NBER WORKING PAPER SERIES

VOTING RIGHTS, SHARE CONCENTRATION, AND LEVERAGE AT NINETEENTH-CENTURY US BANKS

Howard Bodenhorn

Working Paper 17808
http://www.nber.org/papers/w17808

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
February 2012

I thank Eric Hilt for providing me with his data on New York bank shareholdings and charter provisions. I thank Charles Calomiris, Tomas Cvrcek, Liliana Danilla, Bill Dougan, Gerald Dwyer, Eric Hilt, Matthew Jaremski, Kevin Tsui and participants at Clemson public economics workshop, and the NBER-DAE Summer Institute for comments on earlier drafts. The views expressed herein are those of the author and do not necessarily reflect the views of the National Bureau of Economic Research.

Voting Rights, Share Concentration, and Leverage at Nineteenth-Century US Banks
Howard Bodenhorn
NBER Working Paper No. 17808
February 2012
JEL No. G21,G3,N2

ABSTRACT

Studies of corporate governance are concerned with two features of modern shareholding: diffuse ownership and the resulting separation of ownership and control, which potentially leads to managerial self-dealing; and, majority shareholding, which potentially mitigates some managerial self-dealing but opens the door for the expropriation of minority shareholders. This paper provides a study of the second issue for nineteenth-century US corporations. It investigates two related questions. First, did voting rules that limited the control rights of large shareholders encourage diffuse ownership? It did. Second, did diffuse ownership systematically alter bank risk taking? It did. Banks with less concentrated ownership followed policies that reduced liquidity and bankruptcy risk.

Howard Bodenhorn
John E. Walker Department of Economics
College of Business and Behavioral Science
201-B Sirrine Hall
Clemson University
Clemson, SC 29634
and NBER
bodenhorn@gmail.com

Voting Rights, Share Concentration and Leverage at Nineteenth-Century US Banks

1. Introduction

In the *Modern Corporation and Private Property* Adolph Berle and Gardiner Means (1932) drew attention to what they considered a disturbing phenomenon: the separation of ownership and control in the large, modern corporation. They were troubled by the trend toward great accumulations of wealth contributed by diffuse owners and directed by insular managers. The separation of ownership and control had "effectively broken the old property relationships" (Berle and Means 1968, 4). Strong managers, freed from the oversight of weak owners, had ample opportunity to pursue policies inconsistent with maximum firm value (Roe 1994). In 1968, reflecting on his earlier conclusions, Berle had grown more rather than less concerned by trends in corporate control. "Directors of the corporation," he wrote, "are not the owners; they are not [even] agents of the [owners] and are not obliged to follow their instructions. (Berle and Means 1968, ix). Absent effective oversight, managers were free to pursue policies that generated utility for them without creating benefits for owners; in short, managers were free to self-deal.

Several recent histories of early corporations find that the earliest corporations were not beset with self-dealing managers (Miwa and Ramseyer 2000; Hilt 2008; Musacchio 2009). Because boards of directors were dominated by large shareholders who exercised control over daily operations, large shareholders did not face the collective action problem that plagues managerial monitoring at modern, multidivisional, multinational corporations. Managerial self-dealing was not the central corporate governance issue of the nineteenth century that it became in the twentieth century. Rather, the central

concern of the earlier era was the potential for self-dealing by large, often controlling shareholders. Shleifer and Vishny (1986) and Morck (2000) note that controlling shareholders will be more interested in maximizing personal utility rather than firm value and will use a firm's resources to serve their ends at the expense of minority shareholders.

Fears of expropriation by majority shareholders among minority shareholders in America's nineteenth-century banks were a continuing concern. The Canal Bank of Albany (New York), for example, declared bankruptcy in 1848 (New York State Comptroller 1848). The trustee appointed by the court later reported that 4 of the 5 largest shareholders were directors who controlled 22 percent of the bank's shares. The directors used their insider position at the bank to direct its resources to their own use in that the directors' indebtedness to the bank as borrowers or co-signors represented more than half the bank's outstanding loans, many of which were secured by overvalued mortgages. More troubling, perhaps, was that 10 percent of the bank's assets were simply missing; that is, once the trustee made sense of the poorly kept books, recorded assets fell 10 percent short of liabilities plus capital. Further, the trustee reported that the bank's employees were poorly supervised, and the cashier (chief operating officer) and tellers borrowed money from the bank at low rates without good collateral. The trustee anticipated that the bank's capital was gone and the small shareholders would lose all.

Entrepreneurs who organized and took large stakes in contemporary corporations faced two options. They could keep the shares close and organize firms no larger than the capital contributed by a small number of investors, all of whom had representation on the board and could thwart others' efforts to self-deal. But concentrated ownership limited firm size and the organizers' ability to diversify. Alternatively, to curtail the power of large shareholders corporate charters might limit the

voting rights of large shareholders, which would increase the attractiveness of taking small ownership stakes in corporations. With proportionately more votes than shares, minority shareholders might elect some of their own to monitor and mitigate large shareholder self-dealing. Encouraging minority shareholding reduced capital costs and allowed for greater portfolio diversification among large shareholders.

Nineteenth-century corporations adopted various strategies designed to signal their willingness to reduce self-dealing and encourage minority ownership. Some strategies were imposed by legislative fiat -- term limits on and regular rotation of directors; large boards with majority quora; proxy voting; a small fraction of outstanding shares needed to call extraordinary shareholder meetings; and limits on the number of votes that large shareholders might cast -- and others adopted through corporate bylaws (Bodenhorn 2011). State corporation law was less readily changed, however, and represented potentially stronger protections to minority shareholders. One of the more important legislatively imposed strategies to curtail large shareholder self-dealing was limiting the number of votes a large shareholder might cast at shareholder meetings.

Like Hilt (2008) and Musacchio (2009) this article investigates how differences in share voting rules influenced the concentration of ownership. Unlike previous studies, which considered differences in concentration across industries, this article investigates the effect of alternative voting rules on share ownership in a single industry -- banking -- across time and space. Using a new data set of shareholdings at about 700 banks from 14 states and five decades (1810s through 1860s), I exploit state-level variation in corporate voting rights to identify the effect of alternative voting rules on share ownership. Limits on the number of votes large shareholders could cast at shareholder meetings were associated with more diffuse corporate ownership. As an example, Pennsylvania's

corporate law circa 1815 imposed a 30-vote limit on large shareholders and banks there had, on average, more than 800 shareholders. New York corporate law, alternatively, imposed one share-one vote up to a maximum of 800 votes. On average, New York banks had fewer than 80 shareholders.

This finding is consistent with the observation that nineteenth-century bank regulators were concerned, generally, with the concentration of corporate wealth and power, and, specifically, with majority shareholder self-dealing (Dunlavy 2006; Bodenhorn 2011). To encourage minority ownership, which would limit concentration and the kind of self-dealing or looting that occurred at the Canal Bank of Albany, legislatures limited the voting power of large shareholders. One share-one vote regimes were less attractive to minority shareholders than voting rules that limited the number of votes large shareholders might cast. The analysis below demonstrates that the association between limited voting rights and less concentrated ownership is robust to how share concentration is measured. Further, the formal statistical analysis, combined with contemporary expressions of concerns with concentrated ownership, provides strong evidence that the driving corporate governance issue of early nineteenth century was not the conflict of interest between managers and owners; rather, the driving concern was the conflict of interest between majority and minority shareholders.

The second contribution of this article demonstrates why contemporary bank regulators were so deeply concerned with bank governance. Because banks were not just another corporation in that they supplied the bulk of the country's media of exchange, the conflict of interest surrounding majority owner self-dealing through either looting or tunneling was not just that between large and small share owners, but between large owners and creditors, namely depositors and holders of banknotes. Banks are different (Fama 1980) and contemporaries recognized that self-dealing

threatened to disrupt financial markets and economic transactions. To test whether shareholding concentration had any influence on bank risk taking, I regress share concentration measures on three leverage ratios designed to capture liquidity (short-term) risk, default (medium-term) risk, and bankruptcy (long-term) risk. The evidence shows that diffuse ownership was strongly negatively associated with liquidity and bankruptcy risk, but it was positively associated with default risk. The different tolerances for different kinds of risks are consistent with shareholder diversification and the reason small shareholders held shares. In the wake of the recent financial crisis and concerns over internal governance at banks, the historical evidence implies that limited voting rights of majority shareholders may reduce certain behaviors that induce bank risk. Nineteenth-century evidence speaks to the concern with majority shareholder looting and tunneling, but it does not speak to the separation of ownership and control that so worried Berle and Means and how that conflict may influence financial risk taking.

2. The politics of one share-one vote in early America

Some scholars too readily accept what Dunlavy (2004) considers the timeless view of the corporation; that is, they write about the corporation as if it sprang forth in its modern incarnation some time in the nineteenth century. It did not. One of its more important modern governance features -- "all shares vote, and all votes have the same weight" -- surely did not (Easterbrook and Fischel 1983). One share-one vote did not emerge as the standard until the late nineteenth century and then only after a long and contentious debate concerning the proper allocation of power within the corporation. While modern corporate governance research is concerned primarily with vertical power relations, or how owners treat with managers and how managers treat with employees,

nineteenth-century commentators were much more concerned with horizontal power relations, or how owners treat with one another (Jensen and Meckling 1976; Alchian and Demsetz 1972). Share voting rights reflected one manifestation of horizontal power relations within the firm. Voting rights could be, and were, distributed along a continuum from pure democracy (one shareholder-one vote) to pure plutocracy (one share-one vote), tending more toward the former than the latter (Ratner 1970; Maier 1993; Dunlavy 2004; Dunlavy 2006).

The issue of appropriate share voting rules dates from the very inception of the corporation. In the earliest English corporations (circa 1500-1650), shareholders were considered *members* rather than investors; charters were constitutions among equals (Maier 1993). One shareholder-one vote was the logical byproduct of this conception of the corporation. Voting rights that increased less than proportionately with residual profit rights were institutionalized when the English East India Company's charter became the governance prototype for the next century or more (Harris 2009). The English East India Company's charter established a single class of shares, limited the number of votes than any shareholder might cast, made all shareholders eligible to serve as directors, mandated that all directors stand for annual (re)election, and provided for the removal of directors at any time for nonperformance.

As the so-called legal origins literature makes clear, English traditions traveled well and influenced the institutions of corporate law in North America (La Porta et al. 1998).[1] The Bank of

[1] Despite La Porta et al.'s (1998) assertion of the primacy of the common law and the origins of the modern corporation, judge-made law was of relatively minor import. The law of corporation and the nature of internal governance originated and became standardized through legislative enactments, not common law precedent (Harris 2009). In discussing much-cited *Taylor v. Griswold* (14 N.J.L. 222 [NJ 1834]), which is often held up as a clear articulation of the common law doctrine of one share-one vote, Ratner (1970) shows that the majority did not reiterate an ancient common law tradition because there was no tradition to reiterate. Despite his

North America was chartered by the Continental Congress in 1781. The bank's chartering act left internal governance rules to the organizers. Contrary to English custom, Robert Morris and the bank's other principals adopted a one share-one vote rule (Rappaport 1996; Bodenhorn 2011). Their choice quickly came under attack by men with no direct stake in the bank, an attack that led to an annulment of the bank's charter. After a heated legislative debate the Bank of North America's charter was restored, but to assuage critics the bank's bylaws were revised to limit the number of votes any shareholder could cast.[2]

As a friend of Morris and an astute observer of contemporary finance, Alexander Hamilton was familiar with the Bank of North America debates and his *Report on a National Bank* and the chartering bill for the Bank of the United States attempted to allay Republican distaste for undemocratic corporations by offering a middle ground to share voting (Dunlavy 2004; Bodenhorn 2011).[3] In the *Report* Hamilton rejected the federal government's use of the Bank of North America as the national bank for several reasons, not least of which was its one share-one vote rule, which he considered unwise. He considered the one shareholder-one vote rule "not less erroneous" (Clarke and Hall 1832, 28). Hamilton developed an alternative, graduated voting rule he labeled the ***prudent mean*** and described it thus:

For one share, and not more than two shares, one vote; for every two shares above two, and

---

assertion that the question was "perfectly plain," Justice Hornblower's opinion cited only a few tangential common law precedents and a single legal treatise in support because there were few precedent to cite in support or otherwise.

[2] Transcripts of the debate are provided in Carey (1786). The debates and their meaning are discussed in Maier (1993), Rappaport (1996), Dunlavy (2004) and Bodenhorn (2011).

[3] Hamilton's *Report on a National Bank* and the charter of the Bank of the United States are reprinted in Clark and Hall (1832).

> not exceeding ten, one vote; for every four shares above ten, and not exceeding thirty, one vote; for every six shares above thirty, and not exceeding sixty, one vote; for every eight shares above sixty, and not exceeding one hundred, one vote; and for every ten shares above one hundred, one vote; but no person, co-partnership, or body politic, shall be entitled to a greater number than thirty votes (Clarke and Hall 1832, 32).

Although the Bank of the United States charter resembled the Bank of England charter in several respects, its voting rule looked more like that adopted by the English East India Company. Larger shareholdings received more votes, but votes did not increase linearly in shares and the charter imposed a ceiling on the number of votes that might be cast by any one shareholder. Hamilton had previously included a similar voting scheme in the Bank of New York's 1784 articles of association, so it was issue he had been thinking about for some time (Dommett 1884; Hammond 1957).

Hamilton's prudent mean (hereafter labeled *graduated voting*) rule proved popular and durable. By the 1840s variations on his graduated voting rule appeared in bank charters from Maine to Georgia, and from Virginia to Missouri. Whereas the Bank of the United States's charter limited a shareholder owning 25 shares to nine votes, New Jersey bank shareholders who owned 25 shares could cast eight votes at shareholder meetings. Bank shareholders in New Hampshire with 25 shares could cast 10 votes; in Missouri they could cast either 12 or 13; in Massachusetts 10; in Georgia just 6. In 1811 New York adopted the first general incorporation law (manufacturers only), which specified one share-one vote. One share-one vote had become standard language in New York bank charters by 1830 but, at that time, one share-one vote was more the exception than the rule. Only Delaware, Georgia and Illinois followed suit. By 1860, one share-one vote rules were also adopted in Ohio, Indiana and Wisconsin. Connecticut remained an anomaly in that voting rules written into the banks' charters reflected the organizers' wishes; eight of Connecticut's first ten banks adopted one

share-one vote rules; the two remaining adopted different graduated voting rules. More importantly, voting rules once adopted persisted. In Pennsylvania graduated voting rules lasted until 1874; in Massachusetts such rules persisted until 1906 for railroads, 1910 for banks and 1928 for insurance companies (Ratner 1970, 7).

Figure 1 provides a graphical representation of five voting rights regimes, four of which are variants on Hamilton's graduated voting rule. By the mid-1820s any newly chartered bank in New York operated under a one share-one vote rule with a maximum of either 400 or 800 votes depending on the number of shares outstanding.[4] Graduated voting rules in the four other states all fall well below the 45-degree line because the voting rights of large shareholders were limited. Kentucky, for example, instituted one share-one vote up to a maximum of 50 votes, then one additional vote for every additional five shares up to 100 shares, and then one vote for every ten shares above 100. Maryland had one share-one vote up to a maximum of 20 shares, then one additional vote for each five additional shares. Rhode Island adopted a graduated voting rule up to 50 shares with a maximum of 20 votes; Massachusetts (not shown) imposed a 10 vote limit. The schemes presented in Figure 1 are not exhaustive, just illustrative of the many variations on Hamilton's graduated voting rule. It demonstrates that during the first half of the nineteenth century, Americans did not generally embrace one share-one vote rules. Although corporate charters created a single class of shares (preferred shares emerge only later) with equal residual claims, shares carried potentially unequal voting rights and, therefore, unequal control rights.

[4] In the empirical analysis to follow, New York is treated as a one share-one vote regime because, with the exception of three New York City banks, the 400- and 800-share limits were not found to be binding.

3. The economics of share voting

The economics of corporate governance and share voting is now so well understood that I offer a brief discussion of two relevant conceptual issues and how they apply to nineteenth-century corporations.[5] First, corporate shareholders are subject to collective actions problems. Because the benefits of monitoring managers are diffuse and the costs concentrated, shareholders produce inefficiently low levels of monitoring. As a consequence, managers may not face effective internal discipline. The market for shares and regular dividends provide imperfect substitutes, as do debt contracts that encourage creditor monitoring (Hart 2001). Outside the few city banks whose shares traded regularly, shareholder exit (or the threat of takeover) was probably not a fully effective disciplining device in the nineteenth century. Dividends reduce the cash available for managers to consume as perquisites, which forces managers into debt markets. Although some debt enhances shareholder governance, its excessive use will sufficiently reduce free cash flow that the relatively more costly option of debt finance may render unprofitable entrepreneurial ventures that would be profitable if financed with retained earnings.[6] Many nineteenth-century bank charters limited the amount that banks could accumulate in retained earnings accounts, forcing them to distribute profits. Distributing profits limits looting and tunneling, but an excessive reliance on debt may cause too many bankruptcies and the liquidation of otherwise good firms.

---

[5] The literature begins with Berle and Means (1932/1968) and includes Manne (1965), Jensen and Meckling (1976), Fama and Jensen (1983), Easterbrook and Fischel (1983), Grossman and Hart (1988), Roe (1994), Law Porta, Lopez-de-Silanes and Shleifer (2000), among many others. Concise summaries of the current state of theory and evidence are provided in Burkhart and Lee (2008) and Adams and Fereira (2008).

[6] This assumes, of course, that debt intermediation drives a wedge between borrowing and lending rates. See Myers (1977) for a discussion of corporate borrowing.

Second, one solution to the collective action problem of diffuse ownership is the presence of one or a few large shareholders. Because residual claims on the corporation's earnings are tied to residual control rights associated with voting, a shareholder with a substantial fraction of his or her wealth tied up in a firm has an incentive to elect and monitor managers committed to maximizing the value of the firm *to the large shareholder* (Easterbrook and Fischel 1983; Shleifer and Vishny 1986). And, in the modern context, at least, large shareholders – those holding at least 5% of the outstanding shares – are more prevalent than might be expected. Shleifer and Vishny (1986) report that 45% of *Fortune* 500 companies had at least one 5% shareholder.

But large shareholdings are not without their own incentive problems. Although a few large shareholders face incentives to control the excessive consumption of managerial perks, they also face incentives to elect board members and hire managers willing to direct the firm's resources to the large shareholders's advantage, perhaps at the expense of minority shareholders. Morck, Shleifer and Vishny (1988), in fact, identify an inverted U-shaped relationship between the largest ownership stake and Tobin's Q. For firms with the largest single shareholding between 0 and 5%, they find a positive relationship between the largest ownership stake and firm value. Ownership stakes beyond 5% are associated with lower Q values. They attribute this to large shareholders expropriating from small shareholders, a pattern of self-dealing they label *tunneling*.[7] But, as in the Canal Bank case, large

[7] Several scholars identify an association between higher proportions of shares owned and lower firm values and attribute it to expropriation (Becht, Bolton and Röell 2003 provide an overview). If minority shareholders are rational and expect majority shareholders to tunnel or loot at their expense, the prices they are willing to pay for their few shares reflect their individuals assessments of the likelihood and extent of expropriation. If minority shareholders anticipate self-dealing, the rents from majority shareholder self-dealing will be offset by the reduced market value of the shares owned and the post-expropriation returns to minority shareholders will be competitive. True expropriation then turns on information asymmetries between large and small shareholders.

shareholder self-dealing might be nothing less than looting.

Although one share-one vote is equitable, it may or may not be efficient (Easterbrook and Fischel 1983). If we let Q represent firm value, v votes, and s shares, Burkhart and Lee (2008) show that Q increases as (v-s) decreases.[8] A one share-one vote rule translates into higher firm value for shareholders. They note, however, that expropriation declines as (v-s) approaches -s. Expropriation is minimized when the majority shareholder owns a large block of non-voting shares: he monitors but cannot expropriate. Although expropriation would be minimized and the incentives for majority shareholders to monitor are enhanced under such a voting rule, limits on the influence of large shareholders dilutes the shareholders' abilities to concentrate and exercise control over managers. Limits on share voting – including any variation on Hamilton's graduated voting rights rule – introduce a tradeoff between managerial self-dealing and majority shareholder self-dealing.

That so many states included graduated voting rules in corporate charters suggests that nineteenth-century shareholders were less concerned with managerial than majority shareholder self-dealing. This is not surprising given that contemporary corporations did not employ the extensive managerial hierarchies that emerged later in the century. The typical bank employed a cashier (chief operating officer), a few tellers and a staff of clerks to record daily transactions. Best practice recommended separate clerks for each of the major account books – loans, banknotes, deposits, cash – to mitigate opportunities for fraud, but this still implies that a typical bank employed a half-dozen men; the largest city banks perhaps a couple dozen, only a handful of whom exercised much

[8] Modern corporate finance is more concerned with the current trend toward providing some shares with more than proportionate voting rights, which further entrenches the power of large shareholders. The analyses of more votes than shares and fewer votes than shares are not symmetric, but Burkhart and Lee (2008) provide a brief review of the consequences of fewer votes than shares.

managerial discretion.

Lending choices, perhaps the most important management decision at banks, were delegated by charter or bylaws to discount committees, which were usually populated by three to seven members of the board. Prospective borrowers applied at the bank and the discount committee would offer recommendations on whether to accept each loan at a weekly or biweekly meetings. Given the internal operating structure, managerial self-dealing was limited so long as the board and the discount committee did their jobs. A prominent concern with the discount committee procedure, however, was that it provided opportunities for large shareholder self-dealing. With more voting shares, large shareholders could elect themselves to boards and then onto discount committees that might too willingly accept each others' loans.[9] Meissner (2005) finds a positive association between discount committee size and profitability that he attributes to larger boards providing more effective monitoring and the reduced incidence of unprofitable insider self-dealing.

From the standpoint of the small shareholder, banks with larger boards, larger discount committees and fewer large shareholders would have presented more attractive investments. That is, small shareholders could better protect themselves from expropriation by self-dealing large shareholders with graduated voting rule or maximum vote limits or a combination of the two. Contemporaries certainly expressed great concern over the possibilities for one share-one vote regimes to generate tunneling, looting or other forms of self-dealing. In his *Report on a National Bank*, Hamilton advocated a graduated voting rule because one shareholder-one vote failed to give more weight to men more invested in the firm, but one share-one vote rendered "a combination

[9] Lamoreaux (1994) argues that the benefits of insider self-dealing at nineteenth-century New England banks (overcoming information asymmetries over loan quality) outweighed the costs (accepting too many bad loans).

between a few principal stockholders, to monopolize the power and benefits of the bank, too easy" (Clarke and Hall 1832, 28). Hamilton's assistant Secretary of the Treasury, Tench Coxe, declared that the one blemish on the Bank of North America's charter was it one share-one vote rule because it led to "conspiracy" within the bank, by which he meant institutionalized self-dealing among a few large shareholders (Dorfman 1946, 291). Two empirical questions are presented by contemporary debates and practices: (1) did graduated voting rules lead to more diffuse ownership than one share-one vote rule?, and, (2) did diffuse ownership lead to more or less risk taking at nineteenth-century banks? After discussing the data, subsequent sections bring some new evidence to bear on these questions.

4. Data

Information on shareholding for nineteenth-century US banks is not readily available, but it can be found in bank histories, scattered legislative reports, extant bank ledgers at various archives and other contemporary documents. Bank histories tend to provide lists of the founding shareholders (Dommett 1884; Gras 1938; Baldwin 1916). If the sample consisted only of such data, it would be subject to survivor bias, but data from these sources represent a modest fraction of the total number of observations (5 of 711) used here.

A second data source are of original subscribers. Such lists are less subject to survivor bias -- many of the banks' lists used here, in fact, failed -- but these are subject to a different kind of bias. Lists of original shareholders may not represent equilibrium *investor* holdings. Then, as now, new share issues were subject to initial public offering pricing effects as speculators scrambled to capture quick profits in the price run-ups that surrounded new offerings. Cowen (2000, 35) describes the subscription "frenzy" surrounding the First Bank of the United States in July 1791. The initial public

offering was over-subscribed by 20 percent. At the IPO date, subscribers to each $400 share paid $25 in cash and received transferable scrip that entitled the bearer to purchase a share. Buyers of the scrip were purchasing an option right to pay an additional $375 in four additional semi-annual instalments. Once the full $400 has been tendered the scrip would be redeemed for a share. By early August 1791, $25 scrip prices rose as high as $250. An investor buying scrip at this price was effectively paying close to $625 (undiscounted present value) for a $400 share. Prices for the $25 scrip declined from the peak, but remained between $130 and $170 for the remainder of the year. Speculations in state bank shares around their initial public offerings differed only in magnitude. The only subscriber lists used here are for the 33 Pennsylvania banks chartered *en masse* in 1817 and about 20 banks newly chartered in New York in 1829 and 1830, so these, too, represent less than 10 percent of overall sample.

A third source of data, subject to yet a different kind of bias, is shareholder lists compiled by legislative committees during hearings following a bank's failure. As with subscriber lists, it is not clear whether shareholding at failure represented equilibrium ownership. If informed insiders sold out in the weeks and months prior to failure, shareholdings would reflect information asymmetries between insiders and outsiders more than typical holdings. The data set includes only three such banks from New York: the Canal Bank of Albany, the Lewis County Bank and the Eighth Avenue Bank of New York City, all of which failed between 1848 and 1854. Reports tendered by trustees appointed to resolve the bankruptcies do not write about insiders selling out prior to the failures, so the lists are included here. Some bank resolution reports that indicated unusual share trading prior to bankruptcy were not used.

A fourth source of data is state legislative reports published following a general banking panic.

Michigan, for example, collected shareholder lists in 1840 and 1841 after the crisis of 1839 and the suspension of specie payments. Ohio collected shareholder lists in 1854 following a localized panic in that state (Van Horn 2011). Interestingly, to determine how shareholdings had changed, the legislature collected and published lists of shareholders in 1849 and 1854. It is not clear how a panic might influence shareholding. If the panic was of the sunspot type described in Diamond and Dybvig (1983), it is unlikely that existing shareholders would sell out in anticipation of the event so that pre-panic and post-panic shareholder lists should provide fairly representative shareholding. The Ohio lists, in fact, reveal relatively modest turnover in the five-year interval between 1849 and 1854.

The fifth and most useful sources are legislative documents that report shareholder information for all banks at a point in time. Among the data used here, Massachusetts, Maine, New Hampshire and Wisconsin all required some type of shareholder information on an annual basis. Maine published annual shareholder lists for all incorporated business firms (not just banks) chartered by the state. Data from four years (1840, 1843, 1845 and 1849) of reports that could be located are used here. Following passage of their free banking acts, New York and Wisconsin collected and published information on individual shareholdings at some (New York) or most (Wisconsin) of those state's free banks. Massachusetts published information only on the number of shares held by the single largest shareholder and New Hampshire, with a few exceptions, published information only on the total number of shareholders. These types of information are less informative than lists of individual shareholdings, but they do provide information about the concentration of share ownership and are used here.[10]

[10] The data appendix provides the sources details and Appendix Table A1 provides information on the number of observations by state and decade. Massachusetts, Maine, New Hampshire, New York and Wisconsin provide most of the data. And while the 1830s are

Several shareholder concentration measures are constructed from the available data and are reported in Table 1. Hilt (2008) focuses on the number of shareholders and its natural log. It is evident from the table that banks operating in one share-one vote regimes had significantly fewer shareholders than graduated voting banks. The mean number of shareholders in one share-one vote states was 38 compared to 149 in graduated voting rule states. Figure 2 presents shareholder distributions in Maine and New York, two representative states with a large number of observations. The figure suggests that differences in mean shareholdings was not the consequence of outliers. The largest class of shareholdings in Maine (graduated voting) was those holding 10 or fewer shares. In New York, the largest class of shareholdings (one share-one vote) was those holding between 11 and 20 shares, but the proportion of shareholdings in consecutively larger classes are notably larger than in Maine, remarkably so in the class of shareholdings between 91 and 100 shares. These are relatively close corporations by modern standards, but bank shares were more widely held than any other type of corporate share in this period (Hilt 2008; Majewski 2006).

Alternatively, Demsetz and Lehn (1985) use the fraction of shares owned by the five largest and twenty largest shareholders, as well as the Herfindahl-Hirshman Index (HHI), to capture shareholder concentration. Those measures are also reported in Table 1, along with the fraction of shares owned by the single largest shareholder (in order to utilize the limited information included in the Massachusetts banks reports). All three measures reveal substantially more concentrated ownership at banks in one share-one vote states than banks in graduated voting states. Across the entire sample, the single largest shareholder accounts for 21 percent of outstanding shares, but th

---

relatively well represented, most of the available data was collected between 1840 and 1862, with the greatest number of observations coming from the 1850s.

largest shareholder accounts for 36 percent of outstanding shares at one share-one vote banks compared to just 10 percent at graduated voting banks. An advantage of the Herfindahl-Hirschman Index is that it accounts for share holdings over the entire distribution and it too reveals markedly different share ownership patterns at the two types of banks. As a final measure of share concentration, Table 1 reports the fraction of banks at which a group of five or fewer shareholders controlled at least 20 percent of the outstanding shares. La Porta et al. (1998) believe that this to be the important measure in matters of corporate governance because a 20 percent stake is generally sufficient to take effective control of the board and, therefore, the corporation. A small control group may be more likely to engage in self-dealing. While the majority of banks were controlled by small groups (not including family groups), the difference between one share-one vote and graduated voting states remains.

5. Voting rules, share concentration and leverage

The remainder of the article investigates two related questions. First, did alternative voting rules systematically influence the concentration of share ownership controlling for other features of the environment? Second, did the concentration of share ownership systematically alter banking practice? The results answer each question in the affirmative. Subsequent sections provide the details of the analysis.

5.1 Voting rules and share concentration

The first step in the empirical analysis considers the whether and the extent to which alternative voting rights influenced the concentration of share ownership. Hilt (2008, 669) contends

that corporate ownership structure and voting rules were jointly endogenous when looking across industries within a single state. Manufacturers in 1820s New York had the most concentrated ownership and were the least likely to have adopted graduated voting rules. Banks, on the other hand, exhibited the least concentrated ownership and were the most likely to have adopted graduated voting rules. Interstate analysis is less subject to endogeneity, however. As discussed above, once a state established a particular voting rule it was slow to change. Still, there might be concerns that the choice of voting rule was not random and responded to some economic or political features of the states. Although it does not exhaust the list of possible influences, linear probability models of voting rules (circa 1830) revealed no systematical correlation with population, the percent of the population enslaved, the percent employed in manufacturing in 1820, the percent of popular vote of the number of electoral college votes for Andrew Jackson in 1828, or bank capital per capita in 1820 or 1830. Voting rules were exogenous to readily observable state political and economic features.

Even if voting rules were exogenous across states, it is possible that shareholders sorted across regimes. That is, a potential shareholder residing in a one share-one vote state that was concerned with majority shareholder self-dealing may have invested across state lines in a graduated voting rule states. Similarly, investors residing in a graduated voting rule states with a preference for one share-one vote may have invested elsewhere. Although some easterners invested in western banks, the limited extant evidence suggests that New Yorkers (one share-one vote) investors were more likely than easterners in graduated voting rules states (Massachusetts, Maine, New Hampshire, Pennsylvania) to invest in banks in Ohio and Wisconsin (one share-one vote). Whether this was an expression of preference for a familiar voting rule or the consequence that New York was the largest investment market in the late antebellum era is unclear. What is unambiguously clear, is that most

owners were locals, which is not surprising given information asymmetries and the value of local knowledge.

Accepting voting rights as exogenous from the perspective of the individual investor, yields the following general estimating equation:

(1) $\text{Share concentration}_{it} = \alpha + \beta \text{ Voting Rights}_{it} + \lambda X_{it} + \epsilon_{it}$

where X_{it} represents a vector of bank-specific controls, including the bank's age, its capitalization, whether is was a free bank, and the (natural log) population of the city or town in which it was located. Bank age (in years) is likely to influence share ownership because shares change hands and may become either more concentrated or diffuse over time, depending on the rules underlying the distribution of shares at the initial public offering. Helwege et al (2007) argue that most modern firms begin with relatively concentrated share holdings that grow more diffuse over time. It is unclear a priori whether the same will be true in the nineteenth century. Some states encouraged diffuse holdings by limiting the number of shares a single individual might subscribe to; other states included no such restrictions. In the former case, we might expect a movement toward concentration; in the latter a movement toward diffuseness. The larger the bank's capital, the more shares, so perhaps the more diffuse was ownership. A free bank variable is included to capture any free banking effect independent of bank capitalization and age. Free banks are younger and smaller, on average, than chartered banks, but there may remain a free banking effect independent of age and size. Finally, city or town population is included to capture the potential size of the market for shares. Shares could be and were sometimes geographically diffuse -- the Bank of Kentucky, for example, sold many of its shares through Philadelphia brokers and its shares traded irregularly on the Philadelphia exchange -- but most founding bankers viewed the local market as the most important source of investment

capital. Larger markets were more attractive than smaller ones, all else equal. Moreover, given the opacity and idiosyncracy of bank portfolios, investor proximity was likely to be of value. Standard errors of the estimated coefficients are corrected for clustering at the city level. This allows the clusters to capture common error processes while allowing the number of clusters to be large enough for the technique to be effective (Bertrand, Duflo and Mullainathan 2005).

Estimated coefficients on the control variables are generally statistically significant and the direction of influence is consistent with expectations. Shareholding was more diffuse at larger banks located in larger cities and towns. Contrary to modern studies, however, older banks exhibit more concentrated ownership, all else equal. A one standard deviation increase in bank age (11.7 years) decreased the number of shareholders by about 20 percent; it increased the fraction of shares held by the five largest shareholders by nearly 5 percent, and the probability that a small group would control 20 percent or more of the bank's shares by 19.9 percent. Increasing concentration was the consequence of contemporary IPO rules. Some states limited the number of shares any individual (or partnership or corporation) might subscribe to, but even when no such rule was imposed, laws typically required shares to be distributed pro rata with the subscription when initial public offerings were oversubscribed. Moreover, every subscriber was guaranteed at least one share. Thus, if an individual subscribed for 100 of a bank's 2000 shares, but subscriptions totaled 3000 shares, the 100-share subscriber received no more than two-thirds of his subscription, or 66 instead of 100 shares. All other subscribers' allocations were similarly reduced. If the investor preferred a five percent stake in the bank (100 shares), he could purchase shares from other subscribers, but only after the IPO was

complete.[11] With thin secondary markets outside Boston, New York and Philadelphia, consolidating a large position in a bank took some time.

The coefficients of principal interest are those on the *graduated voting* variable. Regardless of the measure of shareholder concentration used as the dependent variable, graduated voting rights rules are associated with more diffuse ownership. Graduated voting rules increased the number of shareholders by an estimated 164 percent ($e^{0.97}$ - 1), a value consistent with, though smaller than the 397 percent ratio of the raw means reported in Table 1. Graduated voting rules are also associated with more diffuse share holding, whether measured by the Single Largest, Five Largest, Twenty Largest or the Herfindahl-Hirshmann Index (HHI). The single largest shareholder in the average graduated voting bank owned 10.3 percent less shares than the single largest shareholder in the average one share-one vote bank. Similarly, the HHI for the representative bank in a graduated voting rule state was 193 percent lower than that for the representative one share-one vote bank.

Following La Porta et al (1998), who argue that large block ownership rather than concentration per se is strongly associated with the quality of governance, Table 2 also reports the results of regressions where the dependent variable equals 1 if (1) the single largest share holding controls at least 20% of the stock (Single Control), or, (2) the five largest shareholdings represent at least 20% of the outstanding shares (Large Block). Single Control captures the influence of a controlling shareholder, a feature that troubled some contemporary observers. There are at least two

[11] After the subscription frenzy at the Bank of the United States in 1791, most bank charters included a provision against the sale of one's subscription until the shares were fully paid. Subscribers usually had to swear that they were the bona fide purchasers and had not sold their claim to someone else. The rule served three purposes: to limit speculation; to create transparency in ownership so that a consortium of subscribers could not disguise their control of the bank at the IPO; and, to spread corporate ownership as widely as possible.

disadvantages of the Single Control measure.[12] First, the mechanics of lending discussed earlier suggests that large shareholder self-dealing might be dependent on taking control of the discount committee, which would require a majority of a three to seven-member committee. Second, it is unlikely to capture the influence of family block holdings that are not readily discernible in many of the bank reports, but were a common feature of nineteenth corporate ownership. The Large Block variable is designed to capture the effect of blocks of family–owned shares or other interlocked groups that are not apparent in the shareholder lists. The last two columns of Table 2 report the results of linear probability model (probit estimates were not substantially different) with either the Single Control or the Large Block variable as the dependent variable. Bank operating under a graduated voting rule regime were 27 percent less likely to have a single controlling shareholder and nearly 29 percent less likely to have a group of controlling shareholders.

Interstate evidence from the financial sector stand in sharp contrast to Hilt's (2008, 671) findings. Using an alternative measure of voting rights and considering New York corporations in several sectors, he concluded that graduated "voting rights schemes did not cause the distribution of shares to become dramatically more equal.... Evidently, investors were willing to hold stakes that were large enough to be penalized by graduated voting rights schemes." In fairness, Hilt notes that his regressions do not reveal causal relationships because voting rights rules were potentially endogenous in some industries in New York in the 1820s. In contrast, interstate variation in voting rights at banks were arguably exogenous (outside Connecticut at least). Voting rights regimes are not predictable from readily observable state-level economic, financial or political variables. Once a

[12] One practical advantage of the measure is that allows for use of the Massachusetts data, which reported only the single largest share holding.

regime was selected, it tended to persist and nearly every bank in a state operated under one regime or another. The interstate evidence provides compelling evidence that alternative voting rules influenced the diffusion of share holdings. Banks in states that limited the voting rights of large shareholders exhibited more diffuse ownership, which suggests that at least some shareholders were concerned with tunneling, looting and other forms of self-dealing by majority shareholders.

5.2 Share concentration and leverage

While evidence concerning the relationship between corporate voting rights and the balance of power between large and small shareholders is interesting in its own right, a second important issue is whether and to what extent the balance of power manifested itself in firm performance. If leverage and riskiness are correlated at financial firms, if bank risk taking is privately and socially costly, and risk tolerances differ across stakeholders, leverage ratios provide valuable metrics of bank risk-taking preferences.

Any discussion of bank leverage and portfolio risk must acknowledge potential conflicts between five distinct groups: creditors, managers, regulators, large shareholders, and small shareholders. It is widely accepted that limited liability shareholders have incentives to increase firm risk taking by increasing leverage (Saunders et al 1990). To the extent that depositors and other bank creditors can only imperfectly monitor bank portfolios, bank owners can increase the value of their equity by increasing the underlying riskiness of the bank's portfolio at the expense of the firm's creditors. The owners' ability to increase leverage depends on the effectiveness of regulators and the risk preferences of managers. Owners and managers generally have different risk tolerances (Rose-Ackerman 1991). Because managers have invested in nondiversifiable, firm-specific human capital,

they will pass up risky loans preferred by the well-diversified shareholder. Saunders et al (1990), in fact, find that owner-controlled banks exhibit greater risk taking than manager-controlled banks.

It is not obvious how leverage changes with large shareholdings absent information on the diversification of large and small shareholders. If large shareholdings represent an effort on the part of a well-diversified investor to increase the idiosyncratic component of firm value through leverage, the presence of a large shareholder may increase bank risk taking because variance is valuable. If, on the other hand, the large shareholder has a substantial share of his or her total wealth tied up in a single firm, high leverage exposes him or her to greater risks of substantial loss than a more diversified investor. If the undiversified large shareholder controls the firm's strategic decisions, he may pass up some profitable opportunities to lever based on an assessment of total rather than idiosyncratic risk (Güner and Aydoğan 2002).

Three leverage ratios are considered here. First, the ratio of banknotes to total liabilities. Bank-issued debt serves as currency and creates an atypical class of corporate creditors who can exercise a redemption option at will (Calomiris and Kahn 1991). Bank-issued debt also affords opportunities for controlling shareholders to expropriate from creditors and minority shareholders. In a brief period, controlling shareholders could issue additional debt (principally banknotes) to secure more of the firm's resources for their own use through poorly secured or otherwise risky loans that informed creditors or minority shareholders would not approve. In short, control of the ability to issue short-term debt affords the controlling shareholder additional opportunities for self-dealing even while it increases the likelihood of financial distress.

A second measure of leverage is the loan-asset ratio, which should reflect risk tolerances. Banks could construct portfolios of the same overall risk by holding a portfolio of low-risk loans and

a few relatively risk-free government bonds or a portfolio of risky loans and more bonds. If a well-diversified large shareholder preferred idiosyncratic variance, however, and returns on risky loans were greater than bonds, large shareholders would prefer a higher loan-asset ratio. In the alternative, Lamoreaux (1994) found that share ownership was valued not just for its value as an investment, but for the access it afforded to bank loans. Many nineteenth-century banks were insider operations in that shareholders had an implicit prior claim on a bank's lending. Thus, small shareholders may have bought shares to exercise this right and regular demands from shareholder/borrowers may have limited a bank's ability to reduce risk through portfolio diversification.

Third, the asset-capital ratio is used as a measure bankruptcy risk. Higher asset-capital ratios (or greater capital leverage) meant that risky banks were less able to absorb losses and were more prone to bankruptcy, whether due to systemic or idiosyncratic shocks. The three leverage measures are designed to capture short-term (liquidity) risks, medium term (default risk), and long-term (bankruptcy risk).

The empirical issue is whether voting rules influenced bank leverage. If it did, was the influence of alternative voting rules mediated through its effect on shareholder concentration? The second question is particularly relevant considering the earlier discussion of majority shareholder self-dealing. Jensen (1986) contends that debt limits expropriation through third-party (creditor) monitoring, but debt took an uncharacteristic form at banks in that creditors exercised their claims on a first come-first serve rule (Calomiris and Khan 1991). But Faccio et al (2003) find that greater control by a large shareholder is associated with greater leverage. Their finding implies that controlling shareholders use leverage to channel the firm's resources to their own uses. If nineteenth-century majority shareholders used banks to finance their nonbanking ventures, they would prefer

greater leverage than minority shareholders. Legislative inquiries into failed banks uncovered extremely high leverage and shareholders who had taken control of the board and become the bank's largest debtors. Such sources are subject to selection, of course, given the absence of comparable inquiries into nonfailed banks, but the pattern suggests greater leverage (and risk-taking) at banks with more concentrated ownership. An empirical concern is that, for an exogenously given voting rule, share concentration and leverage are likely to be jointly endogenous. The concern can be mitigated through the use of instrumental variables (IV) regression.

To determine whether and to what extent alternative voting rules influenced bank behavior, I adopt the following empirical specification:

$$(1) \qquad \text{Share concentration}_{it} = \alpha + \beta \text{ Voting Rights}_{it} + \lambda X_{it} + \epsilon_{it}$$

$$(2) \qquad \text{Leverage}_{it} = \gamma \text{ Share concentration}_{it} + \delta W_{it} + \nu_{it}$$

where the estimation involves specifying Equation (1) as the first-stage and Equation (2) as the second-stage regression. For the procedure to generate consistent estimates, the proposed instrument has to satisfy several conditions. First, it must be exogenous. The discussion above makes a strong case for the exogeneity of voting rules, at least from the perspective of the local investor. Second, the instrument must induce meaningful variation in the share concentration, The evidence presented in §5.1 above shows that it does. Third, the instrument must affect bank leverage outcomes through concentration and not some other channel. Two plausible alternative channels presented themselves: the par value of shares (low share denominations might be more attractive to small shareholders) and total bank capitalization (more shares leads to more diffuse ownership). Preliminary tests (not reported) using these variables as instruments showed no evidence of these alternative pathways

influencing leverage through concentration. Finally, bank shareholders must not self-select into alternative voting rights regimes. The limited available evidence, discussed above, suggests that most investors were local and it seems implausible that potential investors would relocate in response to corporate voting regimes. It is also implausible that differential labor market conditions that might induce mobility would be systematically related to voting regimes.

The results of 42 separate regressions are summarized in Table 3. Each principle cell in the table reports either the OLS coefficient or the IV coefficient from regressions of the general form reported in equations (1) and (2) above. Five notable features merit discussion. First, the Davidson-McKinnon test statistic shows that the IV estimates are consistent (the test statistics systematically reject the null that OLS estimates are consistent). Second, the IV estimates are substantially larger than the OLS estimates, sometimes five times as great. Given the nature of the IV estimation strategy, this is not unexpected. The IV coefficients reflect the local average treatment effect (LATE), which applies to banks that adopted graduated voting rules because they operated in a graduated voting rule state but which would otherwise have adopted a one share-one vote rule. This excludes graduated voting rule volunteers and includes only banks for which graduated voting rules were binding. Given the popularity of graduated voting rules in the early to mid-nineteenth century, the LATE effect is likely to have affected a select group of banks. Because Connecticut did not officially adopt either regime, allowing bank organizers to select, it provides some insight into how often a voting rule may have been binding. Of a sample of 40 Connecticut banks chartered between 1790 and 1840, only four adopted a true Hamilton-style graduated voting rule (votes increasing less than linearly in shares), but an additional 19 banks included vote ceilings, or limits on the maximum number of votes that might be cast by large shareholders. Moreover, the ceilings (generally between 15 and 75 votes) were

binding if share holdings in Connecticut were similar to those in the neighboring states of Massachusetts and New York. That more than half of banks free to adopt one share-one vote rules chose some type of graduated voting rule instead suggests that the LATE estimates reported in Table 3 represent meaningful effects. That is, there were a not insubstantial number of banks for which the rule was binding.

Third, greater share concentration was associated with a greater reliance on funding asset purchases through banknotes than deposits, even after controlling for free banking (which was a more banknote reliant system than chartered banking). A one standard deviation increase in the (log) number of shareholders, for example, is associated with a 20.5% decrease in the Banknote-Liability ratio. The coefficients on the other measures of concentration suggest that the presence of one or more large shareholders, or more concentrated ownership generally, was associated with significant increases in the use of banknotes to finance a bank's portfolio. When a single shareholder (Single Control) held 20 percent or more of a bank's shares, its Banknote-Liability ratio increased by nearly 47 percent. Similarly, a one standard deviation increase in the fraction of shares owned by the Single Largest shareholder increased the banknote ratio by 29.6 percent.

The banknote-liability ratio mattered to stakeholders other than large shareholders for a number of reasons. An increased reliance on banknotes relative to other funding sources, especially deposits, increased the risk of a bank run and the suspension of specie payments. It was a commonplace in the nineteenth century that good banking was synonymous with limited use of banknotes (Hammond 1957, 188-190). Although markets in banknotes emerged that mitigated information asymmetries between note holder and banker, note holders tended to be more dispersed and less well-informed than depositors (Gorton 1996). Of greater concern to the small shareholder

was the possibility that a controlling shareholder could, at nearly any time, print additional banknotes, buy up assets and abscond, leaving the small shareholders liable for the losses. Wildcatting was just one, admittedly rare, instance of such fraudulent behavior, but less-conspicuous cases of tunneling were surely an ongoing concern.

Fourth, there is a robust negative association between share concentration and loan-asset ratios. A one standard deviation increase in the (log) number of shareholders is associated with an 18.1 percent increase in the ratio. All the concentration measures, on the other hand, imply that greater concentration of share ownership led to lower ratios. When a single shareholder owned 20 percent or more of a bank's shares, the loan-asset ratio declined by 11.1 percent. A one standard deviation increase in the fraction of shares controlled by the single largest shareholder reduced the ratio by 21.9 percent.

The loan-asset ratio reflects a bank's medium-term default risk in that it could trade off risk and return through its composition of safe government bonds and risky loans. The mechanism driving the negative association between share concentration and loan-asset ratios is likely that identified by Lamoreaux (1994). Shareholding provided access to bank lending. Discount committees systematically favored insiders (owners) over outsiders and there are reported instances of insiders completely monopolizing a bank's lending (Wainwright 1953). The clamor for bank charters, at times, was driven by the exclusion of outsiders from credit. With more owners, discount committees likely faced greater demands from insiders and, consequently, there were fewer opportunities to diversify into non-loan earning assets.

Fifth, IV coefficients show that share concentration led to markedly higher capital leverage, measured by the asset/capital ratio. A one standard deviation increase in the (log) number of

shareholders is associated with a 178 percent reduction in the asset-capital ratio. Similarly, the presence of a single shareholder controlling 20 percent or more of a bank's shares is associated with a 363 percent increase in the ratio.

Capital leverage is where conflict between managers and owners is likely to be most pronounced. Rose-Ackerman (1991) argues that managers have a lower tolerance for potential bankruptcy than shareholders. Accepted wisdom holds that diversified shareholders prefer greater variance in returns and accept the possibility of a negative return on some assets as part of a well-diversified portfolio. Absent information on the portfolios of large and small shareholders, it is difficult to know much about their relative preferences for risk, but it is reasonable to infer from the results that large shareholders had a greater taste for bankruptcy risk than small shareholders. Because the principal asset was personal and business loans of (small) shareholders, the markedly higher ratios under more concentrated ownership imply that large shareholders may have traded increased bankruptcy risk for greater access to the bank's credit. Contemporary legislators and regulators may have been rational in their concerns over concentrated ownership. Recent events demonstrate that modest economic downturns can quickly expose the fragility of highly levered financial institutions. Economic downturns and bank crises were more common in the nineteenth century and any regulatory device likely to reduce their incidence was viewed positively.

6. Concluding remarks

An enduring interest in the relationship between development and institutions has led economic historians to study the emergence, adoption, and spread of the Old World corporation in the New World (Handlin and Handlin 1945; Maier 1993; Dunlavy 2004; Lamoreaux 2004; Guinnane

et al 2007; Hilt 2008; Harris 2009; Wright 2011). While the belief in American exceptionalism is often unwarranted, in the case of the corporation the United States was exceptional. Even while it restricted the ability of incorporators to alter the internal nexus of contracts, there were more corporations in the United States circa 1840 than anywhere else, including England (Sylla 1998; Lamoreaux 2004). The financial sector was the principal beneficiary of America's corporate liberalism. Financial development and depth were greater in nineteenth century America than elsewhere, including England. But the spread of the corporation was not without its contemporary detractors and even advocates believed that corporations would generate widespread benefits only if they were well-regulated and well-managed. To increase the likelihood of having well-managed institutions, nineteenth-century Americans imposed a host of controls including limiting the power of majority shareholders to bend the corporation to their will.

Berle and Means' (1932) concern with the separation of ownership and control in the large modern corporation established a lasting and productive research agenda for the modern era. Their concern with dispersed owners and unaccountable managers, however, does not describe the concerns of early nineteenth-century observers. In the nineteenth century, the principal concern was with minority control and it appears that the fears, at least in the financial sector, were reasonable. Concerns with majority shareholder expropriation led many states to adopt graduated voting rules and impose other limits on the number of votes large shareholders could cast in order to limit the ability of large shareholders to loot, tunnel and otherwise expropriate at the expense of small shareholders.

Graduated voting rights were not just so much political window dressing to blunt Republican criticisms of the undemocratic corporation. Graduated voting rights had real economic consequences.

Such voting rules encouraged more diffuse ownership – surely a Republican objective – and altered bank leverage and, by implication, bank risk taking. Bank runs were recurrent events in the early nineteenth century, with notable crises in 1819, 1837, 1839 and 1857. To the extent that high leverage created the conditions for and exacerbated the recessionary consequences of such crises, voting rules assume first-order importance, not just for microeconomic reasons, but for macroeconomic outcomes as well.

7. References

Adams, Renee and Daniel Ferreira. 2008. "One Share-One Vote: The Empirical Evidence." *Review of Finance* 12(1), 51-91.

Alchian, Armen and Harold Demsetz. 1972. "Production, Information Costs, and Economic Organization." *American Economic Review* 62.5, 777-795.

Angrist, Joshua D. and Jörn-Steffen Pischke. 2009. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton and London: Princeton University Press.

Becht, Marco, Patrick Bolton, and Ailsa Röell. "Corporate Governance and Control." Handbook of the Economics of Finance. Vol. 1, Part A. Edited by G. M. Constantinides, M. Harris, and R. M. Stulz, 1-109. Elsevier, 2003.

Bena, Jan and Jan Hanousek. 2006. "Rent Extraction by Large Shareholders: Evidence using Dividend Policy in the Czech Republic." Working paper, London School of Economics.

Berle, Adolph A. and Gardiner Means. 1932. *The Modern Corporation and Private Property*. New York: Macmillan.

Berle, Adolph A. and Gardiner Means. 1968. *The Modern Corporation and Private Property*. Revised Edition. New York: Harcourt, Brace & World.

Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan. "How Much Should We Trust Differences-in-Differences Estimates?" *Quarterly Journal of Economics* 119.1 (February 2004), 249-275.

Bodenhorn, Howard. *State Banking in Early America: A New Economic History*. New York: Oxford University Press, 2003.

Bodenhorn. Howard. 2011. "Federal and State Commercial Banking Policy in the Federalist Era an Beyond." In Founding Choices: American Economic Policy in the 1790s. Edited by Douglas Irwin and Richard Sylla. Chicago: University of Chicago Press.

Burkart, Mike and Samuel Lee. 2008. "One Share-One Vote: The Theory." *Review of Finance* 12(1), 1-49.

Calomiris, Charles W. and Charles M. Khan. "The Role of Demandable Debt in Structuring Optimal Banking Arrangements." *American Economic Review* 81.3 (June 1991), 497-513.

Carey, Mathew. 1786. *Debates and Proceedings of the General Assembly of Pennsylvania: On the Memorials Praying for a Repeal or Suspension of the Law Annulling the Charter of the Bank*. Philadelphia: Seddon & Pritchard.

Clarke, M. St. Clair and D. A. Hall. 1832. *Legislative and Documentary History of the Bank of the United States*. Washington, D.C.: Gales and Seaton.

Cowen, David Jack. 2000. *The Origins and Economic Impact of the First Bank of the United States, 1791-1797*. New York and London: Garland Press.

Cull, Robert, Jana Matesora, and Mary Shirley. 2001. "Ownership Structure and the Temptation to Loot: Evidence from Privatized Firms in the Czech Republic." World Bank Policy Research Paper 2568.

Demsetz, Harold and Kenneth Lehn. 1985. "The Structure of Corporate Ownership: Causes and Consequences." *Journal of Political Economy* 93(6), 1155-1177.

Diamond, Douglas W. And Philip H. Dybvig. 1983. "Bank Runs, Deposit Insurance, an Liquidity." *Journal of Political Economy* 91.3, 410-419.

Dorfman, Joseph. 1946. *The Economic Mind in American Civilization, 1606-1865*. New York:

Viking Press.

Dunlavy, Colleen. 2004. "From Citizens to Plutocrats: Nineteenth-Century Shareholder Voting Rights and Theories of the Corporation." *In Constructing Corporate America: History, Politics, Culture*, 66-93. Edited by Kenneth Lipartito and David B. Sicilia. New York: Oxford University Press.

Dunlavy, Colleen. 2006. "Social Conceptions of the Corporation: Insight from the History of Shareholder Voting Rights." *Washington & Lee Law Review* 63, 1347-1388.

Easterbrook, F. and D. Fischel. "Voting in Corporate Law." *Journal of Law & Economics* 26, 395-427.

Faccio, Mara, Larry H. P. Lang and Leslie Young. 2003. "Debt and Expropriation." Working paper, Purdue University. SSRN 239724.

Fama, Eugene F. "Agency Problems and the Theory of the Firm." *Journal of Political Economy* 88.2, 288-307.

Fama. Eugene F. 1985. "What's Different about Banks?" *Journal of Monetary Economics* 15.1, 29-39.

Fama, Eugene and Michael Jensen. 1983a. "Separation of Ownership and Control." *Journal of Law & Economics* 26(2), 301-26.

Fama, Eugene and Michael Jensen. 1983b. "Agency Problems and Residual Claims." Journal of Law & Economics 26(2), 327-50.

Gorton, Gary. 1996. "Reputation Formation in Early Bank Note Markets." *Journal of Political Economy* 104.2 , 346-397.

Grossman, Sanford J. and Oliver D. Hart. 1988. "One Share-One Vote and the Market for Corporate

Control." *Journal of Financial Economics* 20(1), 175-202.

Guinnane, Timothy W., Ron Harris, Naomi Lamoreaux, and Jean-Laurent Rosenthal. 2007. "Putting the Corporation in Its Place." *Enterprise & Society* 8.3, 687-729.

Gürsoy, Güner and Kürşat Aydoğan. 2002. "Equity Ownership Structures, Risk Taking, and Performance: An Empirical Investigation in Turkish Listed Companies." *Emerging Markets Finance and Trade* 38.6, 6-25.

Hammond, Bray. *Banks and Politics in American from the Revolution to the Civil War*. Princeton: Princeton University Press, 1957.

Handlin, Oscar and Mary F. Handlin. 1945. "Origins of the American Business Corporation." *Journal of Economic History* 5.1, 1-23.

Harris, Ron. 2009. "Law, Finance and the First Corporations." In *Global Perspectives on the Rule of Law.* Edited by James J. Heckman, R. L. Nelson and L. Cabatingan, 145-72. Abingdon: Routledge-Cavendish.

Hart, Oliver. 2001. "Financial Contracting." *Journal of Economic Literature* 39.4, 1079-1100.

Helwege, Jean, Christo Pirinisky and René Stulz. 2007. "Why Do Firms become Widely Held? An Analysis of the Dynamics of Corporate Ownership. *Journal of Finance* 62.3, 995-1028.

Hilt, Eric. 2008. "When did Ownership Separate from Control? Corporate Governance in the Early Nineteenth Century." *Journal of Economic History* 68(3), 645-685.

Jaremski, Matthew. 2010. "Bank-Specific Default Risk in the Pricing of Bank Note Discounts." Unpublished working paper, Vanderbilt University.

Jensen. Michael C and William H. Meckling. 1976. "Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure." *Journal of Financial Economics* 3.4, 305-360.

Lamoreaux, Naomi R. 1994. *Insider Lending: Banks, Commercial Lending and Economic Development in Industrial New England*. Cambridge and New York: Cambridge University Press.

LaPorta, Raphael, Florencio Lopez-de-Silanes, Andrei Shleifer and Robert W. Vishny. 1998. "Law and Finance." *Journal of Political Economy* 106(6), 1113-1155.

LaPorta, Raphael, Florencio Lopez-de-Silanes, and Andrei Shleifer. "Investor Protection and Corporate Ownership." *Journal of Financial Economics* 58.1, 3-27.

Maier, Pauline. 1993. "The Revolutionary Origins of the American Corporation." *William & Mary Quarterly* 50:1, 51-84.

Majewski, John. 2006. "Toward a Social History of the Corporation: Shareholding in Pennsylvania, 1800-1840." In *The Economy of Early America: Historical Perspectives and New Directions*. Edited by Cathy Matson. Philadelphia: University of Pennsylvania Press.

Manne, Henry G. 1965. "Mergers and the Market for Corporate Control. *Journal of Political Economy* 73.2, 110-120.

Meissner, Christopher M. 2005. "Voting Rules and the Success of Connected Lending in 19th century New England Banks. *Explorations in Economic History* 42, 509-528.

Morck, Randall K. "Introduction." In *Concentrated Corporate Ownership*, 1-13. Edited by Randall K. Morck. Chicago: University of Chicago Press, 2000.

Morck, Randall K., Andrei Shleifer, and Robert W. Vishny. 1988. "Management Ownership and Market Valuation: An Empirical Analysis." *Journal of Financial Economics* 20, 293-315.

Myers, Stewart C. "Determinants of Corporate Borrowing." *Journal of Financial Economics* 5, 147-175.

New York (State) Comptroller's Office. *Special Agents' Report to the Comptroller, in Relation to the Affairs of the Canal Bank.* Albany, New York, 1848.

Ratner, David L. 1970. "The Government of Business Corporations: Critical Reflections on the Role of "One Share, One Vote." *Cornell Law Review* 56.1, 1-

Roe, Mark J. 1994. *Strong Managers, Weak Owners*. Princeton: Princeton University Press.

Rose-Ackerman, Susan. 1991. "Risk Taking and Ruin: Bankruptcy and Investment Choices." *Journal of Legal Studies* 20.2, 277-310.

Saunders, Anthony, Elizabeth Trock, and Nickolaos G. Travlos. 1990. "Ownership Structure, Deregulation, and Bank Risk Taking." *Journal of Finance* 45.2, 643-654.

Shleifer, Andrei and Robert W. Vishny. 1986. "Large Shareholders and Corporate Control." *Journal of Political Economy* 94(3), 461-488.

Sylla, Richard. "U.S. Securities Markets and the Banking System, 1790-1840." Federal Reserve Bank of St. Louis *Review*

Van Horn, Patrick. "The Ohio Banking Panic of 1854." Working paper, New College of Florida, April 2011.

Wainwright, Nicholas B. *History of the Philadelphia National Bank: A Century and a Half of Philadelphia Banking, 1803-1953.* Philadelphia: Wm. F. Fell, Printers, 1953.

Wright, Robert E. 2011. "Rise of the Corporation Nation." In *Founding Choices: American Economic Policy in the 1790s*, 217-258. Edited by Douglas Irwin and Richard Sylla. Chicago: University of Chicago Press.

8. Data Appendix

Bank balance sheet data

Weber, Warren. Antebellum Bank Archive. Federal Reserve Bank of Minneapolis.

Connecticut

United States House of Representatives. 35th Congress. 2d Session. Condition of the Banks. Executive Document No. 112. Washington, D.C.: James B. Steadman, 1859.

Indiana

Indiana. Senate. *Journal of the Bank Investigating Committee: A Select Committee of the Indiana Senate, 1857.* Indianapolis: Joseph J. Bingham, state printer, 1857.

Kentucky

Bank of Kentucky. *A List of the Present Holders of the Original Stock in the Bank of Kentucky, Also a List of Spurious Stock.* Louisville: Morton & Griswold, 1841.

United States Senate. 23d Congress, 2d Session. Report of the Secretary of the Treasury. Document No. 73. *Public Documents Printed by Order of the Senate of the United States.* 10 vols. Vol. II. Washington, D.C.: Duff Green, 1834.

Louisiana

United States Senate. 23d Congress, 2d Session. Report of the Secretary of the Treasury. Document No. 73. *Public Documents Printed by Order of the Senate of the United States.* 10 vols. Vol. II. Washington, D.C.: Duff Green, 1834.

Maine

Maine. "List of Stockholders." *Documents Printed by Order of the Legislature, of the State of*

Maine, during Its Session A. D. 1840. Augusta: Wm. R. Smith & Co., printers to the state, 1840.

Maine. "List of Stockholders. *Documents Printed by Order of the Legislature, of the State of Maine, during Its Session A. D. 1843.* Augusta: Wm. R. Smith & Co., printer to the state, 1843.

Maine. "List of Stockholders, Amount of Stock Held by Each, Jan. 1, 1845." *Documents of the Legislature of the State of Maine during Its Session A.D. 1845.* Augusta: Wm. T. Johnson, printer to the state, 1845.

Maine. "List of Stockholders, Amount of Stock Held by Each, Jan. 1, 1849." *Documents of the Legislature of the State of Maine during Its Session A.D. 1849.* Augusta: William T. Johnson, printer to the state, 1850.

Massachusetts

Gras. N. S. B. *The Massachusetts First National Bank of Boston, 1784-1934*. Cambridge, Mass.: Harvard University Press, 1937.

Massachusetts. *Annual Report of the Bank Commissioners, September 30, 1858*. Public Document No. 6. Boston: William White, printer to the state, 1858.

Massachusetts. *Annual Report of the Bank Commissioners, September 30, 1860.* Public Document No. 10. Boston: William White, printer to the state, 1860.

Michigan

Michigan. "Report of K. Pritchett, Bank Commissioner, relative to specie certificates, issues to create banks, &c." *Journal of the House of Representatives of the State of Michigan, At the Annual Session in 1839.* Detroit: J. S. & S. A. Bagg, printers, 1839.

Michigan. “Reports of the Majority and Minority of the Bank Investigating Committee, Together with the Minutes of the Committee.” *Documents Accompanying the Journal of the Senate of the State of Michigan at the Annual Session of 1840*, vol. II. George Dawson: state printer, 1840.

New Hampshire

New Hampshire. Board of Bank Commissioners. *Annual Report of the Bank Commissioners of the State of New Hampshire to His Excellency the Governor, June Session, 1840*. Concord: , state printers, 1840.

New Hampshire. Board of Bank Commissioners. “Reports of Bank Commissioners.” *Journal of the Honorable Senate of the State of New Hampshire, June Session 1846.* Concord: , state printers, 1846.

New Hampshire. Board of Bank Commissioners. “Reports of Bank Commissioners.” *Journal of the Honorable Senate of the State of New Hampshire, June Session 1848.* Concord: Butterfield & Hill, state printers, 1848.

New Hampshire. Board of Bank Commissioners. *Annual Report of the Bank Commissioners of the State of New Hampshire to His Excellency the Governor, June Session, 1849*. Concord: Butterfield & Hill, state printers, 1849.

New Hampshire. Board of Bank Commissioners. “Bank Commissioners’ Reports.” *Journal of the Honorable Senate of the State of New Hampshire, June Session 1850*. Concord: Butterfield & Hill, state printers, 1850.

New Hampshire. Board of Bank Commissioners. *Reports of the Bank Commissioners of the State of New Hampshire to His Excellency the Governor, June Session, 1855*. Concord: Amos

Hadley, state printers, 1855.

New York

Chemical Bank. *History of the Chemical Bank, 1823-1913*. New York: Privately printed, 1913.

Eric Hilt. "When Did Ownership Separate from Control? Corporate Governance in the Early Nineteenth Century. *Journal of Economic History* 68.3 (September 2008), 645-685.

New York. Assembly. "Report of the Bank Commissioners on the Resolution of the Assembly on the 28th March 1832." *Documents of the Assembly of the State of New York.* Assembly Document No. 89. Albany: E. Croswell, state printer, 1833.

New York. Assembly. "Annual Report of the Superintendent of the Banking Department." *Documents of the Assembly of the State of New York.* Assembly Document No. 10. Albany: C. Van Benthuysen, 1855.

New York. Assembly. "Annual Report of the Superintendent of the Banking Department." *Documents of the Assembly of the State of New York.* Assembly Document No. 5. Albany: C. Van Benthuysen, state printer, 1857.

Ohio

Ohio. General Assembly. *Documents, Including Messages and Other Communications made to the Forthy-Seventh General Assembly of the State of Ohio*. Columbus: Chas. Scott, state printer, 1849.

Ohio. Auditor of State. *Appendix to Annual Report of Auditor of State. Series of Reports Made on the Condition of the Ohio Stock Banks as Ascertained by Charles Reemelin, Esq., Acting as Special Examiner under the Appointment of the Auditor and Secretary of State*.

Columbus: Statesman Steam Press, 1855.

Pennsylvania

Gertrude MacKinney, ed. *Pennsylvania Archives*, 9th series, vols. 5-6. 1931.

Vermont

Bank of Orleans (1865). Frederick W. Baldwin, ed. *History of "Bank of Orleans," "Irasburgh National Bank of Orleans," "Barton National Bank," "Barton Savings Bank," "Barton Savings Bank and Trust Company."* Burlington, VT: Free Press Printing Company, 1916.

Wisconsin

Wisconsin. Office of the Bank Comptroller. "Annual Report of the Bank Comptroller." *Governor's Message and Accompanying Documents*. Madison, WI: Beriah Brown, State Printer, 1855.

Wisconsin. Bank Comptroller. *Annual Report of the Banking Department of the State of Wisconsin for the Year 1856.* Madison, WI: Calkins & Proudfit, Printers, 1857.

Wisconsin. Bank Comptroller. *Annual Report of the Bank Comptroller of the State of Wisconsin for the Year Ending January 3d, 1858.* Madison: Calkins & Webb, 1858.

Wisconsin. Bank Comptroller. "Annual Report of the Bank Comptroller for the Fiscal Year Ending September 20th, 1864." *Message of the Governor of Wisconsin, Together with the Annual Reports of the Officers of the State for the Year A.D. 1864.* Madison, WI: Atwood & Rubles, state printers, 1865.

Table 1: Summary statistics by voting rule

Variable	N	Full Sample (N = 714)	One share-One vote	Graduated Voting
Shareholders	550	88.23 (209.09)	37.51 (70.66)	149.04 (289.09)
Single largest	633	0.21 (0.24)	0.36 (0.28)	0.10 (0.08)
Five largest	469	0.56 (0.31)	0.70 (0.29)	0.35 (0.19)
Twenty largest	469	0.79 (0.23)	0.89 (0.18)	0.66 (0.23)
Herfindahl Index	469	1874.36 (2568.58)	2822.75 (2964.91)	493.98 (451.05)
Large Block 20	466	0.87 (0.33)	0.95 (0.22)	0.78 (0.42)
Bank age	714	9.86 (11.70)	3.28 (4.10)	14.62 (13.04)
Capital (000)	714	179.28 (334.72)	130.07 (333.55)	214.94 (331.42)
City Population (000)	702	22 (53)	22 (63)	22 (44)
Banknotes/Liabilities	714	0.31 (0.14)	0.33 (0.16)	0.29 (0.12)
Loans / Assets	714	0.73 (0.21)	0.60 (0.25)	0.82 (0.10)
Assets / Capital	714	2.52 (1.31)	3.16 (1.76)	2.05 (0.49)

Notes: Single Largest is the proportion of share owned by the single largest shareholder; Five Largest is the proportion of shares owned by the five largest shareholders; Twenty Largest is the proportion of shares owned by the 20 largest shareholders; Large Block 20 is an indicator variable equal to 1 if the five largest shareholders own more than 20% of the bank's shares; otherwise it equals zero. Bank age is date of observation minus date established.
Sources: see Data Appendix for shareholdings; other data from Weber (2011).

Table 2: Determinants of share concentration

	ln(share-holders)	Single Largest	Five Largest	Twenty Largest	ln(HHI)	Single Control	Large Block
Graduated voting	0.970 (7.10)	-0.103 (5.00)	-0.213 (7.18)	-0.211 (8.70)	-1.072 (7.94)	-0.273 (6.29)	-0.288 (7.36)
Bank Age	-0.017 (2.74)	0.000 (0.07)	0.004 (2.65)	0.006 (4.89)	0.031 (4.24)	-0.002 (1.55)	0.017 (7.76)
Capital ($000)	0.001 (5.93)	-4.2 e-5 (1.95)	-1.2e-4 (4.16)	-1.9e-4 (7.60)	-5.9e-4 (4.34)	-9.8e-5 (2.15)	-2.8e-4 (7.24)
Free Bank	-1.568 (11.75)	0.241 (11.22)	0.256 (9.17)	0.106 (4.61)	1.049 (8.33)	0.353 (7.82)	0.012 (0.32)
ln(population)	0.185 (4.55)	-0.014 (2.48)	-0.039 (4.66)	-0.024 (3.52)	-0.160 (4.20)	-0.052 (4.49)	0.002 (0.20)
Constant	1.907 (5.10)	0.331 (6.46)	0.877 (11.33)	1.039 (16.38)	8.004 (22.87)	0.909 (8.41)	0.912 (8.99)
N	539	623	460	460	457	621	457
Adj R-square	0.56	0.46	0.51	0.43	0.49	0.45	0.25
F-statistic	138.8	108.9	94.7	70.3	87.1	101.6	32.1

Notes: Graduated voting rule includes instances in which votes increases less than linearly with shares, instances in which limits were placed on the maximum number of votes a shareholder might cast, and instances in which both were operative. Nearly all cases of graduated voting included limits so they are combined into a single variable. Absolute value of t-statistics in parentheses. Standard errors corrected for clustering on city.
Sources: see Table 1.

Table 3: Share concentration and bank leverage
OLS and IV results

	Banknotes/Liabilities (1)		**Loans/ Assets (2)**		**Assets/ Capital (3)**	
	OLS	IV	OLS	IV	OLS	IV
ln(share)	-0.011	-0.127	0.016	0.112	-0.212	-1.099
	(2.05)	(3.30)	(1.59))	(3.19)	(2.29)	(3.20)
D-M test stat		5.37**		3.37**		3.40**
Single	0.077	1.233	-0.051	-0.914	1.116	9.582
Largest	(2.59)	(3.31)	(0.69)	(3.55)	(2.64)	(3.40)
D-M test stat		5.92**		2.97**		2.93**
Five	0.051	0.624	-0.210	-0.458	1.205	5.271
Largest	(1.72)	(2.84)	(4.66)	(2.83)	(2.21)	(2.91)
D-M test stat		5.67**		2.85**		3.36**
Twenty	0.041	0.629	-0.191	-0.461	0.801	5.310
Largest	(1.06)	(3.05)	(3.62)	(2.54)	(1.43)	(2.74)
D-M test stat		5.67**		2.85**		3.36**
ln(HHI)	0.012	0.121	-0.032	-0.091	0.215	1.081
	(1.91)	(3.18)	(2.83)	(2.73)	(2.00)	(2.99)
D-m test stat		5.67**		2.85**		3.36**
Single	0.016	0.467	-0.111	-0.345	0.672	3.634
Control	(0.99)	(2.59)	(4.69)	(3.23)	(2.55)	(2.97)
		5.94**		2.96**		2.94**
Large	0.009	0.451	-0.069	-0.338	0.045	4.023
Block	(0.44)	(3.38)	(3.13)	(2.37)	(0.22)	(2.60)
D-M test stat		5.53**		2.82**		3.44**

Table 3: Share concentration and bank leverage
OLS and IV results

	Banknotes/Liabilities (1)		**Loans/ Assets (2)**		**Assets/ Capital (3)**	
	OLS	IV	OLS	IV	OLS	IV

Notes: First-stage regressions reported in Table 2. All regressions (OLS and IV) include Bank Age, Bank Capital, Free Bank, ln(population) and a constant. All standard errors corrected for clustering city. Absolute values of t-statistics reported in parentheses. Davidson-McKinnon test statistic is the t-statistic on the predicted value of the endogenous regressor included in the augmented OLS regressions. A statistically significant value of the D-M test statistic rejects the null hypothesis that the OLS estimator is consistent. With a single instrument, the equation is just identified. ** implies $p < 0.01$.
Sources: see Table 1.

Figure 1: Alternative graduated voting rights regimes

This figure plots the number of shares on the horizontal axis and the corresponding number of votes on the vertical axis. New York's one share-one vote rule establishes the 45-degree line. The other states present cases where shares and votes do not increase 1 for 1. Rhode Island placed a maximum limit of 10 votes; the legal maximum in Kentucky was 50 votes.

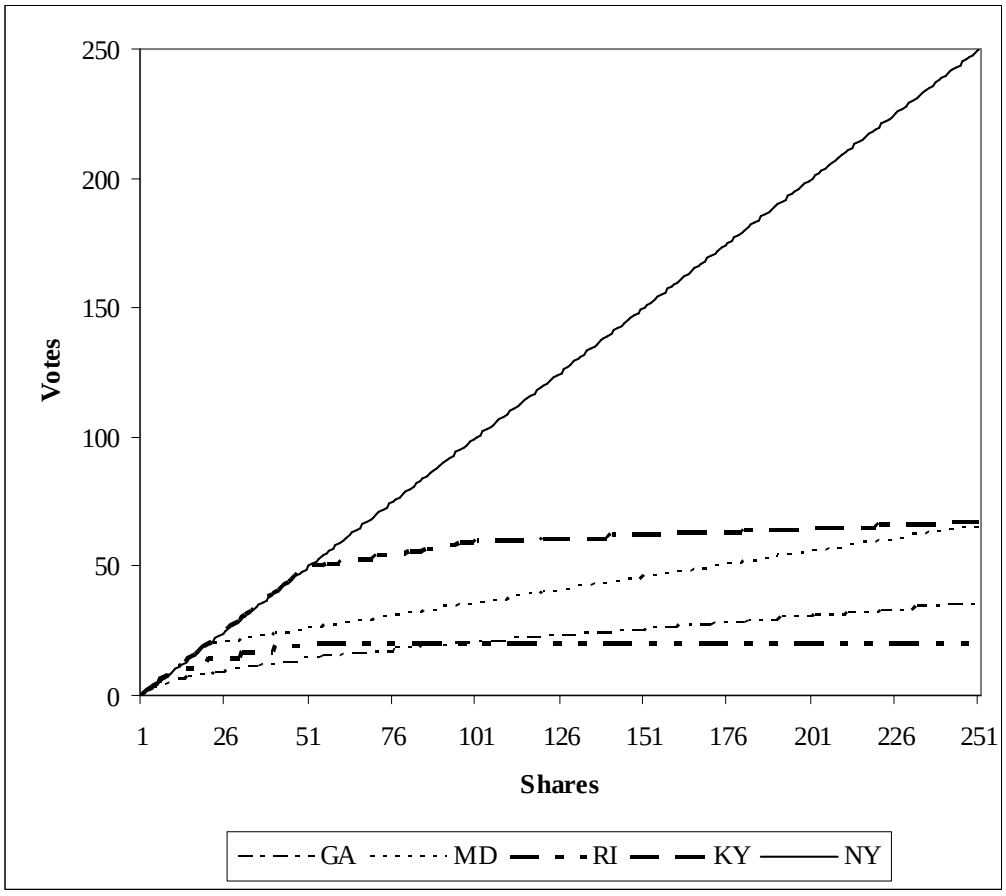

Figure 2: Distribution of share holdings in Maine and New York

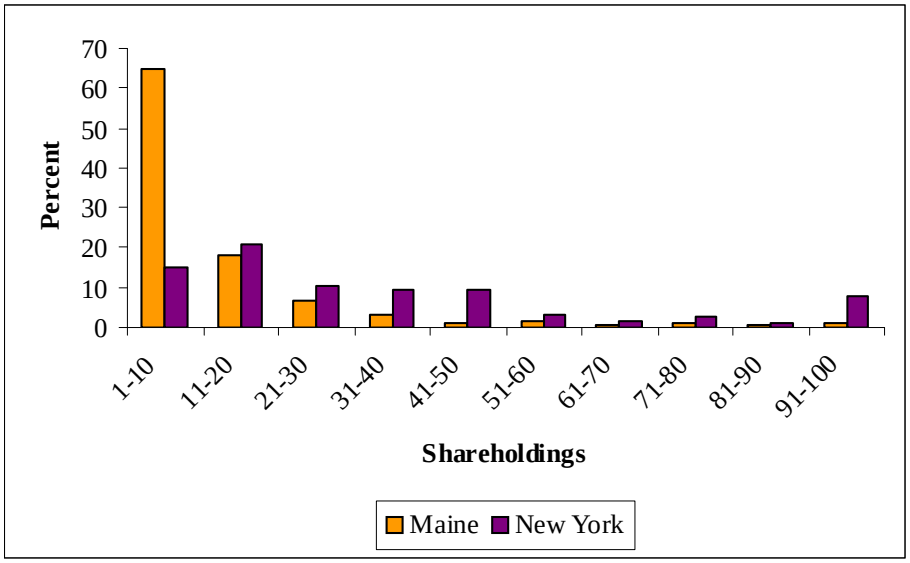

Table A1: Data on bank shareholdings by state and decade, 1810-1865

Shareholding data by state and decade

	1810s	1820s	1830s	1840s	1850s	1860s	Total
CT			1		1		2
IN					18		18
KY			1	1			2
LA			1				1
MA	1		1		83	79	164
ME				145			145
MI			5	1			6
NH				33	22		55
NY		2	56	2	40		100
OH			1	13	24		38
PA	33						33
TN			1				1
VT			1			1	2
WI					125	19	144
Total	33	2	68	195	313	99	711