

# Commercial Banks affiliated Mutual Funds: a win-win game?

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*Gramm-Leach-Bliley Act* (GLBA) of 1999 is cited by academicians and practitioners alike to be instrumental in removing regulatory impediments meant to prevent commercial banks from aggressively diversify into investment banking, insurance and investment advisory activities. By removing regulatory barriers, the GLBA was expected to benefit commercial banks by reducing bank systematic risk through activity diversification, and improving bank profitability by cross-selling to the existing customers symbiotic banking products, like brokerage and fund advisory services.

In this paper, we investigate the benefits of the mutual fund activity on capital management, lending ability and competitiveness of commercial banks operating in the United States. We focus our analysis on two types of banks, those that act as investment advisors of affiliated mutual fund companies and others that act as brokers on third party mutual funds. We find preliminary evidence supporting the positive impact of the mutual fund business as a “win-win game” benefiting banks as well as market participants and borrowers.

We collect data from quarterly Call Reports from the Federal Reserve Bank of Chicago website ([www.chicagofed.org](http://www.chicagofed.org)) and quarterly Summary of Deposits from the Federal Deposits Insurance Corporation website ([www.fdic.org](http://www.fdic.org)) from 2001 to 2007.

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## Introduction and Literature Review

Do commercial banks become more competitive in their traditional loan markets when they venture into the mutual fund industry? Specifically, we study the impact of selling third party mutual funds or managing a proprietary mutual fund on banks' loan securitization and loan sales activity, risk-shifting incentives, ability to generate more loans and willingness to pass on all, or part, of the incremental mutual fund revenues to the existing customers.

It has long been said that banks are special. The "specialness" of banks originate from their ability to provide monitored loans to opaque borrowers, which otherwise may not be able to borrow directly from the capital markets. By expanding their loan activity, banks create value by providing certification (Diamond, 1991), better pricing (Berger and Udell, 1995), and greater protection against credit crunches (Repullo *and* Suarez, 2000) for their borrowers.

Traditionally, the ability of banks to originate loans has been linked to their capital, given that banks face imperfect capital markets for their equities (Calomiris and Hubbard, 1995; Cornett and Tehranian, 1994; Myers and Majluf, 1984). Prior to the development of the loan sales and securitization markets in the 1990s, banks held their illiquid loans to maturity and managed credit risk by internally diversify their loan portfolios (Diamond, 1984). Additionally, banks were restricted from diversifying into investment banking and insurance activities to manage their credit and capital costs.<sup>2</sup> However, with relaxation in regulation and emergence of loan transfer markets, the amount of credit provided by banks has become more sensitive to efficient management of capital through activity diversification and the development of orderly and liquid loan risk transfer markets, such as loan sales and securitization.<sup>3</sup>

This paper makes several contributions to the existing literature on bank diversification, lending and competition. First, we investigate which kind of banks choose to enter into the mutual fund business; acting either as brokers (involved with only selling third party label products) or investment advisors (actively involved in both managing and selling their own proprietary funds). We consider the effects of diversification across different market conditions, and find the odds of managing a mutual fund become stronger in concentrated loan markets. We also find that the decision to manage a mutual fund is influenced by the level of expertise of the sponsoring bank in non-commercial banking activities, such as trading and investment banking. Second, we analyze the impact of mutual fund management on banks' securitization and loan sales activities. Banks use securitization and loan sales to manage regulatory capital requirements (Karaoglu, 2005). However, the effectiveness of loan transfer markets in managing

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<sup>2</sup> The Glass-Steagall Act of 1933 prohibiting commercial banks from undertaking investment banking or insurance activities.

<sup>3</sup> Gramm-Leach-Bliley Act (GLBA) of 1999 removed all regulatory barriers between commercial and investment banking.

capital, to a large extent, depends upon the level of liquidity available in these markets. The liquidity in credit transfer markets tends to be highly correlated with business cycles, growing in booming periods and drying up in recessionary ones, on the fear of rising defaults. The recent collapse of the sub-prime mortgage markets is a good example showing how vulnerable credit transfer markets can be during economic and liquidity shocks. We therefore posit that proprietary mutual funds can “hedge” liquidity risk for banks in loan transfer markets and serve as a “strategic” resource to augment banks’ loan sales and securitization activity.

Third, we gauge the effect of mutual fund management on the ability of the banks to generate new loans. We control for industry structure, level of competition, activity diversification and bank loan concentration risk (on real estate, consumer, agricultural, and commercial and industrial loans), and question whether engaging in activities that enhance liquidity for banks’ credit risk management also favorably impacts the equilibrium level of bank credit for its customers. If having access to an affiliated mutual fund improves the ability of banks to support their loan sale and securitization activity in economic downturns, correspondingly, it should encourage them to create more loans, thereby avoiding credit crunches in times of recession.

Fourth, we investigate whether managing mutual funds may cause banks to behave *opportunistically*. In economic downturns, banks can advantageously shift riskier loans to the mutual funds to buy protection against rising default losses and preserve its bank capital.

Ritter and Zhang (2007) examine the possible opportunistic behavior resulting from the linkage between investment banks and their affiliated mutual funds. They argue that investment banks might allocate cold IPOs to affiliated funds so that more deals can be concluded when demand for these IPOs is low. In our case, during market downturns commercial banks, finding it difficult to sell and securitize the desired level loans, might choose to allot them to their own mutual funds. Alternatively, Ritter and Zhang (2007) suggest that banks may allocate hot IPOs to affiliated funds in order to enhance their performance and thus draw more money. Similarly, banks might allocate good quality loans and securitized credits to their funds, instead of selling them to unrelated investors. We test Ritter and Zhang (2007) conflict of interest argument in the parallel loan sales and securitization markets for banks managing mutual funds, and find strong evidence to the contrary. Banks with mutual funds tend to transfer less risky loans through securitization and loan sales than those who do not manage mutual funds.

Lastly, we investigate whether banks with affiliated mutual funds share and transfer their incremental revenue gains with their clients, in the form of lower interest rates. If that is indeed the case, mutual fund linkage can definitely make banks more competitive in their traditional, relationship lending markets.

Our results show that having a bank affiliated mutual fund is a strong “win-win game” for banks and their borrowers. We find that having access to a mutual fund, at the bank holding level, has significant positive effects for all the other member banks in the group. On average, member banks pursue a more aggressive loan origination policy because they can recycle their capital more efficiently through loan sales and securitization. Moreover, mutual funds make external credit risk management less sensitive to market movements. We do not find banks engaging in risk-shifting at the detriment of the mutual fund investors. Finally, we see banks transferring their gains, in the shape of better loan pricing, to their customers.

The rest of the paper is laid out as follows. In the next section we briefly describe the commercial banks and mutual fund industries, the growth of the mutual fund industry in the United States, followed by a brief description of our sample and data, the description of the probability of operating in the mutual fund industry, the empirical analysis, and finally our conclusion.

### **Commercial Banking and Mutual Funds**

Commercial banks are financial intermediaries that invest in illiquid loans and hold minimum regulatory capital levels to protect their liability suppliers (depositors) from asset devaluations or write-offs. In contrast, mutual funds are corporate entities that pool resources of many small investors by selling them shares and using the proceeds to buy marketable securities (stocks and bonds).<sup>4</sup> Mutual fund investors, unlike depositors, are shareholders and therefore bear all the risk of loss in capital value if the fund underperforms. To protect the interests of the shareholders, an independent board of directors is appointed to oversee the fund’s activities, which include, among other things, hiring an investment advisor, underwriter, custodian, and public auditor.<sup>5</sup>

The appointment of the Investment Advisor is the most crucial decision undertaken by the board of directors to maximize shareholder wealth. Investment advisors are responsible for undertaking all investment decisions pertaining to the fund, including its asset allocation, stock picking, monitoring and portfolio rebalancing. Investment advisors enjoy a free reign in executing their investment strategies, without interference or prejudice, from the fund’s board of directors or shareholders.

The delegation of the fund’s investment management function the advisor creates principal-agent problem. To minimize potential principal-agent problems, management fee of the investment advisors is

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<sup>4</sup> A relatively small proportion of mutual funds specialize in higher risk-return but illiquid asset class called Alternative Investments, which includes real estate, private equity, hedge fund investment strategies, and venture capital. Alternative investments are an attractive asset class for individuals and institutions managing long term retirement accounts owing to their low, and in some instances negative correlation, with traditional stocks and bonds.

<sup>5</sup> In the US, mutual funds have to comply with disclosure requirements of the Securities Exchange Act of 1933, 1934

tied directly to the net asset value of the fund, thereby aligning any incentives of the investment advisor to deviate from the shareholder's objective of maximizing wealth. Connecting management fees of the investment advisor to the fund's performance works well in mitigating agency problems, especially, if the advisor is an independent firm.

However, where the investment advisor is an affiliate of a commercial bank or bank holding company agency costs may actually increase. Commercial banks could use proprietary mutual funds as vehicles for dumping poor quality loans, that they cannot sell to other sources, in an attempt to preserve their costly regulatory capital. Investment advisors of bank affiliated firms may thus take decisions that are beneficial to the affiliated commercial banks, at the cost of fund's investors. While there are laws in place that prevent occurrences of such gross violations, their enforcement is a greater challenge. It is difficult to prove, in a court of law, that an 'unlucky' investment decision is the result of an intentional fiduciary violation and not an inept decision.<sup>6</sup> Hence, there is always potential that commercial banks could exploit such conflicts of interest to their advantage, at the detriment of the mutual fund investors. However, we suspect that such abuses would be minimal as the mutual fund would underperform and the bank would lose not only a lucrative fees based stream of income, but more importantly, lose the flexibility of using the mutual fund to manage its costly capital more strategically.

### **Growth of the mutual fund industry in the United States**

In the United States, growth in the mutual funds was spurred as a direct consequence of the bull market of 1982 and the Employee Retirement Income Security Act of 1974 which created Individual Retirement Accounts that paved the way for 401(k) pension plans. In 1982 there were only 857 mutual funds in the United States managing \$297 Billion.<sup>7</sup>

*“As people invest their plan balances directly in mutual fund, they develop greater familiarity with the concept; they are thus more inclined to invest their non-401(k) savings in mutual funds as well”.*

(pp. 36, Shiller (2001)).

By the end of 1998, the size of net asset values of mutual funds had reached \$5,530 Billion, registering an annual growth of 20.01% during the period 1982-1998. During the past ten years (1998 to 2007), mutual funds in the US have continued to show a robust, annual growth rate of 8.09% (reaching

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<sup>6</sup> The Investment Company Act of 1940 and US Securities and Exchange Commission (SEC) Rule 10(f)-3 restrict the ability of a lead underwriter's allocations of IPO shares to its affiliated mutual funds. We didn't find any analogous provision for the sales of securitized assets and loans to affiliated mutual funds.

<sup>7</sup> Table 1, Chapter 21, Financial Markets and Institution, by Mishkin and Eakins, Fifth Edition. Pearson Addison and Wesley.

\$12,039 Billion in 2007), which is only slightly below the 8.31% corresponding growth seen in US domestic deposits with insured commercial banks and savings institutions.

Lured by the mass exodus of household savings into fixed income mutual funds, commercial banks also eagerly entered the industry in the 1990s. Initially, banks were involved in only selling third party mutual funds and pocketing the sales commission. However, as the mutual fund market continued to grow in new millennium, bank holding companies set up affiliate investment advisor firms, which started to manage proprietary mutual funds, which subsequently were sold by the bank's staff to its retail customers.

To assess the potential of abuse or benefit by commercial banks operating in the mutual fund industry, one has to see the size of the mutual fund industry relative to the US loan market. Excluding the period 1998-2000, which represents stock market boom period, the fixed income mutual funds have grown at a faster rate of 11.9%, compared to a corresponding growth of 9.0% for US bank deposits (see Table IB and IE). By 2007, the size of the fixed income mutual funds stood at \$4,797 Billion, of which \$3,118 Billion or 70% represented money market mutual funds. If one were to compare only the money market mutual fund segment to total loans outstanding, of \$7,805 Billion in 2007, one can see the immense potential synergistic gains that can be realized by banks from originating and selling loans to proprietary managed funds. In all essence, money market mutual funds represent parallel pools of liquidity that banks can tap into without any of the costly regulatory reserve requirements.

### **Data and sample description**

We collected quarterly Call reports from the Federal Reserve Bank of Chicago website ([www.chicagofed.org](http://www.chicagofed.org)) and Summary of Deposits quarterly data from the Federal Deposits Insurance Corporation website ([www.fdic.org](http://www.fdic.org)) from 2001 to 2007. The sample consists in foreign and domestic commercial banks<sup>8</sup> operating in the United States. Over the sampling period 2001 to 2007, 20.1% of the banks act as broker on third parties mutual fund and but only 1.7% act as investment advisor on proprietary mutual funds<sup>9</sup>.

From 2001 to 2007 the percentage of banks selling third parties mutual fund remains substantially stable around 20%, while the share of conglomerates managing mutual funds shrinks from 6.6% in 2001 to 3.40% in 2007. Finally, the size of assets under management, also diminish by 36.31% from the peak of 184673.56 million dollars in assets in 2002 to 117617.15 in 2007 (Table 1).

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<sup>2</sup> We included in our sample banks with Charter Type equal to 200. Charter Type 200 identifies the category Commercial Banks (including depository trust companies, credit card companies with commercial bank charters, private banks, development banks, limited charter banks [BNK\_TYPE\_ANALYS\_CD = 4, 5], and foreign banks)

Overall banks that act as brokers or investment advisor on mutual funds are bigger (in terms of total assets) and generally provide more credit to the market. The level total deposits is smaller for banks acting as investment advisor on proprietary mutual funds (64% of total assets versus 82% for banks that do not sell nor manage mutual funds).

The management of proprietary mutual funds seems to take place in credit markets relatively more concentrated and characterized by a stronger presence of large banks as depository institutions.

Finally, only 14.12% of banks providing brokerage services on third party mutual funds belong to conglomerates with a bank holding company branched in more than one State, the percentage rise to 40.1% for banks managing proprietary mutual funds.

### **Probability of operating in the mutual fund industry**

The probability of entering in the mutual fund business as broker of third party mutual funds seems to be driven by profitability (*ROA*) and negatively related to the amount of liquid assets (*Liquid/Total assets*). Banks with relatively higher asset risk might try to mitigate loan concentration risk by holding more liquid assets, thus lowering the gains from diversifying into the mutual fund activity.

The level of deposits increases the probability of selling third parties mutual funds, while decreases the odds of managing proprietary mutual funds.

Economies of scale and diversification needs seem to drive the choice of entering the mutual fund business as a broker of third parties products. Table 3 Panel A and B shows that the amount of deposits (*Deposits/Total assets*) increases the odds of selling third parties mutual fund shares while decreases the chances of managing proprietary mutual funds. Large depository institutions have a potentially large captive and easy-to-reach clientele for the sale of mutual funds shares, while the management of mutual funds is more likely carried out by diversified institutions with specific know-how in asset management.

Moreover, the odds of acting only as a broker are positively related to the loan portfolio concentration (*Bank loan portfolio concentration*): the higher the concentration of loans into a single category the higher the need to diversify risk by entering in the fee based brokerage business.

Finally looking at the diversification activity (*Diversification*)<sup>10</sup> it is plain that, the more that bank is involved in nontraditional banking activities such as investment banking and trading, the higher are the odds of selling third parties' products and even more of managing proprietary mutual funds.

The *expertise* gained in nontraditional banking can be spent in the advisory activity on proprietary mutual funds explaining synergies and economies of scale. The expertise argument holds with respect to

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<sup>10</sup> The *Diversification* variable, ranging from 1 to 5 is the sum of the following dummy variables, each equal to 1 if the bank is involved in the following activities: fiduciary, investment banking, insurance and venture capital.

the organizational complexity of the bank: banks belonging to complex conglomerates are much more likely to act as investment advisor on proprietary products<sup>11</sup> (Table 3 Panel B).

Finally, we investigate the effect of competition and the structure of the banking market as determinants of the choice of entering the mutual fund business.

As a proxy for competition we take the Herfindahl-Hirschman Index (HHI) on four main categories of loans: Real estate loans, Consumer Loans, Commercial and Industrial loans and Agricultural loans. The HHI ranges from zero to one<sup>12</sup> and measures the degree of the competitiveness/concentration of the relevant market.

Berger et al. (2005) affirm that States have been historically different in how permissive they were with respect to branching and banks' competition, thus we calculate HHI per quarter by using the State code as a geographical meter to identify the relevant market<sup>13</sup>.

Following Berger, Rosen, Udell (2005) we also control for market structure using the proportion of deposit within a State held by large banks<sup>14</sup> over the total amount for deposits.

The regression results show that the choice to sell third party mutual funds (Table 3 Panel A) is not affected by the level of competition, while relatively concentrated markets and markets characterized by the presence of large banks as depository institution increase the odd of managing proprietary products (Table 3 Panel B). The results can be explained referring to the start up costs of the investment advisory activity: entering the mutual fund business takes high initial costs that might be sustainable only in relatively more concentrated markets where banks are able to charge comparatively higher interests on loans without losing the client.<sup>15</sup>

### **Empirical Analysis**

Our main objective is to quantify the impact of mutual fund activity on bank lending, securitization and loan sales, risk shifting, and wealth transfer decisions. We report our hypothesis and empirical findings in subsections A to D.

In our empirical analysis, we control for quality of a bank's loan portfolio, liquidity in loan transfer markets, level of activity diversification, concentration risk on loan portfolios, competitive

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<sup>11</sup> Conglomerates having bank holding companies with operative branches in more than one State are more likely to manage proprietary mutual funds.

<sup>12</sup> Values of HHI close to zero indicate competitive markets; while close to one indicate concentrated markets.

<sup>13</sup> Our initial choice was to define the relevant market using MSA codes; many rural areas were left out of the sample since an appropriate code was not available. We are currently working on identifying and assigning specific codes to rural area and as a compute HHIs at MSA and rural area level. A further robustness check will be done by using the first four digits of the bank ZIP code.

<sup>14</sup> Large banks are defined as having total assets greater the \$1 billion.

<sup>15</sup> We are planning to complete the current study by looking at the spectrum and level of fees banks charge on investors. We are currently collecting data from Morningstar database.



market conditions in loan markets, and market structure, proxied by the level of deposits held by large banks in a given State.

The variable *Charge Offs* captures the effect of total loan charge off, reported by banks, in the preceding period. We use the lagged values of total loan charge offs, instead of current values, as we predict that loan sales markets would form their beliefs about the quality of a bank loan portfolio, based on the level of its last reported loan charge offs. By the same token, we use the market mean level of charge offs per quarter (*Market Charge offs*) to proxy for the overall level of default risk in the banking sector.

*Market Charge offs* would also proxy for the level of liquidity available in the market for securitized assets and loan sales. An increase in *Market Charge offs* would indicate a “flight to quality”, which would drive out liquidity from risky credit markets as fixed income investors would shift their portfolios away from risky instruments to safer government issued securities. The variable *Cross\_Market Charge offs* is the cross product of *Market Charge offs* and a response variable indicating whether or not at least a bank within a conglomerate manages proprietary mutual funds. The *Cross\_Market Charge offs* variable allows us to analyze how the mutual fund management impacts on the bank lending, securitization and risk shifting incentives controlling when market conditions are bad.

*Diversification* and *Bank loan portfolio concentration* proxy for a bank necessity to actively manage its capital levels through securitization and loan sales. Banks that engage in activities other than commercial banking, such as investment banking, venture capital, and fiduciary activity, are likely to have well-diversified revenue streams, compared to banks that rely on traditional lending. Therefore, the need to access to loan securitization markets for managing capital decreases as nontraditional banking activities increase. Our *Diversification* variable thus captures the scope of a bank’s non-commercial banking activities, and proxies for activity diversification. *Bank loan portfolio concentration* measures the level of asset concentration on a bank loan portfolio. The variable is constructed as an HHI on the proportionate weights of a bank’s loan portfolio held in real estate, agricultural, consumer, and commercial and industrial loans. *Bank loan portfolio concentration* ranges in value between zero and one, with higher values indicating a more concentrated loan portfolio which would be more vulnerable to economic shocks and downturns, and thus have higher need for active bank capital management.

We control for the level of competition banks face in their local markets in two ways. First, we measure competition by creating Herfindahl-Hirschman Index on local loan markets, *HHI - Real estate lending*, *HHI - Commercial and Industrial*, *HHI - Consumer lending*, and *HHI - Agricultural lending*. Second, we measure *Market structure* by creating a ratio of total deposits held by large banks (having deposits greater than \$1 Billion) in a given State. We control for market structure in each of our results,

and postulate, that a bank's decision to enter into the mutual fund activity may be motivated by increased competition in the traditional commercial banking markets for deposits and loans.

#### **A) Securitization and Loan Sales:**

Banks are heavily regulated institutions. They are required to hold sufficient capital levels, at all times, to protect their depositors from suffering from unexpected loan losses on the banks' loan portfolio. Due to higher information sensitivity of loans, banks face positive marginal cost of capital when they approach capital markets to raise fresh equity capital (Froot and Stein, 1998). Owing to positive marginal costs of capital, value-maximizing banks benefit from hedging their market and credit risks. Karaoglu (2005) reports that commercial banks indeed use the mechanism of loan transfers to influence their reported earnings and manage their regulatory capital levels. Thus, we hypothesize that having access to a proprietary mutual fund should favorably increase a banks' reliance on the mechanism of loan transfer, especially when capital debt markets would not be too deep due to tight liquidity conditions.

Following Petersen (2007) we control for cross-sectional and time series correlation and the related bias in the standard error estimates by using clustered standard errors. We address the cross-sectional dependence by clustering by bank identification number and the time series dependence, parametrically, introducing time fixed effects.

*H1: Deteriorating credit market conditions should have no impact on the loan sales and securitization activity of banks that sell third party funds or manage their own mutual funds.*

Table (4) shows the impact of mutual fund activity on loan securitization and loan sales activity of banks. The dependent variable is the *loan transfer activity* of the bank, measured by the ratio of total loans sold and securitized over total assets. Consistent with our expectations, *Charge Offs* has a positive and significant relation with loan transfer activity, while *Market Charge offs* is negatively correlated. A negative coefficient on *Market Charge offs* indicates that liquidity in loan transfer markets are adversely affected by declining economic and business conditions, as evident by the rise bank charge offs. However, conditional on bad market conditions, we find that banks that manage mutual funds, post a significant increase in their loan transfer activity compared to banks that do not own a mutual funds. This result strongly supports the hypothesis that banks use mutual funds to enhance their risk management capability, especially when poor liquidity conditions inhibit their ability to sell loans to external debt

markets. In such situations, we find banks tapping into their mutual funds to support their loan sales and securitization activities.

In the case of banks selling only third party mutual funds, we find that the loan transfer activity is negatively related with the response variable (*Sell Third*). The variable indicates a lower level of loan transfer activity for banks that only sell third party funds, compared to banks that do not enter the mutual fund industry. We suspect that this result might partly driven by the “activity diversification” argument, as selling third party funds improves the diversification of banks existing revenue streams, reducing the need to engage in the loan transfer activity or might reflect their relatively lower complexity: smaller, less complex banks as the one that act as brokers only (see Table 1) might be less engaged in the loan sales and securitization activities.

### ***B. Loan Origination***

If banks increase their loan sales and securitization activity in poor market conditions by drawing on liquidity in their mutual funds, we next test, whether the possession of this increased “strategic” flexibility, results in banks also becoming more aggressive in originating loans.

*H2: Deteriorating credit market conditions have no impact on the loan origination activity of banks that sell third party funds or manage their own mutual funds.*

In Table (5) we present results for the impact of mutual fund association on a bank’s willingness to create more loans. The dependent variable is the sum of total outstanding loans, loans sold and securitized over total assets. A significant negative coefficient on *Cross\_Market Charge offs* captures our main result. When economic conditions slow down, banks with mutual funds create more loans than those that do not have access to one. We find no effect on banks’ loan origination activity if they are merely involved in selling third party funds, as the coefficient on *Sell Third* is negative but insignificant. Moreover, consistent with our expectation, loan origination activity is highly sensitive to market conditions. Overall new loans tend to drop when bank charge offs rise as captured by a significant, negative coefficient on *Market Charge offs*.

Of the four market concentration variables, *HHI - Commercial and Industrial* and *HHI - Agricultural lending* have no significant influence on the level of loans created by banks, independent of their involvement with the mutual fund industry. However, in the case of *HHI - Real estate lending* and *HHI - Consumer lending*, we find that as competition increases in real estate and consumer loan markets, the level of loans created goes down. Since real estate backed and consumer loans tend to be less relationship driven, and behave like transactional loans, a decrease in competition would increase the

incentive to originate more loans. In the case of business loans (commercial and industrial and agricultural) banks have to screen and monitor loans more actively, these loans are driven more by business cycles, than bank competition.. Our market structure variable, *Market structure*, indicates that as more large banks (having deposits in excess of \$1Billion) operate in a market, it negatively impacts loan origination.

Overall, we find that bank profitability, ROA, has a positive effect of loan origination, along with *Bank loan portfolio concentration*. This result appears counter intuitive, because with higher loan concentration risk banks should originate fewer loans, unless these incremental loans are being created with the intent to subsequently be securitized.

### **C) Risk shifting Incentives:**

If banks behave opportunistically they will have an incentive to shift loans with higher risk from their balance sheet on to the mutual fund. To gauge credit risk on the loans held on the banks' balance sheet we use the ratio of non-performing loans (overdue 30 days and above) divided by total loans, while to proxy for credit risk inherent to loans hedged under the banks' loan transfer activity, we use maximum credit exposure retained by banks on these loan transactions over total loan sold and securitized. Specifically, we create the dependent variable *Risk shift*, as the difference between the maximum credit exposure ratio and non-performing loans ratio. Thus, if opportunistic incentives are high, the incentive to *Risk shift* will increase, indicating that banks are selling riskier loans from their balance sheets. We hypothesize that banks will rip off their mutual funds investors when it is most beneficial for them to do so. Therefore in poor market conditions, we should see banks sell more risky loans under their loan securitization program.

*H3: Deteriorating credit market conditions have no impact on risk-shifting incentives for banks that sell third party funds or manage their own mutual funds.*

Table (6) contains results on the incentive of banks to risk shift with a mutual fund. First and foremost, holding all else constant, in poor market conditions banks' incentive to risk-shift increases and the coefficient on *Market Charge offs* is significant and positive. However, we find this risk-shifting incentive is mitigated when banks also hold mutual funds. The coefficient on *Cross\_Market Charge offs* is both negative and significant. Our results show that banks do not engage in risk-shifting because doing so may undermine performance of the mutual fund, and adversely affect its incremental fund flows. Thus, they do not seem to use the mutual fund as a dumping ground (Ritter, Zang, 2007) for hard-to-sell risky loans.

Market competition and structure variables do not seem to be relevant on banks' incentives to risk shift. However, lower funding risk (proxied by *Deposits/Total assets*) tends to distort banks risk shifting incentives. Since banks with higher deposits are not as dependent on the loan sales markets for funding, they would engage in more risk-shifting, as they would not stand to lose as much as banks that rely on the loan sales market for both funding and credit risk management needs.

We find little evidence of risk shifting in Commercial and Industrial loans. Our choice variable *Cross\_Market Charge offs* is almost zero and insignificant, while the indicator variables for bank conglomerates managing proprietary mutual funds *MF\_Dummy*. We find the size of the mutual fund, *MF\_Assets\_TA*, significant in curtailing risk shifting incentives; however, its effect is extremely negligible, as its coefficient is close to zero.

#### **D) Transfer benefits to loan customers:**

One of the arguments made by the proponents of banks deregulation, in favor of diversification, is that the benefits from diversification can be transferred also to retail customers and borrowers. We test the validity of this argument in the pricing of commercial and industrial loans. If indeed diversification gains are transferred to borrowers, in the shape of lower interest costs, then bank deregulation has positive welfare effects.

Thus, banks that sell private or third party mutual funds earn more commission income than banks who choose not to become mutual fund advisors and brokers. Consequently, we posit that such revenue gains are used by banks in making bank loans more competitive.

*H4: Selling third party funds or managing own mutual fund does not lower interest rate charged by banks on their commercial and Industrial (CI) loans.*

As shown in Table (7), a very strong positive effect is seen on pricing of Commercial and Industrial loans (CI) loans, measured by the interest rate charged on those loans, when banks start selling or managing mutual funds. The income from the sales of mutual funds shares (*MFSales\_TA*) is negative and significant. However, the size of the assets under the mutual funds management has a negligible impact on loan pricing. The variable *MFAssets\_TA*, capturing the size of the fund at the bank holding level, has its coefficient close to zero.

As expected *Bank loan portfolio concentration* and the ratio of loan loss reserve to total assets (*Loan loss reserve/Total assets*) have positive and significant coefficients, as these variables proxy for loan risk. Holding all else constant, as loan risk increases we expect the interest charged on loans to increase accordingly to reflect higher default risk. We find that the amount of loans over total assets

*(Loans and leases/Total assets)* has negative correlation with interest charged on CI loans. We surmise that as *Loans and Leases/Total assets* increases, banks attain better economies of scale on their monitoring costs, which in equilibrium, get transferred to their borrowers in competitive loan markets.

Analyzing the effects of market competition on the four different loan sectors, we find that compared to consumer and real estate backed loans, CI and agricultural loan markets, are not sensitive to market competition. In fact, in the case of CI market competition, we find that banks become more competitive in their pricing when competition level decreases among banks. In our view, what this shows is that banks are probably willing to decrease their loan pricings as they become more certain of not losing relationship rents to other banks.

### **Concluding Remarks**

Consistent with our hypothesis, we find that banks with mutual funds propitiously increase their loan sales and securitization activity during deteriorating credit market conditions, thereby lowering the sensitivity of their capital management program to the vagaries of market movements. Moreover, their higher risk tolerance encourages them to lend more. Mutual funds thus play an integral resource for banks in not only increasing fees based income but also for recycling bank's regulatory capital. As mutual funds become indispensable in improving competitiveness of banks in their traditional markets, their incentive to risk-shift also proportionately decrease. Finally, we also find that banks transfer their gains from being in the mutual fund business to their loan customers. The mutual fund business seems to be a "win-win game" for banks obtaining an additional source of revenue and an additional mean to manage their capital requirements, for borrower obtaining lower costs of funding and for customers investing their saving in bank affiliated funds.

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**Table 1 Foreign and domestic commercial banks operating in the United states, sampling period 2001-2007 - Descriptive Statistics <sup>1</sup>**

	<b>Bank does not sell or manage any mutual fund</b>	<b>Bank acts <u>only</u> as a broker on third parties mutual funds</b>	<b>Bank acts as investment advisor on proprietary mutual funds</b>	
Total Assets	1042711.58	1182089.03	30751876.46	***
ROA	0.022	0.007	0.007	
Liquid	0.175	0.123	0.126	***
Loans and leases	0.621	0.671	0.631	***
Deposits	0.820	0.813	0.728	***
Equity	0.119	0.096	0.105	***
Real Estate Loans	0.399	0.453	0.380	***
Commercial and Industrial Loans	0.100	0.109	0.130	***
Consumers Loans	0.063	0.055	0.063	***
Agricultural Loans	0.050	0.042	0.031	***
Loans securitized	0.007	0.002	0.025	***
Loan Sold	0.002	0.006	0.005	***
Credit Origination	0.623	0.670	0.642	***
Commercial and Industrial credit origination	0.100	0.109	0.131	***
Diversification	1.517	2.813	2.892	***
Bank loan portfolio concentration	0.540	0.552	0.508	***
HHI -Real Estate lending	0.114	0.122	0.157	***
HHI - Commercial and Industrial lending	0.166	0.174	0.233	***
HHI - Consumer lending	0.182	0.182	0.245	***
HHI – Agricultural lending	0.091	0.090	0.159	***
Market Structure	0.532	0.542	0.652	***
Multi-state Bank Holding Company	11.7%	14.12%	40.1%	***
<b>Number of Observations</b>	171559	43335	3730	

<sup>1</sup> Table 1 reports the mean level of the variable of interest. Liquid, Loans and leases, Loan loss reserve, Deposits, Equity, Real Estate Loans, Commercial and Industrial Loans, Consumers Loans, Agricultural Loans, Loans securitized, Loan Sold, Credit Origination, Commercial and Industrial Credit origination are reported with respect to total assets.

\*\*\*, \*\* and \* indicate statistical significance at the 1% , 5% and 10% (two-tailed) test levels, respectively.

**Table 2 Banks' mutual fund business per year of activity<sup>2</sup>**

<b>Year</b>	<b>No. of Banks</b>	<b>Mutual fund type of activity</b>	
<b>2001</b>	8100	Sales of third parties MF shares	19.00%
		Conglomerates with proprietary MF	6.60%
		Size of MF asset under management	167913.24
<b>2002</b>	7892	Sales of third parties MF shares	20.17%
		Conglomerates with proprietary MF	5.14%
		Size of MF asset under management	184673.56
<b>2003</b>	7765	Sales of third parties MF shares	20.32%
		Conglomerates with proprietary MF	4.63%
		Size of MF asset under management	138830.72
<b>2004</b>	7614	Sales of third parties MF shares	21.13%
		Conglomerates with proprietary MF	3.84%
		Size of MF asset under management	119948.77
<b>2005</b>	7702	Sales of third parties MF shares	20.35%
		Conglomerates with proprietary MF	3.61%
		Size of MF asset under management	109458.80
<b>2006</b>	7388	Sales of third parties MF shares	20.21%
		Conglomerates with proprietary MF	3.40%
		Size of MF asset under management	126372.34
<b>2007</b>	7264	Sales of third parties MF shares	20.05%
		Conglomerates with proprietary MF <sup>3</sup>	3.41%
		Size of MF asset under management	117617.15

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<sup>2</sup> Table 2 reports the percentage of banks acting as broker on third party mutual fund shares, bank conglomerates managing proprietary mutual funds and the size in million US dollar of the assets under management by the banking industry.

<sup>3</sup> Even if the share of conglomerates that manage mutual funds decreases in time, the overall number of conglomerates increases during the sampling period, meaning that some conglomerates are effectively going out of the investment advisory business.

**Table 3 Probability of operating in the mutual fund industry – Logit models with maximum likelihood estimates <sup>4</sup>**

**Panel A: Probability of selling only third party mutual fund shares**

Intercept	-6.847	***	-6.852	***	-6.798	***	-6.868	***	-6.738	***
Total Assets	0.035		0.040		0.034		0.042		0.027	
Deposits/Total Asset	2.256	***	2.240	***	2.235	***	2.234	***	2.204	***
ROA	10.370	***	10.529	***	10.716	***	10.505	***	11.186	***
Liquid/Total Asset	-3.720	***	-3.763	***	-3.752	***	-3.761	***	-3.785	***
Multi State Bank Holding Company	-0.316	***	-0.309	***	-0.314	***	-0.310	***	-0.307	***
Diversification	1.918	***	1.913	***	1.918	***	1.912	***	1.918	***
Bank loan portfolio concentration	1.179	***	1.209	***	1.168	***	1.219	***	1.153	***
HHI -Real Estate lending	0.399	**					-0.083			
HHI - Commercial and Industrial lending			-0.020							
HHI - Consumer lending					0.197					
HHI – Agricultural lending							-6.868			
Market structure									0.179	
<b>No. observations</b>	<b>174282</b>									
<b>No. of clusters</b>	<b>7781</b>									

<sup>4</sup> Table 3 reports maximum likelihood estimates of a logistic model with clustered standard errors. We address time series dependence by clustering by bank identification code and the cross sectional dependence with time fixed effects. The sampling period is 2001-2007. In Panel A the dependent variable is a dichotomic variable equal to 1 when the bank acts as a broker on third party mutual fund shares. In panel B the dependent variable is a dichotomic variable equal to 1 when the bank acts as an investment advisor on proprietary mutual funds, in panel C the dependent variable is a dichotomic variable equal to 1 when the bank belongs to a conglomerate with proprietary mutual funds.

The Herfindal Hirschman Indices and Market Structure are highly correlated; therefore we repeatedly run the model introducing one variable at the time. \*\*\*, \*\* and \* indicate statistical significance at the 1%, 5% and 10% (two-tailed) test levels, respectively.





**Table 4: The impact of mutual fund activity on loan sales and securitization** <sup>5</sup>

<b>Parameter</b>	<b>Bank acts <u>only</u> as a broker on third parties mutual funds</b>		<b>Bank sell or manages proprietary mutual funds</b>	
Intercept	0.166	**	0.028	
Charge offs (natural log)	0.005	**	0.002	**
Market Charge offs (median)	-0.004	***	-0.002	**
Cross_Market Charge offs (median)			0.005	**
MFAssets_TA			-0.000	**
Sell Third	-0.006	**		
Total Assets (natural log)	-0.004		0.002	
ROA	2.056	**	0.388	
Diversification	-0.002	*	-0.002	
Bank loan portfolio concentration	0.055	**	0.013	
Deposits/Total assets	-0.177	**	-0.061	**
HHI -Real Estate lending	0.017		0.02	
HHI - Commercial and Industrial lending	-0.003		0.003	*
HHI - Consumer lending	-0.004		-0.012	
HHI – Agricultural lending	0.039	*	0.030	*
Market Structure	-0.013		-0.030	**
<b>Number of Observations</b>	202125		165427	
<b>Number of Clusters</b>	8948		7503	
<b>R-square</b>	0.033		0.046	

<sup>5</sup> Table 4 shows the impact of mutual fund activity on loan securitization and loan sales activity of banks. The dependent variable is the *loan transfer activity* of the bank, measured by the ratio of total loans sold and securitized over total assets. Following Petersen (2007) we control for cross-sectional and time series correlation and the related bias in the standard error estimates by using clustered standard errors. We address the cross-sectional dependence by clustering by bank identification number and the time series dependence, parametrically, introducing time fixed effects.

\*\*\*, \*\* and \* indicate statistical significance at the 1%, 5% and 10% (two-tailed) test levels, respectively.

**Table 5 The impact of mutual fund activity on loans origination<sup>6</sup>**

**Panel A: Total loans**

	<b>Bank acts <u>only</u> as a broker on third parties mutual funds</b>		<b>Bank sell or manages proprietary mutual funds</b>	
<b>Parameter</b>				
Intercept	0.631	***	0.618	***
Market Charge offs (median)	-0.005	***	-0.005	***
Cross_Market Charge offs (median)			0.004	**
MF_Dummy			0.007	
MFAssets_TA			-0.000	
Sell Third	-0.003			
Total assets (natural log)	0.001		0.001	
ROA	2.623	**	1.087	**
Diversification	-0.002		-0.002	
Bank loan portfolio concentration	0.148	***	0.107	***
Deposits/Total assets	0.092		0.151	***
Liquid/Total assets	-0.804	***	-0.829	***
HHI -Real Estate lending	0.093	***	0.093	***
HHI - Commercial and Industrial lending	0.013		0.014	
HHI - Consumer lending	0.033	**	0.039	**
HHI – Agricultural lending	-0.008		-0.032	
Market Structure	-0.090	***	-0.086	***
<b>Number of Observations</b>	202125		165427	
<b>Number of Clusters</b>	8948		7503	
<b>R-square</b>	0.230		0.362	

<sup>6</sup> Table 5 presents the impact of mutual fund management on a bank willingness to create more loans. The dependent variable is the total amount of loan and leases (Panel A), the amount of Commercial and industrial loans (Panel B) and the amount of real estate backed loans (Panel C) originated, sold and securitized to total assets. Following Petersen (2007) we control for cross-sectional and time series correlation and the related bias in the standard error estimates by using clustered standard errors. We address the cross-sectional dependence by clustering by bank identification number and the time series dependence, parametrically, introducing time fixed effects.

\*\*\*, \*\* and \* indicate statistical significance at the 1%, 5% and 10% (two-tailed) test levels, respectively.



**Panel B: Commercial and Industrial loans**

	<b>Bank acts <u>only</u> as a broker on third parties mutual funds</b>		<b>Bank sell or manages proprietary mutual funds</b>	
<b>Parameter</b>				
Intercept	0.120	***	0.124	***
Market Charge offs (median)	-0.000	***	-0.000	***
Cross_Market Charge offs (median)			-0.000	
MF_Dummy			-0.002	
MFAssets_TA			-0.000	
Sell Third	0.002			
Total assets (natural log)	0.011	***	0.011	***
ROA	-0.829	***	-0.821	***
Diversification	-0.009	***	-0.008	***
Bank loan portfolio concentration	-0.208	***	-0.209	***
Deposits/Total assets	0.010		0.008	
Liquid/Total assets	-0.184	***	-0.188	***
HHI -Real Estate lending	0.020	**	0.021	**
HHI - Commercial and Industrial lending	-0.029	***	-0.019	**
HHI - Consumer lending	0.017	***	0.013	**
HHI – Agricultural lending	-0.002		-0.011	
Market Structure	0.015	**	0.010	**
<b>Number of Observations</b>	202125		165427	
<b>Number of Clusters</b>	8948		7503	
<b>R-square</b>	0.242		0.238	

**Panel C: Real estate loans**

	<b>Bank acts <u>only</u> as a broker on third parties mutual funds</b>	<b>Bank sell or manages proprietary mutual funds</b>
<b>Parameter</b>		
Intercept	-0.227 ***	-0.187 ***
Market Charge offs (median)	-0.003 ***	-0.003 ***
Cross_Market Charge offs (median)		-0.000
MF_Dummy		-0.026 **
MFAssets_TA		-0.000
Sell Third	0.006 **	
Total assets (natural log)	0.005 **	0.005 **
ROA	-0.400 **	0.102
Diversification	0.009 ***	0.009 ***
Bank loan portfolio concentration	0.650 ***	0.664 ***
Deposits/Total assets	0.395 ***	0.340 ***
Liquid/Total assets	-0.540 ***	-0.543 ***
HHI -Real Estate lending	0.005	0.011
HHI - Commercial and Industrial lending	0.029 **	0.031 **
HHI - Consumer lending	-0.006	-0.005
HHI – Agricultural lending	-0.072 ***	-0.079 ***
Market Structure	-0.016 **	-0.014 *
<b>Number of Observations</b>	202125	165427
<b>Number of Clusters</b>	8948	7503
<b>R-square</b>	0.594	0.593

**Table 6 Mutual fund activity and risk shifting incentive<sup>7</sup>**

<b>Parameter</b>	<b>Risk shifting</b>	<b>Risk shifting on commercial and industrial loans</b>
Intercept	-0.467 **	-0.104
Market Charge offs (median)	0.016 ***	-0.000
Cross_Market Charge offs (median)	-0.014 *	-0.000
MF_Dummy	-0.042	0.069
MFAssets_TA	-0.000 **	-0.000 *
Total assets (natural log)	0.018	0.033 *
ROA	2.809 *	3.911 **
Diversification	-0.015	-0.040 *
Bank loan portfolio concentration	0.122	0.160
Deposits/Total assets	0.621 ***	0.707 ***
Loans and Leases/Total asset	0.007	-0.328
HHI -Real Estate lending	0.177	0.347 **
HHI - Commercial and Industrial lending	-0.253	-0.239
HHI - Consumer lending	0.152	0.100
HHI – Agricultural lending	0.062	0.046
Market Structure	0.149	-0.055
<b>Number of Observations</b>	13515	5629
<b>Number of Clusters</b>	1087	461
<b>R-square</b>	0.047	0.047

<sup>7</sup> Table 6 contains results on the incentive of banks to risk shift to mutual fund investors. The dependent variable is the difference between the maximum credit exposure on loans sold and securitized to total assets and non-performing loans to total assets.

Following Petersen (2007) we control for cross-sectional and time series correlation and the related bias in the standard error estimates by using clustered standard errors. We address the cross-sectional dependence by clustering by bank identification number and the time series dependence, parametrically, introducing time fixed effects.

\*\*\*, \*\* and \* indicate statistical significance at the 1%, 5% and 10% (two-tailed) test levels, respectively.

**Table 7 Mutual fund activity and the effect on loan pricing<sup>8</sup>**

	<b>Loan Price</b>	
	(Interest rate charge on loans)	
<b>Parameter</b>		
Intercept	0.061	***
Loan loss reserve/Total assets	0.297	**
MFSales_TA	-0.033	***
MFAssets_TA	-0.000	**
Total assets (natural log)	-0.003	***
ROA	1.830	***
Diversification	0.000	
Bank loan portfolio concentration	0.024	***
Deposits/Total assets	0.002	
Loan and Lease/Total assets	-0.009	***
HHI -Real Estate lending	0.005	*
HHI - Commercial and Industrial lending	-0.009	**
HHI - Consumer lending	0.002	
HHI – Agricultural lending	-0.005	**
Market Structure	0.010	***
<b>Number of Observations</b>	169264	
<b>Number of Clusters</b>	7687	
<b>R-square</b>	0.093	

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<sup>8</sup> Table 7 reports the effect of mutual fund management on Commercial and Industrial loan pricing, as a proxy of the potential benefit transfer to borrowers. The dependent variable is the interest rate charged on CI loans.

Following Petersen (2007) we control for cross-sectional and time series correlation and the related bias in the standard error estimates by using clustered standard errors. We address the cross-sectional dependence by clustering by bank identification number and the time series dependence, parametrically, introducing time fixed effects.

\*\*\*, \*\* and \* indicate statistical significance at the 1%, 5% and 10% (two-tailed) test levels, respectively.