estimates of difference-in-differences regressions of fund's stock portfolio holdings and risk-adjusted performance (four-factor alpha) around the three quarters before and three quarters after the divestiture of a fund management company by a commercial banking group. Panel A shows tests of equality of pre-treatment means and medians of treated and control groups. Panel B shows the estimates of difference-in-differences regressions of divestitures during the 2000-2010 period (columns (1) and (2)), the 2007-2009 global financial crisis (columns (3) and (4)), and the 2000-2010 period but restricting the sample to funds without fund manager turnover in the event window (columns (5) and (6)). Treated funds are those funds sold by a commercial bank to a stand-alone management company. A matched control fund is selected for each treated fund. The control fund is the nearest neighbor (Mahalanobis distance) from the same quarter, country of domicile, investment objective (Lipper global classification) and with the closest *TNA*, *Family TNA* and *Average Performance* (average fund's four-factor alpha in the previous four quarters). *After* is a dummy variable that takes a value of one in the announcement quarter of a fund divestiture and thereafter. *%TNA Invested in Client Stocks* is percentage of TNA invested in client stocks (i.e., firms that borrow from the fund's parent bank). Variable definitions are provided in Table A.1 in the Appendix. The sample consists of actively managed domestic equity mutual funds. Robust *t*-statistics adjusted for clustering at the deal level are reported in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Matched Sample

	Mean			Median		
	Treated	Control	*t*-test (*p*-value)	Treated	Control	Pearson χ^2 (*p*-value)
TNA	911.9	752.6	0.41	251.6	193.3	0.33
Family TNA	32,940	22,567	0.00	21,489	9,183	0.11
Average Performance	0.13	0.06	0.80	0.19	0.34	0.90

Panel B: Difference-in-Differences

	2000-2010		2007-2009 Global Financial Crisis		Sample without Fund Manager Turnover	
	%TNA Invested in Client Stocks	Average Performance	%TNA Invested in Client Stocks	Average Performance	%TNA Invested in Client Stocks	Average Performance
	(1)	(2)	(3)	(4)	(5)	(6)
Treated	11.323**	-0.086**	4.444***	-0.019	13.976**	-0.063
	(2.58)	(-2.20)	(5.11)	(-0.32)	(2.71)	(-0.96)
After	-1.310	-0.402*	1.996	0.308	0.659	-0.478*
	(-0.41)	(-1.76)	(0.19)	(0.34)	(0.16)	(-1.97)
Treated × After	-2.371***	0.412***	-3.018***	0.353*	-2.704***	0.384**
	(-4.75)	(4.30)	(-3.88)	(1.87)	(-4.67)	(2.92)
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	1,584	1,577	420	420	1,140	1,136
Number of Treated Funds	132	132	35	35	95	95
Number of Deals	22	22	7	7	15	15
Number of Banks	19	19	7	7	12	12
R^2	0.175	0.135	0.041	0.186	0.271	0.157

Table 7
Calendar-Time Portfolio Returns on Buys minus Sells of Client and Non-Client Stocks

This table presents risk-adjusted monthly portfolio returns of client stock a fund buys and sells, defined as the portfolio of client stocks (i.e., firms that borrow from the fund's parent bank) held by bank-affiliated funds that had an increase or decrease in the number of shares held in the previous quarter, respectively. Portfolio returns of non-client stock a fund buys and sells are defined similarly. Every quarter in the 2000-2010 period, each fund portfolio holdings are split into a client portfolio and a non-client portfolio. These two portfolios are further subdivided into a buy portfolio and a sell portfolio. We calculate the average portfolio return across funds in each month weighted by total net assets, and then the return of the portfolio of stocks bought minus sold in each month. Returns are risk-adjusted using the Carhart four-factor model with global factors. The high and low bias fund groups consist of those funds that are above and below the median of the *Bias in Client Stocks* variable in a given country and quarter. The sample consists of actively managed domestic equity mutual funds that are affiliated with commercial banking groups in the 2000-2010 period. Robust *t*-statistics are reported in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	All Bank-Affiliated Funds	High Bias Funds	Low Bias Funds
	(1)	(2)	(3)
Client Stocks	-0.115	-0.226*	0.169
	(-0.99)	(-1.90)	(0.68)
Non-Client Stocks	0.033	0.044	0.021
	(0.60)	(0.65)	(0.32)
Client – Non-Client Stocks	-0.148	-0.269*	0.148
	(-1.23)	(-1.90)	(0.61)

Table 8
Probability of Getting Future Lending Business and Client Stock Holdings

This table presents estimates of logit regressions of whether the existence of a bank-firm(*i, j*) link through bank-affiliated funds' portfolio holdings prior to the loan affects the probability that firm (borrower) *j* chooses bank *i* as lead arranger in the syndicated loan market. For each facility, there is a choice set of 20 potential lead arrangers (top 20 ranked by U.S. dollar volume of syndicated 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. *Client Stock Holding* is a dummy variable that takes the value of one if the funds affiliated with bank *i* hold stock of the firm at the end of the previous year, and zero otherwise. *Client Stock Holding>1%* is a dummy that takes the value of one if the funds affiliated with bank *i* hold at least 1% of the firm's shares outstanding at the end of the previous year, and zero otherwise. *Bank Market Share* is the fraction of bank *i* on the U.S. dollar volume of syndicated loans in each country. *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 past three years. Firm-level controls include stock market capitalization (log), book-to-market ratio, leverage, tangibility, stock volatility and stock return (coefficients not shown). All control variables are lagged by one period. Variable definitions are provided in Table A.1 in the Appendix. 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)
Client Stock Holding	0.269***		0.193***	
	(5.72)		(3.03)	
Client Stock Holding>1%		0.339***		0.324***
		(3.56)		(3.75)
Bank Market Share	13.266***	13.522***	13.586***	13.824***
	(22.67)	(23.50)	(16.68)	(15.96)
Lending Relationship	1.911***	1.946***	1.748***	1.750***
	(27.33)	(29.07)	(24.61)	(24.79)
log(Bank Assets)			0.119	0.108
			(1.27)	(1.11)
Bank Return on Assets			0.095	0.105
			(1.14)	(1.31)
Year Fixed Effects	Yes	Yes	Yes	Yes
Loan Purpose Fixed Effects	Yes	Yes	Yes	Yes
Bank Fixed Effects	No	No	Yes	Yes
Firm Controls	No	No	Yes	Yes
Firm Industry Fixed Effects	Yes	Yes	Yes	Yes
Firm Country Fixed Effects	Yes	Yes	Yes	Yes
Number of Observations	499,143	499,143	402,733	402,733
Pseudo R^2	0.21	0.21	0.23	0.23
Probability of being chosen as the lead lender using the column (1) specification				
			Past Lending Relationship	
		Average	No	Yes
Client Stock Holdings = 0		0.126	0.094	0.413
Client Stock Holdings = 1		0.158	0.120	0.479
Change in Probability		0.032	0.026	0.066
Probability of being chosen as the lead lender using the column (2) specification				
			Past Lending Relationship	
		Average	No	Yes
Client Stock Holdings >1% = 0		0.135	0.101	0.441
Client Stock Holdings >1% = 1		0.180	0.136	0.525
Change in Probability		0.045	0.035	0.084

Table 9
Voting Dissent and Commercial Bank-Affiliated Funds Ownership

This table presents estimates of ordinary least squares (OLS) and tobit (with censoring at zero and one) firm-level panel regressions of voting dissent on executive compensation proposals. The dependent variable is the percentage of votes against management's proposals on executive compensation plans at shareholder meetings (*%Voting Dissent*). *Lender-Affiliated Funds Ownership* is ownership by funds affiliated with commercial banks that were chosen by firm *j* as lead arrangers in a loan over the past three years. *Non-Lender-Affiliated Funds Ownership is* ownership by funds affiliated with commercial banks that were not chosen by firm *j* as lead arrangers in a loan over the past three years. *Unaffiliated Funds Ownership* is ownership by funds unaffiliated with commercial banks. *Institutional ownership* is total institutional ownership and *Insider Ownership* is closely-held shares. Ownership variables are defined as a percentage of market capitalization. All control variables are lagged by one period. Variable definitions are provided in Table A.1 in the Appendix. The sample consists of non-U.S. firms for which votes at shareholder meetings are available in Institutional Shareholder Services/RiskMetrics (ISS) in the 2008-2010 period. Robust *t*-statistics adjusted for clustering at the country-industry level are reported in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	OLS		Tobit	
	(1)	(2)	(3)	(4)
Lender-Affiliated Funds Ownership	-0.545**	-0.520**	-0.639**	-0.642**
	(-2.16)	(-2.12)	(-1.97)	(-2.04)
Non-Lender-Affiliated Funds Ownership	-0.124		-0.128	
	(-1.28)		(-1.04)	
Unaffiliated Funds Ownership	0.092*		0.107	
	(1.84)		(1.64)	
Institutional Ownership		0.043*		0.065**
		(1.75)		(2.05)
Insider Ownership	-0.023*	-0.016	-0.032**	-0.022
	(-1.71)	(-1.13)	(-2.09)	(-1.33)
log(Market Capitalization)	-0.003	-0.003	-0.001	-0.002
	(-1.18)	(-1.45)	(-0.35)	(-0.82)
Leverage	0.032*	0.029	0.041*	0.038*
	(1.73)	(1.62)	(1.93)	(1.82)
Book-to-Market	0.002	0.002	0.001	0.000
	(0.33)	(0.29)	(0.10)	(0.05)
Return on Assets	-0.040**	-0.040**	-0.042**	-0.041**
	(-2.50)	(-2.42)	(-2.25)	(-2.25)
Year Fixed Effects	Yes	Yes	Yes	Yes
Stock Country Fixed Effects	Yes	Yes	Yes	Yes
Stock Industry Fixed Effects	Yes	Yes	Yes	Yes
Number of Observations	2,263	2,263	2,263	2,263
R^2	0.104	0.104		

Table 10
Commercial Bank-Affiliated Fund Manager Turnover and Portfolio Allocation to Client Stocks

This table presents estimates of fund-level probit regressions of fund manager turnover-performance sensitivity. The dependent variable is a dummy variable that takes a value of one if the fund manager is replaced in a quarter, and zero otherwise (*Fund Manager Turnover*). *Commercial Bank-Affiliated* is a dummy variable that takes a value of one if the ultimate owner of the fund's management company is a commercial banking group, and zero otherwise. *High Bias Fund* is a dummy variable that takes a value of one if an affiliated fund *Bias in Client Stocks* is above the median in a given country and quarter, and zero otherwise. *Bias in Client Stocks* is the portfolio bias in stocks of firms that borrow from the fund's parent bank versus the average weight of comparable passive funds. 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 2004-2010 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.

	All Funds	Non-U.S. Funds	U.S. Funds
	(1)	(2)	(3)
Commercial Bank-Affiliated	0.109***	0.149***	0.075
	(2.66)	(2.58)	(1.20)
High Bias Fund	-0.081	-0.188***	0.002
	(-1.41)	(-2.73)	(0.02)
Rank	-0.144***	-0.168**	-0.137**
	(-3.15)	(-2.29)	(-2.37)
Fund Manager Tenure	0.009***	0.024***	0.000
	(2.60)	(4.67)	(0.04)
log(TNA)	-0.039***	-0.024*	-0.048***
	(-3.67)	(-1.78)	(-3.72)
log(Family TNA)	0.058***	0.034*	0.064***
	(4.95)	(1.82)	(4.90)
log(1+Age)	-0.005	-0.059	0.032
	(-0.19)	(-1.53)	(1.15)
Flow	-0.003**	-0.002	-0.003**
	(-2.11)	(-0.95)	(-1.98)
Team Managed	-0.140***	-0.220***	-0.106**
	(-4.12)	(-3.37)	(-2.55)
Year Fixed Effects	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	No
Number of Observations	72,373	26,052	46,321
Pseudo R^2	0.055	0.102	0.035
Probability (*fund manager left* | *fund survived*) *in quarter t*			
High Bias Fund = 0	2.01%	2.75%	1.57%
High Bias Fund = 1	1.66%	1.82%	1.58%
Change in Probability	-0.35%	-0.93%	0.01%

Table 11
Flows to Commercial Bank-Affiliated Funds

This table presents estimates of ordinary least squares (OLS) regressions of fund flows (percentage growth in TNA). The sample in Panel A consists of primary share classes. The sample in Panel B consists of retail and institutional share classes (i.e., those with minimum investment amount above $100,000). *Commercial Bank-Affiliated* is a dummy variable that takes a value of one if the ultimate owner of the fund's management company is a commercial banking group, and zero otherwise. *Rank* is the fractional performance rank ranging from zero to one, which is assigned according to the average four-factor alpha in the past four quarters in a given quarter and country. The piecewise linear specification includes three performance rank segments: *Low* = min(0.2, *Rank*), Mid = min(0.6, *Rank* - *Low*), and *High* = *Rank* - (*Low* + *Mid*). 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.

Panel A: Primary Share Class						
	All Funds		Non-U.S. Funds		U.S. Funds	
	Linear	Piecewise	Linear	Piecewise	Linear	Piecewise
	(1)	(2)	(3)	(4)	(5)	(6)
Commercial Bank-Affiliated	-0.267	-0.824	0.977***	1.454**	-1.405***	-2.749***
	(-0.84)	(-1.42)	(2.67)	(2.55)	(-3.13)	(-3.28)
Rank	6.007***		5.604***		6.018***	
	(21.26)		(12.78)		(15.10)	
Commercial Bank-Affiliated × Rank	-0.904		-1.491**		0.129	
	(-1.60)		(-2.11)		(0.17)	
Low		6.827***		9.307***		4.846**
		(3.55)		(3.65)		(2.04)
Commercial Bank-Affiliated × Low		2.371		-5.524*		8.680**
		(0.80)		(-1.67)		(2.03)
Mid		4.729***		3.329***		5.303***
		(12.76)		(5.49)		(11.49)
Commercial Bank-Affiliated × Mid		-0.788		-0.405		-0.249
		(-1.27)		(-0.46)		(-0.32)
High		14.468***		17.999***		12.426***
		(6.96)		(6.73)		(4.27)
Commercial Bank-Affiliated × High		-3.966		-4.402		-4.602
		(-1.14)		(-0.96)		(-0.87)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	No	No
Number of Observations	119,424	119,424	47,453	47,453	71,971	71,971
R^2	0.095	0.096	0.059	0.060	0.126	0.126

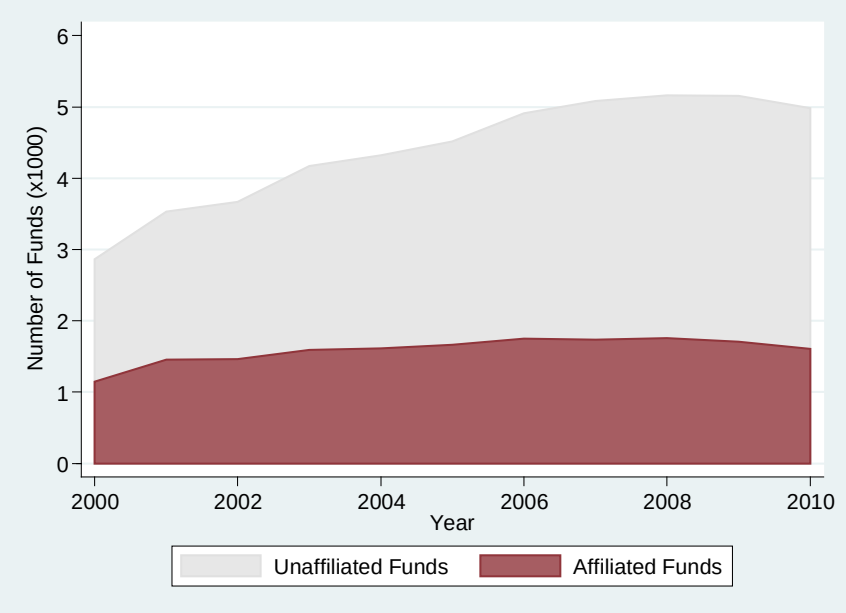
Table 11: continued

Panel B: Retail vs. Institutional Share Class						
	All Funds		Non-U.S. Funds		U.S. Funds	
	Retail	Institutional	Retail	Institutional	Retail	Institutional
	(1)	(2)	(3)	(4)	(5)	(6)
Commercial Bank-Affiliated	-1.845*	-1.147	1.722*	-6.856	-2.598**	-0.035
	(-1.78)	(-0.52)	(1.84)	(-0.87)	(-2.15)	(-0.02)
Low	5.896	17.753**	16.093***	-34.869	3.639	25.866***
	(1.62)	(2.17)	(4.50)	(-1.18)	(0.87)	(3.17)
Commercial Bank-Affiliated × Low	8.270	-0.472	-8.925*	31.225	11.376*	-7.113
	(1.64)	(-0.04)	(-1.68)	(0.69)	(1.93)	(-0.56)
Mid	5.975***	9.446***	2.882***	6.867*	6.612***	9.831***
	(11.64)	(4.87)	(3.08)	(1.95)	(11.16)	(4.57)
Commercial Bank-Affiliated × Mid	-0.278	-3.123	0.518	-7.944	-0.046	-2.987
	(-0.30)	(-1.06)	(0.33)	(-1.45)	(-0.04)	(-0.95)
High	20.208***	16.697*	25.265***	19.712	19.303***	15.117
	(6.78)	(1.83)	(4.58)	(1.58)	(5.81)	(1.42)
Commercial Bank-Affiliated × High	-9.265	-12.554	-7.272	-8.125	-10.637	-11.958
	(-1.56)	(-1.09)	(-0.63)	(-0.31)	(-1.63)	(-0.93)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	No	No
Number of Observations	209,256	24,503	39,628	2,826	169,628	21,677
R^2	0.044	0.039	0.028	0.054	0.050	0.040

Figure 1
Market Share of Commercial Bank-Affiliated Mutual Funds

This figure shows the number of funds (Panel A) and total net assets (Panel B) of commercial 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.

Panel A: Number of Funds



Panel B: Total Net Assets

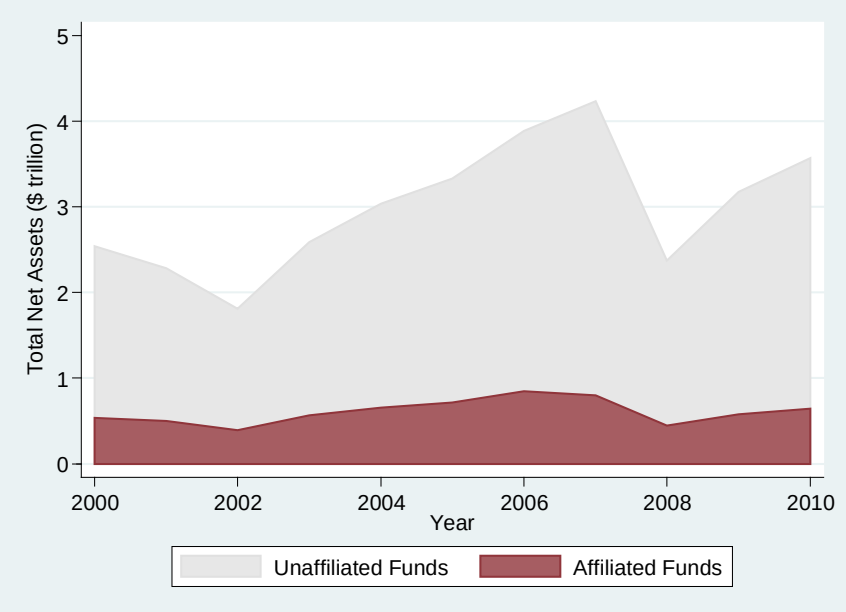
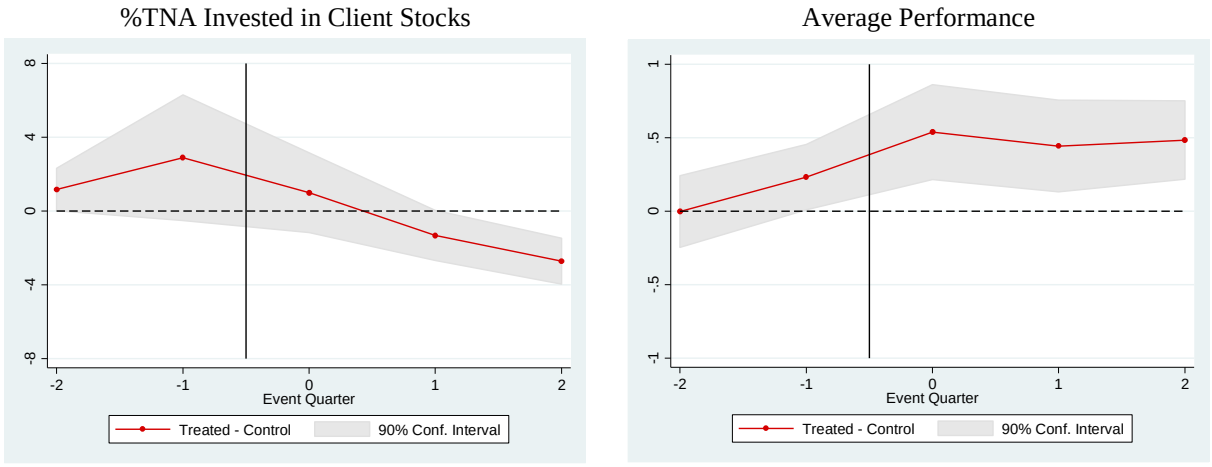


Figure 2
Funds' Client Stock Holdings and Performance Around Divestitures

This figure shows commercial bank-affiliated funds' portfolio holdings of client stocks and performance around divestitures of fund management companies in 2000-2010 (Panel A), and 2007-2009 global financial crisis (Panel B). *%TNA Invested in Client Stocks* is the percentage of TNA invested in stocks of firms that borrow from the fund's parent bank. *Average Performance* is the average four-factor alpha over the last four quarters. The sample of divestitures includes funds of management companies affiliated to commercial banking groups that are sold to stand-alone management companies. The divestitures occur between quarter -1 and quarter 0. The sample consists of actively managed domestic equity mutual funds.

Panel A: 2000-2010



Panel B: 2007-2009 Global Financial Crisis

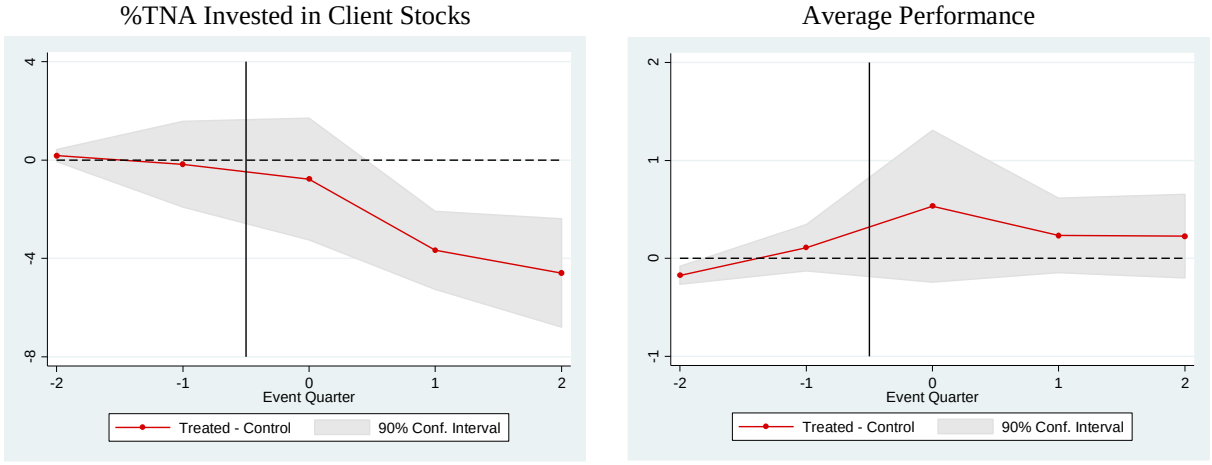


Table A.1
Variable Definitions

Variable	Definition
Commercial Bank-Affiliated	Dummy variable that takes a value of one if the ultimate owner of the fund's management company is a commercial banking group, and zero otherwise (Lipper and LionShares).
Publicly Traded Parent	Dummy variable that takes a value of one if the ultimate owner's stock of the fund's management company is publicly traded, and zero otherwise (Lipper and LionShares).
Insurance-Affiliated	Dummy variable that takes a value of one if the ultimate owner of the fund's management company is an insurance banking group, and zero otherwise (Lipper and LionShares).
Investment Bank-Affiliated	Dummy variable that takes a value of one if the ultimate owner of the fund's management company is among the top 20 investment banks in a given region and quarter, and zero otherwise (Lipper and LionShares).
Loans/TNA	Loans outstanding (Bankscope item 2000) of fund's parent bank divided by total net assets (in equity funds) of the fund management company (Lipper).
Corporate Loans/TNA	Corporate and commercial loans outstanding (Bankscope item 11060) of fund's parent bank divided by total net assets (in equity funds) of the fund management company (Lipper).
Interest Income/Fees	Fund's parent bank interest income on loans (Bankscope item 10010) divided by revenues of the fund management company, defined as the product of total net assets by total expense ratio (in equity funds) (Lipper).
%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 (LionShares).
%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 (LionShares)
Bias in Client Stocks	Sum of portfolio bias (difference in portfolio weight compared to passive funds with the same benchmark) in stocks of firms that are among the fund's parent bank lending clients over the past three years (LionShares)
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 (LionShares)
Four-Factor Alpha	Four-factor alpha (per quarter) estimated with three years of past monthly fund net returns in U.S. dollars and with regional factors (Asia, Europe, North America or Emerging Markets) or world factors in the case of world funds (Lipper).
Benchmark-Adjusted Return	Difference between the fund net return and its benchmark return (per quarter) (Lipper).
Gross Return	Four-factor alpha (percentage per quarter) estimated with three years of past monthly fund gross returns in U.S. dollars and with regional factors (Asia, Europe, North America, or Emerging Markets) or world factors in the case of world funds (Lipper).
Buy and Hold Benchmark-Adjusted Return	Difference between the fund buy-and-hold return and its benchmark return (per quarter) (Lipper).
Information Ratio	Ratio of four-factor alpha by the standard deviation of residuals of the four-factor model (Lipper).
TNA	Total net assets (in millions of U.S. dollars) of the fund (Lipper).
Family TNA ($ million)	Total net assets (in millions of U.S. dollars) of funds managed by the fund management company to which the fund belongs (Lipper).
Age	Number of years since the fund launch date (Lipper).
Total Expense Ratio	Total annual expenses as a fraction of TNA (Lipper).
Total Load	Sum of front-end and back-end loads as a fraction of new investments (Lipper).
Flow	Percentage growth in TNA in a quarter, net of internal growth (assuming reinvestment of dividends and distributions) (Lipper).
Number of Countries of Sale	Number of countries where the fund is sold (Lipper).

Table A.1: continued

Variable	Definition
Team Managed	Dummy variable that takes a value of one if the fund is managed by a team, and zero otherwise (Lipper).
Client Stock Holding	Dummy that takes a value of one if the funds affiliated with a lead arranger bank hold stock of the borrower at the end of the previous year (LionShares).
Client Stock Holding>1%	Dummy that takes a value of one if the funds affiliated with a lead arranger bank own at least 1% of the shares of borrower at the end of the previous year (LionShares).
Bank Market Share	Fraction of the lead arranger bank in the U.S. dollar volume of loans in each country (DealScan).
Lending Relationship	Dummy that takes a value of one if a firm chose a bank as lead arranger in a loan in the past three years (DealScan).
Bank Assets	Book value of the assets in millions of U.S. dollars of the lead arranger bank (Bankscope item 2000).
Bank Return on Assets	Return on assets of the lead arranger bank (Bankscope item 4024).
Market Capitalization	Market capitalization in U.S. dollars (Datastream item MV).
Book-to-Market	Book value of equity divided by market value of equity (Worldscope item 03501 / item 08001).
Leverage	Ratio of total debt to total assets (WorldScope item 03255 / item 02999).
Tangibility	Net property, plant, and equipment divided by total assets (Worldscope item 02501 / item 02999).
Stock Volatility	Annualized standard deviation of monthly stock returns (Datastream).
Stock Return	Stock return (Datastream item RI).
Return on Assets	Ratio of net income before extraordinary items plus interest expenses to total assets (Worldscope (item 01551 + item 01151) / item 02999).
%Voting Dissent	Percentage of votes against management's recommendation on executive compensation proposals at shareholder meetings (Institutional Shareholder Services/RiskMetrics).
Lender-Affiliated Funds Ownership	Institutional ownership by funds affiliated with commercial banks that were chosen by a firm as lead arrangers in a loan over the past three years as a percentage of market capitalization (DealScan and LionShares).
Non-Lender-Affiliated Funds Ownership	Institutional ownership by funds affiliated with commercial banks that were not chosen by a firm as lead arrangers in a loan over the past three years as a percentage of market capitalization (DealScan and LionShares).
Unaffiliated Funds Ownership	Institutional ownership by funds unaffiliated with commercial banks as a percentage of market capitalization (LionShares).
Institutional Ownership	Institutional ownership by all institutions as a percentage of market capitalization (LionShares).
Insider Ownership	Number of shares held by insiders as a proportion of the number of shares outstanding (WorldScope item 08021).
Fund Manager Turnover	Dummy variable that takes a value of one if the fund manager is replaced in a quarter, and zero otherwise (Lipper).
Fund Manager Tenure	Number of years as fund manager at the current fund (Lipper).
Rank	Fractional rank that ranges from zero to one assigned to funds within each country according to their average Carhart (1997) four-factor model in the past four quarters. A fund with a rank of one is the top performer (Lipper).

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

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This Version: August 2017

Table IA.1
Top Fund Management Companies by Country

This table presents number of funds and total net assets (TNA) of the top five management companies by domicile country as of 2010. The sample consists of open-end equity funds including domestic and international funds and active and passive funds. *Commercial Bank-Affiliated* is a dummy variable that takes a value of one if the ultimate owner of the fund's management company is a commercial banking group, and zero otherwise.

Country	Ultimate Owner	Commercial-Bank Affiliated	TNA ($ billion)	Number of Funds
Australia	Platinum Asset Management Ltd.	0	14.7	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	Erste Group Bank AG	1	3.30	34
Austria	Raiffeisen Zentralbank Österreich AG	1	3.21	13
Austria	UniCredit SpA (Pioneer)	1	2.09	23
Austria	Investec Plc (Investec Bank Ltd.)	1	0.99	3
Austria	Invesco Ltd.	0	0.53	4
Belgium	KBC Groupe SA	1	19.71	416
Belgium	Banque Degroof SA	0	3.09	17
Belgium	Petercam SA	0	2.59	14
Belgium	Dexia SA	1	2.56	24
Belgium	BNP Paribas SA	1	2.52	66
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 - Scotiabank	1	21.91	41
Canada	Macquarie Group Ltd.	1	16.29	21
Canada	Toronto Dominion Bank	1	12.77	23
China	China Merchants Securities Co. Ltd.	0	8.02	4
China	Harvest Fund Management Co. Ltd.	0	7.50	3
China	E Fund Management Co., Ltd.	0	7.37	5
China	Citic Group	0	7.16	4
China	Yinhua Fund Management Co. Ltd.	0	6.06	5
Denmark	Nordea Bank AB	1	5.31	21
Denmark	Danske Bank A/S	1	4.51	28
Denmark	Sparinvest Holding A/S	0	3.13	25
Denmark	Bi Holding A/S	0	2.90	11
Denmark	Aberdeen Asset Management Plc	0	2.83	6
Finland	Nordea Bank AB	1	8.74	22
Finland	Pohjola Bank Plc	1	4.48	15
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	37.46	157
France	BPCE SA - Banque Populaire, Caisse d'Epargne (Natixis)	1	16.99	125
France	Carmignac Gestion SA	0	16.77	4
France	State Street Corporation	1	15.38	49
France	BNP Paribas SA	1	13.39	92
Germany	Deutsche Bank AG	1	50.76	72
Germany	DZ Bank AG	1	20.25	22
Germany	Allianz SE	0	20.23	42
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	Commercial Bank-Affiliated	TNA ($billion)	Number of Funds
India	Reliance Capital Ltd.	0	7.69	15
India	Housing Development Finance Corp. Ltd.	1	6.45	14
India	UTI Asset Management Co. Ltd.	0	3.65	22
India	Franklin Resources, Inc. (Franklin Templeton)	0	3.22	18
India	Birla Sun Life Asset Management Co. Ltd.	0	2.62	22
Israel	Psagot Investment House Ltd.	0	0.24	13
Israel	Generali Assicurazioni Spa	0	0.15	9
Israel	I.B.I. Investment House Ltd.	0	0.13	6
Israel	Yelin Lapidot Investment House Ltd.	0	0.13	2
Israel	Analyst I.M.S. Investment Management Services Ltd.	0	0.13	7
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 Scpa-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	18.44	110
Japan	Nomura Holdings Inc	1	15.31	132
Japan	Sumitomo Mitsui Trust Holdings, Inc.	1	10.64	98
Japan	FMR LLC (Fidelity)	0	7.68	36
Japan	Mitsubishi UFJ Financial Group	1	7.09	99
Malaysia	Public Bank Bhd.	1	5.59	14
Malaysia	CIMB-Principal Asset Management Bhd.	1	1.28	19
Malaysia	Nomura Holdings Inc	1	0.33	1
Malaysia	Oversea-Chinese Banking Corp. Ltd. (Pacific Mutual Fund Bhd.)	1	0.32	11
Malaysia	OSK Holdings Bhd.	0	0.26	11
Netherlands	Cooperatieve Cent. Raiffeisen-Boerenleenbank (Rabobank Group)	1	10.19	8
Netherlands	BNP Paribas SA	1	8.67	13
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	15.4	3
Norway	DnB NOR ASA	1	7.44	44
Norway	Government of Norway (KLP / KBN)	1	5.16	14
Norway	SpareBank 1 Gruppen AS	1	5.04	13
Norway	Storebrand ASA	0	4.07	25
Poland	Aviva Plc	0	2.02	2
Poland	Bank Zachodni Wbk SA	1	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	2.85	20
South Africa	Investec Ltd. (Investec Bank Ltd.)	1	2.64	8
South Africa	Coronation Fund Managers Ltd.	0	2.12	8

Table IA.1: continued

Country	Ultimate Owner	Commercial Bank-Affiliated	TNA ($billion)	Number of Funds
Spain	Grupo Entrecanales SA / Acciona (Bestinver)	0	3.29	3
Spain	Santander AM Holding SL (Banco Santander SA)	1	2.61	27
Spain	Banco Bilbao Vizcaya Argentaria SA	1	1.86	23
Spain	Caja de Ahorros y Pensiones de Barcelona / La Caixa (Invercaixa)	1	1.11	25
Spain	Caja de Ahorros y Monte de Piedad Madrid / Caja Madrid (Bankia)	1	0.88	47
Sweden	Swedbank AB	1	45.08	79
Sweden	Svenska Handelsbanken AB	1	14.04	23
Sweden	Skandinaviska Enskilda Banken AB	1	12.01	27
Sweden	Nordea Bank AB	1	10.11	20
Sweden	AMF Pensionsförsäkring AB	0	6.27	7
Switzerland	Credit Suisse Group AG	1	26.11	44
Switzerland	UBS AG	1	21.19	54
Switzerland	Pictet & Cie	0	9.75	23
Switzerland	Swisscanto Holding AG	0	7.53	23
Switzerland	State Street Corporation	1	2.68	6
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	1.4	7
Thailand	Kasikornbank Public Co. Ltd.	1	1.65	16
Thailand	Siam Commercial Bank Public Co. Ltd.	1	1.52	16
Thailand	TMB Bank Public Co., Ltd.	1	0.57	7
Thailand	Bangkok Bank Public Co. Ltd.	1	0.42	9
Thailand	Finansa Public Co., Ltd.	0	0.4	3
United Kingdom	Prudential Plc	0	45.82	40
United Kingdom	Invesco Ltd.	0	44.58	32
United Kingdom	FMR LLC (Fidelity)	0	33.44	32
United Kingdom	Blackrock, Inc.	0	32.41	34
United Kingdom	Schroders Plc	0	27.48	38
United States	The Capital Group Cos., Inc.	0	673.39	16
United States	FMR LLC (Fidelity)	0	535.26	165
United States	Vanguard Group, Inc.	0	506.45	22
United States	T. Rowe Price Group, Inc.	0	205.85	63
United States	Franklin Resources, Inc. (Franklin Templeton)	0	127.02	48

Table IA.2
Performance of Commercial Bank-Affiliated Funds: Market Downturns

This table presents estimates of ordinary least squares (OLS) regressions of fund risk-adjusted performance. The dependent variable is the alpha from the Carhart four-factor model in each quarter. *Commercial Bank-Affiliated* is a dummy variable 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:Q1-2002:Q3 and 2007:Q4-2009:Q1 periods, and zero otherwise. *Investment Region Return* is the stock market return in the fund's investment region (Asia Pacific, Europe, North America, Emerging). *NBER Recession* is a dummy that takes the value of one if a quarter lies within the time-frame of NBER contraction cycles, and zero otherwise. The regressions include the same control variables (coefficients not shown) as in Table 3. 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)
Commercial Bank-Affiliated	-0.178***	-0.238***	-0.158***
	(-3.94)	(-5.98)	(-3.59)
Commercial Bank-Affiliated × Bear Market	-0.161*		
	(-1.85)		
Commercial Bank-Affiliated × Investment Region Return		0.018***	
		(2.60)	
Investment Region Return		-0.168***	
		(-9.54)	
Commercial Bank-Affiliated × NBER Recession			-0.282***
			(-3.12)
Controls	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
Number of Observations	127,880	127,880	127,880
R^2	0.145	0.147	0.145

Table IA.3
Fund Portfolio Weights in Client Stocks

This table presents estimates of ordinary least squares (OLS) regressions of portfolio weights. The dependent variable is the fund's portfolio stock holding as a percentage of total net assets. *Client Stock* is a dummy variable that takes a value of one if the holding is from a lending client, and zero otherwise. *Top 10 Client Stock* is similarly defined for the set of top ten borrowers of the fund's parent bank. *Commercial Bank-Affiliated* is a dummy variable that takes a value of one if the ultimate owner of the fund's management company is a commercial banking group, and zero otherwise. *Parent Stock* is a dummy variable that takes a value of one if the holding is on the stock of the fund's parent bank, and zero otherwise. Stock-level controls include market capitalization, book-to-market, return, volatility, leverage, and stock turnover. Fund-level controls include fund TNA, family TNA, age, total expense ratio, total load, flow, number of countries of sale, team managed dummy, and past performance. 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)
Client Stock	0.325*		0.187**		0.195***		0.095*	
	(1.90)		(2.12)		(3.25)		(1.68)	
Top 10 Client Stock		1.644***		0.887***		0.825***		0.483***
		(11.99)		(5.75)		(5.66)		(6.12)
Commercial Bank-Affiliated	0.176*	0.203*	-0.071**	-0.054	-0.067***	-0.049**	-0.048	-0.039
	(1.74)	(1.95)	(-1.96)	(-1.47)	(-3.14)	(-2.49)	(-1.20)	(-0.98)
Parent Stock	3.473***	3.453***	2.068***	2.058***	1.931***	1.916***	1.112***	1.106***
	(10.04)	(10.01)	(7.23)	(7.24)	(7.05)	(7.06)	(6.43)	(6.41)
Stock-Level Controls	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Fund-Level Controls	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Quarter Fixed Effects	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	No	No	Yes	Yes	No	No	No	No
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	11,162,862	11,162,862	13,532,596	13,532,596	11,210,967	11,210,967
R^2	0.010	0.011	0.305	0.305	0.490	0.490	0.365	0.365

Table IA.4
Performance of Commercial Bank-Affiliated Funds: Client Stocks Not Held

This table presents estimates of ordinary least squares (OLS) regressions of fund risk-adjusted performance. The dependent variable is the alpha from the Carhart four-factor model in each quarter. *Commercial Bank-Affiliated* is a dummy variable that takes a value of one if the ultimate owner of the fund's management company is a commercial banking group, and zero otherwise. *High Bias Fund* is a dummy variable that takes a value of one if an affiliated fund *Bias in Client Stocks* is above the median in a given country and quarter, and zero otherwise. *Bias in Client Stocks* is the portfolio bias in stocks of firms that borrow from the fund's parent bank versus the average weight of passive funds. *High Bias Fund in Top 10 Client Stocks* is a dummy variable similarly defined for the set of top ten borrowers of the fund's parent bank. All these variables are set to zero if the fund is unaffiliated. The regressions include the same control variables (coefficients not shown) as in Table 3. 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)
Commercial Bank-Affiliated	-0.287***	-0.366***
	(-3.67)	(-5.46)
High Bias Fund	0.067	
	(0.85)	
High Bias Fund in Top 10 Client Stocks		0.252***
		(3.00)
Controls	Yes	Yes
Quarter Fixed Effects	Yes	Yes
Country Fixed Effects	Yes	Yes
Number of Observations	127,238	127,238
R^2	0.145	0.145

Table IA.5
Performance of Commercial Bank-Affiliated Funds: Robustness

This table presents estimates of ordinary least squares (OLS) regressions of fund risk-adjusted performance. The dependent variable is the alpha from the Carhart four-factor model. Column (1) uses the Fama-MacBeth estimation method. Column (2) uses weighted least squares (WLS) regressions using funds' TNA as weights. Column (3) excludes funds with assets under management below $10 million. Column (4) excludes the 2000-2001 period. Column (5) includes the fund's *Active Share* measure of Cremers and Petajisto (2009) as a control variable. Column (6) uses the sample of passive funds. *Commercial Bank-Affiliated* is a dummy variable 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 as in Table 3 (coefficients not shown). 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.

	Fama-MacBeth	WLS	TNA above $10 million	2002-2010	Active Share	Passive Funds
	(1)	(2)	(3)	(4)	(5)	(6)
Commercial Bank-Affiliated	-0.212***	-0.247***	-0.219***	-0.242***	-0.224***	0.052
	(-4.03)	(-3.31)	(-3.52)	(-4.26)	(-3.94)	(0.74)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of Observations	127,880	127,880	118,316	115,442	124,369	23,083
R^2	0.401	0.275	0.154	0.057	0.145	0.117

Table IA.6
Performance of Commercial Bank-Affiliated Funds: Outsourcing

This table presents estimates of ordinary least squares (OLS) regressions of fund risk-adjusted performance. The dependent variable is the alpha from the Carhart four-factor model in each quarter. Panel A presents results for the sample of funds that are managed in-house. If the name of the management company in FactSet/LionShares corresponds to the name of the fund family in Lipper, the fund is classified as in-house; the fund is an outsourced candidate otherwise. For the outsourced candidates, if the fund family reported in Lipper corresponds to any of the subsidiaries that are connected to the ultimate parent of the management company reported in LionShares, the fund is classified as in-house; all other candidates are classified as outsourced. Panel B presents results of regressions that include a dummy that takes a value of one when a fund is managed under a sub-advisory arrangement, and zero otherwise, using the baseline sample of all funds. *Commercial Bank-Affiliated* is a dummy variable 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 as in Table 3 (coefficients not shown). 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.

Panel A: Sample of In-House Funds					
	(1)	(2)	(3)	(4)	(5)
Commercial Bank-Affiliated	-0.239***	-0.500**	-0.107	-0.133	0.155
	(-3.89)	(-2.16)	(-1.16)	(-1.46)	(0.74)
log(1+Loans/TNA)			-0.047**		
			(-2.04)		
log(1+Corporate Loans/TNA)				-0.049*	
				(-1.84)	
log(1+Interest Income/Fees)					-0.077**
					(-2.01)
Controls	Yes	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	No	Yes	Yes	Yes
Fund Fixed Effects	No	Yes	No	No	No
Number of Observations	106,110	106,110	105,338	105,234	91,795
R^2	0.138	0.184	0.138	0.138	0.124
Panel B: Baseline Sample Controlling for Outsourcing					
	(1)	(2)	(3)	(4)	(5)
Commercial Bank-Affiliated	-0.230***	-0.379**	-0.096	-0.124	0.129
	(-3.85)	(-2.34)	(-1.02)	(-1.35)	(0.64)
log(1+Loans/TNA)			-0.049**		
			(-2.06)		
log(1+Corporate Loans/TNA)				-0.050*	
				(-1.91)	
log(1+Interest Income/Fees)					-0.075**
					(-1.98)
Controls	Yes	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	No	Yes	Yes	Yes
Fund Fixed Effects	No	Yes	No	No	No
Number of Observations	127,880	127,880	126,782	126,673	110,641
R^2	0.145	0.192	0.146	0.146	0.131

Table IA.7
Divestitures of Fund Management Companies by Commercial Banking Groups: Benchmark Holdings

This table presents estimates of difference-in-differences regressions of fund's stock portfolio holdings around the three quarters before and three quarters after the divestiture of a fund management company by a commercial banking group. The dependent variable is the percentage of TNA invested in client stocks (i.e., firms that borrow from the fund's parent bank), *%TNA Invested in Client Stocks*. Column (1) shows the estimates of difference-in-differences regressions of divestitures during the 2000-2010 period, column (2) during the 2007-2009 global financial crisis, and column (3) during the 2000-2010 period but restricting the sample to funds without fund manager turnover in the event window. Treated funds are those funds sold by a commercial bank to a stand-alone management company. The control fund is given by the fund's benchmark portfolio weights. *After* is a dummy variable that takes a value of one in the announcement quarter of a fund divestiture and thereafter. Variable definitions are provided in Table A.1 in the Appendix. The sample consists of actively managed domestic equity mutual funds. Robust *t*-statistics adjusted for clustering at the deal level are reported in parentheses. *, **, *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	2000-2010	2007-2009 Global Financial Crisis	Sample without Fund Manager Turnover
	(1)	(2)	(3)
Treated	11.323**	4.444***	13.976**
	(2.58)	(5.11)	(2.71)
After	-1.310	1.996	0.659
	(-0.41)	(0.19)	(0.16)
Treated × After	-2.371***	-3.018***	-2.704***
	(-4.75)	(-3.88)	(-4.67)
Quarter Fixed Effects	Yes	Yes	Yes
Number of Observations	1,584	420	1,140
Number of Treated Funds	132	35	95
Number of Deals	22	7	15
Number of Banks	19	7	12
R^2	0.175	0.041	0.271

Table IA.8
Fund Holding Turnover of Commercial Bank-Affiliated Funds

This table presents estimates of ordinary least squares (OLS) regressions of fund holding turnover. The dependent variable is the number of shares bought or sold in firm *j* by fund *i* divided by the number of shares held in the previous quarter. Column (1) presents the estimates for the sample of all funds, and column (2) presents the estimates for the sample of commercial bank-affiliated funds. *Client Stock* is a dummy variable that takes a value of one if the holding is from a lending client, and zero otherwise. *Commercial Bank-Affiliated* is a dummy variable that takes a value of one if the ultimate owner of the fund's management company is a commercial banking group, and zero otherwise. *Parent Stock* is a dummy variable that takes a value of one if the holding is on the stock of the fund's parent bank. Stock-level controls include market capitalization, book-to-market, return, volatility, leverage, and stock turnover. Fund-level controls include fund TNA, family TNA, and fund ownership of fund *i* on stock *j*. 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.

	Full Sample	Commercial Bank-Affiliated Funds
	(1)	(2)
Client Stock	0.011**	0.013***
	(2.31)	(2.61)
Commercial Bank-Affiliated	0.007	
	(1.39)	
Parent Stock	-0.023***	-0.025***
	(-3.70)	(-3.45)
Controls (Stock and Fund)	Yes	Yes
Quarter Fixed Effects	Yes	Yes
Stock Fixed Effects	Yes	Yes
Number of Observations	10,971,845	3,237,902
R^2	0.028	0.035

Table IA.9
Commercial Bank-Affiliated Funds Trading Behavior Around Negative Shocks

This table presents estimates of ordinary least squares (OLS) regressions of fund trading behavior around price pressure events caused by widespread selling of stocks. The dependent variable is the logarithm of fund *i* ownership of firm *j* in quarter *t*. Column (1) presents the estimates for the sample of all funds, and column (2) presents the estimates for the sample of commercial bank-affiliated funds. *Client Stock* is a dummy variable that takes a value of one if the holding is from a lending client, and zero otherwise. *%Comp Sold>1* is a dummy variable that takes a value of one when more than one percent of the shares of outstanding of a firm are sold in aggregate by all funds in quarter *t*, and zero otherwise. *Commercial Bank-Affiliated* is a dummy variable that takes a value of one if the ultimate owner of the fund's management company is a commercial banking group, and zero otherwise. Stock-level controls include market capitalization, book-to-market, return, volatility, leverage, and stock turnover. Fund-level controls include fund TNA and family TNA. 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.

	Full Sample	Commercial Bank-Affiliated Funds
	(1)	(2)
Client Stock	0.061***	0.071***
	(3.54)	(4.71)
Client Stock × %Comp Sold>1	0.029***	0.021**
	(2.85)	(2.25)
%Comp Sold>1		-0.016***
		(-4.55)
Commercial Bank-Affiliated	0.143***	
	(5.86)	
Commercial Bank-Affiliated × %Comp Sold>1	0.001	
	(0.04)	
Controls (Stock and Fund)	Yes	Yes
Quarter Fixed Effects	Yes	Yes
Stock Fixed Effects	Yes	Yes
Number of Observations	10,992,365	3,247,240
R^2	0.671	0.733

Table IA.10
Performance of Commercial Bank-Affiliated Funds: International Funds Placebo

This table presents estimates of ordinary least squares (OLS) regressions of fund risk-adjusted performance. The dependent variable is the alpha from the Carhart four-factor model in each quarter. *Commercial Bank-Affiliated* is a dummy variable that takes a value of one if the ultimate owner of the fund's management company is a commercial banking group, and zero otherwise. *High Bias Fund* is a dummy variable that takes a value of one if an affiliated fund *Bias in Client Stocks* is above the median in a given country and quarter, and zero otherwise. *Bias in Client Stocks* is the portfolio bias in stocks of firms that borrow from the fund's parent bank versus the average weight of passive funds. *High Allocation Fund* is a dummy variable that takes a value of one if an affiliated fund *%TNA Invested in Client Stocks* is above the median in a given country and quarter, and zero otherwise. *%TNA Invested in Client Stocks* is the percentage of TNA invested in stocks of firms that borrow from the fund's parent bank. The regressions include the same control variables (coefficients not shown) as in Table 3. 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 international 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)
Commercial Bank-Affiliated	-0.110**	-0.118**	-0.119**
	(-2.25)	(-2.10)	(-2.13)
High Bias Fund		0.024	
		(0.35)	
High Allocation Fund			0.031
			(0.39)
Controls	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
Investment Region Fixed Effects	Yes	Yes	Yes
Number of Observations	114,637	114,428	114,637
R^2	0.070	0.070	0.070

Table IA.11
Performance of Commercial Bank-Affiliated Funds: Retail and Institutional Investors

This table presents estimates of ordinary least squares (OLS) regressions of fund risk-adjusted performance. The dependent variable is the alpha from the Carhart four-factor model in each quarter. Panel A presents results for the sample of funds that cater exclusively to retail investors (i.e., funds without an institutional share class). Panel B presents results for other funds that cater both to retail and institutional investors (i.e., funds with at least one institutional share class). *Commercial Bank-Affiliated* is a dummy variable 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. 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.

Panel A: Funds that Cater Exclusively to Retail Investors					
	(1)	(2)	(3)	(4)	(5)
Commercial Bank-Affiliated	-0.271***	-0.587**	-0.125	-0.123	0.164
	(-3.58)	(-2.52)	(-1.02)	(-1.07)	(0.67)
log(1+Loans/TNA)			-0.049*		
			(-1.71)		
log(1+Corporate Loans/TNA)				-0.063**	
				(-2.07)	
log(1+Interest Income/Fees)					-0.082*
					(-1.90)
Controls	Yes	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	No	Yes	Yes	Yes
Fund Fixed Effects	No	Yes	No	No	No
Number of Observations	90,467	90,467	90,181	90,072	79,684
R^2	0.135	0.184	0.135	0.135	0.125
Panel B: Funds that Cater to Both Retail and Institutional Investors					
	(1)	(2)	(3)	(4)	(5)
Commercial Bank-Affiliated	-0.112	-0.023	-0.050	-0.188	-0.264
	(-1.62)	(-0.11)	(-0.38)	(-1.51)	(-1.09)
log(1+Loans/TNA)			-0.031		
			(-0.82)		
log(1+Corporate Loans/TNA)				0.024	
				(0.59)	
log(1+Interest Income/Fees)					0.021
					(0.35)
Controls	Yes	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	No	Yes	Yes	Yes
Fund Fixed Effects	No	Yes	No	No	No
Number of Observations	37,142	37,142	36,330	36,330	30,691
R^2	0.212	0.271	0.214	0.214	0.186

Table IA.12
Performance of Commercial Bank-Affiliated Funds and Portfolio Allocation to Client Stocks: Funds that Cater Exclusively to Retail Investors

This table presents estimates of ordinary least squares (OLS) regressions of fund risk-adjusted performance. The dependent variable is the alpha from the Carhart four-factor model in each quarter. *Commercial Bank-Affiliated* is a dummy variable that takes a value of one if the ultimate owner of the fund's management company is a commercial banking group, and zero otherwise. *High Bias Fund* is a dummy variable that takes a value of one if an affiliated fund *Bias in Client Stocks* is above the median in a given country and quarter, and zero otherwise. *Bias in Client Stocks* is the portfolio bias in stocks of firms that borrow from the fund's parent bank versus the average weight of comparable passive funds. *High Allocation Fund* is a dummy variable that takes a value of one if an affiliated fund *%TNA Invested in Client Stocks* is above the median in a given country and quarter, and zero otherwise. *%TNA Invested in Client Stocks* is the percentage of TNA invested in stocks of firms that borrow from the fund's parent bank. *High Bias Fund in Top 10 Client Stocks* and *High Allocation Fund in Top 10 Client Stocks* are dummy variables similarly defined for the set of top ten borrowers of the fund's parent bank. All these variables are set to zero if the fund is unaffiliated. The regressions include the same control variables (coefficients not shown) as in Table 3. 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. The sample is restricted to funds that cater exclusively to retail investors (i.e., funds without an institutional share class). 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				Non-U.S. Funds	U.S. Funds
	(1)	(2)	(3)	(4)	(5)	(6)
Commercial Bank-Affiliated	-0.238***	-0.249***	-0.213***	-0.204**	-0.247**	-0.286***
	(-2.94)	(-3.23)	(-2.58)	(-2.54)	(-2.32)	(-2.83)
High Bias Fund	-0.149*				-0.182*	-0.033
	(-1.73)				(-1.76)	(-0.21)
High Bias Fund in Top 10 Client Stocks		-0.206**				
		(-2.36)				
High Allocation Fund			-0.189**			
			(-2.00)			
High Allocation Fund in Top 10 Client Stocks				-0.281***		
				(-2.65)		
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	No
Number of Observations	89,947	89,947	90,467	90,467	46,787	43,160
R^2	0.134	0.134	0.135	0.135	0.092	0.250

Table IA.13
Flows to Commercial Bank-Affiliated Funds: Funds that Cater Exclusively to Retail Investors

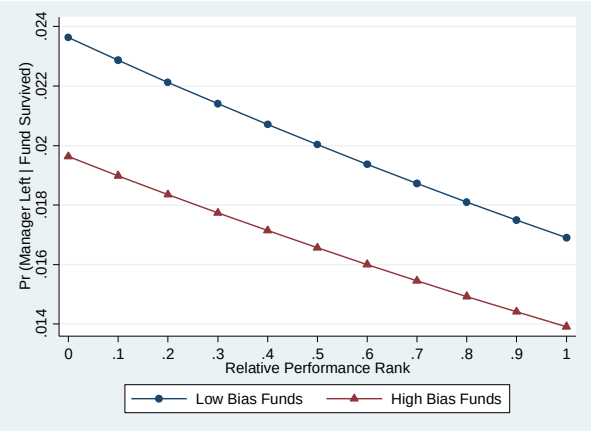
This table presents estimates of ordinary least squares (OLS) regressions of fund flows (percentage growth in TNA). *Commercial Bank-Affiliated* is a dummy variable that takes a value of one if the ultimate owner of the fund's management company is a commercial banking group, and zero otherwise. *Rank* is the fractional performance rank ranging from zero to one, which is assigned according to the average four-factor alpha in the past four quarters in a given quarter and country. The piecewise linear specification includes three performance rank segments: *Low* = min(0.2, *Rank*), Mid = min(0.6, *Rank* - *Low*), and *High* = *Rank* - (*Low* + *Mid*). 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. The sample is restricted to funds that cater exclusively to retail investors (i.e., funds without an institutional share class). 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		Non-U.S. Funds		U.S. Funds	
	Linear	Piecewise	Linear	Piecewise	Linear	Piecewise
	(1)	(2)	(3)	(4)	(5)	(6)
Commercial Bank-Affiliated	-0.229	-0.542	0.815**	1.516**	-2.226***	-3.736***
	(-0.61)	(-0.81)	(2.22)	(2.55)	(-3.38)	(-3.38)
Rank	5.714***		5.139***		5.922***	
	(17.54)		(11.59)		(11.45)	
Commercial Bank-Affiliated × Rank	-0.699		-1.218*		1.413	
	(-1.02)		(-1.74)		(1.30)	
Low		7.597***		9.665***		5.554*
		(3.28)		(3.60)		(1.92)
Commercial Bank-Affiliated × Low		0.702		-6.619*		10.923*
		(0.20)		(-1.90)		(1.93)
Mid		3.843***		2.913***		4.437***
		(8.69)		(4.68)		(7.19)
Commercial Bank-Affiliated × Mid		-0.211		-0.158		1.097
		(-0.29)		(-0.17)		(1.21)
High		16.849***		16.375***		16.520***
		(6.99)		(5.75)		(4.28)
Commercial Bank-Affiliated × High		-4.041		-2.758		-3.585
		(-0.98)		(-0.56)		(-0.48)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Quarter Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	No	No
Number of Observations	84,645	84,645	43,713	43,713	40,932	40,932
R^2	0.081	0.082	0.059	0.061	0.105	0.106

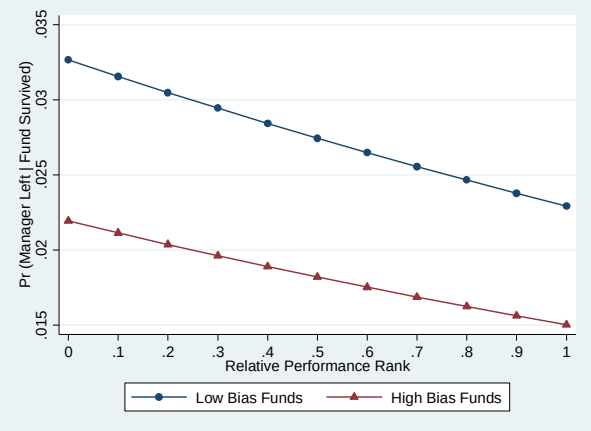
Figure IA.1
Commercial Bank-Affiliated Fund Manager Turnover

This figure shows the average probability of fund manager turnover across deciles of relative fund performance. The sample in Panel A consists of all funds. The sample in Panel B consists of non-U.S. funds. The sample in Panel C consists of U.S. funds. *High Bias Fund* is a dummy variable that takes a value of one if an affiliated fund *Bias in Client Stocks* is above the median in a given country and quarter, and zero otherwise. *Bias in Client Stocks* is the portfolio bias in stocks of firms that borrow from the fund's parent bank versus the average weight of comparable passive funds. The sample consists of actively managed domestic equity mutual funds in the 2004-2010 period.

Panel A: All Funds



Panel B: Non-U.S. Funds



Panel C: U.S. Funds

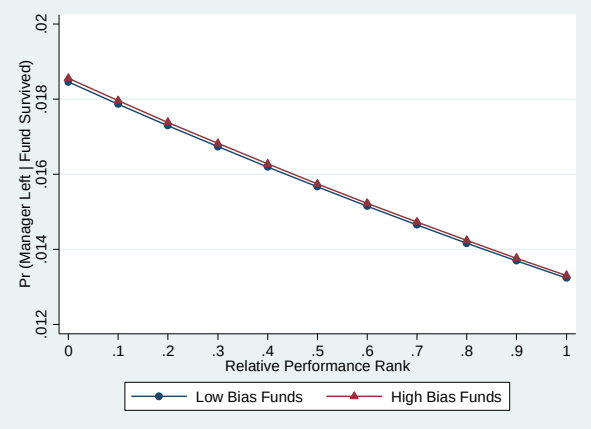
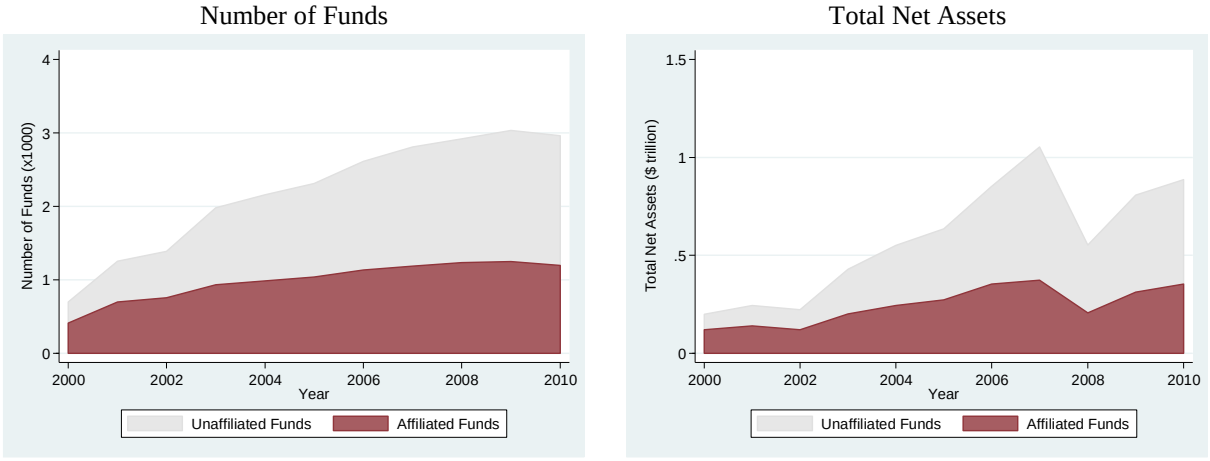


Figure IA.2
Market Share of Commercial Bank-Affiliated Mutual Funds

This figure shows the number of funds and total net assets of commercial bank-affiliated and unaffiliated mutual funds by year. The sample in Panel A consists of non-U.S. funds. The sample in Panel B consists of U.S. funds. A fund is classified as commercial 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.

Panel A: Non-U.S. Funds



Panel B: U.S. Funds