Abstract: How do political institutions—the rules that govern the functioning of the political system—affect the process of economic growth? This paper explores this question by focusing on how the institutions that structure political competition affect the economic institutions that regulate banking, and how those economic institutions, in turn, affect the size, structure, and efficiency of banking systems. I focus on the cases of Mexico and the United States from their independence to 1932. I argue that the initial conditions of bank chartering in both cases were similar: segmented monopolies were established that shared rents with the government and (at times) with public officials. The initial conditions of the institutions that structured political competition, however, varied dramatically between the two cases. Over time, political competition undermined these monopolies in the United States. In Mexico, on the other hand, the absence of institutionalized political competition meant that government-created banking monopolies were able to persist. The end results could not have been more different: even normalizing for GDP or population, Mexico had a smaller, more concentrated, and more inefficient banking system than did the U.S.

Support for this research was provided by National Science Foundation Grant SBR-9515222, the William and Flora Hewlett Foundation’s Program in U.S.-Latin American Relations, and the Bechel Initiative of the Institute of International Studies at Stanford University. Earlier versions of this paper were presented at the 2002 Meeting of the American Economics Association and at Stanford’s Center for Research on Economic Development and Policy Reform. Jeff Frieden, Ross Levine, Noel Maurer, James Robinson, Gabriel Sod Hoffs, Kenneth Sokoloff, and Barry Weingast made helpful comments on an early draft of this paper.
How do political institutions—the rules that govern the functioning of the political system—affect the process of economic growth? The cross-country growth regression literature has demonstrated that there is a correlation between political institutions that constrain government and levels of economic development. We do not yet, however, fully understand the mechanisms that underlie these statistical relationships. In recent years, this topic has generated considerable scholarly interest, but the literature is still in its early stages and we are far from a consensus view. As a review article by Przeworski and Limongi put it: “...social scientists know surprisingly little [about the connection between regime type and economic development]: our guess is that political institutions do matter for growth, but thinking in terms of regimes does not seem to capture the relevant differences.”

This paper offers a contribution to the growing literature. I focus, in particular, on two inter-related questions. How do political institutions structure the economic institutions that govern banking systems? How do those economic institutions

---

1 Political institutions are the rules that govern the legitimate extent of government authority, that specify the division of labor in decision-making, and that specify the mechanisms by which the government is selected. Political institutions also include the rules that specify how a government may change its own institutions. These are rules about the reform of rules, so to speak, and are typically embodied in a constitution.


3 Acemoglu, Johnson, and Robinson (2002); Acemoglu, Johnson, Robinson and Thaicharoen (2003); Bates (2001); Engerman and Sokoloff (1997); Rajan and Zingales (forthcoming); Beck, Demirgüç-Kunt, and Levine (2002); Levine (1998); Levine (1999); La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998); North and Weingast (1989); North, Summerhill, and Weingast (2002); Weingast (1995, 1997a 1997b).


5 Any law, rule, or regulation that affects property rights is an economic institution. Economic institutions therefore include a wide range of legal arrangements that affect economic activity and the value of property.
institutions, in turn, affect the size, market structure, and efficiency of the banking system? I focus on banking because there is a broad literature and a consensus view that banks are crucial part of the financial system, and that an efficient financial system is a necessary requisite for economic growth. Thus, understanding how political institutions structure the development of banking systems is an important piece of the larger puzzle about politics and economic development.

The theoretical framework of this paper is as follows. Banking systems are highly sensitive to changes in the institutions that govern them. The reason is that banks allow claims on real—and relatively immobile and illiquid—assets to be represented by relatively liquid financial contracts. The government plays a crucial role in the specification and enforcement of these contracts. In fact, the government not only determines the security of financial contracts, it determines who can create them and the circumstances under which they may do so. That is, governments determine who can obtain a bank charter and the types of contracts into which banks may enter. Moreover, in the early stages of economic development, governments often play a direct role in the founding of banking systems—through government ownership of banks, the purchase of bank stock, and the creation of entry regulations that protect young banks from competition.

6 King and Levine (1993a, 1993b); Levine and Zervos (1998); Beck, Levine, and Loayza (2000); Rajan and Zingales (1998); Beck, Demirgüç-Kunt, Levine, and Maksimovic (2001); Levine (1997); Neusser and Kugler (1998); Rousseau and Wachtel (1998); La Porta, Lopez-de-Silanes, Shleifer, and Vishny (2000).
The government, however, is not a disinterested party. At the same time that the government specifies and enforces the rules that govern banking, it also looks to the banking system as a source of finance. These sources include revenues from taxes on bank capital or bank profits, dividend income from the ownership of bank stock, credit lines from banks, or the mandatory purchase of government bonds as a chartering or reserve requirement.

This conflict of interest means that the government has strong incentives to structure the institutions that govern banking in ways that are inconsistent with long-run economic development. It may, for example, create bank monopolies that share rents with the government, thereby maximizing government revenue at the expense of economic growth. The government may also allocate charters only to politically-favored constituents. Alternatively, bankers may bribe public officials to obtain charters. Either way, unless the set of people who have the clout to obtain a charter overlaps with the set of entrepreneurially-capable bankers, there will be a welfare loss to society.

The economic institutions that govern banking are not an endogenous outcome of the process of economic growth. Obviously, there is some endogeneity—banks can only develop if there is demand for their services. Nevertheless, the specific details of chartering and regulation are politically determined. Moreover, the process by which politics influences chartering and regulation is structured by the political institutions that structure decision making in the government.
I argue that the most crucial of these political institutions are those that dictate the degree of competition in the political system. Political competition accomplishes two goals: it creates ex ante vetos on policy making, thereby favoring the creation of policies that enhance social welfare over those that enhance rent seeking; and it provides mechanisms to sanction public officials who do not abide by their promises or who engage in rent seeking. All other things being equal, the greater the extent to which a society’s political institutions encourage political competition, the larger, and the more competitively structured will be the banking system.

The institutions that structure political competition take three broad forms: electoral suffrage; separation of powers; and federalism.

Electoral suffrage is an obvious form of political competition, and it has received considerable attention in the literature on institutions. It allows voters to replace elected officials who choose to provide private goods to small numbers of constituents instead of public goods that will enhance welfare. Suffrage—even if it is universal—is, however, an imperfect mechanism. It provides only for ex post sanctions, not ex ante vetos. Moreover, being voted out of office is a weak sanction that may only be applied at prescribed times. In addition, it requires that voters be sufficiently informed that they vote retrospectively. Thus, suffrage is almost always accompanied by separation of powers or federalism. In fact, electoral suffrage is not a

---

7 See, for example, Mariscal and Sokoloff (2000); Sokoloff (2002).
necessary requirement for these other forms of political competition to function—although they will operate more efficiently if there is electoral suffrage.\textsuperscript{8}

Governments with separation of powers are divided into multiple branches, where each branch plays a role in the process of policy formation. Overlapping authority over policies creates multiple veto points in the decision making process, thereby constraining public officials from choosing policies that encourage rent seeking at the expense of social welfare.\textsuperscript{9} It also provides for ex post sanctions if any branch of government exceeds its authority or does not carry out its legislative mandate. Separation of powers works to constrain the discretion of public officials because different interests among actors in the different branches of government will give those actors the incentives to police the actions of other branches. The more branches there are, the greater the probability that actors in different branches will have different interests. This will limit the number of possible policies that can be pursued.\textsuperscript{10}

Federalism also produces ex ante vetos and ex post sanctions. In federal systems there are actually two types of political competition taking place. One is

\textsuperscript{8} Separation of powers and federalism exist in political systems that have only the most limited and indirect forms of electoral suffrage. One implication of this is that it is possible to constrain electoral officials, and produce growth-enhancing policies, even in the absence of electoral democracy.

\textsuperscript{9} If the separation of powers is absolute, with different branches of government having completely independent policy making authority, then there will not be multiple veto points. To be effective, separation of powers requires that different branches of government have overlapping authority over the same policies.

\textsuperscript{10} The literature on separation of powers is exemplified by McCubbins and Schwartz (1984); McCubbins, Noll, and Weingast (1987); Haggard and McCubbins (2001).
horizontal competition across states or municipalities for population and tax revenues. Precisely because capital and labor are mobile, states or municipalities have incentives to create public goods that enhance growth. States or municipalities that fail to do so will be sanctioned with the loss of population (and hence have a reduced voice in the central government, provided that there is proportional representation) and will see their tax revenues decline as business enterprises relocate elsewhere.

The second form of competition that exists in federal systems is vertical—across different levels of government. In some federal systems, there is overlap in policy authority across state and national governments. When this is the case, similar mechanisms to interstate competition come into play: federal laws must compete with state laws because business enterprises can choose to be chartered and regulated by state authorities. De facto, states obtain ex ante vetos on federal laws.

Sustaining the hypothesis that the structure and performance of banking systems is, in large part, a function of a society’s underlying political institutions will require the analysis of a large number of country case studies—far more than be tackled in any single paper. This paper provides only a first pass, based on two extreme cases—the United States and Mexico during the period 1781-1932. The initial conditions of bank chartering in both cases were similar: monopoly banks were established that shared rents with the government and (at times) with public

11 We break off our analysis in 1932, because the creation of the Federal Deposit Insurance Corporation in the following year gradually weakened the ability of states to charter and regulate banks independently of the federal government.
officials. In exchange, the government regulated entry so as to maintain the value of the monopoly. The initial conditions of the institutions that structured political competition, however, varied dramatically between the two cases. The United States was characterized by all three types of political competition: electoral suffrage, separation of powers, and federalism. Mexico, on the other hand, was characterized by an almost complete absence of institutionalized political competition of any type.\footnote{12}

Differences in political institutions exerted a powerful effect on long-run economic outcomes. In the case of the United States, any equilibrium that involved banking monopolies at the either the federal or state level was unsustainable. Indeed, the nature of U.S. political institutions gave rise to a highly unusual market structure, with tens of thousands of unit (non-branching) banks. In Mexico, on the other hand, the absence of institutionalized political competition meant that government-created banking monopolies were able to persist. The end results could not have been more different: even normalizing for GDP or population, Mexico had a smaller, more concentrated, and more inefficient banking system than did the U.S.

**The United States**

The United States is a strong example of the phenomenon of political competition producing a highly competitive structure of the banking industry. Circa 1932, there

\footnote{12} This is not to say that there was not political competition. It is to say, however, that what
were several striking features of the U.S. banking system: it was made up of tens of thousands of banks; the overwhelming majority of banks were unit banks (they did not branch); and there was no interstate branching. Even more striking, at the time that the U.S. Constitution was put into effect in 1789, U.S. banking looked nothing like this. Instead, it was characterized by segmented monopolies created by regulated entry. In exchange for regulations that protected banks from competition, bankers shared their monopoly rents with state treasuries—and with state legislators as individuals.

During the colonial period of U.S. history, the British government did not allow colonists to charter banks. Financial intermediation was therefore carried out by merchants, who issued and discounted bills of exchange. Paper money was issued by the governments of each colony.

Once independence from Great Britain was achieved in 1781, the new revolutionary government quickly did what almost all new governments that are short of cash do: it founded a commercial bank whose purpose was to help finance the government. In fact, the Bank of North America (BNA) was explicitly modelled
by its architects (Alexander Hamilton and Robert Morris) on the Bank of England, which itself was the creation of a government struggling to finance itself during wartime. In exchange for assisting the government with its embarrassing financial state, the BNA received two valuable concessions: its notes circulated as legal tender, and its shareholders received unlimited liability.15

Hamilton’s plan for a single bank of issue that would be the fiscal agent of the government was quickly undermined by the political institutions of federalism. Colonial America had been composed of 13 colonies that operated with almost complete independence from one another. There was no central political authority — no colonial capital, no viceroy, no judicial and administrative center. There was only a Board of Trade (located in London) whose purpose was to maximize the income of the Crown from the colonies. This decentralized colonial structure carried over after independence: each of the 13 colonies became a state. The central government, charged only with national defense, was so weak as to be virtually non-existent.

It was, in fact, ambiguous as to whether the federal government even had the authority to charter a bank. The BNA was therefore rechartered by the state of Pennsylvania (Philadelphia was the nation’s financial center, and also served as the federal capital). Almost immediately, it came into conflict with the Pennsylvania State Legislature. The bank had been founded with the understanding that it would hold a monopoly on the issue of paper currency. It therefore took a strong position

regarding the fact that the states (Pennsylvania included) were issuing bills of credit, which was paper money by another name. In retaliation, the Pennsylvania state legislature revoked the BNA’s charter in 1785. After a two year battle, the BNA got its charter restored, but only after accepting a series of restrictions: its term was limited to 14 years, its total assets could not exceed $2 million, and it was prohibited from dealing in merchandise other than bullion.\textsuperscript{16}

The extreme federalism of the Articles of Confederation soon proved unworkable, in dimensions beyond the fiasco that had occurred with the BNA. In 1789, the Articles were replaced with the Constitution, which conferred on the central government a great deal more authority—in exchange for which it assumed the (quite considerable) debts that had been racked up by the states. Nevertheless, the American political system was still strongly federal: all policy-making authority not explicitly delegated to the federal government by the Constitution was vested in the states.

The delegation of power to the states meant that they had the right, and the incentive, to charter and regulate banks. Under the Constitution, the states lost both the right to tax imports and exports and the right to issue paper money—both of these powers were vested with the federal government. These constitutional provisions created two problems for state finances: tax revenues were dependent on cumbersome poll and property taxes; and states could no longer finance their

expenditures in excess of taxes by issuing paper money. The response of the states was to sidestep the Constitution: It might have been the case that states could no longer issue paper money, but the Constitution said nothing about states chartering banks of issue, whose banknotes would circulate as currency.  

The ability to charter banks allowed states to find a ready source of finance. A bank charter was not just a license to do business, it conferred two very valuable concessions on its holders—the right to issue banknotes (and thereby profit from seignorage), and the right to limited liability (shareholders were liable only for the bank’s debts up to the face value of their shares). This meant that potential bankers were willing to pay—and pay handsomely—for a charter, especially if they believed that they were receiving the only one. States, for their part, had every incentive to sell charters so that they could fill their empty treasuries. Thus, bankers offered (and states demanded) the payment of charter “bonuses.” These bonuses came in various forms—one-time cash payments, the promise to lend to the state government at preferential rates, or the ceding of blocks of bank shares to the state (which generated a stream of dividend income). They would soon also come to include obligations by banks to fund expensive public works projects.

State governments therefore owned sizable amounts of bank stock. In Virginia, for example, the state owned one-fifth of the stock in the Bank of Virginia (chartered in 1804)—a purchase that it financed by borrowing the funds from that 

very same bank. It then repaid the loan out of the stream of dividends it earned from the bank. It later simplified matters by simply demanding that new banks provide the state with shares gratis. In Massachusetts, the state government was a major investor in the Union Bank (chartered in 1793) and the Bank of Boston (chartered in 1803), giving it control of one-eighth of all banking capital until 1812. In Pennsylvania, the state owned more than $1 million in bank shares, most of it in the Bank of Pennsylvania, whose concession made it the state’s fiscal agent.

New states, as they entered the union, copied the chartering model of the original 13 states: all of them were major owners of bank stock. Kentucky, Tennessee, Illinois, Arkansas, and Alabama went even further: their first banks were 100 percent state-owned. When they later granted charters to competing banks, they typically subscribed to a significant portion of their capital—and also required that those banks finance public works projects as a condition of chartering. Indeed, the basic pattern of state governments being major bank stockholders held just about everywhere—with the exception of New York, where (as we will discuss below) bankers did not share rents with the state treasury, they shared them directly with legislators as individuals.19

The chartering of banks helped solve the problem of state government finance. Sylla, Legler, and Wallis have calculated that circa 1810, bank dividends and bank

---

taxes accounted for six percent of total state revenues in New York, nine percent in Connecticut and South Carolina, 12 percent in Delaware and Virginia, 29 percent in Maryland, and 38 percent in Pennsylvania. These 1810 estimates do not include a number of states that we know (from subsequent observations) relied heavily on bank dividends or taxes. Thus, their first observation for North Carolina is in 1820 (when banks accounted for 31 percent of state revenues), and their first observation for Massachusetts is in 1830 (when banks accounted for an amazing 61 percent of state revenues). Moreover, none of these figures include one-time cash payments by banks to state treasuries, the market value of bank stock distributed gratis (or discounted) to states, nor the transfers created by bank-financing of public works projects or credit lines provided to states at favorable rates.20

The financing of state expenditures via chartering bonuses created a problem of moral hazard: it was not in the interest of state governments to charter large numbers of banks and create a competitive market for banking services. Rather, it was in the interest of state governments to restrict entry into banking in order to maximize the amount of rent earned by banks, rent which would then be shared with the state government. 21 This meant that states had to make sure that there was not a competitive fringe of private banks that operated without charters. They therefore

21 Bodenhorn (2003): 244.
nearly all passed laws that required private banks to obtain a corporate charter from the state government—and then turned down many of those charter applications.22

The history of early American banking is replete with stories of existing banks offering “bonuses” to state legislatures to deny the charter applications of potential competitors. Such bidding wars were settled, ultimately, on the basis of which bank offered the largest payment. The history of the chartering of the Philadelphia Bank in 1803 provides a relevant example of the phenomenon. When its founders petitioned for a charter they had to overcome the fact that the state of Pennsylvania held stock in the Pennsylvania Bank—stock that would be less valuable if the Pennsylvania Bank faced competition. The founders of the Philadelphia Bank therefore offered the state legislature a series of increasingly attractive bonus schemes. The Philadelphia Bank responded with a series of equally generous counter-offers—whose one proviso was that the Philadelphia Bank be denied its petition. In the end, the Philadelphia Bank outbid the Pennsylvania Bank, but did so by sharing much of the rent that the bank would earn with the state treasury. The total capital of the bank was only $1.3 million, yet it provided the state with a $135,000 cash gratuity, obliged itself to lend $100,000 to the state at five percent for ten years, exchanged $300,000 of its stock for a similar amount of depreciated six percent federal bonds held by the state, and gave the state the option to buy $200,000

22 By 1831, there was only one unchartered bank in operation in the entire country. Fenstermaker (1965): 403.
in the bank’s stock at par in four years time and an additional $200,000 in stock at par in eight years time.23

In some states, problems of moral hazard extended beyond the incentives of the state treasury and affected the behavior of legislators as individuals. The most notorious such case was New York. There, Secretary of the Treasury Alexander Hamilton used his considerable clout with the legislature to block the chartering of any bank that would compete with his own creation, the Bank of New York.24 In addition, New York’s 1804 restraining law made it illegal for anyone to engage in banking without a state charter. The death of Hamilton, and the unseating of Federalists in the statehouse, did not de-politicize bank chartering in New York. It only changed the identity of the group that received the rents. From the 1810s to the late 1830s, bank chartering in New York was controlled by the so-called Albany Regency – a political machine controlled by influential members of the Republican Party led by Martin Van Buren. (The name derived from the charge that Van Buren’s principal supporters, residing in Albany, managed the machine for him while he

23 The Philadelphia Bank appers to be an example of the phenomenon modeled by Krueger (1974), in which rent seekers expend rents up the point that they earn the normal rate of return. Most of the rent is captured by the government and by public officials. Details about the Philadelphia Bank chartering process can be found in Bodenhorn (2003): 17.
24 The grip of the Bank of New York was only loosened in 1799, when Hamilton’s nemesis, Aaron Burr, succeeded in chartering a rival bank through a ruse: he obtained a charter for a water company, and had a clause inserted in the charter stating that “any capital not immediately employed in the water project could be employed in any moneymed transaction or operation not inconsistent with the laws and constitution of the State of New York.” Burr’s Manhattan Company then devoted much of its capital to banking, rather than water delivery. Other banks were chartered through similar mechanisms, including Chemical Bank (which obtained a charter to operate a chemical manufacturing company in 1824) and the Dry Dock Bank (which obtained a charter to operate a dry
served in the U.S. Senate, as Secretary of State, as Vice President, and as President).

Under the Regency, New York’s restraining laws were actually made more restrictive. The Regency also amended the New York State Constitution (in 1821) so that new bank charters required a two-thirds vote of the legislature, instead of the simple majority that had been required up to that time. 25 Not surprisingly, bank charters were only granted to friends of the Regency. The incentives of other legislators were aligned with the bankers by allowing the former to subscribe to initial public offerings of bank stock at par, even though the stock traded for a substantial premium because the banks earned monopoly rents.26

Banking in the Early Republican United States therefore tended to be characterized by segmented monopolies. In Massachusetts, for example, there was only one chartered bank in any town— with the notable exception of Boston, which had two. Precisely because it wanted to maintain a stream of dividend earnings from the existing banks, the state government blocked most new bank charters. Private banks (those without charters) were restrained by law from operation.27 In Pennsylvania the story was much the same: the state restricted the number of banks that could do business within its borders, and held stock in those banks. In fact, as of

dock in 1825). In the case of Chemical Bank, the chartering process also involved the payment of bribes to state legislators. Bodenhorn (2003): 134, 188.
1803, the state had granted only four charters, all to banks located in Philadelphia. The basic pattern in Virginia was much like Pennsylvania. The state government favored the Bank of Virginia, in which it owned 20 percent of the stock. It occasionally granted charters to other large banks, provided that they pay a sizable franchise tax, which included blocks of bank shares, to the state.

The federal government pursued a similar strategy to that of the states, and chartered its own bank, the Bank of the United States (BUS), in 1791. Unlike the states, the incentive of the federal government was not to produce a source of income (dividends from the BUS were on the order of one percent of total federal revenues). Rather, it was to provide the federal government with a financial agent that could issue banknotes against customs’ duties and that could hold federal balances. Nonetheless, the BUS was founded and operated much the same as the segmented monopolies created by the states: it was a commercial bank fully capable of making loans to private individuals, and 20 percent of its stock was owned by the federal government. The federal government did not actually pay for its $2 million stake in the bank: rather, the bank lent the government the money for the shares, which the government then “paid for” out of the flow of dividends. In other words, the BUS allocated a 20 percent ownership stake in the bank to the federal government in exchange for a series of valuable concessions: the right to hold federal government

30 Lane (1997): 601-12; Wettereau (1942).
specie balances; the right to charge the federal government interest on loans from the bank (notes issued by the bank to cover federal expenses); and the sole right to open branches throughout the country. This gave it a tremendous competitive advantage over state chartered banks, which were not allowed to branch across state lines, and which did not have the advantage of having the federal government as their biggest depositor.\textsuperscript{31} Needless to say, the existence of the BUS generated considerable resentment from bankers who held state charters, and therefore from state legislatures. Some states even tried (unsuccessfully) to tax the bank notes of the BUS in order to constrain it from competing against their own banks.\textsuperscript{32}

Not surprisingly, there were very few banks in the early United States. In 1789, when the Constitution went into effect, there were only two banks in operation, with a total capital of just $2.8 million. By 1800 there were still only 28 banks, with $17.4 million in capital. As late as 1810, there were still only 102, with a total capital of $56.2 million.

The strategies of the state and federal governments made sense from their individual points of view, but it was not a sustainable equilibrium. There were competitive pressures that were undermining it, almost right from the beginning.

The first source of competition, and the one that has received the most attention from historians, was that between states and the federal government. Bankers with state charters, and hence state legislatures, had opposed the Bank of the

\textsuperscript{31} Atack and Passell (1994): 92; Wettereau (1942).
United States from the time of its initial chartering in 1791. The reason for their opposition was straightforward: branches of the BUS undermined local banking monopolies. Thus, when the BUS’ charter expired in 1811, it was not renewed by Congress. The War of 1812 demonstrated, however, the importance of a bank that could serve as the financial agent of the federal government, and thus a new charter (for a Second Bank of the United States) was granted in 1816. The Second Bank, like its predecessor, was a private enterprise, but 20 percent of the bank’s stock was owned by the federal government, which it paid for with government bonds. Much as happened with its predecessor, the holders of state banking charters, as well as state governments, resented the fact that the Second Bank held tremendous government balances—balances which state bankers believed should be part of their reserve base. They also resented the fact that the Second Bank could compete in their markets by opening branches at will. The history of the closure of the Second Bank would take us beyond the space limitations of this paper. Suffice to say, however, that in the end the state bankers prevailed by forming an alliance with Jacksonian populists. The Second Bank was closed in 1836 when its charter expired.

A second, and less obvious, source of competition was that between states for business enterprise and population. The fact that the United States had a federal system and a rapidly expanding frontier meant that population and business

---

32 Wettereau (1942): 84.
enterprises could easily relocate to other states. This meant that state governments were under pressure to grant increased numbers of bank charters—lest their populations move to states in which it was easier to obtain a bank loan and their entrepreneurs move to a state in which it was easier to obtain a bank charter.

Following a similar political logic, state legislators were under considerable pressure to provide public works projects, particularly canals. Powerful constituents, who included urban merchants as well as large farmers, stood to gain from the increase in commerce created by canals. The pressure to carry out these projects was made particularly intense by the fact that the failure to do so would result in commerce (and hence labor and capital) moving to those states that had made these improvements. Indeed, state legislatures tended to be highly aware of canal and port improvement projects in neighboring states, and of the consequences of those projects for the flow of commercial traffic within their own borders.35

State legislatures tended not, however, to have the ability to fund public works projects out of their meager tax revenues. They therefore sought to fund them from “bonuses” levied on new bank charters. This created an incentive, however, for state legislatures to abandon their implicit contract with existing banks. New charters would reduce the flow of dividends to the state treasury from already existing banks in which the state held stock, but it would fund a project that would keep capital and labor in the state. As a consequence, quite a few banks were

granted charters that undermined the monopolies of pre-existing banks, in exchange for which they provided financing for canals, ports, and (somewhat later) street-lights and railroads. These schemes were employed across the country, even including Southern states that tended to be highly resistant to undermining their initial monopoly banks. 36

Competition over capital and labor was reinforced by a related factor: the broadening of the suffrage. All of the original 13 states restricted the right to vote based on a person’s economic standing: some had minimum property qualifications; others had a qualification based on a minimum tax payment. With the exception of Louisiana, all of the states that subsequently joined the union, however, either eliminated these qualifications entirely or reduced them to the point that they were not binding. The original 13 states were therefore forced to ratchet their voting restrictions downwards, or risk losing their populations to those states that did not restrict the right to vote. By the first decade of the nineteenth century, some of the original 13 states had effectively done away with economic based qualifications. By the mid-1820s, property qualifications had been dropped or dramatically reduced even in such holdouts as New York and Massachusetts. By the 1840s, the vast majority of states had dropped all property requirements, and by 1850 virtually all states (with some minor exceptions) had done so. 37

The broadening of the suffrage, however, served to undermine the political coalitions that supported restrictions on the number of bank charters. That is, it created a second source of political competition—competition within states over who would hold office and the policies they would enact.

Political competition within and among states gradually undermined most state banking monopolies. Following the expiration of the charter of the First Bank of the United States in 1811, many states in New England and the Middle Atlantic began to charter progressively larger number of banks. The first state to shift was Massachusetts, which began to increase the number of charters it granted as early as 1812. Pennsylvania soon followed with the Omnibus Banking Act of 1814, which divided the state into 27 banking districts, and allocated at least one bank to each district. In all, it chartered 41 new banks. The constituencies demanding this dramatic change in economic institutions is made clear by a peculiar requirement of the law: banks had to lend at least 20 percent of their capital to farmers, mechanics, and manufacturers. 38

By the 1820s many states—particularly in New England—increasingly granted charters almost as a matter of course. This meant that the value of the stock they held in the state’s oldest banks decreased. Consequently, during the period from the 1810s to the late 1830s, many states liquidated their banking investments and began to tax bank capital or dividends as a replacement for the dividend income

that they had previously earned. Interestingly, Southern states were quite slow to make this shift, and tended to be underbanked compared to their northern and midwestern counterparts.39

The result was the rapid expansion of the state-chartered banking system, particularly in New England. In 1800, New England had 17 banks, whose combined capital totaled only $5.5 million. By 1819 it had 84 banks with a capital of $16.5 million. This swelled to 172 banks with $34.7 million in capital in 1830.40 Data on the size of the banking system as a whole in Table One indicates a similar growth on a national level. In 1818 there were 338 banks in operation, with a total capital of $160 million—roughly three times as many banks and bank capital as in 1810. By 1835, there were 584 banks. Larger cities may have had a dozen or more banks, while small towns may have had two or three. 41

By the late 1830s the de facto policies of many states to grant virtually all requests for bank charters became institutionalized as a series of laws known as free banking. Under free banking, bank charters no longer had to be approved by state legislatures. Rather, individuals could open banks provided that they registered with the state comptroller and deposited state or federal bonds with the comptroller as a guarantee of their note issues. Some states also had minimum capital

requirements and specified a minimum number of directors. Many required that bank stockholders be doubly liable.\textsuperscript{42}

The first state to make the switch (New York in 1838) to free banking was not one that had previously carried out a de facto reform. Indeed, free banking in New York was unambiguously a consequence of political competition within the state.\textsuperscript{43} New York did not allow for universal manhood suffrage until 1826. Once voting rights were broadened, however the political coalitions that kept the Albany Regency in power were gradually undermined. In 1837, the electorate voted the Republicans (and the Albany Regency) out of control of the legislature. The following year, the Whig-dominated legislature drafted a complete reform of the state’s banking laws. By 1841, 43 free banks had been founded, with a total capital of $10.7 million. By 1849, there were 111 operating free banks (with $16.8 million in paid capital), and by 1859 there were 274 free banks with paid in capital of $100.6 million.\textsuperscript{44}

Other states soon followed New York’s lead: Georgia passed a free banking law in 1839; Alabama passed one in 1849, and then New Jersey, Illinois, Massachusetts, Ohio, Vermont, Connecticut, Indiana, Tennessee, Wisconsin, Florida,

\begin{flushright}
\textsuperscript{42} If a bank breached the requirement that its notes be redeemable on demand for specie, the comptroller closed the bank, sold the bonds held as collateral, and redeemed the bank’s circulating notes from the proceeds. Some states also allowed banks to also use mortgages on unencumbered property to back their note issues. Many states, for obvious fiscal reasons, later amended their laws, requiring that all reserves be held in bonds issued by that state. Bodenhorn (2003): chap. 8.
\textsuperscript{43} Michigan was actually the first state to pass a free banking law, in 1837, but revoked the law in 1839. It reinstituted free banking in 1857.
\end{flushright}
Louisiana, Iowa, and Minnesota all followed during the 1850s. Some variant of the New York law was ultimately adopted in 21 states.45

There has been considerable debate in the literature regarding the impact of free banking laws. The traditional view, associated with Rockoff, was that free banking reduced barriers to entry, increased competitiveness, and reduced profits.46 This view was challenged by Ng, who argued that free banking acts, with the exception of that of New York State, did not reduce barriers to entry because the competitive pressures that existed among states prior to the free banking acts had already eroded barriers to entry.47 Ng’s argument was subsequently challenged by Economopoulos and O’Neill, who demonstrated that free banking states were able to respond more elastically to changes in demand for banking services than chartering (non-free banking) states.48 A series of articles by Bodenhorn has also cast considerable doubt on Ng’s view. Bodenhorn has demonstrated that one of the effects of free banking was to put competitive pressure on non-free banking states to grant more charters than they would have otherwise. That is, many (though not all) traditional chartering states mimicked free banking by granting most charter

47 Free banking laws contained a bond security provision that provided for approved bonds to be deposited with the state on a dollar for dollar basis as a condition of issuing banknotes. If a bank failed, the state could sell the bonds and use the proceeds to compensate note holders. Ng (1985) argues that the bond security provisions created a barrier to entry no higher than that created by the need to negotiate an individual charter with a state legislature.
In short, the weight of the evidence supports Rockoff’s original interpretation: free banking increased entry and contributed to the rapid growth of the number of banks operating in most markets.

The lack of barriers to entry in American banking, and its attendant system of unit banks, had its advantages and its disadvantages. The obvious advantage was that the number of banks and bank capital mushroomed. Circa 1860, the United States had 1,579 banks, with a total capital of $422.5 million. Roughly 30 percent of all banks and all bank capital clustered in the states of New England, which had led the way in moving away from the original system of state-owned monopolies. The New England States had an amazingly high density of banks: one for every 6,600 people, which was roughly three times the national average of one bank for every 19,900 people (See Table 2).

Large numbers of fairly small banks (the average capitalization was only $268,000) spread around the country conferred an advantage on the U.S. at this stage of its economic and institutional development. Bankers always face a problem of information assymetries: borrowers know more about their creditworthiness than do bankers. Prior to the existence of modern credit reporting, standard accounting procedures, and independent auditing, problems of information assymetries were even more severe. The only reliable information that bankers had about borrowers was what they could obtain via repeated business dealings with them, via

---

49 Bodenhorn (1990); Bodenhorn (1993).
information obtained from local (and informal) networks of businessmen and farmers, or via their kinship ties. This meant that bankers tended to lend primarily to people that they knew personally. Under these circumstances, a system made up of large numbers of small banks embedded in even small communities was a rational way to organize the banking industry.

As Naomi Lamoreaux has shown, this fairly unusual organization of the banking industry allowed New England banks in particular to operate as investment pools—the nineteenth century equivalent of modern mutual funds. New England’s banks were not the independent credit intermediaries of economic theory. Rather, they were the financial arms of kinship groups whose investments spread across a wide number of economic sectors and a wide number of enterprises. Basically, kinship groups tapped the local supply of investable funds by founding a bank and selling its equity to both individual and institutional investors. The founding groups then lent those funds to the various enterprises under their own control. They lent very little money to anyone outside of their immediate network. Investors in the banks knew full well that the banks only lent to insiders. They bought bank stock precisely in order to invest in the broad range of business enterprises controlled by the founding group of entrepreneurs. 50

Had legal restrictions been placed on the founding of banks, these insider arrangements would have concentrated capital in the hands of a small number of

50 Lamoreaux (1994).
kinship/business groups. The fact that entry into banking was essentially free, however, meant that large numbers of entrepreneurs could tap the capital of non-group investors by using banks as investment pools. The crucial point is that the rules of the game were not constructed so as to allow some entrepreneurs to play while excluding others. Free banking did not provide for a completely equal distribution of investable funds, but it did allow a large number of players to enter the game.

The United States’ unusual system of bank chartering had disadvantages as well. One peculiar feature of most state banking laws was that they almost uniformly precluded the chartering of branch banks. Virtually all banks in the nineteenth century United States, except those in some southern states—which tended to hold on to older forms of state-administered monopolies—were unit (single branch) banks. Unit banking was often defended on ideological grounds: it prevented the formation of monopolies. It was also the case, however, that unit banking protected local bankers in distant rural communities from competition. Regardless of the motivation for unit banking, it presented two potential problems, one of which was solved by the market, and the one of which was only solved by federal deposit insurance in 1933.

The first problem with unit banking was that there were literally of thousands of different bank notes in circulation, which potentially meant that few people would have actually accepted paper money at all. Given the difficulty that regulators faced in policing hundreds of far-flung small banks, there were inevitably going to be
banks that issued far more banknotes than they could redeem for specie. Given the possibility (and the actual occurrence) of swindles involving unscrupulous bankers in remote locales, why would anyone, including other banks, been willing to accept bank notes as money?

Two factors mitigated this problem. The first was the existence of a specie standard, against which all banknotes could be discounted. The second was the Suffolk System (named after the Suffolk Bank), which was a network of large New England banks that agreed to purchase the bank notes of all other New England banks at a discount, thereby acting as a clearinghouse for the notes of even the smallest and most distant of banks. The Suffolk Bank published the discount rate it applied to the notes of other banks, allowing individuals and institutions to assess the quality of bank notes before they accepted them.\textsuperscript{51}

The second problem potentially posed by unit banking was that individual small banks were susceptible to failure because of changes in local business conditions. This problem would have been mitigated had there been branch banking, which would have allowed banks to transfer funds from one branch to another in the event of a run on any single branch. It also would have been mitigated had there been a central bank, which could have acted as a lender of last resort, by buying and holding the notes of banks that were in trouble. Unfortunately, the U.S. banking system after the closure of the Second Bank of the United States had neither.

\textsuperscript{51} Calomiris and Kahn (1996).
To a remarkable degree, this problem was largely mitigated by the specie standard and the Suffolk System during the antebellum period. As research by Rockoff has shown, bank failure rates of were surprisingly low.52

Unit banking had another major drawback: it did not provide the federal government with a source of finance. This had not been a major problem during the 1840s and 1850s (after the closure of the Second Bank of the United States in 1836), because the federal government was able to sell treasury bonds to the public and to European investors. The Civil War, however, dramatically increased the financial needs of the federal government. The response of the federal government was to do what most governments do when they need to finance a war: they turn to the banking system. It therefore passed the National Banking Act in 1863.

The National Banking Act was designed so as to centralize bank chartering in the hands of the federal government. It did not abrogate the rights of states to charter banks—that would have violated the Constitution. It also did not abrogate the right of state-chartered banks to issue bank notes, as that too would have been unconstitutional. The National Banking Act did, however, impose a tax on bank notes, and then exempted federally-chartered banks from the tax. This created a strong incentive for state banks to obtain new, federal charters. In fact, the expectation of the federal government was that state banks would disappear. The

52 Rockoff (1974); Rockoff (1985). The problem of bank failures became more widespread in the 1920s, however, and was finally solved with the creation of the FDIC in 1933. Calomiris and White (1994).
incentive of the federal government for doing this is not obvious until you consider a principal feature of the new law: federally-chartered banks had to hold their reserves either in specie or in federal government bonds. Essentially, banks had been told that if they wanted to issue bank notes, they were going to have to hold some of their reserves in the form of a loan to the federal government. Consistent with the goal of maximizing credit to the federal government, the National Banking Act made the granting of a charter an administrative procedure: as long as minimum capital and reserve requirements were met, the charter was granted. It was, as Bodenhorn has pointed out, free banking on a national scale.\(^53\)

In the short run, the response of private banks was as the federal government expected: the number of state chartered banks declined from 1,579 in 1860 to 349 by 1865. (See Table 3). Federal banks grew dramatically: from zero in 1860 to 1,294 in 1865. They then continued growing, reaching 7,518 by 1914, controlling $11.5 billion in assets in that year.\(^54\)

In the long run, however, the existence of political competition undermined the federal government’s goal of a single, federally-chartered banking system. The National Banking Act effectively nationalized the right to issue bank notes. It did not, however, say anything about checks drawn on accounts in state-chartered banks. Checks therefore became a common means of exchange in business transactions.

\(^{54}\) For a discussion of the growth of the banking system under the National Banking Act see: Sylla (1975).
Moreover, the states rewrote their banking laws, reducing even further the requirements to obtain a charter. Most states did away with the requirement of “double liability” for bank stockholders. This gave a state charter a tremendous advantage over federal charter: the National Banking Act stated that in the event of a bank failure “stockholders, in addition to losing their investment, could be assessed an amount equal to the initial par value of their stock.” State banking laws carried no such provisions: stockholders in state banks were liable only for the face value of their shares.

The result was that state chartered banks actually outgrew federally chartered banks during the period 1865-1914. In 1865, state banks accounted for only 21 percent of all banks and 13 percent of total bank assets. By 1890 there were more state banks than national banks, and state banks controlled the majority of assets. Circa 1914, 73 percent of all banks were state banks, and state banks controlled 58 percent of assets. (See tables 3).

The end result of this competition between states and the federal government was a banking system that had a structure unlike that of any other country. In the first place, circa 1930 there were 21,309 banks in the United States. Total bank assets totaled $27.6 billion. In the second place, virtually all of these banks were unit banks: many states had laws that prevented branch banking, even by nationally chartered banks; most other states did not explicitly forbid branching, but their laws provided

no provision for branch banking. Thus, in 1900, there were only 119 branches operating anywhere in the United States, only five of which were branches of National Banks. Even as late as 1931, as Calomiris and White have shown, of the 21,309 banks in operation, only 723 had branches. The average number of branches operated by these banks was less than five. Large numbers of small unit banks created problems of volatility, which were only partially compensated by the fact that the national banks had correspondent relationships. It also made it difficult for banks to capture scale economies.

Unit banking did, however, confer two advantages. First, unit banking meant that all markets were contestable. Second, embedding banks into communities meant that bankers could overcome information asymmetries by tapping into local (and informal) networks for information about potential borrowers. Indeed, one feature that is particularly striking about this system was how many banks there were per person in the United States, and how geographically dispersed banks were. (See Table 4).

**Mexico**

Mexico’s experience stands in stark contrast to that of the United States. From independence in 1821 until the 1880s, Mexico had neither effective suffrage,

57 Calomiris and White (1994).
separation of powers, nor a strong federal system. Instead, interests and ideologies were promoted through the use of military force or the threat of military force. The result was that Mexico fragmented into a number of de facto sub-national polities ruled by local political and military bosses. These political and military bosses, in turn, battled over control of the central government. Thus, in the 55 years from independence until the beginning of the Porfirio Díaz dictatorship in 1876, Mexico had 75 presidents. For every constitutional president there were four interim, provisional, or irregular presidents. One military figure, Antonio López de Santa Ana, occupied the presidential chair on 11 different occasions.

Once Mexico finally established a viable set of political institutions during the last two decades of the nineteenth century, the central government moved to concentrate all power in its hands. Rights that had formerly been conferred on the states, including the regulation and taxation of mining, the regulation and taxation of ground water and petroleum, the taxation of interstate commerce, and the chartering of banks, were all centralized in the federal government. Moreover, they were centralized in the hands of a single federal executive, Porfirio Díaz, who ruled from 1876 to 1911.

Thus, Mexico had no institutions that could promote effective political competition. Mexico was nominally democratic, but the outcomes of elections were decided beforehand. Mexico nominally had a bicameral legislature that was supposed to represent the interests of the states, and which was supposed to check presidential power, but it did not do so. Indeed, as recent work by Armando Razo
has shown, after the mid-1880s virtually all roll call votes in the Mexican Senate were unanimous. 59 Mexico was nominally federal, but state governors gradually lost power to the federal executive. In fact, by 1910, 70 percent of Mexico’s governors were cronies appointed by the federal executive. Many of them had no ties at all to their local constituencies. 60

The lack of stable institutions of any type during most of the nineteenth century prevented the founding of any banking system at all. The first chartered bank was not founded until 1863, when the government of Archduke Maximillian granted a charter to a branch of the British Bank of London, Mexico, and South America. Prior to that, all banking services in Mexico were provided by merchants. 61

One might be tempted to argue that Mexico had no formal banks prior to 1863 because there was insufficient demand. Such an argument would not, however, square with two pieces of evidence. The first is that Mexico’s fledgling industrialists were clamoring for more credit than could be provided by the private bankers. For that reason, they convinced the government to create a national industrial development bank, the Banco de Avío, in 1830. That bank was scuttled in 1842, when

60 Haber, Razo, and Maurer (2003): Chap. 3.
61 Merchants had provided private banking services well back into the colonial period, and had played an important role in providing working capital for Mexico’s silver mines. After independence, many of these private bankers made (and lost) considerable money speculating on the public debt. They also financed domestic commerce. Like merchants in colonial America, however, Mexico’s merchant houses were vastly different from modern banks: they did not sell equity to outside
the central government, desperate for revenue, ransacked its vaults. The second is that the Mexican government was itself clamoring for more credit at lower interest rates than could be provided by the private bankers. Clearly, it was in the government’s interest to create a semi-official commercial bank (such as the Bank of England or the Bank of North America) that would provide it with credit in exchange for a set of special privileges. Such a bank also would have been in the interest of the largest private bankers, as they almost certainly would have comprised the stockholders of the bank. Moreover, a bank of this type would have held a monopoly on providing the government with credit, and would therefore have allowed the country’s banks to solve the coordination problem that allowed the government to selectively reneg on its debts. The fact that the government so often reneged on its debts was, in fact, the reason why the private bankers charged extremely high interest rates (sometimes as much as 300 percent) in the first place.

From 1863 until the early 1880s, Mexico remained locked in endless coups and civil wars. Not surprisingly, few banks were chartered during this period. In fact, as of 1883, there were only eight chartered banks operating in the entire country. About investors, they did not have limited liability, they did not take deposits, and their bills of exchange had to be 100 percent backed by specie reserves. Brading (1971); Tennenbaum (1986); Walker (1986).

62 The Banco de Avío was financed out of a share of the tariff revenues collected on cotton textile imports, and its portfolio of loans included the country’s largest cotton textile manufacturers. Potash (1983).

63 The government would have had to either reneg on all loans, or reneg on none of them. This would have raised the cost of opportunism, because the government would have been unable to contract additional loans once it behaved opportunistically.
half of these were located in the mining state of Chihuahua, and operated under concession from the state government.

The fact that the Mexican federal government was continually broke, however, created a strong incentive for the federal government to monopolize bank chartering as a means to provide itself with a ready source of credit. The government of dictator Porfirio Díaz (who ruled from 1876 to 1911) therefore made two moves. First, in 1884, the Díaz government engineered the merger of Mexico City’s two largest banks creating the Banco Nacional de México (Banamex). The intention of the government was to model Banamex on the early Bank of England, granting it a monopoly over the issuance of paper money in return for providing a credit line to the federal government and acting as the treasury’s financial agent. In addition, the federal government granted Banamex the rights to tax farm customs receipts and the right to run the mint. Second, the government simultaneously federalized the chartering of banks. As of 1884, states could no longer grant charters. The fact that few states had, as yet, granted any bank charters, meant that there was little political opposition to this move from the state governors. Opposition by the small number of

---

64 Díaz had an advantage that was not available to any previous Mexican president: the ability to integrate with the U.S. economy. In the early nineteenth century, the U.S. economy, from Mexico’s perspective, was a distant theoretical abstraction. By the time Díaz seized power, however, the U.S. economy, and its railroad system, had moved westward. The fall in transportation costs and the westward shift in the U.S. economy meant that it was now possible for Mexico to trade with the United States in ways that were previously unimaginable. The possibility of trade, in turn, meant that it was now profitable for foreigners to invest in those sectors where tradable goods were produced—particularly mining, ranching, and export agriculture.

65 Maurer and Gomberg (2003).
existing banks operating under state concessions was overcome by grandfathering them into the new arrangement.

What was crucial, from the point of view of Banamex, was that the commercial code of 1884 erected high barriers to entry. Not only had the federal government monopolized the granting of charters, it also required that new banks obtain the permission of Congress and the Secretary of the Treasury in order to obtain a charter. They also had to pay a five percent tax on the issuance of bank notes. Banamex was exempted from the tax. Finally, Banamex was permitted to issue banknotes up to three times the amount of its reserves. Other banks were not afforded this privilege. In short, the federal government was attempting to exchange a set of special privileges for access to credit.

Mexico’s already extant banks, particularly the Banco de Londres y México, realized that the commercial code and Banamex’ special privileges put them at a serious disadvantage. They therefore sued in federal court, and managed to obtain an injunction against the 1884 Commercial Code. The ensuing legal and political battle ground on for 13 years, until a compromise was finally hammered out by Secretary of Finance Limantour in 1897.66

There were four groups that pressured the federal government in the crafting of the 1897 General Credit Institutions and Banking Act: the stockholders of Banamex; the stockholders in the Banco de Londres y México; the stockholders in
other, smaller, state-level banks; and the state governors (who wished to award cronies with bank charters). The resulting law could easily be predicted from knowledge of the players in the negotiations: Banamex shared many (although not all) of its special privileges with the Banco de Londres y México; the state banks were given local monopolies; and the state governors were able to award concessions to their cronies. Holding the arrangement together was the fact that the federal government monopolized bank chartering. Legal barriers to entry into banking could not be eroded by competition among states for bank business, because states did not have the right to charter banks.67

The resulting competitive structure had the following features. Banamex and the Banco de Londres y México were granted a duopoly in the Mexico City market. In addition, only Banamex and the Banco de Londres y México had the right to branch across state lines. Banamex was also granted an exclusive privilege of providing financial services to the government: collecting tax receipts, making payments, holding federal deposits, and underwriting all foreign and domestic federal debt issues. In short, the compromise was that Banamex would retain the

66 For a detailed discussion of the Banamex charter, the Commercial Code of 1884, and the ensuing legal battle, see: Maurer (2002), chap. 2.
67 Had states had the right to charter banks, they would have been tempted to ratchet downwards the minimum requirements for a bank charter as they competed against one another for bank business. For discussions of the 1897 law see: Haber (1991); Maurer (2002): chap. 3; Haber, Razo, and Maurer (2003): chap. 4.
special privileges granted to it in 1884, and some of these privileges would also be extended to the Banco de Londres y México.68

State level banks, and their patrons—the state governors—were also protected from competition. The law was written in such a way that, as a practical matter, only one bank could be established in each state, although existing banks were grandfathered in. The law specified that bank charters (and additions to capital) had to be approved by the Secretary of the Treasury and the Federal Congress. In order to make this commitment credible beyond the tenure of José Limantour as Treasury Secretary, the law also created three other barriers to entry. First, the law created very high minimum capital requirements, U.S. $125,000 (later raised to U.S. $250,000). Even the initial figure of $125,000 was more than twice the minimum capital required for a national bank charter in the United States. Second, the law established a two percent annual tax on paid-in capital. The first bank granted a charter in each state, however, was granted an exemption from the tax. Third, state banks were not allowed to branch outside of their concession territories. This prevented banks chartered in one state from challenging the monopoly of a bank in an adjoining state. In short, the only threat to the monopoly of a state bank could come from a branch of Banamex or the Banco de Londres y México.69

69 The law also allowed for the establishment of mortgage banks and “bancos refaccionarios,” which were allowed to make long-term loans. These banks were not granted, however, the right to issue bank notes and were subject to a variety of restrictions on the types of investments they could make. Without the right to issue notes, and with few ways to actually foreclose on a mortgage, these banks could not compete. Few charters for mortgage banks were ever taken out. See: Riguzzi (2002).
The existence of these segmented monopolies was made incentive compatible with the interests of Mexico’s most important public officials, who received seats on the boards of the major banks (and thus were entitled to director’s fees and stock distributions). Indeed, the Díaz government did not choose the groups that received a bank charter based on their entrepreneurial talents: it chose them based on their political connections. The board of directors of Banamex, for example, was populated by members of Díaz’ coterie, including the President of Congress, the Under-Secretary of the Treasury, the Senator for the Federal District, the President’s Chief of Staff, and the brother of the Secretary of the Treasury. The Chairman of the board of the Banco de Londres y México, was none other than the Secretary of War. Joining him on the board was a federal senator from the State of Sonora. The Banco Internacional e Hipotecario (a mortgage bank) was similarly populated with political notables, including the President’s son, the ambassador to Belgium and the Netherlands (who was also a federal senator), and the brother of the Secretary of the Treasury. The Banco Mexicano de Comercio e Industria was also a who’s who of insiders. Its board chairman was the President of Congress. Joining him on the board was the Governor of the Federal District. Banks with limited territorial concessions were also chosen based on their political connections. The only difference was that state governors, rather than cabinet ministers, sat on their boards and received directors’ fees, stock distributions, dividends, and in some cases loans made with no expectation of repayment. In some cases, the governor himself received the bank concession. In fact, the system was deliberately conceived to
distribute benefits to the state governors, and give them a stake in the maintenance of Porfirio Díaz’s rule.\textsuperscript{70}

The result was that Mexico had a very small and concentrated banking sector. In 1911, there were only 42 formally incorporated banks in the entire country. The United States, for comparison purposes, had more than 25,000 banks and trust companies in that year.\textsuperscript{71} The capital available to the Mexican banking system was also small: total assets in 1911 totalled approximately U.S. $385 million.\textsuperscript{72} (See Table 5). For comparison purposes, total assets of the U.S. banking system were $22.9 billion.\textsuperscript{73} Finally, not only were Mexico’s banks few in number and of small size, but the level of concentration was extremely high: Banamex and Banco de Londres y México accounted for more than 60 percent of all assets.\textsuperscript{74} The vast majority of markets had, at most, three banks: a branch of Banamex, a branch of the BLM, and a branch of the bank that held that state’s territorial concession. It was not uncommon for there to be only one or two banks in some states.

One might argue that differences in population or GDP would explain the differences in the U.S. and Mexican banking systems. In this view, Mexico had fewer banks and less bank capital because Mexico had a small and poor population. This argument does not, however, stand up to the evidence. In table 6, I normalize bank

\textsuperscript{70} Haber, Razo, and Maurer (2003): 88-90; Razo (2003): chaps. 8, 9.
\textsuperscript{71} United States, Department of Commerce (1975): Series X 580-587.
\textsuperscript{72} Mexico, Secretaria de Hacienda (1912): 255.
\textsuperscript{73} United States, Department of Commerce (1975): Series X 580-587.
assets by GDP and population. The results are unambiguous: compared to the United States, Mexico had less bank assets per capita by an order of magnitude. Comparing bank assets to GDP, Mexico was underbanked by a factor of three (bank assets as a percentage of GDP were .20 in Mexico, compared to .65 in the United States).

A skeptical reader might argue that a small, concentrated banking system with branch networks might have been an efficient solution in a country with a low GDP. This hypothesis can be subjected to two kinds of tests against evidence, neither of which supports it.

The first test is an analysis of excess liquidity in the leading banks. Noel Maurer has demonstrated that the two largest banks in the system (Banamex and the Banco de Londres y México, which jointly controlled 60 percent of assets) acted like inefficient monopolists: they held excess liquidity in order to ration credit and drive up their rates of return. As a result, their stockholders earned substantial rents (measures of Tobin’s $q$ for both of these banks were substantially higher than one) while they incurred very little risk (their yields were about equal to that on government bonds).75

The second test of the efficiency of Mexico’s banking system focuses not on the banks, but on the firms to which banks extended credit. This research, carried out by Maurer and Haber, uses panel data techniques to track all cotton textile

---

74 Calculated from data in Mexico, Secretaria de Hacienda (1912): 236, 255.
manufacturers in Mexico over the period 1888-1913. It codes textile mills for access to bank credit, and then assesses the impact of access to bank credit on the size, survival, profitability, and technical efficiency of mills.

The results indicate that Mexico’s banks misallocated capital. Textile mills that received bank credit grew considerably faster than their competitors because they were less liquidity constrained. Bank connected mills also had a probability of survival three times that of their competitors, because they could borrow their way through downturns in the business cycle. As a result, mills that received bank credit gained market share against mills that did not receive bank credit. Mills that received bank credit, however, were actually less profitable and less technically efficient than their competitors. That is, differential access to bank credit allowed relatively less productive mills to drive relatively more productive mills out of the market.76

The mechanism driving this inefficient outcome was twofold: insider lending coupled to the politicized allocation of bank charters. Research by Maurer and Haber indicates that, much like New England bankers in the 19th century, Mexican bankers converged on insider lending as their dominant business strategy. From 1886 to 1901 all of the private (non-government) loans made by Banamex went to its own directors. Eighty-six percent of the credit extended by the Banco Mercantil de Veracruz from 1898 to 1906 went its own directors. A cross-section of loans drawn

75 Maurer (2002): chap. 5.
for 1908 for four other banks indicate similar lending strategies: 29 percent of the Banco de Nuevo León’s loans went to a firm owned by one of its directors; 31 percent of the Banco Mercantil de Monterrey’s loans went to a firm owned by one of its directors; 51 percent of the Banco de Durango’s loans went to enterprises owned by family members of one of its directors; and an astounding 72 percent of the Banco de Coahuila’s loans went to a single firm owned by family members of a director.77

Had Mexican bank charters been allocated on the basis of entrepreneurial ability, or had Mexico allowed freer entry into banking (thereby raising the probability that individuals with entrepreneurial ability could obtain charters), the prevalence of insider lending would not, in and of itself, have produced capital misallocation. The problem was, however, that bank charters were tightly controlled by the federal government, and were distributed on the basis of political clout. The unintended result, therefore, of the politicized allocation of charters was that credit went to political insiders, not individuals with entrepreneurial talent.

A further implication of the combination of charter restrictions coupled to insider lending is that access to bank credit in Mexico served as a barrier to entry in downstream industries. It is not possible, of course, to observe the universe of potential entrepreneurs who did not found firms for lack of credit. It is possible, however, to determine whether industries that are usually characterized by near-perfect competition, were structured that way in Mexico. If we observe that

76 Maurer and Haber (2004).
industries with modest scale economies had competitively structured markets, the implication would be that entrepreneurs did not face financial barriers to entry. If we observe, however, that industries with modest scale economies had market structures similar to industries characterized by increasing returns to scale, then the implication would be that entrepreneurs faced financial barriers to entry.

A series of papers by Haber and Maurer and Haber, that focus on the industrial structure of the Mexican cotton textile industry, addresses this question. These papers specify three counterfactuals. The first compares Mexico to itself over time. Cotton textile manufacturing was an industry characterized by constant returns to scale technologies and the absence of entry barriers. We should expect that as the industry grew, concentration should have fallen. The second compares Mexico to three other countries (the United States, Brazil, and India) that had large textile industries, but which did not have Mexico’s banking system. The third, following Sutton, compares the Mexican textile industry’s actual market structure to a hypothetical, fully competitive industry, in which the market structure was a function solely of industry size and a stochastic growth process.

The results of all three experiments, presented in Table 7, indicate that the Mexican cotton textile industry was “too concentrated.” First, concentration in Mexico actually increased over time, even though the industry was growing rapidly.

77 Maurer and Haber (2004).
78 Haber (1991); Haber (1997); Haber (2003); Maurer and Haber 2004.
(In the United States, Brazil, and India, unlike Mexico, concentration fell or remained stable as the textile industry grew.) Second, the Mexican cotton textile industry was much more concentrated than the American, Brazilian, or Indian cotton textile industry. Third, the Mexican cotton textile industry showed much higher four-firm ratios compared to the ratio that would be expected in a perfectly competitive market (following Sutton), given the number of firms in the industry. The implication is that some entrepreneurs were awash in funds, while other entrepreneurs (as well as potential entrepreneurs) were starved for capital. In short, all of the evidence supports the view that Mexico was not just underbanked: the banking system it did have was inefficient.

A detailed discussion of Mexico’s banking system after the fall of the Díaz dictatorship would take us well beyond the space constraints of a single paper. Suffice to say that the Mexican Revolution (1911-20) and the ensuing political instability of the 1920s did little to create institutionalized political competition. In point of fact, during the period 1911-29, political competition in Mexico took place as it did in the 19th century: at gunpoint. The banking system, as a result, contracted until post-revolutionary governments forged a new set of institutions that would govern the industry. (See Table 5). These governments, much like Díaz before them, were not constrained by institutionalized political competition. Not surprisingly,
they created economic institutions—and a resulting banking system— that were remarkably similar to that which had existed under Díaz.  

**Conclusions and Implications:**

This paper has presented a theory about how political institutions that foster competition give rise to banking systems that are also characterized by competition. It has also provided two case studies, the United States and Mexico during the period prior to 1932, which are consistent with the hypotheses advanced by the paper. Obviously, sustaining the argument that institutions that encourage political competition translate into economic institutions that encourage competition in banking will require more empirical testing than I have provided here. Additional case studies, which focus on cases intermediate to the United States and Mexico, are required.

Nevertheless, the analysis presented here makes a strong case for the argument that competitive markets do not happen all by themselves. All markets are embedded in political systems, and some of these markets—banking in particular—are highly sensitive to regulation by governments. When governments are unconstrained by institutionalized competition, they (and the public officials within them) will structure economic institutions so as to maximize short-run government revenues and/or permit rent seeking by public officials. The unintended result is

---

80 Haber, Razo, and Maurer (2003), chap. 4.
smaller and less efficient banking systems, which, in turn, exert a drag on economic growth.

Reference List


Mexico, Secretaria de Hacienda. 1912. *Anuario de Estadística Fiscal, 1911-12*.


and Hilton L. Root (eds.), Governing for Prosperity. New Haven: Yale


Table 1  
Number of State Chartered Banks and their Authorized Capital in the United States, 1782-1818

<table>
<thead>
<tr>
<th>Year</th>
<th>State Banks</th>
<th>Authorized Paid-In Capital ('000 Current US Dollars)</th>
<th>Average Bank Size ('000 Current US Dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1782</td>
<td>1</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>1783</td>
<td>1</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>1784</td>
<td>2</td>
<td>1,200</td>
<td>600</td>
</tr>
<tr>
<td>1785</td>
<td>2</td>
<td>1,200</td>
<td>600</td>
</tr>
<tr>
<td>1786</td>
<td>1</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>1787</td>
<td>2</td>
<td>1,800</td>
<td>900</td>
</tr>
<tr>
<td>1788</td>
<td>2</td>
<td>2,800</td>
<td>1,400</td>
</tr>
<tr>
<td>1789</td>
<td>2</td>
<td>2,800</td>
<td>1,400</td>
</tr>
<tr>
<td>1790</td>
<td>3</td>
<td>3,100</td>
<td>1,033</td>
</tr>
<tr>
<td>1791</td>
<td>5</td>
<td>4,600</td>
<td>920</td>
</tr>
<tr>
<td>1792</td>
<td>12</td>
<td>6,310</td>
<td>526</td>
</tr>
<tr>
<td>1793</td>
<td>15</td>
<td>10,470</td>
<td>698</td>
</tr>
<tr>
<td>1794</td>
<td>15</td>
<td>10,470</td>
<td>698</td>
</tr>
<tr>
<td>1795</td>
<td>20</td>
<td>13,470</td>
<td>674</td>
</tr>
<tr>
<td>1796</td>
<td>22</td>
<td>14,170</td>
<td>644</td>
</tr>
<tr>
<td>1797</td>
<td>22</td>
<td>14,170</td>
<td>644</td>
</tr>
<tr>
<td>1798</td>
<td>22</td>
<td>14,170</td>
<td>644</td>
</tr>
<tr>
<td>1799</td>
<td>25</td>
<td>16,870</td>
<td>675</td>
</tr>
<tr>
<td>1800</td>
<td>28</td>
<td>17,420</td>
<td>622</td>
</tr>
<tr>
<td>1801</td>
<td>32</td>
<td>19,170</td>
<td>599</td>
</tr>
<tr>
<td>1802</td>
<td>35</td>
<td>20,030</td>
<td>572</td>
</tr>
<tr>
<td>1803</td>
<td>53</td>
<td>24,900</td>
<td>470</td>
</tr>
<tr>
<td>1804</td>
<td>64</td>
<td>31,165</td>
<td>487</td>
</tr>
<tr>
<td>1805</td>
<td>71</td>
<td>38,865</td>
<td>547</td>
</tr>
<tr>
<td>1806</td>
<td>78</td>
<td>41,340</td>
<td>530</td>
</tr>
<tr>
<td>1807</td>
<td>83</td>
<td>43,429</td>
<td>523</td>
</tr>
<tr>
<td>1808</td>
<td>86</td>
<td>42,490</td>
<td>494</td>
</tr>
<tr>
<td>1809</td>
<td>92</td>
<td>45,190</td>
<td>491</td>
</tr>
<tr>
<td>1810</td>
<td>102</td>
<td>56,190</td>
<td>551</td>
</tr>
<tr>
<td>1811</td>
<td>117</td>
<td>66,290</td>
<td>567</td>
</tr>
<tr>
<td>1812</td>
<td>143</td>
<td>84,485</td>
<td>591</td>
</tr>
<tr>
<td>1813</td>
<td>147</td>
<td>87,000</td>
<td>592</td>
</tr>
<tr>
<td>1814</td>
<td>202</td>
<td>110,024</td>
<td>545</td>
</tr>
<tr>
<td>1815</td>
<td>212</td>
<td>115,232</td>
<td>544</td>
</tr>
<tr>
<td>1816</td>
<td>232</td>
<td>123,977</td>
<td>534</td>
</tr>
<tr>
<td>1817</td>
<td>262</td>
<td>137,844</td>
<td>526</td>
</tr>
<tr>
<td>1818</td>
<td>338</td>
<td>160,309</td>
<td>474</td>
</tr>
</tbody>
</table>

Table 2

Banks and Bank Capital in 1860

<table>
<thead>
<tr>
<th>Area</th>
<th>Number of Banks</th>
<th>Capital ('000 Dollars)</th>
<th>Population (thousands)</th>
<th>Persons Capital Per Bank</th>
<th>Capital Per Person</th>
<th>Capital Per Bank ('000 Dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maine</td>
<td>69</td>
<td>7,533</td>
<td>628</td>
<td>9,101</td>
<td>12</td>
<td>109</td>
</tr>
<tr>
<td>Massachusetts¹</td>
<td>178</td>
<td>66,482</td>
<td>1,231</td>
<td>6,916</td>
<td>54</td>
<td>373</td>
</tr>
<tr>
<td>Boston</td>
<td>40</td>
<td>37,732</td>
<td>178</td>
<td>4,450</td>
<td>212</td>
<td>943</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>51</td>
<td>4,941</td>
<td>326</td>
<td>6,392</td>
<td>15</td>
<td>97</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>90</td>
<td>21,152</td>
<td>175</td>
<td>1,944</td>
<td>121</td>
<td>235</td>
</tr>
<tr>
<td>New England²</td>
<td>505</td>
<td>123,560</td>
<td>3,313</td>
<td>6,560</td>
<td>37</td>
<td>245</td>
</tr>
<tr>
<td>United States</td>
<td>1579</td>
<td>422,540</td>
<td>31,443</td>
<td>19,913</td>
<td>13</td>
<td>268</td>
</tr>
</tbody>
</table>

¹. Includes Boston.
². Includes Connecticut and Vermont.

Table 3

Number of U.S. Commercial Banks, 1865-1932

| Year | State Chartered Banks |  | National Banks |  | Total Banks |  | National Banks as % of Total |
|------|----------------------|---------------------------|------------------|---------------------------|------------------|--------------------------------|
|      | Number (Millions $)  | Assets (Millions $)       | Number (Millions $) | Assets (Millions $) | Number (Millions $) | Assets (Millions $) | Assets (Millions $) |
| 1860 | 1,579                | 423                       | 1,294             | 1,127                    | 1,643             | 1,358                    | 79%     | 83%          |
| 1865 | 349                  | 231                       | 1,612             | 1,566                    | 1,937             | 1,781                    | 83%     | 88%          |
| 1870 | 325                  | 215                       | 2,076             | 1,913                    | 3,336             | 3,204                    | 62%     | 60%          |
| 1875 | 1,260                | 1,291                     | 2,076             | 2,036                    | 3,355             | 3,400                    | 62%     | 60%          |
| 1880 | 1,279                | 1,364                     | 2,689             | 2,422                    | 4,350             | 4,427                    | 62%     | 55%          |
| 1885 | 1,661                | 2,005                     | 3,484             | 3,062                    | 8,201             | 6,358                    | 42%     | 48%          |
| 1890 | 4,717                | 3,296                     | 3,715             | 3,471                    | 9,818             | 7,610                    | 38%     | 46%          |
| 1895 | 6,103                | 4,139                     | 3,731             | 4,944                    | 13,053            | 11,388                   | 29%     | 43%          |
| 1900 | 9,322                | 6,444                     | 5,664             | 7,325                    | 18,767            | 17,511                   | 30%     | 42%          |
| 1905 | 13,103               | 10,186                    | 7,138             | 9,892                    | 25,151            | 22,922                   | 28%     | 43%          |
| 1910 | 18,013               | 13,030                    | 7,518             | 11,477                   | 27,864            | 27,349                   | 27%     | 42%          |
| 1914 | 20,346               | 15,872                    | 7,518             | 11,477                   | 27,864            | 27,349                   |          |              |
| 1915 | 25,875               |                           |                  |                          |                  |                          |          |              |
| 1920 | 29,087               |                           |                  |                          |                  |                          |          |              |
| 1925 | 27,858               |                           |                  |                          |                  |                          |          |              |
| 1930 | 23,251               |                           |                  |                          |                  |                          |          |              |
| 1931 | 21,309               |                           |                  |                          |                  |                          |          |              |

Table 4

U.S. Commercial Bank Lending Resources Per Capita, By Region in 1909

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of Banks</th>
<th>Population (millions)</th>
<th>Persons Per Bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>New England</td>
<td>657</td>
<td>6.3</td>
<td>9,527</td>
</tr>
<tr>
<td>Eastern¹</td>
<td>2477</td>
<td>20.1</td>
<td>8,121</td>
</tr>
<tr>
<td>Southern</td>
<td>4,961</td>
<td>25.4</td>
<td>5,130</td>
</tr>
<tr>
<td>Mid-West</td>
<td>7,059</td>
<td>26.0</td>
<td>3,681</td>
</tr>
<tr>
<td>Western</td>
<td>4,276</td>
<td>6.7</td>
<td>1,573</td>
</tr>
<tr>
<td>Pacific</td>
<td>1,326</td>
<td>3.7</td>
<td>2,828</td>
</tr>
<tr>
<td>United States</td>
<td>20,756</td>
<td>88.3</td>
<td>4,253</td>
</tr>
</tbody>
</table>

¹. Mid-Atlantic States from New York to Washington D.C.

Source: Davis and Gallman (2001): 270.
Table 5  
Real and Nominal Banking Assets in Mexico, 1894-1929

<table>
<thead>
<tr>
<th>Year</th>
<th>Current Pesos</th>
<th>Real (1900) Pesos</th>
</tr>
</thead>
<tbody>
<tr>
<td>1894</td>
<td>61,216</td>
<td>63,858</td>
</tr>
<tr>
<td>1895</td>
<td>85,220</td>
<td>88,899</td>
</tr>
<tr>
<td>1896</td>
<td>96,317</td>
<td>91,281</td>
</tr>
<tr>
<td>1897</td>
<td>115,430</td>
<td>108,684</td>
</tr>
<tr>
<td>1899</td>
<td>162,748</td>
<td>188,788</td>
</tr>
<tr>
<td>1901</td>
<td>224,742</td>
<td>183,076</td>
</tr>
<tr>
<td>1902</td>
<td>255,621</td>
<td>202,541</td>
</tr>
<tr>
<td>1903</td>
<td>308,743</td>
<td>245,977</td>
</tr>
<tr>
<td>1904</td>
<td>366,406</td>
<td>296,809</td>
</tr>
<tr>
<td>1905</td>
<td>415,109</td>
<td>303,994</td>
</tr>
<tr>
<td>1906</td>
<td>526,105</td>
<td>389,210</td>
</tr>
<tr>
<td>1907</td>
<td>605,627</td>
<td>452,659</td>
</tr>
<tr>
<td>1908</td>
<td>680,396</td>
<td>490,833</td>
</tr>
<tr>
<td>1909</td>
<td>569,752</td>
<td>386,047</td>
</tr>
<tr>
<td>1910</td>
<td>606,422</td>
<td>350,323</td>
</tr>
<tr>
<td>1911</td>
<td>774,214</td>
<td>471,685</td>
</tr>
<tr>
<td>1912</td>
<td>686,599</td>
<td>418,306</td>
</tr>
<tr>
<td>1921</td>
<td>284,752</td>
<td>84,117</td>
</tr>
<tr>
<td>1922</td>
<td>148,916</td>
<td>53,714</td>
</tr>
<tr>
<td>1923</td>
<td>140,526</td>
<td>60,464</td>
</tr>
<tr>
<td>1924</td>
<td>205,509</td>
<td>82,317</td>
</tr>
<tr>
<td>1925</td>
<td>224,576</td>
<td>94,114</td>
</tr>
<tr>
<td>1926</td>
<td>416,981</td>
<td>166,105</td>
</tr>
<tr>
<td>1927</td>
<td>515,477</td>
<td>209,367</td>
</tr>
<tr>
<td>1928</td>
<td>521,205</td>
<td>221,427</td>
</tr>
<tr>
<td>1929</td>
<td>577,039</td>
<td>249,763</td>
</tr>
</tbody>
</table>

Source: Haber, Razo, and Maurer (2003), chap. 4.
Table 6

Banks and Bank Assets in the United States and Mexico, Circa 1910

<table>
<thead>
<tr>
<th></th>
<th>Population (in millions)</th>
<th>GDP (in millions of current US$)</th>
<th>Number of Banks</th>
<th>Bank Assets (in millions of current US$)</th>
<th>Population Per Bank</th>
<th>Bank Assets Per Capita</th>
<th>Bank Assets as % of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>15.3</td>
<td>1,542</td>
<td>42</td>
<td>301.7</td>
<td>364,286</td>
<td>20</td>
<td>20%</td>
</tr>
<tr>
<td>United States</td>
<td>88.3</td>
<td>33,300</td>
<td>22,922</td>
<td>23,000</td>
<td>3,852</td>
<td>260</td>
<td>65%</td>
</tr>
</tbody>
</table>
Table 7
Industrial Concentration in Cotton Textiles, Mexico, Brazil, India, and the United States

<table>
<thead>
<tr>
<th>Circa</th>
<th>Mexico</th>
<th>Expected</th>
<th>Brazil</th>
<th>India</th>
<th>U.S.A.</th>
<th>Four Firm Ratio</th>
<th>Herfindahl Index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Mexico</td>
<td>Brazil</td>
</tr>
<tr>
<td>1888</td>
<td>18%</td>
<td>19%</td>
<td>37%</td>
<td>8%</td>
<td></td>
<td>0.022</td>
<td>0.058</td>
</tr>
<tr>
<td>1893</td>
<td>29%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.038</td>
<td></td>
</tr>
<tr>
<td>1895</td>
<td>33%</td>
<td>17%</td>
<td>35%</td>
<td></td>
<td></td>
<td>0.042</td>
<td>0.059</td>
</tr>
<tr>
<td>1896</td>
<td>30%</td>
<td>16%</td>
<td></td>
<td></td>
<td></td>
<td>0.041</td>
<td></td>
</tr>
<tr>
<td>1900</td>
<td>30%</td>
<td>14%</td>
<td></td>
<td>19%</td>
<td>7%</td>
<td>0.038</td>
<td>0.028</td>
</tr>
<tr>
<td>1904</td>
<td>33%</td>
<td>15%</td>
<td></td>
<td>21%</td>
<td></td>
<td>0.042</td>
<td></td>
</tr>
<tr>
<td>1909</td>
<td>38%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.045</td>
<td></td>
</tr>
<tr>
<td>1912</td>
<td>30%</td>
<td>14%</td>
<td></td>
<td>19%</td>
<td>8%</td>
<td>0.039</td>
<td>0.018</td>
</tr>
<tr>
<td>1913</td>
<td>31%</td>
<td>14%</td>
<td>14%</td>
<td></td>
<td></td>
<td>0.041</td>
<td>0.014</td>
</tr>
</tbody>
</table>

Source: Maurer and Haber 2004.