

# DOES CORPORATE GOVERNANCE DETERMINE BANK LOAN PORTFOLIO CHOICE?

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## ABSTRACT

*In this paper, we examine the relationship between the structure of a bank's board of directors and the bank's loan portfolio choice (holdings of agricultural, real estate, consumer, and commercial and industrial loans). The board of directors has the responsibility to monitor the loan policy of the bank; therefore, the structure of the board seems likely to influence the portfolio of loans that the bank has outstanding. However, financial institutions are unique in that they have additional external regulatory agencies that also monitor managerial behavior and actions. By means of this logic, bank boards should not influence loan policy. Using a sample of over 300 bank holding companies in 1997, we show evidence consistent with both arguments. First, growth in C&I loans as a percent of total assets is inversely related to the proportion of outsiders on the BHC board. Second, both proportion of outsiders and a board strength index are directly related to growth in consumer loans as a percent of total assets. Third, farm, and to a lesser extent, real estate, loan holdings are not related to bank board structure. Fourth, changes in consumer and C&I lending does not consistently explain the BHC's future performance.*

**Keywords:** Bank Loan Portfolio, Corporate Governance, Board Strength Index

## 1. INTRODUCTION

In 1988, the Office of the Comptroller of the Currency (OCC), in a study on bank failures, identified three major internal causes of bank capital erosion: an uninformed or inattentive board of directors, overly aggressive activity by the board or managers, and problems involving the CEO. They list several factors that constitute poor board supervision including (1) nonexistent or poorly followed loan policies, (2) decisions made by one dominant individual, and (3) granting unwarranted concentrations of credit. The relationship between a bank's board structure and lending practices thus appears to be an important one. The purpose of this paper, therefore, is to address this relationship and to ask the question: is a bank's loan portfolio influenced by its board structure?

Several studies would conclude that the answer to our question is yes. Jensen (1993) argues that problems with internal control systems start with the board of directors. The board is responsible for managerial oversight and, in the case of commercial banks, supervision of lending policies. If that supervisory unit is deficient in some way, lending policies and guidelines may be absent or disregarded. However, other studies conclude that a bank's governance structure has little influence on the operations and performance of the firm since outside monitors, such as the FDIC, ensure proper bank management. For instance, Simpson and Gleason (1999) find that four of five board characteristics analyzed in their sample had no effect on bank failures.

In this study, we analyze the loan practices and governance structures in a sample of over 300 Bank Holding Companies (BHC) from 1997. Using a simultaneous equation framework, our results suggest that banks with a strong board of directors tend to increase consumer lending as a proportion of total assets. Further, we show that banks with a high representation of outsiders on the board of directors tend to reduce their commercial and industrial loan concentration as a proportion of total assets. However, these changes are not linked to subsequent financial performance of the bank. Board structure is not significantly related to changes in other loan activities including agriculture and real estate.

The paper is organized as follows: Section 2 reviews the literature and states hypotheses; Section 3 describes the data and methodology used in the study; Section 4 examines the results of the statistical analyses; and Section 5 concludes.

## **2. LITERATURE REVIEW**

### **2.1 Why bank boards matter**

In non-financial firms, the structure of the board of directors has been shown to be related to, among other characteristics, agency costs and financial performance. Jensen and Meckling (1976) first described the board's role in monitoring managers on behalf of shareholders. Boards best able to do this are those that can best alleviate agency problems through independent internal control. From a review of the corporate governance literature since Jensen and Meckling's study, John and Senbet (1998) report that the degree of board independence is related to composition, and that board independence fosters board effectiveness. Several examples follow.

Core, Holthausen, and Larcker (1999) find that firms with weak governance structures have more agency problems than do firms with strong boards. They find an inverse relationship between strength of the board of directors and characteristics such as insider representation on the board, board size, and CEO/chairman duality. Beasley, Carcello, Hermanson, and Lapides (2000) report a direct link between weak governance structure and agency problems as well as subsequent poor firm performance. They arrive at these conclusions by analyzing board characteristics of firms with instances of financial statement fraud and compare these results to a benchmark sample. Results indicate that the fraudulent companies have weak (ineffective) governance structures relative to the benchmark firms. The idea that agency problems are exacerbated under conditions of weak board structure is noted in Howton, Howton, and Olson (2001). Here, the authors show that a strong board alleviates agency problems between managers and shareholders, and thus reduces the extent of IPO underpricing.

The studies listed above pertain generally to samples of non-financial firms. However, banks' boards of directors appear to have a substantial role in monitoring managers as well. In a document titled "Insights for Bank Directors" created by the Federal Reserve Banks of Kansas City and St. Louis, details on directors' roles and responsibilities regarding bank lending policies are described. In it, the Fed states that it is the board's responsibility to review and approve the loan policies (which also can be written by the board or a board committee) because "the board is ultimately responsible for the bank." Bank boards review and approve the loan policies at least once a year. According to the Kansas City Federal Reserve, this process is generally done following the election of directors. A reasonable assumption can therefore be made that the structure of the board of directors should be a factor in the resulting loan policy changes of the bank.

Several studies in the literature on BHCs' governance structure agree. Pi and Timme (1993) examine the role of the chairman on a bank's board of directors. They find that cost efficiency and return on assets are lower for banks that have the same person serving as chairman of the board and CEO than for banks without such duality. However, Pi and Timme also find that the proportion of insiders (outsiders) on the board of directors is unrelated to BHC performance. Conversely, Mishra and Nielsen (2000), in their study of large BHCs, find a positive relationship between the percentage of independent outside directors and CEO pay-performance sensitivity. According to the authors, accounting performance is positively affected by relative tenure of independent outside directors on the bank's board. Further, Lorsch and MacIver (1989) assert that board members exercise more power when firms face external threats, thus making the structure of the board more significant during these circumstances. Mishra and Nielsen (2000) posit that high levels of regulatory supervision, as in the case of banks, constitute an example of an external threat. Thus, bank board members should wield more power than unregulated industries' boards.

### **2.2 Why bank boards may not matter**

On the other hand, a stream of literature exists which shows that the structure and monitoring power at bank boards is different from that at non-financial firm boards. For instance, John, Mehran, and Qian (2003) find evidence that BHC regulatory supervision results in less supervision by the board because it acts as a substitute for corporate governance. In particular, they find that higher pay-performance sensitivity is linked with lower BHC regulatory monitoring ratings (suggesting greater regulatory oversight). There are many reasons why corporate governance may differ in the banking industry than in other unregulated industries. Unlike other industries, depositors and regulators, not just shareholders,

have an interest in the performance of a BHC. Regulators are interested in ensuring the soundness of the financial system because of the negative impact of bank failures on economic activity.<sup>1</sup>

Regulators place further requirements on the boards of banks (subsidiaries of the BHC) to ensure the soundness of the financial system. According to Macey and O'Hara (2003) these expectations may also influence the operation of the board of the BHC. Adams and Mehran (2003) characterize many of the differences between the corporate governance of bank holding companies and manufacturing firms. These differences include larger BHC boards with more outsiders that meet more frequently and have more committees, but less use of stock options for CEO relative to salary and bonus, and smaller ownership shares by institutions and CEOs.

Prowse (1997) examines the power of banks' boards relative to non-financial firms' boards. Here, he compares corporate control changes in BHCs to those in non-financial firms over the period from 1987-1992. The study provides evidence that much of the monitoring responsibility in a bank falls on the shoulders of regulators. In particular, he finds that, as opposed to non-financial firms, much of the change in corporate control in commercial banks takes place as a result of regulatory intervention. For the sample that he examines, 45% to 62% of the corporate control changes at commercial banks are the result of regulatory intervention.<sup>2,3</sup>

The findings of Prowse are consistent with findings by Simpson and Gleason (1999) who examine data over roughly the same timeframe and likewise find little evidence of corporate governance characteristics influencing bank activity. They examine bank failure probability and ownership stakes by directors and officers, ownership stakes by the CEO, size of the board, the percentage of inside directors, and CEO duality. Their only significant finding is that a lower probability of financial distress exists when the CEO and chairman are the same person.

Den Haan, Sumner, and Yamashiro (2004) show that banks adjust their portfolio of loans during the monetary transmission mechanism. The reasons suggested in the paper for this substitution behavior is that banks want to protect their equity capital position through hedging because of bank capital regulations. Successful banks will experience smaller deterioration in the bank equity capital position. This suggests that there may be a link between the corporate governance and the asset portfolio of a bank, which we will examine in this paper.

From this discussion, we predict that the structure of bank boards should have some influence on bank lending activities, but the direction is not clear. Bank boards have a responsibility for lending oversight, supervision, and policy, but because of external regulatory agencies in place, board influence may be muted. The next two sections describe our process of examining this issue.

### **3. DATA**

We start with the sample of banks from Compustat's Bank Annual File from 1997. This file contains approximately 640 of the leading United States financial institutions with the following 4-digit SIC codes: 6021 (National Commercial Banks), 6022 (State Commercial Banks), 6029 (Commercial Banks, Not Elsewhere Classified), 6035 (Savings Institutions, Federally Chartered), 6036 (Savings Institutions, Not Federally Chartered), and 6311 (Life Insurance). For our purposes, we include only commercial banks, or those banks from the Bank Annual File with SIC codes of 6021, 6022, and 6029. Our final sample includes 121 national commercial banks, 193 state commercial banks, and 2 commercial banks (not elsewhere classified).

For this total sample of 316 commercial banks, we collect board of director variables from each bank's proxy statement in 1997. Specifically, we collect the following variables: the size of the board, CEO/chairman duality, percent of outsiders, percent of insiders, percent of grays, and percent of the board made up of women. Please see Table 1 for a complete description of each board variable. We use 1997 as the base year for two reasons. First, the federal funds rate was relatively stable at this time so this should not influence loan portfolio changes. Second, in order to analyze subsequent performance of the sample BHCs, we use a date that will provide us with at least five years of performance data.

**TABLE 1: DATA DESCRIPTION**

Variable	Definition
<b>Board Characteristics</b>	
<b>Members</b>	Number of directors currently on the board.
<b>Duality</b>	If the chairman of the board is also the CEO of the bank, duality is set to 1.
<b>Outsiders</b>	Number of directors that have no ties to the firm other than directorship (i.e., not a present/past employee of the firm, consultant to the firm, or related to an employee of the firm).
<b>Insiders</b>	Number of directors who are current <i>or former</i> employees of the firm, or are related (wife, sibling, etc.) of an employee of the firm.
<b>Grays</b>	Number of directors who are not employees of the firm, but receive payment from the firm for services unrelated to director duties such as consulting, working for a law or accounting firm that provides services for the firm.
<b>Women</b>	Number of women on the board.
<b>Financial Variables</b>	
<b>Total Assets</b>	The sum of all assets owned by the institution including cash, loans, securities, bank premises and other assets. This total does not include off-balance-sheet accounts.
<b>Real Estate Loans</b>	Loans secured primarily by real estate, whether originated by the bank or purchased.
<b>Commercial and Industrial Loans</b>	Commercial and industrial loans. Excludes all loans secured by real estate, loans to individuals, loans to depository institutions and foreign governments, loans to states and political subdivisions and lease financing receivables.
<b>Consumer Loans</b>	Loans to individuals for household, family, and other personal expenditures including outstanding credit card balances and other secured and unsecured consumer loans.
<b>Agricultural Loans</b>	Loans to finance agricultural production and other loans to farmers. Excludes savings institutions filing a TFR.
<b>Equity capital to assets</b>	Total equity capital as a percent of total assets.
<b>Core capital (leverage) ratio</b>	Tier 1 (core) capital as a percent of average total assets minus ineligible intangibles.  Tier 1 (core) capital includes: common equity plus noncumulative perpetual preferred stock plus minority interests in consolidated subsidiaries less goodwill and other ineligible intangible assets. The amount of eligible intangibles (including mortgage servicing rights) included in core capital is limited in accordance with supervisory capital regulations. Average total assets used in this computation are an average of daily or weekly figures for the quarter.
<b>Tier 1 risk-based capital ratio</b>	Tier 1 (core) capital as a percent of risk-weighted assets as defined by the appropriate <a href="#">federal regulator</a> for prompt corrective action during that time period.
<b>Total risk-based capital ratio</b>	Total risk based capital as a percent of risk-weighted assets as defined by the appropriate <a href="#">federal regulator</a> for prompt corrective action during that time period.

We next collect bank characteristics and loan data from call reports and from Compustat. We access the call reports through the FDIC's website (<http://www.fdic.gov/>). From the call reports, we gather the following condition ratios for years 1997 to 1999: equity capital to assets, core capital (leverage) ratio, Tier 1 risk-based capital ratio, and total risk-based capital ratio. The following loan values are collected for years 1997 to 1999: real estate loans, agricultural loans, commercial and industrial (C&I) loans, and loans to individuals (consumer loans). In addition, we collect information on the total assets of the BHC. From Compustat, we retrieve the following bank characteristic and performance variables for years 1997 to 2003: total sales, price-earnings ratio, return on assets, and return on equity. Variables are described further in Table 1.

Using the data on boards of directors, we calculate a board structure index using a ranking system. The percentile rankings for each board characteristic are calculated where score and monitoring effectiveness are directly related. For instance, since board size has been shown to be negatively related to monitoring effectiveness (see, for instance, Yermack, 1996), the inverse percentile rank is used in the calculation of the index. Larger boards receive a lower ranking. Core, Holthausen, and Larcker (1999) show that the proportion of insider and gray directors on the board is inversely related to board strength, and that the presence of CEO/chairman duality is also an obstruction to the board's duties. Outside directors, however, are found to be directly related to the strength and independence of the board (see, for instance, Beasley (1996) and Rosenstein and Wyatt (1990)). Each characteristic is included in the ranking system. For each firm, the average of the percentile rankings constitutes the firm's board structure index. High index scores indicate strong boards characterized by having greater independence and monitoring effectiveness.

We analyze bank characteristics and their summary statistics by first dividing the sample into BHCs with strong boards (board index is greater than median board index) and weak boards (board index is less than median). We also divide the sample by high and low outsider representation on the board (above and below median outsider representation percentages, respectively). Table 2 displays the results. The capital-to-asset ratios are very similar between samples in both Panel A (board index) and Panel B (proportion of outsiders). The average total equity capital to assets ratio is 9% for each of the four samples, while total risk-based capital ratios are each 14%. It appears that strong boards and boards with high proportion of outsiders both have greater average total assets than BHCs with weak boards and low outsider representation. However, median total asset values are lower for strong boards (high outsider proportion) than for weak boards (low outsider proportion). In terms of lending, we see a similar pattern. In Panel A, the value of all lending activities (real estate, farming, C&I, and consumer) is larger for strong boards than weak boards. For instance, the average commercial loan amount for strong board BHCs (high outsider proportion) is \$1,603 million (\$1,498 million) versus \$905 million for weak board BHCs (\$994 for low outsider proportion). Median values, again, appear lower for strong boards and high outsider proportions than for weak boards and low outsider representation.

Bank and governance characteristics are further analyzed in Table 3, where we divide the sample by high and low (above and below median) loan values for farming, real estate, C&I, and consumer loans. Board characteristics are not significantly different between each sample. Both mean and median values of each board characteristic are similar across loan types. Further, condition ratios appear to be similar across loan types. However, lending values across samples do appear to diverge. For above-median farm loan banks (FARM=1), banks tend to be larger (average total assets equals \$10,168 million compared to \$6,559 million for FARM=0), have higher average real estate loan values (\$2,638 versus \$1,740 million), have higher C&I loans (\$1,653 versus \$1,049 million), and lower consumer loan values (\$712 versus \$780 million).

#### 4. DISCUSSION AND RESULTS

In order to test the hypothesis that the structure of the board is related to bank loan portfolio choice, we examine a series of regressions. After controlling for size and equity capital, we analyze the relation between board index (BDINDEX) and change in lending practices for four types of loans (LOAN%TA). We measure firm size by the natural logarithm of total assets and include the total equity capital ratio to control for the banks' capital position. The dependent variable (LOAN%TA) is calculated as follows where "loan" refers to agriculture, real estate, C&I, and consumer loans (each analyzed separately):

$$LOAN\%TA = \frac{(loan_{1998} / totassets_{1998}) - (loan_{1997} / totassets_{1997})}{(loan_{1997} / totassets_{1997})}$$

**TABLE 2: SUMMARY STATISTICS**

Variable	Mean		Median		Minimum		Maximum		Std Dev	
	Strong Board	Weak Board	Strong Board	Weak Board	Strong Board	Weak Board	Strong Board	Weak Board	Strong Board	Weak Board
Board Characteristics										
members	12.22	11.47	12.00	10.00	5.00	4.00	26.00	28.00	3.98	4.50
duality	0.36	0.66	0.00	1.00	0.00	0.00	1.00	1.00	0.48	0.48
pcoutside	0.80	0.58	0.82	0.61	0.17	0.00	1.00	0.86	0.11	0.16
pcinside	0.17	0.29	0.14	0.27	0.00	0.00	0.83	0.75	0.11	0.15
pcgray	0.03	0.12	0.00	0.11	0.00	0.00	0.25	0.54	0.05	0.12
pcwomen	0.08	0.03	0.08	0.00	0.00	0.00	0.79	0.30	0.09	0.05
Bdindex	0.69	0.41	0.68	0.43	0.55	0.12	0.98	0.55	0.10	0.11
Capital-to-Asset Ratios										
Total	0.09	0.09	0.09	0.08	0.06	0.06	0.18	0.15	0.02	0.02
Core	0.09	0.08	0.08	0.08	0.06	0.05	0.99	0.15	0.08	0.02
Tier 1	0.13	0.12	0.12	0.12	0.07	0.07	0.30	0.24	0.05	0.03
Total Risk	0.14	0.14	0.13	0.13	0.09	0.09	0.31	0.26	0.05	0.03
Total Assets	9479.41	6085.26	505.36	529.61	16.60	41.52	277999.77	353816.27	32290.92	32252.92
Lending										
Real Estate	2637.22	1453.46	212.60	212.47	0.00	14.52	57636.45	45843.40	8163.19	4995.93
Agricultural	38.69	27.00	0.88	0.56	0.00	0.00	1189.61	1308.45	140.00	136.42
C & I	1603.02	905.29	45.08	50.78	0.00	0.05	47305.65	56990.65	5501.33	5271.50
Consumer	891.65	623.22	36.74	43.59	0.17	1.29	25822.77	33359.98	3163.91	3226.91
Panel B	High Outside	Low Outside	High Outside	Low Outside	High Outside	Low Outside	High Outside	Low Outside	High Outside	Low Outside
Board Characteristics										
Members	12.33	11.37	11.00	11.00	5.00	4.00	28.00	27.00	4.18	4.30
Duality	0.47	0.55	0.00	1.00	0.00	0.00	1.00	1.00	0.50	0.50
Pcoutside	0.83	0.56	0.83	0.60	0.73	0.00	1.00	0.72	0.07	0.15
Pcinside	0.15	0.31	0.14	0.29	0.00	0.00	0.27	0.83	0.06	0.16
Pcgray	0.03	0.12	0.00	0.10	0.00	0.00	0.18	0.54	0.05	0.12
Pcwomen	0.06	0.05	0.04	0.00	0.00	0.00	0.79	0.30	0.10	0.06
Bdindex	0.68	0.42	0.68	0.44	0.39	0.12	0.98	0.67	0.13	0.12
Capital-to-Asset Ratios										
Total	0.09	0.09	0.09	0.08	0.06	0.06	0.16	0.18	0.02	0.02
Core	0.09	0.09	0.08	0.08	0.05	0.05	0.99	0.18	0.08	0.02
Tier 1	0.13	0.13	0.12	0.12	0.07	0.07	0.29	0.30	0.04	0.04
Total Risk	0.14	0.14	0.13	0.13	0.09	0.10	0.29	0.31	0.04	0.03
Total Assets	9581.15	5871.02	479.81	572.47	16.60	45.03	277999.77	353816.27	31860.54	32682.69
Lending										
Real Estate	2668.31	1383.37	200.20	220.35	0.00	15.36	57636.45	45843.40	8097.86	4962.75
Agricultural	37.60	27.71	1.13	0.48	0.00	0.00	1189.61	1308.45	137.42	139.17
C & I	1497.79	994.34	41.14	57.57	0.00	0.05	47305.65	56990.65	5292.47	5496.42
Consumer	877.36	629.84	36.74	38.46	0.17	1.29	25822.77	33359.98	3112.51	3282.04
Dollar Figures in Millions; Bank Balance Sheet/Income Statement Variables represent values for 1997.										

**TABLE 3: SUMMARY STATISTICS**

Variable	Mean		Median		Minimum		Maximum		Std Dev	
	High Farm	Low Farm	High Farm	Low Farm	High Farm	Low Farm	High Farm	Low Farm	High Farm	Low Farm
Panel A										
Board Characteristics										
members	11.92	11.82	11.00	11.00	6.00	4.00	26.00	28.00	3.98	4.37
duality	0.48	0.52	0.00	1.00	0.00	0.00	1.00	1.00	0.50	0.50
pcoutside	0.72	0.68	0.75	0.71	0.25	0.00	1.00	1.00	0.18	0.18
pcinside	0.20	0.24	0.17	0.21	0.00	0.00	0.64	0.83	0.13	0.15
pcgray	0.08	0.07	0.00	0.00	0.00	0.00	0.43	0.54	0.11	0.10
pcwomen	0.05	0.06	0.00	0.00	0.00	0.00	0.79	0.60	0.09	0.07
Bdindex	0.57	0.54	0.58	0.53	0.16	0.12	0.97	0.98	0.19	0.18
Capital-to-Asset Ratios										
Total	0.09	0.09	0.08	0.09	0.06	0.06	0.15	0.18	0.02	0.02
Core	0.08	0.09	0.08	0.08	0.05	0.05	0.15	0.99	0.02	0.07
Tier 1	0.12	0.13	0.11	0.12	0.07	0.07	0.30	0.29	0.04	0.04
Total Risk	0.14	0.14	0.13	0.13	0.09	0.09	0.31	0.29	0.04	0.04
Total Assets	10168.31	6558.85	568.50	451.56	16.60	41.52	277999.77	353816.27	35773.45	30346.43
Lending										
Real Estate	2638.28	1740.31	273.92	186.47	4.40	0.00	57636.45	45843.40	8851.57	5428.66
Agricultural	42.93	27.51	4.91	0.07	0.01	0.00	1189.61	1308.45	152.69	129.78
C & I	1653.41	1049.05	61.07	46.52	0.24	0.00	47305.65	56990.65	6029.89	5036.98
Consumer	711.72	779.90	48.29	30.36	1.95	0.17	15676.12	33359.98	2248.46	3584.21
Panel B										
	Real Estate High	Real Estate Low	Real Estate High	Real Estate Low	Real Estate High	Real Estate Low	Real Estate High	Real Estate Low	Real Estate High	Real Estate Low
Board Characteristics										
Members	11.86	11.84	11.00	11.00	4.00	5.00	28.00	26.00	4.27	4.26
Duality	0.61	0.44	1.00	0.00	0.00	0.00	1.00	1.00	0.49	0.50
Pcoutside	0.70	0.69	0.73	0.71	0.25	0.00	1.00	1.00	0.17	0.18
Pcinside	0.23	0.23	0.20	0.20	0.00	0.00	0.75	0.83	0.15	0.14
Pcgray	0.07	0.08	0.00	0.00	0.00	0.00	0.43	0.54	0.10	0.11
Pcwomen	0.06	0.05	0.00	0.00	0.00	0.00	0.79	0.30	0.10	0.06
Bdindex	0.54	0.56	0.54	0.56	0.15	0.12	0.92	0.98	0.18	0.18
Capital-to-Asset Ratios										
Total	0.09	0.09	0.09	0.08	0.06	0.06	0.16	0.18	0.02	0.02
Core	0.08	0.09	0.08	0.08	0.05	0.05	0.15	0.99	0.02	0.08
Tier 1	0.12	0.13	0.12	0.12	0.07	0.07	0.27	0.30	0.04	0.04
Total Risk	0.14	0.14	0.13	0.13	0.09	0.09	0.29	0.31	0.04	0.04
Total Assets	10725.13	4893.57	572.47	488.47	16.60	41.52	353816.27	159326.75	41742.01	18585.02
Lending										
Real Estate	2555.80	1542.00	247.09	204.36	4.40	0.00	57636.45	54267.68	7779.56	5607.11
Agricultural	40.69	25.11	0.50	1.39	0.00	0.00	1308.45	638.86	179.61	77.49
C & I	1785.34	732.40	58.63	41.14	0.24	0.00	56990.65	20614.23	7056.61	2900.70
Consumer	962.44	556.06	36.84	37.55	0.17	1.29	33359.98	25822.77	3653.38	2665.16
Dollar Figures in Millions; Bank Balance Sheet/Income Statement Variables represent values for 1997.										

**TABLE 3: SUMMARY STATISTICS**

Variable	Mean		Median		Minimum		Maximum		Std Dev	
	C & I High	C & I Low	C & I High	C & I Low	C & I High	C & I Low	C & I High	C & I Low	C & I High	C & I Low
Board Characteristics										
members	11.36	12.18	10.00	11.00	4.00	5.00	26.00	28.00	4.17	4.30
duality	0.61	0.44	1.00	0.00	0.00	0.00	1.00	1.00	0.49	0.50
pcoutside	0.68	0.70	0.73	0.71	0.17	0.00	1.00	1.00	0.18	0.17
pcinside	0.26	0.21	0.20	0.18	0.00	0.00	0.83	0.78	0.16	0.13
pcgray	0.07	0.08	0.00	0.00	0.00	0.00	0.50	0.54	0.10	0.11
pcwomen	0.06	0.05	0.00	0.00	0.00	0.00	0.79	0.30	0.10	0.06
Bdindex	0.53	0.56	0.54	0.55	0.15	0.12	0.97	0.98	0.18	0.17
Capital-to-Asset Ratios										
Total	0.09	0.09	0.08	0.09	0.06	0.06	0.16	0.18	0.02	0.02
Core	0.08	0.09	0.08	0.08	0.05	0.05	0.15	0.99	0.02	0.08
Tier 1	0.13	0.13	0.12	0.12	0.07	0.07	0.30	0.29	0.04	0.04
Total Risk	0.14	0.14	0.13	0.13	0.09	0.09	0.31	0.29	0.04	0.04
Total Assets	10506.44	5107.29	743.80	447.79	16.60	41.52	277999.77	353816.27	32796.77	31612.01
Lending										
Real Estate	3033.21	1075.43	294.10	188.99	4.40	0.00	57636.45	45843.40	8365.84	4560.02
Agricultural	57.59	9.85	0.90	0.62	0.00	0.00	1308.45	170.32	194.50	25.27
C & I	1738.12	778.54	55.38	45.34	0.05	0.00	47305.65	56990.65	5615.22	5133.65
Consumer	1044.26	476.11	48.50	32.52	0.57	0.17	25822.77	33359.98	3345.18	3021.94
Board Characteristics										
Members	11.53	12.06	11.00	11.00	5.00	4.00	27.00	28.00	3.95	4.46
Duality	0.56	0.48	1.00	0.00	0.00	0.00	1.00	1.00	0.50	0.50
Pcoutside	0.70	0.69	0.73	0.72	0.15	0.00	1.00	1.00	0.17	0.18
Pcinside	0.23	0.23	0.20	0.20	0.00	0.00	0.64	0.83	0.15	0.14
Pcgray	0.07	0.08	0.00	0.05	0.00	0.00	0.54	0.50	0.11	0.10
Pcwomen	0.05	0.06	0.00	0.00	0.00	0.00	0.79	0.60	0.09	0.08
Bdindex	0.55	0.55	0.54	0.56	0.16	0.12	0.90	0.98	0.17	0.19
Capital-to-Asset Ratios										
Total	0.09	0.09	0.09	0.08	0.06	0.06	0.15	0.18	0.02	0.02
Core	0.09	0.09	0.08	0.08	0.05	0.06	0.15	0.99	0.02	0.08
Tier 1	0.13	0.13	0.12	0.12	0.07	0.07	0.30	0.29	0.04	0.04
Total Risk	0.14	0.14	0.13	0.13	0.09	0.09	0.31	0.29	0.04	0.04
Total Assets	9359.55	6228.11	473.10	577.94	16.60	41.52	353816.27	159326.75	41127.35	20179.82
Lending										
Real Estate	2024.42	2061.30	196.66	248.59	4.40	0.00	57636.45	54267.68	7262.58	6288.83
Agricultural	37.08	28.89	0.61	0.82	0.00	0.00	1308.45	1189.61	152.99	122.78
C & I	1605.44	908.21	41.36	57.70	0.24	0.00	56990.65	20614.23	6995.30	3092.87
Consumer	731.63	781.63	34.89	41.02	0.85	0.17	33359.98	25822.77	3359.77	3032.49

Dollar Figures in Millions; Bank Balance Sheet/Income Statement Variables represent values for 1997.

In Table 4 we present descriptive statistics of these loan changes for the entire sample. During this timeframe, the average bank increased farm loans as a proportion of total assets by 18%, increased real estate holdings by 0.4%, increased C&I loans by 4.3% and decreased holdings of consumer loans by 1.3%. However, median lending changes show a decline in all loan types.

**TABLE 4: SUMMARY STATISTICS**

Variable	Mean	Median	Minimum	Maximum
FARM%ASST	0.182	-0.071	-1.00	12.343
RE%ASST	0.004	-0.005	-0.349	0.509
CI%ASST	0.043	-0.002	-0.544	1.656
CO%ASST	-0.013	-0.104	-0.672	13.526

Since the dependent variable, LOAN%TA, may be determined by the simultaneous interaction of the determinants of governance structure, we analyze these relationships in a multivariate setting using a simultaneous equation approach with BDINDEX (and later proportion of outsiders, or PCOUTSIDE) and change in lending practices (LOAN%TA) as the endogenous variables. The two equations are estimated simultaneously using a three-stage least squares procedure. The first series of equations are as follows:

$$LOAN\%TA = a + b_1BDINDEX + b_2LNTA + b_3TOTCAR$$

$$BDINDEX = a + b_1LOAN\%TA + b_2LNTA$$

We report the results for each loan type in Tables 5 to 8. In Table 5, we address the relationship between board structure and the percent change in C&I loans to assets from 1997 to 1998. Using BDINDEX as the measure of board strength in the first two columns of Table 5, we find no relationship between board structure and change in C&I loans during this time period. However, in the third column of Table 5, the coefficient on C&I loans to assets is a negative and significant (at the 5% level) predictor of the percentage of outside directors on a bank's board. Specifically, we analyze the following simultaneous regression equations for each loan type:

$$LOAN\%TA = a + b_1PCOUTSIDE + b_2LNTA + b_3TOTCAR$$

$$PCOUTSIDE = a + b_1LOAN\%TA + b_2LNTA$$

**TABLE 5: 3SLS - C&I LOANS**

Variable	BDINDEX	CILOAN%TA	PCOUTSIDE	CILOAN%TA
INT	0.500 (<0.001)	-0.215 (0.232)	0.621 (<0.001)	-0.079 (0.660)
CILOAN%TA	0.007 (0.863)		-0.087 (0.027)	
LNTA	0.003 (0.610)	0.008 (0.407)	0.006 (0.358)	0.010 (0.309)
BDINDEX		-0.003 (0.976)		
PCOUTSIDE				-0.250 (0.012)
TOTRCAR		1.036 (0.038)		1.114 (0.025)
N	257		257	
System R-sq	0.009		0.030	
Bank Balance Sheet/Income Statement Variables represent values for 1997. P-values reported under coefficients.				

In column four of Table 5, the proportion of outside directors is negative and significant (at the 5% level) when change in C&I loans is the dependent variable. Results from Table 5 imply that (1) a 1% increase in a bank's holdings of C&I loans as a percent of total assets is associated with an 8% decrease in the proportion of outsiders on the board, and (2) a 1% increase in outsider representation on a bank's board is related to a 25% decline of C&I loans as a percent of TA. However, the overall board index is not significantly related to changes in C&I loans.

Next, we turn to changes in banks' consumer loan portfolios. In the first series of simultaneous regressions (columns 1 and 2) in Table 6, we show that the coefficient on changes in consumer loans as a percentages of total assets (COLOAN%TA) is positive and significant (at the 5% level) with BDINDEX as the dependent variable. In addition, the coefficient on BDINDEX is positive and significant in the second regression with COLOAN%TA as the dependent variable. Results using PCOUTSIDE (columns 3 and 4) are consistent with the board index equations. These results strongly suggest that changes in consumer loans are directly related to the strength of the board of directors; both measured by an overall board index and by the proportion of outsiders on the banks' board. Banks tend to increase holdings of consumer loans as board strength increases. These results are interesting because both the mean and median changes in consumer loan proportions for our sample are negative (see Table 4).

**TABLE 6: 3SLS - CONSUMER LOANS**

Variable	BDINDEX	COLOAN%TA	PCOUTSIDE	COLOAN%TA
INT	0.490 (<0.001)	0.066 (0.908)	0.610 (<0.001)	0.011 (0.985)
COLOAN%TA	0.029 (0.021)		0.025 (0.036)	
LNTA	0.004 (0.514)	-0.030 (0.361)	0.006 (0.306)	-0.032 (0.338)
BDINDEX		0.729 (0.020)		
PCOUTSIDE				0.691 (0.034)
TOTRCAR		-0.479 (0.759)		-0.511 (0.744)
N	255		258	
System R-sq	0.020		0.020	
Bank Balance Sheet/Income Statement Variables represent values of r1997. P-values reported under coefficients.				

In Tables 7 and 8, results are not as conclusive. In Table 7, we analyze the relationship between changes in banks' holdings of real estate loans as a percentage of total assets from 1997 to 1998. While the coefficient on BDINDEX is negative, it is statistically significant only at the 17% level. P-values are even larger when using PCOUTSIDE. In Table 8, we use the change in agriculture (farm) loans and board structure and also find that both the board index and percent of outsiders on the board are not significantly related.

**TABLE 7: 3SLS – REAL ESTATE LOANS**

Variable	BDINDEX	RELOAN%TA	PCOUTSIDE	RELOAN%TA
INT	0.507 (<0.001)	0.071 (0.363)	0.615 (<0.001)	0.021 (0.789)
RELOAN%TA	-0.130 (0.169)		0.095 (0.300)	
LNTA	0.003 (0.654)	-0.003 (0.530)	0.006 (0.343)	-0.003 (0.442)
BDINDEX		-0.058 (0.169)		
PCOUTSIDE				0.045 (0.300)
TOTRCAR		0.018 (0.933)		-0.011 (0.958)
N	257		257	
System R-sq	0.009		0.007	
Bank Balance Sheet/Income Statement Variables represent values of r1997. P-values reported under coefficients.				

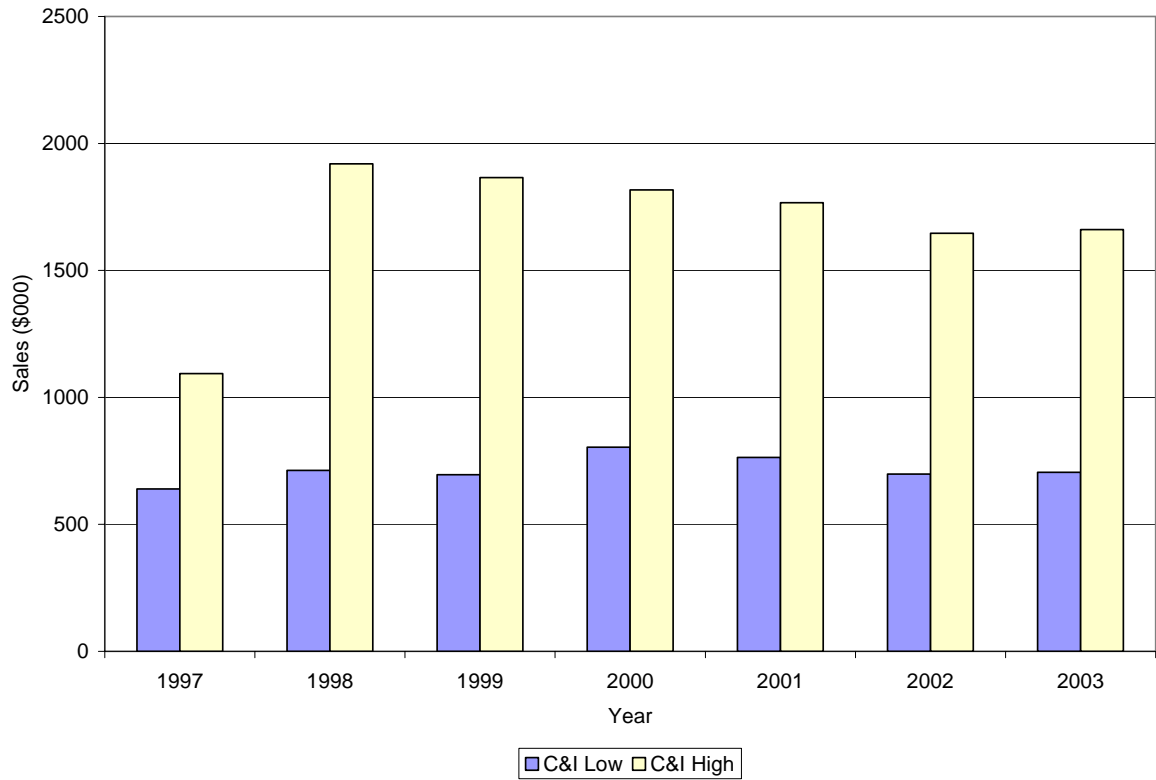
**TABLE 8: 3SLS – AGRICULTURE LOANS**

Variable	BDINDEX	FARMLOAN%TA	PCOUTSIDE	FARMLOAN%TA
INT	0.465 (<0.001)	1.137 (0.334)	0.621 (<0.001)	1.336 (0.262)
FARMLOAN%TA	0.009 (0.358)		0.001 (0.914)	
LNTA	0.006 (0.378)	-0.053 (0.402)	0.006 (0.392)	-0.051 (0.426)
BDINDEX		0.584 (0.348)		
PCOUTSIDE				0.132 (0.836)
TOTRCAR		-3.882 (0.249)		-3.913 (0.248)
N	176		176	
System R-sq	0.011		0.006	
Bank Balance Sheet/Income Statement Variables represent values of r1997. P-values reported under coefficients.				

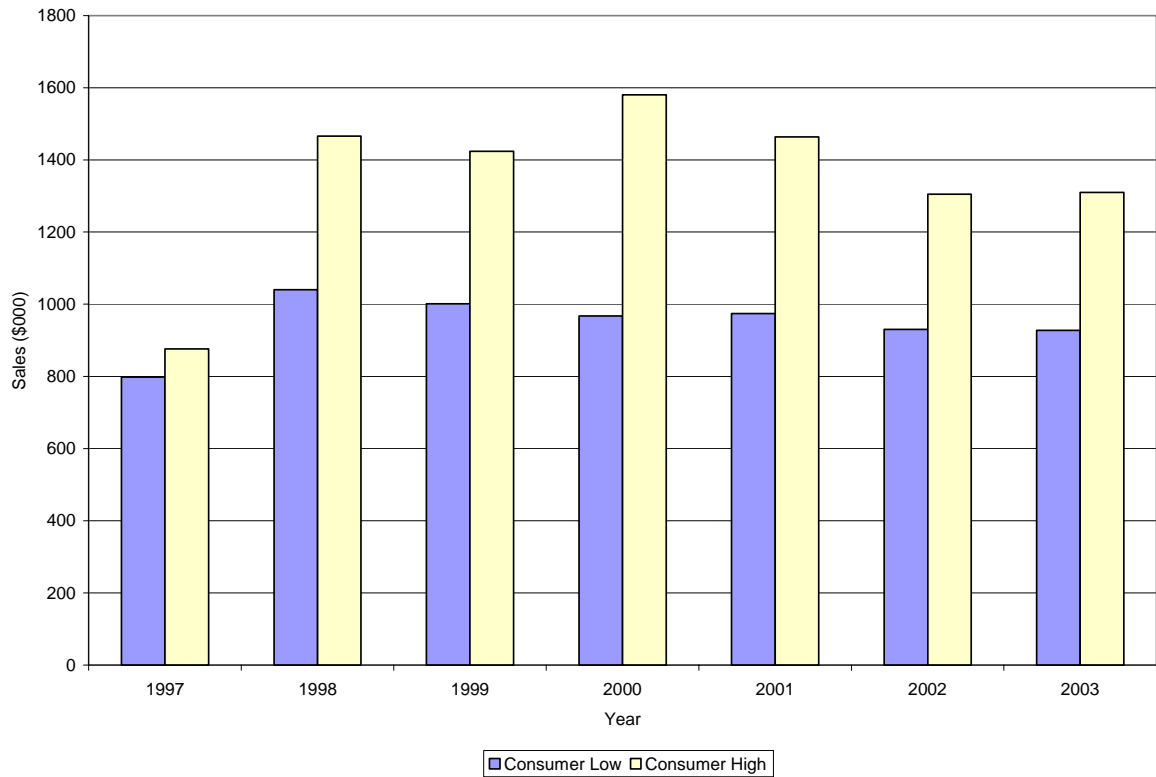
Since changes in banks' portfolios of both consumer and C&I loans are related to board structure (positively and negatively, respectively), we next follow the banks performance after 1998 according to these loan portfolio changes. First we separate the sample into four subgroups: "high" consumer and C&I loan change (above the median), and "low" consumer and C&I loan change (below the median) banks. We calculate the average performance level from 1999 to 2003 (years following the loan change). We present graphical depictions of performance (sales and ROA) from 1999 to 2003 for each loan type in the following figures.

The graphs provide mixed results. In Figure 1, we see that sales (revenue) are higher for banks that increased holdings of C&I loans in 1997. Despite the fact that percent of outsiders on the board is negatively related to changes in C&I loans (indicating stronger boards decrease C&I holdings), we see that the banks that increased C&I lending had better sales performance than banks which decreased holdings. In Figure 2, banks with increases in consumer loans from 1997 to 1998 tended to have better sales performance in subsequent years. Consumer loans are directly related to board strength, so it appears that stronger boards monitor banks, which increased consumer loan holdings, and these banks had subsequent high sales performance.

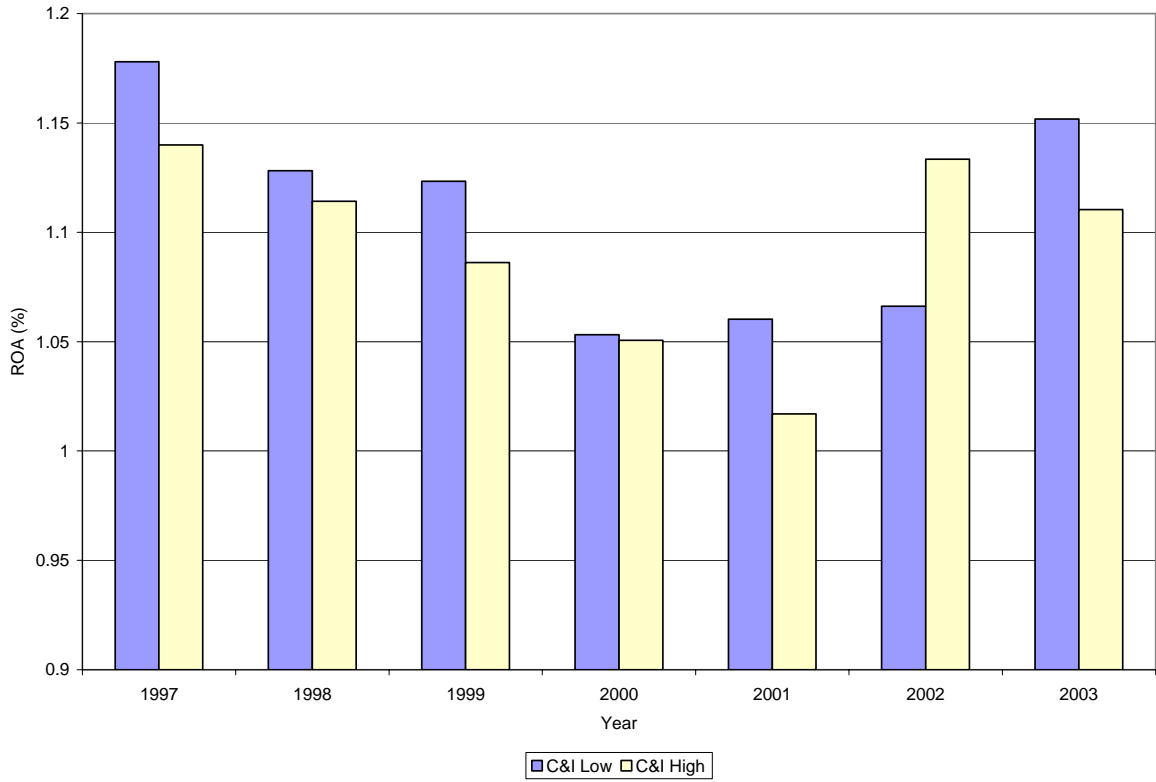
**FIGURE 1: SALES BY C&I LOAN TYPE**



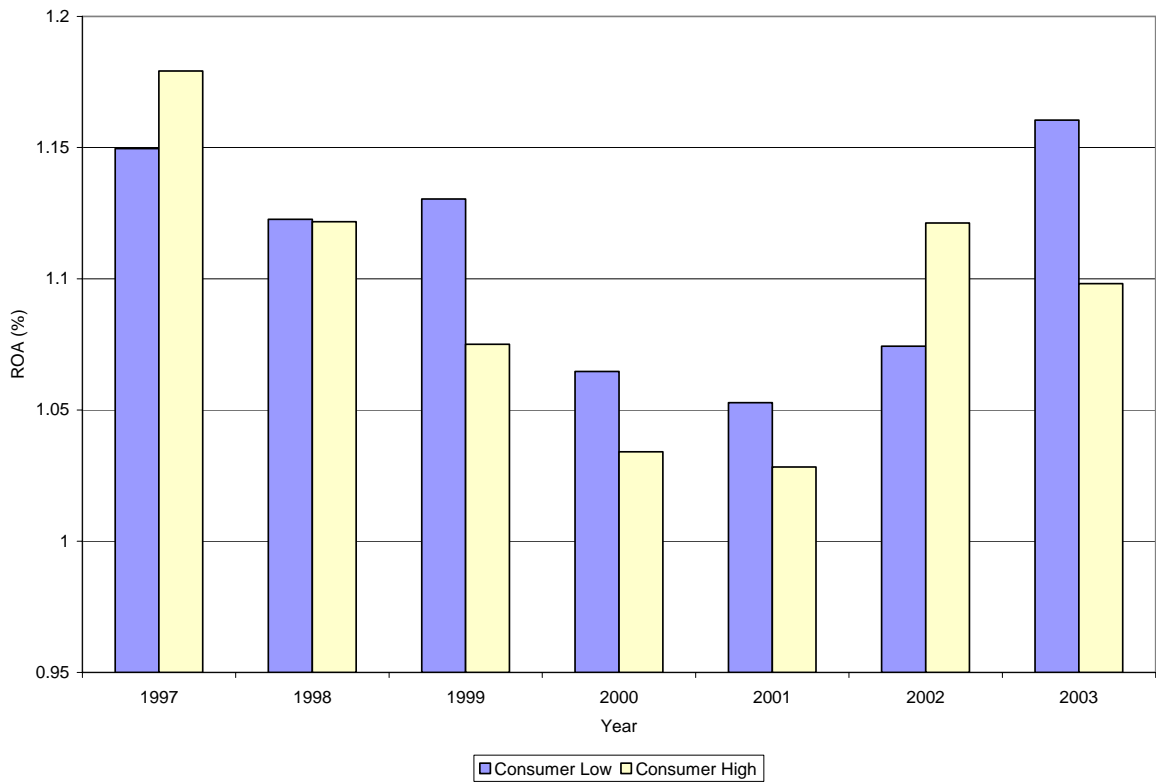
**FIGURE 2: SALES BY CONSUMER LOAN TYPE**



**FIGURE 3: ROA BY C&I LOAN TYPE**



**FIGURE 4: ROA BY CONSUMER LOAN TYPE**



Figures 3 and 4 are less conclusive. Figure 3 demonstrates that banks which decreased holdings in C&I loans tended to have stronger ROA performance until 2001. A similar graph is pictured in Figure 4, where banks that decreased consumer loans in 1997 had stronger ROA than banks that increased consumer lending until 2001. Overall, changes in bank loan portfolios do not appear to affect future sales or ROA.

## 5. CONCLUSIONS

In this paper we examine whether there exists a relationship between a bank's board of directors and its' lending policy. On the one hand, the board of directors is given the responsibility of monitoring and overseeing the bank's loan portfolio; therefore, the structure of the board seems likely to influence the portfolio of loans that the bank has outstanding. On the other hand, financial institutions are unique in that they have additional external regulatory agencies that also monitor managerial behavior and actions. Hence, the board of directors at a financial firm may not have the same structure or power that a non-financial firm board has, and therefore bank boards should not influence loan policy.

Using a sample of over 300 bank holding companies in 1997, we show evidence consistent with both arguments. First, growth in C&I loans as a percent of total assets is inversely related to the proportion of outsiders on the BHC board. More independent boards tended to decrease holdings of C&I loans during this time period. Second, both proportion of outsiders and a board strength index are directly related to growth in consumer loans as a percent of total assets. Strong boards increased holdings of consumer loans in the loan portfolio. Third, farm, and to a lesser extent, real estate, loan holdings are not related to bank board structure. Fourth, changes in consumer and C&I lending does not consistently explain the BHC's future performance.

This study adds to a growing body of literature on corporate governance in financial institutions. The results provide evidence that depending on the strength of their boards, BHCs adjusted their loan portfolios during the timeframe that we examined. Given that other studies have found that loan portfolio changes can influence bank equity capital positions and that the deterioration of bank equity capital positions are important for the soundness of financial institutions, it may be important for boards to closely monitor their loan portfolio to ensure the soundness of their institution. Furthermore, strong boards, in particular those boards that are more independent and effective monitors, will be more likely to proactively adjust their portfolio to prevent the deterioration of their bank equity capital positions and therefore regulators will have less of a need to monitor and intervene.

## 6. ENDNOTES

\*We would like to thank Megan Boughton, Carol Garate, and Ernie Gutierrez for helpful research assistance. The views expressed in this article are those of the authors and do not necessarily represent those of the Federal Reserve System.

<sup>1</sup> Peek and Rosengren (1997) show the impact of banking troubles on economic activity in the United States and thus why regulators are so concerned with the soundness of the banking system. In their paper, they show that the deterioration of bank equity capital positions of Japanese banks (who lend in the United States) led to a subsequent reduction in the supply of loans in the early 1990s for certain sectors of the U.S. economy. Further they demonstrate that this in turn had a negative impact on economic activity in markets where lending was reduced.

<sup>2</sup> Prowse uses the BOPEC rating system (a rating system used by bank examiners that judges a bank as (1) strongest to (5) weakest in five component areas including (i) bank subsidiaries (ii) other non-bank subsidiaries (iii) parent company (iv) the level of consolidated earnings, and (v) the level of capital adequacy) to define regulatory intervention. The 45% (62%) figure corresponds to a situation in which intervention occurs if the BHC has a composite BOPEC rating of 4 or 5 (3, 4, or 5).

<sup>3</sup> Furthermore, more than half of the market-based control changes are the result of friendly mergers. Hostile takeovers are much less likely in BHCs because of regulation and the takeover process (Adams and Mehran, 2003).

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