STRICTER RULES, LOOSER GOVERNANCE: REGULATORY INTENSITY, BOARD MONITORING AND THEIR JOINT PERFORMANCE EFFECTS IN COMMERCIAL BANKING

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November 11, 2005

Key words: Governance, Boards of Directors, Regulation, Banking

[*] Both authors contributed equally to the article. The authors would like to thank Phil Bromiley, Mason Carpenter, Scott Johnson, Nandini Rajagopalan, and the participants at the University of Texas, Austin Governance Conference for their helpful comments and suggestions.

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Abstract

The interaction of governance and regulation, as well as their joint impact on performance is poorly investigated. Boards of directors, as a critical governance mechanism, may have less influence in heavily regulated industries than in less intensely regulated industries. We examine this question with a sample of 170 newly chartered banks. These banks were subject to one of two different regulatory regimes, reflecting different levels of stringency. We find that board monitoring ability and the regulatory environment are partial substitutes, and jointly impact firm performance.

Recent corporate scandals have reminded us of the importance of a firm's board of directors to the shareholders. Current regulatory and legal changes mandate, for example, that a board be composed predominantly of outsiders. This is because outsiders are presumed to be independent of management and therefore better monitors of management than insiders, and so should better represent the interests of shareholders. These proposed legal changes apply to all public US firms, regardless of industry or other contingent factors.

However, the board of directors may *not* need to play as strong a monitoring role in heavily regulated industries as it might in loosely regulated or unregulated industries. In regulated industries, owners may leave most of the monitoring function to the regulatory agencies. These agencies may, in essence, subsidize the 'monitoring and disciplining of the management of regulated firms' (Demsetz and Lehn 1985 p.1161). For example, European telecommunications firms have strengthened their boards as government control and regulation have declined (Goldstein 2000). This suggests that board strength was less important for monitoring and oversight in a stronger regulatory regime.

This paper examines the need for board monitoring in regulated industries. We hypothesize that board monitoring is less necessary in highly regulated environments than in less regulated environments. This hypothesis sets up a test of the substitution between board monitoring and the regulatory environment. We further hypothesize that there are performance differences between firms with 'fit', in other words those firms that do engage in substitution, and firms with 'misfit', when firms do not engage in this substitution, to the extent that misfit firms suffer poorer performance. We test these hypotheses in the context of the banking industry. There are several regulatory agencies within the banking industry that vary in the activities they regulate and in their stringency, which we use as a proxy for

different regulatory environments. By restricting ourselves to one industry, we control for a number of factors that might impact either need for governance or performance. Because there is variance in the regulatory environment of banks, we can test the substitution between regulation and boards, and their joint impact on performance. We use a sample of 170 new banks in two different regulatory regimes to test our hypotheses. We find that board monitoring ability and the regulatory environment are partial substitutes, and jointly impact firm performance.

We contribute to the research on governance by adding to our understanding of the monitoring role of boards in regulated industries, and the joint impact of regulation and board monitoring ability on firm performance in a regulated industry. This contribution deepens our understanding of the role of boards in value creation and prevention of value loss in different industry contexts.

Board Monitoring, Regulation, and Governance

Managers have daily contact with the firm and thus have more direct influence over the firm than shareholders do, who can only indirectly influence the firm. Managers may have incentives to take action to benefit themselves as opposed to the shareholders, and can do this both in appropriation of perquisites and in reduction of effort (Fama and Jensen 1983, Jensen and Meckling 1976). The separation of ownership by shareholders from control by managers thus creates the agency problem.

Mechanisms exist to control the agency problem. For example, one mechanism often studied to control the agency problem is the board of directors. Boards have the responsibility to hire, fire and compensate the CEO, as well as to serve as the ultimate monitor (Fama and

Jensen 1983). A board that fulfills its role as monitor poorly may allow managers to appropriate perquisites more readily than a board that serves its monitoring role well (Daily and Johnson 1997, Dalton Daily Ellstrand and Johnson 1998, Zahra and Pearce 1989). However, in a regulated environment, perquisite appropriation is less likely, even with a poor board. Regulation restricts managerial action and the scope of choices they make (Demsetz and Lehn 1985, Smith and Grimm 1987). Thus, a regulatory agency may substitute for monitoring by the board (Holderness 2003). The following section discusses board monitoring as a governance mechanism, the subsequent section discusses the phenomenon of substitution of governance mechanisms and the final section discusses regulation and governance.

Board Monitoring

Governance mechanisms that can limit the consumption of non-pecuniary benefits are, for the most part, monitoring mechanisms. With no monitoring mechanisms in place, the CEO can easily divert all firm resources for personal gain. An important component of the overall monitoring system in a firm is the board of directors (Fama and Jensen, 1983). The monitoring provided by the board of directors is especially important because the board is the main interface between the CEO and investors. Higher levels of monitoring limit the ability of CEOs to self-deal. Agency theory is designed to identify governance mechanisms that 'limit the agent's self-serving behavior' (Eisenhardt, 1989: 59). Jensen and Meckling (1976) label all actions that benefit the CEO while reducing the value of the firm the 'consumption of non-pecuniary benefits', equivalent to 'self-serving behavior'. These benefits may take many

different forms – shirking, paying higher than market wages to employees who are also friends or buying a corporate jet, for example.

In research on boards of directors based on the agency theory perspective, an implicit assumption is that the more independent the board, the higher the level of monitoring. A more independent board, with greater monitoring ability results in stronger governance for the firm. A board with greater independence is more likely to fulfill its role of representing stockholders and monitoring management than a less-independent board.

Monitoring and Substitution

Agency theorists have a very broad view of the overall governance structure of the firm. Jensen and Meckling (1976) for example discuss (among other things) industry dynamics, the ability to find new managers and ownership structure. Yet, much of the research in governance focuses on one mechanism at a time—just boards of directors or just the structure of ownership, for example.

However, board independence is one of a basket of mechanisms that can monitor or control the CEO. Several studies have examined the components of this basket of monitoring mechanisms as substitutes for each other (Agrawal and Knoeber 1996, Bathala and Rao 1995, Brickley and James 1987, Rediker and Seth 1995, Zajac and Westphal 1994). Brickley and James (1987), for example, asked if board composition was related to the outside market for corporate takeovers, an external monitoring mechanism. Using a sample of banks from 1979, these authors found that internal monitoring mechanisms (e.g., board outsiders and concentrated ownership structures) were influential mechanisms for control, but were not

perfect substitutes for the market for takeovers, indicating that different governance mechanisms may have different levels of substitution.

Bathala and Rao (1995) examine what agency theoretic variables are associated with outsider representation on the board. They use only one year of data and find that insider ownership, debt, CEO tenure and firm size are negatively associated with outsiders and that institutional ownership is positively associated with outsiders. Rediker and Seth (1995) also adopt an agency theoretic lens. They find that insider ownership and block ownership are negatively associated with outsider representation in a one-year sample of 81 bank holding companies, implying substitution between outsider representation and both insider and block ownership. Agrawal and Knoeber (1996) also conducted a study that examined several of the mechanisms that mitigate the agency problem between managers and shareholders. The mechanisms they focused on are shareholdings of insiders, institutions and blockholders, representation of outside directors, debt policy, the managerial labor market and the market for corporate control. They suggest that most governance mechanisms work in combination. Collectively, these studies suggest that governance mechanisms all work in conjunction with each other, at different levels depending on the firm's circumstances, to mitigate the agency problem; in essence, to monitor the CEO. The impact of these mechanisms may vary depending on their internal consistency and the environmental conditions.

These studies imply that there are degrees of fit and misfit within governance mechanisms themselves as well as between governance mechanisms and the environment. This contingent view sees 'the structure and process of an organization must fit its context…if it is to survive or be effective' (Drazin and Van de Van, 1985: 515). Further, underlying the notion of fit is that 'decision makers rationally strive to align their organizations with

situational conditions, and that their organizations benefit to the degree alignment is achieved' (Hambrick and Canella, 2004: 963). In the governance context, managers align their firm governance structures—the ones they have choices about—to the environment and governance structures they do not have choices about, and better alignment, or fit, results in better firm performance.

There are several studies that examine governance structure and the concept of fit explicitly. Hambrick and Canella (2004), for example, examine the conditions under which CEOs choose to have COOs and when they do not, and find that CEOs are likely to have COOs when the CEO is also the Chair of the board, the firm is larger, and the CEO lacks firm-specific information. They also find that, based on the contingency of the CEO's limitations requiring a COO, that there is no performance benefit to this form of fit. Yin and Zajac (2004) examine different governance structures: company-owned stores and franchise-owned stores. They find that when governance structure fits the strategy, stores perform better. Zajac and Westphal (1994) examine tradeoffs between various monitoring mechanisms, and introduce the notion of diminishing returns to increased levels of monitoring, implying a misfit in the case of simply increasing monitoring across the board as opposed to fitting the monitoring structure to the firm structure. These authors suggest that not only is there substitution, but that there is an optimal level of monitoring for each organization and that the appropriate level of monitoring may vary from one organization to the next. This implies that lower levels of monitoring in relation to one mechanism, while another mechanism is operating at a higher level, may in some cases be beneficial to the firm, or provide 'fit' between monitoring need and monitoring structure. Related to this is that adding monitoring mechanisms may be redundant or unnecessarily costly. So, while there is

substitution between governance mechanisms, simply adding more monitoring mechanisms in an effort to reduce the agency problem can be both costly and redundant.

In sum, there are a basket of mechanisms that can be used to monitor the CEO. Firms vary in the level of monitoring of each mechanism. Firms with higher levels of monitoring in some of these mechanisms would see the benefits of board independence decrease because the other governance mechanisms have already restricted the ability of the CEO to pursue opportunistic activities. If the additional monitoring capability created by an additional outsider board member is costly, but also redundant due to the presence of substitute monitoring mechanisms, either this board member will not be added, or, if they are added, firm performance should suffer.

Regulation as a Monitoring Mechanism

Regulatory environments exist to assure firm survival and appropriate firm performance. In many ways, the function of regulatory agencies can mimic the monitoring role of the board of directors in agency theory. Yet, the regulatory environment exists regardless of the board of directors. As a result, the board of directors may not need to play as strong a monitoring role in regulated industries as it might in non-regulated industries. In essence, the level of regulation in an industry can be viewed as an alternative monitoring mechanism (Demsetz and Lehn, 1985) and may serve as a substitute for one of the traditional roles of the board of directors as prescribed by agency theory (Kim and Prescott, 2002).

Like a monitor, regulators (and the policies that they put in place) can work to maintain acceptable levels of financial performance, reduce risky operating practices in the firm, curb overly aggressive growth and limit self-dealing transactions and potentially self-

interested relationships with other firms. In short, these are all practices that might otherwise be performed by the monitoring function of the board. In fact, Baysinger and Zardkoohi (1986) find that the shareholders of firms in highly regulated industries rely less on directors as monitors and more on the regulatory agency.

However, the regulators' objectives are not perfectly aligned with the stockholders' (Kim and Prescott 2003). For example, while the regulators' objectives are survival, 'appropriate' behavior and acceptable performance, the shareholders' objectives could arguably be 'make a lot of money'. At some point after survival, regulators may be more risk-averse that stockholders. However, regulators' and stockholders' objectives run together this far: survival and minimum appropriate return. Following that, the objectives may diverge.

From the point of view of contingency theory, different regulatory environments constitute different external environments that the firm's governance structure can align with differently. These regulatory environments differ in the extent of their monitoring, the stringency of oversight, operational flexibility allowed to management. As a result, the firm may choose their own governance structures

If there is regulatory and board overlap on monitoring activities that are already handled capably by regulators, cost inefficiencies are created and board members can be distracted from other important fiduciary duties. Baysinger and Zardkoohi (1986) refer to regulatory activities as an 'additional layer of governance' (Baysinger and Zardkoohi 1986, p. 341). Thus, a firm's regulatory environment plays a governance role too. If this is the case, then regulation is one of the components of a basket of mechanisms that can be used to assess the level of monitoring that a CEO faces.

Indeed, Booth, Cornett and Tehranian (2002) empirically examined whether regulation substitutes for internal monitoring mechanisms in controlling agency conflicts. Specifically, they investigated the tradeoffs between various monitoring mechanisms (outside directors, CEO/chair duality and inside stock ownership) across three industries with varying degrees of regulation intensity—commercial banks, public utility companies and industrial companies. They found that, in general, there appeared to be tradeoffs, or partial substitutes, in the use of various monitoring mechanisms across the industries. When the percentage of outside directors was high (a signal of effective governance), officer and director stock ownership was low (a signal of less effectiveness governance). Moreover, they found that in the more regulated banking and utilities industries, the degree of substitution was less. Booth *et al* (2002) concluded that in highly regulated industries regulators might serve as a substitute for traditional agency theory-based monitoring mechanisms. They suggest that directors in regulated industries may perform other functions besides that of monitor.

Thus, board monitoring in highly regulated environments is likely to be different from board monitoring in more loosely regulated environments. Therefore, the need for monitoring by the board may differ across regulatory regime, depending on the level of regulation intensity present. We hypothesize that, in stronger regulatory environments we will find less independent boards, and in weaker regulatory environments we will find more independent boards, or:

> *Hypothesis 1: Regulatory intensity is negatively associated with board independence.*

If regulatory intensity and board monitoring do indeed substitute for one another, then 'good governance' is some level of substitution, in essence, a balance. Firms that do not have a 'good' amount of monitoring by the board based on their regulatory intensity level may have this non-optimal governance balance impact firm performance. The contingent view sees fit and misfit of internal and external mechanisms as having performance implications. Indeed, 'contingency theorists assert that successful performance is the result of a proper alignment of endogenous design variables…with exogenous context variables' (Powell, 1992: 120). As a result, if firms do not fit the board structure with the regulatory environment, it will result in a misfit, and performance will suffer. Thus:

> *Hypothesis 2: Firms with regulatory and board independence fit perform better than firms with regulatory and board independence misfit.*

Hypothesis two argues that a misfit can have negative performance implications, however, it doesn't specify the nature of the misfit. Indeed, this misfit can occur in two ways. Where hypothesis one indicated a negative relationship between board independence and regulatory environment, then a misfit is one of two types of positive relationship between board independence and regulatory environment. The contingency framework does not specify any performance differences in types of misfits.

First, firms in a weaker regulatory regime and with a less effective board may suffer, and there may be performance implications. With weaker monitoring overall, managers may be able to act in a self-interested manner to the detriment of the firm. Firms in a weak regulatory environment, with a non-independent board, may experience managerial

opportunism and this may negatively impact firm performance. This is a 'weak-weak' misfit. Therefore, we hypothesize:

Hypothesis 2a: *Firms that have both weak regulation intensity and a weak board will perform more poorly than firms that have a fit between these mechanisms.*

Second, firms that are in a strong regulatory environment and have a strong board may have 'too much' monitoring. There are diminishing returns to increasing monitoring (Zajac and Westphal 1994). Zajac and Westphal (1994) offer two interpretations for this finding, one from the CEO's point of view and one from the board's point of view. The first is that with 'some' monitoring, the CEO is aware of the monitoring and acts appropriately, but adding more monitoring will not necessarily change the CEO's behavior, adding costs with no benefits. The second interpretation is that, where monitoring is already high, boards may not want to increase monitoring since the CEO would resist greater scrutiny and would push back against such an increase. There are other costs associated with monitoring. It may be that, if regulation is a substitute for board monitoring, that the cost of both employed maximally is excessive. For example, firm CEOs who exist in a strong regulatory environment are required to respond to the demands of the regulatory agencies as well as to the demands of a board. If the board is an independent board, this responding will be more extensive than responding to a less independent board, yet much of this interaction is duplicating regulatory requests. This is a strong-strong misfit. Therefore, we hypothesize:

Hypothesis 2b: *Firms that have both strong regulation intensity and a strong board will perform more poorly than firms that have a fit between these mechanisms.*

METHODS

Research Setting

The setting for our study is the U.S. commercial banking industry. Specifically, we focus on monitoring, regulatory and governance issues in newly chartered commercial banks—de novo banks. Although our period of study, the1990s, is regarded by many as a period of deregulation and loosening restrictions for banking activities, close observers of the banking industry note that this broad characterization is not entirely accurate. For example, recently published studies by the FDIC and others (Gail and Norton 1990, Hanc 1997) have described the period following the passage of the Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA), the 1990s, as a period of supervisory 're-regulation.'

While the regulatory environment for all banks in general tightened during much of the 1990s, this tightening was particularly acute for the population of de novo banks. One reason why de novo banks received *more* rather than less regulatory scrutiny, and were clearly targeted during this period of re-regulation in the 1990s, concerns the general financial fragility of de novo banks relative to older more established banks. New banks, like most new enterprises, are highly vulnerable to failure in their initial years. This is confirmed by banking studies (e.g., Hunter and Srinivasan 1990, DeYoung and Hasan 1998) that show that de novo bank financial performance tends to lag that of established banks.

Our focus on the banking industry in general and on new banks in particular is advantageous on several fronts. First, banking is a heavily regulated industry with three separate federal banking regulatory agencies. Second, our concentration on a single industry

rather than several industries allows us to not only empirically control for the effect of industry, but also examine how variation in regulation *within* an industry can affect regulation and governance tradeoffs. This extends prior research, which has only examined the extent to which regulatory variation *across* industries may influence governance choices. As a result, our study represents a stronger test of the 'regulation substitution' hypothesis and permits us to make more precise statements regarding substitution and tradeoffs between regulation and governance.

Finally, our emphasis on de novo (new) banks serves a dual purpose. First, a different federal bank regulatory agency oversees each of the three bank charter types for de novo banks and the regulations levied by these agencies vary in stringency and leniency over the course of the period studied (the first three years of bank operations). Second, the characteristics of the firms in our sample (small, closely held and owner-managed firms) represent a departure from the typical focal firms in governance studies (large, publicly traded and professionally managed firms). Thus, our focus on de novo banks expands our understanding of governance practices in a relatively understudied population of firms.

Sample and Data Collection

We began by selecting a stratified random sample of 600 new banks from the wider population of 1,367 new banks that were chartered in the U.S. between 1992 and 2001. These banks are not only new firms, but also largely private, closely held and owner-managed. This sample enables us to assess how the choice of a specific bank charter and regulatory environment by a founding board of directors might influence the governance structures and

practices of the firm. This is because the choice of bank charter type is linked to a specific, unique regulatory environment set by one three federal bank regulatory agencies.

The banking information was obtained from the *FDIC's Institution Directory*, a comprehensive database of all commercial banks and savings institutions insured by the FDIC that lists key demographic data (i.e., assets, age, location, etc.). Data on board and executive officer structure came from *Thomson's North American Financial Institutions Directory*. The annual *Thomson's* directory lists demographic data, financial summaries and information on bank officers and board members. Performance measures were constructed using the *FDIC's Reports of Condition and Income* ('call reports'), accounting-like reports filed by all FDIC insured banks, irrespective of ownership structure. Banks must file call reports with the FDIC each quarter.

Our usable sample included 188 bank observations. Several observations were dropped because sufficient, reliable data was unavailable from one of the three data sources (i.e., FDIC Institution Directory, Thomson's directory or FDIC call reports) needed to develop our sample. However, analysis of our final sample revealed no significant differences from the original selected sample. In fact, our sample nearly mirrors the original stratified random sample of 600 new banks with respect to the proportion of bank charter type, our primary research variable (our proxy for regulatory environment). The original sample of 600 was comprised of 64 percent nonmember state banks (FDIC banks), 25 percent national banks (OCC banks) and 11 percent member state banks (FRB Banks). Our final sample included 62 percent nonmember state banks, 27 percent national banks and 11 percent member state banks. However, for the purposes of our analysis, we were interested in banks subject to only the most and the least stringent regulatory conditions. Accordingly, we

dropped the member state banks (18 FRB banks), which lie in the middle, with respect to level of stringency, for a final sample of 170.

Measures

We develop measures for regulation intensity, board monitoring, firm performance and a set of controls to address other factors that may affect bank risk or performance. Table 1 presents our variables and how they were measured.

Regulation intensity. As we argued in the discussion of our research setting, a new bank's choice of charter defines its regulatory environment. Each of the possible banking charter choices links to a specific 'primary federal regulator' who sets the regulations by which the newly chartered bank must abide. The stringency or intensity of these regulations vary from regulator to regulator and can result in wide differences in permissible banking practices for a new bank. Guirlinger (1999) maintains that each type of charter is different and establishes a different regulatory environment under which each bank will operate and dictates what management can and cannot do in managing its bank.

Some of the more salient differences across regulations at the regulatory agencies are in the areas of bank capital requirements, bank examination frequency, profitability requirements and number of supervising regulatory bodies. However, prior research has indicated that the most acute differences in regulations are between the FDIC and the OCC, the primary federal regulator of nonmember state banks (FDIC banks) and national banks (OCC banks), respectively (DeYoung 2000, DeVaughn 2003).

The magnitude of the differences in regulatory stringency is corroborated by information taken from the policy statements of these respective agencies. For example, the

regulations for FDIC supervised de novo banks are more stringent than those for OCC supervised de novo banks: FDIC banks are required to maintain a ratio of capital to assets ratio of at least 8 percent during their first three years of operations, while similar OCC banks are only required to be "well capitalized" during the same period, standards that allow these banks to maintain a ratio of capital to assets of as low as 4 percent.

Moreover, other authors (e.g. Lovett 2001, DeYoung 1999, Rehm 1989) have also noted that OCC supervised banks have typically enjoyed more liberal bank regulations relative to banks supervised by other federal bank regulatory agencies. This view is substantiated by federal bank regulatory documents (i.e., FDIC Statement of Policy, Federal Reserve Bank Application and Supervision Standards for De Novo State Member Banks and The Comptroller's Licensing Manual) that detail differences in capital adequacy, bank examination and profitability requirements across the different bank regulatory agencies.

We use the new bank's primary federal regulator, OCC or FDIC, as a proxy for the relative stringency of the bank's regulatory environment. *OCC* is associated with a weaker regulatory environment and *FDIC* is associated with a strong regulatory environment. Each variable is scored 0, 1.

Board independence. A number of specific mechanisms can increase the monitoring capability of the board. Board monitoring ability is commonly seen as related to a board's independence from management (Fama 1980, Fama and Jensen 1983). We use two measures that proxy for board independence, all of which are well established in the governance literature. The first measure is the *board outsiders*, the number of outside directors on the

board[1]. While outsiders are not necessarily always 'independent', insiders are beholden to the CEO for their job, so are certainly less independent than outsiders. The idea that more outsiders represent greater monitoring ability comes from several studies. The use of outside directors may represent greater board vigilance, or be a signal for better quality of information (Anderson Francis and Stokes 1993, Fama 1980, Watts and Zimmerman 1986). Outsiders may focus more on financial performance measures, which is an important component of monitoring (Fama and Jensen 1983, Johnson Hoskisson and Hitt 1993), and may act on that information, as boards dominated by outsiders are more likely to dismiss CEOs following poor financial performance (Coughlin and Schmidt 1985, Warner Watts and Wruck 1988, Weisbach 1988). This measure is calculated by dividing the number of board outsiders by the total board size.

The second measure of board monitoring is *CEO/chair duality*. Separation of the CEO and Chair roles (non-duality) allows more objective assessment of the performance of the CEO and thus more effective monitoring by the board (Weidenbaum 1986). The Chair of the Board sets board agendas and monitors committee functioning. If the Chair were also the CEO (duality), it would be likely to reduce the independence of these functions. Indeed, Morck, Shleifer and Vishny (1989) and Boyd (1994) find that a CEO who is also Chair has more control over the board than the board has over the CEO-Chair. If a CEO has control over a board, this represents a constraint on the board's ability to effectively monitor the CEO. Constraints on the board's ability to monitor reduce the possibility that the board can execute its governance role (Kesner and Dalton 1985, Dobrzynski 1991, Fama and Jensen

[1] We run the models with the number of outsiders with a control for board size. We also run our models with the percent of outsiders on the board. The percent of outsiders reflects proportion of impact, but is a false continuous variable in that it represents discontinuous addition of individuals.

1983, Fizel and Louie 1990, Lorsch and MacIver 1989, Millstein 1992, Mizruchi 1983, Molz 1988, Vance 1983). Thus, CEO duality signals ineffective governance (Mallette and Fowler 1992, Morck Shleifer and Vishny 1989) and separation of the chair and CEO signals greater board monitoring ability. This variable is a binary variable that equals one when the CEO is also the chair of the board.

It should be noted that monitoring is only one of the board's jobs. A board can also be a resource for management. We do not deny this role, but with regard to this study and its focus on the monitoring role of regulators, it is the board's monitoring role that we are testing. This issue will be examined again in the discussion section.

Finally, because we test for interactive effects, we also construct interaction variables using regulation intensity and board independence by taking the cross products of the regulation intensity and board monitoring variables.

Firm performance. We use three primary measures to assess firm performance in this study: *return on assets* (*ROA*), computed as net income after taxes and extraordinary items as a percentage of average total assets; *return on equity (ROE*), computed as net income as a percentage of average equity; and *nonperforming assets*, computed as cumulative loans past 90 days due or more plus assets all assets no longer accruing interest. Both ROA and ROE are well-established banking industry metrics of 'positive' bank performance, while nonperforming assets is a customary measure of 'negative' bank performance (Berger and DeYoung 1997, Hanc 1997). These three performance measures are calculated using the average of the first three full calendar years of data after the initial charter date of each bank. This measurement choice minimizes performance differences associated with differences in bank opening dates in the initial year of operations. Three years is the time horizon selected

for this study because the first three years of operations defines a distinctive regulatory environment for each new bank (DeYoung 1999). After the initial three years of operations, variation in the regulatory environments of new banks is less divergent, as new banks mature and become subject to normal (less restrictive) regulations faced by all banks (DeYoung 1999).

Control variables. Our empirical analysis includes several control variables designed to account for factors beyond those hypothesized that may influence monitoring or performance. We include controls for *bank size* (initial number of employees at the beginning of bank operations), *age* (measured in months between the initial charter date and the first full calendar year reporting period), *initial equity* (measured as the beginning equity capital of the new bank) and *multi-branch location*, a proxy for the complexity of bank operations (scored 1 if a new bank has more than one bank branch location at start up or 0 otherwise) to control for the potential effects of firm-level differences on performance.

In addition, we also include controls to account for differences in the level of risk across bank assets. By controlling for these differences, we reduce the possibility that high levels of performance are being achieved by taking on higher levels of risk. These control variables include: *non-current asset ratio*, the ratio of non-current loans (i.e., loans past 90 days due) to bank assets, *high-risk loan ratio*, the ratio of commercial real estate and commercial and industrial loans to total loans and *equity/asset ratio*, the ratio of bank equity to bank assets, a standard metric of bank risk.

We also include controls for environmental level influences on performance. The *founding density* of commercial banks in the home state of each new bank is included to proxy the competitive conditions faced by new banks. This is measured by taking a count of

all commercial banks in the home state of each new bank in the year in which the new bank was chartered. Gross state product growth (*GSP*) (the state-level equivalent of the gross national product) is used to control for economic differences in each bank's home state. This measure represents the GSP growth rate in the home state of the new bank in the initial year of bank operations. Dummy variables representing the *year* that each bank was founded have been included to capture unmeasured differences that may be associated with specific years.

Finally, we control for *board size*. The impact of board size on performance is equivocal. Some argue that board size is associated with good governance because the board capacity for monitoring increases with its size, as larger boards can process information more effectively and have a broader skill basis (Alexander Fennell and Halpern 1993). Alternately, a larger board can become unwieldy, effectively putting the CEO in a position of greater power. In a meta-analysis of board size and firm performance, Dalton, Daily, Johnson and Ellstrand (1999) find that across 27 studies comprising 131 samples and 20,620 companies, larger boards are associated with higher firm performance. Board size is calculated using a numerical count of a bank's board members.

Table 1 about here

Analysis

To test for a 'substitution effect' we used two approaches. First, the larger sample was divided into two sub-samples—one representing low regulation intensity environment and the

other representing high regulation intensity environment—and comparison of means testing was used to assess differences on the mean scores across our two board monitoring variables (i.e., board outsiders and CEO duality) in the two sub-samples. Differences would indicate that these board level variables differ depending on their regulatory environment. Second, board monitoring and regulation interaction variables were constructed and tested in a regression context to assess the substitution impact on firm performance. Parametric and nonparametric multiple regression analyses were used to test for the effects of regulation intensity and board monitoring on 'positive' and 'negative' performance.

RESULTS

Descriptive Statistics and Correlations

Our final sample includes data on 170 FDIC regulated and OCC regulated commercial banks chartered between 1992 and 2001. Table 2 depicts the descriptive statistics and correlation matrix associated with sample. National ('OCC') banks, those subject to the lowest levels of regulation intensity, comprise approximately 30 percent of the sample. State-chartered nonmember ('FDIC') banks, subject to the highest levels of regulation intensity, represent 70 percent of the sample. Table 2 also shows that the mean performance of the banks in the sample is consistently low across multiple performance indicators (e.g., average ROA, average ROE, and nonperforming assets). For example, average ROE in our sample is 2.30%, with a standard deviation of 7.87%. These scores, which represent the first three full calendar years of bank operations, are consistent with expected performance of newly chartered banks. Most new banks do not experience profitability until sometime beyond their third year of operations (DeYoung 1999, DeYoung and Hasan 1998).

Table 2 about here

Table 3 shows summary statistics for key control, monitoring and performance variables by regulatory regime. Sub-sample A lists statistics associated with OCC banks (low regulation intensity), while sub-sample B lists statistics associated with FDIC banks (high regulation intensity). This comparative table shows differences across the two measures of board monitoring (board outsiders and CEO duality). More loosely regulated OCC banks tend to have fewer outside board members (7.02 members vs. 7.82 members) and an equal incidence of CEO duality (28 percent) as compared to more tightly regulated FDIC banks. Two-sample comparison of means testing indicates that none of the differences are statistically significant. This finding does not support hypothesis 1. However, this analytical approach does not control for the outside factors that will be considered in our regression analyses below.

Table 3 about here

Regression Results

Regressions results are shown in Tables 4, 5 and 6. We performed three sets of regression analyses using return on assets (ROA), return on equity (ROE) and nonperforming assets as separate dependent variables. ROA and ROE represent measures of 'positive' performance, while nonperforming assets represents a measure of 'negative' performance. We ran similar models including the FRB, member state banks, earlier omitted, to test for any impact these banks might have empirically, and found similar results to those presented below. We also ran our models using the proportion of board outsiders on the board, rather than the sheer number of outsiders on the board. Again, we found the results to be similar to those below.

Because profitability measures of performance such as ROA and ROE can be highly volatile in the early years of new banks (Moore and Skelton 1998), before conducting regression analyses, we examined our data to assess the presence of and understand the potential influence of outliers. We assessed the impact of these outliers both before regression analyses (through histograms and other graphing techniques) as well as after regression analyses (Cook's distance, leverage and graphs of leverage vs. squared residuals). Because customary outlier cutoff rules would have resulted in the loss of a significant portion of our sample, our findings led us to consider rank regression techniques (e.g., ordered logistic regression), which also have the property of attenuating the effect of extreme values and reducing the influence of outliers on relatively small sample sizes, but without loss of valuable data. Therefore, we transformed our ratio-scaled ROA and ROE scores to percentile scores (quartiles).

Our decision to transform the ROA and ROE scores into rank percentile scores is in fact more closely aligned with conventions used by federal bank regulators to monitor the performance of new banks. Regulators gauge the performance of a new bank by comparing its performance on a percentile basis to a set of peer institutions with similar characteristics (see FFIEC Uniform Bank Performance Report).

The results for each set of regressions are detailed below. For each dependent variable, we run four models, each building on one another in hierarchical progression. We are interested in comparing the impact of regulation, governance (board monitoring), and the interaction of the two on banks' performance to that of a model including none of these variables. By structuring the regression analysis is this manner, we can see the incremental contribution to performance of each of these models.

ROA and ROE performance. Table 4 shows the hierarchical regression results for ROA performance, and Table 5 for ROE performance. Model 1 includes just the control variables, model 2 includes the regulatory environment indicator variable, model 3 adds the board monitoring variables and model 4 adds the interaction terms. The low regulation intensity variable (*OCC*) equals 1 and the high regulation intensity variable equals 0 when the bank is in a low regulation environment, and the high regulation intensity variable (*FDIC*) equals 1 and the low regulation intensity variable equals 0 when the bank is in a high regulation environment. This means that the interaction terms only capture the impact of the board monitoring variables in the appropriate regulatory environment.

The results from the models suggest some level of substitution between regulation and board monitoring, supporting hypothesis 1. However, the results also indicate that regulation

and board monitoring may also be complements rather than substitutes, failing to support hypothesis 1. Finally, the results show that regulation and board monitoring jointly impact performance and, in general, supports only hypothesis 2b (strong regulation and strong board monitoring decreases impairs performance).

In Table 4 model 1, the ordered quartile logit model for ROA, *bank size, GSP, age non-current asset ratio, high-risk loan ratio, board size* and *startup years 1994, 1997* and *1999* are significant. In Table 5 model 1, the ordered quartile logit model for ROE, *bank size, GSP, age, non-current asset ratio, high-risk loan ratio, equity/asset ratio, board size* and *startup year 1994* are significant. Model 2 in Tables 4 and 5, shows the regression results when the regulation environment variable (*OCC*) is included. This variable is significant in both the ROA model ($p < .01$), and in the ROE model ($p < .10$). Model 3 in Tables 4 and 5 includes the two board monitoring measures (*board outsiders* and *CEO duality*). *Board outsiders* is negative and significant ($p < .05$) only in the ROA model.

Model 4, our full model, incorporates the interaction terms of the board monitoring variables with the two regulatory environment variables. In the ROA model, Table 4 model 4, the control variables *bank size, GSP, age* and *non-current assets ratio, high-risk loan ratio* and *startup year 1994* are all significant. The low regulation variable, *OCC*, is positive and significant ($p < .05$). With respect to the two pairs of board monitoring and regulatory environment interaction variables, the interaction of board outsiders with weak regulatory environment (*OCC X Board outsiders*) is negative and significant ($p < .05$) and the interaction of board outsiders with strong regulatory environment (*FDIC X Board outsiders*) is also negative and marginally significant ($p < .10$). These results indicate that greater outsider representation on boards of banks in both low regulation environments and (to a lesser

degree) in high regulation environments negatively impacts performance as measured by ROA.

In the ROE model, Table 5 model 4, the same control variables from the ROA model are significant except for *startup year 1997*. In addition, the control variables *equity/asset ratio* and *multi-branch location* are also significant. The low regulation variable, *OCC*, is positive and significant. Of the interaction variables, the interaction of board outsiders with weak regulatory environment (*OCC X Board outsiders*) is negative and significant ($p < .01$) and the interaction of *CEO duality* and strong regulatory environment (*FDIC X CEO duality*) is negative and significant ($p < .05$). These results indicate that greater outsider representation on boards of banks in low regulation environments negatively impacts performance as measured by ROE. In addition, CEO duality in banks in strong regulatory environments also impairs performance.

Table 4 about here

Table 5 about here

Nonperforming assets performance. Table 6 shows the OLS regression results when nonperforming assets, a measure of 'negative' performance, is used as the dependent variable.

Models 1-3 show the various control models and model 4 shows the full model with the interaction terms included. In the full model, the control variable *bank size* is significant as well as the control variables representing the *startup years 1992-2000*. The weak regulatory environment variable (*OCC*) is positive and significant ($p < .01$). The positive coefficient means that in a weak regulatory environment, nonperforming assets are higher, an indication of weaker performance. Of the board monitoring and regulatory environment interaction variables, the weak regulatory environment and board outsiders interaction variable (*OCC X Board outsiders*) and the weak regulatory environment and CEO duality interaction variable (*OCC X CEO duality)* are both marginally significant ($p < .10$). The negative coefficients on these variables suggest that they decrease nonperforming assets (i.e., improves performance).

Table 6 about here

Overall, with respect to our original hypotheses, the regression analyses suggest that there is a partial substitution effect between board monitoring and regulation. Our first hypothesis, which argued that stronger regulatory environments would be associated with weaker board monitoring and that weaker regulatory environments would be associated with stronger board monitoring, is generally supported, but does not always influence performance in the ways that we predicted. For example, the statistically significant results for *OCC X Board outsiders* indicate that banks in weak regulatory environments with strong board

monitoring practices (i.e., more outsiders) do impact performance. However, this impact is negative, rather than positive.

Relative to our hypotheses regarding over- and under-monitoring and performance (*H 2a* and *H2b*), we again find partial support. We find that stronger monitoring in stronger regulatory environments (i.e., *FDIC X Board outsiders*) can decrease performance (measured as ROA), but also find that weaker monitoring in a weak regulatory environment (i.e., *OCC X CEO duality*) can positively impact performance—in a reduction of non-performing assets. Finally, while we find mixed support for our predictions, the significant results across all the board monitoring and regulatory environment interaction variables (i.e., *OCC X Board outsiders, FDIC X Board outsiders, FDIC X CEO duality,* and *OCC X CEO duality*) is a clear indication that the regulatory environment strongly influences the board monitoring and firm performance relationship.

DISCUSSION

Our results shed some light on the relationship between various levels of regulation and board monitoring, and their joint impact on performance. While we do observe a partial substitution effect between regulation and monitoring, we find that this substitution generally has a negative impact on firm performance—in weak regulatory environments, greater board outsider representation (a strong governance practice) is negatively associated with firm performance when measured by ROA and ROE. However, board outsiders are associated with fewer bad loans in our nonperforming asset model (Table 6). We also find that contrary to our hypotheses, strong regulation and weak governance (*FDIC X CEO duality*) (Table 5) is

associated with poor firm performance. However, when strong regulation and strong governance are present (*FDIC X Board outsiders*), firm performance, measured as ROA, is impaired (Tables 4). These findings suggest that relationship among regulation, board monitoring and performance is likely much more complex than our original conception based on received theory. Table 7 shows a summary of the regressions results and their support, or lack thereof, for our hypotheses.

Table 7 about here

Substitution Effect

Our initial hypothesis was that we would observe a substitution effect between regulation and monitoring. This hypothesis was partially supported. We do find substitution between weak regulation and strong governance in the case of nonperforming assets performance when stronger governance is measured by board outsider representation. We also find substitution such that in stronger regulatory environments we are more likely to see CEO duality (weaker board monitoring) in the case of ROE performance.

Our hypotheses, however, assume that this substitution, as a reflection of fit, should be associated with good firm performance. Unfortunately, these combinations are predominantly associated with poor firm performance. The exception to this is that weak regulation and strong governance (board outsiders) are associated with fewer non-performing assets. To the

extent that nonperforming assets are a precursor to poor performance, this may be an important signal (Wheelock and Wilson 1995, 2000, Berger and DeYoung 1997).

The finding of partial substitution between governance and regulation supports the few studies that precede this one with regard to viewing regulatory activities as another of a basket of governance mechanisms (Baysinger and Zardkoohi 1986). However, these studies did not examine the impact of this substitution on firm performance. Our finding that substitution of governance mechanisms is generally associated with poor firm performance is of some concern. However, given our relatively short performance window (the first three full calendar years after startup) and the nature of performance in the banking industry (loan portfolios, a key driver of performance, of newly chartered banks are disproportionately comprised of 'unseasoned' loans that have not yet stood the test of time), it could be that firms in these circumstances have pursued higher quality loan portfolios at the expense of short term performance in hopes that a higher quality portfolio will yield superior longer term performance. This explanation is consistent with our finding of lower non-performing assets for firms where regulation-board monitoring substitution is present.

Too Little Monitoring and Too Much Monitoring

With respect to our hypothesis concerning the negative performance impact of too little monitoring, we find limited support. Weak regulation and weak governance (*OCC X CEO Duality* in Table 6) is associated with fewer bad loans (*positive* performance), but this relationship is only significant at ($p < .10$) and no relationship at all is noted in either our ROA or ROE models (Table 4 and Table 5). A possible explanation for this result is that, in the first three years of a bank, a clear strategic direction and clean chain of command are

important for survival. Duality might be beneficial for the company because it provides a single point for company leadership. This single leader can provide faster response to external events, possibly has greater knowledge of the firm and industry, and might have greater commitment to the organization (Andersen and Anthony, 1986; Stoeberl and Sherony, 1985). In fact, several studies have found CEO duality to be positively associated with performance (Canella and Lubatkin 1993, Mallette and Fowler 1992). Boyd (1995) finds that duality has a positive effect in some environmental conditions, specifically, those of low munificence and high complexity. Under the intense requirements in the first three years of a new bank, having one leader (CEO-Chair) as opposed to two, may improve performance.

With respect to our hypothesis concerning the negative performance impact of too much monitoring, we find support. When we measure strong governance as more board outsiders, we find that the strong regulation and strong governance interaction (*FDIC X Board outsiders*) is indeed associated with poorer firm performance in our ROA model.

Governance and Regulation

Taken together, these findings pose an interesting conundrum. For example, on one hand, strong governance (more board outsiders) in highly regulated environments can impair performance (ROA), on the other hand, weak governance (CEO duality) in weakly regulated environments can improve performance (reduce bad loans). Moreover, when there is more of a fit between governance and regulation (i.e., weak regulation and strong governance or strong regulation and weak governance), sometimes performance is enhanced—greater outsider board representation in looser regulatory environments decreases nonperforming loans. However, sometimes having this fit can negatively impact performance—when board

outsiders negatively associated with ROA and ROE in a weaker regulatory environment and CEO duality negatively associated with ROE in a stronger regulatory environment. Thus, it is apparent that regulation matters significantly, but its effect on performance depends on the measures of performance and governance used.

Limitations

Like most studies, this one also has limitations. One limitation concerns generalizability. Our study examines only a single industry. This has two implications. First, it remains to be seen whether our findings might hold in other heavily regulated industries. Second, while we do have variance in our regulatory environment, compared to a study that focused on a highly regulated industry vs. a non-regulated industry, we may not have as much variance as needed to detect our hypothesized differences. The benefit for us is that we have controlled for industry level variables that can impact governance perfectly. The cost is that our results may be understated.

Another potential limitation involves the performance time horizon of the banks under study: the first three full calendar years after startup. While this time horizon is central to the design of our study (the initial three years of bank operations delineates a distinct regulatory environment for the different types of new bank charters), it also has the potential to be limiting since it considers only the early performance of each new bank and may not be indicative of a bank's future performance. However, banking industry observers have noted that a new bank's performance during this critical performance window often foreshadows its eventual performance during more mature stages (Rosenstein 1983, Lamb 2001).

Additionally, we do not appear to have an exhaustive set of governance variables. While we do have critical board-related variables, we do not have ownership, for example. As our sample is new, mostly private, banks, this is unavoidable. However, as close industry observers note (and data taken from bank charter applications corroborate), bank boards, especially those of new banks, are typically dominated by major investors or owners of the bank. Therefore, the outsiders on the board are likely to represent a controlling interest in the bank. As a result, the impact of ownership has already been taken into account in our study implicitly. A final limitation is that boards of directors are concerned with financial performance and the stockholders, and regulatory agencies may be more focused on customer protection. To the extent that banking regulatory agencies are focused on bank profitability, which is indeed a major component of federal bank regulators' 'CAMELS' monitoring system, this is less of a problem.

Finally, we focus exclusively on the monitoring role of the board. Boards have many jobs, including advice giving and a resource dependence role (Hillman, Cannella and Paetzold, 2000; Hillman and Dalziel, 2003). However, as we are investigating boards in the context of a regulated industry, we are focusing on the monitoring task specifically. If greater regulation does substitute for board monitoring, the board then may be able to undertake its other important duties, and possibly spend more time on them.

Conclusion

We believe that our study provides several contributions to the governance literature. Our study context and sample of small, newly established privately held banking firms, which is atypical of governance studies, advances our understanding of governance in such

environments. The results of our study seem to suggest that, while regulation and governance do partially substitute for each other technically, the impact of governance and regulation on firm performance is not so straightforward. Our contribution goes beyond the understanding that regulation and governance are partial substitutes by including their joint impact on performance—both positive performance and negative performance.

We also make a contribution with regard to the importance of considering the regulatory environment in governance research. While we did not find results consistent with our predictions, which were based on current received theory, the mere fact that we found results, even within a single industry, mean that we have established that regulatory regimes matter to governance research. This represents an advance, as the bulk of prior work has only looked at the effect of regulation and governance on performance independently, rather than jointly, as we have in this study. Going forward, we suggest that governance work that takes place under different regulatory environments needs to acknowledge this.

Moreover, we also contribute to a public policy debate. Under different regulatory conditions, for example, more board outsiders are associated with good performance *AND* poor performance. Regulatory agencies and board members in these situations should revisit their goals to assure themselves that they are not generating some of the problems they hope to prevent. Policies that are based on the assumption that all industries have the same external governance influences will be flawed. Finally, we also contribute to practice, in that managers assembling boards for new firms also need to understand the nature of their regulatory environment, and what that might mean for their board representation.

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TABLE 1
Variable definitions and measurements

Variable	Definition	Measurement
Regulatory Regime		
• OCC	Weak regulatory regime	Binary, OCC=1
• FDIC	Strong regulatory regime	Binary, FDIC=1
Board Monitoring		
• Board outsiders	More outsiders, Stronger board	# outside board members (non-employee)
• CEO duality	Is CEO also chair? Weak board	CEO=Chair=1
Performance		
• ROA	Return on assets	Avg ROA over 1st 3 years, expressed as a percent
• ROE	Return on equity	Avg ROE over 1st 3 years, expressed as a percent
• Non-performing loans	Loans over 90 days overdue	Cumulative 90 day bad loans
Controls		
• Bank size		# employees at beginning of operations
• Initial equity	Beginning capital (resources) of the focal bank	Equity at founding
• Board size		# total board members
• Age		Age in months since founding
• Gross state product growth rate	Proxy economic conditions in the focal bank's home market	Growth in gross state product from the previous year in the home state of the focal bank
• Founding density	Proxy for competitive conditions in the focal bank's home market	Number of banks operating in the home state of the focal bank
• High risk loans	Risk level of the focal bank's loan portfolio	Ratio of commercial and commercial real estate loans to total loans in the focal bank's portfolio
• Equity/asset ratio	Risk measure	Ratio of bank equity to assets
• Multi-branch location	Proxy for complexity of bank operations	Binary, =1 if more than 1 branch at start up
• Non-current assets	Quality of the focal bank's loan assets	Loans past due 90 days/total bank assets
• Year		Year dummy for founding year

TABLE 2
Descriptive statistics and correlations

Variable	Obs	Mean	SD	1	2	3	4	5	6
1. OCC	170	0.29	0.46	1.00					
2. FDIC	170	0.71	0.46	-1.00**	1.00				
3. Board outsiders	169	7.59	3.38	-0.11	0.06	1.00			
4. Board size	169	9.18	3.28	-0.11	0.11	0.97**	1.00		
5. CEO duality	170	0.28	0.45	0.01	-0.01	-0.17	-0.16*	1.00	
6. Avg ROA	170	0.05	1.29	0.00	-0.00	-0.08	-0.05	0.08	1.00
7. Avg ROE	170	2.53	8.18	0.08	-0.08	-0.08	-0.06	0.07	0.88**
8. Non-performing loans	170	622.05	1517.88	0.14+	-0.14+	-0.13+	-0.10	-0.05	0.05
9. Initial equity	170	8112.22	33962	0.12	-0.12	-0.01	-0.02	-0.06	-0.54**
10. Employees (size)	170	14.99	13.49	0.13	-0.13	0.17	0.17*	-0.05	-0.08
11. Age	170	5.49	3.41	-0.24**	0.24**	-0.00	0.03	0.03	0.32**
12. Avg GSP growth	170	0.06	0.02	0.13	-0.13	-0.04	-0.06	0.05	-0.01
13. Founding density	170	308.61	221.64	0.10	-0.10	-0.16	-0.15+	-0.04	-0.06
14. High risk loans	170	0.46	0.18	0.00	-0.00	0.01	-0.01	0.14+	-0.09
15. Equity/asset ratio	170	0.11	0.06	0.04	-0.04	-0.08	-0.08	-0.03	-0.47**
16. Non-current asset ratio	170	0.01	0.01	0.15+	-0.15+	-0.20*	-0.19*	0.01	-0.12
17. Multi-branch location	170	0.22	0.42	0.12	-0.12	-0.06	-0.05	-0.11	0.03

+=p<0.10, *=p<0.05,
**=p<0.01

TABLE 2, continued:
Descriptive statistics and correlations

Variable	7	8	9	10	11	12	13	14	15	16	17
7. Avg ROE	1.00										
8. Non-performing loans	0.05	1.00									
9. Initial equity	-0.21**	-0.01	1.00								
10. Employees (size)	0.07	0.27**	0.39**	1.00							
11. Age	0.26**	0.08	-0.08	0.12	1.00						
12. Avg GSP growth	-0.00	0.01	0.03	-0.00	-0.11	1.00					
13. Founding density	-0.07	-0.06	-0.03	-0.13+	-0.15+	-0.03	1.00				
14. High risk loans	-0.20*	0.04	-0.17*	-0.15+	-0.03	-0.02	-0.02	1.00			
15. Equity/asset ratio	-0.24**	-0.10	0.69**	0.07	-0.15*	0.01	-0.10	0.01	1.00		
16. Non-current asset ratio	-0.20*	0.50**	-0.05	0.02	0.11	0.15*	0.04	0.05	-0.06	1.00	
17. Multi-branch location	0.01	0.21**	-0.02	0.35**	0.05	0.03	-0.17*	-0.07	-0.12	0.01	

+=p<0.10, *=p<0.05, **=p<0.01

TABLE 3
Low and high regulatory regime by sub sample

	OCC Banks (Low regulatory regime) Sub sample A			FDIC Banks (High regulatory regime) Sub sample B		
Variable	Obs	Mean	SD	Obs	Mean	SD
Board outsiders	50	7.02	2.98	119	7.82	3.52
Board size	50	8.62	2.83	119	9.41	3.43
CEO duality	50	0.28	0.45	120	0.28	0.45
Avg ROA	50	0.05	1.63	120	0.05	1.13
Avg ROE	50	3.60	7.59	120	2.09	8.40
Nonperforming Assets (bad loans)	50	951.46+	2388.25	120	484.79	926.73
Non-current asset ratio	50	0.01	0.02	120	0.01	0.01
Initial equity	50	14227.76	62304.15	120	5564.08	4170.52
Employees (size)	50	17.62	14.11	120	13.89	13.13
Age	50	4.24**	3.05	120	6.02	3.43
Avg GSP growth	50	0.06	0.02	120	0.06	0.02
Founding density	50	342.68	231.85	120	294.41	216.65
High risk loans	50	0.46	0.20	120	0.46	0.18
Multi-branch location	50	0.30	0.42	120	0.19	0.40
Equity/asset ratio	50	0.12	0.08	120	0.11	0.04

**significantly different at the 0.01 level
+significantly different at the 0.10 level

TABLE 4
ROA Ordered Quartile Logit Models

ROA Models	Model 1		Model 2		Model 3		Model 4	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Initial equity	-0.00	0.00	-0.00	0.00	-0.00	0.00	-0.00	0.00
Employees (size)	0.05+	0.03	0.05+	0.03	0.05+	0.02	0.05+	0.03
Avg GSP growth	21.21*	8.76	20.62*	8.63	20.17*	8.64	19.78*	8.48
Founding density	-0.00	0.00	-0.00	0.00	-0.00	0.00	-0.00	0.00
Age	0.31**	0.05	0.36**	0.06	0.36**	0.06	0.36**	0.06
Non-current asset ratio	-28.72*	11.36	-34.81**	11.8	-37.53**	11.95	-43.39**	12.47
High risk loans	-2.41**	0.92	-2.57**	0.92	-2.19*	0.94	-2.16*	0.94
Equity/Asset ratio	-3.71	4.07	-3.07	4.07	-4.62	4.15	-5.18	4.27
Multi-branch location	0.11	0.40	-0.17	0.40	-0.23	0.40	-0.21	0.41
Board size	-0.30**	0.06	-0.30**	0.06	0.09	0.20	0.09	0.21
Startup 1992	-0.56	1.35	-0.46	1.36	0.31	1.42	0.22	1.41
Startup 1993	0.68	1.04	0.79	1.04	1.31	1.09	1.31	1.08
Startup 1994	-2.93*	1.27	-3.07*	1.28	-2.78*	1.31	-2.86*	1.32
Startup 1995	-1.33	0.99	-1.30	0.98	-0.80	1.02	-0.71	1.02
Startup 1996	-0.49	0.95	-0.72	0.96	-0.16	1.00	-0.15	0.99
Startup 1997	-1.96*	0.96	-2.11*	0.97	-1.62+	1.00	-1.54	0.99
Startup 1998	-1.14	1.03	-1.18	1.03	-0.70	1.06	-0.43	1.07
Startup 1999	-1.69+	1.01	-1.84+	1.01	-1.48	1.03	-1.47	1.03
Startup 2000	-1.27	1.04	-1.33	1.03	-1.19	1.03	-1.02	1.04
OCC			0.95**	0.36	0.93**	0.36	2.22*	1.06
Board Outsiders					-0.42*	0.21		
CEO Duality					-0.34	0.36		
OCC x Board Outsiders							-0.56*	0.22
FDIC x Board Outsiders							-0.36+	0.21
OCC x CEO duality							0.08	0.63
FDIC x CEO duality							-0.56	0.44
N	169		169		169		169	
Log Likelihood	-189.90		-186.38		-184.09		-182.06	

+=p<0.10, *=p<0.05, **=p<0.01

TABLE 5
ROE Ordered Quartile Logit Models

ROE Models	Model 1		Model 2		Model 3		Model 4	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Initial equity	-0.00	0.00	-0.00	0.00	-0.00	0.00	-0.00	0.00
Employees (size)	0.11**	0.03	0.10**	0.03	0.10**	0.03	0.12**	0.03
Avg GSP growth	19.44*	8.57	18.88*	8.50	18.09*	8.57	18.28*	8.63
Founding density	-0.00	0.00	-0.00	0.00	-0.00	0.00	-0.00	0.00
Age	0.28**	0.05	0.31**	0.06	0.31**	0.06	0.32**	0.06
Non-current asset ratio	-25.90*	11.47	-29.41*	11.62	-30.91*	12.07	-48.69**	12.96
High risk loans	-3.00**	0.95	-3.09**	0.96	-2.73**	0.97	-3.09**	1.04
Equity/Asset ratio	-10.41*	5.04	-9.84+	5.10	-11.36*	5.22	-14.18*	6.18
Multi-branch location	-0.70+	0.42	-0.73+	0.42	-0.79+	0.43	-0.92*	0.45
Board size	-0.34**	0.06	-0.34**	0.06	-0.07	0.20	-0.07	0.21
Startup 1992	-0.02	1.28	0.03	1.29	0.62	1.35	0.34	1.38
Startup 1993	1.21	0.98	1.26	0.97	1.62	1.03	1.70	1.04
Startup 1994	-2.71*	1.21	-2.75*	1.21	-2.47*	1.24	-2.70*	1.31
Startup 1995	-0.71	0.90	-0.69	0.90	-0.28	0.95	-0.13	0.96
Startup 1996	0.49	0.87	0.37	0.87	0.85	0.93	1.00	0.94
Startup 1997	-1.37	0.87	-1.46+	0.87	-1.06	0.91	-1.07	0.92
Startup 1998	-1.23	0.95	-1.23	0.94	-0.89	0.99	-0.36	1.01
Startup 1999	-1.18	0.93	-1.25	0.93	-0.96	0.97	-0.93	0.99
Startup 2000	-1.03	0.95	-1.05	0.94	-0.87	0.95	-0.41	0.96
OCC			0.62+	0.37	0.59	0.37	4.81**	1.29
Board Outsiders					-0.29	0.21		
CEO Duality					-0.48	0.36		
OCC x Board Outsiders							-0.86**	0.26
FDIC x Board Outsiders							-0.20	0.22
OCC x CEO duality							0.72	0.70
FDIC x CEO duality							-0.96*	0.44
N	169		169		169		169	
Log Likelihood	-182.54		-181.12		-179.45		-166.85	

+=p<0.10, *=p<0.05, **=p<0.01

TABLE 6

Non-performing Asset Models

Non-performing Assets Models	**Model 1**		**Model 2**		**Model 3**		**Model 4**	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Constant	3282.32**	894.58	3145.63**	893.10	2862.25**	941.67	2471.22**	942.58
Initial Equity	-0.00	0.01	-0.00	0.01	-0.00	0.01	-0.00	0.01
Employees (size)	34.43**	10.00	33.06**	9.98	33.17**	9.98	29.59**	9.96
Avg GSP growth	9303.38	5734.15	8645.37	5714.14	8896.38	5726.16	7800.72	5667.24
Founding density	-0.38	0.52	-0.46	0.52	-0.57	0.52	-0.40	0.52
Age	16.49	33.05	30.20	33.87	28.29	34.03	29.24	33.68
High risk loans	844.81	641.98	797.88	638.83	1006.82	655.35	1054.96	647.38
Equity/Asset ratio	-3215.04	2832.00	-2933.14	2820.46	-3600.70	2859.54	-3535.63	2828.67
Multi-branch location	364.75	288.54	330.14	287.59	300.98	289.13	397.49	287.93
Board size	-91.06	34.98	-85.86	34.91	72.91	142.59	14.47	142.81
Startup 1992	-3027.61**	941.42	-2989.44**	936.17	-2687.34**	965.70	-2883.67**	956.02
Startup 1993	-2349.25**	725.42	-2304.03**	721.67	-2110.13**	739.18	-2138.42**	729.45
Startup 1994	-2624.28**	848.69	-2644.51**	843.80	-2525.37**	850.91	-2554.92**	839.52
Startup 1995	-3149.78**	675.99	-3113.35**	672.38	-2908.61**	691.65	-2927.71**	683.04
Startup 1996	-3104.69**	644.11	-3162.85**	641.27	-2925.90**	663.54	-2880.64**	654.93
Startup 1997	-3097.74**	644.41	-3147.35**	641.32	-2963.65**	656.87	-2877.35**	649.26
Startup 1998	-3249.90**	706.50	-3283.62**	702.64	-3127.50**	715.86	-2907.14**	712.34
Startup 1999	-3042.30**	690.94	-3071.26**	687.10	-2969.52**	695.80	-2869.91**	687.61
Startup 2000	-3407.17**	695.78	-3390.28**	249.56	-3339.94**	692.99	-3103.45**	691.13
OCC			415.87+	249.56	398.02	249.94	1934.20**	684.65
Board Outsiders					-166.62	140.54		
CEO Duality					-240.25	252.61		
OCCx Brd Outsider							-243.67+	145.62
FDICx Brd Outsider							-62.71	144.97
OCCxCEODuality							-843.51+	453.17
FDICxCEODuality							10.50	296.12
N	169		169		169		169	
Adj R2	0.1903		0.1997		0.20		0.2215	
F	3.19**		3.21**		3.00**		3.08**	

+=p<0.10, *=p<0.05, **=p<0.01

TABLE 7:

Results Summary

Regulation: Strong	Governance: Weak	Governance: Strong
	• *H1: Regulation negatively related to governance* • Strong regulation and weak governance (CEO duality): partial substitutes • => negatively impacts ROE • *Supporting hypothesis 1, but calling in to question hypotheses 2 and 3*	• *H3: Strong regulation and strong governance=poor performance* • Strong regulation and strong governance (board size) =>negative performance (ROA and ROE) • *Supporting hypothesis 3*
Regulation: Weak	• *H2: Weak regulation and weak governance=poor performance* • Weak regulation and weak governance (CEO duality)=> positive performance (non-performing assets) • *Opposite hypothesis 2*	• *H1: Regulation negatively related to governance* • Weak regulation and strong governance (outsider % and board size): partial substitutes • =>negatively impacts ROA and ROE performance (poor performance) • =>negatively impacts nonperforming assets (good performance) • *Supporting hypothesis 1, but calling in to question hypotheses 2 and 3*

Governance