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Abstract

From 2007 to 2010, more than 200 community banks in the United States failed. Many of these failed community banking organizations (CBOs) held less than $1 billion in total assets. As economic conditions worsen, banking organizations are expected to preserve capital to withstand unexpected losses. This study examines CBOs prior to failure or becoming problem institutions to understand if, on average, a run on capital by insiders via dividend payouts led to greater financial fragility at the onset of the crisis. We use a control group of similar-sized banks that did not fail or become problem institutions to compare our results and to draw statistical conclusions. We use standard control variables highlighting corporate governance and managerial ownership, such as S-corporation designation and bank complexity that might create incentives more conducive to insider enrichment than to the welfare of depositors or debtholders. Although the new Dodd-Frank legislation exempted smaller banks from many proposed requirements, our results show that capital distributions to insiders contributed to community bank weakness during the financial crisis.

JEL Classifications: E44, G01, G21, G32, G35

Keywords: dividend policy, financial crisis, bank lending, bank risk, bank regulation, risk management

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I. Introduction

Banking regulators have made positive remarks on the viability of community banking organizations (CBOs) [1] both before and after the financial crisis.[2] This optimism reflected the comparative advantage CBOs had over larger institutions in lending to relatively opaque small businesses and households in addition to the presence of deposit insurance. Today, the CBO business model is now facing pressure despite having little or no role in the problems that led to the financial crisis in 2007. Community bankers are voicing their frustration in the media that regulatory burden, in particular, is a factor for many small banks that are looking to exit the industry (Reckard, 2013). Overall, statistics show that the government insured 8,534 commercial banks and savings institutions in the fourth quarter of 2007. By the second quarter of 2013, there were 6,926 institutions, down 19 percent since the crisis began. Figure 1 shows that CBO median earnings remain below precrisis levels, while median capital levels have risen steadily from late 2009 to 2013. The roles of deposit insurance and timely regulatory focus on capital adequacy have traditionally been expected to serve as key mitigating factors to prevent bank runs and failure during economic downturns (Diamond and Dybvig, 1983). It appears that, in many cases, these mitigating factors are not enough to prevent bank runs and failures.[3] The question remains: Were there important endogenous forces at work beyond the systemic risk from the financial crisis that reverberated through the banking sector and led more than 200 CBOs to fail from 2007 to 2010?

Our paper differs from the literature that highlights how bank runs are caused by coordination problems among depositors or are the result of information asymmetry among depositors regarding the

[1] CBOs are defined here as institutions with less than $10 billion in assets.
[2] Federal Reserve Chairman Ben Bernanke made encouraging remarks on the future of CBOs based on historical financial performance, strong community relationships, and personalized service. The Chairman's remarks were made to the Independent Community Bankers of America National Convention and Techworld in Las Vegas, NV, on March 8, 2006. Remarks from Governor Elizabeth Duke in 2013 suggested that the future of community banking remains positive despite recognized challenges stemming from regulation, competition, and the economy.
[3] Bank runs were noted at Countrywide, IndyMac Bank, and Northern Rock Bank (UK) during the financial crisis.

financial condition of the bank. Recent work by Iyer and Puri (2012) also suggests that bank runs can be mitigated by bank–depositor relationships via social networks. Our paper identifies the propensity of CBOs to engage in large or consistent capital distributions even in the presence of deteriorating economic conditions, declining earnings, or rising credit risk, ceteris paribus. In the absence of malfeasance, bank managers and directors who allow capital to consistently leave the institution in the presence of severe market shocks are effectively causing a run on bank capital because they are intimately knowledgeable about the bank's current financial condition relative to their expectations of its condition in the near future. To our knowledge, this paper makes a unique contribution to the literature, as insider bank runs have not been studied empirically in relation to bank fragility (Diamond and Rajan, 2001).

One regulator used the analogy of a financial "first response" that will limit systemic financial damage in order to substantially reduce the need for emergency infusion of public funds.[4] In particular, this argument describes the benefits of retaining capital in the banking system by cutting bank dividends when problems first emerge. These comments were directed toward larger non-CBO institutions, but in this paper, we view insider bank runs as the antithesis to the first response analogy. We find the opposite behavior, as bank managers and directors at CBOs have the capability to effectively generate a run on bank capital via dividend policy prior to a market shock, which could exacerbate the fragility of institutions and further weaken an institution's ability to withstand an economic downturn.

In this paper, we compare the dividends on common stock at commercial banks with assets less than $10 billion 36 months prior to failing or having a CAMELS[5] rating of 3, 4, or 5 with those of healthy banks. We test the null hypothesis that leading up to the crisis, the rate of capital distributions at problem CBOs are statistically different from those at healthy similarly sized CBOs in the presence of key idiosyncratic, corporate governance, and managerial control factors. These findings may prove critical for

[4] Boston Fed President Eric Rosengren argued that with earnings somewhat slow to react to emerging problems and boards reluctant to signal problems, most of the large banks were very slow to react to the crisis with reduced dividends. These remarks were made at the Rethinking Central Banking Conference in Washington, D.C., on October 10, 2010. See also Wessel (2008), Scharfstein and Stein (2008), and Dudley (2009).

[5] A CAMELS rating is a regulatory rating system originally designed in the U.S. to classify a bank's overall condition. A bank's safety and soundness are measured on a scale from 1 (strongest) to 5 (weakest).

bank regulators in future crises in that more proactive, broadly imposed dividend reductions could ameliorate some of the economic costs of a financial crisis and improve the nation's prospect for stronger economic recoveries.

The remainder of the paper is organized as follows. Section II describes the general framework for corporate dividend policy and how the dividend policy of CBOs might vary from conventional wisdom. Section III describes the analytical representation of the manager's decision to pay dividends when information asymmetry is present. Section IV presents the data design, and Section V details the empirical results. Section VI concludes.

II. Dividend Policy

Paying dividends has remained a puzzle since Miller and Modigliani's seminal paper (1961), which posited that the value of the firm depends only on the distribution of future cash flows provided by investment decisions and that the availability of external financing in a world without information asymmetry or transaction costs makes the value of the firm independent of dividend policy.[6] Fama and French (2001) find that dividend payouts declined markedly from the 1970s up until the late 1990s. Share repurchases, however, have been on the rise as a percent of capitalization. Floyd et al. (2013) studied the role of dividends and repurchases of both industrials and financial firms in the U.S. from 1980 to 2010. They conclude that industrials and financial firms increased payouts in the years prior to the crisis. Their findings also show that financial firms have a greater propensity to pay and increase dividends than do industrials. Other research efforts (i.e., Edgerton (2012), Guay and Harford (2000), Grinstein and Michaely (2005), Grullon and Michaely (2002), and DeAngelo et al. (2004, 2008)) find evidence that share repurchases have advantages over dividends mainly because of tax treatments. Despite the research findings on share repurchases, during the financial crisis and the worst economic downturn since the

[6] We use the terms "firm" and "bank" interchangeably, but this paper refers only to commercial banking institutions (excluding savings and loans or thrifts) as opposed to nonfinancial firms. The literature that Miller and Modigliani's famous paper spawned is too vast to summarize here. The authors recommend Morck and Yeung (2005) for an excellent compendium of key papers on the topic.

Great Depression, financial institutions continued to pay dividends, and managers at particular firms were reluctant to cut dividends.

Dewatripont and Tirole (1994) addressed why managers' monetary incentives (i.e., bonuses and stock options) are traditionally correlated with the value of equity instead of the value of debt. Their paper also addresses the incongruence of desired corporate decisions between management and shareholders (implying shareholders' relative passivity), when debtholders are more prone to constrain management if given the right to do so. The researchers conclude that effective external interference in the firm requires a specific correlation between control rights and income streams of financial securities. In particular, "debt-like" control generates more external interference than "equity-like" control. As a result, Dewatripont and Tirole's model rationalizes the widespread practice of rewarding management (insiders) with stocks and not bonds, as well as the casual observation that managers tend to dislike debtholders' involvement. This line of research is supported in more recent work by Acharya et al. (2011) who recognized the harm that was done to the financial system from the continued payout of dividends during the financial crisis at the same time that capital became critically scarce. In other words, dividends were paid to equity holders at the expense of debtholders, which represents a violation of the priority of debt over equity.

Given the view that equity is a "soft" claim and debt a "hard" claim, the inability of the largest banks to restrain capital distributions during the crisis in the midst of funding challenges and difficult economic conditions is mildly plausible. For this practice to occur among regional and community banks is extremely difficult to understand given the monumental task of raising capital during a banking crisis and, thus, is the focus of this paper. It is also well known within regulatory circles how quickly well-capitalized institutions can fail in a short amount of time. In the New England banking crisis of the 1980s and early 1990s, many institutions that failed or required supervisory intervention were well capitalized prior to the emergence of problems in New England, and four-fifths of the banks that failed were classified as well capitalized within two years of their failures (Peek and Rosengren, 1997; Tucker, 2008). During the New England crisis, for one-third of those failed banks, the leverage ratio declined by

more than 5 percentage points in a single quarter, enough to wipe out the entire capital of any bank below the well-capitalized threshold.

The rules governing dividends for national banks are contained in section 5199 of the United States Code (12 U.S.C. §60). The rule states that "approval of the Comptroller of the Currency shall be required if the total of all dividends declared by such association in any calendar year shall exceed the total of its net income of that year combined with its retained net income of the preceding two years, less any required transfers to surplus or a fund for the retirement of any preferred stock." Similar rules govern state member banks supervised by the Federal Reserve System. Other restrictions of bank dividends could emanate from supervisory enforcement actions and the Prompt Corrective Guidelines under the Financial Institutions Reform, Recovery, and Enforcement Act of 1989 in the event any capital distribution causes the bank to become undercapitalized. Based on these rules, dividend payout can be very large, and regulatory agencies have limited tools to "rein in" banks before financial weaknesses are identified.

Myers (1977) suggests that firms cut dividends to avoid the debt overhang problem that emerges if a company is unable to make new investments because the company is unable to raise new debt, as lenders are unwilling to lend to highly leveraged firms. Firms anticipating such opportunities maintain an equity cushion and thus cut dividends in times of distress. While challenging market conditions persist, universally restricting bank dividends to conserve capital would be the preferred tool during a financial crisis. Attempting to increase overall bank capital levels by reducing bank dividends in this way may also have significant, and unintended, negative effects. Although the markets would be less inclined to severely penalize share prices, since the impact would apply to banks across the board, this action would penalize those institutions (and their shareholders) that did not indulge in excessive risk-taking, have remained diversified in their business lines, and have ample capital and reserves. Such an action would also send a signal to investors and the public that the integrity of the banking industry is seriously compromised, which could impact other investment and leveraged finance opportunities. Restricting

dividends would have an immediate impact on preserving bank capital at a critical time, but it is also not clear which regulatory agency would have authority to implement this action.

Acharya et al. (2011) argue that dividend payouts during a crisis period are attributable to the short-term nature of bank funding and the implicit and explicit guarantees from the government. Since banks are typically funded by short-term debt, a dividend cut announcement could cause a "run" on rollover debt as it did on investment banks during the crisis. Therefore, the fear of runs leads banks to continue paying dividends even when it would be prudent for them in the long run to cut dividends. We argue that bank insiders exploit inside information on the future path of earnings and extract capital in advance of realized draws on state variables. Similar to the argument posed by Myers and Majluf (1984) in financing investment decisions by either debt or equity, information advantages can lead to rational financing decisions that could result in outcomes more favorable to equity holders as opposed to debtholders. Ruling out malfeasance, banks maximize shareholder value by optimizing the present value of the expected equity cash flows. The two main components of equity cash flows are dividends and share repurchases. Raising the value of these two components, given uncertain projections of future earnings, could be welfare enhancing — if bank managers view their prospects for survival favorably during an economic downturn.

In Figure 2, we let theta, Θ, represent the degree of information asymmetry (high information is greater than 1) held by bank management or insiders. The figure shows how dividends can persist for positive values of Θ that exceed 1. A value of Θ less than or equal to 1 represents low information asymmetry, and equilibrium can be achieved at point E. In the A region of the graph, a firm's expected net operating income exceeds the dividend payout ratio, allowing for rising dividends supported by healthy accretion of earnings to tangible capital, and new investment can be financed by new equity or debt depending on managerial strategy (Myers and Majluf, 1984). Low or no information asymmetry permits both shareholders and debtholders to understand management strategy and make reasonably accurate predictions of the time path of future earnings (Miller and Rock, 1985). Over time, economic

dynamics and positive earnings will move dividends higher toward equilibrium. In the B region of the graph, information asymmetry is high, while dividend payouts exceed expectations of net operating income.

Although shareholders and debtholders will not detect the perverse trends in the short run, this state of disequilibrium is not sustainable, as the accounting results will trigger regulatory action, according to section 5199, and dividends will have to fall until equilibrium is reached at point E. We argue that firms that fall into region B could continue issuing a high dividend as long as $\Theta > 1$, as we observed during the financial crisis. If capital levels remain healthy and systemic risk is not known, the financial structure of a bank in which dividends are paid to equity holders at the expense of debtholders could occur regardless if it represents a violation of the priority of debt over equity. In other words, high dividend payouts are not easy to curb by regulatory authorities or market discipline outside of observed financial problems. Bank management is expected to make good decisions regarding capital distributions that serve the best interests of both equity holders and debtholders.

III. Managerial Incentives to Pay Dividends

To motivate an analytical representation of the managerial incentive to continue paying dividends, we begin with the basic model design in Miller and Modigliani (1961) in which the value of the firm is seen to be equal to the discounted sum of two cash flows: total discounted dollar dividends paid out at the end of the period, DIV_t, and the end-of-period value of the firm:

$$(1)\ V_t = \frac{DIV_t + n_t P_i}{1+\rho},$$

where V_t is the market value of the discounted number of outstanding shares (n_t) multiplied by the current market price of shares (P_i), which equals the beginning period market value of the firm. Assuming the representative firm is an all-equity firm, sources of funds received from net operating income are set equal to planned uses of those funds such as dividends and investment:

$$(2)\ NOI_t + m_i P_i = I_t + DIV_t,$$

where NOI_t is cash from operations and m_i represents new end-of-period shares. By solving (2) for dividends and substituting into (1) summing new and existing shares, the Miller–Modigliani valuation for the firm is:

$$(3)\ V_t = \frac{NOI_t - I_t + \tilde{V}_t}{1+\rho}.$$

In a world with no taxes, market frictions, or information asymmetry, the firm can choose any dividend policy and not affect the stream of cash flows received by shareholders. After making investment decisions, the firm could pay dividends or repurchase shares, as long as external financing is available. To understand how the firm could continue to pay dividends during an economic downturn, we introduce the concept of decision-making under uncertainty when there is an important tradeoff to consider. Following Calem et al. (2011), uncertainty might limit the incentives facing bank managers when costs are binding ex ante. In particular, the authors find that greater uncertainty for achieving an ex-post optimum (say maximizing the value of the firm) limits the activity of conducting transactions because of the higher cost associated with ex-post outcomes from making those transactions. In other words, optimal V_t from equation (1) is a function of the marginal cost of paying dividends in region B (denoted as c) and the marginal cost of paying dividends in region A (denoted as $\alpha \cdot c$) in Figure 2. If we let S denote the level of dividend payout chosen ex ante by the bank and let X denote the random variable representing the ex-post optimum, which is dependent on realized economic conditions for a given distribution, the gap between X and S reduces the value of the firm from what it would be had X been known with certainty ex ante such that S=X. The resulting optimization problem is to choose S to maximize:

$$(4) \int V_t f(x)dx - \int_X^S c|S - X|f(x)dx - \int_X^S \alpha c|X - S|f(x)dx.$$

The solution to the bank's optimization problem (S*) for a given distribution for *x* is:

(5) $F(S*) = \alpha/(1+\alpha)$, where α<1.

Intuitively, the greater amount of uncertainty surrounding the dividend decision or the greater the cost asymmetry because of the economic or banking environment, the smaller the dividend payout to mitigate the regulatory and adverse financial effects of paying too high a dividend. If we monetize the information asymmetry discussed above such that α = Θ, then dividend payments would be bounded in region A. The proof for equation (5) is found in Calem et al. (2011).

The remainder of the paper focuses on empirical results that identify those characteristics that drove community banking firms to pay dividends (especially high levels of dividends) leading up to the financial crisis of 2007. In addition, we observe the financial performance of those firms during the crisis. The empirical design is to capture firm behavior along distinct dimensions such as organizational structure (S-corporation or C-corporation), bank complexity, geography, portfolio composition, and other fixed effects that are unique to CBOs (Gilbert et al., 2013). Statistical estimates are conducted on a sample of banking firms with payout ratios and compared with firms of similar size and complexity that do not pay dividends.

IV. Data

The sampled data represent commercial banks with assets less than $10 billion using quarterly data from 2000 to 2013. Various financial performance measures from Call Report data, as well as measures from the Uniform Bank Performance Report, are used for this analysis. The financial performance metrics covered financial ratios for assessing capital adequacy, asset quality levels, earnings performance, and liquidity. In addition to the financial performance measures, we obtained regulatory information calibrated from internal models as well as CAMELS ratings and incorporated these metrics into the financial results. Data were also analyzed from supervisory management information systems for benchmarking purposes and robustness checks. The unemployment rate was used to address regional economic variations as well as the housing price index data from CoreLogic; both of these variables are

measured at the county level. The number of branch locations within or outside state lines was also identified.

Table 1 provides a list of bank variables that are used to construct the necessary explanatory and control variables that will permit the isolation of the marginal effect that the dividend payout ratio will have on bank performance and capital levels. We identify the typical financial variables that have been used in empirical studies to measure performance such as capital, asset size, deposits, liquidity, loan concentrations, loan mix (retail versus wholesale lender), nonaccrual, geography, and branch network. Since dividend policy is a function of endogenous corporate strategy, we include bank structure proxy variables such as S-corporation flag and bank complexity flag. Bank complexity is a supervisor-determined variable that indicates whether the consolidated institution is involved in complex banking activity or has a complex structure. Economic variables are included in the data set to account for economic variation and impact among local banking markets. Changes in house prices and county unemployment rates are used to reflect local economic information.

The data structure for this analysis also reflects the organizational structure of the CBO model. More than 90 percent of the CBOs in our sample have a bank holding company (BHC) structure in which bank and nonbank subsidiaries reside under the holding company structure. We build in a segmentation scheme that identifies CBOs by BHC over three distinct sample periods (precrisis, crisis, and postcrisis). According to Figures 3a–3f, it is clear that the dividend payout ratio (DPO) for CBOs with and without holding companies is significantly different over the precrisis period. In particular, CBOs with a BHC tend to pay lower dividends across the sample periods. This finding is logical, as BHCs tend to be more complex; service corporate obligations; and hold debt structures such as trust preferred securities, subordinated debt, and possibly the Troubled Asset Relief Program (TARP).[7]

[7] On October 14, 2008, the U.S. government announced a series of initiatives to strengthen market stability, improve the strength of financial institutions, and enhance market liquidity. The U.S. Department of the Treasury announced a voluntary

To identify DPO ranges, we chose ranges that maximized the number of observations across asset sizes and sample periods. Table 2 details the distribution for DPO, and the number of observations across BHCs and non-BHCs is relatively consistent across all sample periods. These data also show that the tails of the distribution widened significantly during the crisis period, suggesting either that DPOs grew larger over the crisis or that current levels persisted throughout the crisis and Great Recession as net income at CBOs fell. The majority of institutions do not pay dividends as evidenced by the number of zero values in the 5th and 25th percentiles of the distribution in Table 2. Plots of the data show that DPO is nonlinear across bank asset size and CAMELS ratings. The majority of observations for DPO are zero and the next critical mass of observations lie at or above the 75th percentile.

When considering a smaller population of interest, such as the number of CBOs that become problem banks over the full sample period by asset size, the percentage of those problem banks that increased dividends is small in number, but their behavior is of great interest. Figures 4a–4c show that the largest increases in DPO occurred after 2007 but still during the Great Recession (2008–2009). Although the increases in DPO are small relative to those CBOs without increases, much of the variation occurs within the highest quantiles. The need to segment the statistical analysis by asset size becomes critically important because of the observed skew in the distribution of DPO. Modeling the conditional mean of the dependent variable (i.e., problem bank or failure) as a function of the mean of key variables such as DPO may not be appropriate. Since the dependent variable is binary, we cannot use standard econometric techniques to test the robustness of a skewed covariate (such as quantile regression). We analyze deviance residuals to assess if the maximum likelihood residuals are white noise.

V. Statistical Results

Capital Purchase Program to encourage U.S. financial institutions to build capital to increase the flow of financing to U.S. businesses and consumers and to support the U.S. economy. TARP originally authorized expenditures of $700 billion.

Ordinary least squares (OLS) and logistic models are estimated using historical data prior to the crisis (2002–2006) to determine the effect of high precrisis dividend payout ratios on the likelihood that a bank will hold less capital and have less-than-satisfactory ratings or worse as measured by the composite CAMELS ratings of 3, 4, and 5 during the crisis (2007–2009). We define a bank with less-than-satisfactory CAMELS ratings as a "bad bank." We impose a more restrictive definition of bad bank by considering only those with ratings of 4 or 5. The more restrictive definition reflects supervisory practices that could result in greater restrictions on capital distributions for "troubled institutions." Regulatory guidance allows for bank examiners to designate institutions as being in "troubled condition" based on their ratings and other factors.[8] For determining if a bank becomes a bad bank, we divide banks into three asset classes (small, midsize, and large). Large CBOs have total assets greater than $300 million. Midsize CBOs have total assets between $100 million and $300 million. Small CBOs have total assets less than $100 million. Given the proper set of controls for bank complexity, asset size, financial condition, loan concentrations, and economic environment, we first identify if higher DPOs lead to lower capital levels as measured by the change in the level of tier 1 common equity (TCE). Given the classical result that dividend policy is irrelevant to the financial performance of a given institution, we test the null hypothesis that the coefficient on dividends is equal to zero. Using precrisis data, the first set of statistical results in Table 3 shows a negative sign on the DPO coefficient, indicating that the nation's smaller banking institutions that issue dividends are more likely to hold less capital as measured by TCE leading up to the crisis. Similar results are found when looking at larger CBOs.

The principal drivers for changes in capital in these basic OLS models are earnings and the level of performing assets for large and small institutions. Positive coefficients for earnings and nonperforming assets (Texas ratio) are expected, as both reflect an incentive to increase capital levels. Bank structure and corporate governance variables such as Subchapter-S and BHC complexity were highly significant for larger CBOs. Higher concentrations of home equity line of credit loans led to lower capital accumulation

[8] See Section 225.71 of Regulation Y or SR 03-6 on the Board of Governors website: www.federalreserve.gov/boarddocs/srletters/2003/sr0306.htm.

for all asset groups, which could also contribute to the bank's vulnerability to the financial crisis that followed in 2007. The overall results support the proposition that capital distributions in the form of dividend payouts are contributors to diminished capital levels going into the Great Recession for a range of CBOs of different asset sizes. With a lower capital cushion, institutions are more fragile, less able to survive serious market and economic shocks, and likely to suffer regulatory CAMELS downgrades.

Table 4a–b shows the logit results for CBO performance during the crisis period from 2007 to 2009 after observing their financial performance before the onset of the crisis (2004–2006). In particular, we observe the covariates of the model over the two-year period for 1- and 2-rated institutions and then identify when the bank has an "event" as measured by a less-than-satisfactory composite rating (i.e., a CAMELS rating of 3, 4, or 5). A downgrade from a 3 to 4 or from a 4 to 5 is not considered an event in this analysis. The dependent variable is binary when an event equals 1 and zero otherwise. To account for the nonlinear nature of the dividend payout ratio over time, the focus of our statistical results is the coefficient DPO2, which characterizes the quadratic term. For small, midsize, and large CBOs, high dividend payout (DPO2) is statistically significant and positively contributes to the increased likelihood that a bank will be classified as a bad bank over a three-year window in the presence of robust control factors. The results are not sensitive to the bad bank definition when isolating just those banks with the 4 and 5 ratings. Most variables are highly significant with expected signs. Only bank profitability as measured by return on assets is not significant in the models for large banks as one would suspect and, thus, needs further explanation. As previously noted, given the uncertain projections of future earnings, increasing capital distributions could be welfare-enhancing if bank managers view their prospects for survival favorably during an economic downturn. For all asset sizes in the postcrisis period, higher dividend payouts during the crisis are associated with the event that a good bank becomes bad within three years.

To test the idea that bank managers engaged in insider bank run behavior while executing a strategic plan that incorporated increased inherent credit risk in their portfolios, we interacted dividend

payout ratios with measures of absolute risk such as the Texas ratio and the concentration of construction and land development (C&LD) exposures. Dividends and C&LD concentrations significantly raise the probability of a good bank becoming bad using the broader definition of a bad bank. For banks that become less than satisfactory (i.e., 3, 4, and 5), dividend payout in the presence of nonperforming loans (Texas ratio) is not significant but has the expected sign. These results are reasonable given that corporate dividend strategy is more sensitive to income generation and that having more C&LD exposure in the loan mix is more profitable yet has greater inherent risk. As an institution becomes weaker (i.e., rated 4 or 5) and is subject to more strict oversight, nonperforming assets and concentrations are more likely to get addressed first, while dividends are usually curtailed or shut off completely. The fact that higher dividends and C&LD concentrations occurred simultaneously prior to the crisis suggests that higher-yielding assets were the source for higher or sustained payouts irrespective of the long-term costs associated with such risky credit policies. In Table 4c, the dependent variable is changed to indicate bank failure using the FDIC definition of a bank failure. The same covariates are used in the failure model with similar results. Along with higher dividend payout ratios, standard variables such as the Texas ratio, C&LD concentrations, and economic conditions were major drivers of default. The main effect of dividend payouts when interacted with the Texas ratio and concentrations is also clear in the failure model. If an institution is paying dividends, earnings and/or capital must be sufficient and should work to lower the probability of failure as indicated by the negative signs.

These results are striking, as they present new evidence on the role of dividends in bank performance while supporting conventional wisdom that the primary causes of poor bank performance are nonperforming loans, low capital levels, and loan concentrations (Jones (1991), Brown and Epstein (1992), Cole and Gunther (1995), Fahlenbrach et al. (2012), and Berger and Bouwman (2013)). The literature is largely silent on the role dividends play in the fragility of bank performance outside these primary causes. These results do not imply that high dividends cause bank failure, but it is clear that a fragile or more thinly capitalized bank is less likely to withstand economic and market shocks, thereby

making a bank's prospects for survival in an economic downturn more tenuous. These results also show that bank managers might be more concerned with the information content of their dividend policy than the operational impact of equity versus debt financing and the need to build capital buffers during periods of stress.

VI. Conclusions

The results found in this paper show that CBOs relied on dividend payouts to shareholders at the expense of debtholders during the period leading up to the crisis and during the crisis. Other researchers have found that financial institutions as opposed to industrials had a higher propensity to use this type of capital distribution over this same period. Our results confirm previous research that suggests information asymmetries can generate these types of analytical and empirical results. Bank funding is short term, and banks rely on their reputation in capital markets (which, in turn, relies on their ability to communicate favorable news) in order to roll over this short-term funding. As a result, the need to signal financial strength (even though it may be absent in reality) via dividend payouts is important and could be a primary driver for the results. This need to signal financial strength became more acute during the financial crisis of 2007, as markets seized up after the fall of Lehman Brothers, and massive government intervention became necessary.

The presence of near-term economic uncertainty, however, would suggest that firms would behave more conservatively and optimize firm value by choosing a dividend payout ratio that minimizes ex-post costs. The results here show that CBOs did not behave in this manner. They continued dividend payouts that reduced capital levels prior to the financial crisis and during the Great Recession. More important, some of the nation's smallest and most economically vulnerable institutions continued to pay dividends in the midst of the crisis, which led them to become problem institutions. Based on the results in this paper, community banks may have responded to the incentive to engage in more risky lending activities in order to support greater profitability for purposes of enriching insiders via capital distributions.

The information content of dividend policy may play a much larger role than empirical default models predict once managerial incentives are fully taken into account. Regulatory guidance could be one approach used to address capital distributions at CBOs to prevent rapid increases in bank failures in the future. Federal regulators have already responded to the need to weigh in on capital distributions at the nation's largest banking institutions through the implementation of the Dodd-Frank Act stress tests. No regulation or supervisory guidance on capital distributions, however, is directed toward smaller banking institutions (less than $1 billion) that are more likely to fail in an economic downturn. As a result, there is an important gap in the nation's regulatory framework. Based on the results found in this study, a reduction in capital distributions among CBOs could serve as a "first response" to economic downturns and improve the viability of these important institutions when they are most needed.

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Figure 1

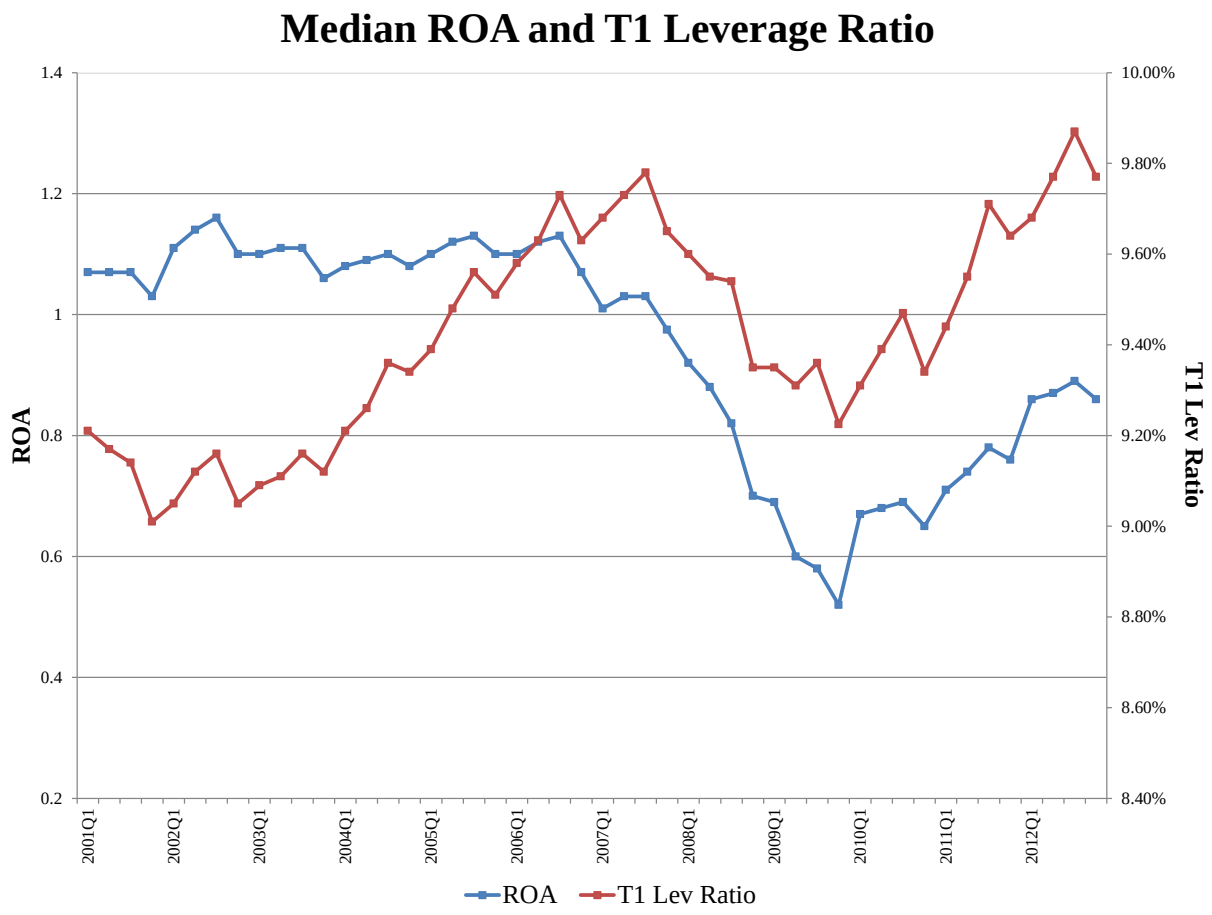

Median ROA and T1 Leverage Ratio
ROA
T1 Lev Ratio
1.4
1.2
1
0.8
0.6
0.4
0.2
10.00%
9.80%
9.60%
9.40%
9.20%
9.00%
8.80%
8.60%
8.40%
2001Q1
2002Q1
2003Q1
2004Q1
2005Q1
2006Q1
2007Q1
2008Q1
2009Q1
2010Q1
2011Q1
2012Q1
ROA
T1 Lev Ratio

Figure 2

Graphical Analysis of Dividend Equilibrium Under Uncertainty

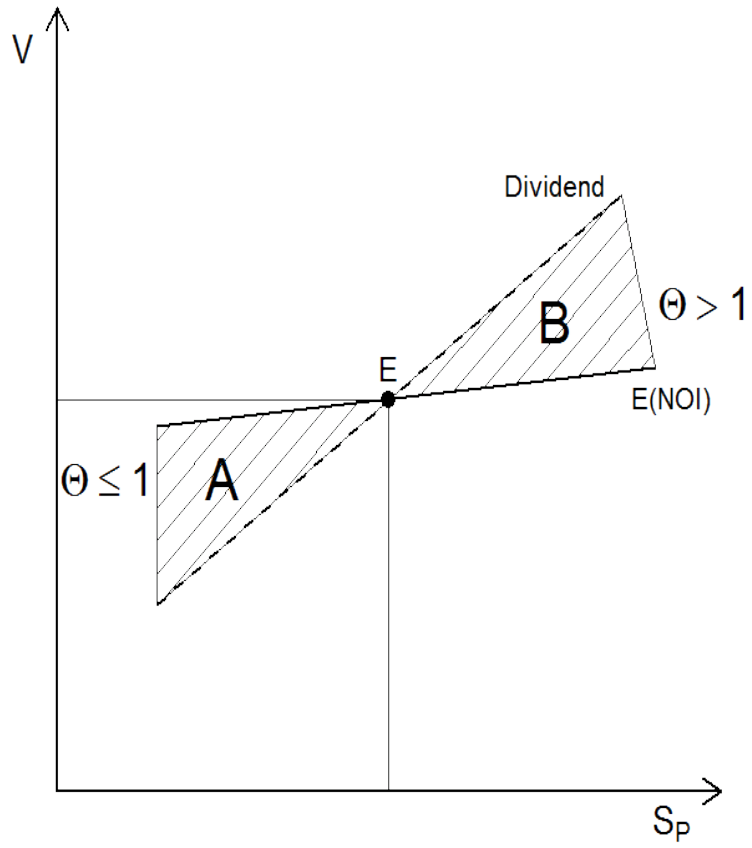
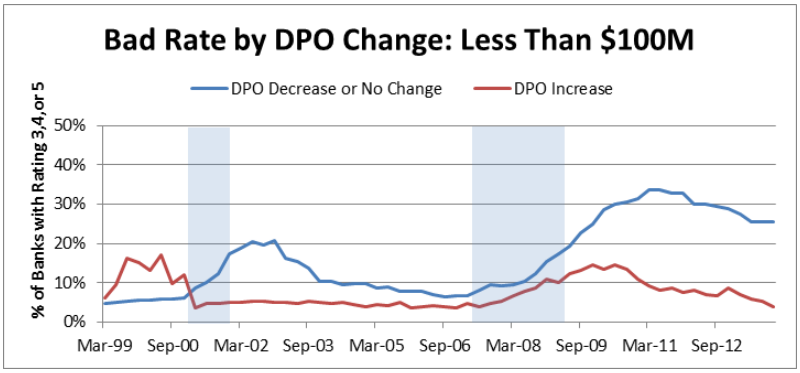


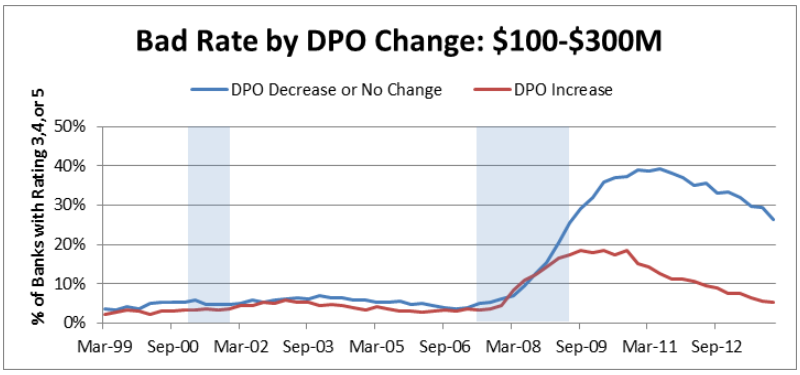
Figure 3

Dividend Payouts at Problem Commercial Banks (with Holding Company).

(a)



(b)



(c)

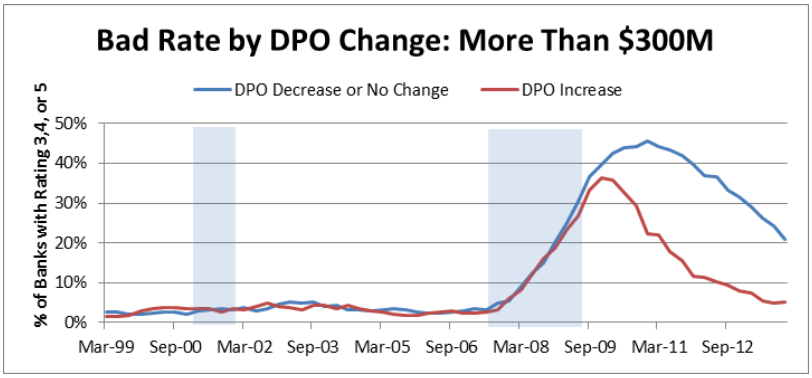
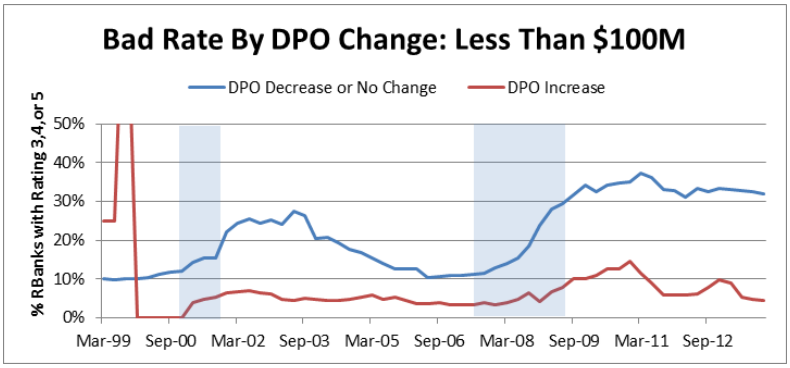


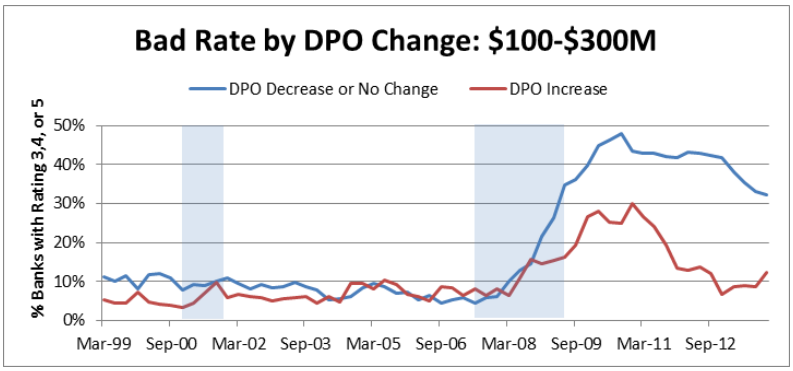
Figure 3 (continued)

Dividend Payouts at Problem Commercial Banks (Without Holding Company).

(d)



(e)



(f)

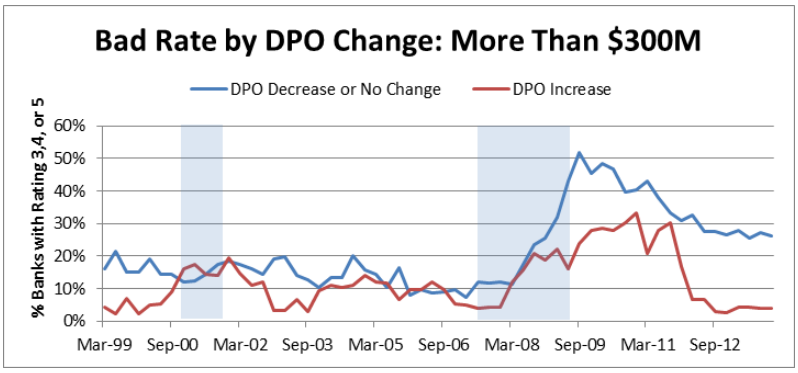
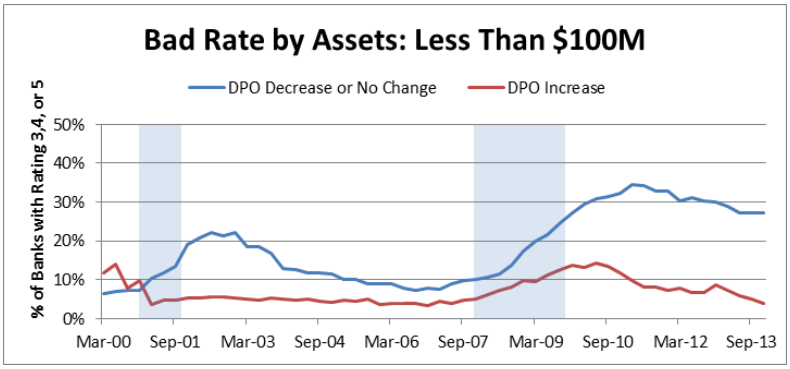


Figure 4

Dividend Payout Changes at Problem Commercial Banks.

(a)



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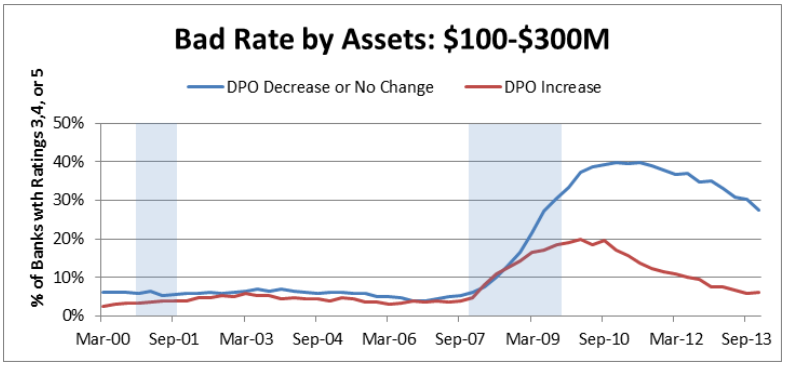

(c)

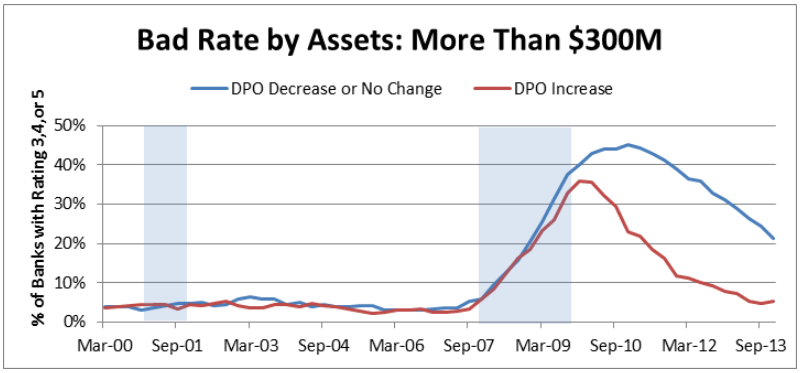

Table 1

Data Summary Statistics

Variable Names	N	Mean	Std Dev	Minimum	Maximum
Total Loans	6202	230166.25	527090.2	25	7652845
Total Credit Card Loans	6202	2959.96	92486.08	0	4985127
Total Assets	6202	366706.41	812627.23	4001	9816225
Avg. Assets	6202	364691.1	808730.26	4067	9753975
Net Income	6202	2434.07	14168.91	-215919	599726
Dividends Preferred Stock	6202	7.1944534	144.9534141	0	7954
Dividends Common stock	6202	1519.82	11961.91	0	794333
Tier 1 Leverage $	6202	36090.6	89793.22	-36088	2024019
Total Risk Based Capital $	6202	39237.48	96447.81	-36088	2076933
Total Risk Weighted Assets	6202	247572.43	563538.9	964	8785160
Tier 1 Leverage Ratio	6202	10.3274508	4.4167202	-7.43	96.81
Total Risk Based Capital Ratio	6202	17.9413012	13.2284815	-13.52	467.21
Overhead Expenses	6202	11070.85	26079.07	45	511855
Net Interest Income	6202	12923.24	33216.46	31	1138497
Total NonInterest Income	6202	3538.08	15249.4	-37076	462632
Total C and I loans	6202	36536.72	126004.06	0	3302031
Total Construction and Land Development	6202	16369.28	44663.12	0	1200187
Total NFNR Loans	6202	73757.14	173714.58	0	2680010
Total Multifamily Loans	6202	8453.76	34242.68	0	1089583
Total 1st lien mortgage loans	6202	43326.19	112305.26	0	3145509
Total 2nd lien mortgage loans	6202	3490.57	12704.16	0	325496
Total HELOCs	6202	9961.13	36038.63	0	708731
ALLL	6202	4742.26	13131.9	0	400421
Total Agricultural Loans	6202	8893.56	21092.28	0	501249
AG Production Loans	6202	6982.7	20391.04	0	650032
Other Consumer Loans	6202	12064.97	119621.51	0	6671872
ROA or ROAA	6202	0.5963544	1.5869813	-12.82	59.86
30-89 Days Past Due $	6202	2652.82	8760.32	0	225925
Total 90+ Days Past Due $	6202	1254.73	16491.04	0	806966
Total Nonaccrual Loans	6202	6550.71	21919.89	0	715124
OREO $	6202	3477.48	10988.92	0	281454
Provisions for Loan Losses	6202	2277.84	8748.41	-40690	251000
Charge-offs	6202	2833.84	12307.86	0	390060
Recoveries	6202	351.107546	2011.92	0	86825
Total Deposits	6202	297391.46	624240.08	0	8064792
Securities Purchased Under Agreement to Resell	6202	142.6296356	3025.36	0	185000
Brokered Deposits	6202	16002	145916.41	0	5837197
Short-term Investments / Assets	6202	10.2028733	9.3696857	0	93.19
Short-Term Noncore Funding/Assets	6202	6.4933602	6.4800579	0	86.52
Net noncore funding dependence $100K	6202	6.8599984	256.833818	-17304.33	94.64
Net Short Term Liabilities to Total Assets	6202	-1.1132683	15.745054	-93.68	86.5
Brokered Deposits to Total Deposits	6201	2.9402677	7.6769733	0	99.98
Brkr Dep Mat < 1 Yr to Brkr Deps	2596	65.6001695	34.8047894	0	100
Fed Home Loan Bor Mat < 1 Yr $	6202	3601.4	27054.11	0	1200000
Fed Home Loan Bor Mat > 1 Yr $	6202	8808.64	34978.21	0	1054583
Tier 1 Risk-Based Capital Ratio	6202	16.7625105	13.2707863	-13.52	467.21
SUBCHAPTER S (1=YES, 0=NO)	6202	0.3611738	0.4803795	0	1
Efficiency Ratio	6202	77.228704	73.786472	-2459.51	3066.67
Total CRE loans	6202	98580.18	233073.66	0	3773603
Total Noncurrent Loans $	6202	7805.44	29521.02	0	875184
NPA Loans $	6202	11282.91	38262.21	0	952939
NPA Ratio	6202	4.1667064	5.303169	0	65.5172414
Net Charge-offs	6202	2482.73	10816.03	-3646	311227
House Pricing Index	6193	126.2260169	22.1356511	58.2741	243.1171
Unemployment Rate	6198	7.4665483	2.5108626	0.9	29
Number of branches in head office state	6202	4.8984199	11.2973189	0	241
Number of branches out of head office state	6202	0.6631732	8.514209	0	561

Table 2

Distribution of the Dividend Payout Ratio

	Owner	Assets ($)	# of Banks/BHC	Mean	5th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile
Pre-Crisis (2000-2006)	Bank								
		< $100M	26956	26	0	0	0	36	78
		$100 - $300M	8898	29	0	0	18	46	72
		$300M +	2671	32	0	0	23	41	69
	BHC								
		< $100M	86281	45	0	0	30	70	100
		$100 - $300M	57944	49	0	12	41	69	97
		$300M +	33542	52	0	16	42	71	105
Crisis (2007-2010)	Bank								
		< $100M	10163	40	0	0	7	59	98
		$100 - $300M	6246	39	0	0	0	48	95
		$300M +	1715	46	0	0	13	56	116
	BHC								
		< $100M	33708	66	0	0	52	85	137
		$100 - $300M	33630	63	0	4	47	78	135
		$300M +	24775	71	0	0	46	83	274
Post-Crisis (2011-2013)	Bank								
		< $100M	5339	39	0	0	13	56	92
		$100 - $300M	4744	27	0	0	0	35	66
		$300M +	1553	27	0	0	5	41	70
	BHC								
		< $100M	18993	49	0	0	40	72	100
		$100 - $300M	23721	45	0	0	37	66	91
		$300M +	18093	43	0	0	31	61	94

Table 3

Pre Crisis (2002-2006) - Dependent Variable: Change in Capital over Next 18 Months

Variable	Assets < $100M	Assets $100-$300M	Assets $300M+
Intercept	92.247***	90.214***	82.325***
	(0.520)	(0.699)	(1.100)
Sub-chapter S for bank (1 if Yes, 0 if No)	0.826*	4.104***	7.647***
	(0.283)	(0.375)	(0.708)
BCH Complexity flag	-3.318	3.611**	5.626***
	(2.034)	(1.092)	(0.817)
DPO rate	-0.027***	-0.043***	-0.060***
	(0.002)	(0.003)	(0.005)
Texas Ratio	0.192***	0.222***	0.386***
	(0.019)	(0.025)	(0.043)
ROA or ROAA	2.092***	2.045***	1.903***
	(0.209)	(0.284)	(0.412)
Concentration of C&LD Loans	-0.009**	-0.012***	0.004
	(0.003)	(0.002)	(0.003)
Concentration of HELOC Loans	-0.054***	-0.065***	-0.028*
	(0.007)	(0.006)	(0.007)
Unemployment Rate	-0.099	0.281*	0.731
	(0.076)	(0.094)	(0.144)
Net Loss to Average Total Loans & Leases	0.231	-0.353	0.304
	(0.238)	(0.327)	(0.474)
F- Statistic	49.54 ***	72.46 ***	59.58***
Adjusted-R2	0.0086	0.0174	0.023
Number of Observations Used	50295	36257	22358

* P < 0.01, ** p < 0.001, *** p < 0.0001

Table 4a

Statistical Results: Probability of Becoming Less Than Satisfactory (CAMELS 3, 4, and 5)

	Event Defined as 3, 4 or 5 composite rating		
	2007-2009 Window		
	Assets < $100M	Assets $100-$300M	Assets $300M+
DPO	-0.6647***	-0.7986***	-0.6863***
	(0.0793)	(0.0931)	(0.1074)
DPO Squared	0.1307***	0.1512**	0.1077
	(0.0405)	(0.0654)	(0.0765)
ROA	-0.3154***	-0.3273***	-0.0621
	(0.0270)	(0.0323)	(0.0422)
Texas Ratio	0.0516***	0.0559***	0.0641***
	(0.0027)	(0.0031)	(0.0044)
DPO Squared x Texas Ratio	0.0018	0.0007	0.0010
	(0.0018)	(0.0034)	(0.0040)
Concentration - CLD	0.0082***	0.0075***	0.0081***
	(0.0003)	(0.0002)	(0.0003)
DPO Squared x Concentration - CLD	0.0015***	-0.0004*	0.0015***
	(0.0003)	(0.0003)	(0.0004)
BHC Complexity Flag	-0.2084	-0.4327***	0.2457***
	(0.3826)	(0.1653)	(0.0740)
Sub-Chapter S	0.0416	0.3870***	0.3688***
	(0.0383)	(0.0425)	(0.0607)
Δ in RBC Ratio	-0.0120***	-0.0045***	-0.0093***
	(0.0015)	(0.0016)	(0.0022)
Y/Y Δ in HPI	0.0231***	0.0369***	0.0214***
	(0.0032)	(0.0024)	(0.0026)
Brokered Deposits / Total Deposits	0.0503***	0.0457***	0.0408***
	(0.0030)	(0.0025)	(0.0028)
Unemployment Rate	0.0109	0.0342***	0.0717***
	(0.0099)	(0.0101)	(0.0125)
Constant	-1.9789***	-2.0328***	-2.4257***
	(0.0676)	(0.0750)	(0.0978)
# of Banks	3018	2313	1413
LR chi-square test	3351	3634	2511
Prob > chi-square	0.0000	0.0000	0.0000
Pseudo R-squared	0.1139	0.1294	0.1318

* P < 0.01, ** p < 0.001, *** p < 0.0001

Table 4b

Statistical Results: Probability of Becoming Less Than Satisfactory (CAMELS 4 and 5)

	Event Defined as 4 or 5 composite rating		
	2007-2009 Window		
	Assets < $100M	Assets $100-$300M	Assets $300M+
DPO	-0.9970***	-1.2956***	-1.1876***
	(0.1128)	(0.1155)	(0.1358)
DPO Squared	0.3022***	0.4057***	0.4469***
	(0.0529)	(0.0731)	(0.0839)
ROA	-0.1582***	-0.1764***	-0.0231
	(0.0338)	(0.0382)	(0.0529)
Texas Ratio	0.0540***	0.0438***	0.0644***
	(0.0029)	(0.0032)	(0.0046)
DPO Squared x Texas Ratio	0.0013	-0.0010	-0.0021
	(0.0016)	(0.0028)	(0.0036)
Concentration - CLD	0.0098***	0.0084***	0.0092***
	(0.0003)	(0.0002)	(0.0003)
DPO Squared x Concentration - CLD	-0.0001	0.0001	0.0005
	(0.0002)	(0.0003)	(0.0004)
BHC Complexity Flag	-0.0897	0.2776	0.1749*
	(0.4507)	(0.1765)	(0.0921)
Sub-Chapter S	0.0447	0.3139***	0.5097***
	(0.0560)	(0.0555)	(0.0784)
Δ in RBC Ratio	-0.0116***	-0.0000	-0.0024
	(0.0018)	(0.0018)	(0.0027)
Y/Y Δ in HPI	0.0349***	0.0301***	0.0300***
	(0.0038)	(0.0027)	(0.0031)
Brokered Deposits / Total Deposits	0.0627***	0.0405***	0.0291***
	(0.0031)	(0.0025)	(0.0029)
Unemployment Rate	0.0266*	0.0040	0.0758***
	(0.0139)	(0.0133)	(0.0155)
Constant	-3.6573***	-3.0327***	-3.8679***
	(0.0953)	(0.0951)	(0.1242)
# of Banks	3422	2532	1506
LR chi-square test	3043	3060	2021
Prob > chi-square	0.0000	0.0000	0.0000
Pseudo R-squared	0.1694	0.1554	0.1549

* P < 0.01, ** p < 0.001, *** p < 0.0001

Table 4c

Statistical Results: Probability of Bank Failure

	Event Defined as Bank Failure		
	2007-2009 Window		
	Assets < $100M	Assets $100-$300M	Assets $300M+
DPO	-1.1168***	-1.5742***	-1.8389***
	(0.2957)	(0.3085)	(0.2935)
DPO Squared	0.5262***	0.6880***	0.9015***
	(0.1137)	(0.1484)	(0.1421)
ROA	-0.0319	-0.1432	0.5202***
	(0.0801)	(0.0904)	(0.1089)
Texas Ratio	0.0488***	0.0465***	0.0320***
	(0.0066)	(0.0072)	(0.0094)
DPO Squared x Texas Ratio	-0.0041	-0.0073	-0.0128*
	(0.0028)	(0.0054)	(0.0074)
Concentration - CLD	0.0097***	0.0089***	0.0088***
	(0.0006)	(0.0005)	(0.0006)
DPO Squared x Concentration - CLD	-0.0005	-0.0008*	0.0002
	(0.0004)	(0.0004)	(0.0007)
BHC Complexity Flag	2.4694***	-1.4501	0.5272***
	(0.4228)	(1.0100)	(0.1701)
Sub-Chapter S	-0.1282	1.0883***	0.2147
	(0.1536)	(0.1350)	(0.1775)
Δ in RBC Ratio	-0.0078*	0.0020	-0.0028
	(0.0044)	(0.0046)	(0.0057)
Y/Y Δ in HPI	0.0342***	0.0194***	0.0497***
	(0.0085)	(0.0070)	(0.0059)
Brokered Deposits / Total Deposits	0.0300***	0.0430***	0.0409***
	(0.0078)	(0.0052)	(0.0054)
Unemployment Rate	0.1021***	0.0784**	0.1660***
	(0.0309)	(0.0337)	(0.0303)
Constant	-6.3870***	-6.1423***	-7.0901***
	(0.2293)	(0.2483)	(0.2693)
# of Banks	3553	2558	1524
LR chi-square test	437	574	621
Prob > chi-square	0.0000	0.0000	0.0000
Pseudo R-squared	0.1258	0.1463	0.1692

* P < 0.01, ** p < 0.001, *** p < 0.0001