ECONSTOR
Make Your Publications Visible.

A Service of
ZBW
Leibniz-Informationszentrum Wirtschaft
Leibniz Information Centre for Economics

Adams, Renée B.; Mehran, Hamid

Working Paper

Corporate performance, board structure, and their determinants in the banking industry

Staff Report, No. 330

Provided in Cooperation with:
Federal Reserve Bank of New York

Suggested Citation: Adams, Renée B.; Mehran, Hamid (2008) : Corporate performance, board structure, and their determinants in the banking industry, Staff Report, No. 330, Federal Reserve Bank of New York, New York, NY

This Version is available at:
https://hdl.handle.net/10419/60967

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

WWW.ECONSTOR.EU

Mitglied der Leibniz-Gemeinschaft

Federal Reserve Bank of New York
Staff Reports

Corporate Performance, Board Structure, and Their Determinants in the Banking Industry

Renée B. Adams
Hamid Mehran

Staff Report no. 330
June 2008

This paper presents preliminary findings and is being distributed to economists and other interested readers solely to stimulate discussion and elicit comments. The views expressed in the paper are those of the authors and are not necessarily reflective of views at the Federal Reserve Bank of New York or the Federal Reserve System. Any errors or omissions are the responsibility of the authors.

Corporate Performance, Board Structure, and Their Determinants in the Banking Industry

Renée B. Adams and Hamid Mehran

Federal Reserve Bank of New York Staff Reports, no. 330
June 2008
JEL classification: G34, G21, J41, L22

Abstract

The subprime crisis highlights how little we know about the governance of banks. This paper addresses a long-standing gap in the literature by analyzing board governance using a sample of banking firm data that spans forty years. We examine the relationship between board structure (size and composition) and bank performance, as well as some determinants of board structure. We document that mergers and acquisitions activity influences bank board composition, and we provide new evidence that organizational structure is significantly related to bank board size. We argue that these factors may explain why banking firms with larger boards do not underperform their peers in terms of Tobin's Q. Our findings suggest caution in applying regulations motivated by research on the governance of nonfinancial firms to banking firms. Since organizational structure is not specific to banks, our results suggest that it may be an important determinant for the boards of nonfinancial firms with complex organizational structures such as business groups.

Key words: corporate governance, board structure, banking industry, holding company, organizational structure

---

Adams: University of Queensland. Mehran: Federal Reserve Bank of New York. Address correspondence to Renée B. Adams (e-mail: r.adams@business.uq.edu.au). The views expressed in this paper are those of the authors and do not necessarily reflect the position of the Federal Reserve Bank of New York or the Federal Reserve System.

1 Introduction

Most studies of board effectiveness exclude financial firms from their samples. As a result, we know very little about the effectiveness of banking firm governance.[3] But it has arguably never been as important to understand the governance of banking firms as it is now during the subprime mortgage crisis. Blame for the crisis has been attributed to various factors, such as the US housing bubble and the rise of securitization. However, the recent resignations of several high profile finance executives, e.g. Stan O'Neal at Merrill Lynch, Charles Prince at Citigroup and Marcel Ospel at UBS, and the recommendations by several proxy advisors against the reelection of the board at Citigroup, amongst others (see e.g. Moyer, 2008), make clear that poor governance is also seen as playing an important role. This is particularly interesting since following the deregulation of the banking industry (due to the passage of the Riegle-Neal Act of 1994 and the Gramm-Leach Bliley Act in 1999) one might have expected market discipline and internal governance mechanisms to increase in strength. Because the crisis happened after deregulation, banks are likely to face increases in regulation and already face increased pressure to improve their governance.

But, in order to evaluate and consider changes in banking firms' governance structure, it is important to understand how banks are typically governed and whether and how banking firm governance differs from the governance of unregulated firms. This last issue is particularly important since most governance reform proposals are motivated by features of non-financial firms. For example, the Sarbanes-Oxley Act (SOX) of 2002 places a strong emphasis on director independence. But it is not clear whether the same independence standards should be applied to banks. As the Federal Reserve Bank of Atlanta's *The Director's Primer* points out, bank directors often represent some of the best customers of the bank (Federal Reserve Bank of Atlanta, 2002, p. 47). But, such directors would most likely not

[3] Relatively few papers specifically analyze board structure in banking firms. Some exceptions are Brickley and James (1987) who use interstate branching restrictions in banking to examine whether internal control through the board substitutes for external control (the takeover market) in a cross-section of banks in 1979. Contrary to the substitution hypothesis, they find that banks from states with takeover restrictions have fewer outside directors than banks from other states. Brewer III, Jackson III, and Jagtiani (2000) examine the effect of governance characteristics on merger premiums in banking during the 1990s. They find bid premiums increase with the independence of the target's board and that they are not affected by target board size. Byrd, Fraser, Lee and Williams (2001) examine the effect of internal governance arrangements on the probability that a thrift survives the thrift crisis of the 1980s. They find that firms which survived the crisis had a greater proportion of independent directors on the board.

be considered independent according to SOX. Therefore, to comply with SOX, bank boards would have to exclude them from audit committees and either increase board size to satisfy independence requirements or discontinue the practice of appointing customer representatives to their board. While such changes could be beneficial, there are many arguments why having bank customers on the board may be good practice. It is also clear that the cost to banks of implementing this feature of SOX is more costly than for non-financial firms which are not as likely to have customer representatives on the board.

The purpose of this paper is to examine the board structure of banking firms in more detail in order to learn more about what, if anything, is special about bank governance. We are also interested in seeing whether we can learn anything from bank governance that has broader applicability to non-financial firms. We begin our analysis by following the approach adopted by many papers on the governance of non-financial firms (see Hermalin and Weisbach, 2003), i.e. we examine the relationship between banking firm board structure and performance. Because our findings differ from those for non-financial firms, we then try to explain them by identifying unique features of bank board structure. We identify three factors that we believe play a particularly important role in defining bank board structure. First, as mentioned above, bank lending relationships influence board composition. Second, M&A activity affects bank boards due to the addition of target directors to acquiror boards following acquisitions. Finally, organizational structure, in particular, the fact that publicly-traded banks are all organized as banks holding companies (BHCs), seems to influence bank boards. While lending relationships are unique to banks, the latter two factors are not. M&A activity may also affect boards of non-financial firms (e.g. Lehn, Patro and Zhao, 2008). However, it has an arguably greater impact on bank boards because there are few hostile takeovers in banking. Thus, in a bank merger it is common that target directors play a role in the combined firm (see also Adams and Mehran, 2003).

To our knowledge, we are the first to argue that organizational structure may have a significant impact on board structure. This is noticeable for banks because holding companies often have complicated hierarchical structures through their ownership or control of banks, lower level BHCs and other subsidiaries. Each of these subsidiaries is separately chartered with its own board. Thus, it is plausible that the coordination of activities across subsidiaries occurs through these boards. Organizational structure is less likely to play a role for non-financial firms that are organized along functional or divisional lines, none of which need have a separate legal identity. In these firms, the coordination of activities between functions may occur through means other than through boards. However, we believe that structure could

also play an important role in non-financial firms that are organized as pyramids or business groups. Although there has been a substantial increase in interest in business groups in recent years (see e.g. the survey by Khanna and Yafeh, 2007), to date there is little research on how pyramids or business groups are managed. One reason is that it is difficult to obtain the necessary data. We believe that because banks have similar organizational forms as some business groups, studying bank governance may also provide insights into the governance of business groups.

Consistent with previous studies in governance, we examine the relationship between banking firm board structure and performance as proxied by a measure of Tobin's Q. Although we also examine the relationship between other variables which the literature identifies as being correlated with good or bad governance, and in turn performance, we focus on two dimensions of board structure that have been studied most extensively: board composition and size.

Because outside directors are considered to be more effective monitors of managers, the literature on board effectiveness predicts that as the proportion of outside directors on the board increases, firm performance should increase. Several management scientists and sociologists argue that larger boards may be beneficial because, for example, they increase the pool of expertise and resources available to the organization (see e.g. Dalton, Daily, Johnson and Ellstrand, 1999). However, Hermalin and Weisbach (2003) argue that the consensus in the economic literature is that an increase in board size will have a negative effect on firm performance. For instance, Jensen (1993) argues that as board size increases, boards become less effective at monitoring management because of free-riding problems amongst directors and increased decision-making time.

We use two data sets to examine internal governance structure and its effect on performance from 1959-1999. First, we construct a sample of 480 firm years of data on 35 bank holding companies (BHCs) over the period from 1986 to 1999. The length of this panel ensures that there is sufficient variation in governance variables which typically do not change much over time. Another advantage of this sample is that it contains detailed data on variables that have received attention in the law, economics, and organization literature and which are recognized to be correlated with sound corporate governance. Since internal governance mechanisms are ultimately simultaneously chosen, the richness of this data enables us to limit omitted variable bias in performance regressions both by using firm fixed effects and by controlling for possible interdependencies among governance mechanisms. Second,

to investigate several alternative explanations for our findings, we extend this sample by collecting data on board size, board composition and performance for these banking firms from 1959-1985. Because our data provides information on bank governance over a 40 year time period prior to the recent governance reform movement, it helps us document persistent governance choices banks have made in the absence of governance pressure. Thus, it serves as a useful baseline against which to analyze any proposed governance changes.

Our primary findings are as follows. Historically, the proportion of outsiders in BHCs and the size of the board have been large compared to statistics reported from samples of large manufacturing firms.[4] These differences suggest we should find even stronger effects of board structure on performance in the directions predicted by theory than in samples of manufacturing firms. Yet, as in other studies, we find that the proportion of outsiders on the board is not significantly related to performance, as proxied by Tobin's Q. In contrast to the findings of previous studies, the natural logarithm of board size is positively and significantly related to Tobin's Q in our sample.

We examine two main reasons why board size may have a positive effect on Tobin's Q since this result is particularly surprising given both the predictions of the previous literature, the conclusions based on samples of manufacturing firms (e.g. Yermack, 1996; Eisenberg, Sundgren and Wells, 1998) and the relatively large size of banking firm boards in our data. One possibility is that our results are driven by the increase in merger and acquisition activity during our sample time period. Following a merger or acquisition, board size may increase to incorporate some of the target directors. If high Q firms are more likely to engage in M&A activity, then our findings could be explained by endogeneity induced through M&A activity. Since bank M&A activity increased substantially during the 1990s, this is a plausible explanation.

Another possibility is that our results are driven by organizational structure. If subsidiary boards play a coordinating role, then BHC structure should be correlated with BHC board structure. For example, the establishment of subsidiaries in different states may be associated with an increase in BHC board size due to the need to incorporate directors with regional expertise. Klein and Saidenberg (2005) show that there is a "diversification discount" in banking, i.e. that BHCs with more bank subsidiaries have lower values of Tobin's Q. This suggests that our performance results may be driven by endogeneity due to omitted

[4] Both Hayes, Mehran, and Schaefer (2005) and Adams and Mehran (2003) find that differences in board structure across manufacturing and banking firms are statistically significant.

organizational structure variables.

Consistent with our intuition, we document that M&A activity and organizational structure are related to board structure. For example, we show that it was common for our sample BHCs to add target directors to their boards following M&A transactions. We also show that board size is significantly related to characteristics of BHC structure.

Overall, it appears that additions of directors due to M&A activity do not drive our performance results. For example, we document that although the period 1986-1999 is characterized by high levels of M&A activity in banking, mean board size is smaller during this period than prior to 1986. In contrast, when we include organizational structure variables in our performance regressions, we find both that they are significantly related to Tobin's Q and that the coefficient on board size is no longer statistically significant. This suggests that organizational structure has an important influence on bank board structure.

Our paper contributes to the literature in several ways. First, we provide the most extensive time series of data on bank board governance in the literature. Our paper complements other papers that have examined governance over long periods of time, e.g. Koles and Lehn (1999) who analyze the governance of the U.S. airline industry over a 22 year period and Lehn, Patro and Zhao (2008) who examine determinants of the size and structure of boards of 82 manufacturing firms from 1935-2000. Second, our paper complements the growing literature examining the determinants of board structure in non-financial firms (e.g. Coles, Daniel and Naveen, 2008; Linck, Netter and Yang, 2008, Boone, Fields, Karpoff and Raheja, 2007 and Lehn, Patro and Zhao, 2008). Our paper is perhaps closest to Coles, Daniel and Naveen (2008), who argue that complexity in terms of advising requirements may affect board structure in manufacturing firms. However, we are unaware of any paper that directly examines the effect of organizational structure on board structure.[5] Finally, we show that even after accounting for M&A activity and organizational structure, there is no negative relationship between board size and performance in our sample. Of course, it is possible that other sources of endogeneity exist than the ones we consider here. After accounting for these other sources, it may be the case that board size is also negatively related to performance in banking. However, in addition to controlling for a wide range of governance variables and firm fixed effects, we have examined the two sources which seem the most plausible to us

[5] Eldenburg, Hermalin, Weisbach and Wosinka (2004) find in a sample of hospitals that organizational type affects board structure. However, in their paper, organizational type is determined by ownership, whereas we are concerned with organizational structure.

given the nature of the banking industry. At this stage, our results are at least suggestive that for banking firms the advantages of larger boards may outweigh their costs. Thus, our paper contributes to the growing body of evidence that some firms may benefit from large boards (e.g. Coles, Daniel and Naveen, 2008 and Linck, Netter and Yang, 2008).

The structure of our paper is as follows. Section 2 describes the data. In sections 3, we investigate the relation between board structure and firm value. We analyze the role of M&A activity in section 4. In section 5, we examine the link between organizational structure and board structure. We examine the robustness of our performance results to using return on assets as an alternative performance measure in section 6. We conclude in section 7.

2 Data

Our primary sample of firms consists of a random sample of 35 publicly traded bank holding companies (BHCs) which were amongst the 200 largest (in terms of book value of assets) top tier bank holding companies for each of the years 1986-1996. We collected additional data on these firms for the years 1997-1999. However, the number of firms drops from 35 to 32 during those years due to M&A activity. The requirement that the firms must be publicly traded made it possible to collect data on board size and composition as well as other internal governance characteristics of the firms from proxy statements filed with the SEC. In addition, we collected balance sheet data from the fourth quarter Consolidated Financial Statements for Bank Holding Companies (Form FR Y-9C) from the Federal Reserve Board and stock price and return data from CRSP.[6]

Although the requirement that data be available on these firms for at least 10 years may introduce a survivorship bias, these firms did not necessarily outperform other BHCs.[7] Also,

[6] The governance data is measured on the date of the proxy at the beginning of the corresponding fiscal year. We adjust our data collection procedures to account for the fact that proxies disclose some governance characteristics for the previous fiscal year and others for the following fiscal year.

[7] To examine whether survivorship bias is a concern in our sample, we examined the stock price performance of our sample firms relative to several benchmarks of all other publicly traded commercial banks (SIC codes 6020-6029 and 6199) available in the CRSP database during 1986-1999. In each case, we excluded the sample firms from the benchmark. We found that over the sample period the monthly raw stock returns of our sample of bank holding companies very closely match the returns of benchmark portfolios, both on an equal- and value-weighted return basis (the t-tests for the difference between portfolio returns on the sample and the benchmarks are not statistically significant).

as Boyd and Runkle (1993) argue, survivorship bias may not be a serious problem in the banking industry since the FDIC generally does not allow large BHCs to fail. In addition, we allow our firms to enter the sample in the extended data set we collect on our sample firms for the period 1959-1985. We discuss how we extend our sample to 1959-1985 in section 4. The requirement that the firms be among the 200 largest every year during 1986-1996 also means that our findings could be different for smaller bank holding companies. However, the requirement was imposed to study the role of governance in firms where the potential impact of bad governance could have serious consequences. Because we impose no restrictions on our sample firms prior to 1986, our analysis of this time period serves as a robustness check that our results are not driven by sample selection.

We chose a relatively small random set of BHCs for our original sample because of the high cost of collecting detailed internal governance variables over the 1986-1999 period. However, this sample is still representative since the assets of our sample BHCs constitute a large fraction of total industry assets (32.3% of total top-tiered BHC assets in 1990). Reflecting increasing consolidation in the industry, this number rose to 50.75% in 1998.

2.1 Descriptive statistics

In Table 1, we present descriptive statistics concerning select financial variables and governance characteristics of the sample firms.

2.1.1 Financial variables

Our measure of Tobin's Q is the ratio of the firm's market value to its book value. The firm's market value is calculated as the book value of assets minus the book value of equity plus the market value of equity. Return on assets (ROA) is calculated as the ratio of net income to the book value of assets. We also calculate a measure of bank capital, its primary capital ratio, which we define as the sum of the book value of common stock, perpetual preferred stock, surplus, undivided profits, capital reserves, mandatory convertible debt, loan and lease loss reserves, and minority interests in consolidated subsidiaries minus intangible assets.

Panel A of Table 1 indicates that average Tobin's Q for our sample firms during 1986-1999 is 1.05 and average ROA is 1%. An average BHC has 41.0 billion dollars in assets and primary capital of 8%. While we do not show them in the tables, there are several trends in the variables that we note here. Perhaps the most important of these are the trends in

performance and firm size. While annual returns are more volatile, Tobin's Q and ROA show an upward trend since the end of the 1990-1991 recession. This is consistent with the upward trend in performance for the banking industry as a whole during this period (see also Stiroh, 2000). Also striking is the trend in firm size, measured by the book value of assets, reflecting the increase in consolidation in the banking industry during the sample period. An average sample firm has $18.7 billion of assets at the end of 1986 and increases in size to $91.5 billion of assets in 1999.

2.1.2 Governance variables

Panels B and C of Table 1 present summary statistics of selected governance variables over the sample period. Consistent with other studies (see Hermalin and Weisbach, 2003), we consider a director to be "an insider" if he works for the firm and "affiliated" if he has had any previous business relationship with the firm or family relationship with its officers. Since we follow the BHCs in our sample over a period of at least 10 years, we are also able to identify whether any directors are former officers of the BHC (generally the CEO or Chairman). We also consider these directors to be insiders. All other directors are outsiders.

Each BHC, on average, has 18 directors. As Adams and Mehran (2003) and Hayes, Mehran, and Schaefer (2005) also document, financial firms in this time period have on average larger boards than manufacturing firms. Both papers document a board size of roughly 12 in their sample of manufacturing firms. However, BHCs also have a higher proportion of outsiders on the board than is found in studies of non-financial firms: 69% as compared to 61% in Adams and Mehran (2003) and 54% in Yermack (1999).

On the one hand the high proportion of outsiders in our sample is surprising since our classification of who is an independent outsider is stricter than in other studies: a director is not an outsider if he was an officer or had *any* business relationship with the BHC in *any* of the 14 years of the sample. In contrast, most cross-sectional studies can only classify directors based on current employee status or business relationships. On the other hand, because these are banking firms, the proportion of outsiders may overstate the board's true independence if lending relationships with directors or directors' employers exist but are not individually disclosed, as a typical proxy statement, such as that of United Jersey Banks (1988, p. 4), illustrates:

> Some officers, Directors, and nominees for election as Director of UJB and their associates may also have transactions with one or more subsidiaries, including

> loans, in the ordinary course of business. All loans in excess of $60,000 to executive officers and Directors and their associates were made on substantially the same terms, including interest rates and collateral, as those prevailing at the time for comparable transactions with other persons and did not involve more than the normal risk of collectibility or present other unfavorable features.

Such lending relationships may be large enough to matter for independence. For example, Riggs National Corporation's proxy for 1988 (p. 8) discloses that: "the aggregate principal amount of indebtedness to banking subsidiaries of the Corporation owed by directors and executive officers of Riggs Bank and Riggs Corporation and their associates represented approximately 78.9% of total stockholder's equity and 7.7% of total loans." Similarly, First Union Corporation's proxy for 2000 (p. 36) states that: "the aggregate monthly outstanding principal balances of loans made by our bank to such directors and officers, including certain of their related interests, ranged from a high of approximately $3.6 billion to a low of approximately $2.9 billion." Unfortunately, it is difficult to get more detailed data on these lending relationships. This means that traditional proxies for board independence in banking are always measured with error. If the measured proportion of outsiders systematically overstates actual board independence, as the anecdotal evidence above suggests, we might expect a larger positive coefficient on the proportion of outsiders in our performance regressions than otherwise. However, if there are disadvantages to lending relationships with directors' employers, then the coefficient on the proportion of outsiders could also be negative.

On average, each board in the 1986-99 period has 4.42 committees and each committee member sits on 1.87 committees. Outsiders chair 62% of the committees and the chair of each committee also is a chair of another committee. The average number of board meetings per year is 8.45, which is close to the 7.45 meetings a year reported by Vafeas (1999), and the average board meeting fee is $994. Nearly 95% of the firms have deferred compensation plans for their directors. Interlocks exist in 39% of the sample. We define an interlock to be a situation where the chairman or the CEO of a BHC is a director in another company whose top management is on the board of the BHC. Excluding the BHC, each outside director is on the board of 1.76 firms and each insider is on the board of 1.49 firms. CEOs of BHCs hold on average 2.27% of the stock of their own companies.

We should note here that the internal governance characteristics we describe are those of the board at the bank holding company level. Because of the holding company structure,

some of these characteristics may not be strictly comparable to the characteristics of boards in non-financial firms. For example, the directors of the BHC often sit on the boards of subsidiary banks of the BHC. If directors are compensated for their service on the subsidiary board, then the amount of compensation they receive for their service at the BHC level may understate their total compensation from the BHC. As an example, First Empire State's 1988 proxy states that directors of First Empire State who also sit on the board of its subsidiary, M&T Bank, receive the same meeting fees for attending meetings of both boards. This also means that the number of meetings of the BHC board may understate total interactions among BHC directors. However, it is important to note that the holding company structure does not affect the measurement of board size and composition, our primary variables of interest in this paper.

3 The relation between board structure and performance

In this section, we investigate the relation between firm performance as measured by Tobin's Q and board size and composition. We discuss our specification of the relationship between performance and board size and composition in section 3.1. In section 3.2, we present the empirical results.

3.1 Empirical Specification

Because the legal mandate of directors in BHCs is essentially the same as that in non-financial firms - to create value for shareholders - we expect board size and composition to affect the performance of banking firms in the same way as it affects, according to the governance literature, the performance of non-financial firms. Thus, we expect to find a negative relationship between firm performance and board size and a positive relationship between performance and the proportion of outsiders on the board. In our basic specification, we therefore follow previous studies and regress our proxy for Tobin's Q on the natural logarithm of board size and the proportion of outside directors plus financial controls. The financial control variables consist of the natural logarithm of the book value of assets as a proxy for firm size, the capital ratio as a proxy for capital structure, and the volatility of stock prices as a measure of uncertainty. All regressions include year dummies and firm fixed

effects. By including firm fixed effects, we limit both omitted variable bias and the effect of potential outliers caused by the fact that the number of cross-sectional units in our sample is small. In all specifications, the standard errors are adjusted for potential heteroskedasticity.

Since we have detailed data on other internal governance characteristics of the BHCs in our sample, in expanded specifications we include these variables as governance controls. Since internal governance mechanisms are likely to be ultimately simultaneously chosen, performance regressions which only include board size and composition may suffer from omitted variable bias if other internal governance characteristics are also correlated with performance. For example, Klein (1998) shows that the proportion of insiders on the finance committee is positively related to firm value and Vafeas (1999) finds a negative correlation between the number of board meetings and performance. Since both the committee structure of the board and the number of board meetings are plausibly related to board size and composition, we cannot be sure that we are not picking up spurious correlations between board size, composition and performance if we do not include these additional governance characteristics in our performance regressions.

Since there is little theory to guide us in the selection of the most important internal governance characteristics from the large set of possible characteristics, we make an ad hoc selection of groups of variables that we believe may proxy for the aspects of governance that the literature has emphasized most. Our first group of variables consists of committee characteristics: the natural logarithm of the number of committees, the average number of committee seats per committee member, the proportion of committee chairs that are outsiders and the average number of committee seats per committee chair. Our second group of variables includes additional proxies for board/director activity: the natural logarithm of the number of board meetings, the fee directors get paid for attending board meetings and the average number of other directorships outside and inside directors have.

Our last group of variables consists of variables related to director interlocks and CEO and director compensation. Hallock (1997) argues that interlocks may be representative of a dual agency problem. On the other hand, authors in the organizational literature argue that interlocks are beneficial since they may reduce the information uncertainty created by resource dependence amongst firms (e.g. Pettigrew, 1992). While the predicted sign of the correlation between performance and interlocks is unclear, it is plausible that a correlation exists. There is also a vast literature that argues that the percentage of CEO ownership is correlated with Tobin's Q (e.g. Morck, Shleifer, Vishny, 1988; McConnell and Servaes,

1990). Some studies have found a positive relation between CEO shareholdings and both Tobin's Q and ROA (e.g. Mehran, 1995). Others have argued that director compensation should also affect performance (e.g. Brick, Palmon and Wald, 2005). Thus, our final set of internal governance controls consists of a dummy indicating whether a board interlock exists, the proportion of shares held by the CEO and dummies indicating whether the BHC pays the directors deferred compensation or deferred stock.

3.2 Empirical Results

Table 2 presents OLS regression estimates of the relation between Tobin's Q and board size and composition plus controls using our sample of BHCs during 1986-1999. In column I, we present the basic regression using only financial controls. In columns II, III and IV we sequentially add the committee characteristics, the board activity controls and the interlock and compensation variables to the regression. As is evident from Table 2, the natural logarithm of board size, Ln(board size), has a positive and statistically significant (at greater than the 10% level) correlation with Tobin's Q in three of the specifications. Board composition, on the other hand, has no significant relation with Tobin's Q.

The latter finding is consistent with previous studies of board composition, although the explanation for this finding may be different given the measurement error problem we point out above. However, regardless of the explanation, banks do not appear to be making board composition choices that are detrimental to shareholder value. Our finding of a positive relation between the logarithm of board size and Tobin's Q, however, is particularly surprising given the conclusions from all but the most recent studies of board structure. For example, Hermalin and Weisbach (2003, abstract) summarize the findings of the board structure literature as follows: "Across these studies, a number of regularities have emerged-notably, the fact that board composition does not seem to predict corporate performance, while board size has a negative relationship to performance." Although BHC boards are on average larger than the boards of non-financial firms, which might lead us to expect a strong negative relationship between board size and performance, we do not find the negative relationship in our data.

The coefficients on the financial control variables are generally consistent with the results found in other papers. Since there is little theory that would guide our predictions for the signs of the coefficients on most of the internal governance controls, we merely state the results that are consistent across specifications. In Table 2, there is a positive and

significant relationship between performance and the size of the board meeting fee. This is consistent with Adams and Ferreira (2008), who document that the attendance behavior of BHC directors improves as board meeting fees increase. There is a negative and significant relationship between performance and the natural logarithm of the number of committees, the average number of external directorships held by officers of the BHC as well as by outside directors, interlocks, the deferred stock dummy and CEO ownership.

The negative and significant coefficient on CEO ownership is somewhat surprising given that previous papers find no relation between ownership and Tobin's Q in fixed effect regressions (see Himmelberg, Hubbard and Palia, 1999). However, since the length of our panel is fairly long, there may be sufficient variation in CEO ownership in our sample to enable us to find a relation between ownership and performance even after including firm fixed effects (see Zhou, 2001). The negative coefficient on ownership is not inconsistent with the non-linear relationship between Tobin's Q and inside ownership described by Morck, Shleifer and Vishny (1988) and others. Thus, we reran the specifications in columns I and IV after including squared CEO ownership (results not shown). We find a non-linear (but not highly significant) concave relationship between Tobin's Q and CEO ownership in the first specification, but we do not find it in the second specification. This suggests that interdependencies between ownership and internal governance mechanisms may be important factors to consider when evaluating the effect of ownership on performance.

While we find the results for the other governance controls suggestive, we caution against interpreting them as consistent with a particular theory that does not concern board structure in BHCs. As we note in section 2.1.2, some governance characteristics may have a different meaning for BHCs than they do for non-financial firms. For example, Vafeas (1999) uses board meetings as a measure of total board activity. But, because the board of the BHC may overlap with the boards of subsidiary banks or subsidiary BHCs, the number of BHC meetings only measures the activity of the BHC board, but not total BHC director activity. Thus, the coefficient on the number of BHC meetings should be interpreted based on a hypothesis that specifically concerns the activity of the BHC board.

4 M&A activity and board structure

The most surprising finding of the previous section is the positive relationship between board size and Tobin's Q. It is possible that this result is driven by the increase in merger and

acquisition activity during our time period. As is evident from Figure 1, the number of banks per year in the U.S. has declined sharply since 1986, about the beginning of our sample period. It is also known that board size may increase following a merger or acquisition to incorporate some of the target directors (e.g. Lehn, Patro and Zhao, 2008). Given the fact that hostile offers (following which the board of the target is unlikely to be incorporated into the board of the acquiror) are rare in the banking industry, it is likely that BHC boards are growing larger as a result of M&A activity (see also Adams and Mehran, 2003). If high Q firms are more likely to engage in M&A activity, then our finding of a positive relationship between board size and Q could be the result of endogeneity due to omitted variables characterizing BHCs' M&A activity.

It was common for our sample firms to disclose which directors were added to the board following an M&A transaction in their proxy statements. Thus, we examined all proxy statements in order to identify instances in which target directors were added to the board following M&A transactions. Table 3 provides descriptive statistics for these events. On average, each BHC engaged in 2 transactions following which it incorporated target directors. The average number of target directors added to the board was 3.61 and target directors comprised 17% of the merged firm's board at the time of the transaction. In any given year, the proportion of directors who joined the board as the result of a prior M&A transaction is 13% (roughly 3 directors).

The fact that directors of former targets comprise a sizeable percentage of directors at any given time suggests that our concerns about the consequences of omitting characteristics of M&A activity from our performance regressions are justified. Thus, we replicate the performance regressions in Table 2 after including two different variables which proxy for instances in which target directors were added to the board. The first variable is a dummy variable, "Addition to Board following M&A", which is equal to 1 if the proxy statement indicated that directors joined the board following an M&A transaction in that year. Although we were careful to examine directors' biographies for all years to see whether they were identified as former target directors, it is possible that some proxy statements did not disclose this information. Thus, we also define a dummy variable "Potential M&A additions", which is equal to 1 if board size increased by 3 or more directors in a given year, but the proxy did not identify these directors as target directors. There were 21 such events.[8]

[8] We chose 3 directors as the cutoff because it is approximately equal to the average number of target directors who joined the board in events identified in proxy statements.

In columns I and II of Table 4, we show the results of replicating the regressions in columns I and III of Table 2 after including "Addition to Board following M&A". In columns III and IV, we add "Potential M&A additions" to these regressions. As is clear from the table, the coefficients on the natural logarithm of board size are very similar to those in Table 2, both in magnitude and significance. The results from replicating the other regressions in Table 2 are also similar. Our findings do not appear to be driven by the possibility that high Q firms are more likely to undertake mergers which lead to increases in board size.

Another possibility, however, is that better performing firms can afford to retain target directors longer, so that M&A activity leads to more persistent increases in board size in such firms. To control for this possibility, we construct a new measure of board size, "Ln(Number of non M&A directors)", which is the natural logarithm of the number of directors who did not join the board because of a prior acquisition. Then we rerun the regressions in Table 2 after substituting this measure for "Ln(board size)". In essence, we are controlling for the possibility that board size is temporarily inflated because of M&A activity. Columns V and VI of Table 5 show the results of replicating the regressions in columns I and III of Table 2. The results in column V are very similar to those in column I of Table 2, however the coefficient on "Ln(Number of non M&A directors)" in column VI is roughly half the magnitude of its corresponding coefficient in Table 2. This suggests that increases in board size due to M&A activity may explain part of the relationship between Q and board size, but it does not appear to be the main reason why the relationship between Q and board size is nonnegative.

Little is known about how board structure changes following M&A activity. As a result, it is possible that there are other interdependencies between M&A activity, board structure and performance that we have not controlled for. To address this issue, we examine whether our results are different in a period in which there was less M&A activity in the banking industry because of more stringent regulatory restrictions.[9] In particular, we collected data on our sample firms for the period from 1959 to 1985. The earliest year that financial data is available for banks from the Federal Reserve Board is 1959. We chose to collect data on our firms for as many years as we could to ensure that our results are not sensitive to our choice of timeframe. This is important because the banking industry has undergone several major changes over time. The period from 1959 to 1999 captures times when banking firms were heavily regulated, as well as periods of regulatory change and deregulation. Many banks

[9] Rhoades (1996) documents that M&A activity among large banking organizations was very limited in the early 1980s. This was also the case prior to 1980.

also changed their organizational structure to the holding company form during this period, which is an issue we examine more closely in section 5.

About 97% of the banking firms in our sample underwent precisely this change in organizational form. While by 1982 all of our firms were BHCs, only 3% of our firms were BHCs in 1959. Thus, in order to follow most of our institutions back in time, we had to determine their predecessor banks. To do this, we used Moody's Bank and Finance Manuals. When the predecessor bank was not clearly identified in the Moody's Manuals, we chose as the BHC's predecessor bank its banking subsidiary which either had the same permno in CRSP or the same CEO as the BHC the year prior to conversion to the BHC form, or the largest banking subsidiary. By this method we were able to trace 34 of our banking firms back in time to 1959.

We collected information on board size and composition for our sample firms for the years 1959-1985 from Moody's Bank and Finance Manuals. Moody's Manuals only list the board members and the officers of each firm. Thus, it is not possible to characterize non-inside directors as affiliated or outside directors. As a result, our definition of outsiders, as all directors who are not also officers, is less precise for the period prior to 1986 than in 1986-1999. As before, we supplement the board structure data with balance sheet information from either the fourth quarter Consolidated Financial Statements for Bank Holding Companies (Form FR Y-9C) or Report on Condition and Income (Call Report) data for banks from the Federal Reserve Board. Stock return data is from CRSP. While prior to 1965 no firm in our sample was listed on a major exchange, by 1975 all firms in our sample were listed on major exchanges.[10]

Panels A and B of Table 5 provide descriptive statistics for financial variables and board structure for our sample firms for the period 1959-1985. Mean Tobin's Q and ROA for our sample firms is 1.00 and 1%, respectively. Average total assets of our sample firms amount to $5.2 billion and the mean equity to asset ratio is 7%. An average board consists of 21 directors, of which 85% are non-inside directors.

If the results in the previous section are driven by increased M&A activity during 1986-1999, we would expect mean board size during this period to be higher than during the 1959-1985 period. Figure 2 shows average board size over time. Clearly, it has been declining. This is the case despite the significant increase in assets of each bank over time. The trend is

[10] Many banks were listed on regional exhanges during this time period. Thus, although they may not have shown up in CRSP, they may still have been publicly traded.

consistent with the decline in board size for large manufacturing firms documented by Linck, Netter and Yang (2008), which they suggest may be due to institutional activism. However, it is fair to say that the drop in banking firm board size started before the publicized pressure on boards by institutional shareholders. The difference in board size pre- and post-1986 is also significant. In the earlier period, our sample firms had on average 3 more directors, a difference that is significant at less than the 1% level.

In Figure 3, we plot the average ratio of non-inside directors over 1959-1999, where we use the proxy data to generate a comparable measure of non-insiders for the period 1986-1999 to the one derived from the Moody's Manuals. The downward trend in board size does not seem to be accompanied by any major changes in board composition. Confirming the visual evidence, the proportion of non-inside directors is by any standard not significantly different pre- and post-1986.

To evaluate whether the relationship between board size and composition and performance is different pre- and post-1986, we regress Tobin's Q on board structure for the years in which stock return data is available on CRSP for our sample banks. All regressions include the same set of financial controls we used in the previous tables. However, we now use the ratio of the book value of equity to the book value of assets as a proxy for the capital ratio for each banking firm because not all components of primary capital are available prior to 1986. All regressions include firm fixed effects and the standard errors are adjusted for heteroskedasticity. Since only 9 firms were listed in CRSP by 1972, we include year dummies only for all years after 1973. In columns I and II of Table 6, we present the results using the full sample of data from 1965-1999. In columns III and IV, we present the results using only the data prior to 1986. In columns II and IV, we include the ratio of non-insiders we derive from the classification in Moody's Manuals. Across both these columns, the coefficient on the fraction of non-insiders is not significantly different from zero, as was the case for the fraction of outside directors in Table 2. Also as in Table 2, in all regressions the coefficient on the natural logarithm of board size is positive and significant at greater than the 10% level.

We conclude from the investigation in this section that although M&A activity appears to have a significant influence on bank board composition, endogeneity induced through M&A activity does not appear to be the main explanation for our performance result. The non-negative relation between board size and Tobin's Q appears to exist even prior to the increase in consolidation in the banking sector.

5 BHC organizational structure

While omitted M&A activity does not seem to be driving our performance results, endogeneity due to omitted variables may still be a concern. Since the bulk of observations on our sample firms falls into the period when they are BHCs, a plausible omitted variable in the performance regressions is a characteristic which fundamentally differentiates BHCs from most manufacturing firms in a way that could impact both board structure and performance. One major difference between BHCs and most manufacturing firms in the U.S. is the way in which they are organized. By definition BHCs are all holding companies. This means they often have complicated hierarchical structures through their ownership and control of banks, lower level BHCs and other subsidiaries. Each of these subsidiaries is separately chartered and therefore has its own board. In contrast, U.S. manufacturing firms often organize themselves along functional or divisional lines none of which need have a separate legal identity. Thus, the coordination of activities between functions may occur through means other than through boards. Functional organizations may also have a hierarchy that is narrower at the top. For example, Rajan, Servaes and Zingales (2000) document in their sample of all manufacturing firms with segment data in Compustat's Business Segment Information Database from 1979-1993 that the average number of segments is 2.9 with a maximum of 10. In contrast, the BHCs in our sample have on average 5.86 separately incorporated Tier 1 banking subsidiaries (either a bank or a BHC) with a maximum of 37, and an average of 15.45 subsidiaries of all kind, with a maximum of 75.[11] Thus, the organizational structures of BHCs look more similar to those of business groups that can be found outside the U.S. than that of the typical U.S. manufacturing firm.[12] For example, Almeida, Park, Subrahmanyam and Wolfenzon (2007) report that the 47 Korean Chaebols they study have on average 16 affiliated firms. While we already provided some descriptive evidence in section 2.1.2 that the structure of a BHC may affect its board structure, we investigate this idea more in this section. In section 5.1, we identify several specific factors related to the holding company structure which may affect BHC board structure and investigate their impact on board size. In section 5.2, we examine how sensitive our performance results are to the inclusion of variables pertaining to BHC structure.

[11] While different segments/subsidiaries of manufacturing firms may be combined for reporting purposes in Compustat, these numbers are at least suggestive that most U.S. manufacturing firms have less complicated hierarchical structures than banking firms.

[12] Business groups share the feature with BHCs that affiliated firms have separate legal identities.

5.1 BHC organizational structure and board structure

Since there is little written on how organizational forms differ between BHCs and U.S. manufacturing firms and how organizational form in turn may affect board structure, this section is primarily exploratory. We draw upon some examples of statements made in BHC proxy statements which have suggested to us that BHC structure impacts board structure. For example, U.S. Bancorp's proxy statement in 1988 (p. 4) states:

> Since the formation of Bancorp in 1968, Bancorp and USNB [United State National Bank of Oregon] have shared a common board of directors. With the evolution of Bancorp into a regional multi-bank holding company and the creation of U.S. Bank of Washington, National Association, it is no longer practical to have common board membership. Therefore, certain members of the common board have been nominated to serve on the smaller Bancorp Board. The remaining board members of the common board will continue to serve as members of the board of USNB. A strong representative board is also in place at U.S. Washington. This structure provides the broad geographic representation and diversity that is desirable at the bank board level while a smaller group can address the more strategic role of a holding company board. Mr. Breezley will continue to serve on all three boards to facilitate cooperation and communication among them.[13]

As this quote suggests, the need to coordinate activities amongst the separate subsidiaries may affect board structure. As the number of subsidiaries of a BHC increases, more delegation of tasks to subsidiary boards may occur, leaving the BHC board free to act in a more strategic role. Thus, an increase in the number of subsidiaries may lead to a reduction in BHC board size. This reduction in BHC board size may be reinforced if the supply of good directors is limited. The more important a subsidiary is (for example in terms of size), the more important it may be to staff the board of that subsidiary with good directors. On the other hand, with more subsidiaries there may be a need for more representatives from subsidiary boards on the BHC board, both to facilitate coordination amongst the different subsidiaries and to facilitate monitoring.[14] Ultimately, the effect of the number of

[13] "Bancorp" here refers to the top level BHC. USNB was its primary subsidiary bank until the creation of U.S. Bank of Washington, N.A.

[14] While there are no regulatory restrictions on the size of BHC boards, there are some restrictions on the size of bank boards. For example, the board of a national bank (regulated and supervised by the OCC) must

subsidiaries on BHC board size is an empirical question.

To investigate the effect of organizational structure on BHC board size, we supplement our sample with information on all subsidiaries in the first tier of the BHC hierarchy of our sample firms from the Federal Reserve's National Information Center (NIC), which contains historical structure information for financial institutions. We choose to focus on the first tier of the BHC hierarchy because lower tiered subsidiaries are not directly controlled by the BHC, so it is less likely their boards will overlap with the BHC board. Table 7 provides summary statistics for our BHCs' organizational structure. Each institution, on average, has 15.27 Tier 1 subsidiaries, of which an average of 5.86 are separately chartered banking subsidiaries (either banks or BHCs). The average number of banking subsidiaries is approximately the same pre- and post-1986. However, the total number of subsidiaries increases, primarily because of an increase in non-banking subsidiaries. In addition, the number of states the domestic subsidiaries are located in increases from an average of 2.31 in the earlier period to 4.57 in the later period. These increases are most likely the consequence of increased deregulation and consolidation in the banking industry.

We first investigate whether the switch to the BHC structure affects board size. We use the first year that the National Information Center indicates that a BHC owns or controls a commercial banking or BHC subsidiary to identify the year the sample firm became a BHC and construct a BHC dummy that is equal to 1 if the entity is a BHC and equal to 0 otherwise.[15] In column I of Table 8, we regress the natural logarithm of board size on the BHC dummy and the natural logarithm of assets. We include the natural logarithm of assets

consist of at least five, but no more than twenty-five, members. Different states may also have requirements on board size and composition at the bank level. Since such regulatory restrictions apply to board structure at the bank level, the regulatory environment alone does not explain BHC board size and composition. However, it is possible that regulation may have an indirect effect on the structure of BHC boards to the extent that it is influenced by the structure of the boards of the BHC's lead bank and other subsidiary banks (see Adams and Mehran, 2003).

[15] Technically this method works to identify both single-and multi-bank holding companies after 1970, but only multi-bank holding companies between 1959-1969. Prior to 1970 single BHCs were not required to register as such with the Federal Reserve, and thus would not necessarily appear in the National Information Center data as BHCs. As a robustness check on our BHC dummy, we also examined Moody's Bank and Finance Manuals to identify the year the sample firm became a BHC (e.g. through name changes to Bancorp or Bankshares, etc.). Using the BHC dummy we constructed from Moody's in our regressions gives us similar results to using the dummy we constructed from the National Information Center data. Thus, we continue to use the NIC dummy to proxy for the relevant organizational change.

as a proxy for firm size since previous studies have also argued and found that firm size is positively related to board size in other industries (see e.g. Hermalin and Weisbach, 1988; Yermack, 1996; Baker and Gompers, 2003). In columns II and III, we also include ROA and two lags of ROA to control for the fact that performance may affect board size. All specifications include year dummies with heteroskedasticity-adjusted t-statistics in parentheses. In column III, we include firm fixed effects. The coefficient on the BHC dummy is consistently negative and significant at the 1% level in all specifications. Consistent with previous studies, firm size has a significant and positive effect on board size, however, as in Yermack (1996), previous performance does not appear to affect board size.[16] Thus, we leave ROA and its lags out of all further specifications.

The negative coefficient on the BHC dummy is consistent with the idea that some division of labor occurs when the firm switches from a single entity to a hierarchical structure. In Table 9, we investigate this idea further for the years in which the firms are all BHCs. We examine the effect of 4 different measures of organizational structure on board size. The first is the total number of Tier 1 subsidiaries. The second is the number of states that domestic Tier 1 subsidiaries are located in. The third is the average number of domestic subsidiaries per state and the fourth is the relative size of the lead bank, which we define as the ratio of consolidated assets of the largest commercial banking subsidiary to total Tier 1 consolidated commercial bank assets. We believe that all these variables are plausibly correlated with BHC board size, in the spirit of the quote we provide above from U.S. Bancorp's proxy statement. All specifications in Table 9 include year dummies, the natural log of assets and the capital to asset ratio as controls and the t-statistics are heteroskedasticity corrected. In column III, we also include volatility as a control, which restricts the regressions to years in which our firms are traded on major exchanges.

As is evident from column I, the coefficients on the number of subsidiaries and the relative size of the lead bank is negative and significant, whereas the coefficient on the number of states subsidiaries are located in are positive and significant at greater than the 1% level. When we break down the subsidiaries by type, we find that the negative relationship between the number of subsidiaries and board size appears to be driven by the number of foreign subsidiaries, both banking and non-banking. In columns II and III, the number of foreign non-banking subsidiaries is negative and significant at the 1% level.

[16] This also suggests that our result that board size is positively related to Tobin's Q is not driven by a positive relationship between prior performance and board size.

While these regressions are exploratory, we believe the pattern of signs is consistent with the impact of an organizational-structure induced need for delegation and information sharing on board size. For example, it is intuitive that, *ceteris paribus*, as the number of states increases, board size increases to accommodate representatives of subsidiaries from different states. This is also consistent with theories described in Dalton, Daily, Johnson and Ellstrand (1999) that larger boards may be beneficial because they increase the pool of expertise available to the organization. Consistent with the idea that the bigger the "lead" bank, the more important the role played by the "lead" bank board, we find that the more important the biggest bank is in the BHC structure, the smaller is BHC board size. These results and those in Table 8 are also compatible with the downward trend in board size we observe in Figure 2. While suggestive, whether and how the combination of these factors leads BHCs to have bigger boards than manufacturing firms needs to be investigated more thoroughly in further research.

5.2 BHC organizational structure, board structure and performance

The results in section 5.1 suggest that BHC structure is correlated with board structure. If BHC structure also affects BHC performance, then it is possible that the relationship we observe between BHC performance and board size is the result of omitting BHC structure from our performance regressions. Klein and Saidenberg (2005) provide some evidence that BHC organizational structure affects performance. They show that there is a "diversification discount" in banking, i.e. that BHCs with more bank subsidiaries have lower values of Tobin's Q. In Table 10, we evaluate the effect of including our measures of organizational structure in our performance regressions.

Column I replicates the basic regressions between Tobin's Q and board structure in column II of Table 6, where we restrict the sample to years in which data on subsidiaries is available. In columns II-IV, we include the organizational structure variables. All regressions include firm fixed effects and year dummies and the standard errors are adjusted for potential heteroskedasticity. Consistent with Klein and Saidenberg (2005), we find that the number of Tier 1 subsidiaries is negatively and significantly related to Tobin's Q. Other organizational structure variables are also significantly related to Tobin's Q. Once we include these variables, the significance of board size decreases. This suggest that organizational structure may have been an omitted factor in our previous regressions. Because consolidation activity in

the banking industry may be correlated with BHC structure, e.g., through the number of subsidiaries, we also include "Addition to Board following M&A" as an additional control in column IV. Even after including controls for both organizational structure and M&A activity, we do not find a strong reversal of our previous finding of a positive and significant relationship between board size and Tobin's Q. The significance of the board size coefficient drops, but the relationship is still non-negative.[17]

6 Board structure and ROA

In this section, we investigate the relation between an accounting measure of performance (ROA) and board size and composition as a final robustness check of our previous results. However, we are not as confident that governance characteristics will have the same relation with ROA in our sample of BHCs as they have with ROA in non-financial firms. Boyd and Runkle (1993) advocate using market-based measures of performance for banking firms and point out that "With banking firms, accounting profitability measures are notoriously poor since gains and losses need not be realized in a timely manner." (p. 55).

Nevertheless, in Table 11, we examine the relationship between ROA and board size and composition. In column I, we replicate the regressions from columns I and II of Table 6 using ROA as the dependent variable. We leave out the volatility of stock returns so that we are not limited to data from the years during which the sample firms were listed on major exchanges. In column III, we also include the variables "Addition to Board following M&A" and volatility. In columns IV and V, we replicate the regressions in columns III and IV of Table 10. Across all columns, board size has no significant relationship with ROA. While the fraction of non-insiders has a significant negative relationship with ROA in columns II and IV, this relationship does not appear to be robust. There is a significant negative relationship between the number of Tier 1 subsidiaries and ROA, although organizational structure in general does not appear to explain as much variation in ROA as it does in Tobin's Q.

[17] One might argue that our results are driven by (to us) unobservable client relationships since lending relationships may affect who is appointed to the board. However, it is not clear that unobservable client relationships could cause a spurious non-negative relationship between board size and performance. In addition, the correlation between BHC structure and BHC board structure suggests to us that BHC boards are playing an increasingly strategic role over time. It is thus more plausible that the correlations between client relationships and board structure and performance are important at the bank board level (i.e. at the BHC subsidiary level) than at the BHC board level.

The ROA results reinforce our conclusions for Tobin's Q. Board composition appears to have no effect on BHC performance, as in non-financial firms, but board size does not have a negative effect on BHC performance, in contrast to non-financial firms.

7 Conclusions

In this paper, we provide detailed data on several aspects of bank board governance over a period of 40 years. We identify three main factors that appear to influence bank board composition and size. First, we point out that lending relationships between banks and their directors' employers appear important. Second, we show that M&A activity influences board composition. Finally, we show that bank organizational structure is significantly related to board size. We believe the latter finding is particularly interesting since it has not yet been analyzed in the literature and is likely to be relevant for non-financial firms with complex organizational structures as well.

We also show that there appears to be no relation between firm performance and board composition and size once plausible sources of endogeneity are controlled for using firm fixed effects and potentially omitted variables related to M&A activity and organizational structure. This finding highlights the need to be careful about trying to reform bank governance following the subprime mortgage crisis. Simply adopting proposals that are largely motivated by research on non-financial firms are unlikely to be effective. We believe more research is needed, particularly on lending relationships and organizational structure, before governance policy concerning banks can be formulated.

References

[1] Adams, R. and Ferreira, D. "Do Directors Perform for Pay?" Working paper, University of Queensland, 2008.

[2] Adams, R. and Mehran, H. "Is Corporate Governance Different for Bank Holding Companies?" *Economic Policy Review*, 2003, 9, pp. 123-142.

[3] Almeida, H., Park S., Subrahmanyam, M. and D. Wolfenzon, "Beyond cash flow and voting rights: Valuation and performance of firms in complex ownership structures," Working paper, Stern School of Business, 2007.

[4] Baker, M. and Gompers, P. "The Determinants of Board Structure at the Initial Public Offering." 2003, forthcoming, *Journal of Law and Economics.*

[5] Boyd, J. and Runkle, D. "Size and performance of banking firms." *Journal of Monetary Economics*, 1993, 31, pp. 47-67.

[6] Brewer III, E., Jackson III, W. and Jagtiani, J. "Impact of Independent Directors and the Regulatory Environment on Bank Merger Prices: Evidence from Takeover Activity in the 1990s." Working paper 2000-31, 2000, Federal Reserve Bank of Chicago.

[7] Brick, I., Palmon, O. and Wald, J. "CEO Compensation, Director Compensation, and Firm Performance: Evidence of Cronyism." 2005, forthcoming, *Journal of Corporate Finance.*

[8] Brickley, J. and James, C. "The Takeover Market, Corporate Board Composition and Ownership Structure." *Journal of Law and Economics*, 1987, 30, pp. 161-180.

[9] Byrd, J., Fraser, D., Lee, D. and Williams, T. "Financial crises, natural selection and governance structure: evidence from the thrift crisis." Working paper, Texas A&M University, 2001.

[10] Coles, L. Jeffrey, Naveen D. Daniel and Lalitha Naveen, "Boards: Does one size fit all?" *Journal of Financial Economics,* 2008, 87, 329–356.

[11] Dalton, D., Daily, C., Johnson, J. and Ellstrand, A. "Number of Directors and Financial Performance: A Meta-Analysis." *Academy of Management Journal*, 1999, 42, pp. 674-686.

[12] Eisenberg, T., S. Sundgren and Wells, M. "Larger Board Size and Decreasing Firm Value in Small Firms." *Journal of Financial Economics*, 1998, 48, pp. 35-54.

[13] Eldenburg, L, Hermalin, B., Weisbach, M. and Wosinka, M. "Governance, Performance Objectives and Organizational Form: Evidence from Hospitals." *Journal of Corporate Finance*, 2004, 10, pp. 527-548.

[14] Federal Reserve Bank of Atlanta, *The Director's Primer*, 2002, Third Edition.

[15] Hallock, K. "Reciprocally Interlocking Boards of Directors and Executive Compensation." *Journal of Financial and Quantitative Analysis*, 1997, 32, pp. 331-344.

[16] Hayes, R., Mehran, H., Schaefer, S. "Board Committee Structures, Ownership and Firm Performance." Working Paper, Federal Reserve Bank of New York and University of Chicago, 2005.

[17] Hermalin, H. and Weisbach, M. "The determinants of board composition." *Rand Journal of Economics*, 1988, 19, pp. 589-606.

[18] Hermalin, B. and Weisbach, M. "Boards of Directors as an Endogenously-Determined Institution: A Survey of the Economic Literature." *Economic Policy Review*, 2003, 9, pp. 7-26.

[19] Himmelberg, C., Hubbard, R. and Palia, D. "Understanding the determinants of managerial ownership and the link between ownership and performance." *Journal of Financial Economics*, 1999, 53, pp. 353-384.

[20] Jensen, M. "The modern industrial revolution, exit, and the failure of internal control systems." *Journal of Finance*, 1993, 48, pp. 831-880.

[21] Khanna, Tarun, and Yishay Yafeh, "Business Groups in Emerging Markets: Paragons or Parasites?" *Journal of Economic Literature,* 2007, 45, no. 2, pp. 331-372.

[22] Klein, A. "Firm Performance and Board Committee Structure." *Journal of Law and Economics*, 1998, 41, pp. 275-303.

[23] Klein, P. and Saidenberg, M. "Organizational Structure and the Diversification Discount: Evidence from Commercial Banking." CORI Working paper #2005-06, 2005.

[24] Kole, S. and Lehn, K. "Deregulation and the Adaptation of Governance Structure: The Case of the U.S. Airline Industry." *Journal of Financial Economics*, 1999, 52, pp. 79-117.

[25] Lehn, Kenneth, Sukesh Patro and Mengxin Zhao, "Determinants of the Size and Structure of Corporate Boards: 1935-2000," 2008, CEI Working Paper Series, No. 2008-13.

[26] Linck, James S., Jeffry M. Netter and Tina Yang, "The Determinants of Board Structure," *Journal of Financial Economics,* 2008, 87, 308–328.

[27] McConnell, J. and Servaes, H. "Additional evidence on equity ownership and corporate value." *Journal of Financial Economics*, 1990, 27, pp. 595-612.

[28] Mehran, H. "Executive compensation structure, ownership and firm performance." *Journal of Financial Economics*, 1995, 38, pp. 163-184.

[29] Morck, R., Shleifer, A. and Vishny, R. "Management Ownership and Market Valuation: An Empirical Analysis." *Journal of Financial Economics*, 1988, 20, pp. 293-315.

[30] Moyer, L. "Off with their heads", April 4, 2008, Forbes.com, available at http://www.forbes.com/2008/04/11/shareholders-banking-iss-biz-wall-cx_lm_0411proxy.html.

[31] Pettigrew, A. "On studying managerial elites." *Strategic Management Journal*, 1992, 13, pp. 163-182.

[32] Rajan, R., Servaes, H. and Zingales, L. "The Cost of Diversity: Diversification Discount and Inefficient Investment." *Journal of Finance*, 2000, 55, pp. 35-80.

[33] Rhoades, S. "Bank Mergers and Industrywide Structure, 1980-1994." Staff Study, Board of Governors of the Federal Reserve System, Washington, D.C., 1996.

[34] Stiroh, K. "How did bank holding companies prosper in the 1990s?" *Journal of Banking and Finance*, 2000, 24, pp. 1703-1745.

[35] Vafeas, N. "Board meeting frequency and firm performance." *Journal of Financial Economics*, 1999, 53, pp. 113-142.

[36] Wulf, J. "Do CEOs of Target Firms Trade Power for Premium? Evidence from "Mergers of Equals." *Journal of Law, Economics and Organization*, 2004, 20, pp. 60-101.

[37] Yermack, D. "Higher market valuation of companies with a small board of directors." *Journal of Financial Economics*, 1996, 40, pp. 185-211.

[38] Zhou, X. "Understanding the determination of managerial ownership and its relationship to firm performance: comment." *Journal of Financial Economics*, 2001, 62, pp. 559-571.

Figure 1: Number of FDIC-Insured Commercial Banks, 1934-99

Data on number of institutions is from the FDIC historical statistics on banking. The number of banks is indicated by the solid line and measured on the left axis. The number of branches is indicated by the dotted line and measured on the right axis. The dotted vertical line at year=1986 indicates the first year of our primary data set on BHCs described in Table 1.

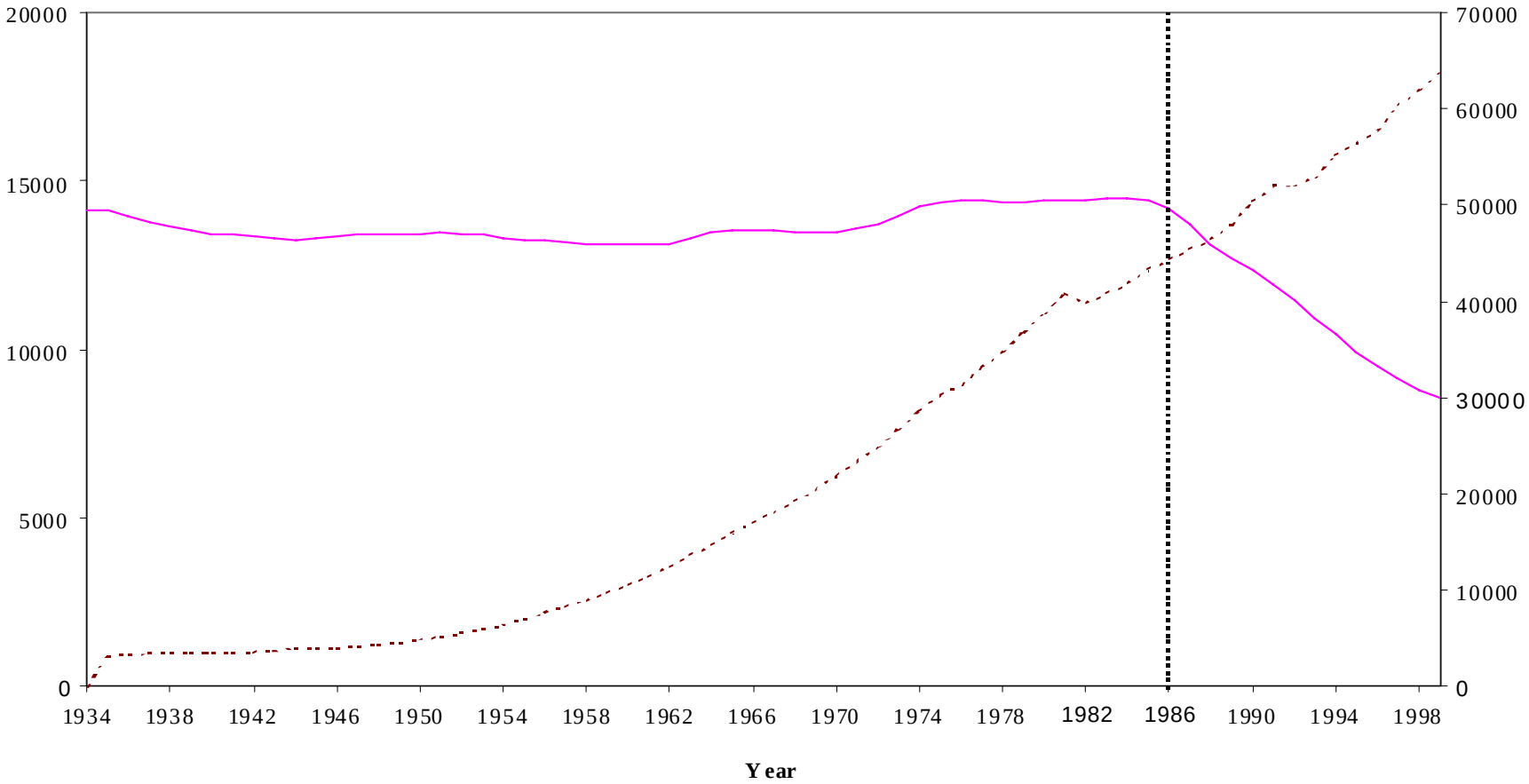

Figure 2: Plot of Average Board Size Over the Years 1959-1999

Tables 1 and 3 describe the sample firms. From 1982-1999 all sample firms are BHCs. Prior to 1982, the sample firms consist of a mixture of BHCs and banks. We determine the predecessor banks to the BHCs in our primary data set from Moody's Bank and Finance Manuals. Data prior to 1986 is from Moody's Bank and Finance Manuals. Data post-1986 is from bank proxy statements. The average is taken over the number of institutions in a given year. During 1959-1965 there were 34 institutions; during 1966-1996 there were 35 institutions. In 1997, 1998 and 1999, there were 34, 33 and 32 institutions, respectively.

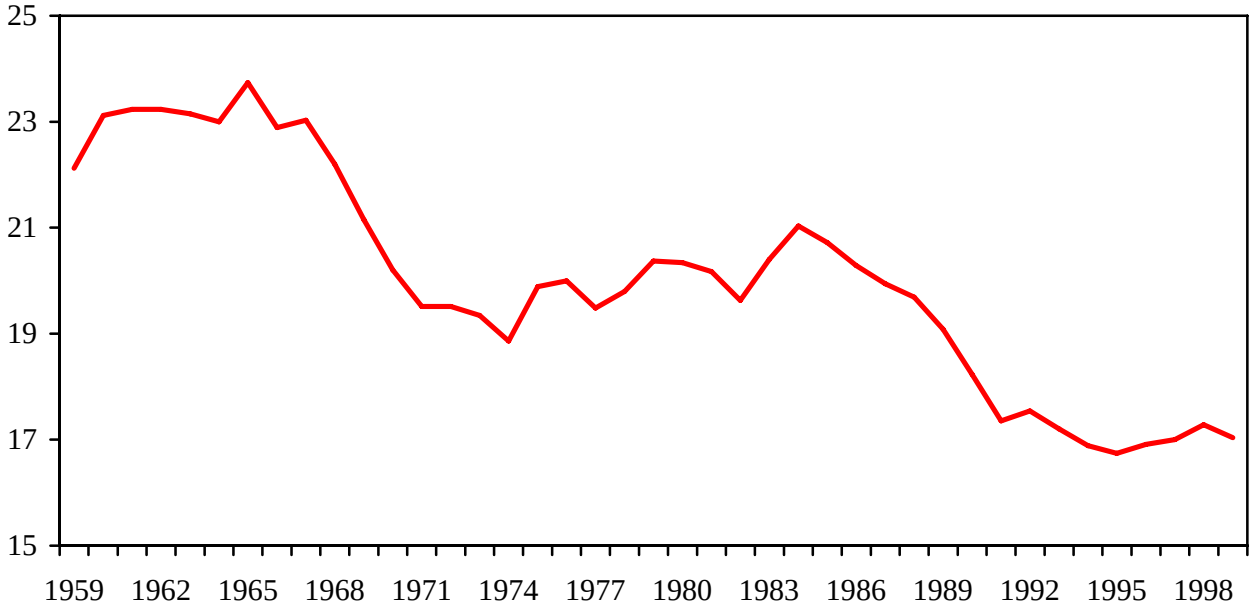

Figure 3: Plot of the Average Fraction of Non-Insiders Over the Years 1959-1999

Tables 1 and 3 describe the sample firms. From 1982-1999 all sample firms are BHCs. Prior to 1982, the sample firms consist of a mixture of BHCs and banks. We determine the predecessor banks to the BHCs in our primary data set from Moody's Bank and Finance Manuals. The figure shows the ratio of non-insiders to board size from 1959 to 1999. A non-insider is defined to be any director who is not currently an officer of the banking firm's headquarters. By headquarters we mean the top layer of the organizational hierarchy of the banking firm. Data prior to 1986 is from Moody's Bank and Finance Manuals. Data post-1986 is from bank proxy statements. The average is taken over the number of institutions in a given year. During 1959-1965 there were 34 institutions; during 1966-1996 there were 35 institutions. In 1997, 1998 and 1999, there were 34, 33 and 32 institutions, respectively. The number of non-insiders may not necessarily be comparable across banks and BHCs, since it is not always possible to identify officers of the BHC whose primary position is with a subsidiary of the BHC from Moody's Bank and Finance Manuals. In contrast, it may be easier to identify all officers of a bank who sit on the board of the bank. Thus, banks may appear to have more insiders than BHCs. In 1959, 3% of our banking firms were BHCs. The vertical line at year=1982 indicates the first year all sample firms were BHCs. The average is taken over the number of institutions in a given year. During 1959-1965 there were 34 institutions, during 1966-1996 there were 35 institutions. In 1997, 1998 and 1999 there were 34, 33 and 32 institutions, respectively.

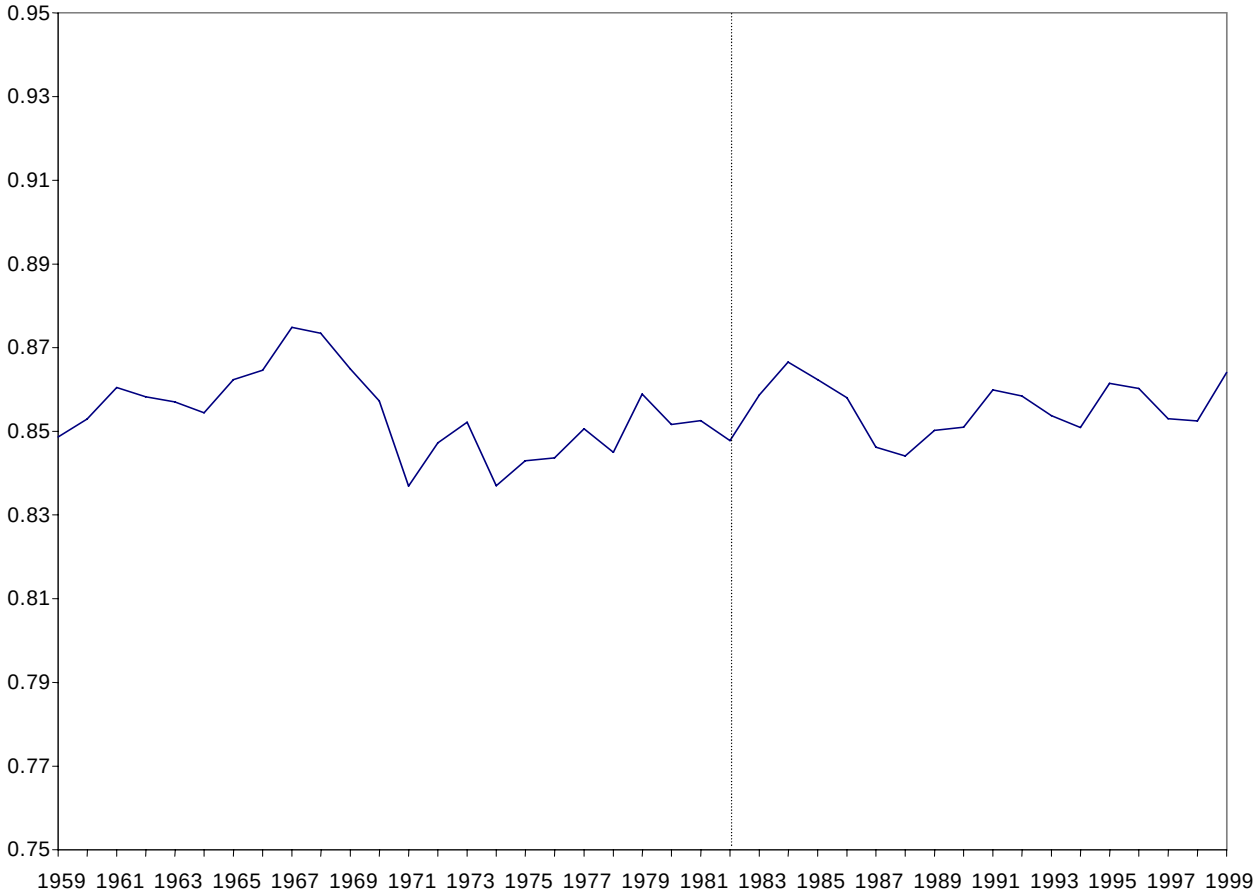

Table 1
Summary Statistics for Sample of BHCs from 1986-1999

Table 1 shows summary statistics for select financial variables, board size and board composition and control variables for our sample of BHCs from 1986-1999. This sample consists of 480 observations on BHCs. All financial variables were collected from the fourth quarter *Consolidated Financial Statements for Bank Holding Companies* (Form FR Y-9C) from the Federal Reserve Board, except monthly stock returns which were collected from CRSP. Sample data is not available for all firms for all years because of missing data (primarily due to missing proxy statements) and because of acquisitions of sample banks in 1997-1999. Our measure of Q is the ratio of the firm's market value to book value of its assets. The firm's market value is calculated as book value of assets minus book value of equity plus market value of equity. Return on assets (ROA) is calculated as the ratio of net income to book value of assets. We calculate a measure of bank capital, its primary capital ratio, which we define as the sum of the book value of common stock, perpetual preferred stock, surplus, undivided profits, capital reserves, mandatory convertible debt, loan and lease loss reserves, and minority interests in consolidated subsidiaries minus intangible assets. Volatility of stock price is measured as the standard deviation of the monthly returns on the stock price for the given year. Data on the governance characteristics, including CEO ownership, is collected from proxy statements filed with the SEC. We consider a director to be an insider if he works for the firm and affiliated if he has had any previous business relationship with the firm or family relationship with its officers. All other directors are outsiders. We classify boards as being interlocked if any inside director sits on the board of an affiliated or outside director. Meeting fees is the amount directors get paid to attend board meetings.

	Observations	Mean	Std. Deviation	Minimum	Maximum
Panel A: Financial Variables					
Tobin's Q	480	1.05	0.08	0.95	1.55
Return on assets	480	0.01	0.01	-0.03	0.02
Total assets (in millions of $)	480	40900	59200	3007	633000
Capital ratio	480	0.08	0.02	0.03	0.15
Volatility	484	0.08	0.03	0.01	0.22
Panel B: Board Size and Composition					
Board size	472	17.97	5.33	8	36
Ratio of outside directors to board size	472	0.69	0.15	0.10	0.95
Panel C: Control Variables					
No. of committees	472	4.42	1.64	1	9
Committee members / no. committees	446	1.87	0.92	0.14	5
% committees chaired by outsiders	472	62.43	30.23	0	100
Average no. of committees per chair	446	2.03	0.83	1	5.33
Meetings per year	472	8.48	3.30	2	24
Meeting fee	471	994	617	0	9000
Average other directorship for outsiders	472	1.76	0.88	0	5.29
Average other directorship for insiders	471	1.49	1.31	0	7
Dummy if board interlock exists	482	0.39	0.49	0	1
% CEO ownership	463	2.27	6.83	0	49.44
Dummy if pay directors deferred comp.	482	0.95	0.23	0	1
Dummy if pay directors deferred stock	482	0.31	0.46	0	1

Table 2
Fixed Effect Regressions of Tobin's Q on Board Structure plus Controls

Table 2 shows fixed effect regressions of Tobin's Q on the natural logarithm of board size, the proportion of outside directors and financial and governance controls using the sample of BHCs from 1986-1999. Tobin's Q=(book value of assets+market value of equity-book value of equity)/book value of assets. We consider a director to be an insider if he works for the firm and affiliated if he has had any previous business relationship with the firm or family relationship with its officers. All other directors are outsiders. Table 1 describes the sample and the control variables further. Columns vary by the regressors they include. All specifications include year dummies and firm fixed effects. If an adjustment factor is indicated for a variable, the true coefficients for that variable are the indicated coefficients divided by the adjustment factor. Robust t-statistics are in parentheses. Significance levels: (***)-1% (**)-5% (*)-10%.

	Dependent Variable: Tobin's Q			
Independent Variable	I	II	III	IV
Ln (board size)	0.018*	0.021**	0.020*	0.012
	(1.825)	(2.140)	(1.946)	(1.146)
Fraction of outside directors	0.018	-0.008	0.004	-0.006
	(0.757)	(-0.349)	(0.157)	(-0.239)
Ln (no. committees)	.	-0.039***	-0.042***	-0.033***
		(-2.927)	(-3.217)	(-2.728)
Committee members / no. committees	.	0.098	0.011	-0.001
Adjustment factor: 10		(1.228)	(1.341)	(-0.015)
% outside chairs	.	0.006	0.002	0.004
Adjustment factor: 100		(0.465)	(0.140)	(0.292)
Avg. no. committees per chair	.	-0.001	-0.001	0.008
		(-0.064)	(-0.092)	(1.175)
Ln (no. board meetings)	.	.	-0.011	-0.010
			(-1.264)	(-1.207)
Meeting fee	.	.	0.001**	0.001**
Adjustment factor: 100			(2.519)	(2.285)
Avg. other directorships for outsiders	.	.	-0.007*	-0.007*
			(-1.832)	(-1.662)
Avg. other directorships for insiders	.	.	-0.007***	-0.006***
			(-3.483)	(-3.092)
Dummy if board interlock exists	.	.	.	-0.009**
				(-2.103)
% CEO ownership	.	.	.	-0.007***
				(-3.437)
Dummy if pay directors deferred comp.	.	.	.	0.001
				(0.113)
Dummy if pay directors deferred stock	.	.	.	-0.013**
				(-2.228)
Ln (assets)	0.001	-8.842	-8.069	-10.667
Adjustment factor: 1000	(0.000)	(-1.217)	(-1.178)	(-1.542)
Capital ratio	0.517**	0.728**	0.754**	0.936***
	(1.983)	(2.309)	(2.402)	(2.879)
Volatility	-0.148	-0.165**	-0.157**	-0.214***
	(-1.561)	(-2.039)	(-1.964)	(-2.633)
Constant	0.931***	1.101***	1.128***	1.192***
	(5.800)	(8.520)	(9.227)	(9.496)
Observations	472	446	444	436
R^2	0.767	0.780	0.791	0.803
F-Statistic	43.80	41.21	46.00	37.48

Table 3
Summary Statistics for Board Additions Following Mergers and Acquisitions

Table 3 shows summary statistics for data on additions to the board following mergers and acquisitions for our sample firms during the period 1986-1999. Directors who were added to the board following an M&A transaction are identified from proxy statements. Number of M&A with additions is the number of M&A transactions which involved additions to the board for each firm during 1986-1999. Number of M&A directors in a given year is the sum of all directors on the board in that year who joined the board as the result of an M&A transaction. Ratio of M&A directors to board size is the fraction of directors who joined the board as the result of an M&A transaction.

	Observations	Mean	Std. Deviation	Minimum	Maximum
Panel A: Transaction Data					
Number of M&A with additions	35	2.03	1.79	0	6
Number of directors added in M&A transaction	71	3.61	3.03	1	14
Fraction of acquirer's board added in M&A transaction	70	0.17	0.14	0.03	0.56
Panel B: Board Composition					
Number of M&A directors	482	2.52	3.58	0	16
Number of non M&A directors	472	15.45	5.09	4	36
Ratio of M&A directors to board size	472	0.13	0.18	0	0.68

Table 4
Fixed Effect Regressions of Tobin's Q on M&A Board Additions plus Controls

Table 4 replicates the fixed effect Tobin's Q regressions in columns I and III of Table 2 after including controls for M&A board additions. Tobin's Q=(book value of assets+market value of equity-book value of equity)/book value of assets. Addition to Board following M&A is a dummy which is equal to 1 if an M&A transaction occurred in a given year in which directors from the target were added to the BHC board. Potential M&A additions is a dummy which is equal to 1if 3 or more directors were added to the board in a given year, but the proxy did not indicate whether this was due to an M&A transaction. Ln (Number of non M&A directors) is the natural logarithm of Number of non M&A directors. Tables 1 and 3 describe the sample and the control variables further. Columns vary by the regressors they include. All specifications include year dummies and firm fixed effects. If an adjustment factor is indicated for a variable, the true coefficients for that variable are the indicated coefficients divided by the adjustment factor. Robust t-statistics are in parentheses. Significance levels: (***)-1% (**)-5% (*)-10%.

	Dependent Variable: Tobin's Q					
Independent Variables	I	II	III	IV	V	VI
Ln (board size)	0.019*	0.018*	0.023**	0.023**	.	.
	(1.87)	(1.78)	(2.27)	(2.10)		
Addition to Board following M&A	-0.002	0.004	-0.004	0.002	.	.
	(-0.31)	(0.93)	(-0.61)	(0.59)		
Potential M&A additions	.	.	-0.014*	-0.010	.	.
			(-1.70)	(-1.48)		
Ln (Number of non M&A directors)	.	.	.	.	0.018**	0.011
					(2.30)	(1.58)
Fraction of outside directors	0.017	0.004	0.018	0.005	0.014	0.003
	(0.74)	(0.20)	(0.77)	(0.24)	(0.60)	(0.14)
Ln (no. committees)	.	-0.042***	.	-0.045***	.	-0.038***
		(-3.23)		(-3.34)		(-2.93)
Committee members / no. committees	.	0.011	.	0.011	.	0.011
		(1.36)		(1.39)		(1.33)
% outside chairs	.	1.570	.	1.200	.	1.620
Adjustment factor: 100000		(0.13)		(0.10)		(0.13)
Avg. no. committees per chair	.	-0.100	.	-0.005	.	-0.200
Adjustment factor: 100000		(-0.12)		(-0.01)		(-0.29)
Ln (no. board meetings)	.	-0.011	.	-0.012	.	-0.010
		(-1.29)		(-1.34)		(-1.21)
Meeting fee	.	1.050**	.	1.100***	.	0.9310**
Adjustment factor: 100000		(2.49)		(2.59)		(2.30)
Avg. other directorships for outsiders	.	-0.007*	.	-0.007*	.	-0.007*
		(-1.84)		(-1.76)		(-1.77)
Avg. other directorships for insiders	.	-0.007***	.	-0.007***	.	-0.007***
		(-3.49)		(-3.49)		(-3.60)
Ln (assets)	0.345	-9.000	-1.000	-9.000	4.000	-5.000
Adjustment factor: 1000	(0.04)	(-1.28)	(-0.07)	(-1.34)	(0.44)	(-0.75)
Capital ratio	0.519**	0.758**	0.523**	0.759**	0.542**	0.758**
	(1.98)	(2.41)	(2.00)	(2.42)	(2.06)	(2.40)
Volatility	-0.151	-0.151*	-0.146	-0.146*	-0.148	-0.154*
	(-1.60)	(-1.88)	(-1.51)	(-1.77)	(-1.56)	(-1.90)
Constant	1.016***	1.143***	1.019***	1.137***	0.956***	1.104***
	(5.83)	(9.29)	(5.84)	(9.26)	(5.22)	(8.59)
Observations	472	444	472	444	472	444
R^2	0.7669	0.7917	0.7687	0.7929	0.7678	0.7905
F-statistic	41.87	44.48	40.02	42.50	43.18	45.42

Table 5
Summary Statistics for Banking Firms 1959-1985

Table 5 shows summary statistics for select financial variables, board size and composition of the predecessors of the BHCs in our 1986-1999 data set over the period of 1959-1985. From 1982-1999, all sample firms are BHCs. Prior to 1982, the sample firms consist of a mixture of BHCs and banks. We determine the predecessor banks to the BHCs in our primary data set from Moody's Bank and Finance Manuals. Balance sheet data for BHCs was collected from the fourth quarter *Consolidated Financial Statements for Bank Holding Companies* (Form FR Y-9C) from the Federal Reserve Board. Balance sheet data for banks was collected from *Reports of Condition and Income (Call Reports)*. Monthly stock returns are from CRSP. Since our sample firms were not listed on major exchanges for all years, there is missing stock return data for those years. Prior to 1965 no firm was listed on a major exchange, by 1972 only 9 firms were listed on major exchanges and by 1975 all firms were listed on major exchanges. Our measure of Q is the ratio of the firm's market value to book value of its assets. Our proxy for Tobin's Q is the book value of assets minus the book value of equity plus the market value of equity. Return on assets (ROA) is calculated as the ratio of net income to book value of assets. Capital/assets=Book value equity/Book value assets. Volatility of stock price is measured as the standard deviation of the monthly returns on the stock price for the given year. Data on board characteristics is from Moody's Bank and Finance Manuals. A non-insider is defined to be any director who is not currently an officer of the banking firm's headquarters.

	Observations	Mean	Std. Deviation	Minimum	Maximum
Panel A: Financial Variables					
Tobin's Q	473	1.00	0.03	0.94	1.14
Return on assets	913	0.01	0.00	0.00	0.09
Total assets (in millions of $)	931	5239	10700	54	87700
Capital/assets	865	0.07	0.02	0.03	0.14
Volatility	486	0.07	0.03	0.02	0.18
Panel B: Board Size and Composition					
Board size	937	21.10	5.97	5	45
Ratio of non-inside directors to board size	937	0.85	0.07	0.40	0.98

Table 6
Comparison of Fixed Effect Regressions of Tobin's Q on Board Structure for 1959-1999 to Pre-86

Table 6 compares fixed effect regressions of Tobin's Q on the natural logarithm of board size, the proportion of non-inside directors and financial controls using the full sample of data from 1959-1999 to the same regressions restricted to data prior to 1986 (columns III and IV). Since our sample firms were not listed on major exchanges for all years, there is missing stock return data for those years. Prior to 1965 no firm was listed on a major exchange, by 1972 only 9 firms were listed on major exchanges and by 1975 all firms were listed on major exchanges. Q=(book value of assets+market value of equity-book value of equity)/book value of assets. Data on board size and composition prior to 1986 is from Moody's Bank and Finance Manuals. Data on board size and composition post-1986 is from bank proxy statements. A non-insider is defined to be any director who is not currently an officer of the banking firm's headquarters. Tables 1 and 5 describe the sample and the control variables further. All specifications include year dummies for all years beginning in 1973 and firm fixed effects. If an adjustment factor is indicated for a variable, the true coefficients for that variable are the indicated coefficients divided by the adjustment factor. Robust t-statistics are in parentheses. Significance levels: (***)-1% (**)-5% (*)-10%.

	Dependent Variable: Tobin's Q			
Independent Variable	I	II	III	IV
Ln (board size)	0.010**	0.010*	0.016**	0.016**
	(2.036)	(1.800)	(2.521)	(2.280)
Fraction of non-insiders	.	0.007	.	-0.005
		(0.343)		(-0.270)
Ln (assets)	20.499	21.250	1.517	-0.002
Adjustment factor: 10000	(0.485)	(0.501)	(0.028)	(0.000)
Volatility	-0.043	-0.004	0.040	0.041
	(-0.691)	(-0.684)	(1.090)	(1.108)
Capital /assets	0.067	0.066	-0.265*	-0.258
	(0.471)	(0.465)	(-1.713)	(-1.617)
Constant	0.969***	0.965***	0.994***	0.998***
	(14.950)	(14.343)	(12.730)	(12.310)
	Major exchange sub sample			
	Full Sample	*Full Sample*	*Pre-86 data*	*Pre-86 data*
Observations	931	930	459	459
R^2	0.729	0.729	0.585	0.589
F-Statistic	44.36	43.40	14.71	14.75

Table 7
Summary Statistics for Tier 1 Organizational Structure for BHCs 1959-1999

Table 7 shows summary statistics of Tier 1 organizational structure for all firm-years in which our sample firms are BHCs over the 1959-1999 period. We define the Tier 1 to be the first level in the organizational hierarchy below the top level. Organizational structure data is from the Federal Reserve's National Income Center (NIC). Asset data for commercial bank subsidiaries is from *Reports of Condition and Income (Call Reports).* We use the first year that NIC indicates that our sample firms own or control a commercial banking or BHC subsidiary to identify the year the sample firm became a BHC. From 1969 to 1970, the number of BHCs in our sample increases from 7 to 20 out of 35. From 1982-1999, all sample firms are BHCs. We define a bank according to the Federal Reserve's definition to be a commercial bank or non-deposit trust company. Total subsidiaries include banks and BHC subsidiaries. Relative size of the Lead bank=ratio of consolidated assets of the largest commercial banking subsidiary to total Tier 1 consolidated commercial bank assets. We were unable to obtain assets for all subsidiary banks, thus missing values for assets are excluded from the calculation of the relative size of the lead bank. # U.S. states of Tier 1 subsidiaries=# states that domestic subsidiary headquarters are located in. Average # U.S. subsidiaries/State=average over all states that domestic subsidiaries are located in of the # Tier 1 subsidiaries in those states.

	Observations	Mean	Std. Deviation	Minimum	Maximum
Panel A: Full Sample 1959-1999					
# Tier 1 subsidiaries	1015	15.275	11.625	1	75
# Tier 1 foreign bank subsidiaries	1015	0.035	0.190	0	2
# Tier 1 foreign non-banking subsidiaries	1015	0.488	1.784	0	18
# U.S. states of Tier 1 subsidiaries	1015	3.373	2.666	1	18
Average # U.S. subsidiaries/State	1015	5.620	5.408	1	41
Relative size of the Lead bank	974	0.845	0.210	0.181	1
Panel B: Sub Sample 1959-1985					
# Tier 1 subsidiaries	537	12.644	9.198	1	57
# Tier 1 foreign bank subsidiaries	537	0.028	0.176	0	2
# Tier 1 foreign non-banking subsidiaries	537	0.089	0.355	0	3
# U.S. states of Tier 1 subsidiaries	537	2.311	1.591	1	11
Average # U.S. subsidiaries/State	537	6.803	6.392	1	41
Relative size of the Lead bank	519	0.844	0.207	0.201	1
Panel C: Sub Sample 1986-1999					
# Tier 1 subsidiaries	478	18.230	13.253	1	75
# Tier 1 foreign bank subsidiaries	478	0.044	0.205	0	1
# Tier 1 foreign non-banking subsidiaries	478	0.935	2.499	0	18
# U.S. states of Tier 1 subsidiaries	478	4.567	3.094	1	18
Average # U.S. subsidiaries/State	478	4.291	3.594	1	34
Relative size of the Lead bank	455	0.846	0.213	0.181	1

Table 8
OLS Regressions of Board Size on Bank Holding Company Dummy, Assets and Past Return on Assets for Banking Firms 1959-1999

Table 8 shows OLS regressions of the natural logarithm of board size on the BHC dummy, the natural logarithm of assets and lagged ROA using the sample of all banking firms from 1959-1999. Tables 1, 5 and 7 describe the sample and the independent variables further. We use the first year that NIC indicates that our sample firms own or control a commercial banking or BHC subsidiary to identify the year the sample firm became a BHC. From 1969 to 1970, the number of BHCs in our sample increases from 7 to 20 out of 35. From 1982-1999, all sample firms are BHCs. Columns vary by the regressors they include. The regression in column III includes firm fixed effects. All specifications include year dummies. If an adjustment factor is indicated for a variable, the true coefficients for that variable are the indicated coefficients divided by the adjustment factor. Robust t-statistics are in parentheses. Significance levels: (***)-1% (**)-5% (*)-10%.

	Dependent Variable: Ln (board size)		
Independent Variable	I	II	III
BHC dummy	-0.144***	-0.183***	-0.148***
	(-3.659)	(-4.730)	(-4.646)
Ln (assets)	0.111***	0.107***	0.166***
	(14.91)	(13.64)	(9.476)
ROA_t	.	1.054	0.958
		(0.348)	(0.527)
ROA_{t-1}	.	0.219	-0.783
		(0.077)	(-0.555)
ROA_{t-2}	.	-0.332	-1.193
		(-0.124)	(-0.877)
Constant	1.610***	1.692***	0.034
	(14.97)	(14.05)	(0.110)
Observations	1402	1304	1304
Includes Firm Fixed Effects?	No	No	Yes
R^2	0.215	0.217	0.582
F-Statistic	11.12	10.25	9.29

Table 9
OLS Regressions of Board Size on Tier 1 Subsidiary Structure for BHCs during 1959-1999

Table 9 presents OLS regressions of the natural logarithm of board size on Tier 1 subsidiary structure and controls. Tables 1, 5 and 7 describe the sample and the independent variables further. We define Tier 1 to be the first level in the organizational hierarchy below the top level. Columns vary by the regressors they include. All specifications include year dummies. If an adjustment factor is indicated for a variable, the true coefficients for that variable are the indicated coefficients divided by the adjustment factor. Robust t-statistics are in parentheses. Significance levels: (***)-1% (**)-5% (*)-10%.

	Dependent Variable: Ln (board size)		
Independent Variable	I	II	III
# Tier 1 subsidiaries	-0.043*	-0.021	-0.035
Adjustment Factor: 10	(-2.120)	(-0.922)	(-1.414)
# Tier 1 foreign	.	-0.055*	-0.056*
banking subsidiaries		(-1.897)	(-1.954)
# Tier 1 foreign non-	.	-0.018***	-0.016***
banking subsidiaries		(-3.950)	(-3.386)
# U.S. states of Tier 1	0.026***	0.020**	0.023***
subsidiaries	(3.421)	(2.492)	(2.700)
Average # U.S.	-0.453	-0.677*	-0.528
subsidiaries/State	(-1.285)	(-1.823)	(-1.357)
Adjustment Factor: 100			
Relative size of the	-0.198***	-0.170***	-0.179***
Lead bank	(-3.530)	(-2.997)	(-3.057)
Ln (assets)	0.121***	0.126***	0.129***
	(9.383)	(9.984)	(9.790)
Capital/assets	2.592***	2.301***	2.595***
	(3.514)	(3.068)	(3.295)
Volatility	.	.	0.385
			(0.800)
Constant	1.296***	1.215***	1.073***
	(5.875)	(5.540)	(4.631)
Observations	916	916	866
R^2	0.239	0.248	0.241
F-Statistic	23.920	24.080	23.730

Table 10
Fixed Effect Regressions of Tobin's Q on Board Structure, Organizational Structure and Controls for BHCs 1959-1999

Table 10 presents fixed effect regressions of the Tobin's Q on the natural logarithm of board size, board composition, Tier 1 subsidiary structure and other control variables. Column IV includes the variable Addition to Board following M&A and, as a result, is restricted to the time period 1986-1999. Tables 1, 3, 5 and 7 describe the sample and the independent variables further. Tobin's Q=(book value of assets+market value of equity-book value of equity)/book value of assets. A non-insider is defined to be any director who is not currently an officer of the banking firm headquarters. Addition to Board following M&A is a dummy which is equal to 1 if an M&A transaction occurred in a given year in which directors from the target were added to the BHC board. All specifications include firm fixed effects. All specifications include year dummies for all years from 1973-1999, due to limited observations on publicly traded BHCs prior to 1973. If an adjustment factor is indicated for a variable, the true coefficients for that variable are the indicated coefficients divided by the adjustment factor. Robust t-statistics are in parentheses. Significance levels: (***)-1% (**)-5% (*)-10%.

	Dependent Variable: Tobins' Q			
Independent Variable	I	II	III	IV
Ln (board size)	0.012*	0.008	0.009	0.010
	(1.893)	(1.416)	(1.501)	(0.85)
Fraction of non-insiders	0.003	-0.002	0.010	0.053
	(0.179)	(-0.082)	(0.499)	(1.26)
# Tier 1 subsidiaries	.	-0.009**	-0.011***	-0.020***
Adjustment Factor: 10		(-2.239)	(-3.118)	(-3.89)
# Tier 1 foreign banking subs.	.	.	0.015**	0.015
			(2.034)	(1.29)
# Tier 1 foreign non-banking subs.	.	.	0.002	0.006**
			(0.920)	(2.36)
# U.S. states of Tier 1 subs.	.	0.003**	0.003**	0.006***
		(1.739)	(2.025)	(2.93)
Average # U.S. subs./State	.	0.007*	0.008**	0.010
Adjustment Factor: 10		(1.719)	(2.027)	(1.17)
Relative size of the Lead bank	.	-0.024*	-0.028**	-0.039**
		(-1.773)	(-2.083)	(-2.13)
Addition to Board following M&A	.	.	.	0.001
				(0.13)
Ln (assets)	0.001	0.001	0.001	-0.004
	(0.308)	(0.223)	(0.186)	(-0.31)
Capital/assets	0.033	0.010	-0.012	0.427
	(0.211)	(0.059)	(-0.069)	(1.64)
Volatility	-0.030	-0.009	-0.019	-0.123
	(-0.456)	(-0.134)	(-0.283)	(-1.32)
Constant	0.972***	1.002***	1.003***	1.136***
	(13.603)	(12.298)	(12.196)	(4.62)
Observations	890	864	864	447
R^2	0.732	0.730	0.733	0.777
F-Statistic	41.530	38.900	37.180	29.230

Table 11
Fixed Effect Regressions of ROA on Board Structure, Organizational Structure and Controls for BHCs 1959-1999

Table 11 presents fixed effect regressions of ROA on the natural logarithm of board size, board composition, Tier 1 subsidiary structure and controls. Columns III and V also include the variable Addition to Board following M&A and, as a result, are restricted to the time period 1986-1999. Tables 1, 3, 5 and 7 describe the sample and the independent variables further. Tobin's Q=(book value of assets+market value of equity-book value of equity)/book value of assets. ROA=net income/book value assets. A non-insider is defined to be any director who is not currently an officer of the banking firm headquarters. Addition to Board following M&A is a dummy which is equal to 1 if an M&A transaction occurred in a given year in which directors from the target were added to the BHC board. All specifications include year dummies and firm fixed effects. If an adjustment factor is indicated for a variable, the true coefficients for that variable are the indicated coefficients divided by the adjustment factor. Robust t-statistics are in parentheses. Significance levels: (***)-1% (**)-5% (*)-10%.

	Dependent Variable: ROA				
Independent Variable	I	II	III	IV	V
Ln (board size)	-0.050	-0.010	-0.001	0.021	0.001
Adjustment Factor: 100	(-1.285)	(-0.245)	(-0.75)	(0.327)	(0.57)
Fraction of non-insiders	.	-0.005**	0.002	-0.005**	-0.003
		(-1.982)	(0.95)	(-2.102)	(-0.63)
Addition to Board following M&A	.	.	0.001***	.	0.001
			(3.03)		(1.41)
# Tier 1 subsidiaries	.	.	.	-0.005**	-0.077**
Adjustment Factor: 100				(-2.239)	(-2.17)
# Tier 1 foreign banking subs.	.	.	.	0.006	0.010
Adjustment Factor: 10				(1.029)	(0.59)
# Tier 1 foreign non-banking subs.	.	.	.	0.001	0.004**
Adjustment Factor: 10				(0.984)	(2.40)
# U.S. states of Tier 1 subs.	.	.	.	0.007	0.012
Adjustment Factor: 100				(0.662)	(0.72)
Average # U.S. subs./State	.	.	.	0.007	0.016
Adjustment Factor: 1000				(0.206)	(0.17)
Relative size of the Lead bank	.	.	.	0.001	0.001
				(0.890)	(1.05)
Ln (assets)	0.003	0.003	-0.001	0.005	-0.010
Adjustment Factor: 10	(1.322)	(1.302)	(-0.37)	(1.032)	(-0.66)
Capital/assets	0.125***	0.125***	0.038*	0.170***	0.203***
	(9.483)	(9.427)	(1.86)	(5.649)	(3.82)
Volatility	.	.	-0.087***	-0.041***	-0.068***
			(-6.19)	(-5.015)	(-4.99)
Constant	-0.006*	-0.004	0.020***	-0.004	0.018
	(-1.657)	(-0.981)	(3.34)	(-0.491)	(0.77)
Observations	1336	1335	472	865	447
R^2	0.464	0.466	0.3499	0.539	0.5623
F-Statistic	12.87	12.98	8.17	13.790	9.36