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Corporate Governance and Risk Management at Unprotected Banks: National Banks in the 1890s

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Abstract

Managers' incentives may conflict with those of shareholders or creditors, particularly at leveraged, opaque banks. Bankers may abuse their control rights to give themselves excessive salaries, favored access to credit, or to take excessive risks that benefit themselves at the expense of depositors. Banks must design contracting and governance structures that sufficiently resolve agency problems so that they can attract funding from outside shareholders and depositors. We examine banks from the 1890s, a period when there were no distortions from deposit insurance or government interventions to assist banks. We use national banks' Examination Reports to link differences in managerial ownership to different corporate governance policies, risk, and methods of risk management. Formal corporate governance is lower when manager ownership shares are higher. Managerial rent seeking via salaries and insider lending is greater when managerial ownership is higher, and lower when formal governance controls are employed. Banks with higher managerial ownership target lower default risk. Higher managerial ownership and less-formal governance are associated with a greater reliance on cash rather than capital as a means of limiting risk, which we show is consistent both with higher adverse-selection costs of raising outside equity and with greater moral-hazard with respect to risk shifting.

Keywords: Manager ownership, corporate governance, rent seeking, risk preferences, bank failures, risk shifting, adverse selection

JEL Codes: G21, G32, N21

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1. Introduction

Incentives of managers may conflict with those of shareholders or creditors, particular at highly leveraged and opaque institutions such as banks. Agency problems arise both with respect to the outright transfer of resources (e.g., excessive salaries or subsidized access to credit), as well as implicit transfers related to risk management practices (transfers from creditors to stockholders through risk shifting). Bankers must design contracting and governance structures that sufficiently resolve agency problems so that they can attract funding from minority shareholders and depositors. Examining how banks resolve those conflicts in today's banking environment is complicated by government regulation of capital structure and corporate governance practices, and by protections, such as deposit insurance, too-big-to-fail policies, and a lender of last resort, which can distort incentives. To investigate the endogenous emergence of corporate governance mechanisms that limit rent seeking and credibly manage risk, we look at banks from the 1890s, a period when there was no deposit insurance, no lender of last resort, and virtually no government interventions to save banks. We do so using national banks' Examination Reports, a detailed but seldom used resource that provides considerable information about banks' ownership structures, governance structures, tools for managing risk and levels of risk. This information allows us to link differences in ownership structure (especially the extent of managerial ownership) to differences in corporate governance policies, risk outcomes, and banks' approaches to risk management.

The simplest class of agency problems revolves around the transfer of resources to insiders who maintain operational control over the bank. Bank managers with sufficient control rights may pay themselves excessive salaries or give themselves access to credit on subsidized terms. For a sample of East Asian firms in the mid-1990s, Claessens, Djankov, Fan, and Lang (2002) find that concentrated management ownership increases firm value when ownership and cash flow rights are aligned, but in cases where managers enjoy greater control rights than cash flow rights, managerial ownership concentration is value-destroying.

Control rights can also give rise to agency problems with respect to risk management. In general, managers who have large stakes in the performance of their banks may prefer to take less risk in order to preserve their own financial wealth or their firm-specific human capital (see the discussion in Demsetz, Saidenberg, and Strahan 1997; Laeven and Levine 2009). In some cases, particularly in the presence of safety net subsidies, diversified outside equity holders with sufficient stakes in banks may seek to incentivize managers to take more risk and may employ pay schemes that reward risk taking (see Laeven and Levine 2009; Cheng, Hong and Scheinkman 2013; Bai and Elyasiani 2013). Anginer, Demirguc-Kunt, Huizinga and Ma (2013) study an international sample of banks for 2003-2011 and find that stronger formal governance tends to be associated with lower bank capital ratios, and that managers with large stakes tend to be choose higher bank capitalization ratios.[1] For samples of publicly traded firms more generally, Holderness, Kroszner and Sheehan (1999) find that, in 1935 and 1995, higher managerial ownership is associated with lower risk.

At the same time, the literature has found that management controlled banks may become risk loving in some states of the world. One agency problem results from the difference in risk preferences between equity and debt holders, which in the presence of limited liability, gives rise to moral hazard problems. In some states of the world -- especially in the wake of losses that reduce net worth and increase leverage -- bankers with substantial equity stakes and control rights will prefer to increase asset risk at the expense of debtholders (this problem – modeled by Jensen and Meckling 1976, Myers 1977, and Merton 1977 – is known as "risk shifting" or "asset substitution").[2]

[1] They found, however, that in 2006, the payoff of risk reversed this effect for managers with sufficiently large stock option wealth. Like Anginer, Demirguc-Kunt, Huizinga and Ma (2013), Saunders, Strock and Travlos (1990) find variation over time in the extent to which higher managerial ownership is associated with more of less risk taking. Saunders et al. find that during the period 1979-1982 greater managerial ownership was associated with higher risk, which they attribute to the deregulatory environment. Consistent with that interpretation, Bruno and Claessens (2010) show that legal regimes that are excessively strict can be value destroying; better corporate governance combined with more flexible legal environments can lead to superior outcomes through the ability to undertake value-creating risk.

[2] In sufficiently bad states of the world, bankers may also choose to commit fraud and abscond (Calomiris and Kahn 1991).

Moral-hazard issues can be mitigated through various measures, including short-term debt contracting; a first-come, first-served rule for bank liquidation; and actions by bankers that credibly signal good risk management, including the maintenance of a minimum amount of cash assets (Calomiris and Kahn 1991, Calomiris, Heider and Hoerova 2013). If bank debt holders are protected by deposit insurance or other guarantees, however, moral hazard can be exacerbated because bank debt holders lose their incentive to monitor and control banks' risk taking (Calomiris, Heider and Hoerova 2013). Gorton and Rosen (1995) argue that, when faced with a declining industry, managers may boost profits to hide poor prospects from shareholders.

These agency issues have received additional attention after the recent financial crisis. Many of studies, in addition to those cited above, have debated the extent to which corporate governance and manager incentive schemes influenced how banks fared during the crisis (Acharya et al. 2009; Berger, Imbierowicz, and Rauch 2012; Ellul and Yeramilli 2010; and Fahlenbrach, Prilmeier and Stulz 2012; Senior Supervisors Group 2008; Mehran, Morrison and Shapiro 2011).

Although the nature of conflicts of interest between bankers and their funding sources differ between outside equity and debt, there is also considerable overlap in the usefulness of corporate governance tools for addressing many aspects of conflicts of interest that are common to both types of outside funding sources. For example, the presence of outside directors, or the "bonding" of management, should mitigate the risk of defalcation, which benefits both outside stockholders and debtholders.

Corporate governance policies of banks should arise endogenously, in part to reduce the costs related to the two sets of conflicts of interest in risk taking – that is, the conflict between shareholders and debtholders, and the conflict between managers and shareholders. Understanding how governance policies respond to such conflicts, and what effects ownership structure and governance policies have on risk taking, is highly challenging in the current regulatory environment, where policies such as deposit insurance, too-big-to-fail (TBTF) bailouts,

and legal restrictions on controlling ownership interests in banks, which remove the disciplinary incentives of debtholders and limit the ability of equity holders to concentrate ownership (on the effects of TBTF, for example, see Acharya, et. al 2009).[3]

To improve our understanding of how ownership structure affects corporate governance, and how ownership structure and corporate governance affect banks' risk management, we examine the links among ownership, governance, and risk management during a period prior to the establishment of a regulatory safety net for banks. During the National Banking Era (1863-1914), government protection was absent, and the latitude for voluntary governance decisions by banks was great. We observe large cross-sectional differences in the ownership structure of national banks, as well as great variation in their choices for organizing corporate governance. Banks also structured their portfolios very differently, and displayed important differences in their management of risk – indicated by balance sheet differences and the patterns of bank failure during the panics of this era, especially the severe Panic of 1893. Cross-sectional differences in ownership, governance choices, portfolios and risks, under a common and relatively laissez-faire regulatory environment, makes national banks' experiences in the 1890s an ideal laboratory for examining how manager ownership and board oversight are related to rent seeking, portfolio choice, and failure risk, in an environment free of many of the regulatory distortions that affect those decisions today. Another advantage of focusing on cross-sectional variation among national banks is that their business models were quite similar (in contrast to today's banking system, in which small banks focus on lending and deposit taking, while global universal banks undertake a much wider range of activities for a quite different customer base).

Corporate governance in the historical U.S. banking context has been the subject of numerous prior studies. One of the most important themes of that literature, which is not present in other contexts, has been the connection between stock ownership and lending. In today's banks,

[3] The so-called separation of banking and commerce places special constraints on who is permitted to exercise a controlling interest in a bank.

there are strict limits on loans to officers and directors, and it is considered inappropriate to provide better terms to loans offered to officers, directors or other large stockholders. Historically, in the "unit" banking system of the United States, where banks were local, single-office enterprises, banks acted as "loan clubs" for insiders, who were often large shareholders with significant formal or informal control rights. Generally, the empirical literature has taken a benign view of insider lending, arguing that it facilitated value creation and risk management because insiders had strong incentives to screen and monitor one another (Lamoreaux and Glaisek 1991; Lamoreaux 1994; Meissner 2005; Haber and Maurer 2007; Pearson and Taylor 2012; Hansmann and Parglender 2012; Freeman, Pearson and Taylor 2012). Bodenhorn (2013) finds that bank value increases with the number of individual blockholders, but declines with the number of institutional blockholders – that is, blockholders who are not part of the loan club. According to this evidence, loans clubs increased the value of bank stock because insiders valued preferential access to lending that was attached to their blockholding status.[4]

National banks, which were first chartered during the Civil War, operated alongside state-chartered banks. Although national banks were chartered under the same charter rules throughout the United States, like state-chartered banks they operated as single office (unit) banks. As we will show, national banks, like the state-chartered banks studied by Lamoreaux, Bodenhorn and others, engaged in large amounts of insider lending. Thus, it is important to take into account the effects of ownership and governance rules on this aspect of bank behavior.

The data we use come primarily from national banks' Examination Reports, a source which, to our knowledge, has been little used, and never used for quantitative analysis of the questions we address here. These Reports provide very detailed pictures of the banks and the bank examiners'

[4] Interestingly, 19th century corporate chartering rules often employed voting rights rules that reduced the voting power of large shareholders, largely to reduce concentration of control over corporations. Although these departures from one share-one vote rules were common for many firms, they were less common for banks (Hilt 2008). This may have reflected the desirability of encouraging insider blockholding, as well as the relative absence of the political consequences of control over a bank once banks became chartered freely (roughly around the second quarter of the 19th century).

views about them. They describe the equity ownership of managers and of Board members (and identifies whether managers are on the Board). There is substantial heterogeneity with respect to ownership structure among the national banks in our sample. Some managers own a considerable portion of the shares of the bank, while in other cases the managers own only a small fraction. We also have information about a variety of corporate governance measures that could be used to provide oversight of bank managers, such as the frequency of board meetings, the number of outside directors on the board, and whether there was an independent loan review committee that included outside directors. We also know whether the managers were required to post surety bonds, which protected other equity holders in the event of fraud. The reports also provide a fairly detailed picture of the balance sheet, as well as containing the examiner's assessments of various measures of asset quality, forward-looking expectations of loss, and qualitative evaluations. Thus, we are able to examine the relationship between ownership and governance choices, as well as the impact of both on risk preferences at the bank. The richness of the data permits us to provide an integrated picture of the linkages between ownership, governance, and financial stability.

For our analysis, we gather data from 206 banks from 37 fairly large cities located mainly in the Western and Southern parts of the United States. Those regions saw the greatest financial turmoil and the highest rates of bank failure during the Panic of 1893. By selecting all the national banks from 37 similar cities in these regions we intend to construct a sample of reasonably comparable national banks, in terms of their economic environment and lending activities. We combine the information in the Examination Reports with standard balance sheet data from the Call Reports, as well as other location-specific controls, drawn from various censuses and other sources. We examine the banks situations in the early 1890s, just prior to the Panic of 1893.

This panic is a useful moment to focus upon because it brought the most severe distress for banks of any of the crises during the National Banking Era. That episode resulted in the highest numbers of bank failures of any of the crises, and was one of three episodes during the National

Banking Era that witnessed a suspension of convertibility in New York. Although most of the banks in our sample avoided failure, there was enough failure risk during this episode to provide substantial observable cross-sectional variation – something that is absent during most of the National Banking Era.

We look first at the interplay between ownership and governance by gauging the extent to which the structure of ownership affects banks' choices of corporate governance policies. We report some regressions in which managerial ownership is treated as an exogenous variable, and others in which it is assumed to be endogenous. We instrument managerial ownership using managerial turnover events. The patterns we observe are robust across specifications: All five of the formal corporate governance policy choices we consider are mutually positively correlated with one another, and each of them is negatively correlated with the degree of managerial ownership. We interpret this as evidence that managerial ownership concentration is a substitute for formal governance tools in resolving conflicts of interest between managers and the sources of outside funding for the bank.

Next we can see how ownership and governance – taking into account the endogeneity of governance to ownership structure – affects rent seeking behavior, which is captured by managerial salaries and loans to managers. We find that managers' salaries relative to assets tend to be higher when they own a greater portion of outstanding stock, reflecting their greater ability to extract rents. Interestingly, the *total* proportion of loans made to insiders is not affected by the structure of ownership or governance, but ownership and oversight have a strong impact on who receives those insider loans. When managers have greater equity ownership, more inside loans are allocated to them; when outside directors exercise greater oversight in corporate governance, a greater proportion of the inside loans are received by them.

We also connect ownership structure and corporate governance choice to banks' risk preferences and their balance sheet choices. In particular, we can observe how ownership and

governance affected bank portfolio structure, performance and failure probabilities during the Panic of 1893. Building the analysis out in this way provides a rich perspective on the connections among ownership, governance, rent seeking, and risk choices.

Our results on risk taking indicate that managers who own a greater proportion of the bank's stock take less risk according to any measure of risk we employ. For example, with respect to forward-looking measures of risk, managers with large equity stakes in their banks are less likely to rely upon high-cost "borrowed funds" and are also less likely to be involved in real estate lending. Both activities were perceived by contemporaries as riskier and such perceptions are generally borne out in the Panic. Ex post measures of risk – the proportion of troubled loans, the estimated probability of bank failure, or the forecasted losses anticipated by the bank's examiner – paint a similar picture; greater management stakes are associated with lower default risk. We view these results as consistent with the idea that managers with a larger share of their wealth invested in the bank were more risk–averse in their risk management practices. Banks with lower managerial stakes, and consequently with more formal governance policies, tended to undertake greater levels of risk. That finding is consistent with outside directors, who represent the interests of all equity holders, as preferring a slightly higher level of risk.

The preference for lower risk appears to have been beneficial during the Panic of 1893 as we find that banks with higher manager ownership were less likely to fail. This affect is due largely to how these banks structured their balance sheets as when additional balance sheet controls are included, the direct effect of manager ownership concentration is reduced.

Finally, we investigate how banks differed in the financial structures they chose to manage risk. Banks seeking to reduce the risk of default on their debts that is traceable to risks of default on their loans can use two alternative risk management tools in combination: a higher cash-to-asset ratio (on the asset side of the balance sheet), or a higher equity-to-asset ratio (on the liability side of the balance sheet). We find that banks with higher managerial ownership concentration relied

more on cash assets, and less on equity, to control bank default risk. This finding is consistent with the view that high managerial ownership, and informal governance, make bank managers' behavior less observable and less controllable. It is harder to observe and control risk management at banks without formal governance structures. Similarly, it is harder for outsiders to observe the level of risk in such banks. Under these circumstances, banks will suffer from greater asset substitution risk, and greater adverse-selection problems (if they were to attempt to raise additional sources of outside equity). Greater asset substitution risk will tend to lead banks to rely more on cash as a means of signaling good risk management practices (Calomiris, Heider and Hoerova 2013). Greater adverse-selection problems raise the cost of equity finance, and thus also lead to a greater weight on cash in controlling default risk. Given the paucity of equity offerings in our sample, we think the asset substitution channel is more likely to be the important one.

The paper is organized as follows. Section 2 provides an illustrative model of ownership, governance, and asymmetric information. Section 3 discusses the data sources and the sample. That section also explains the construction of our corporate governance measures and the variables we use as indicators of rent seeking and risk preferences. The baseline analysis is contained in Section 4 while a variety of robustness checks are presented in Section 5. Section 6 concludes.

Section 2. A Model of Endogenous Asymmetric Information

We begin with the simplest possible model of corporate governance choice, where the assets of the bank consist entirely of loans and the financing of the bank consists only of stock. We relax these assumptions subsequently, and show that the central implications of the model – that is, that higher managerial wealth tends to reduce the reliance on formal corporate governance – also hold when we allow for deposit financing and the holding of cash assets.

A banker is endowed with wealth (E) and lending opportunities (a given number of profitable potential loans that he might undertake). Each loan is normalized to be of identical,

unitary size. The number and amount of loans made, X , is between 0 and X^{max}. For simplicity, we assume that the bank holds only loans and is financed entirely by equity provided by the banker and outside investors (there is no bank debt). The manager's equity share of the bank, m, is therefore E/X. When we add deposit liabilities and cash assets to the model – as in Calomiris, Heider and Hoerova (2013) – the main conclusions of the model are the same, but additional conclusions follow with respect to the role of cash in incentivizing good risk management. Interestingly, in this framework, cash plays an important role in incentivizing good risk management whether or not outsider financing is in the form of debt or equity. This warrants emphasis: unlike the discussion of Jensen and Meckling (1976), the problem of risk shifting in this model is a conflict between the insider/manager and all outside funding sources, not just debt holders.[5] In the simplified model, bank managers face incentives to increase risk in value-destroying ways (so-called "asset substitution" or "risk shifting") even though debt finance is absent. Minority shareholders, like creditors, have an interest in ensuring proper risk management by bank managers, which can either be achieved through higher managerial stakes in the bank or formal corporate governance.

Outside equity is provided by a single outside investor. The outside investor and the banker are risk-neutral and have identical reservation returns of R, which represents the gross return they could earn on an alternative to lending. The loan opportunities of the banker are worth pursuing,

[5] In the model presented here, the outside equity investor either becomes an insider by being invited to participate in governance, or remains uninvolved in governance knowing that the banker will invest in risk management due to a sufficiently high level of m (the banker's proportion of ownership). As we discuss further below, and as Calomiris, Heider and Hoerova (2013) show, in this model, the optimal contract for investors who remain outsiders (and therefore are not able to control risk management) would be senior deposits in a bank with cash reserves as well as loans. The key differences in assumptions between that model and the simplified one presented here are the availability of a single large outside investor (assumed here) and the possibility of establishing oversight of risk management by that outside investor. Calomiris, Heider and Hoerova (2013) assume that outside investors are fragmented. Their solution to incentive-compatible risk management entails the use of deposits and cash reserve holdings. In a small bank, with a single large outside investor, and the possibility of direct monitoring of the banker by that outside investor, depositor withdrawal threats and idle cash holdings are not necessary to achieve efficient risk management. The Calomiris, Heider and Hoerova (2013) model captures the role of deposits and reserves in bank corporate governance, while the model presented here highlights the relationship between the banker and a large outside equity investor, which is not considered by Calomiris, Heider and Hoerova (2013).

but only if the banker invests his own effort in risk management. One can think of this investment in risk management as the banker's continuing performance of due diligence, monitoring, and enforcement of loan covenants. Risk management effort is privately costly to the banker; it entails disutility equal to BX. With risk management, loans earn a certain return of $Y > R$. Without risk management, loans earn Y with probability p and 0 with probability (1-p). Without risk management, loans are not worthwhile investments because $pY < R$.

The observability of risk management depends on the corporate governance environment chosen. If the banker chooses to include the outside investor in the governance of the bank, then risk management is observable and contractible. If the banker chooses not to include the outside investor in the governance of the bank, then risk management is a matter of private information only observed by the banker.

The banker's "salary" (S) is a form of rent extraction, which is endogenous to the corporate governance choice of the banker. If the banker does not include the outside investor in the governance of the bank, then he will set his salary such that the outside investor receives only the reservation return R. If the banker includes the outside investor in the governance of the firm, then he must share the rents from lending above R with the outside investor. The precise degree of that sharing should reflect, in a more realistic model of the market for outside funding, the competition among outside investors to supply funds to the bank. In our model, we simply assume, without loss of generality, that the banker and outside investor split the rents evenly when the outside investor is included in corporate governance.

As we will show, in equilibrium, because risk management is privately costly to the banker, without outside investor involvement in corporate governance, the banker will have to limit the size of the bank to X^*. With outsider involvement in corporate governance, the banker can set the size of the bank to X^{max}. Thus, the banker trades off the benefit of greater rents that come with larger bank size (which is only feasible if he includes the outside investor in the governance of the

bank, and shares the rents from lending with the outside investor) against the cost of sharing the rents of lending with the outside investor.

X* is determined by the incentive-compatibility constraint for the banker to invest in risk management in the absence of the involvement of the outside investor in governance. Without outsider involvement, the banker will choose to invest in risk management only if the payoff to him from doing so exceeds the payoff from not doing so. This is captured by the expression:

(1) $SX + m(YX - SX) - BX > p[SX + m(YX - SX)]$.

Recall that m=E/X. X* is the maximum feasible level of X at which this equation is satisfied (that is, where the equation is satisfied as an equality, where the banker is indifferent to investing in risk management). X* also implies a unique minimum value of m*.

(2) $m^* = E/X^* = \{[B/(1-p)] - S\}/ (Y - S)$.

As this expression shows, the critical values of m* and X* depend on S. S will be chosen to transfer all rent to the banker, leaving the outside investor earning only the reservation level of return, R. In other words, S is chosen by the banker to satisfy the following expression, which is the participation constraint for the outside investor:

(3) $(X - E)R = (1 - m)(YX - SX)$.

This expression reduces to $S = Y - R$.

Thus, the condition determining the critical value of m* can be rewritten as:

(4) $m^* = \{[B/(1-p)] - (Y - R)\}/ R$.

This expression can be used to perform comparative static analysis of m* with respect to different values of p, Y, and R. In particular, it can be shown that a higher Y implies a lower value of m*. Intuitively, when rents are higher, the banker is able to credibly pledge to invest in risk management, without oversight, with a lower minimum managerial stake m*.

Whether the banker will choose not to include the outside investor in governance (and operate the bank at the level of X*) or to include the outside investor in governance (and operate

the bank at X^{max}) depends on how much the banker receives under each of those alternatives. Recall that, if the outside investor is included in corporate governance, he will split the rents with the banker, and therefore, both the banker and the outside investor/director will each earn an identical "salary" of $S = (Y - R)/2$.

If the following condition is satisfied, the banker will earn more by choosing to include the outside investor in governance and operate the bank at X^{max}:

(5) $\quad ER + X^{max}(Y - R)/2 > ER + X^*(Y - R).$

So long as $X^{max} > 2X^*$, this condition is satisfied. Note that, in any comparative static calculation, Y affects the governance decision only indirectly through the positive effect of Y on X^* (i.e., $dX^*/dY > 0$, implying that, ceteris paribus, higher Y makes it less likely that outside investor's will be invited to participate in governance).

The above model has clear implications for corporate governance decisions and their consequences. Depending on the size of rents per loan, and the number of loans available to the banker, he will decide whether to run the bank with no outside oversight or to include the outside investor in oversight. If the outside investor is included in oversight, then "asymmetric information" and "asset substitution risk" will be eliminated, and the banker's salary will be lower, as he is forced to share rent with the outside investor.

Section 2.1. Adding Cash Assets and Deposits To the Model

The model can be extended to allow bankers to choose to hold cash in a credible and observable form. If cash assets are added to the model without also allowing for senior deposit claims, cash holdings serve no purpose. To see why, consider the effect on equation (1) of bank cash holdings, C. Because cash is riskless, the banker will receive, in addition to the payoffs described in equation (1), an amount mC irrespective of whether the banker undertakes risk management. Thus, cash has no effect on the banker's risk management effort.

As Calomiris, Heider and Hoerova (2013) point out, however, outsider financing via equity is not generally the optimal contract under these circumstances. By giving outsiders a senior claim on the cash flows of the bank, the banker ensures that when risk is not managed properly, and when low payoffs occur, outsiders will receive all of the cash, not just (1-m)C. Thus when outsider financing is partly in the form of deposits, and bankers are able to hold cash, bankers are able to commit to proper risk management by holding a sufficient amount of cash assets. Deposits and cash affect risk management because, unlike outside equity financing, deposit financing does not dilute the upside of the banker's profit, and unlike outside equity holders, deposits receive all of the bank's cash assets when the banker chooses not to invest in risk management and the bad outcome occurs (with probability 1-p).

A fully realistic model (which would have to be much more complicated that either the framework presented here, or that of Calomiris, Heider and Hoerova 2013) could allow for both deposits and outside equity sources of funding. For example, with a more continuous distribution of bank earnings outcomes, one could derive two forms of outside financing by assuming that depositors are relatively risk-averse small investors who desire fixed claims, but that a single, large investor, who is less risk-averse, is willing to provide outside equity financing. In that setup, we conjecture that the same two basic results derived above and in Calomiris, Heider and Hoerova (2013), respectively, will hold: (1) bankers that limit the amount of their risky lending relative to their own equity interest in the bank, will be able to attract both depositors and an outside equity investor without establishing formal corporate governance protections, and (2) bankers that choose not to establish formal corporate governance protections can expand the amount of risky lending in which they can engage, and thereby increase the rents they derive from banking, by raising much of their outside financing in the form of senior debt and holding sufficient cash assets. In other words, this framework implies that bankers that choose not to engage in formal corporate

governance will tend to rely less on equity in their financing, and will hold a larger fraction of their assets in cash. In our empirical results, we will test, and confirm, these predictions.

Section 3. Data

We gather a variety of information on individual banks using the Call Reports and the Examination Reports. In this section, we describe the data sources and the definitions of the variables used in this study.

Section 3.1 The Sample

Our sample contains 206 banking institutions, which consists of all the national banks located in 37 cities. As national banks (i.e., those chartered by the federal government), these institutions were subject to the same set of rules and regulations regardless of where they were located. Beneficially for our purposes, all the banks were unit, or single office, banks which makes it easier to control for differences in local economic conditions. National banks were required to provide information to the Comptroller of the Currency, their primary regulator, several times a year. One method was through the Call Report, which contains information on the banks' balance sheets and was filed about five times a year. The second method of providing information about themselves consisted of Examination Reports filed by examiners who visited each bank once or twice a year. To be included in our sample, the banks needed to have provided information for the September 1892 Call Report and to have had at least one Examination Report completed prior to May 1893 (the onset of the Panic). Those are the Reports that provide the information used for the analysis.[6]

[6] Two banks file the September 1892 call report but close prior to May 1893. For these institutions, we use the examination report nearest closure, so long as it was filed at least [four] months prior to closure.

The cities include many of the larger ones in the Western and Southern parts of the United States.[7] A number of them were designated as "reserve cities" for purposes of regulatory cash reserve requirements. Deposits held at banks in reserve cities could count as part of a "country" bank's legal reserve and these deposits often served as part of the regional payment system (see James 1978 for further detail). Some of the other cities, even though they were not technically reserve cities, were important enough regionally that other banks held deposits there. Thus, many of the banks in our sample played important roles as intermediaries in interbank markets. Nevertheless, our sample includes a number of banks from smaller cities as well.

Section 3.2. Data Sources

The Examination Reports provide a wealth of information.[8] The most vital material contained in the Examination Reports for our purposes is the detailed information regarding the extent of ownership by the bank's management and its board, as well as the information about corporate governance practices. The Examination Report lists all the bank directors and major officers (President, Vice-President, Cashier), the number of shares held by these individuals, and any loans to these individuals. Salaries of the officers were noted and whether the officers were required to put up a surety bond, which would provide insurance against fraud. The examiner also commented on whether the board exercised any oversight of the officers, such as by maintaining an independent discount and examining committee to review its loans, or through the frequency of its board meetings.

[7] The cities are: Birmingham, AL; Mobile, AL; San Diego, CA; Los Angeles, CA; Denver, CO; Pueblo, CO; Indianapolis, IN; Des Moines, IA; Dubuque, IA; Lexington, KY; Louisville, KY; New Orleans, LA; Minneapolis, MN; Rochester, MN; St. Paul, MN; Stillwater; MN; Kansas City, MO; St. Joseph, MO; Helena, MT; Lincoln, NE; Omaha, NE; Albuquerque, NM; Fargo, ND; Cincinnati, OH; Portland, OR; Knoxville, TN; Memphis, TN; Nashville, TN; Dallas, TX; El Paso, TX; San Antonio, TX; Salt Lake City, UT; Spokane, WA; Tacoma, WA; Milwaukee; WI; Racine, WI; and Cheyenne, WY.

[8] Calomiris and Carlson (2013) provide a detailed summary of the contents of the Examination Reports. See also Robertson (1995) for more information on the examination process.

The Examination Reports also considered a variety of aspects of the balance sheet beyond what was covered by the Call Report. That information included additional quantitative detail about the loan book, such as the amount of loans that were demand or time loans, the amount of loans secured by real estate, and the amount secured by other collateral.[9] There was also information on the bank's liabilities including additional detail on whether the bank borrowed from other banks (a form of higher-interest, short-term "hot" money).

Finally, the examiner provided information on the performance of the bank, which combined hard facts about the bank with their own judgments. Specifically, the examiners evaluated the quality of the loan book by listing the volume of slow and overdue loans and providing an estimate of expected losses on the banks' assets – which included loans, as well as other assets. The examiners also noted the amount and date of the most recent payment of dividends, as well as whether funds that were retained would cover current and future losses or build up the bank's net worth.

In our analysis, for most of our balance sheet data, we use information from the September 1892 Call Report. The Call Report at this time provides considerable detail about the balance sheet. While some additional information is available on the Examination Report, the Call Report has the advantage of providing data for all the banks at the same point in time, which reduces concerns about spurious differences due to seasonal or other time-related factors.

We also include a number of variables related to the economic environment in which the bank operated. These include county level variables from the various censuses, such as population and the share of income from agriculture.

All variables, their definitions, and their sources appear in Table 1. Summary statistics for these variables appear in Table 2.

[9] Although real estate lending was "prohibited" by national banks, national banks nonetheless found ways to lend against real estate. A loan made without real estate as collateral could become collateralized by real estate if the creditworthiness of the borrower deteriorated.

Section 3.3 Ownership and Governance Variables

The individuals most responsible for running the bank were its senior managers, in particular the president, vice-president, and cashier (essentially, the chief operating officer of the bank). They played a large role in making loans and arranging the funding of the bank, including whether the bank borrowed from other banks via short-term, higher-interest "borrowed" money. These individuals tended to own shares in the bank and were frequently also on the board of directors (the President of the bank was always on the Board, and the others typically were, too). A key variable in our analysis is the share of the bank's stock owned by the officers of the bank. We focus, in particular, on the fraction of outstanding bank shares owned by the president, vice-president, and cashier.[10] The average portion of shares owned by these three officers, as reported in Table 2, was 25 percent. The histogram in Chart 1 provides a better indication of the distribution of managerial ownership. At most banks in the sample, ownership by the managers is fairly modest; the three top managers owned less than 6 percent of outstanding shares for about 30 percent of the sample. There are also cases of significant ownership concentration; the top three managers owned at least half the outstanding shares in nearly 10 percent of the sample.

The behavior of the managers could be constrained by the Board of Directors. Boards ranged in size from 4 members to 23 members. Some Board members owned significant stakes in the bank. Others were prominent businessmen that might provide business to the bank.[11] A histogram of ownership by outside directors is shown in Chart 2. The average portion of shares owned by outside (non-officer) directors was 15 percent but it reached as high as 57 percent. Presumably, the larger the portion of shares owned by the outside directors, the more they could

[10] We obtain the number of outstanding bank shares by dividing bank capital by 100 (as bank capital was typically carried at book value based on share prices of $100 per share). In a few cases the examiner indicated the number of shares outstanding and these reports confirm that our procedure is correct. In a few other cases the examiner reported that the value of capital had previously been written down and shares revalued. We believe that we have made all the appropriate corrections for these write-downs.

[11] For instance, a Mr. Proctor and a Mr. Gamble served on the board of the Citizens National in Cincinnati.

influence the behavior of managers. The ownership by all other individuals is shown in chart 3. As can be seen from this chart, individuals who are neither managers nor bank managers own a majority of the shares in about two-thirds of the banks in our sample.

There were also other ways that the board could exert control over managers. One way was by maintaining an active independent discount committee containing at least one outside director to review and approve loans proposed by the managers. Such a committee was maintained by 60 percent of banks. Another way of exerting control was by meeting frequently. Boards that met infrequently, such as semi-annually, presumably had little influence on the managers. The board met monthly or more frequently in nearly two-thirds of the banks in our sample. In cases where the managers comprised a significant portion of the board, there was presumably little independent oversight; when outside directors dominated the board, they could presumably exert more control. In our sample, the median portion of the board that consisted of outside directors was 71 percent; we create an indicator variable equal to one when the portion of directors are outsiders is above the median and is zero otherwise. Our measures of the reliance on independent directors, of the existence of a loan review committee, and of the frequency with which it met are similar to other measures used to analyze corporate risk management in modern financial institutions, such as the "active board risk committee" of Ellul and Yerramilli (2010).

Another way of influencing bank management was requiring bank managers to post surety bonds. These bonds would offer the directors (or receiver) a way of recovering funds in the event the manager committed some specified act, typically some type of fraud that caused losses to the bank. Bonds could be personal or provided through a surety bond agency (which often required that the person being insured post some type of collateral).[12] Surety bonds were most often required for the cashier, who oversaw the books and for whom the possibility of fraud was therefore highest (nearly 60 percent of cashiers posted bonds). Other managers also were required

[12] For more information on surety bonds see Lunt (1922).

to post such bonds (the President posted a bond in 33 percent of our sample and the vice-president did so in 12 percent of the sample).

In Chart 4, we illustrate the relationship between manager ownership and one of the indicators of corporate oversight: the fraction of the Board consisting of outside directors. The negative relationship between these two measures indicates that more manager ownership tends to be associated with less oversight. Moreover, not only are each of the measures of Board oversight negatively correlated with manager ownership, Table 3, but they are all positively correlated with each other. Although we investigated the impact of each of these measures of Board control on managerial behavior, it is useful for our purposes to create an index that aggregates the different measures into a single corporate governance index. We do so by summing the five indicator variables.[13]

Examiners seem to have understood that banks could achieve good management of risk with or without active oversight of management by the Board. Below are excerpts from the Examination Reports of two banks, one with the minimum corporate oversight score of 0 and the other with the maximum score of 5. In neither case did the examiner have concerns about the management of the bank or the soundness of the bank, even though the examiner was aware of the clear differences in the oversight being exercised by the Board.

Oversight score of 0 - Comment on the Board:

> Frequent meetings are not held by the directors of this bank and records only show that formal meetings are held to declare dividends. No mention being made of their having examined or approved loans and discounts at such times, and there is no report of discount and examining committee having acted. The management is apparently with Mr. Gates, the president of the bank.

[13] We also tried aggregating the five indicators by taking the first principle component, similar to Ellul and Yerramilli (2010). All the five indicators had positive and roughly equal weights. Thus, the first principle component was not so different than the simple average so we stick with the average for simplicity.

Comment on the Officers:

> Officers are capable, prudent and of good reputation and their management is efficient and successful, that management being in the hands of Mr. Henry Gates the president who has had over 30 years experience in the banking business in this city. No bonds required.[14]

Oversight score of 5 - Comment on the Board:

> Directors meet monthly. Minutes full and explicit. Have discount board and examining committee. Discount board pass[es] upon all loans.
>
> *Comment on the Officers*:
>
> Officers are capable, prudent, of good reputation. Their management successful; the bonds are furnished by Louisville Bond Co. and in custody of Lexington Trust.[15]

Section 3.4 Financial and Portfolio Measures

A number of financial measures are potentially of interest as controls in our regressions relating ownership, governance and risk management, while others will serve as endogenous variables (i.e., the cash assets ratio and the equity-to-assets ratio). Two important basic control variables are bank size and bank age. Smaller banks, ceteris paribus, may be more closely held and may also be less likely to adopt formal governance procedures due to fixed costs. We measure size and age using the log of assets and the log of the number of years since the bank was established (this could be the date the bank became nationally chartered, or the date it was founded, depending on whether it was a conversion of a state bank). Our banks are of generally similar size, but of fairly heterogeneous age.

We have considerable information on the asset portfolio of the banks. Loans were obviously a relatively risky asset but also a relatively high-earning asset. One basic and often-used asset ratio that captures both risk and earning potential is the share of assets consisting of loans. The Examination Reports provide additional information about the loan portfolio. During the National Banking Era, real estate loans were considered riskier loans. National banks were not

[14] From the examiner report of November 14, 1892 for the Nebraska National Bank of Omaha, NE charter 2665.
[15] From the examiner report of August 18, 1892 for the Fayette National Bank of Lexington, KY, charter 1720.

supposed to originate mortgages; however, they were allowed to have mortgages loans if the real estate was being used to collateralize a previously existing loan. Thus, we will employ real estate loans relative to total loans as a measure of lending risk. We are also interested in the degree of insider lending. We construct two measures: the share of all loans that are made to insiders (whether board members or managers) and the share of loans to insiders that are made to managers rather than outside directors.

Previous research on bank risk management has identified liability structure as an important indicator (Calomiris and Mason 1997, 2003, 2008, Calomiris, Mason and Wheelock 2011, Carlson 2010). A bank's liability structure may reflect exogenous liquidity risks faced by banks (e.g., a higher proportion of checking deposits). Liability structure also may capture endogenous changes in the composition of debts in reaction to changes in unobserved characteristics of banks' asset risks (e.g., banks that rely on borrowed funds may find it hard to raise funds from other sources), and we include reliance on high-interest rate borrowed funds as an endogenous variable in our analysis as an indicator of risk.[16] In some specifications, we include the proportion of liabilities consisting of individual deposits and the proportion of deposits in checking deposits, as opposed to savings or time deposits, as controls.

We have some potentially useful information about the earnings and expenses of the banks in our sample. One of the expenses listed in the Examination Reports is the salaries paid to managers. As larger banks tend to pay higher salaries, we scale salaries by the assets of the bank. We also observe dividend payments. Dividend payments are a way to reward equity holders. We analyze dividends as a dependent variable; high dividend payments are sometimes viewed as an indication of a disciplined corporate governance environment. We recognize, of course, that dividends can also reflect differences in profitability; that is, they may be used to signal

[16] Often this borrowing took the form of rediscounting notes or having bills payable, but could also take the form of collateralized certificates of deposit. While the former are noted on the Call Report, the latter type is noted only in the Examination Reports. As the amounts are not always noted, we instead use an indicator for whether or not the bank made of this "hot" money.

management's belief that earnings will persist. Dividend payment differences may also reflect different growth opportunities; retaining profits raise the amount of equity invested in the bank, which ceteris paribus, lowers the bank's default risk, and thus increases the capacity of the bank to grow its assets. To analyze dividend payouts, we consider is the ratio of dividend payments relative to shares outstanding if dividends were paid during the past six (banks typically paid dividends semi-annually, in June and December). [17]

Section 3.5 Risk

We consider several indicators of the risk of the bank. Some of these indicators focus on aspects of bank asset risk – based either on objective criteria about the composition of bank assets (e.g., the ratio of real estate loans), or on examiner expectations (e.g., the ratio of "troubled" loans, or the losses forecast on assets). Another asset-side indicator of risk is the amount of other real estate owned among bank assets. This asset category typically represented properties seized when loans went into default. Finally, we measure risk based on failure outcomes.

Our measures of risk that employ examiner opinions use specific categories contained in the Examination Reports. Examiners reported the amount of bad debts or other suspended or overdue paper; the proportion of loans consisting of these items – which we define as "troubled loans" – is a useful metric of loan quality. Examiners also provided estimates of likely losses on assets (not just loans but on securities and other items as well, such as non-income generating assets such as furnishings).

The two primary tools of risk management for banks were the equity-to-asset ratio and the cash assets-to-total-assets ratio. Equity, or net worth, is measured as the sum of paid in capital plus cumulative retained earnings held as surplus or undivided profits. There were no equity ratio requirements, although banks were required to maintain minimum amounts of capital and surplus.

[17] As an alternative, we also looked at whether the bank paid out dividends during the past six months. The implications from those results are similar.

Estimating the demand for cash assets is complicated by the legal minimum requirements of cash relative to deposits. Cash reserve requirements specified a certain level of cash and deposits in reserve city banks relative to deposits and net due to banks. As we show in our regression analysis, however, regulatory constraints on holdings of cash reserves were not binding on banks' demands for cash assets.[18]

Section 3.6 Other Controls

We also include a number of variables to control for local conditions. At the county level, we gather information on population and the share of county income from agriculture. These variables are from the 1890 census.

An important feature of the banking system during the National Banking Era was the system of interbank depositing of reserves. National banks were required to hold cash and interbank deposits against their own deposit liabilities. Banks outside major cities need to hold a 15 percent reserve, three-fifths of which could be held as deposits at banks in larger "Reserve" cities or, "Central Reserve" cities—New York, Chicago, or St. Louis. Banks in Reserve cities needed to hold a 25 percent reserve, half of which could consist of deposits in a "Central Reserve" city. Deposits in New York played a key role in the settling of interregional payments. Many banks held deposits with banks in New York. Moreover, banks in New York provided a substantial amount of interbank loans through rediscounting. To capture the potential importance of proximity to New York in affecting banks' risks and operations, we include the log of the distance of banks from New York as a control. We also include an indicator for whether the city in which the bank is located is a

[18] The Examination Reports are based on non-scheduled (surprise) examinations of national banks. In addition to these examinations, there were regularly scheduled call reports of bank balance sheets in June and December. We hypothesize that banks did not maintain required reserves continually through the year, but that they may have engaged in window dressing to meet their reserve requirements temporarily on the June and December call dates. The penalties available to the Office of the Comptroller of the Currency appear to have been limited to rather extreme measures (suspension of dividends or revocation of charter). Banks that failed to meet their reserve requirements on examination dates likely were told to correct the problem, which they could do by window dressing their balance sheets on the next reporting date (the June or December call).

reserve city, to capture the possible effects of differences in interbank relationships and reserve requirements on bank behavior. We do not include bank asset size as a control variable because, as our model shows, it is an endogenous variable. Treating bank size as an exogenous variable, and adding it to the list of controls would not affect any of the conclusions derived below.

Section 4. Analysis

We are interested in how the different ownership and corporate governance variables affected behavior. As these variables are clearly inter-related, we start by presenting our approach to identifying the linkages among ownership structure, governance choices, rent seeking, and risk management. We then review our findings.

As we noted in our review of the literature on manager/stockholder conflicts, it is not clear a priori whether increased shareholdings by managers lead them to take more or less risk. Risk-averse managers that hold a large share of their wealth in the form of bank stock, and whose human capital depends on the fortunes of the bank, should generally prefer less risk than the outside shareholders. In some states of the world, however – if hidden losses are large – managers may prefer to undertake more risk than outside shareholders. With respect to rent extractions, we expect that all managers would prefer to extract greater rents from the bank, and that those with more equity shares will be more successful in doing so, especially if they are not subject to formal oversight.

Outside directors presumably will try to influence the behavior of the managers, particularly if that behavior deviates from what outside stockholders would prefer. We expect that when the managers own a larger equity stake, and outside directors own a smaller stake, that fewer oversight tools will to be employed. We also expect that outside directors will try to reduce any rent seeking by the managers. With respect to risk preferences, outside directors should represent the interests of outside shareholders. If, for example, managers with large equity stakes tend to

keep risk lower than outsiders would like, then banks with lower managerial shares and greater oversight should maintain higher levels of risk than banks with high managerial shares and less oversight.

Section 4.1 Inter-Related Ownership and Corporate Governance Measures

We are interested both in both whether higher ownership by management results in particular behaviors and in whether the use of various oversight tools by outside directors results in similar or different behaviors. As we have noted, and as the correlations in Table 1 show, there is a strong negative correlation between the degree of management ownership and each of the different oversight measures that could constrain management.

Our initial empirical approach to identifying the effects of ownership and government choices on bank behavior employs a two-step procedure, which treats ownership structure as exogenous – that is, mainly the result of exogenous cross-sectional variation in the levels of E and X^{max} in our model (we subsequently relax that assumption). We first regress the governance score measure (from section 2.3) on the fraction of bank shares owned by the top three managers and other controls. We capture both the predicted values and the residuals from that regression. For the second stage, we run sets of four regressions (which we will label columns 1-4) for each outcome variable of interest in which the independent variable of primary interest is, respectively: the fraction of bank shares owned by the top three managers, the governance score variable, the predicted values from the first stage, and the residual values from the first stage. In this setting, the predicted values from the first stage indicate the impact on behavior from greater board oversight, which is predicted by the degree of ownership by management. By using predicted values of governance as a second-stage regressor, we ensure that governance effects are not reflecting the endogenous responses of governance to other endogenous variables.

Assuming (initially) that ownership structure is exogenous, the column 1 regressions can be regarded as a true "reduced form," which captures the *combined direct and indirect* effects of managerial ownership (the exogenous variable) on each of the endogenous variables of interest. Column 2 reports OLS regressions where the governance score is treated as an exogenous variable and managerial ownership is excluded from the regression. The coefficient on the governance score in the column 2 regressions is a partial correlation and should be interpreted with caution. We regard the governance score as an endogenous variable, and we recognize that column 2 omits a highly relevant exogenous variable (managerial ownership) from the model, which is correlated with governance. Nevertheless, we regard column 2 as useful when juxtaposed with columns 3 and 4. Columns 3 and 4 "decompose" the coefficient in column 2 into two parts: the part of governance that is correlated with managerial ownership and the part that is not.

The results of the first stage regressions are reported in Table 4. As expected, when the top three managers own a greater fraction of the bank's stock, the governance score is lower. Having outside directors own a greater share tends to increase the governance score, but that effect is not statistically significant. Older banks tend to have lower governance scores. We also find that banks farther away from New York tended to have lower scores.

Section 4.2 Corporate Governance and Insider Rent Seeking

Here we first explore whether managerial ownership and formal oversight measures are related to insider rent seeking. In particular, we look at officer salaries, lending to insiders, and (lower) dividend payments as ways that insiders might seek to extract value from the bank.

When management owns a greater share of the stock, we expect them to pay themselves higher salaries relative to assets as a way of extracting rents from the bank. (As assumed in our model, it is also true larger banks tend to pay higher salaries, but the extent to which bankers are able to extract rent should be defined as the ratio of salary to assets.) Higher banker salaries

(relative to assets) increase the expenses of the bank and reduce funds paid out to shareholders as dividends. When non-management shareholders own a greater proportion of stock, they may be able to better limit salaries. The results, shown in Table 5, are consistent with that idea and indicate that when the managers own more shares, they tend to pay themselves higher salaries.

Another way of extracting rents from a bank is for the owners to lend to themselves to finance their outside projects. There has been considerable prior academic analysis of this issue, which indicates that insider lending is not always value-destroying or risky (Lamoreaux 1994, Haber 1995). We look at two variables related to insider lending. The first is the amount of loans made to all insiders (board members and management) relative to all loans. The second is the proportion of all insider loans going to managers. We expect that managerial ownership and governance measures will be associated with both these variables.

Interestingly, in regressions not reported here, we do not find any evidence that our measures of ownership or Board oversight are associated with insider lending. We do find, however, that ownership and governance structure strongly influence who receives those insider loans (Table 6). At banks where the management owned a greater proportion of the stock, a greater fraction of insider loans went to the management. When there were more corporate governance controls, more of the insider loans were made to the outside directors.

With respect to dividends, we find, in Table 7, that when more shares are owned by managers, then dividend payments are higher. While this finding is consistent with the idea that institutions with higher managerial ownership provide greater payouts to owners, it is also consistent with the idea that these institutions are more profitable.

Taken together, our results regarding salaries, insider lending, and dividend payments are consistent with the idea that when managers own a greater fraction of the equity shares of the bank, they extract greater rents from the bank through higher salaries and more loans to themselves. They do not, however, limit dividend payments (because this means of rent extraction

would harm them as stockholders). Stronger oversight by the Board of Directors tends to be associated with less rent extraction by the managers but somewhat greater extraction by the outsiders on the Board (insider lending became skewed more toward the outsiders on the Board). All parties appeared interested in maintaining strong dividend payments.

Section 4.3 Corporate Governance, Balance Sheet Composition, and Risk Taking

We begin our analysis of the relationship between risk choices and ownership and governance structure by focusing on measures of risk from the liability side of the balance sheet. With respect to the composition of liabilities, we examine bank reliance on the use of borrowed funds, which previous research has shown is a forecaster of bank distress (Calomiris and Mason 1997, 2003, Carlson 2010). Borrowed funds were more expensive and had to be secured; use of these funds suggests a greater level of risk. As noted earlier, due to data limitations in tracking the exact amounts of borrowed funds, we use a probit specification to test whether our ownership or governance variables are associated with the use of such funds. We find, in Table 8, that banks where managers are more significant owners are less likely to rely on borrowed funds from other banks.

To economize on the reporting of results, our subsequent findings for other endogenous variables are summarized in Table 9, which omits the various control variables and focuses on the key coefficients of interest (the relationship among managerial ownership, governance score, and other variables of interest).

With respect to measures of risk based on the asset side of the balance sheet, we consider the composition of loans. As noted earlier, real estate loans were generally considered to be riskier and were forbidden by the National Bank Act, but banks could use mortgages to secure debts previously entered into. As shown in Table 9, when management owns more shares in the bank, the bank tends to have fewer mortgages on its books.

There are a number of outcome variables that also reflect the risk preference of the banks. The three measures we consider are other real estate owned relative to assets, as well as the examiner's assessment of problems, measured by the share of troubled loans to total loans and by the estimated losses on assets relative to total assets. We report in Table 9 that greater ownership by management is associated with lower values of all these measures. There is no association between board controls and troubled loans. However, estimated losses do appear to be reduced by increased board oversight measures, a finding that suggests that these governance structures are at least partially effective. On closer inspection of the composition of expected losses, we found that loan losses were not driving this result; rather, losses related to greater expenditures on furnishings are a primary contributor to the greater expected losses of banks with both low managerial ownership and low board oversight. That result is intuitively appealing: excessive expenditures on furnishings are a wasteful, value-destroying use of funds that would not be chosen in a disciplined environment.

Table 9 also examines the effects of ownership and governance on bank survival. We find that increased ownership by management is associated with a reduced likelihood that the bank closes between October 1892 and December 1893, though the bulk of the closures occur during the Panic of 1893. When managers had a greater ownership stake, they took less risk and were thus less likely to succumb. However, the direct effect of managerial ownership is reduced when additional balance sheet controls are included. This finding suggests that the benefits of managerial ownership on survival operate largely through the balance sheet choices made by the managers.

We now turn to the question of how ownership and governance structure are related to greater or lesser reliance on particular tools of risk management. Our analysis of bank loan composition in Table 9 showed that higher managerial stakes and greater oversight were associated with less risky lending, but this is only one of the main influences on bank default risk. In finance theory, the default risk of a bank is mainly determined by three variables: the riskiness of

the risky assets (loans and other risky assets), the ratio of (riskless) cash assets to total assets, and the ratio of equity to assets. Less risky loans, a higher ratio of cash assets, or a higher equity ratio all contribute to lower risk. Banks can tradeoff among these three measures to target the desired level of default risk on their debts.

In deciding whether to employ more cash assets or more capital to reduce risks, banks consider the costs of each. Calomiris and Wilson (2004) show that banks may prefer to rely less on equity when they face higher adverse-selection costs of raising equity in the market. In our theoretical discussion above, which builds on Calomiris, Heider and Hoerova (2013), we argue that conflicts of interest in risk management can also lead banks to rely relatively more on cash because higher cash holdings change bankers' incentives to manage the risks of their risky assets, and thus higher cash holdings credibly signals a safer loan portfolio. The implication of both these studies is that banks that have either higher adverse-selection costs or higher asset substitution risks – both of which reflect problems of asymmetric information about managerial risk taking – will tend to rely more on cash and less on equity to manage their default risk.

We expect problems of asymmetric information to be mitigated by the use of Board oversight. Board meetings, a loan review committee, and bonding should be associated with greater transparency and less opportunities for risk shifting by management. Thus, we expect a greater reliance on formal oversight to be associated with a greater use of equity and less use of cash. Of course, in estimating the reliance on cash, other factors are relevant. In particular, the structure of deposits has implications for liquidity risk—a bank that is more reliant on checking accounts than savings accounts for its funding will probably need to hold more cash, ceteris paribus. Thus, we include additional controls in our analysis of the choices of cash and equity, in particular the ratio of individual deposits to total liabilities and the ratio of checking deposits to all individual deposits.[19]

[19] As noted earlier, banks in Reserve Cities were required to hold more cash relative to deposits than other banks. We therefore include a dummy variable indicating whether the bank is located in a Reserve City. The results indicate that this being in a Reserve City did boost cash holdings slightly. Finding only a modest effect

The results, presented in Tables 10 and 11, suggest that banks with greater managerial ownership prefer to make greater use of cash and less use of equity capital to target their default risk. When outside board members own more shares, they also tend to prefer to have a lower net worth to asset ratio, but they do not push for holding more cash. At banks that had more Board oversight of management, cash ratios tended to be slightly lower, consistent with those banks' higher tolerance for default risk noted above.

Section 4.4 Corroborating Anecdotal Information

In the previous sections, we find that high management ownership is associated with safer asset portfolio choices, low management ownership is associated with risker portfolios and manager rent seeking, and strong corporate governance appears to reduce rent seeking. These finding are consistent with anecdotal information in the examiner reports. For example, in one bank with high ownership and strong governance, the examiner reported that: "This is a very conservative bank and loans and discounts only where they believe that they are perfectly safe. I can discern no poor paper in the bank.[20]"

Moreover, we find examples of examiner expressions of concern about banks with low manager ownership and low governance scores:

> Its capital is badly impaired…It is shameful and wicked that so much money should be fooled away in so short a time and prove the folly of having real estate speculators as managers of banking institutions.[21]

and

> The general condition of the bank is good excepting that the officers are using too much of the bank's money without security, loaning too much to the Bank of Everett and using too many devices to make a good showing.[22]

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is consistent with Carlson (2013) who finds that cash holdings were not very different between banks in larger country cities and banks in the reserve cities, as the buffers held by the country banks were substantial. Moreover, he finds that it was not uncommon for banks to hold less cash than required, suggesting that the reserve requirements were not strongly binding. For these reasons, the simple dummy variable control in the regression is likely sufficient.

[20] Lumberman's National Bank, Stillwater, MN.

[21] Washington National Bank of Tacoma, WA.

These are particularly apt examples of the sorts of behaviors we identify in the empirical analysis. More generally, in reviewing the anecdotal information, we find that there tended to be more concerns about banks with low management ownership and low governance and few concerns about banks with high ownership and governance.

Section 5 Robustness and extensions

Here we report a variety of robustness checks and extensions of the baseline analysis. In conducting this additional analysis, we focus on selected indicators of risk. We summarize these extensions as follows: First, we re-run our regressions, allowing stock ownership structure to be endogenous. As an instrument, we use managerial turnover events – moments when one bank president replaced another. Second, we provide an alternative conditional-mean analysis of banks to test the proposition that managerial ownership and formal corporate governance were substitute forms of discipline over managerial behavior. Third, we show that our results are robust to separately considering the components of the governance score used above. Fourth, we show that managerial compensation structure also affects management incentives toward risk; managers with more of their compensation in dividends relative to salary undertook lower risk. Fifth, we show that the association between greater risk and formal corporate governance is accentuated in the presence of a large outside blockholder (analogously to Laeven and Levine 2009). Sixth, and finally, we find that our results were robust to the inclusion of various controls.

Section 5.1 Endogenizing Ownership Structure Using Managerial Turnover

Here we treat managerial ownership as endogenous, and we instrument either managerial ownership or corporate governance score using events associated with managerial turnover. We

[22] Columbia National Bank, Tacoma, WA

expect (and find) that a managerial turnover event (such as the death of a bank president), which can be thought of as an exogenous reduction in the level of E in our model, is associated with a reduction in the managerial ownership share of the bank and an increase in corporate governance.

To verify that managerial turnover is traceable to exogenous events, we performed web-based searches, and also searched through newspapers available through the various digitized search engines maintained by the Library of Congress, to find information about the changes in bank presidents between 1882 and 1892 for banks in our sample. We used both the bank names and the presidents' names to obtain information about the reason for managerial turnover. Because the sources covered by these digital databases tend to be biased toward larger cities' newspapers and national publications, we were not able to find information about many of these management changes. For the 137 relevant turnover events in our sample, we find information explaining the reason for the management change for 37 of the events. For 65 of the events for which information was lacking, we were unable to locate any newspapers for the relevant time period and location. For 35 of the events for which information was lacking, local newspapers for the relevant time period were available, but we were unable to find any story about the changes in bank presidents.

Managerial turnover generally was associated with clearly identifiable exogenous events.. In the cases we were able to trace, the causes of turnover included death or severe illness (23 cases), election to public office or other new career opportunity (9 cases), retirement (2 cases), and other apparently exogenous circumstances (one departure in the wake of a cashier embezzlement, one because of business problems unrelated to the bank, and one because the president declined re-election). We also checked to see if there were notable changes in the condition of the banks as indicated by changes in the capital stock around the time the president changed. We found no evidence that changes in capital systematically preceded, followed, or were coincident with turnover.

In our regressions, the turnover instrument is measured as the number of times the President of the bank changed between 1882 and 1892. The first-stage regressions – measuring the effect of turnover on managerial ownership and corporate governance score – are reported in Table 12. Clearly, turnover results in reduced managerial ownership and greater use of formal governance. Table 13 presents, for each endogenous variable of interest, the results for the key parameter of interest (the effect of instrumented managerial ownership, or alternatively, instrumented governance score, on the endogenous variable of interest). For purposes of comparison, Table 13 reports the estimated coefficient for the second-stage regression alongside the comparable coefficients reported in Table 9. The results are quite similar, although, not surprisingly, the new IV results are less precisely estimated.

Section 5.2 Conditional Mean Tests

Another way to test the proposition that managerial ownership and formal corporate governance acted as substitute means for disciplining managerial rent seeking and promoting risk management is to divide banks into four groups, using a two-by-two matrix that measures each bank's combination of managerial ownership and formal corporate governance score. The four groups are defined as (1) high-managerial ownership and high-formal governance score banks, (2) high-managerial ownership and low-formal governance score banks, (3) low-managerial ownership and high-formal governance banks, and (4) low- managerial ownership and low-formal governance banks.[23] Our findings for these groups are reported in Table 14.

As predicted, the fourth group (which lacks either a high degree of managerial ownership or formal governance) is riskier. This group was more likely to use borrowed funds, more heavily invested in real estate loans, and had greater expected losses than the other groups. Furthermore,

[23] This approach also helps assure us that our earlier results were not driven by outliers in our concentration measure.

these banks display higher operating costs, which a more granular analysis shows is the result of unusually high spending on bank premises (a form of managerial perquisities).

Several other findings are also consistent with our earlier results. For instance, the ratios of managerial salaries to assets and of loans to managers relative to all insider loans are significantly greater at banks where management ownership is higher and formal corporate governance is lower compared to banks with low managerial ownership and high formal governance. The average ratio of cash to liabilities is highest for the most opaque group (high management concentration and low formal governance), though the difference relative to the group with low ownership and high governance is of marginal statistical significance. Net worth to asset ratios are notably lower for the two groups with high management ownership than the other two groups.

Section 5.3 Considering the Components of the Governance Score Separately

We explore whether our results relating to the corporate governance score are driven by one or two of the five individual indicators. We repeat the regressions, replacing the score variable with each component in turn. In many cases, we find that the coefficients on the individual components tend to point in the same direction, which suggests that the overall results are indeed driven by the summation of these different measures. For example, a high ratio of other real estate owned relative to assets was positively related to most individual component measures. We also find that the reduction in losses relative to assets is most strongly associated with having an active discount committee and with having a bonded cashier, though the relationship with the other governance measures also point in that direction.

For a few measures, the relationship between oversight and outcomes is more complicated. For the use of borrowed funds, having the board meet monthly or more frequently, having a relatively high portion of the Board consisting of outside directors, and requiring a bond from the cashier are all associated with an increased likelihood of using borrowed funds. By contrast, having

an active discount committee and requiring a bond from the president are both associated with a lower likelihood of using borrowed money. Thus, there is some indication that the different oversight measures triggered different responses on the part of managers in some cases.

Section 5.4 Examining Executive Compensation Schemes

Managers were paid salaries, and there is no evidence of stock-based, option-based, or cash bonuses in managerial compensation. Nevertheless, we are able to consider how managerial incentives may have been influenced by the extent to which the income of the manager covaried with the bank's income. The manager received a salary as well as dividend payouts by virtue of his ownership of shares. A number of recent studies have found that compensation sensitivity to firm performance matters for risk taking and that when the executive's salary is more sensitive to risk – in our case, when it is more dependent on dividends – the bank's investments tend to be riskier (Bai and Elyasiani 2013; Cheng, Hong and Scheinkman 2013). For this analysis, we focus on the income of the president.

We find that the having a higher proportion of the president's compensation in the form of salary (rather than dividends) is associated with having a higher proportion of loans related to real estate and having more troubled loans. These results point to greater risk taking when compensation is less due to profits. Of course, these results are subject to concerns about endogeneity; it could be that having more troubled loans reduces profits and dividends, which increases the proportion of compensation due to salary.

Section 5.5 Alternative Measures of Outside Director Influence

Our measure of outside director ownership considers all outside directors together. However, it is possible that the effects of board oversight depend on the amount of shares that board members own. To investigate that possibility, we create a dummy variable indicating when

there is an outside director with more shares than any of the top three managers (individually, not collectively). Such an outside director exists for about 20 percent of the banks in our sample.

When a director with a large number of shares is on the Board, we find that the presence of such an individual tends to magnify the prior result of greater risk taking. For instance, the bank tends to have greater shares of loans related to real estate. The tendency for greater risk taking appears to be consequential as banks with large-shareholding directors also are more likely to close during the panic.

Section 5.6 Additional Control variables

We also tried including a variety of other variables as controls. One such variable was the average score for banks in the same city, which might reflect the best practice of the neighboring banks. This variable tended to have the same coefficient as the bank's own score variable. Including it did not affect the results about which we are most interested. We also tried including the log of bank assets in the state, which might provide indications of lending opportunities or the banking environment at the city or state level.

As an alternative to controlling for specific local factors, we also replaced our local controls with state fixed effects which provide a more general control for things that might be less observable (such as differences in the ability of state banks to offer services prohibited to National banks). Using fixed effects also has little effect on the ownership structure or corporate governance regressions.

We also tried including the square of the ownership by the top three managers in case there were diminishing returns to ownership concentration. This variable also did not affect our main results and was largely insignificant.

Section 6 Conclusion

Our results have interesting, important, and novel implications for how governance differences lead companies manage to attract outside funding sources in an environment where conflicts of interest are important. We find that managerial ownership and formal governance tools are alternative means to resolve conflicts. Each of these alternatives has important and somewhat different implications for rent seeking, the targeting of default risk, and the tools used (cash vs. equity) to achieve the targeted level of default risk. More concentration of ownership leads to less formal structures of governance, more insider tunneling through loans and salaries, more dividend paying, less risk taking (presumably due to risk aversion of manager stockholders), and more reliance on cash (to resolve asset-substitution and adverse-selection problems). Endogenously chosen formal governance structures produce greater risk, and more relative reliance on capital for risk management, but lower managerial salaries.

In summary, there are two key corporate governance problems that arise in banking: managerial rent extraction through simple transfers (high salaries and subsidized loans to managers) and the possibility of managers' undertaking excessive risk (i.e., risk shifting or "asset substitution"). High managerial ownership without formal corporate governance addresses the second of these problems, but permits greater managerial rent extraction than would occur under more formal corporate governance practices. That outcome may be preferred by the managers who organize banks (i.e., if the potential rents from expanding the size of the bank are limited). If, however, manager/organizers wish to expand their enterprises to a scale that is large relative to their managerial stakes in the bank, then formal corporate governance is likely to become necessary. The formal approach to governance results in higher tolerance for risk (reflecting the greater diversification of holdings of bank stock) and a reduction in the rents that bank managers are able to extract though high salaries subsidized lending. In the presence of formal governance, managers share their privileged access to bank loans with outside directors.

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Table 1
List of variables

Variable	Source	Description
Management ownership	Exam report	The share of stock owned by the top 3 bank managers – the president, vice president, and cashier
Ownership of outside directors	Exam report	The share of stock owned by individuals who were on the board of directors but were not managers
Board meets month	Exam report	Indicator variable for the board of directors meeting monthly or more frequently
Outside directors on board	Exam report	The share of the board of directors that consisted of individuals that were not managers
Active discount committee	Exam report	Indicator variable for having an active independent discount committee
President bonded	Exam report	President posted a surety bond
Cashier bonded	Exam Report	Cashier posted a surety bond
Score	Derived	Sum of governance indicators
Turnover	Exam reports & bankers magazine	Number of changes in the president between 1882 call report and 1892 call report
Log assets	Call Report	Log of assets.
Log age	Comptroller & Rand McNally	Log of the difference between 1892 and the time the bank was established.
Salaries to assets	Exam report	Ratio of salaries of 3 officers to assets
Officers loans to insider loans	Exam report	Ratio of loans made to top 3 officers to loans to all insiders (managers and board members)
Dividends to shares	Exam report	Ratio of dividends paid at last payout to shares outstanding (dollars per share)
Used borrowed funds	Exam report & call report	Indicator that the bank borrowed using interbank certificates of deposit, rediscounts, or bills payable
Real estate loans to total loans	Exam report	Ratio of loans secured by real estate to total loans
Other real estate owned to assets	Call report	Ratio of other real estate owned to assets
Troubled loans to total loans	Exam report	Ratio of "troubled" loans – those past due or suspended – to total loans
Losses to assets	Exam report	Ratio of total losses on all balance sheet items as estimated by the examiner relative to assets
Loan losses to assets	Exam report	Ratio of losses on bad loans, other overdue paper, other loans and overdrafts to assets
Other losses to assets	Exam report	Ratio of losses on securities, bank house, furniture and fixtures, other real estate, cash, and other to assets
Individual deposits to total liabilities	Call report	Share of liabilities consisting of deposits by individuals

Checking deposits to individual deposits	Exam report	Share of individual deposits consisting of checking deposits
Net worth to assets	Exam report	Ratio of capital, surplus, and undivided profits to assets
Cash to assets	Exam report	Cash and legal tender to assets
Closed	Comptroller reports	Indicator that the bank suspended, failed, voluntarily liquidated after filing the Sept. 1892 call report but before Jan 1, 1894.
Reserve city	Comptroller reports	Indicator that the city is a reserve city
Log city population	1890 Census	Log of city population (city population is not available for El Paso, TX so county population is used)
Log distance to New York		Log distance in miles to NY
Fraction county income from agriculture	1890 Census	Value of agricultural products in the county divided by the sum of the value of agricultural products and the value of manufacturing

Table 2
Summary statistics

Variable	Mean	Median	Std. Dev	Min	25th percentile	75th percentile	Max
Management ownership	0.24	0.17	0.23	0.01	0.08	0.37	0.97
Ownership of outside directors	0.15	0.12	0.11	0.01	0.06	0.22	0.57
Board meets month	0.63	1	0.48	0	0	1	1
Outside directors on board	0.69	0.71	0.13	0.20	0.60	0.78	0.94
Active discount committee	0.60	1	0.49	0	0	1	1
President bonded	0.33	0	0.47	0	0	1	1
Cashier bonded	0.57	1	0.50	0	0	1	1
Score	2.69	3	1.56	0	1	4	5
Turnover	0.67	0	0.81	0	0	1	3
Log assets	14.1	14.1	0.8	12.0	13.5	14.7	15.9
Log age	2.42	2.40	0.74	0.69	1.79	3.14	3.43
Salaries to assets (percent)	0.59	0.46	0.45	0.02	0.33	0.69	3.61
Officers loans to insider loans (percent)	36.7	34.4	29.4	0	8.1	56.2	100
Dividends to shares	4.7	4	6.2	0	3	5	50
Used borrowed funds	0.31	0	0.46	0	0	1	1
Real estate loans to total loans (percent)	3.6	1.1	6.1	0	0	1.2	11.2
Other real estate owned to assets (percent)	0.9	.1	1.6	0	0	1.2	11.2
Troubled loans to total loans (percent)	9.1	5.9	9.9	0	2.5	12.4	71.8
Losses to assets (percent)	1.2	.2	3.8	0	0	1.1	32.1
Loan losses to assets (percent)	.95	.10	3.05	0	0	.85	28.6

Other losses to assets (percent)	.27	0	0.96	0	0	.15	11.3
Individual deposits to total liabilities	.70	.72	.17	.20	.57	.85	.97
Checking deposits to individual deposits	.74	.77	.20	.18	.61	.91	1
Net worth to assets (percent)	32.9	30.7	12.7	8.5	24.1	39.9	76.1
Cash to assets (percent)	7.9	7.6	3.6	.3	5.0	9.8	20.3
Closed	.29	0	.45	0	0	1	1
Reserve city	0.37	0	0.48	0	0	1	1
Log city population	11.0	10.8	.45	8.2	10.3	11.9	12.6
Log distance to New York	7.07	7.05	0.45	6.35	6.76	7.40	7.81
Fraction county income from agriculture	0.25	0.12	0.27	0.02	0.07	0.36	0.96

Table 3
Correlation of measures of ownership and control

	Board meets at least monthly	High % Outsiders on Board	Active discount committee	President bonded	Cashier bonded
Management ownership	-0.23	-0.44	-0.25	-0.15	-0.22
Board meets at least monthly		0.20	0.33	0.08	0.15
High % Outsiders on Board			0.25	0.22	0.20
Active discount committee				0.24	0.43
President bonded					0.50

Table 4
Determinants of the Corporate Governance Score

	Score
Management ownership	-1.93*** *(0.44)*
Ownership of outside directors	0.73 *(0.83)*
Log age	-0.35*** *(0.13)*
Reserve city	-0.02 *(0.30)*
Log city population	0.12 *(0.18)*
Log distance to NYC	-1.29*** *(0.26)*
Fraction county income from agriculture	-0.007 *(0.50)*
Intercept	11.65*** *(3.03)*
Observations	206
Adj R^2	0.29
F-statistic	12.7

Notes: The symbols (***), (**), and (*) indicate statistical significance at the 1, 5, and 10 percent level, respectively. Estimated using ordinary least squares. Standard errors in parentheses and italics.

Table 5 - Determinants of Manager Salaries Relative to Assets

	Spec 1	Spec 2	Spec 3	Spec 4
Management ownership	0.32*			
	(0.18)			
Score		0.00		
		(0.03)		
Score – predicted			-0.16*	
			(0.09)	
Score – residual				0.01
				(0.02)
Ownership of outside directors	-0.01	-0.04	0.09	-0.04
	(0.30)	*(0.30)*	*(0.34)*	*(0.25)*
Log age	-0.20***	-0.18***	-0.25***	-0.18***
	(0.05)	*(0.05)*	*(0.07)*	*(0.05)*
Reserve city	0.03	0.03	0.02	0.03
	(0.11)	*(0.11)*	*(0.12)*	*(0.07)*
Log city population	-0.04	-0.06	-0.03	-0.06
	(0.07)	*(0.07)*	*(0.08)*	*(0.05)*
Log distance to NY	0.06	0.09	-0.15	0.09
	(0.09)	*(0.10)*	*(0.18)*	*(0.08)*
Fraction county income from agriculture	0.10	0.07	0.07	0.07
	(0.19)	*(0.19)*	*(0.21)*	*(0.16)*
Intercept	1.06	1.12	3.09*	1.06
	(1.14)	*(1.20)*	*(1.77)*	*(1.61)*
Observations	172	172	172	172
Adj R^2	0.12	0.10		
F-stat	4.19	3.64		

Notes: The symbols (***), (**), and (*) indicate statistical significance at the 1, 5, and 10 percent level, respectively. Specifications 1 and 2 estimated using ordinary least squares; specifications 3 and 4 estimated using two-stage least squares. Standard errors in parentheses and italics. Standard errors in specifications 3 and 4 have been adjusted to reflect the use of generated regressors.

Table 6 – Determinants of Loans to Management as a Share of Insider Loans

	Spec 1	Spec 2	Spec 3	Spec 4
Management ownership	33.63***			
	(8.96)			
Score		-4.97***		
		(1.37)		
Score - predicted			-17.40***	
			(5.53)	
Score - residual				-3.78***
				(1.41)
Ownership of outside directors	-37.56**	-36.18**	-24.88	-40.70**
	(16.75)	*(16.82)*	*(20.57)*	*(17.32)*
Log age	1.77	1.19	-4.30	3.39
	(2.72)	*(2.76)*	*(4.03)*	*(2.87)*
Reserve city	1.17	0.35	0.91	0.13
	(5.99)	*(6.00)*	*(7.13)*	*(6.92)*
Log city population	0.23	-0.02	2.36	-0.97
	(3.54)	*(3.55)*	*(4.34)*	*(3.69)*
Log distance to NY	13.52***	10.75**	-8.87	18.59***
	(5.18)	*(5.46)*	*(10.57)*	*(4.98)*
Fraction county income from agriculture	20.75**	18.81*	20.63*	18.08*
	(10.09)	*(10.09)*	*(12.02)*	*(10.32)*
Intercept	-73.94	-27.98	128.92	-90.74
	(61.16)	*(63.54)*	*(100.75)*	*(55.05)*
Observations	206	206	206	206
Adj R^2	0.18	0.17		
F-stat	7.28	7.11		

Notes: The symbols (***), (**), and (*) indicate statistical significance at the 1, 5, and 10 percent level, respectively. Specifications 1 and 2 estimated using ordinary least squares; specifications 3 and 4 estimated using two-stage least squares. Standard errors in parentheses and italics. Standard errors in specifications 3 and 4 have been adjusted to reflect the use of generated regressors.

Table 7 – Determinants of the Ratio of Dividends to Shares

	Spec 1	Spec 2	Spec 3	Spec 4
Management ownership	6.39***			
	(1.97)			
Score		-0.52*		
		(0.30)		
Score - predicted			-3.22***	
			(1.21)	
Score - residual				-0.26
				(0.23)
Ownership of outside directors	1.15	0.93	3.92	0.40
	(3.65)	*(3.73)*	*(4.60)*	*(3.77)*
Log age	1.77***	1.92***	0.69	2.16***
	(0.61)	*(0.62)*	*(0.90)*	*(0.67)*
Reserve city	0.19	-0.02	-0.07	-0.03
	(1.30)	*(1.32)*	*(1.57)*	*(0.87)*
Log city population	0.11	-0.02	0.50	-0.12
	(0.76)	*(0.77)*	*(0.94)*	*(0.85)*
Log distance to NY	2.32**	2.46**	-1.98	3.29***
	(1.12)	*(1.21)*	*(2.37)*	*(1.22)*
Fraction county income from agriculture	4.37*	4.00*	4.46*	3.92
	(2.16)	*(2.20)*	*(2.63)*	*(3.76)*
Intercept	-20.10	-16.86	18.47	-23.51
	(13.18)	*(13.96)*	*(22.35)*	*(13.46)*
Observations	201	201	201	201
Adj R^2	0.14	0.11		
F-stat	5.63	4.38		

Notes: The symbols (***), (**), and (*) indicate statistical significance at the 1, 5, and 10 percent level, respectively. Specifications 1 and 2 estimated using ordinary least squares; specifications 3 and 4 estimated using two-stage least squares. Standard errors in parentheses and italics. Standard errors in specifications 3 and 4 have been adjusted to reflect the use of generated regressors.

Table 8 – Factors Associated with the use of Borrowed Money

	Spec 1	Spec 2	Spec 3	Spec 4
Management ownership	-1.71***			
	(0.54)			
Score		0.08		
		(0.7)		
Score - predicted			0.88**	
			(0.35)	
Score - residual				0.02
				(0.08)
Ownership of outside directors	-1.82**	-1.83**	-2.56**	-1.69*
	(0.94)	*(.93)*	*(1.24)*	*(0.91)*
Log age	-0.19	-0.23**	0.10	-0.25*
	(0.15)	*(0.14)*	*(0.23)*	*(0.14)*
Reserve city	0.63*	0.63*	0.65	0.64*
	(0.35)	*(0.34)*	*(0.44)*	*(0.34)*
Log city population	-0.63***	-0.53***	-0.74***	-0.51**
	(0.21)	*(0.20)*	*(0.28)*	*(0.20)*
Log distance to NY	0.58**	0.47*	1.69***	0.35
	(0.29)	*(0.29)*	*(0.64)*	*(0.27)*
Fraction county income from agriculture	-2.08***	-1.81***	-2.08**	-1.79***
	(0.67)	*(0.64)*	*(0.80)*	*(0.64)*
Intercept	3.65	2.66	-6.38	3.64
	(3.33)	*(3.37)*	*(5.85)*	*(3.25)*
Observations	200	200	200	200
Pseudo R^2	0.14	0.10		
LR χ^2	34.63	24.86		

Notes: The symbols (***), (**), and (*) indicate statistical significance at the 1, 5, and 10 percent level, respectively. Specifications 1 and 2 estimated using probit analysis; specifications 3 and 4 estimated using an ordinary least squares first stage and a probit second stage. Standard errors in parentheses and italics. Standard errors in specifications 3 and 4 have been adjusted to reflect the use of generated regressors.

Table 9 – Other measures of bank risk taking

	Management ownership	Score	Score – predicted	Score - residual
Real estate loans to total loans	-3.5*	0.1	1.8*	-0.0
	(1.9)	*(0.3)*	*(1.1)*	*(0.4)*
Other real estate owned to assets	-1.1**	0.1	0.5*	0.0
	(0.5)	*(0.1)*	*(0.3)*	*(0.1)*
Troubled loans to all loans	-5.0*	0.4	2.6	0.1
	(3.0)	*(0.5)*	*(1.6)*	*(0.6)*
Estimated losses to assets	-2.2*	-0.4**	1.1	-0.5**
	(1.3)	*(0.2)*	*(0.7)*	*(0.2)*
Bank closed its doors	-0.88*	.06	-.18	.09
	(.49)	*(.07)*	*(.54)*	*(.08)*

Notes: The symbols (***), (**), and (*) indicate statistical significance at the 1, 5, and 10 percent level, respectively. Rows 1-4 are estimated using ordinary least squares while row 5 uses probit analysis. Columns 3 and 4 using a two-step procedure. Standard errors in parentheses and italics. Standard errors in columns 3 and 4 have been adjusted to reflect the use of generated regressors. All regressions include the controls used in the previous regressions (such as those shown in the preceding table).

Table 10 –Determinants of the Ratio of Net Worth to Assets

	Spec 1	Spec 2	Spec 3	Spec 4
Management ownership	-15.55***			
	(3.38)			
Score		1.01*		
		(0.54)		
Score - predicted			7.82***	
			(2.39)	
Score - residual				0.34
				(0.53)
Ownership of outside directors	-19.76***	-19.02***	-24.70***	-18.14***
	(6.31)	*(6.59)*	*(9.1)*	*(5.93)*
Individual deposits to total liabilities	-15.97***	-16.82***	-15.32**	-17.01***
	(4.78)	*(4.99)*	*(6.73)*	*(6.22)*
Checking deposits to individual deposits	11.63***	9.45**	3.87	9.94**
	(4.20)	*(4.40)*	*(6.20)*	*(4.44)*
Log age	-6.10***	-6.45***	-3.75**	-6.86***
	(1.07)	*(1.13)*	*(1.77)*	*(1.14)*
Reserve city	-5.12**	-5.10**	-6.11*	-4.99**
	(2.37)	*(2.47)*	*(3.35)*	*(2.83)*
Log city population	-1.85	-1.16	-1.57	-1.04
	(1.49)	*(1.55)*	*(2.09)*	*(1.66)*
Log distance to NY	1.76	0.92	11.16**	-0.62
	(2.01)	*(2.18)*	*(4.51)*	*(2.05)*
Fraction county income from agriculture	1.65	3.15	3.14	-3.21
	(3.88)	*(4.03)*	*(5.42)*	*(4.06)*
Intercept	66.30***	60.65**	-27.77	73.62***
	(23.07)	*(25.01)*	*(44.79)*	*(24.20)*
Observations	206	206	206	206
Adj R^2	0.41	0.33		
F-stat	15.19	12.19		

Notes: The symbols (***), (**), and (*) indicate statistical significance at the 1, 5, and 10 percent level, respectively. Specifications 1 and 2 estimated using ordinary least squares; specifications 3 and 4 estimated using two-stage least squares. Standard errors in parentheses and italics. Standard errors in specifications 3 and 4 have been adjusted to reflect the use of generated regressors.

Table 11 – Determinants of the Ratio of Cash to Assets

	Spec 1	Spec 2	Spec 3	Spec 4
Management ownership	2.30**			
	(1.06)			
Score		-0.24		
		(0.16)		
Score - predicted			-1.15**	
			(0.58)	
Score - residual				-0.15
				(0.17)
Ownership of outside directors	-0.43	-0.47	0.29	-0.68
	(1.98)	*(1.99)*	*(2.20)*	*(1.81)*
Individual deposits to total liabilities	4.46***	4.56***	4.37***	4.61***
	(1.50)	*(1.51)*	*(1.63)*	*(1.61)*
Checking deposits to individual deposits	0.82	1.21	1.96	1.16
	(1.32)	*(1.33)*	*(1.50)*	*(1.35)*
Log age	1.18***	1.19***	0.83*	1.29***
	(0.34)	*(0.34)*	*(0.43)*	*(0.34)*
Reserve city	0.04	0.05	0.19	0.04
	(0.74)	*(0.75)*	*(0.81)*	*(0.89)*
Log city population	1.51***	1.41***	1.47***	1.37***
	(0.47)	*(0.47)*	*(0.51)*	*(0.47)*
Log distance to NY	1.63***	1.63**	0.25	2.00***
	(0.63)	*(0.66)*	*(1.09)*	*(0.60)*
Fraction county income from agriculture	-0.94	-1.17	-1.16	-1.19
	(1.22)	*(1.22)*	*(1.31)*	*(1.01)*
Intercept	-26.99***	-25.02***	-13.10	-28.03***
	(7.24)	*(7.57)*	*(10.86)*	*(6.79)*
Observations	206	206	206	206
Adj R^2	0.25	0.24		
F-stat	8.75	8.36		

Notes: The symbols (***), (**), and (*) indicate statistical significance at the 1, 5, and 10 percent level, respectively. Specifications 1 and 2 estimated using ordinary least squares; specifications 3 and 4 estimated using two-stage least squares. Standard errors in parentheses and italics. Standard errors in specifications 3 and 4 have been adjusted to reflect the use of generated regressors.

Table 12
First stage for IV regressions

	Management ownership	Score
Turnover	-0.06***	0.38***
	(0.02)	*(0.12)*
Ownership of outside directors	-0.09	0.89
	(0.13)	*(0.84)*
Log age	0.06***	-0.50***
	(0.02)	*(0.14)*
Reserve city	-0.01	-0.07
	(0.05)	*(0.30)*
Log city population	-0.05*	0.27
	(0.03)	*(0.18)*
Log distance to NYC	0.15***	-1.56***
	(0.04)	*(0.25)*
Fraction county income from agriculture	-0.09	0.18
	(0.08)	*(0.51)*
Intercept	-0.33	11.60***
	(0.47)	*(3.10)*
Observations	206	206
Adj R^2	0.17	.26
F-statistic	7.08	11.05

Notes: The symbols (***), (**), and (*) indicate statistical significance at the 1, 5, and 10 percent level, respectively. Estimated using ordinary least squares. Standard errors in parentheses and italics.

Table 13
IV results

	Management ownership	Score	IV Management ownership	IV Score
Loans to management to all insider loans	33.63*** *(8.96)*	-4.97*** *(1.37)*	64.29* (39.02)	-10.4* (6.36)
Dividends to shares	6.39*** *(1.97)*	-0.52* *(0.30)*	-8.11 (9.79)	1.22 (1.44)
Likelihood that used borrowed money	-1.71*** *(0.54)*	0.08 *(0.7)*	-4.45** (2.31)	0.65* (.37)
Real estate loans to total loans	-3.5* *(1.9)*	0.1 *(0.3)*	-10.37 *(8.48)*	1.67 *(1.42)*
Other real estate owned to assets	-1.1** *(0.5)*	0.1 *(0.1)*	-1.97 *(2.23)*	0.31 *(.35)*
Troubled loans to all loans	-5.0* *(3.0)*	0.4 *(0.5)*	-4.36 *(12.60)*	0.70 *(2.04)*
Estimated losses to assets	-2.2* *(1.3)*	-0.4** *(0.2)*	1.00 *(5.22)*	-0.17 *(0.87)*
Bank closed its doors	-0.88* *(.49)*	0.06 *(.07)*	-3.56* *(2.13)*	.57 *(.35)*
Net worth to assets	-15.55*** *(3.38)*	1.01* *(0.54)*	-29.42** *(14.40)*	4.91* *(2.70)*
Cash to assets	2.30** *(1.06)*	-0.24 *(0.16)*	8.22* *(4.67)*	-1.37* *(.81)*

Notes: The symbols (***), (**), and (*) indicate statistical significance at the 1, 5, and 10 percent level, respectively. All rows estimated using ordinary least squares, except rows 3 and 8 which are estimated using probit analysis. Columns 3 and 4 using a two-step procedure. Standard errors in parentheses and italics. Standard errors in columns 3 and 4 have been adjusted consistent with instrumented variable analysis. All regressions include the controls used in the previous regressions.

Table 14
Mean bank characteristics by Management Ownership and Governance Score

	High ownership high governance	High ownership low governance	Low ownership high governance	Low ownership low governance	Test for differences in means		
	[1]	[2]	[3]	[4]	1 vs 4	2 vs 4	3 vs 4
Salary to assets	0.67 (0.55)	0.75 (0.49)	0.51 (0.45)	0.54 (0.20)		*	
Officer loans to insider loans	36.3 (26.2)	53.3 (32.2)	24.7 (22.8)	33.9 (28.3)		***	*
Dividends per share	4.4 (3.4)	7.0 (10.4)	3.3 (1.5)	4.1 (2.9)			*
Used borrowed funds	20.9 41.2	27.1 44.8	33.8 47.6	45.8 50.9	**	*	
Real estate loans to all loans	3.2 (4.4)	3.5 (4.3)	2.5 (4.8)	7.3 (11.7)	**	**	***
Other real estate owed to assets	0.8 (1.9)	0.7 (1.6)	0.8 (1.5)	1.2 (1.7)			
Troubled loans to total loans	8.8 (9.4)	10.4 (11.0)	7.3 (9.0)	11.5 (10.1)			**
Losses to assets	0.7 (1.5)	1.1 (4.1)	0.8 (1.3)	3.6 (7.6)	**	**	***
Loan losses to assets	0.58 (1.28)	0.90 (3.72)	0.58 (1.00)	2.73 (5.66)	**	*	***
Other losses to assets	0.10 (0.28)	0.21 (0.60)	0.21 (0.52)	0.86 (2.24)	**	**	**
Closed	30.2 (46.5)	28.3 (45.4)	25.0 (43.6)	33.3 (48.0)			
Cash to liabilities	7.9 (4.3)	8.3 (3.8)	7.6 (3.3)	8.1 (3.1)			
Net worth to assets	30.4 (11.2)	30.2 (11.4)	35.8 (13.1)	34.8 (15.5)			

Notes: The symbols (***), (**), and (*) indicate statistical significance at the 1, 5, and 10 percent level, respectively. Standard errors in parentheses and italics.

Chart 1
Distribution of ownership by top 3 managers

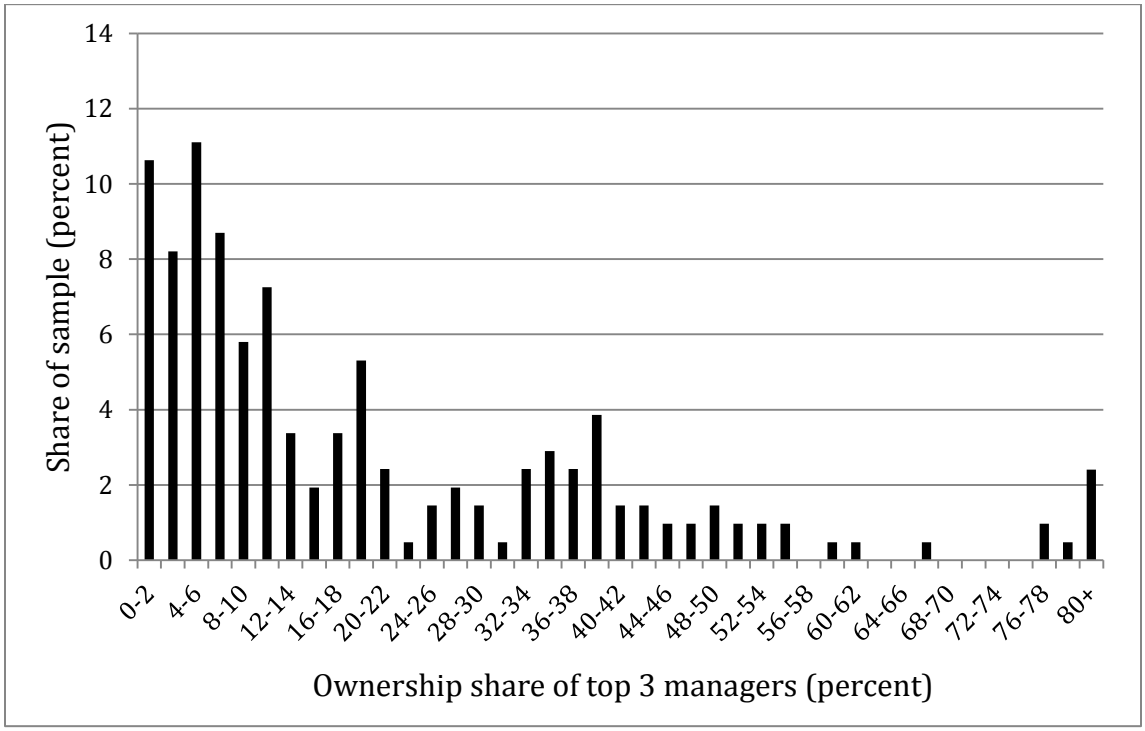

Chart 2
Distribution of ownership by outside directors

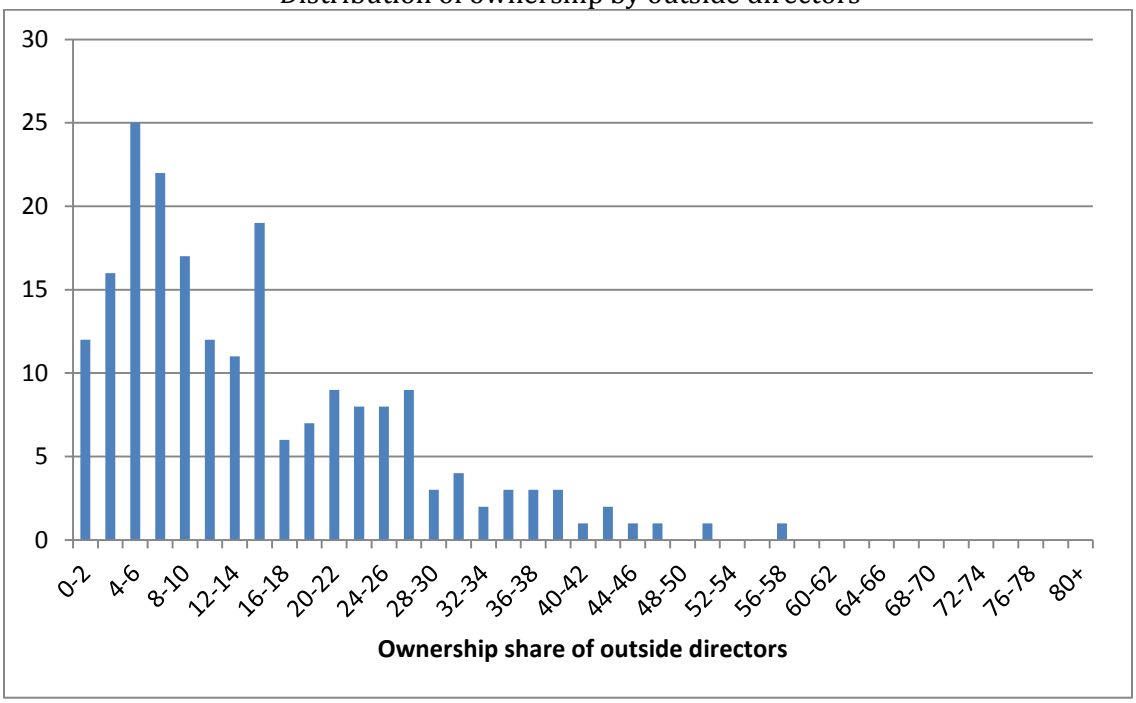

Chart 3
Distribution of ownership by non-managers, non-board members

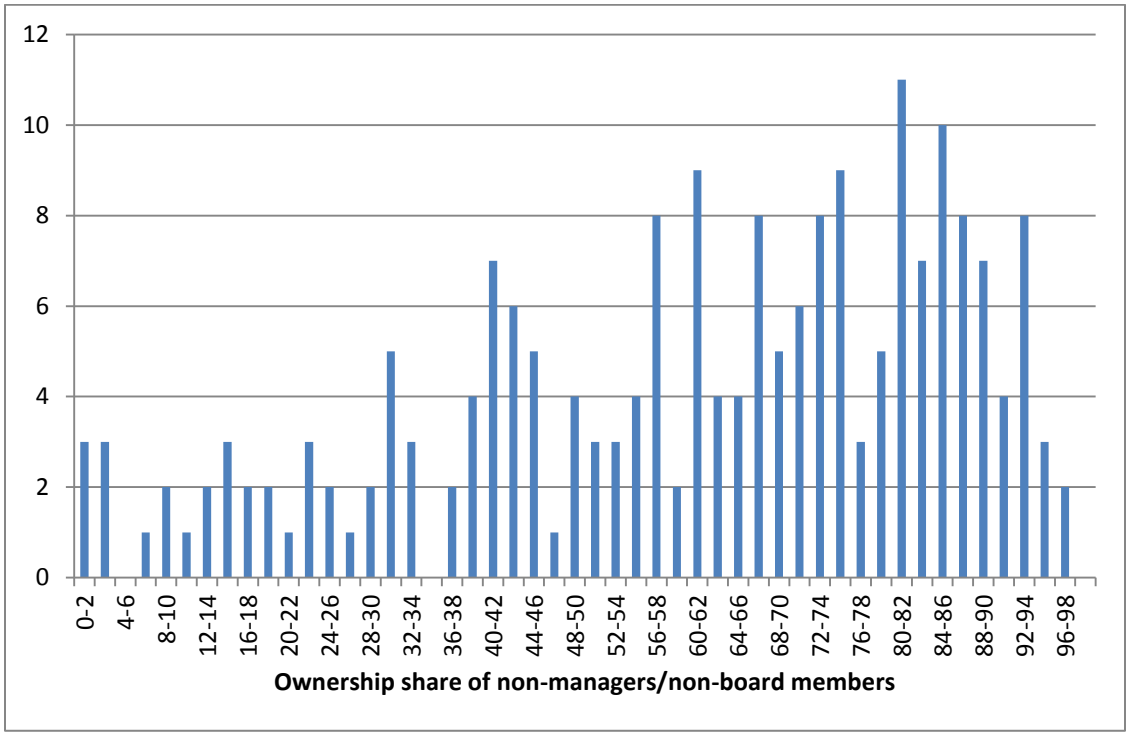

Chart 4
Manager ownership and Board Composition