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THE ROLES OF CORPORATE GOVERNANCE IN BANK FAILURES DURING THE RECENT FINANCIAL CRISIS

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Abstract

This paper analyzes the roles of corporate governance in bank defaults during the recent financial crisis of 2007-2010. Using a data sample of 249 default and 4,021 no default US commercial banks, we investigate the impact of bank ownership and management structures on the probability of default. The results show that defaults are strongly influenced by a bank's ownership structure: high shareholdings of outside directors and chief officers (managers with a "chief officer" position, such as the CEO, CFO, etc.) imply a substantially lower probability of failure. In contrast, high shareholdings of lower-level management, such as vice presidents, increase default risk significantly. These findings suggest that high stakes in the bank induce outside directors and upper-level management to control and reduce risk, while greater stakes for lower-level management seem to induce it to take high risks which may eventually result in bank default. Some accounting variables, such as capital, earnings, and non-performing loans, also help predict bank default. However, other potential stability indicators, such as the management structure of the bank, indicators of market competition, subprime mortgage risks, state economic conditions, and regulatory influences, do not appear to be decisive factors in predicting bank default.

JEL Codes: G21, G28, G32, G34

Keywords: Bank Default, Corporate Governance. Bank Regulation

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Why do banks fail? After every crisis, this question is asked by regulators, politicians, bank managers, customers, investors, and academics, hoping that an answer can help improve the stability of the financial system and/or prevent future crises. Although a broad body of research has been able to provide a number of answers to this question, many aspects remain unresolved. After all, the bank failures during the recent financial crisis of 2007-2010 have shown that the gained knowledge about bank defaults is apparently still not sufficient to prevent large numbers of banks from failing. Most studies of bank default have focused on the influence of accounting variables, such as capital ratios, with some success (e.g., Martin, 1977; Pettway and Sinkey, 1980; Lane, Looney, and Wansley, 1986; Espahbodi, 1991; Cole and Gunther, 1995, 1998; Helwege, 1996; Schaeck, 2008; Cole and White, 2012).

However, almost no research to date has empirically analyzed the influence corporate governance characteristics, such as ownership structure or management structure, have on a bank's probability of default (PD).[1] This is perhaps surprising for two reasons. The first is the calls for corporate governance-based mechanisms to control bank risk taking during and after the recent financial crisis (e.g., restrictions on compensation and perks under TARP, disclosure of compensation and advisory votes of shareholders about executive compensation under Dodd-Frank, guidance for compensation such as deferred compensation, alignment of compensation with performance and risk, disclosure of compensation, etc. by the G20, or more recent discussions in the UK regarding a lifetime ban from the financial services industry on directors of collapsed banks), which are largely without basis in the empirical literature on bank defaults. The second is the literature showing that governance mechanisms can have a very strong influence on bank performance in terms of risk taking (e.g., Saunders, Strock, and Travlos, 1990; Gorton and Rosen, 1995; Anderson and Fraser, 2000; Caprio, Laeven, and Levine, 2003; Laeven and Levine, 2009; Pathan, 2009, Beltratti and Stulz, 2012).

It is therefore the goal of this paper to analyze the roles of corporate governance, including both ownership structure and management structure, in bank defaults. The results are key to underpinning the recent calls for changes in corporate governance to control risk. As well, the results may add a new dimension to the extant literature on the effects of corporate governance

[1] An exception is Berger and Bouwman (2012), which controls for institutional block ownership, bank holding company membership, and foreign ownership in models of bank survival and market share. However, the paper does not focus on these variables, nor does it include the ownership of directors and different types of bank employees, which are the key corporate governance variables of interest here.

on bank performance. Although this body of research has clearly established the causalities between corporate governance and bank risk taking, no study has so far used corporate governance structures to help explain bank defaults or to distinguish default from no default banks. Our paper attempts to fill this void.

To analyze the influence of corporate governance structures on bank defaults, we analyze 249 US commercial bank defaults during the period of 2007:Q1 to 2010:Q3 in comparison to a sample of 4,021 no default US commercial banks. We use five sets of explanatory variables in multivariate logit regression models of default. First, we include the impact of accounting variables on banks' probability of default (PD). These accounting variables are well represented in the established literature on bank default. Second, we employ various corporate governance indicators to measure banks' ownership structure and management structure. For ownership structure, we use the shareholdings of different categories of bank management, whether the CEO is also the largest shareholder, whether the bank or its holding company is publicly traded, and whether the bank is in a multibank holding company. For management structure, we use the numbers of outside directors, chief officers, and other corporate insiders (all normalized by board size), the board size itself, and if the Chairman of a bank is also the CEO. For the purposes of this paper, we define "chief officers" as all bank managers with a "chief officer" position, such as the Chief Executive Officer (CEO), Chief Financial Officer (CFO), Chief Lending Officer (CLO), or Chief Risk Officer (CRO). Third, we incorporate measures of market competition. We thereby account for the large literature on bank market power which is inconclusive on the effects of higher market power on bank stability, depending on whether the traditional "competition-fragility" view or the "competition-stability" view dominates, as discussed in Section II A. We also account for the bank's competitors' subprime loan exposure – a factor often cited as a major source of default risk in the recent crisis – which could help the bank by weakening or eliminating some of its competition. Fourth, we employ economic variables at the state level – GDP growth and the house price inflation – the latter of which is believed to have contributed to instability in the banking system due to banks being able to only partially recover collateral in defaulted mortgage loans. Finally, we account for potential differences among federal bank regulators.

Our results confirm the extant bank failure literature by finding that accounting variables such as the capital ratio, the return on assets, and the portion of non-performing loans, help predict bank

default. Our key new finding is that the ownership structure of a bank is also an important predictor of bank PD. Specifically, three bank ownership variables prove to be significant predictors of bank failure: the shareholdings of outside directors (directors without other direct management executive functions within the bank), the shareholdings of chief officers, and the shareholdings of other corporate insiders (lower-level management, such as vice presidents). Interestingly, the effects differ among these three groups. While our results suggest that large shareholdings of outside directors and chief officers decrease a bank's probability of default, larger shareholdings of lower-level management significantly increase bank PD. We find that these ownership structure variables add substantial explanatory power to the regressions, raising the adjusted R-Squared of the logit equations by more than half relative to the accounting variables alone. We offer explanations for these perhaps unexpected findings. We hypothesize that lower-level managers with large shares may take on more risk because of the moral hazard problem, whereas this problem may not apply as much to outside directors and chief officers because they are vilified in the event of a default. However, our other corporate governance indicators for management structure do not appear to significantly influence bank default probabilities. Perhaps surprisingly, bank market power, competitors' subprime loan exposure, state-level house price inflation and income growth, and different primary federal regulators also have little or no influence on bank failure. These results are robust to different specifications, time periods prior to default, as well as a possible sample selection bias caused by the types of banks for which corporate governance data are available.

In an additional analysis, we develop a variable based on the individual shareholdings of outside directors, chief officers, and other corporate insiders as a single default predictor variable. This measure confirms that the ownership structure of a bank has significant predictive power for bank default, especially if observed some time period prior to default. Overall, our results add substantially to the question of why banks fail, and also contribute to the aforementioned discussion of corporate governance-based mechanisms to control bank risk taking.

The remainder of the paper is structured as follows. In Section I, we provide an overview of the relevant literature regarding corporate governance and bank stability. In Section II A, we describe the composition of our data set. Section II B contains the summary statistics on anecdotal evidence of the reasons behind bank failures during the financial crisis of 2007-2010. We describe the ownership and management structures of the banks in our sample in Section II C.

Section II D contains summary statistics on the accounting, competition and economic data. Section III reports our main multivariate results, and in Section IV we develop and test a single indicator of bank ownership structure to predict default. Section V concludes.

I. Literature Overview

Our paper builds upon and expands the existing literature in two closely connected areas of research: bank defaults and the influence of corporate governance structures on bank risk taking. The literature on bank default mostly focuses on testing a wide variety of bank accounting variables on banks' default probabilities in discriminant analyses and regressions of dependent binary default indicator variables. Examples that precede the recent financial crisis are Meyer and Pfifer (1970), Martin (1977), Whalen and Thomson (1988), Espahbodi (1991), Thomson (1991, 1992), Cole and Fenn (1995), Cole and Gunther (1995, 1998), Logan (2001), and Kolari, Glennon, Shin and Caputo (2002). The predominant findings are that the default probability increases for banks with low capitalization and other measures of poor performance. Following this body of research, there are only few papers to date analyzing the relevant drivers of bank default during the recent financial crisis: Torna (2010), Aubuchon and Wheelock (2010), Ng and Roychowdhury (2011), Berger and Bouwman (2012), and Cole and White (2012). Torna (2010) focuses on the different roles that traditional and modern-day banking activities, such as investment banking and private equity-type business, have in the financial distress or failure of banks from 2007 to 2009 in the US. The paper shows that a stronger focus on these modern-day activities significantly increase a bank's PD. Aubuchon and Wheelock (2010) also focus on bank failures in the US, comparing the 2007-2010 period to the 1987-1992 period. They predominantly analyze the influence of local macroeconomic factors on banks' failure probability. Their study shows that banks are highly vulnerable to local economic shocks and that the majority of bank failures occurred in regions which suffered the strongest economic downturn and the highest distress in real estate markets in the US. Ng and Roychowdhury (2011) also analyze bank failures in the US in the crisis period 2007-2010. They focus on how so called "add-backs" of loan loss reserves to capital can trigger bank instability. They show that add-backs of loan loss reserves to regulatory capital increase banks' likelihood of failure. Berger and Bouwman (2012) focus on the effects of bank equity capital on survival and market share during both financial crises (including

the recent crisis) and normal times. They find that capital helps small banks survive at all times, and is important to large and medium banks as well during banking crises. Finally, Cole and White (2012) perform a test of virtually all accounting-based variables and how these might add to bank PD, using logit regression models on US bank failures in 2009. Using the standard CAMEL approach, they find that banks with more capital, better asset quality, higher earnings and more liquidity are less likely to fail. Their results also show that bank PD is significantly increased by more real estate construction and development loans, commercial mortgages and multi-family mortgages. Although our paper is closely related to these studies – especially to the post-crisis research and in terms of sample selection, observation period, and methodology – we strongly expand the scope of the existing analyses to include corporate governance variables and other factors and are therefore able to substantially contribute to the understanding of bank failure reasons.

Our most important contribution is the analysis of detailed ownership and management structure variables in the standard logit regression model of default. The distress of the banking system in the wake of the recent financial crisis has triggered a discussion about the role of corporate governance structures in the stability of financial institutions. Politicians (e.g., the Financial Crisis Inquiry Commission Report, 2011), think tanks (e.g. in the Squam Lake Working Group on Financial Regulation Report, February 2010), NPOs (such as in the OECD project report on Corporate Governance and the Financial Crisis, 2009), and academic researchers (an overview of scholarly papers regarding corporate governance and the financial crisis is provided by e.g. Mehran, Morrisson and Shapiro, 2011) have recently not only intensely discussed, but also strongly acknowledged, the importance of corporate governance for bank stability. The discussions resulted in a number of actions from regulators addressing corporate governance in banks, such as restrictions on compensation and perks under TARP, various compensation guidelines set forth by the G20, or “clawback” clauses for executive compensation in addition to guidance for deferred compensation in Dodd-Frank. Banks even started to implement voluntary “clawback” clauses for bonus payments (such as Lloyds TSB) in addition to these mandatory clauses. However, the finding that corporate governance has implications for bank stability was already established long before the recent financial crisis. Several studies such as Saunders, Strock and Travlos (1990), Gorton and Rosen (1995), and Anderson and Fraser (2000) show that governance characteristics, such as shareholder composition, have substantial influence on banks’

overall stability. Their findings support that bank managers' ownership is among the most important factors in determining bank risk taking. The general finding in all studies is that higher shareholdings of officers and directors induce a higher overall bank risk taking behavior. Saunders, Strock and Travlos (1990) show this for the 1979-1982 period in the US, and Anderson and Fraser (2000) confirm this for the 1987-1989 period. Although Gorton and Rosen (1995) obtain the same result for the 1984-1990 period, they additionally show that the relationship between managerial shareholdings and bank risk depends on the health of the banking system as a whole: it is strongly pronounced in periods of distress and might reverse in times of prosperity. Pathan (2009) provides empirical evidence for the period 1997-2004 that US bank holding companies assume higher risks if they have a stronger shareholder representation on the boards. Based on these findings, we have strong reason to believe that corporate governance structures might also have an influence on bank default probability.

In light of the recent financial crisis, some studies, such as Beltratti and Stulz (2012) and Erkens, Hung and Matos (2012), analyze bank ownership structures with special regard to bank risk.[2] Testing an international sample of large publicly traded banks, Beltratti and Stulz (2012) find that banks with better governance (in terms of more shareholder-friendly board structures) performed significantly worse during the crisis than other banks and had higher overall stability risk than before the escalation of the crisis. Specifically, they find that banks with higher controlling shareholder ownership are riskier. This result is confirmed by Gropp and Köhler (2010). Erkens, Hung and Matos (2012) analyze the influence of board independence and institutional ownership on the stock performance of a sample of 296 financial firms (also including insurance companies) in over 30 countries over the period 2007-2008. They find that banks with more independent boards and greater institutional ownership have lower stock returns. Also testing an international sample, Laeven and Levine (2009) show that banks with a more diversified and outsider-controlled shareholder base have an overall lower risk structure than banks with a highly concentrated shareholder base in which most of the cash-flow rights pertain to one large (inside or outside) owner. Kirkpatrick (2008) also establishes that weak corporate governance in banks

[2] Another corporate governance-related body of research focuses on compensation structures in banks with special regard to risk. Among the most recent works on bank management compensation and risk taking behavior are Kirkpatrick (2009), Bebchuk and Spamann (2010), DeYoung, Peng, Yan (2010), Fahlenbrach and Stulz (2011), and Bhattacharyya and Purnanandam (2012).

leads to inadequate risk management, especially insufficient risk monitoring through the board, a factor which contributed greatly to the bank instabilities during the crisis.[3]

Although the existing body of research has clearly established a connection between governance and bank risk taking behavior, none of the studies investigates the influence certain governance characteristics might have on bank default. The risk variables most often investigated are the stock price (e.g., Beltratti and Stulz, 2012), returns (e.g., Gropp and Köhler, 2010), lending behavior (e.g., Gorton and Rosen, 1995), or general stability indicators, such as the Z-score (e.g., Laeven and Levine, 2009). Standard governance proxy variables are managerial shareholdings (e.g., Anderson and Fraser, 2000), bank insider shareholdings (Gorton and Rosen, 1995), the ownership percentage of the single largest shareholder (Beltratti and Stulz, 2012), or the shareholder friendliness of the board (as developed by Aggarwal, Erel, Stulz, and Williamson, 2009, and used by e.g. Beltratti and Stulz, 2012).

Our paper offers three important contributions to the literature. We are the first paper to combine a range of these factors by investigating the influence the ownership and management structures in banks may have on their default probability. We are the first paper to differentiate between top- and lower-level shareholdings as well as between outside and inside director shareholdings. Finally, our paper is the first to analyze the influence of management structures on bank default probability.

II. Data

A. Sample Selection

Our main data set is a collection of more than ten different data sets merged manually on the bank level. We start with the population of US commercial banks using the FFIEC Call Report data set to collect bank balance sheet, income statement, and off-balance sheet data for each

[3] As noted above, Berger and Bouwman (2012) include institutional block ownership, bank holding company membership, and foreign ownership as control variables in models of bank survival and market share. They do not find strong, consistent results for any of these variables.

bank.[4] We exclude systemically important financial institutions (SIFIs), commercial banks with at least $50 billion in total assets (as defined by Dodd-Frank), as none of these institutions failed during the crisis, perhaps because of the TARP bailout and/or extraordinary borrowing from the discount window.[5] These data are augmented by two additional data sets containing general economic indicators on the state level. The real estate price development is measured using the quarterly returns of the seasonally-adjusted Federal Housing Financing Agency (FHFA) house price inflation index for the state. The quarterly percentage change in state GDP is taken from the Federal Reserve Bank of St. Louis "Federal Research Economic Database" ("FRED").

The fourth data set we use contains detailed information on the annual census-tract- or MSA (Metropolitan Statistical Area)-level mortgage lending in the United States. This data set is referred to as the "Home Mortgage Disclosure Act" or "HMDA" data set, obtained through the Federal Financial Institutions Examination Council (FFIEC). This data contains the total amount and volume of mortgage loans by year and census tract/MSA, both on an absolute level as well as broken down by borrower characteristics. We classify each mortgage granted to a borrower with an income of less than 50% of the median income in the respective census tract or MSA as "subprime." Although we acknowledge that borrowers falling into this income group might also be classified as "prime" borrowers in some cases, we believe it to be a fair assumption that mortgage borrowers of this category can be deemed as rather high-risk borrowers, and hence we group these as "subprime." We include the ratio of originated subprime mortgage loans to total originated mortgage loans in our data set calculated on census tract or MSA level. We use the subprime variable and the Herfindahl Hirschman Index (HHI) of local market concentration as measures of competition. The HHI is based on the FDIC Summary of Deposits data on the branch level. We use each bank's share of deposits by branch in each rural county or MSA market for these calculations, and take weighted averages across markets for banks in multiple local markets using the proportions of total deposits as the weights.[6]

[4] Merged or acquired banks are treated as if the involved banks had been merged at the beginning of the observation period, by consolidating the banks' balance sheets. As a robustness check, we exclude all merged and acquired banks from our data set. Results remain unchanged.

[5] We also exclude all savings institutions with a thrift charter obtained through the Office of Thrift Supervision. This also includes all failed thrifts and thrift SIFIs (such as Washington Mutual and IndyMac). We do so for reasons of comparability and to obtain a homogenous sample of commercial bank failures only.

[6] We use total deposits in calculating the HHI because it is the only variable for which bank location is available.

In a next step, we collect data on corporate governance, specifically, ownership and management measures. The information is taken from four sources: the Mergent Bank Database, the SEC annual bank reports publicly available through the SEC's EDGAR website, the FDIC Institutions data, and CRSP. The Mergent data base contains detailed ownership and management information for 495 US commercial banks (both stock-listed and private). We specifically use information on each bank's shareholders, their directors, and officers as well as on the other corporate insiders. To expand the sample, we complement the Mergent data base with the information given in the annual reports filed with the SEC of each bank with registered stock. The information on whether a bank is in a multibank holding company or not is taken from the FDIC Institutions data set, obtained through the official FDIC website. Public banks are all banks or banks in bank holding companies (BHCs) with SEC-registered shares which are publicly listed and traded on a United States stock exchange over the observation period. We treat subsidiaries of multibank holding companies as public banks if their respective BHC is publicly listed. Information on trading and listing is obtained from CRSP. Banks with (CUSIP registered-) shares which have been sold in private placements are treated as privately-owned banks. All banks without a stock listing and without a stock-listed BHC are treated as private banks.

In a last step, we have to determine which banks failed within our observation period. As we only focus on US commercial bank failures in the recent financial crisis of 2007-2010, we use the FDIC Failed Institutions list as reported by the FDIC.[7] This list contains a detailed description of each failure of an FDIC-insured commercial bank or thrift, including the name of the bank, the exact date of failure (i.e., when the bank was put into FDIC conservatorship), its location, the estimated cost of the failure to the FDIC, as well as information on the acquiring institution or liquidation of the failed bank. This list allows us to compile the data set of all failed institutions which are eligible for the analyses in our paper.

To gather additional information on each failure, we use multiple sources. First, we employ the Material Loss Reports (MLRs) published by the FDIC as part of their bankruptcy procedure for all material bank failures.[8] In it, the FDIC provides a detailed report on the causes for the failure of the bank, whether or not the failure was caused by the bank's management and its (lack of)

[7] As obtained through the FDIC website: http://www.fdic.gov/bank/individual/failed/banklist.html

[8] The FDIC publishes Material Loss Reports for all bank defaults which result in a "material loss" to the FDIC insurance fund. On January 1st 2010, the threshold for a "material loss" to the FDIC fund was raised from $25 million to $200 million.

risk management, and whether or not the failure could have been anticipated by the regulatory and supervisory authorities of the bank. For failed institutions for which no MLR was published, we gather news wire articles, press releases or reports from newspapers located in each bank's local market. The information we take from these multiple sources is: the exact failure reason, whether or not bad risk management was among the causes for the failure, whether or not regulatory action had been taken against the failed bank (especially cease-and-desist orders), and whether or not the failure came as a surprise to the regulatory and supervisory authorities. We use one additional source to determine the surprise of each bank's failure: stability reports ("LACE Reports") published by Kroll Bond Ratings, an independent firm specialized in rating banks and other financial services firms. These reports contain a rating scheme for each bank (based on a number of standard rating indicators) ranging from A (best) to F (worst). As the ratings are published quarterly, we are able to determine whether or not a bank has a rating better than "F" in the quarter prior to failure. We deem any failure as "surprising" if either the MLR specifically states that it was surprising or the LACE report shows that the failed bank's rating was better than "F" in the quarter prior to failure.

This leaves us with a data set of 249 default banks and 4,021 non-default banks. All bank failures occur in the period 2007:Q1 to 2010:Q3. For the regressions we obtain a total of 79,984 bank-quarter observations in an unbalanced panel. As corporate governance information cannot be obtained for all banks, we exclude all failed and non-failed banks from our subsample of banks with corporate governance data for which we cannot obtain reliable information on the desired ownership and management variables. Our final subsample of banks with corporate governance data consists of 85 default banks and 243 no default banks, recorded over the same period, for a total of 5,905 bank-quarter observations. A detailed description of all of the explanatory variables used in the regressions is provided in Table 1.

(Table 1)

B. Anecdotal Evidence on Bank Defaults

We first investigate the causes of bank failures on an anecdotal level. We do so to better understand the different reasons for bank failures and to ensure that our sample of bank failures is not biased by e.g. too many cases of fraud or regulatory intervention. We draw on the

aforementioned Material Loss Reports (MLRs) and news sources to determine that the reasons for bank failures can be clustered into six distinct groups: “General Crisis Related,” “Liquidity Problems Only,” “Loan Losses Only,” joint “Liquidity Problems and Loan Losses,” “Fraud,” and “Other.” The MLRs and other sources reporting on the failures mentioned these six groups of failure reasons almost exclusively. If MLRs and/or news reports do not contain a specific failure reason, but instead mention that the failure came as a result of the general economic conditions or the crisis, we label the failure as “General Crisis Related.” As shown in Table 2, Panel A, we find that 95 out of 249 banks fall into this category. If it is explicitly mentioned that either only liquidity problems, or only loan losses, or a combination of both was the cause for the failure, we cluster the banks in the respective groups “Liquidity Problems Only,” “Loan Losses Only,” or “Liquidity Problems and Loan Losses.” We find that only one bank was put into FDIC conservatorship as the result of liquidity problems only. In contrast, 106 banks’ failures were triggered by loan losses only and 22 banks defaulted after the joint occurrence of both liquidity problems and loan losses. Finally, we find that 5 banks failed or were taken into FDIC conservatorship due to management fraud. For 20 banks, a specific failure reason could not be determined; we thus label their failure reason as “Other.” These anecdotal results show that loan-induced losses played a dominant role for banks’ stability during the recent financial crisis, as opposed to liquidity problems.

The FDIC also publishes the estimated cost of the failure to the FDIC insurance fund. We collect and report these numbers to show the economic importance and which failure types are the most costly. The overall estimated cost of all failures in our sample to the FDIC insurance fund amount to approximately $6.75 billion. In 2009 the fund incurred the highest cost with an estimate of $2.66 billion from 119 failures; however, the highest insurance costs per institution were incurred in 2008, with only 20 failures resulting in an estimated cost of $2.61 billion. The 106 loan loss-induced failures are the most costly group with a total of $2.08 billion. Interestingly, defaults due to both loan and liquidity losses seem to be much more expensive per institution as compared with loan loss-only failures. Although the overall contribution of the insurance cost to the overall estimated FDIC losses of the loan and liquidity loss group is only slightly smaller with $2.03 billion, this group consists of only 22 banks, as compared to the 106 bank failures in the loan loss-only group.

(Table 2)

In a second step, we collect anecdotal evidence on the role of the banks' management and the regulatory agencies prior to bank failure. Specifically, we determine whether or not bad risk management contributed to the default. Whenever the MLRs, other official FDIC releases, or newspaper articles mention that the bank suffered from managers' bad risk management, we classify the respective bank as a "Bad Risk Management" bank prior to default. Panel B in Table 2 shows that this is the case for only 18% of all defaults. The fact that not even a fifth of all bank defaults during the recent financial crisis happened due to inadequate risk control systems (or failures thereof) calls for a detailed investigation of alternative reasons for bank failures, such as the banks' ownership and management structures. We also gather information on the actions taken by the regulatory and supervisory agencies prior to the default. Supervisory actions prior to default (especially cease-and-desist orders to prevent the bank from failing) are used in only 7.6% of all defaults. Based on the MLRs and the LACE ratings, we also find that only 13.6% of all bank failures came as a surprise and were neither anticipated by a rating agency nor by the supervisory authority. According to Panel B in Table 2, one explanation for this rather low percentage of surprises might be that most of the surprising failures occurred at the onset of the financial crisis, when market participants have not been able to predict the severity of the crisis, while in 2009 and 2010 more banks failed but this was expected more often. Taken together, Panel B in Table 2 shows that our sample of bank failures does not put too much weight on potentially distorting factors as for example regulatory intervention or fraud and emphasizes the requirement of an investigation of alternative reasons for bank failures, such as the banks' ownership and management structures.

C. Corporate Governance and Bank Defaults

Table 3 shows summary statistics of the ownership and management data of our sample banks. We report summary statistics for the total sample, as well as broken down by default and no default banks, bad risk management, banks subject to cease-and-desist orders prior to default, and surprising versus non-surprising failures. We define "Outside Directors" as members of a bank's board of directors, who do not perform any function other than being a board director in the respective bank. The literature on corporate governance also refers to this group as "independent directors." As noted above, we define "Chief Officers" as all bank managers with a "chief

officer" position. "Other Corporate Insiders" are all bank employees holding lower-level management positions in a bank, such as vice presidents, treasurers, or department heads. Note that these "Other Corporate Insiders" are neither "Chief Officers" nor members of the bank's board of directors. The shareholdings are determined based on the Mergent data base or SEC filings. The data contain name, title, and the amount of shares held by each manager. The shareholding variables are normalized by the number of the bank's outstanding shares and the numbers of outside directors, chief officers and other employees are scaled by the board size.[9] Table 3 reports that, on average, default banks have much lower shareholdings of outside directors, slightly lower shareholdings of chief officers, and much higher shareholdings of other corporate insiders, as compared to no default banks. Additionally, the CEO is the single largest shareholder in some of the default banks. This is never the case in no default banks. In terms of management structures, we find that default banks have smaller boards, fewer outside directors and more chief officers relative to their board size, and the Chairman is less often also the CEO than in no default banks.

(Table 3)

These values paint an interesting picture of the ownership and management characteristics of default and no default banks in our sample. Table 3 provides empirical evidence that default banks tend to be characterized by fewer shareholdings of outside directors and chief officers and larger shareholdings of lower level management. A tentative conclusion of these descriptive results could be that the incentives are set very differently in default and no default banks. In no default banks, more than 80% of all shares are held by chief officers, who are responsible for the continuation of bank's operations in the long term, or by outside directors, who are responsible for the oversight of these operations. Furthermore, outside directors and chief officers are publicly known figureheads of the banks. This might imply that their personal reputation is connected to the bank's performance and survival, at least to some extent. In contrast, lower-level management, such as vice-presidents or treasurers, hold more than 50% of all shares in default banks. This group is neither publicly known nor held responsible in public for the failure of the bank, even though they may exert a tremendous amount of direct influence on the actual risk

[9] Note that the scaling with the board size does not imply that the sum of the three variables adds up to one because other corporate insiders are not members of the board while also chief officers are not always members of the board.

taking of the bank in its daily operations.[10] The position of lower level management is equivalent to equity holders in the classic Merton (1977) firm value model which states that shareholders of insured banks have a moral hazard incentive to increase variance of returns, since the assets of the bank can be put to the FDIC in the event of default. This incentive may be less for the outside directors and chief officers who are publicly known and vilified in the event of default as compared to opaque lower level management. Accordingly, Table 3 suggests that outside directors and chief officers behave more responsibly in terms of risk taking when they have large stakes in the bank. In contrast, other non-executive corporate insiders tend to increase risk taking when they hold shares of the bank. We investigate this result in more detail in the next section in a multivariate setting.

Looking at the ownership structures of default banks with bad risk management, we find that they have fewer outside director shareholdings, fewer other corporate insider shareholdings and larger chief officer shareholdings as compared to banks where bad risk management is not mentioned. These exact same shareholder structures are featured by default banks against which cease-and-desist orders had been issued in comparison to banks without such orders before failure. Regarding the management structures of banks with bad risk management prior to default, we find that they are characterized by smaller board sizes, fewer chief officers and fewer outside directors relative to their size. Again, the exact same characteristics can be seen in banks against which cease-and-desist orders had been issued before default, except for the board size, which is slightly higher in banks with cease-and-desist order. These numbers allow for two tentative interpretations regarding the existence of bad risk management: first, banks run by managers facing little oversight through fellow corporate insiders or outside shareholders are more likely to be able to exercise bad risk management, causing the bank to fail. Second, the regulators might be aware of the bad risk management situation in these banks, but act to no avail, i.e. issue cease-and-desist orders against the banks without being able to save them from defaulting.

Interestingly, the ownership and management characteristics of bad risk management and cease-and-desist-banks are also mostly shared by banks whose failure came as a surprise to markets and regulators. As compared to banks whose failures were more predictable, they have fewer outside

[10] We acknowledge that there are a few exceptions, such as Nick Leeson, Jérôme Kerviel, and Bruno Iksil, who became known to the public. However, individual traders have to severely cripple their financial institutions (with losses, only attributable to them, in the billions) before being in the news. Additionally, all of these now infamous cases were based on fraudulent risk taking, as opposed to risk taking within the allowed boundaries. The news on these tail events also supports the notion that lower-level employees may have a tremendous impact on bank risk.

directors and other corporate insiders as shareholders. In terms of management, they have slightly smaller boards, more chief officers and outside directors relative to their board size. Only the number of shares held by chief officers is lower for surprising failure banks, a characteristic in which they differ from the bad risk management and cease-and-desist order banks. These governance features can be a sign of limited outside control of the bank's executive management. As a result, executive managers might have been able to hide the true financial situation of the bank from regulators (in spite of a possibly higher scrutiny expressed by the cease-and-desist orders) and other stakeholders until the very end, either in an attempt to rescue the bank or for mere fear of admitting the failure of the bank. These structures might also allow for gambling for resurrection in an attempt to save the bank. Without outside control, the managers could have taken on excessive risks with promising high returns in a last effort to rescue the bank.

We finally report information if the bank is publicly traded versus privately owned and if it is organized in a multibank holding company as this also describes a bank's ownership structure. We also include these factors because publicly traded banks and banks in multibank holding companies might have access to additional capital markets besides only the bank's internal funds (or the internal funds of the holding company) which, especially in times of distress, might serve as a source of financial strength. About 27% of all default and 41% of all no default banks in our sample were publicly traded over the observation period. Only 12% of the default banks and 14% of the no default banks were part of a multibank holding structure. We find similar numbers for the risk management, cease-and-desist order and non-surprising failure groups.

Table 3 indicates that certain corporate governance characteristics, such as limited outside control of management through fellow top-level employees or through independent outside directors as shareholders, can foster bad risk management and the concealment of a bank's true financial situation. If managers are inadequately monitored, they lack incentives to act in the best interest of shareholders. The fact that a small number of banks failed surprisingly might be an indication that it can be difficult for the regulator to recognize or anticipate problems if the managers are willing and able to conceal them. Our results are therefore in line with the findings of Anderson and Fraser (2000), who show that management shareholdings and risk taking are positively related. The results are also consistent with e.g. Laeven and Levine (2009), who show that banks with more concentrated ownership and management structures also exhibit higher overall risk

taking. We therefore substantially extend this body of literature by showing that the management shareholdings also have implications for the most extreme case of bank risk, which is default.

D. Summary Statistics of Accounting, Competition and Economic Variables

Table 4 provides summary statistics on the variables other than the corporate governance variables. It shows that default banks differ strongly from no default banks, especially in terms of general characteristics, business focus, and overall stability. As can be seen in the table, default banks are on average larger than no default banks as measured by asset size, have a lower capital ratio, lower loan volume relative to their assets, stronger loan growth as well as weaker loan diversification as measured by the loan-concentration HHI. On the funding side, default banks rely more on brokered deposits and less on retail deposits than no default banks. Not surprising, default banks also perform worse in terms of overall stability than no default banks: they have a negative return on assets and a much higher non-performing loan ratio. Interestingly, default banks have a lower exposure to mortgage-backed securities (MBS) than no default banks. Note that default banks do not have any off-balance sheet derivative exposure (not shown in the table), which is why we exclude this factor in our regression analyses.

(Table 4)

Table 4 also shows the differences in accounting data between default and no default banks for our sample with available corporate governance data. While most differences and values are very comparable between our full data sample and our corporate governance sample, one difference is asset size. The banks for which we are able to obtain ownership and management data are larger than the average banks in the full sample. However, this is to be expected, as mostly large banks register shares with the SEC, which in turn requires them to publish ownership and management data. We will therefore also test our results with respect to a possible sample selection bias in our following analyses with a specific focus on bank size and publicly traded shares.

Finally, in the last three columns, the table shows the development of accounting variables from two years prior to default until the quarter immediately preceding the default. In line with expectations, we observe on average a very strong decline of the capital ratio, the return on assets, and the loan growth, paired with a strong increase in the ratio of non-performing loans

over the last two years before default. This confirms a rapid decline in bank profitability and a deterioration of stability. Interestingly, banks seems to strongly increase the amount of retail funding in the form of brokered deposits, from roughly 9% two years before default up to 18% in the quarter before default.

At the bottom of Table 4, we show summary statistics for the market competition and state economic condition variables. For market competition, we report the deposit-based HHI of market concentration and the subprime lending ratio of originated subprime mortgage loans to total originated mortgage loans on census tract or MSA level. The state economic condition variables include the house price inflation indicator, calculated using the average quarterly returns of the seasonally-adjusted Federal Housing Financing Agency (FHFA) house price inflation index for the bank's states, and the quarterly percentage changes in state GDP.[11] Comparing the values for default and no default banks, we find that default banks face slightly higher market concentration, competitors with lower subprime exposure, a steeper decrease in house price values and a slightly lower GDP growth than no default banks. These differences are confirmed for our subsample of banks for which corporate governance data is available, with the exception of market concentration, which is slightly lower for default banks than for no default banks. We do not detect any substantial change in the market competition variables over the two-year period leading up to defaults. Market concentration only increases marginally, subprime risk remains virtually unchanged. We see slightly stronger variations in the two state economic indicators. The FHFA house price index stays negative throughout the period, decreasing slightly in the year before the default but moving to a slightly higher value in the quarter before default. The same goes for the GDP growth, which turns negative in the year before default, but moves back up to slightly positive values in the quarter before default. We will forego a detailed analysis of these univariate statistics and instead rely on the multivariate regression results to interpret the variables' influence on bank defaults in greater detail.

[11] We use the state economic variables from the states in which the banks have deposits. For banks with branches in different states, we calculate the weighted exposure to each state through the FDIC Summary of Deposits data, as previously used for the HHI calculation, to obtain a weighted exposure to the state economic variables.

III. Multivariate Analysis

A. Methodology

In this section, we investigate the possible influence factors have on bank failure in a multivariate logistic regression framework with an indicator variable for bank failure in the default quarter as dependent variable and a number of predictor variables. By choosing this model specification, we follow a broad body of literature having established this approach as standard procedure (e.g., Campbell, Hilscher, and Szilagyi, 2008), which was pioneered for banks by Martin (1977). We include a total of five sets of explanatory variables: accounting variables, corporate governance variables, market competition measures, state economic indicators, and bank regulator variables. We combine these sets of variables to test eleven different model specifications, in which each specification is comprised of either a different set of variables or a different subsample. As reported in Table 4, we have a main sample of 249 bank defaults and 4,021 no default banks. We also have a subsample comprised of 85 default banks and 243 no default banks for which we obtain corporate governance data of a bank's ownership and management structures. The different model specifications alternate between these two data samples. We include both subsamples in our analyses to show that our data does not suffer from selection biases – i.e., that similar results hold for banks with and without available corporate governance data. We test the contribution the different variable sets or combinations thereof have on the explanatory power of our model of bank default. We additionally test each model for three different time periods: the quarter immediately preceding the default, as well as one and two years prior to default. By also testing the time component, we follow a body of research (e.g., Cole and Gunther, 1998; Cole and White, 2012) which shows that the predictive power of binary regression models in the context of bank defaults varies over time. Table 5 contains eleven models together with an additional model in which we account for a possible sample selection bias. Models I and II test only the influence of accounting variables on bank defaults, separately for all banks (Model I) and the subsample of banks with available corporate governance data (Model II). These models most closely resemble the extant empirical literature on bank defaults. Models III and IV focus on the corporate governance sample only. They incorporate accounting variables in addition to six corporate governance ownership variables (Model III) and five corporate governance management variables (Model IV). Model V subsequently investigates the joint influence of the accounting and all the corporate governance variables on bank default. Models VI-VIII expand

this setting by adding market competition variables, the bank's local market power and its competitors' subprime loan exposure (Model VI), by adding economic indicators for the state house price inflation and the quarterly change in state GDP (Model VII), and by adding possible effects stemming from different primary federal bank regulators (Model VIII), respectively. Models IX and X jointly incorporate these three variable sets together with accounting data and exclude corporate governance variables. Model IX does so for all banks, and Model X includes only the sample of banks with available corporate governance data. In Model XI, we include all variables. The final model, labeled "Heckman Selection Model," presents a robustness check using a Heckman Selection model which will be explained later in more detail.

In running these tests, we are primarily interested in three questions: First, how do the different sets of variables and combinations thereof contribute to the overall explanatory power of the regression? Second, which variables are statistically significant in explaining bank failures? Finally, at what point in time prior to the actual default date do sets of variables or individual variables have the largest explanatory power in predicting bank defaults?

The accounting variables include measures of the bank's size, return on assets, capitalization, loan portfolio composition, funding structure, securities business, and off-balance sheet activities. By doing so, we follow a large number of articles on bank default (e.g.; Lane, Looney, and Wansley, 1986; Whalen and Thomson, 1988; Espahbodi, 1991; Logan, 1991; Thomson, 1991; Cole and Gunther, 1995, 1998; Kolari et al., 2002; Schaeck, 2008; Cole and White, 2012) who show that accounting variables have significant explanatory power in predicting bank default. By including the log of total assets, the ratio of equity to assets, and the return on assets, we follow Cole and Gunther (1995, 1998), Molina (2002) and others who show that these variables can serve as valid indicators for size, capitalization, and profitability. To measure the composition and stability of the bank's loan portfolio, we include five accounting variables. We use the ratio of total loans to total assets, excluding construction and development (C&D) loans, as well as the ratio of C&D loans only to total assets. In doing so, we follow Cole and White (2012), who show that C&D loans have strong explanatory power in predicting bank defaults, especially in the recent financial crisis. We account for this finding by investigating the singular influence of C&D loans in a bank's overall loan portfolio on the likelihood of bank failure, as well as incorporating the ratio of the bank's remaining loans to its assets. We also include a loan concentration index, the growth of a bank's loan portfolio and the ratio of non-performing loans to total loans in the

regressions to account for concentration and credit risk. Short-term funding and illiquidity risks are measured by the ratios of short-term deposits to assets and brokered deposits to assets, respectively. We additionally include the ratio of mortgage-backed securities (MBS) to assets. Finally, the ratio of unused commitments to assets is included as a measure for off-balance sheet risks. We do not include the off-balance sheet derivative exposure of the banks in our analyses as no default bank in our data sample has any exposure to these in any time period.

The corporate governance variables are taken from the set of measures introduced above. To account for the bank's ownership structure, we include the number of shares held by outside directors, chief officers, and other corporate insider shareholders (defined as in section II.C). Each of these variables is standardized by the number of shares outstanding of the respective bank. We also include a dummy variable indicating whether or not the bank's CEO is also its single largest shareholder. In addition, we include dummy variables for whether a bank is organized in a multibank holding company, and whether the bank or its BHC is publicly traded. As mentioned before, publicly traded banks and banks in multibank holding companies might have access to further capital markets which might serve as an additional sources of financial strength.[12] By including these ownership variables in our multivariate regression framework, we account for the previous literature on the relationship between banks' ownership structures and bank stability, such as Saunders, Strock and Travlos (1990), Gorton and Rosen (1995), Anderson and Fraser (2000), Caprio, Laeven and Levine (2003), Laeven and Levine (2009), and Pathan (2009). We thereby moreover investigate if the stark differences in the descriptive statistics between default and no default banks in terms of ownership structure also hold in a multivariate setting. To further proxy for the bank's management structure, we include the number of outside directors, the number of chief officers, the number of other corporate insiders, all scaled by the bank's board size, to account for relative differences in management and oversight among banks.[13] We additionally employ (the logarithm of) the number of members of the board of directors ("Board Size") and an indicator variable if the CEO of the bank is also its Chairman. We are thereby the first to explicitly investigate the impact of a bank's management structure on bank default.

[12] As a robustness check, we replace the multibank holding company (BHC) dummy with a dummy variable indicating whether or not the bank is part of any BHC structure, either single-bank or multibank. The results remain unchanged.

[13] As a robustness test, we also standardize the number of outside directors, chief officers, and other corporate insiders variables by the asset size of the bank. The results remain unchanged.

The set of variables on bank competition contains the Herfindahl Hirschman Index (HHI) of bank market power on MSA or rural county level, its squared value, as well as the ratio of originated subprime mortgage loans to total mortgage loans originated on census tract/MSA level. We use the HHI as a proxy for the competition a bank faces in its local market. To calculate the HHI, we define the deposits held by each bank's branches as the product market, the rural county level or MSA in which the bank's branches are located as the local market, and each quarter as the temporal market. Using the standard HHI calculation method, we sum up each bank's squared market share in each market and quarter. For banks which are active in multiple markets, we use the weighted average across each market to determine the HHI. A broad body of research has shown that competition is an important stability factor for banks. According to the literature, higher market power may result in either a higher or a lower probability of bank failure. In the traditional "competition-fragility" view, higher market power increases profit margins and results in greater franchise value with banks reducing risk taking to protect this value (e.g., Marcus, 1984; Keeley, 1990; Demsetz, Saidenberg, and Strahan, 1996; Hellmann, Murdock, and Stiglitz, 2000; Carletti and Hartmann, 2003; Jiménez, Lopez, and Saurina, 2007). Thus, a higher HHI may result in a lower probability of failure. In contrast, in the "competition-stability" view, more market power in the loan market may result in higher bank risk and a higher probability of failure as the higher interest rates charged to loan customers make it harder to repay loans and exacerbate moral hazard and adverse selection problems (e.g., Boyd and De Nicoló, 2005; Boyd, De Nicoló, and Jalal, 2006; De Nicoló and Loukoianova, 2007; Schaeck, Cihák, and Wolfe, 2009). Martinez-Miera and Repullo (2010) furthermore argue that this effect may be non-monotonic. We control for this possibility by also incorporating the squared value of local market power. Berger, Klapper, and Turk-Ariss (2009) argue that the effects of both views may be in place – banks with more market power may have riskier loan portfolios but less overall risk due to higher capital ratios or other risk-mitigating techniques – and find empirical evidence of these predictions. In addition to the HHI, we also include in our analyses the ratio of originated subprime mortgage loans to total mortgage loans originated to account for the particularities of the recent financial crisis. As is known now, the excessive origination of mortgages to borrowers with subprime creditworthiness led to high losses for banks in the recent financial crisis. Additionally, prior research establishes that real estate loans in general also played an important role for bank stability in earlier crises (e.g., Cole and Fenn, 1995). We include the average subprime mortgage loan ratio in a bank's census tract to measure the subprime risk exposure of

the bank's local competitors. Based on the aforementioned literature and the characteristics of the recent financial crisis, we hypothesize that stronger subprime exposure of a bank's competitors could increase the competitors' risk structures and therefore also their default risk, which might have helped the observed banks survive the crisis by weakening their competitors.

The set of variables on state economic conditions contains the FHFA house price index to account for another real estate-related factor of the crisis: the decline in house prices. One of the alleged distress reasons for banks in the recent financial crisis was the strong decline in house prices since 2006. The fact that many banks could only partially recover collateral from defaulted mortgage loans because of depreciated property and estate prices is believed to also have caused instability in the banking system. We also include the annual percentage change in state GDP as a measure for the overall economic conditions.

Our fifth set of variables controls for potential differences in bank stability which could be explained by a bank's primary federal regulator. For this purpose, we measure the effects of OCC- and Fed-regulated banks with FDIC-regulated banks as the base case.

B. Results

Before we look at the coefficients of the single predictor variables in the regression models, we are first interested in the overall explanatory power of the model and how it varies over time periods prior to default and with different sets of included variables. We find that the explanatory power of the various models in terms of adjusted R-squared (McFadden's adjusted pseudo R-squared) increases from two years before the default to the quarter immediately prior to default. We find that the R-squared lies at roughly 59% to 69% when the models run tested for the pre-default quarter. Using the data one year prior to default we observe an R-squared of only about 36% to 48%. These values again decrease to about 18% to 37% when estimating the models two years before default. As might be expected, the explanatory power of the models increases over time towards the default. It has the highest explanatory power in the quarter immediately preceding the failure.

The next subject of interest in our multivariate analyses is the change in the models' explanatory power for different sets of variables. The results are important as they show the importance of

different sets of factors when trying to predict bank defaults. Models II, III, and IV of Table 5 show how the adjusted R-squared changes for accounting variables only (II), accounting variables plus corporate governance ownership variables (III), and accounting variables plus corporate governance management variables (IV). Interestingly, the predictive power of the models increases when adding the ownership data to the set of accounting variables. For the quarter prior to default the adjusted R-Squared increases from 62.3% to 63.5%, the year before default from 36.1% to 47.1%, and two years before default from 18.5% to 30.1%. The ownership data alone therefore increases the overall explanatory power of the model substantially. This effect is especially pronounced if the data is employed in the 2 years prior to default with an increase in explanatory power of more than half compared to accounting variables only. This result is even more interesting when looking at how the models' explanatory power changes when adding the management data (model IV) to the set of accounting variables. We see that there is only a marginal increase in the explanatory power in two and one years before the default as compared to the accounting variables. In the quarter prior to default, the explanatory power even decreases. Consequently, the explanatory power of the management variables is much weaker than the explanatory power of the ownership variables. We see a similar result for the remaining three sets of variables (competition, economic, and regulator variables). Models V to VIII in Table 5 show that the adjusted R-squared only changes marginally with the inclusion of the three additional variable sets with the largest increase due to the state economic conditions in the 2 years prior to default. In some instances, the explanatory power even decreases: as the comparisons of models V and VIII show, two of three adjusted R-squared values decrease when adding the regulatory variables to the accounting and corporate governance variable sets. The full model (XI) with all sets of variables only shows slight variations in the adjusted R-squared as compared to model III with accounting and ownership variables only. In the quarter before default, the full model (XI) has an adjusted R-squared of 59.6% (slightly down from 63.5% in model III), of 47.1% in the year before default (identical to 47.1% in model III) and of 36.7% two years prior to default (up from 30.1% in model III). Thus, it appears that the inclusion of all other sets of variables can only further increase the predictive power of the model two years before default. The accounting and corporate governance ownership variables therefore seem to provide the strongest contribution to the overall explanatory power in bank defaults. In comparing models IX and X we also observe that the explanatory power of the model does not substantially change for the subsample of banks with available corporate governance data and for the full data set.

(Table 5)

Looking next at the coefficients of the individual predictor variables, we find the differences in the accounting variables between default and no default banks in the descriptive statistics to be largely confirmed in our multivariate analysis. Across all model specifications in Table 5, the capital ratio and the return on assets have highly significant and negative influences on default probability: the lower the capital ratio and the return on assets, the higher is the default probability. Table 4 shows that both variables decrease strongly over the time period leading up to the default. This is confirmed in the multivariate analysis: the coefficients and significances of the capital ratio variable are highest in the quarter before default while for the return on assets, the influence seems to be higher when employed in earlier time periods (confirmed in a marginal effects analysis not shown here). The findings for these two variables are intuitive as they are the main ingredients of the bank's distance to default (e.g., Laeven and Levine, 2009; Houston et al., 2010). We also find the summary statistics for the NPL ratio to be confirmed in the regression models. The NPL ratio reveals a significantly positive influence on the default probability. Our descriptive statistics also show that default banks rely to a larger extent on wholesale funding in terms of brokered deposits as compared to no default banks. We find this result to be weakly confirmed in our multivariate analyses. Especially in the quarter before default, the brokered deposit variable has a significantly positive impact on a bank's default probability. The other main funding source, short-term deposits, exhibits significantly negative coefficients across most model specifications, with the largest effects one and two years before default. This implies that more short-term deposits reduce bank default probability. We are thus able to confirm the results of Gatev, Schuermann and Strahan (2006) who show that transaction deposits are sticky and can accordingly be considered as a stable funding source for banks, increasing their stability. Finally, we also verify the importance of C&D loans on the probability of bank failure as shown by Cole and White (2012). Our results substantiate in most cases that a higher exposure to C&D loans increases a bank's default probability. We do not find asset size, loan exposure, loan portfolio concentration, or the amount of MBS to have any consistent or strong influence on a bank's default probability across different model specifications. The overall results with respect to the accounting variables are therefore largely in line with prior research.

We observe several findings in our multivariate analyses regarding the corporate governance variables. First, three out of six ownership variables show a persistently strong influence on the

default probability across all model specifications and time periods prior to default. Table 5 reveals that the shares held by outside directors and shares held by chief officers have strongly significant and negative influences on bank default probability, whereas the variable showing the relative shares held by other corporate insiders has a highly significant and positive influence on a bank's probability to fail. This implies a lower bank default probability if outside board members and chief officers hold more shares but other inside shareholders own lower stakes in the bank. These findings are consistent with our descriptive statistics above. We observe that on average in the no default banks more than 80% of all shares are held by outside directors or chief officers. As mentioned before, these two groups have a high responsibility in addition to public visibility with their personal reputation at risk, especially in case of a bank default. Our multivariate results confirm that high shareholdings of both outside directors and chief officers are beneficial for bank survival. In contrast, if the bank is to a large extent owned by lower-level managers who in general are anonymous, but have direct influence on the bank's daily operations, the probability of bank default increases significantly. To determine the economic significance of these results we also analyze the marginal effects of the variables (not reported in the table) in our main model XI. Specifically, we calculate the marginal effects at the mean of all variables. We are interested how 10 percentage point changes in the relevant three ownership variables (shares held by outside directors, shares held by chief officers, and shares held by other corporate insiders) impact a bank's PD. We find that a 10 percentage point increase in the shares held by outside directors as well as in the shares held by chief officers each decrease a bank's PD by almost half from its average model-implied value. For the shares held by other corporate insiders, we find that a 10 percentage point increase results in about a 50% higher PD.[14] These results further support our findings that lower shareholdings of chief officers and outside directors, and higher shareholdings of lower-level management strongly contribute to a bank's risk of default.

As mentioned before, lower-level management has a moral hazard incentive to increase the risk of the bank. If it assumes high risks which prove to be successful, the value of the bank strongly increases and thereby also the personal wealth of lower-level management due to its high

[14] The model implied probability of default evaluated at the mean is 0.23 basis points (bps), 2.99bps, and 5.42bps 1 quarter, 1 year, and 2 years prior to default, respectively. Increasing the shares held by outside directors by 10 percentage points lowers the PD by -0.115bps, -1.413bps, and -2.245bps, increasing the shares held by chief officers by 10 percentage points reduces the PD by -0.114bps, -1.240bps, and -2.112bps, and 10 percentage points more shares held by other corporate insiders increases bank PD by 0.107bps, 1.234bps, and 2.838bps.

positions in the bank's stock. If, on the other hand, the high risks result in large losses, lower-level managers may lose their jobs. But as the cause (or more specifically, the employees and their actions) remains in most cases unknown to the general public, the chances to quickly find another comparable employment are high. This implies that they have unlimited upside but only limited downside risk. Accordingly, our descriptive as well as our multivariate results suggest that outside directors and chief officers behave more responsibly in terms of risk taking when they have large stakes in the bank while other corporate insiders tend to increase risk taking in this case. This finding is important for bank management as well as regulators: it argues for incentivizing outside directors and upper-level management with large ownership stakes, while lower-level management should rather be discouraged from holding large stakes in the bank.

The variable indicating if the bank CEO is also its single largest shareholder shows some positive significance confirming higher risks from a more concentrated shareholder base (as shown in e.g.; Laeven and Levine, 2009; Gropp and Köhler, 2010; Beltratti and Stulz, 2012). Taken together with the results on management ownership it indicates that top-level shareholdings seem to only be beneficial for bank stability if they are dispersed among top-level management and board members. Banks which are organized in a multibank holding company structure or publicly traded at the stock market do not show significantly different effects.

In contrast to the strong results for the corporate governance ownership variables, the corporate governance management variables do not have substantial explanatory power for bank defaults. None of our five main management variables – the number of outside directors, the number of chief officers, the number of other corporate insiders, the board size, and whether the bank's CEO is also its Chairman – seems to have a substantial influence on a bank's default probability. We only find weak significance for some of these variables scattered in different model specifications. Accordingly, we conclude that the management structure of a given bank is not decisive for its overall stability.

Looking at the last three sets of variables, we find that the local market power of the bank as well as the primary federal regulator have no direct influence on bank default probability. However, we observe that high exposures of the bank's competitors to subprime mortgage loans have positive effects for the bank under analysis. This is intuitive as these direct competitors, who are located in the same census tract or MSA, might suffer from high loan default rates due to a high

subprime exposure and compete less aggressively in the market. Turning to our two state economic indicators, we find that they seem to influence bank default probability at least to some degree. The house price inflation has a negative effect, mostly two years before default, while the GDP growth variable shows significantly negative values mostly in the year before default. These results suggest that declining real estate prices and negative GDP growth increase the chances for a bank to default.

We finally test a Heckman Selection model of bank default using a two-stage probit regression setup. The goal of the Heckman Selection model is to validate the results of the regular logit regression model by accounting for possible selection biases due to different availability of corporate governance data. By including this model, we follow Cole, McKenzie, and White (1995), who show that it can serve as a valid control tool for binary regression models testing bank defaults. Our main concern is that only specific types of banks with specific ownership and management structures report their corporate governance data, so that our analysis would suffer from a non-random subsample of banks. We account for this possibility by including a number of instrumental variables in the selection equation of the model. These are the size of the bank and its squared value to account for nonlinearities in size because very large banks may have a much higher probability to publish corporate governance data. We also use the indicator variable for whether banks are publicly traded as an instrument because banks with registered shares are required by the SEC to publish their corporate governance structure. Furthermore, we include in the first stage if banks are organized in a multibank holding companies as banks in large BHCs might have a higher probability of publishing their corporate governance data. In addition, data on banks' ownership and management structures are only disclosed at the holding company level.[15] Furthermore, we include the individual fractions of a bank's loan portfolio (real estate, agricultural, commercial, and individual loans) in our set of instruments to account for banks' different foci in business. The requirements to report corporate governance data may also differ by regulatory authorities. We therefore use regulatory indicator variables to distinguish between potential differences in the disclosure of corporate governance data by OCC-, FED-, and FDIC-regulated banks.

[15] We also repeat all tests clustering banks at the holding company level to eliminate that results are driven by spurious significances due to repeated observations. All findings remain the same. The exclusion of all banks in multibank holding companies also does not change the results qualitatively.

The results of the second-stage probit model, as shown in the last columns of Table 5, confirm our previous results. We find the same patterns of significance and direction of influence for our variables also when the Heckman correction is incorporated. Furthermore, selection biases are rejected in Wald tests in all cases. These results are additionally supported comparing models IX and X, in which we show the coefficients of the accounting, competition, economic and regulatory variables for both the sample of all banks (model IX) and subsample of banks with available corporate governance data (model X). We also find here that coefficients and significances remain largely unchanged.

IV. Development and Testing of a Single Indicator of Bank Ownership Structure to Predict Default

The results of our multivariate regression analyses suggest that the ownership of outside directors, chief officers, and other corporate insiders play a major role in explaining bank defaults during the recent financial crisis of 2007-2010. We are therefore interested in obtaining a better understanding of these three variables and how default and no default banks featuring different levels of these ownership structures differ from each other. To do so, we develop a single measure of a bank's ownership structure based on the three variables in question and investigate if it is able to confirm our previous results.

Our multivariate results suggest that high levels of outside director and chief officer ownership stakes strongly reduce bank default risk, whereas high levels of ownership of other corporate insiders strongly increase default risk. We therefore investigate the fractions of default and no default banks for various percentiles of ownership. We calculate the ratios of default and no default banks above or below various thresholds for the key ownership variables to observe if a single measure using these thresholds can predict bank default well. For each percentile, we calculate the percentage of banks with higher than that percentile for shareholdings of outside directors and chief officers, and below 100% minus that percentile for other corporate insiders.

Table 6 shows the results. For example, for the 5^{th} percentile, we determine a ratio of 3.87% as threshold for shares held by outside directors, a fraction of 0.38% of shares held by chief officers, and the 95^{th} percentile with a value of 89.1% of shares held by other corporate insiders. We then

calculate the fraction of default banks above the value of 3.87% for shares held by outside directors out of all default banks, the fraction of default banks above the value of 0.38% for shares held by chief officers out of all default banks, as well as the fraction of default banks below the value of 89.1% for shares held by other corporate insiders out of all default banks. For no default banks, we employ the same procedure. Table 6 shows that the potentially stabilizing effects of more shares for outside directors and chief officers and less shares for other corporate insiders are confirmed: the stricter the approach is chosen, i.e. the higher the percentile threshold, the safer are the banks. For the 5th percentile, only the variables of shares held by outside directors and shares held by other corporate insiders indicate that more no default banks than default banks meet the requirement. However, from the 10th percentile on, in all cases more no default banks than default banks meet the respective requirement in our sample (except for the variable of shares held by chief officers in the 15th percentile). Accordingly, the shareholdings of bank management and outside directors provide an easy indicator for bank stability: much more no default banks have more shareholdings of outside directors and chief officers and less shareholdings of other corporate insiders than default banks.

(Table 6)

Based on these results, we calculate the percentage of banks meeting all three requirements. For the 5th percentile, we calculate the fraction of default and of no default banks where outside directors hold more than 3.87% of all shares, chief officers hold more than 0.38% of all shares, and other corporate insiders hold less than 89.1% of all shares. We call the match of all of these three requirements “Intersection.” Table 6 shows that for the 5th percentile, 92.593% of all no default banks, but only 61.957% of all default banks meet these potentially stabilizing ownership structures. The results become even stronger as higher percentile values are chosen. For the 10th percentile, we find values of 86.813% and only 33.929% for no default and default banks, and 77.366% and 9.860% at the 15th percentile. At the 20th percentile, no default bank meets all requirements any more. That is, no default bank has an ownership structure in which outside directors hold more than 24.31% of all shares, chief officers more than 2.84% of all shares, and other corporate insiders less than 25.31% of all shares. In contrast, all three criteria are still met by 68.313% of all no default banks.

As our "Intersection" variable allows for an aggregation of bank ownership information in a single measure, we perform an additional analysis to investigate the potentially stabilizing effects of ownership even further: we re-estimate our multivariate logistic regression model XI of Table 5 in a different specification. Instead of including the full set of six ownership and five management variables, we only include one corporate governance measure: the "Intersection" indicator variable at the 5th, 10th, or 15th percentile of Table 6. Table 7 shows the results for all three percentiles. Comparing the impact of "Intersection" on bank default probability, Table 7 reveals that it increases in significance when determined at higher percentile threshold values. We see a decrease in both the significance and the absolute value of the coefficient over the period leading up to the default. This result confirms our previous finding that corporate governance data has more predictive power for bank failure when employed some time period prior to default, presumably at a point in time at which options for structural changes in the bank are still available. The significantly negative coefficient furthermore confirms our conjecture of stabilizing effects of an ownership structure where outside directors and chief officers hold many and other corporate insiders only a few shares. As for our main model XI of Table 5, we also investigate the marginal effects in Table 7 to observe the economic significance of the single indicator variable of bank default. We find our previous results to be confirmed. The single predictor variable of corporate governance has a strong economic impact on banks' PD. While the predictor variable is insignificant for all three percentile values in the quarter prior to default, banks meeting all three requirements at the 10th (15th) percentile have a lower default probability of 0.33% (0.47%) and even 0.74% (0.99%) in our one year and two years prior to default models, respectively. Finally, the explanatory power of the regression model is quite high including only this single variable for corporate governance. Comparing the regression model including "Intersection" at the 10th (15th) percentile to the regression with all but corporate governance variables (model X in Table 5) we observe an increase in explanatory power from 37.6% to 39.7% (to 43.4%) in the year before default and from 26.7% to 30.5% (to 33.6%) in the period two years prior to default. Accordingly, this single aggregated corporate governance information variable is able to improve the explanatory power of a multivariate regression model by more than a quarter compared to the model with all but corporate governance variables.

(Table 7)

V. Conclusion

This paper analyzes the role of corporate governance in bank defaults during the recent financial crisis of 2007-2010. To do so, it examines the ownership and management structures of default and no default commercial banks in the US. Using a combination of accounting variables, corporate governance structure, and several bank-external control variables (subprime risk, house price development, competition, economic, and regulatory indicators), we can help explain bank defaults as much as two years in advance. The results show that the overall explanatory power of regressions used to explain bank defaults can be strongly increased by including ownership indicators in addition to 'usual' accounting indicators. Our findings also illustrate that a bank's ownership structure plays a substantial role in explaining default likelihood: banks are more likely to default if they have fewer outside director and chief officer shareholdings and more shareholdings of other corporate insiders. We offer explanations for these perhaps unexpected findings. Lower-level managers with large shares may take on more risk because of the moral hazard problem. Outside directors and chief officers are vilified in the event of a default, so that the moral hazard problem may not apply as much to them.

The study therefore offers important policy implications which might assist regulators, supervisors, and other market participants in anticipating and preventing future banking crises. In addition to accounting variables indicating bank stability, such as capitalization, profitability, and nonperforming loans, strong emphasis should be given to the analysis of the bank's corporate governance, especially the ownership structure. The results confirm that it has substantial predictive power for bank failure when employed some time period prior to default – at a point in time at which options for structural changes in the bank are presumably still available.

With regard to stability, our results suggest that banks should be owned in large part by outside directors and chief officers, whereas other employees should only hold minimal stakes in the banks. Our study has also strong implications with respect to bonus payment programs involving stock. Based on our findings, banks or bank regulators should reduce the amount of stock or stock options given out to lower-level managers, such as vice-presidents or department heads, to increase bank stability. Instead, top-level managers or outside directors should receive a higher portion of their overall salary in stock or options, to increase their level of shareholdings in the bank. Our results therefore support the recent efforts of various bank regulations and regulators

(such as Dodd-Frank, the G-20, the FDIC, and the Federal Reserve) to impose stricter rules on bank compensation systems and might even offer potential guidance for the implementation of such rules.

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Table 1 Description of Variables

The table shows descriptions of virtually all variables used in the analyses together with their units of measurement. All financial variables are measured in real terms with 2005 as the base year using the consumer price index (CPI).

Variable Name	Unit	Description
Accounting Variables		
log(Assets)	Log ($ Thd.)	Natural logarithm of total assets in $ thousand as reported on the balance sheet.
Capital Ratio	%	Ratio of equity capital to total assets as reported on the balance sheet.
Total Loans excl. C&D/Assets	%	Ratio of the total volume of all outstanding loans excluding construction and development (C&D) loans to total assets as reported on the balance sheet.
Construction & Development (C&D) Loans/Assets	%	Ratio of the total volume of all construction & development (C&D) loans to total assets as reported on the balance sheet.
Loan Concentration	Index	Herfindahl Hirschman Index (HHI) of bank level loan portfolio concentration. It is calculated by summing the squared percentage of each loan category to the bank's total loans, and ranges from 0 to 1.
ST Deposits/Assets	%	Ratio of short-term deposits (transaction and demand deposits) to total assets as reported on the balance sheet.
Brokered Deposits/Assets	%	Ratio of brokered deposits to total assets as reported on the balance sheet.
Return on Assets	%	Ratio of net income as reported on the profit and loss account to total assets as reported on the balance sheet.
Non-perform. Loans/Assets	%	Ratio of all non-performing loans (all loans 90 days past due plus all loans charged-off) to total assets as reported on the balance sheet.
Loan Growth	%	Quarterly growth in the total volume of deflated outstanding loans as reported on the balance sheet.
MBS/Assets	%	Ratio of mortgage-backed securities (MBS) to total assets as reported on the balance sheet.
Unused Commitm./Assets	%	Ratio of all unused loan commitments as reported in the bank's off-balance sheet statement to total assets as reported on the balance sheet.
Corporate Governance Variables		
Ownership Variables		
Shares Outside Directors/Shares	%	Ratio of the number of shares held by outside (non-affiliate) directors of the bank to the bank's total number of shares outstanding.
Shares Chief Officers/Shares	%	Ratio of the number of shares held by chief officers of the bank to the bank's total number of shares outstanding.
Shares Other Corp. Insiders/Shares	%	Ratio of the number of shares held by other corporate insiders of the bank to the bank's total number of shares outstanding.
CEO is largest Shareholder	Dummy	Dummy variable indicating whether the CEO of a bank is also its single largest shareholder.

Public Bank	Dummy	Dummy variable indicating whether the bank is traded publicly at the stock market. Subsidiaries of publicly traded bank holding companies are considered to be public. Banks with private placements of shares with a CUSIP number, banks without a stock exchange listing, and banks whose bank holding company is not listed at a US stock exchange are not treated as public. The data on trading and listing are derived from CRSP.
Multibank Holding Company	Dummy	Dummy variable indicating whether the bank is a subsidiary of a bank holding company with more than 1 bank.
Management Variables		
Outside Directors/Board	Ratio	Ratio of the number of outside directors (non-affiliate directors, i.e. members of the board of directors excluding chief officers and all other corporate insiders) to the board size (the number of members of the board of directors).
Chief Officers/Board	Ratio	Ratio of the number of chief officers (members of the executive board) to the board size (the number of members of the board of directors).
Other Corporate Insiders/Board	Ratio	Ratio of the number of other corporate insiders of a bank (presidents, vice presidents, treasurer etc., i.e. all employees of the bank except chief officers and board members) to the board size (the number of members of the board of directors).
log(Board Size)	Numeric	Natural logarithm of the number of members of the board of directors.
Chairman is CEO	Dummy	Dummy variable indicating whether the Chairman of the Board of Directors is also the Chief Executive Officer (CEO) of the same bank.
Market Competition Variables		
Local Market Power	Index	Herfindahl Hirschman Index (HHI) of market concentration based on the bank's weighted deposits in the Metropolitan Statistical Areas (MSA) or rural counties in which it operates, and ranges from 0 to 1.
(Local Market Power)^2	Index^2	The squared value of "Local Market Power."
Competitors' Subprime Exposure	%	The ratio of originated subprime loans to total originated loans in the bank's local markets. It is used in the analyses as the annual average from 2004 – 2008 in the respective bank's census tract weighted by the bank's deposits in each census tract employing data of the Home Mortgage Disclosure Act (HMDA).
State-Level Economic Variables		
House Price Inflation	%	Quarterly inflation rate of the seasonally-adjusted Federal Housing Finance Agency's (FHFA) house price index in the bank's state.
%-Change in GDP	%	Quarterly percentage change in the Gross Domestic Product (GDP) in the bank's state.
Primary Federal Regulator Variables		
OCC	Dummy	Dummy variable indicating whether the bank has a national bank charter, so the bank's primary federal regulator is the OCC.
FED	Dummy	Dummy variable indicating whether the bank is a state-chartered Federal Reserve member, so the Federal Reserve is the bank's primary federal regulator.

Table 2 Bank Default Characteristics and Loss to FDIC fund

The table shows the characteristics of commercial default banks in the US over the time period 2007:Q1 – 2010:Q3 aggregated over years. In Panel A, the number of default banks and the corresponding total loss to the FDIC insurance fund in $ million in current year dollars (estimated through the FDIC at the time of default) in the parentheses below is provided by default reason. The respective reason was identified via official press releases and loss reports of regulatory agencies, newspaper articles, and wire news. Fraud refers to any kind of illegal wrongdoing of the management; general crisis related means that it was mentioned that the financial crisis was the main reason for the failure. Panel B shows the percentage of banks with bad risk management, to which a cease-and-desist order had been issued before failure by the respective regulatory agency, and where the default was surprising. "Bad Risk Management" is used as stated by the FDIC after having taken the bank into conservatorship and examining the failure in the Material Loss Report (MLR). For the identification of a cease-and-desist order prior to default we employ the MLR and/or the FDIC press releases of the bank failure. A bank default is defined as "surprising" when it was not anticipated by the bank regulators or the clients. Whether or not a bank failure was "surprising" is taken from two different sources. First, the MLRs in which the FDIC states whether or not it could have anticipated the failure at prior examinations. The second source is LACE bank ratings during the quarters leading up to the failure. These derive from LACE Financial, an independent (often uncompensated) boutique credit-ratings firm specialized in rating banks and other financial services firms. It was founded in 1984 and acquired by Kroll BondRatings in August 2010. If the assigned LACE rating is not F (worst) in the quarter before failure, the failure is deemed "surprising."

Panel A	2007	2008	2009	2010: Q1-Q3	Total
General Crisis Related	- -	2 ($42)	35 ($521)	58 ($205)	95 ($768)
Liquidity Problems Only	- -	- -	1 ($12)	- -	1 ($12)
Loan Losses Only	1 ($110)	12 ($758)	51 ($703)	42 ($510)	106 ($2,081)
Liquidity Problems and Loan Losses	- -	3 ($939)	16 ($593)	3 ($501)	22 ($2,033)
Fraud	- -	1 ($0)	2 ($87)	2 ($77)	5 ($164)
Other	1 ($16)	2 ($874)	14 ($753)	3 ($48)	20 ($1,691)
Total	2 ($126)	20 ($2,613)	119 ($2,668)	108 ($1,341)	249 ($6,748)

Panel B	2007	2008	2009	2010: Q1-Q3	Total
Bad Risk Management	50.00%	5.00%	27.73%	9.26%	18.07%
Cease-and-Desist Order before Failure	0.00%	15.00%	8.40%	5.56%	7.63%
Failure Surprising	0.00%	35.00%	17.65%	5.56%	13.65%

Table 3 Corporate Governance Variables

The table shows descriptive statistics of corporate governance variables for all banks and subdivided by non-default and default banks. The table is based on the subset of 5,905 observations for the 328 banks for which we have corporate governance data. "Bad Risk Management," "Cease-and-Desist Order before Failure," and "Failure Surprising" are defined as in Table 2. Thus, the last six columns in this table only refer to the 85 default banks with available corporate governance data. The shares outside directors, shares chief officers, and shares other corporate insiders variables are standardized by the bank's number of outstanding shares (Shares). The number of outside directors, number of chief officers, and number of other corporate insiders variables are normalized by the bank's board size (Board). All employees of the bank except chief officers and board members are deemed other corporate insiders, chief officers are the members of the executive board, and outside directors are members of the board of directors excluding chief officers and all other corporate insiders.

				Bad Risk Management		Cease-and-Desist Order before Failure		Failure Surprising	
	Total	No Default	Default	No	Yes	No	Yes	No	Yes
Ownership Variables									
Shares Outside Directors/Shares	0.582	0.650	0.387	0.400	0.335	0.392	0.287	0.404	0.173
Shares Chief Officers/Shares	0.162	0.178	0.114	0.111	0.125	0.111	0.166	0.118	0.061
Shares Other Corp. Insiders/Shares	0.218	0.119	0.501	0.511	0.460	0.503	0.453	0.521	0.234
CEO is largest Shareholder	0.052	0.000	0.200	0.206	0.176	0.198	0.250	0.190	0.333
Public Bank	0.339	0.412	0.269	0.265	0.289	0.283	0.105	0.274	0.235
Multibank Holding Company	0.139	0.140	0.124	0.118	0.156	0.130	0.053	0.135	0.059
Management Variables									
Outside Directors/Board	0.882	0.883	0.879	0.880	0.873	0.881	0.838	0.876	0.919
Chief Officers/Board	0.380	0.330	0.524	0.529	0.504	0.524	0.523	0.521	0.565
Other Corporate Insiders/Board	1.548	1.540	1.571	1.589	1.500	1.568	1.637	1.577	1.495
log(Board Size)	2.463	2.521	2.297	2.331	2.161	2.286	2.517	2.298	2.288
Chairman is CEO	0.735	0.778	0.612	0.632	0.529	0.605	0.750	0.608	0.667

Table 4 Descriptive Statistics of Banks

The table provides descriptive statistics of quarterly data of bank-specific variables over the time period 2006:Q1 – 2010:Q3. The variables are described in Table 1. For each variable, we report its mean and standard deviation in parentheses below for the total data set and for the subsample of banks for which corporate governance data is available.

				Available Corp. Gov. Data		Default in		
	Total (n = 79,984)	No Default (n = 76,349)	Default (n = 3,635)	No Default (n = 4,617)	Default (n = 1,288)	2 Years (n = 246)	1 Year (n = 248)	1 Quarter (n = 243)
Number of Banks	4,270	4,021	249	243	85	246	248	243
Accounting Variables								
Total Assets ($-Thd.)	392,315 (1,364,676)	379,436 (1,367,481)	662,826 (1,274,830)	1,935,810 (3,549,197)	990,464 (1,726,073)	687,489 (1,305,029)	719,141 (1,368,124)	667,438 (1,233,452)
Capital Ratio	11.018% (0.049)	11.105% (0.048)	9.179% (0.063)	9.731% (0.025)	8.757% (0.047)	10.474% (0.041)	7.503% (0.026)	1.594% (0.032)
Total Loans excl. C&D/Assets	57.362% (0.148)	57.590% (0.148)	52.568% (0.153)	61.351% (0.103)	51.119% (0.143)	51.951% (0.153)	52.836% (0.155)	53.707% (0.145)
Construction & Development (C&D) Loans/Assets	5.750% (0.078)	4.923% (0.061)	23.113% (0.155)	7.491% (0.064)	26.259% (0.142)	25.335% (0.163)	22.529% (0.149)	18.273% (0.129)
Loan Concentration	0.558 (0.181)	0.549 (0.178)	0.727 (0.155)	0.639 (0.142)	0.753 (0.122)	0.723 (0.157)	0.731 (0.154)	0.744 (0.148)
ST Deposits/Assets	21.624% (0.114)	22.124% (0.113)	11.215% (0.077)	12.829% (0.095)	10.515% (0.070)	10.308% (0.069)	10.016% (0.069)	10.522% (0.084)
Brokered Deposits/Assets	2.319% (0.221)	1.986% (0.223)	9.314% (0.141)	3.087% (0.050)	9.310% (0.133)	8.824% (0.139)	11.155% (0.153)	17.744% (0.177)
Return on Assets	0.494% (0.011)	0.555% (0.009)	-0.784% (0.027)	0.437% (0.008)	-0.718% (0.025)	0.184% (0.009)	-1.650% (0.026)	-5.037% (0.045)
Non-perform. Loans/Assets	1.079% (0.019)	0.954% (0.014)	3.707% (0.053)	1.185% (0.016)	3.707% (0.051)	1.795% (0.021)	6.554% (0.055)	11.737% (0.075)
Loan Growth	1.300% (0.064)	1.251% (0.061)	2.339% (0.107)	1.517% (0.058)	1.865% (0.081)	4.934% (0.121)	-1.340% (0.064)	-6.442% (0.059)
MBS/Assets	6.573% (0.089)	6.677% (0.090)	4.384% (0.055)	8.284% (0.082)	4.939% (0.052)	3.929% (0.052)	5.324% (0.063)	5.481% (0.064)
Unused Commitm./Assets	16.251% (0.425)	15.989% (0.424)	21.758% (0.440)	22.634% (0.186)	23.736% (0.482)	22.718% (0.354)	15.440% (0.249)	10.802% (0.278)
Market Competition Variables								
Local Market Power	11.884% (0.091)	11.809% (0.090)	13.489% (0.106)	13.858% (0.067)	12.804% (0.080)	13.319% (0.099)	13.691% (0.112)	14.167% (0.118)
Comps.' Subprime Exposure	6.003% (0.045)	6.141% (0.045)	3.971% (0.034)	4.763% (0.036)	3.889% (0.031)	3.998% (0.035)	4.031% (0.035)	3.969% (0.035)
State-Level Economic Variables								
House Price Inflation	-0.268% (0.016)	-0.226% (0.016)	-1.145% (0.026)	-0.510% (0.018)	-1.282% (0.027)	-1.961% (0.028)	-2.113% (0.025)	-1.262% (0.022)
%-Change in GDP	0.859% (0.022)	0.864% (0.022)	0.769% (0.023)	0.774% (0.019)	0.757% (0.022)	0.702% (0.017)	-0.116% (0.012)	0.317% (0.014)
Primary Federal Regulator								
OCC	23.097% (0.421)	23.294% (0.423)	18.955% (0.392)	27.572% (0.447)	22.516% (0.418)	19.512% (0.397)	19.355% (0.396)	19.753% (0.399)
FED	12.055% (0.326)	12.033% (0.325)	12.517% (0.331)	18.107% (0.385)	17.857% (0.383)	12.195% (0.328)	12.097% (0.327)	12.346% (0.330)

Table 5 Regression Results

This table reports in Model I to XI results from logit regressions of bankruptcy indicators on predictor variables and in the last three columns a Heckman selection model using probit regressions. The shares outside directors, shares chief officers, and shares other corporate insiders variables are standardized by the bank's number of outstanding shares (Shares). The number of outside directors, number of chief officers, and number of other corporate insiders variables are normalized by the bank's board size (Board). The remaining variables are defined as in Table 1. Robust standard errors are employed. In the last three columns we report results of a probit regression model with sample selection following Heckman (1979) and include robust standard errors derived via the Huber (1967) – White (1980) sandwich estimator. The selection equation is $Corporate\ Governance\ Data\ available = \alpha + \beta_1 * ln(Assets) + \beta_2 * (ln(Assets))^2 + \beta_3 * Real\ Estate\ Loans + \beta_4 * Agricultural\ Loans + \beta_5 * Commercial\ Loans + \beta_6 * Individual\ Loans + \beta_7 * Public\ Bank + \beta_8 * Multibank\ Holding\ Company + \beta_9 * OCC + \beta_{10} * FED$, where the loan variables are employed relative to a bank's total loans. We also report the results for the Wald test of no sample selection bias, i.e. no correlation between the errors of the selection equation and the regression model. The statistical significance of results is indicated by * = 10% level, ** = 5% level, and *** = 1% level.

	I			II			III			IV		
Default in	1 Quarter	1 Year	2 Years	1 Quarter	1 Year	2 Years	1 Quarter	1 Year	2 Years	1 Quarter	1 Year	2 Years
Accounting Variables												
log(Assets)	0.113	-0.274***	-0.154**	-0.110	-0.305*	-0.184	-2.08E-04	-0.131	0.006	-0.151	-0.260	-0.073
Capital Ratio	-87.982***	-41.314***	-5.670**	-70.496***	-30.948***	4.658	-65.476***	-31.204***	2.784	-68.440***	-26.128**	6.703**
Total Loans excl. C&D/Assets	-0.649	2.957**	2.510**	-1.542	2.739	4.224**	-3.013	-0.998	0.768	-1.166	2.271	3.447
C&D Loans/Assets	1.391	8.727***	9.917***	-3.572	8.001***	11.103***	-5.318	1.715	6.317***	-3.799	6.738***	10.454***
Loan Concentration	0.133	0.276	0.584	-0.125	-0.599	0.834	-0.018	-1.552	-1.148	-0.090	-0.225	0.637
ST Deposits/Assets	-1.068	-8.491***	-8.975***	-4.410*	-6.521***	-3.677**	-3.850	-8.773***	-6.968***	-4.780*	-6.460***	-3.635**
Brokered Deposits/Assets	2.957***	0.110***	0.041	2.915**	1.614	0.023	2.960**	1.324	-0.202	3.009**	1.804	-0.044
Return on Assets	-1.484	-26.715***	-20.278***	1.116	-26.475***	-22.664***	2.959	-26.055***	-28.667***	1.553	-30.257***	-23.660***
Non-perform. Loans/Assets	2.653	17.181***	5.452**	10.460**	13.799***	6.967	10.542**	18.333***	16.141***	11.701**	16.354***	9.747**
Loan Growth	-6.628***	-1.882	2.482***	-10.531**	-13.886***	1.325	-7.771**	-11.967***	0.712	-10.238**	-13.684***	0.684
MBS/Assets	-5.769***	0.855	-0.963	-3.535	3.535	2.776	-5.753	-2.088	-2.536	-2.754	4.132	3.334
Unused Commitm./Assets	-0.449	0.515	0.216***	-0.309	-2.830	-1.294	-0.310	-3.927*	-3.132*	-0.238	-2.625	-1.055
Corporate Governance Variables												
Ownership Variables												
Shares Outside Directors/Shares							-4.400***	-4.411***	-3.831***			
Shares Chief Officers/Shares							-2.113**	-2.174***	-2.517***			
Shares Other Corp. Insiders/Shares							3.707***	4.242***	3.923***			
CEO is largest Shareholder							0.411	0.802*	0.931**			
Public Bank							-0.397	0.302	0.194			
Multibank Holding Company							0.620	0.917**	0.255			
Management Variables												
Outside Directors/Board										-0.581	0.238	0.807
Chief Officers/Board										0.601	0.273	0.760
Other Corporate Insiders/Board										0.024	0.309	-0.400
log(Board Size)										-0.244	-0.691	-0.629
Chairman is CEO										-0.208	-0.786**	-0.672**
Market Competition Variables												
Local Market Power												
(Local Market Power)^2												
Comps.' Subprime Exposure												
State-Level Economic Variables												
House Price Inflation												
%-Change in GDP												
Primary Federal Regulator Variables												
OCC												
FED												
Constant	-0.834	-0.879	-4.942***	2.786	0.432	-6.598***	2.860	2.859	-3.301	3.799	0.793	-6.149**
Observations	65,849	77,833	76,850	4,832	5,563	5,226	4,832	5,563	5,226	4,832	5,563	5,226
Number of Defaults	237	244	245	83	83	85	83	83	85	83	83	85
McFadden's adjusted Pseudo R-squared	69.0%	38.5%	24.7%	62.3%	36.1%	18.5%	63.5%	47.1%	30.1%	61.5%	37.1%	19.3%

Table 5 cont. Regression Results

	V			VI			VII			VIII		
Default in	1 Quarter	1 Year	2 Years	1 Quarter	1 Year	2 Years	1 Quarter	1 Year	2 Years	1 Quarter	1 Year	2 Years
Accounting Variables												
log(Assets)	0.015	-0.134	0.131	0.068	-0.134	0.106	-0.022	-0.164	0.066	0.030	-0.141	0.129
Capital Ratio	-64.469***	-28.314***	3.798	-70.758***	-31.518**	3.313	-63.395***	-30.068***	-0.289	-64.121***	-28.962***	3.758
Total Loans excl. C&D/Assets	-2.733	-0.717	0.276	-8.566***	-4.133	0.610	-2.741	-1.796	-2.031	-3.831*	-0.794	0.333
C&D Loans/Assets	-5.624	0.807	5.055**	-10.553**	-1.637	6.734**	-5.335	0.012	3.705	-7.217*	0.716	5.088**
Loan Concentration	0.025	-1.515	-1.449	0.688	-0.219	-1.968	-0.092	-1.599	-1.760	-0.075	-1.426	-1.354
ST Deposits/Assets	-4.022	-7.488***	-6.489***	-1.557	-8.522**	-6.493**	-4.272	-7.168***	-5.679**	-3.192	-7.407***	-6.531**
Brokered Deposits/Assets	3.023**	1.324	-0.439	3.869*	2.475	-0.610	3.104**	1.142	-0.301	3.084**	1.285	-0.361
Return on Assets	3.524	-27.167***	-29.252***	-9.568	-28.568***	-27.814***	2.536	-25.660***	-28.069***	2.783	-26.346***	-29.018***
Non-perform. Loans/Assets	10.990**	20.709***	22.644***	10.794	18.688**	27.532***	11.233**	19.860***	15.300**	12.833**	21.105***	22.159***
Loan Growth	-8.042**	-12.370***	-0.236	-5.132	-13.303***	-0.319	-8.165**	-10.847***	1.252	-7.616**	-12.188***	-0.219
MBS/Assets	-6.194	-0.608	-2.034	-4.908	-3.887	-2.347	-5.707	-1.341	-2.636	-8.017*	-0.748	-2.142
Unused Commitm./Assets	-0.262	-3.262	-2.254	-0.500	-5.220*	-4.154*	-0.261	-2.866	-2.857	-0.151	-3.191	-2.262
Corporate Governance Variables												
Ownership Variables												
Shares Outside Directors/Shares	-4.375***	-4.072***	-4.032***	-4.449***	-4.614***	-3.868***	-4.277***	-4.052***	-3.948***	-4.780***	-4.107***	-4.066***
Shares Chief Officers/Shares	-2.394**	-2.224**	-2.578***	-4.579***	-3.304***	-3.061***	-2.112*	-2.465***	-3.078***	-2.277**	-2.200**	-2.587***
Shares Other Corp. Insiders/Shares	3.895***	4.397***	4.694***	4.278***	4.095***	4.423***	3.867***	4.425***	5.218***	4.345***	4.447***	4.727***
CEO is largest Shareholder	0.520	0.886*	0.934**	1.444**	1.524**	1.066*	0.547	0.810	0.910*	0.391	0.783	0.839*
Public Bank	-0.442	0.655	0.469	-0.834	-0.056	0.344	-0.462	0.639	0.459	-0.289	0.704	0.485
Multibank Holding Company	0.677	0.914**	0.349	0.636	0.857*	0.377	0.723	0.910**	0.201	0.776	0.973**	0.378
Management Variables												
Outside Directors/Board	-0.710	-0.370	0.663	-3.651*	-1.062	-0.170	-0.869	-0.311	0.305	-0.880	-0.383	0.633
Chief Officers/Board	0.844	0.646	1.815**	-1.588	0.292	1.382	0.758	0.702	2.368***	0.815	0.625	1.785**
Other Corporate Insiders/Board	-0.540	-0.177	-1.443**	0.995	0.176	-1.124	-0.450	-0.145	-1.489**	-0.567	-0.155	-1.440**
log(Board Size)	-0.087	-0.509	-0.300	-0.308	-0.199	-0.238	-0.097	-0.464	0.116	0.061	-0.512	-0.314
Chairman is CEO	0.094	-0.782**	-0.833***	0.342	-0.520	-0.791**	0.109	-0.712*	-0.767**	0.075	-0.762*	-0.826***
Market Competition Variables												
Local Market Power				6.588	-0.806	-3.791						
(Local Market Power)^2				-16.523	1.093	6.654						
Comps.' Subprime Exposure				-8.634	-13.824**	-8.232						
State-Level Economic Variables												
House Price Inflation							5.140	-9.817	-36.806***			
%-Change in GDP							11.006	-21.886**	1.455			
Primary Federal Regulator Variables												
OCC										-0.218	0.024	0.128
FED										0.883	0.279	0.306
Constant	3.598	3.814	-2.957	7.441	6.923	-1.414	4.070	4.782	-1.381	3.784	3.823	-3.044
Observations	4,832	5,563	5,226	3,778	4,360	4,093	4,832	5,563	5,226	4,832	5,563	5,226
Number of Defaults	83	83	85	52	66	67	83	83	85	83	83	85
McFadden's adjusted Pseudo R-squared	62.5%	47.1%	31.2%	60.3%	47.2%	30.0%	62.1%	47.5%	37.3%	62.5%	46.7%	30.9%

Table 5 cont. Regression Results

	IX			X			XI			Heckman Selection Model 2nd Stage		
Default in	1 Quarter	1 Year	2 Years	1 Quarter	1 Year	2 Years	1 Quarter	1 Year	2 Years	1 Quarter	1 Year	2 Years
Accounting Variables												
log(Assets)	0.018	-0.461***	-0.339***	0.029	-0.313	-0.124	0.152	-0.034	0.069	0.019	0.019	0.013
Capital Ratio	-83.202***	-41.746***	-8.556***	-73.790***	-29.397**	3.923	-76.995***	-32.687**	-0.846	-38.056***	-15.131***	-0.390
Total Loans excl. C&D/Assets	-2.119	1.358	1.139	-6.322*	-0.938	2.350	-10.249***	-5.603*	-1.305	-4.678**	-2.979**	-0.610
C&D Loans/Assets	-1.018	7.320***	9.821***	-8.667*	5.165**	11.682***	-12.737**	-2.423	5.208	-6.301**	-1.270	2.760**
Loan Concentration	0.366	-0.104	-0.289	0.492	-0.839	-0.820	0.261	0.777	-2.007	0.274	-0.084	-0.886
ST Deposits/Assets	-1.412	-9.064***	-9.182***	-1.821	-5.943***	-2.184	-0.906	-8.020**	-6.993*	-0.285	-4.461***	-3.299**
Brokered Deposits/Assets	2.653**	1.107	-0.011	3.488**	2.745	1.308	3.649*	3.046	0.063	1.973**	1.466	0.152
Return on Assets	-11.839**	-19.980***	-12.398***	-13.432*	-26.199***	-20.981***	-9.568	-30.587***	-29.647***	-3.806	-14.593***	-14.204***
Non-perform. Loans/Assets	5.069	14.225***	1.061	10.884*	11.105*	1.246	12.396*	16.826**	19.025**	7.115**	7.831**	8.790**
Loan Growth	-4.947*	-3.584	2.649***	-8.824	-13.744***	1.845	-6.050	-11.631***	1.372	-2.300	-5.832***	0.501
MBS/Assets	-6.804**	-0.386	-1.627	-3.516	-0.882	-0.709	-5.773	-4.648	-3.447	-3.982*	-2.418	-1.804
Unused Commitm./Assets	-0.150	0.600**	0.212**	-0.229	-4.117**	-5.023**	-0.455	-4.615*	-4.243	-0.230	-2.216**	-2.002*
Corporate Governance Variables												
Ownership Variables												
Shares Outside Directors/Shares							-4.986***	-4.733***	-4.141***	-2.343***	-2.067***	-1.961***
Shares Chief Officers/Shares							-4.936**	-4.154**	-3.897***	-2.247**	-1.946***	-1.905***
Shares Other Corp. Insiders/Shares							4.625***	4.133***	5.236***	2.044***	1.834***	2.409***
CEO is largest Shareholder							1.601**	1.276*	1.241*	0.795*	0.645**	0.568**
Public Bank							-0.642	-0.220	0.404	-1.260	0.400	0.131
Multibank Holding Company							0.747	1.048*	0.227	0.364	0.448*	0.103
Management Variables												
Outside Directors/Board							-3.576*	-1.489	-0.183	-1.707	-0.636	-0.221
Chief Officers/Board							-1.591	0.219	2.060	-0.612	0.177	0.888*
Other Corporate Insiders/Board							0.967	0.396	-1.279	0.418	0.101	-0.513
log(Board Size)							0.046	-0.279	0.285	0.228	-0.153	0.201
Chairman is CEO							0.242	-0.404	-0.697*	0.119	-0.200	-0.366**
Market Competition Variables												
Local Market Power	2.669	-3.799	-3.869	4.926	-6.237	-8.090	5.565	-0.501	4.600	1.028	-0.556	1.065
(Local Market Power)^2	-6.594	7.163	7.681	-18.635	7.550	12.841	-19.981	-0.376	-6.836	-6.247	0.101	-1.452
Comps.' Subprime Exposure	0.180	-8.495***	-4.809*	-7.168	-16.168***	-4.442	-6.451	-13.821**	3.013	-2.346	-6.668**	1.182
State-Level Economic Variables												
House Price Inflation	-7.134	-15.641***	-31.694***	-7.884	-10.477*	-39.057***	-9.780	-3.511	-45.047***	-4.962	-2.891	-22.338***
%-Change in GDP	-9.307	-26.865***	2.350	-0.103	-32.948**	3.224	9.086	-26.521**	4.625	4.958	-12.373**	2.309
Primary Federal Regulator Variables												
OCC	0.161	0.548**	0.585***	-0.126	0.345	0.433	-0.385	0.710	0.222	-0.227	0.301	0.151
FED	0.619	0.175	0.185	0.975*	0.044	-0.222	1.374*	0.534	-0.167	0.492	0.187	0.024
Constant	0.371	3.593*	-0.803	2.837	4.692	-4.249	7.010	5.960	-2.510	4.537	2.352	-1.156
Observations	32,993	38,921	38,223	3,778	4,360	4,093	3,778	4,360	4,093	77,753	78,335	78,068
Number of Defaults	131	174	174	52	66	67	52	66	67	52	66	67
McFadden's adjusted Pseudo R-squared	66.0%	38.8%	27.9%	59.4%	37.6%	26.7%	59.6%	47.1%	36.7%	Wald test of indep. eqns. (rho=0): 0.5656	0.5302	0.9523

Table 6 Descriptive Statistics based on Ownership-based Corporate Governance Variables

The table shows the percentage of non-default and of default banks when they are grouped by various percentiles of the variables shares held by outside directors, shares held by chief officers, and shares held by other corporate insiders, all standardized by the total number of shares outstanding of the respective bank (Shares). For each percentile shown at the top, we provide in the first column the percentile value of the respective Shares-variable which serves as threshold. This is for Shares Outside Directors/Shares and Shares Chief Officers/Shares the respective x^{th} percentile, and for Shares Other Corporate Insiders/Shares the 1-x^{th} percentile. In the second and third column of each percentile, we show for non-default and for default banks separately the percentage of banks above the x^{th} percentile of all observations of Shares Outside Directors/Shares, as well as of Shares Chief Officers/Shares, and below the 1-x^{th} percentile of all observations of Shares Other Corporate Insiders/Shares. Furthermore, in the last row of each percentile we provide the percentage of non-default and of default banks where all three requirements match, i.e. 1) Shares Outside Directors/Shares is larger than the x^{th} percentile of Shares Outside Directors/Shares, 2) Shares Chief Officers/Shares is larger than the x^{th} percentile of Shares Chief Officers/Shares, and 3) Shares Other Corporate Insiders/Shares is smaller than the 1-x^{th} percentile of Shares Other Corporate Insiders/Shares. The match of all these three requirements is labeled "Intersection."

	5th Percentile			10th Percentile		
	Threshold	Default Banks	Non-Default Banks	Threshold	Default Banks	Non-Default Banks
Shares Outside Directors / Shares > x^{th} Percentile	3.870%	87.189%	97.119%	11.100%	76.009%	93.827%
Shares Chief Officers / Shares > x^{th} Percentile	0.380%	98.602%	93.827%	1.280%	87.733%	90.535%
Shares Other Corp. Insiders / Shares < (1 - x^{th}) Percentile	89.170%	76.165%	100.000%	56.680%	61.491%	97.942%
Intersection of all three Ownership Variables		61.957%	92.593%		33.929%	86.831%

	15th Percentile			20th Percentile		
	Threshold	Default Banks	Non-Default Banks	Threshold	Default Banks	Non-Default Banks
Shares Outside Directors / Shares > x^{th} Percentile	15.520%	66.149%	90.123%	24.310%	55.357%	86.831%
Shares Chief Officers / Shares > x^{th} Percentile	2.060%	85.016%	84.774%	2.840%	78.416%	80.247%
Shares Other Corp. Insiders / Shares < (1 - x^{th}) Percentile	34.320%	47.593%	95.062%	25.310%	40.295%	90.947%
Intersection of all three Ownership Variables		9.860%	77.366%		0.000%	68.313%

	25th Percentile			50th Percentile		
	Threshold	Default Banks	Non-Default Banks	Threshold	Default Banks	Non-Default Banks
Shares Outside Directors / Shares > x^{th} Percentile	33.200%	44.410%	83.128%	67.210%	23.137%	57.202%
Shares Chief Officers / Shares > x^{th} Percentile	3.650%	71.584%	75.720%	10.150%	32.997%	54.733%
Shares Other Corp. Insiders / Shares < (1 - x^{th}) Percentile	20.700%	31.910%	86.831%	10.830%	12.422%	60.082%
Intersection of all three Ownership Variables		0.000%	59.671%		0.000%	19.753%

Table 7 Regression Results incorporating a Single Variable for Ownership-based Corporate Governance

The table reports results from logit regressions of bankruptcy indicators on predictor variables. All variables except "Intersection" are defined as in Table 1. "Intersection" is used as a dummy variable, defined as in Table 6, with the respective percentile used for its determination shown at the top of each regression set. The statistical significance of results is indicated by * = 10% level, ** = 5% level and *** = 1% level. Robust standard errors are employed.

	Intersection 5th Percentile			Intersection 10th Percentile			Intersection 15th Percentile		
Default in	1 Quarter	1 Year	2 Years	1 Quarter	1 Year	2 Years	1 Quarter	1 Year	2 Years
Accounting Variables									
log(Assets)	0.042	-0.310	-0.114	0.019	-0.357*	-0.102	0.035	-0.150	0.067
Capital Ratio	-74.291***	-29.804***	2.176	-73.248***	-29.289***	2.333	-71.297***	-32.120***	2.183
Total Loans excl. C&D/Assets	-6.480*	-0.854	2.639	-6.321*	-0.689	3.320	-6.341*	0.317	4.320
C&D Loans/Assets	-8.771*	4.909*	11.561***	-8.780*	3.505	11.077***	-8.928*	3.620	11.466***
Loan Concentration	0.789	-0.770	-1.003	0.378	-0.894	-1.360	0.309	-0.961	-1.526
ST Deposits/Assets	-1.606	-6.123***	-2.454	-1.925	-6.978***	-3.854	-1.688	-6.443***	-3.476
Brokered Deposits/Assets	3.656**	2.648	0.972	3.461**	3.157*	1.276	3.359**	3.780**	2.042
Return on Assets	-13.666*	-24.464***	-22.748***	-13.347*	-22.090***	-26.249***	-12.661*	-21.188**	-22.735***
Non-perform. Loans/Assets	10.653*	11.424*	1.733	10.938*	13.208**	5.184	11.279*	14.784***	8.559
Loan Growth	-9.068	-13.957***	2.091	-8.477	-13.699**	2.165	-7.981	-13.739***	1.691
MBS/Assets	-3.655	-0.663	-0.505	-3.595	-1.286	-1.408	-3.360	-0.092	0.995
Unused Commitm./Assets	-0.270	-3.729*	-4.995**	-0.229	-3.348	-4.529**	-0.221	-4.691**	-5.219***
Corporate Governance Variables									
Intersection	0.210	-0.443	-0.790**	-0.152	-1.320***	-1.692***	-0.618	-2.649***	-2.763***
Market Competition Variables									
Local Market Power	4.859	-6.695	-8.750	4.773	-5.676	-8.459	4.974	-5.170	-2.389
(Local Market Power)^2	-18.615	8.335	13.332	-18.294	4.904	11.499	-18.805	3.822	1.440
Comps.' Subprime Exposure	-7.527	-15.778**	-4.197	-7.095	-13.537**	-1.181	-6.239	-9.659	3.975
State-Level Economic Variables									
House Price Inflation	-8.050	-10.912*	-40.308***	-7.892	-9.827	-42.321***	-7.543	-6.377	-43.584***
%-Change in GDP	-0.482	-32.655**	3.175	0.414	-30.803**	2.878	0.413	-25.715**	5.359
Primary Federal Regulator Variables									
OCC	-0.119	0.291	0.325	-0.122	0.242	0.267	-0.258	0.003	0.256
FED	0.996*	0.046	-0.222	0.945*	-0.076	-0.436	0.916*	-0.160	-0.355
Constant	2.413	4.962	-3.521	3.170	6.091	-3.490	3.025	3.032	-7.205*
Observations	3,778	4,360	4,093	3,778	4,360	4,093	3,778	4,360	4,093
Number of Defaults	52	66	67	52	66	67	52	66	67
McFadden's adjusted Pseudo R-squared	59.1%	37.5%	27.2%	59.1%	39.7%	30.5%	59.2%	43.4%	33.6%