# HISTORICAL ENVIRONMENTS, COORDINATION, AND CONSOLIDATION IN THE US BANKING INDUSTRY, 1896-2001[•]

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## ABSTRACT

Large-scale organizations are a ubiquitous element of modern society, yet few theories have been advanced to explain why they have come to dominate a wide variety of industries. I develop a theory that suggests that organizational growth and scale are contingent on intra-organizational coordination fostered by features of the twentieth-century business environment. I specifically examine how changes in laws and developments in technology influenced coordination capabilities, organizational growth, and acquisitions in the US banking industry. I analyze bank growth in the twentieth century at two levels during two key historical eras. At the state level between 1896 and 1978 I show that in states in which branching was legally permitted and the technical environment was more advanced banks were larger and more geographically dispersed than were banks in states that did not exhibit these characteristics. I further show that banks founded under these conditions were more likely to pursue acquisitions following the deregulation of the banking industry in 1978. These findings suggest that banks founded in environments where coordination over distance was possible developed a capability that proved to be an enduring advantage and that the current structure of the banking industry reflects the variation in the historical environments in which banks were founded.

# HISTORICAL ENVIRONMENTS, COORDINATION, AND CONSOLIDATION IN THE US

# BANKING INDUSTRY, 1896-2001

Previous work on the rise of large industrial organizations in the United States suggests that the ability to

coordinate across units is a precondition of growth. In his groundbreaking work on the development of

US industrial firms, Chandler (1977) analyzed how changes in technical environments gave rise to

managerial hierarchies. In particular, Chandler emphasized how the development of rail, the steam

engine, telegraph, and cable enabled production and distribution to be organized within the same firm

resulting in the large-scale industrial organizations that emerged in the early twentieth century. Others

suggest political and legal bases for the rise of large firms, for example, changes in property laws that

enabled new forms of management and organization (Roy 1997). Although at odds on specifics, both

arguments view the rise of large industrial hierarchies to have been set in motion by changes in the

environments of organizations. These external factors were, however, largely specific to the industrial

firms that dominated the economic landscape for the first half of the twentieth century. Technological

advances facilitated the connection of production and distribution and legal changes the raising of capital

needed to finance and organize manufacturing. The second half of the twentieth century was increasingly

dominated by large-scale service organizations, the growth of which, I argue, was contingent on quite

different environmental factors, in particular, laws that enabled organizations to establish multiple

locations (Ingram and Rao 2004) and technology that supported effective coordination of those locations

with companies' headquarters.

In this paper I examine how changes in legal and technical environments influenced the

transformation of US banking. The banking industry is ideal for illuminating how environments

influence coordination and growth in service industries. First, the size of firms in this industry has

increased dramatically. At the turn of the twentieth century 99% of the more than 12,000 commercial

banking firms in the United States were single unit operations. A century later approximately 6,500

organizations operate more than 80,000 separate units. Second, banking has been characterized by strong

institutional, legal, and technical pressures (Scott 1998) that might have particular relevance for how scale developed in this industry.  State and federal laws enacted in the twentieth century (Ingram and Rao 2004) limited the ability of service industries, including banks, to grow by controlling expansion within and between states.  But to the extent that they might be contingent on the extant technical environment, the consequence of these laws might not be uniform across time.  Banks and other service firms differ from more frequently studied manufacturing firms in that the primary form of intra-organizational interdependence is *pooled* (Nadler and Tushman 1997), necessitating a different form of coordination than is employed  by manufacturing firms (Thompson 1967).  Under pooled interdependence each organizational part renders a discrete contribution to and is supported by the whole.  Thus, growth and organizational scale are a function not of connecting production and distribution sequentially (Chandler 1977) but of a central office's ability to quickly and effectively coordinate among geographically dispersed satellite locations.

To understand how the environments about which I theorize influence coordination and organizational scale in the banking industry I examine bank size and geographic spread of branch locations for the contiguous US states from 1896-1978.  This period is important because until 1978 banks' retail locations were limited to the state in which they were headquartered, so there were in effect 48 different banking systems within the area studied.  During this time the legal environments in which banks operated varied considerably across states as well as through time, particularly in the degree to which banks were permitted to establish multiple locations within a state.  Significant technological advances made during the twentieth century might also have influenced banks' ability to grow.  I argue, that banking being a paper-intensive industry that requires frequent transport of documents between headquarters and outlying locations, the development of roadways was important to inter-unit coordination and, therefore, to organizational growth.  Historical differences in states' legal environments and the evolution of the technical landscape over the course of the twentieth century provide a natural laboratory in which to study the influence of these factors on scale in an important service industry.

A second component of my theory connecting historical environments, coordination, and organizational growth draws on Stinchcombe's (1965) insight that founding environments have an enduring influence on organizations. Others (Carroll et. al. 1996; Haveman 1992) have observed that organizational capabilities developed by a firm during one era can be a source of advantage in a future era. If particular legal and technical environments foster the development of a capacity for coordination, then organizations founded in those environments should subsequently be more likely to engage in activities such as acquisitions that require coordination capability. Subsequent to legislation passed in 1978 that encouraged industry consolidation through acquisition the size of banking organizations has increased dramatically, and work in economics attributes this organizational growth entirely to acquisitions (Stiroh and Poole 2000). For evidence that firms founded under circumstances likely to foster the development of structures and cultures supportive of inter-unit coordination will be more likely to subsequently pursue acquisitions, I examine how differences in banks' contemporary and founding environments influenced their acquisition behavior between 1978 and 2001.

## THEORY AND HYPOTHESES

### Environments, Coordination, and Organizational Growth

The effect of external environments on organizational coordination has been a focus of both theoretical (Thompson 1967) and empirical investigations (Chandler 1977). Uncertainty occasioned by the external environment (Galbraith 1973) has been found to constrain both performance (Lawrence and Lorsch 1967) and the delineation of organizational boundaries (Williamson 1975). Chandler describes how fundamental technical advances around the turn of the twentieth century enabled production and distribution activities to be effectively organized within a single firm. The resulting administrative coordination gave rise to large bureaucratic organizations in America. Roy's (1997) explanation of this process emphasizes how changes in the political and legal environments, by dispersing ownership, enabled firms to finance large-scale manufacturing enterprises.

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The effects of changes in the legal and technical environments on organizational scale were investigated mainly in manufacturing in which intra-organizational activities are highly interdependent. Thompson (1967:54) described three fundamental types of interdependence: pooled interdependence, whereby "each part renders a discrete contribution to the whole and each is supported by the whole" (e.g., branches of an organization that do not have any direct connection); sequential interdependence, whereby X must act before Y can act (e.g., a sub-unit that produces parts for an assembly line); and reciprocal interdependence, whereby each unit's outputs become inputs to, and thus pose contingencies for, the other units (e.g., an organization with both operations and maintenance functions). I argue that to understand growth and scale one must first understand the primary type of interdependency, associated coordination needs, and environmental conditions that enable coordination in the target organization or industry. Put simply, organizational growth is dependent on coordination and the ability to coordinate on features in the external environment. The first step towards understanding growth in organizations and industries is thus to understand the environmental factors that enable coordination.

For the manufacturing firms examined by Chandler, the core activities of which were fabricating and distributing finished products assembled from myriad inputs, the key to creating large organizations was sequential coordination among production units. Automobile manufacture, for example, involves gathering and sequentially assembling the requisite materials and shipping finished vehicles to retail outlets. Technological environments that facilitated the importing of raw materials and shipping of finished goods fostered organizational growth. Legal changes in the way capital is raised enabled the substantial capital investment needed to create large, integrated manufacturing plants (Roy 1997). But whereas industrial firms dominated the first half of the twentieth century, their role in the American economy has since declined, their output presently accounting for less than 25% of US GDP. Service firms now account for approximately 75% of US GDP; however there has not been equal attention to their rise and to the environmental factors and changes that were important for the growth of service firms.

Pooled interdependence is most fundamental to understanding the growth of service organizations such as banks, which involves extending access to consumers through geographically dispersed retail outlets that are not dependent on one another and interact primarily with headquarters (Thompson 1967; Nadler and Tushman 1997).  To achieve scale in service industries in which the primary interdependency constraint is pooled it is necessary that (1) organizations be able to establish geographically dispersed locations to serve new customers (this is acknowledged in Chandler's (1977: 472) observation that banks "like the marketing firms…found that they could make more intensive use of their central office facilities and reach more customers by setting up geographically dispersed outlets"), and (2) appropriate technology be sufficiently advanced to support effective coordination between headquarters and branches. Below, I analyze how legal and technical environments impose limits on coordination and organizational growth in service firms and banks.

**Legal Environments and Organizational Growth in US Banking during the Period of Intra-State Competition (1896-1978)**

For much of US history and well into the twentieth century the US government has regulated major industries including banking, transportation, communication, utilities, health care, and agriculture (Wholey and Sanchez 1991; Lounsbury, Hirsch, and Klinkerman 1998).  Research in the institutional tradition that has examined these laws and organizations constitutes one of the most productive areas of organizational sociology.  Investigators have assessed how public policy influences organizational structures, strategies, and competitive conditions (e.g., Fligstein 1990; Roy 1997; Dobbin and Dowd 1997), and law has been categorized as having coercive (e.g. Fligstein 1990) and normative (e.g., Edelman 1990; Sutton, et al. 1994) influences.  Fligstein (1990), for example, explained how the prohibition of vertical mergers increased cross-industry acquisition activity, Edelman (1990) how the legal environment disposed organizations to adopt different organizational structures following the passage of civil rights legislation, and Campbell and Lindberg (1990) the importance of the US states as economic actors and their role in the development of regionally distinct economies.  Taking advantage of

the US federalist system of limited power and jurisdiction of federal bodies with an independent regulatory role for states, investigators have also looked within (Dobbin and Dowd, 2000; Haveman and Rao, 1997) and across (Schneiberg and Bartley, 2001; Wade, Swaminathan and Saxon, 1998) US states.

Previous work has examined how legal environments can constrain organizations and economic activity. Clearly, coercive laws such as those that prohibit vertical integration might limit or change firms' growth strategies (Fligstein 1990), but there can be less direct effects as well. North's (1981) analysis of the rise of major trading powers in early modern Europe, for example, attributed the success of Dutch and English and decline of Spanish and French organizations and economies to the relative restrictiveness of property rights. The mechanism North uses to connect state policy to economic outcomes is higher transaction costs resulting from less efficient laws. Economic analyses of banking associate greater regulatory constraint with organizational and statewide inefficiencies (Wheelock and Wilson 2002; Jayaratne and Strahan 1996). Organizational costs of state regulation are also shown by Barnett and Carroll's (1993) discussion of the effects of fragmentation of state authority on the number of telephone companies operating in United States during the early twentieth century: the larger the number of political units, they found, the greater the number of telephone companies. More regulation, according to Barnett and Carroll, begat more constraints, which, in turn, begat more and smaller companies. This and other work on laws and economic growth suggests that inefficiencies occasioned by restrictive legal environments constrain organizational growth and size.

Because efficient industrial production requires significant investments in both capital equipment and workplaces in which large numbers of employees can be easily supervised, Roy (1997) argued that legal changes that enabled the diffusion of ownership were most critical for capital-intensive industries such as manufacturing. But in service industries growth more often is achieved by establishing geographically dispersed retail outlets. During much of the twentieth century the practice of establishing multiple business locations was for many service industries legally constrained by tax laws, as documented by Ingram and Rao (2004) who report that during the 1920s and 1930s more than half of US states passed anti-chain-store legislation that as late as 1970 still remained on the books in 13 states.

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More recently, anti-chain-store legislation has been enacted by communities and municipalities, most notably in California, to protect local businesses (Hampton 2004). Being predicated on establishing new outlets, the growth of service firms is directly constrained by legal environments that prohibit or restrict the ability to do so.

Significant variation in the scale of banks throughout the United States resulted from pronounced cross-state differences in laws restricting the ability to establish multiple locations. Banking was for much of its history heavily regulated at the federal and state levels (Roe 1994). Legal environments at the state level variously permitted: unit banking, whereby banks are permitted to operate in only a single location (precludes branches); statewide banking, whereby banks are permitted to operate branches throughout the state; and limited statewide banking, which permits only limited operation of branches. A transformation of states' legal environments during the twentieth century saw the number of unit banking states fall and number of branch banking states increase dramatically. By 2001 every state except Iowa permitted unlimited statewide banking. Figure 1 plots the distribution of these laws throughout the twentieth century.

Figure 1 about here

The importance of these regulations to the development of scale in the banking industry is reflected in debate that has a parallel in the movement-countermovement dynamics observed by Ingram and Rao (2004) with respect to laws governing retail chains. Economists have long advocated liberal branching based mostly on the assumption that more units spread across a greater area can more efficiently share costs and branching diversifies risk across different economic environments (e.g. see Sprague 1903 for an early discussion of these issues). Liberal laws were also supported by larger and

urban banks and manufacturers, with smaller banks, small businesses, and farmers arguing for legal limitations on the size of banks.[1]

Until inter-state banking was permitted in 1978, banks could operate only within the state in which they were headquartered. Each state's branching environment determined the scale of the organizations that operated therein. Cross-state variation in the extent of branching permitted should be reflected in a wide range of bank sizes across the United States during this period. In general, the theory advanced above suggests that states that have historically had less constraining regulations should have larger banks.

- Hypothesis 1(a): In the period before inter-state banking was possible (1896-1978), states with no restriction on statewide banking should have larger banking companies on average.

- Hypothesis 1(b): In the period before inter-state banking was possible (1896-1978), states that restricted banking to only one office should have smaller banking companies on average.

**Technical Environments and Organizational Growth in US Banking during the Period of Intra-State Competition (1896-1978)**

The technological developments Chandler (1977) credits with enabling modern mass production and distribution–railroad, telegraph, steamship, and cable–were not as significant for service industries for which production and distribution were not central concerns. I argue below that bank expansion, because it relied on pooled interdependence between headquarters and branches and frequent and voluminous exchanges of paper, hinged on the development of transportation technology, in particular, the roadway infrastructure in the United States.

Others have maintained that bank coordination and growth is contingent on the capacity of technical environments to facilitate the management of geographically dispersed personnel. Both

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[1] I have included control variables suggested by the work of Ingram and Rao (2004) and economic work on banks' influencing law (e.g. Abrams and Settle 1993; Calomiris 1993; Kane 1996; White 1984) to reflect the major forces on both sides of this debate.

Southworth (1928) and Robertson (1968) point out that the First and Second Banks of the United States, established as central banks in the early years of the country, although organized as multi-bank companies were operated more as independent subsidiaries than branches of a central organization. "In a time of slow communication and transportation," observed Robertson (1968:28), "it was impossible for a head office to exercise day-to-day supervision over a network of branches." Thus, despite the formal organizational structure being a multi-unit hierarchy, owing to communication and transportation constraints the individual units operated independently of the headquarters.

Early historical descriptions of Bank of America's branch system suggest that the distances between branches led the bank to operate more like a confederation than a "well-knit, smoothly running, uniform organization" (James and James 1954:96). These accounts suggest that to supervise and coordinate units that are at a distance poses significant challenges that might be met by advances in transportation technology. Frequent transfer of documents from branches to headquarters and headquarters' inspection of branches, in particular, needed to be facilitated. Chapman and Westerfield (1942) in a treatise on management of branch banking organizations describe a range of paper systems banks used to monitor branch activities that included duplicate records and daily reports as well as documentation of personnel, financial statements, and general business conditions. All had to be physically transported from outlying locations to headquarters. In the manner of the "inspectors" and "road men" observed by Chandler (1977) to be important to the administration of geographically dispersed chain stores, banks often employed traveling staffs of auditors to monitor branch locations. A history of Comerica Bank (Comerica 1999:19-20) records that: "Auditors, known as the 'eyes and ears of management,' traveled to all locations to check accounts and records."

Transportation technology was also a necessary adjunct to conduct the fundamental business of banking, taking in deposits and then lending them out, over a geographically dispersed area, as reflected in the following quote by an early head of the Rothschild banking empire. "Banking consists entirely of facilitating the movement of money from Point A, where it is, to Point B, where it is needed" (Ferguson 1998:1). While a bank that takes deposits in Cleveland may want to be able to loan that money to

customers in Cincinnati, for most of US history, this was not possible without an efficient way of transporting funds, in the form of currency, draft or gold. Such movement requires coordination between central offices, outlying locations, and the Federal Reserve. An early description of credit management for branch banks describes physical systems and processes in place to manage geographically dispersed credit (Whipple, 1935). To accomplish the matching of loans and deposits, banks had "transit departments" which were "the critical point in banking where what goes out is reconciled with what comes in." (Covington and Ellis, 1993:58). As a result, Chapman and Westerfield (1942:142) list ease of "the transportation of funds" as one of the key features for a bank to grow through branching.

A second major function of banking, as a payments system that converts drafts and checks drawn on one bank into cash at another, also turns on transportation capabilities. Until Congress passed the Check Clearing for the 21st Century Act, which went into effect October 28, 2004, banks were required to physically deliver deposited checks to the banks on which they were drawn. A legacy of the banking system's reliance on transportation and the physical movement of "money" is that it commonly still takes up to five days to credit to customers' accounts checks drawn against out-of town banks. The need to physically transfer money and other bank documents has been a significant constraint on bank growth and management.

That the efficiencies posited by theory and the foregoing hypotheses to accrue to more liberal legal environments would be difficult to realize in the absence of an effective transportation system is supported by a number of studies that have found transportation costs to be a constraint on financial businesses (Gilbert 1998; Garbade and Silber 1979). Knodel's (1998) study of the inter-regional payments system in two Ohio cities from 1830-1859 describes, for example, how the switch from water to rail transport precipitated a dramatic decline in shipping specie and a shift to a new payment method. Her analysis suggests that because financial businesses are reliant on hard currency and documents (e.g., gold, currency, and bank drafts) developments in transportation capability can significantly influence how they are organized. I argue that in states in which branching was possible throughout, growth was constrained by the ability to move people and documents among the different parts of an organization.

The size and geographic spread of banks in states with statewide banking would thus be a direct result not only of the prevailing legal environment, as argued earlier, but also of the nature and state of the extant transportation infrastructure.

Where the legal environment accommodated branching, developments in transportation technology would have abetted the practice, providing opportunities for banks where branching was possible. Geographers have noted the tremendous influence, particularly post-1920, of the automobile and development of the highway infrastructure on urban physical and social structures (Borchert 1967). Suburbs expanded around major cities and the United States generally became "smaller" as inter-city travel became easier and faster. Contemporaneously, the geographic scope of banks likely increased. The effect of interaction between state regulation and expanding transportation infrastructure was acknowledged in Southworth's (1928:118) description of how potential strategies available to banks in Michigan (in which branching was permitted) differed from those available to banks in Illinois (in which branching was prohibited), yielding two quite different growth strategies for the respective states' banks.

> The advent of the automobile has brought about traffic difficulties, particularly with regard to parking facilities, which make it desirable from the point of view of the bank customer that banking offices be established in uncongested parts of the city. If branch banking has been prohibited [in Michigan]…small independent banks, as in Chicago for example, would have been established to meet the need. In Detroit, the need was met by the establishment of branches.

A history of NationsBank ties its growth to the growth of suburbs (Covington and Ellis 1993), a link made even more explicit in a history of Michigan-based Comerica Bank, which recounts how "when most Detroiters still lived around the downtown area, one office served the bank well. As the population moved to the edges of the core city and beyond, banks, like other retailers, had to follow if they wished to remain competitive in serving customers" (Comerica 1999:31). Further, an early description of branch banking cites the growth of cities as having important effects on the growth of branching (Collins, 1926) and a history of the growth of commercial banking in the US describes that intra-city branches tripled between 1920 and 1930, and attributed this increase to geographic dispersion of population as a result of the advent of the automobile (Klebaner, 1990).

Technical environments thus had two important effects on growth and expansion in banking. First, they offered a constraint to inter-unit coordination, particularly management at a distance and the movement of paper currency and documents. This suggests that before adequate transportation was possible, it was unlikely that banks would grow much, or expand to outlying locations since there was not an effective means of coordination. Secondly, in states where banks were permitted to grow by branching, firms were able to establish branches as urban environments expanded, which was also a result of the increasing ease of transportation. Both these factors should lead to larger individual banks within those states as the transportation capability expanded.

- Hypothesis 2(a): In the period before inter-state banking was possible (1896-1978) states with no restriction on statewide banking should have *larger banking companies* as the transportation infrastructure became more advanced.

- Hypothesis 2(b): In the period before inter-state banking was possible (1896-1978), states with no restriction on statewide banking should have *more geographically dispersed banking companies* as the transportation infrastructure became more advanced.

**Founding Environments and Acquisition Behavior of US Banking Firms during the Period of Inter-State Competition (1978-2001)**

The discussion thus far has emphasized differences in banking structures consequent to legal and technical developments at the state level. Until 1978, when inter-state banking became possible, there was little consequence of this variation beyond different patterns of within-state competition. The gradual deregulation of the industry in the 1980s was effectively an invitation to organizations from 48 different systems with separate histories to compete with one another. The subsequent decline in the number of banks was accompanied by significant overall growth of industry assets (Figure 2). While in 1980 there were 12,805 commercial banks, by 2000, the total number was reduced to 6,750. Prior work in the banking literature attributes growth by large banks in the 1990s entirely to acquisitions (Stiroh and Poole 2000), suggesting that the most direct way to study bank growth in the inter-state banking period is by examining the banks that pursued acquisitions.

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Figure 2 about here

According to Stinchcombe (1965:142), "the groups, institutions, laws, population characteristics and sets of social relations that form the environment" are historically contingent and imprint an organization with the characteristics of the era in which it was founded. He reasoned that organizations founded during the same historical period, because they faced the same environments and challenges, would exhibit similar structural and cultural characteristics and, moreover, that behaviors that responded to those conditions would persist even when the conditions changed. Stinchcombe (1965) discussed, for example, that hiring practices that responded to the labor laws that prevailed during the period of industrial growth persist not because they fit contemporary conditions, but because it was the way it was done under the founding conditions. More recent investigations have assessed how initial conditions have affected a wide range of outcomes and industries including the organizational strategy of semiconductor manufacturers (Boeker 1988), rates of change of nonprofits (Tucker, Singh, and Meinhard 1990), and organizational mortality of beer brewing and newspapers (Swaminathan 1996).

Related studies have found organizational capabilities established in a prior period to be important to firms' future strategic advantage and success. Carroll et al. (1996), for example, observed that failure rates of auto manufacturers reflected the firms' early experiences. Bicycle and carriage makers that entered the auto industry had a survival advantage attributed by the authors to previously developed capabilities related to production and assembly as well as marketing and sales. Similarly, Haveman's (1992) study of California thrifts in the wake of dramatic deregulatory changes found the better performing firms to be those with original competencies that were closely related to their new activities. These studies suggest that capabilities developed in an earlier period can give an organization a future advantage after a shift in an industry or deregulation.

In banking, multi-unit practices and structures developed early in response to accommodating changes in the legal environment might be expected to be advantageous under present-day legislation that encourages acquisitions, which, by definition, entail coordination among multiple units. The historical record identifies a number of capabilities that were likely developed by banks in states that permitted

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branching. Among these was the creation of uniform procedures that could easily be exported to acquired

banks, a strategy James and James (1954) maintain contributed to Bank of America's early success.

Similar to other early branch banking systems (Chapman and Westerfield 1942), Bank of America also

created a regional infrastructure to support the management of outlying offices and, as noted earlier,

deployed a network of auditors and implemented systematic reporting functions to monitor branch

activity. The development of multi-location management capability is a fundamental distinction between

branch and unit banks.

The importance of such systems escalates with continued expansion of the spatial distribution of

locations.

> The nature of the organization will depend to a considerable extent upon the number and location of branch offices.… If the branches are all located in the city of the parent bank, there is obviously less justification for setting up elaborate rules and regulations to control the business, and similarly, if the branches are located in intermediate regions there is less need of regulation than would be desirable or necessary in the case of a bank operating a large number of branches on a…nation-wide or state-wide basis. (Chapman and Westerfield 1942:167)

As suggested by the foregoing discussion, bank management became more complex with

branching, in particular, with growth in the distribution of branches. Banks in unit banking states, having

had to develop only the structures and systems needed to support management in a single location, were

less likely to have management structures and systems that would enable them to coordinate across

multiple locations. Just as initially established structures were found in Meyer and Brown's (1977) study

of government finance agencies to have a lasting effect on organizational action, so I maintain that

fundamental differences in initially established structures will determine which banks subsequently

successfully expand through acquisitions.

The legal and technical environments that prevail at the time of its founding are also likely to

influence an organization's culture and structure. Dobbin's (1994) observation that different societies'

regulatory "styles" reflect culture and become embedded in regulatory structures suggests differences in

the strategies of companies founded in the three countries he studied. Fligstein (1996) maintained that

initial regulatory behavior shapes the development of markets by producing cultural templates that determine how companies organize, and Baron, Hannan, and Burton (1999) find that the initial cognitive template of founders profoundly influences later organizational behavior. Finally, Fombrun and Zajac's (1987) study of 114 financial services firms found perception of the external environment to influence choice of strategy. Banks for which multiple locations and geographic expansion were part of the initial cultural template might thus be expected to be more likely to conceive of acquiring other firms. Consider, by way of example, the case of North Carolina's Wachovia Bank and NationsBank at the onset of interstate banking (Covington and Ellis 1993:154). Although both would eventually expand beyond their North Carolina roots, "banking analysts who kept track of such things ironically gave Wachovia, not (NationsBank), the best chance at gaining from interstate banking." This judgment acknowledged Wachovia to be financially stronger, but "what analysts could not see on the balance sheets was the commitment that (NationsBank) had to the idea [of interstate expansion]." And as Covington and Ellis (1993) argue, it was NationsBank's intense focus on expanding beyond North Carolina that led to its dramatic growth. If conception of the market does, indeed, shape firms' outlooks and activities, banks that were founded in a unit banking state, likely conceived of themselves as a one office firm and therefore would be less likely to acquire or expand. Conversely, firms that were founded in states where branching is possible would not have this constraint.

The above discussion suggests that, in addition to contemporary environmental conditions influencing bank strategy, founding environmental conditions may also affect banks by having a significant lingering influence on their ability to coordinate across units and therefore their likelihood of acquiring other firms. Law and technology are particularly important elements of founding environments because, as suggested by prior work on imprinting mechanisms (Marquis 2003), they shape firms' initial structures and cultures. Changes in banking regulation between 1978 and 2001 that expanded banks' potential markets explicitly encouraged industry consolidation through acquisition; a strategy that I maintain is more likely to be embraced by banks founded in states in which the prevailing legal and technical environments encouraged the development of structures to support multi-unit coordination.

Based on the logic for hypothesis 2, this would be states where there was both the ability of banks to branch and a greater developed transportation structure. Furthermore, as a more direct test of the coordination mechanism suggested by the above argument, I examine how banks that were founded in states where the geographic distribution of branches was greater would be more likely to acquire other banks.

- Hypothesis 3(a): With the advent of inter-state banking (1978-2001), banks founded when statewide banking was unrestricted should be more likely to acquire other banks.

- Hypothesis 3(b): With the advent of inter-state banking (1978-2001), banks founded when banking was restricted to a single office should be less likely to acquire other banks.

- Hypothesis 3(c): With the advent of inter-state banking (1978-2001), banks founded in states in which statewide banking was unrestricted and transportation infrastructure was progressively improved should be more likely to acquire other banks.

- Hypothesis 3(d): With the advent of inter-state banking (1978-2001), banks founded in states in which there is a greater geographic dispersion of bank locations should be more likely to acquire other banks.

## METHODS AND ANALYSES

**Samples and Units of Analysis**

This study involves two samples and two units of analysis. To test state-level predictions I examine annual state-level banking organization for all contiguous US states from 1896 through 1978. Following Schneiberg and Bartley (2001) I perform state-year analyses to examine average bank size for each state. The annual state-level data yields 3,941 observations (48 observations for every year, except for Oklahoma, which became a state in 1907, and New Mexico and Arizona, which became states in 1912). These data are from a number of sources. The 1896-1955 data are from *All-bank Statistics, United States, 1896-1955* (Flood 1998), the 1956-1978 data from FDIC Historical Statistics on Banking. Because the former used the latter as its primary source but also included information from other sources such as state banking commissions and the Federal Reserve, there is a potential for discontinuity between the pre- and post-1955 data. I consequently conducted a number of sensitivity analyses (e.g., removing states that appeared to have larger discontinuities) and included a dummy variable indicating whether data

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were pre- or post-1955.  None of these actions significantly affected the results.  Moreover, because my primary dependent variable is the mean of state bank size, any impact would be reduced because the discontinuity would affect both the numerator (bank assets) and denominator (number of banks).

To test the organizational-level hypotheses regarding founding environment I examined all banking organizations that existed between 1978 and 2001. From the annual end-of-year Commercial Bank and Bank Holding Company files at the Federal Reserve Bank of Chicago (http://chicagofed.org/economic_research_and_data/) I constructed a database of more than 235,000 observations corresponding to the approximately 25,000 banking organizations that existed during this period.  Because of missing observations for some financial variables, I test my predictions on a dataset that includes approximately 222,000 observations.[2]  I define banking organization at the highest level of ownership (i.e., all subsidiaries are included in one observation corresponding to the bank designated as the primary bank), presuming decision-making authority regarding major strategies such as acquisitions to reside at that level.  This is in contrast to the economic literature, which treats subsidiary banks with separate charters as independent organizations or, alternatively, aggregates based on state.  By way of example, if Bank One Corporation owns separately chartered banks in Ohio including Bank One Columbus and Bank One Cincinnati, and in Indiana including Bank One Indianapolis and Bank One Fort Wayne, by my definition all four banks in both states would be considered one organization.  Others, because each has a charter, treat them as four separate banks (e.g., Rhoades 2000; Wheelock and Wilson 2002) or, alternatively, group them by state giving two observations (Stiroh and Strahan 2003).  Because accounts from the time indicate that acquisition strategies were set by corporate headquarters, for example, that Bank One CEO John McCoy and his staff, not the managers of local banks or even the presidents of state banks, made acquisition decisions (Murray 1995), all subsidiaries are considered to be part of the parent bank.

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[2] The majority were organizations that existed for only one year.  Because I use lagged variables in the analyses, firms that exist for only one year fall of out the analysis, there being no prior year values.  The results are similar when I use contemporaneous values that enable me to include the firms that existed for only one year.

**Dependent Variables**

**Average size of banks**. For the main dependent variable in the state-level analyses I use average bank size to measure how each state's history of regulatory environment generates larger or smaller banks.[3] Another way to conceptualize bank presence in a state would be via a concentration index such as a Herfindhal or four-firm concentration ratio. My data source that extends to 1896, however, though it has information on the total number of banks and total banking assets, lacks information on the sizes of individual banking firms, which is necessary to calculate a concentration index. Moreover, because my interest is in how state laws influence bank growth, which is reflected in size not in concentration, I believe my current measure of average size to be the most appropriate.

**Geographic dispersion of bank locations.** As a supplement to the variable *average size of banks,* I measure the degree to which branches are geographically dispersed by examining the percentage of bank locations in a state that are outside of banks' headquarters location. This measure taps the coordination mechanism implied by my arguments; the greater the geographic dispersion of branches, the greater the coordination needed between headquarters and branches. This data is from the Federal Reserve, which published annually from 1929 to 1992 counts of branches that indicated whether a particular branch was in its bank's head-office city. Prior to 1929 the Federal Reserve published these and historical counts sporadically, so between 1896 and 1929 a number of years are linearly interpolated. This early period was mostly characterized by small numbers of outlying branch locations, and these values appear to be stable, so interpolating the values should not be an issue.

**Acquisition.** For my organizational-level analyses I use a dichotomous variable to indicate whether a banking organization acquired another bank during a given year. This data is from both the Commercial Bank and Bank Holding Company Merger databases maintained by the Chicago Federal Reserve. Alternative approaches might include using a count or the size of acquisitions in a given year. I

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[3] All financial variables are in 2001 dollars.

chose to dichotomize this variable for several reasons. First, more than 80% of my organization-year observations that are greater than zero are one. Moreover, many acquisitions that were of one firm based on my definition of highest level ownership were coded in these databases as multiple acquisitions if more than one subsidiary was acquired. Finally, more complex models are computationally intensive, which is an issue given the size of my database. For example, with my database it takes approximately 24 hours to run one Tobit regression with the dependent variable of total value of acquisitions (results are not substantially different than with the dichotomous variable). So, for this additional, practical reason I dichotomize this variable and use logistic regression.

**Independent Variables**

   **State regulations**. I created annual state-level legal environment histories for all 48 states in the sample from 1896 to 2001. To construct these regulatory histories I examined more than 15 secondary sources as well as, in many cases, actual state statutes. (Appendix A explains how this time series data was constructed.) Regulations were divided into three categories: full statewide banking (i.e., no geographic restrictions on locations); unit banking (banks limited to one location); and limited statewide banking (branching permitted, but geographically restricted). To capture these types, dummy variables were created for statewide banking and unit banking. Using limited statewide banking as the omitted category enabled me to test both unit banking and statewide banking effects, and is more conservative than comparing just branching versus non-branching states. Because branching in limited statewide banking states was typically highly proscribed (e.g., limited to only two offices or a specific geographic area), being in a unit banking state is being compared to being in states that permitted only a few offices instead of states in which branching was unrestricted. Conversely, being in a statewide banking state is being compared to being in states in which it was possible to have a few offices instead of states in which branching was prohibited. To establish legal environment at time of founding I used the bank founding date in the Chicago Federal Reserve database. In the absence of information on banking laws prior to

1896, all banks founded earlier were considered to be founded under the laws that existed in 1896 (or first year of statehood in the cases of Arizona, New Mexico, and Oklahoma).

**Transportation infrastructure.** To test the hypotheses that statewide banking would be more likely to affect bank size as the transportation infrastructure became more developed, I created a measure of transportation infrastructure for each state-year. One possibility would be to operationalize this as total highway mileage, however, I was unable to locate this data for the target historical period. I was able to identify two alternative operationalizations for which I was able to locate the requisite data for almost the entire period: annual state capital spending on roadways; and annual state level highway maintenance. Data for both of these operationalizations are from annual publications of Highway Statistics by the U.S. Department of Transportation. Capital spending on roadways should reflect the expansion of highways and level of highway maintenance a direct function of the extent of roadways. These measures have the additional benefit that they should also capture the quality of roads, which would significantly affect transportation capability. And furthermore, they would reflect road width and number of lanes, items that would not be fully captured by a simple measure of mileage. At the national level since 1921, when the data became available, however, both measures correlate at .95 with total highway mileage. Because these data extend back only to 1921, to be able to use the full range of observations on my dependent variable I had to extrapolate back from 1921 to 1896. To accomplish this for both variables I multiplied the percent of overall highway expenditures in 1921 by the percent change in total national highway mileage (data for which exists back to 1900). For example, in 1921 national maintenance expenditures totaled $65,000 (11 states had $0 and 20 states less than $200). New York's $9,000 represented 14% of the total. National mileage that year increased by 15% (to 55,000 miles), so for New York for example, I subtracted 15% from $9,000 to get approximately $7,500. By 1900, the end of this data series, total national mileage is reduced to 100. To get the 1896 to 1899 values I linearly interpolated for each state under the assumption that in 1896 there were 0 miles. Inasmuch as the highway system did not grow significantly until after 1921, the extrapolation and interpolation of these values should not bias the analyses. Highway maintenance and highway capital expenditures are correlated at 0.97 and both return

similar results in the analyses, so I created a principle component factor score of the extent of highways for each state-year. This variable is included in the analyses as a control and used for the interaction terms with the unit banking and statewide banking variables.

**Geographic dispersion of bank locations.** To more directly test the coordination mechanism that I theorize underlies the imprinting effect, I use the dependent variable for the state-level analyses described above as an independent variable in my organizational level analyses. As this data covers only the period before 1992, organizations founded in 1993 or later are excluded from these analyses, reducing the sample by approximately 1,000 banks, from about 25,000 to about 24,000. Organizations from this recently founded group account for fewer than 100 of the approximately 3,250 bank-year acquisition observations during the period.

## Control Variables

I included a number of control variables in both the state- and organizational-level analyses. To account for state-level economic conditions and potential endogeneity issues with large banks potentially influencing state laws, the state-level analyses include, among other controls, a lagged dependent variable in the equations (so the analyses start in 1897) as well as measures of the strength of various interest groups in each state. As noted earlier, I assembled this list of variables by consulting Ingram and Rao (2004) as well as economic work on banks influencing laws (e.g. Abrams and Settle 1993; Calomiris 1993; Kane 1996; White 1984). Owing to the sporadic reporting of some of these variables, particularly for the earlier period studied, some are interpolated via the ipolate command in STATA. These include the percentage of the population that lived in urbanized areas, data for which were obtained from the US Census Bureau at 10-year intervals beginning in 1900. To account for multiple cities in a state I created as a measure of state urban centralization a Herfindahl index of the concentration of state urban population in large cities. For example, Illinois, in which the majority of the urban population is in Chicago, would have a higher value than Ohio, in which the urban population is spread across many cities. The number of banks per capita was calculated using the state-level banking database described

earlier together with population figures from the Census.[4] I also include a measure of bank deposits per capita at the beginning of the period under study (1896) to account for early bank power which may have influenced the state laws. Data that characterized two important types of customers were also collected. The power of farmers was reflected in data on the average size of farms collected from the US Agriculture Department's historical database on farms, the power of the manufacturing sector in data on the percent of manufacturing employment collected from Historical Statistics of the States of the United States (Dodd 1993) and the Census Bureau. Additional controls for state-level economic conditions include per capita income (data from the Bureau of Economic Analysis and, prior to 1929, Population Redistribution and Economic Growth, 1870-1950 (Lee et al. 1957)) and total population (data from the US Census Bureau).[5] To account for the fact that highway mileage grew during the time period studied and is to some extent a function of the size of a state, I included a linear time trend variable and the square miles of the state and annual dummies for all years. Some of these variables are also included in the organizational-level analyses.

At the organizational level the two most important controls related to bank acquisitions are bank performance and bank size. Following Stiroh and Strahan (2003) I use a relative performance measure, return on owners equity (ROE) normalized (via z-score) to state peers, and include an alternative measure of raw performance operationalized as total income divided by total assets. To operationalize bank size I include a variable that measures a bank's total assets. These financial variables are from the databases described above and are lagged one year. In the organizational-level analysis I included state as well as annual dummies.

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[4] This is included only in the analyses in which percent locations at a distance is the dependent variable. For the analyses of average bank size in a state, "number of banks" is in the numerator of this independent variable as well as in the denominator of the dependent variable. Running models in which I included it (not presented, but available upon request) did not significantly affect the levels of the hypothesized variables.

[5] As an additional check on economic effects varying across states with different legal regimes, in models not presented here but available upon request I also included interaction terms between types of branching law and per capita income. Including these variables did not affect the significance levels of the hypothesized variables.

I also included variables that indicated whether a bank's headquarters was in an urban area (MSA), the age of the bank in years (logged because of extreme values, e.g., the Bank of New York was founded in 1784), and whether the bank was a multi-bank holding company (Barnett, Greve, and Park 1994) as well as a dummy variable to indicate whether the bank had previously acquired another bank. To account for the uniqueness of being in the world's financial center I included a dummy variable that indicated whether a bank was an early New York bank. In the organizational-level analyses I included a control to identify whether the state permitted inter-state banking and a count of the number of acquisitions in the previous year to account for waves of mergers (Stearns and Allan 1996).

**Statistical Models**

I have two sets of models. One set is used to predict mean bank size and geographic dispersion of banks at the state level from 1896-1978, the second to predict organizational-level acquisitions in the period from 1978-2001.

**State-level analysis (1896-1978).** Primary considerations in deciding the appropriate model for my state-level analyses include (1) multiple observations for each state, and (2) the likelihood of a high degree of autocorrelation between a given year and the previous year. Given this time series panel structure I used Prais-Winston regression with a panel specific autoregressive disturbance structure (xtpcse command in STATA, with autocorrelation = psar 1).[6] In such situations, Beck (2001, and see Guillén and Suárez, 2005 for a recent empirical example) recommends a model with panel corrected standard errors and a lagged dependent variable which I also include. The Prais-Winston estimator is a generalized least squares (GLS) estimator corrected for first-order serially-correlated residuals that are specific to each panel (i.e., within states as opposed to across the entire dataset, as is customary with time-

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[6] I conducted numerous sensitivity checks. This included running other potential models, including general fixed and random effects models with an autoregressive term (STATA command xtregar), and an instrumental variable model with an Arellano-Bond estimator (STATA command xtabond2). The results from the Prais-Winston analyses are similar and in most cases significantly more conservative than those obtained by these other methods.

series analyses).  This estimation technique, identical to the Cochrane-Orcutt time-series technique save

that it provides an estimate for the first year of data (Ostrom 1990), transforms each variable through the

following formulas.  Note that $\rho$ is the autocorrelation estimate, the year-to-year correlation of the

residuals from the time-series analysis.

- $Y^* = Y_t - \rho Y_{t-1}$
- $X^* = X_t - \rho X_{t-1}$
- $a^*$ (constant) $= a (1-\rho)$

The Prais-Winston technique transforms the first observation as follows:

- $Y^* = Y \rho (1-\rho^2)$
- $X^* = X \rho (1-\rho^2)$

**Organizational-level analysis (1978-2001).** Because I predict whether a bank engages in

acquisition, I use logistic regression with a 1 indicating an acquisition in a given year.  Because I have

multiple observations for many banks in the study period, not all observations are independent.  To

correct for this I use a random effects panel model that accounts for situations in which there are multiple

observations per firm over time (xtlogit command in STATA).  Because some organizations are in the

dataset for only one year it is not possible to use fixed effects, as there would be no variance on the

dependent variable for those firms.  As noted, I do nevertheless include year and state-level fixed effects

to control for any unobserved time and spatial effects.


**RESULTS**

Tables 1 and 2 present the descriptive statistics and correlations of the state-level and

organizational-level variables, respectively.   Tables 4 and 5 present the regression models for the state-

level and organizational-level analyses, respectively.


Tables 1-4 about here

Models 1 to 3 in Table 3 present the state-level analyses with average bank size per state as the dependent variable, models 4 to 6 with geographic dispersion of branches as the dependent variable.  The first model in each of these sets presents just the control variables, the second the equations with only the banking law variables added, and the third the full models including the controls, main effects for laws, and interaction terms with laws and transportation infrastructure.  Regarding Hypothesis 1, which predicts that statewide banking states are more likely (H1a) and unit banking states less likely (H1b) to have larger banks, model 2 supports both predictions.  Although I do not hypothesize about the effect of these main effects on the dispersion of banking, model 5 corroborates the findings in equation 2.

In the full models (3 and 6), in which I consider the interaction terms between transportation infrastructure and state laws, the interaction between statewide banking and transportation infrastructure is statistically significant supporting both H2a and H2b, that is, that as transportation becomes more advanced in statewide banking states banks become larger and more geographically dispersed.  The results of these analyses indicate that regulatory differences influence banking at the state level and that this effect is, to some extent, historically contingent.


Figures 3 and 4 about here

The graphs presented in Figures 3 and 4 show the predicted effects of the unit* highway and statewide* highway interactions on the two dependent variables.  Note that for both the intercepts of the statewide interaction are higher than those of the unit banking interaction and, further, that the slope of the statewide interaction is steeper.  This is particularly the case for the geographic dispersion of branches.  A more developed transportation infrastructure appears to accentuate the effect of statewide banking in terms of both the growth and geographic dispersion of banks.

Many of the control variables in the state level analyses are not statistically significant, which, given the lagged average size variable and annual dummy variables, is not necessarily surprising, since

these variables capture much of the variance of the dependent variables.[7] Lagged average bank size is a very strong predictor in both sets of models. In the analysis in which the dependent variable is the percentage of locations outside of the headquarters city, urban centralization is significant in the positive direction, and the percent urbanization results are negative. So in states where population is concentrated in fewer cities, banks are more likely to establish branches outside their headquarters city, however this effect is tampered by the overall city size.

Table 4 presents the organizational-level analyses that test hypotheses 3a-d. Model 7 presents the control variables and model 8 adds the main effect for legal environment during founding, model 9 the interactions between state laws and transportation infrastructure. Model 10 includes the controls and the degree to which the state banking industry is geographically dispersed. Model 11 is a full model including all of the variables. Neither H3a nor H3b, which predicted the main effects of statewide branching and unit banking at founding on bank mergers, were supported. However, the interaction effect between statewide banking and highway infrastructure (H4c) was significant, indicating that it is not just initial regulatory conditions but the technical environment as well that determines how banks conceive of their market. The effect of being in a state with geographically dispersed locations, is a significant predictor in model 10, which lends support to H4d, that banks founded in locations in which coordination over distances was necessary were likely to develop in response capabilities that would later enable and dispose them to acquire other banks. In model 11, however, which includes the state law variables, this variable is no longer significant. This result is not entirely surprising since it is the transportation infrastructure that likely led to the ability to establish locations. The statewide branching and transportation at founding interaction in model 11 continues to be a significant predictor of which banks subsequently acquire other banks.

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[7] In models without the annual dummies, in addition to the current pattern of findings, the percent urban variable is positively significant in models 1-3, (i.e. states with a greater percentage of urban residents exhibit a greater likelihood of having larger banks), and the measure of entrenched bank power, bank deposits in 1896 is significant in models 1-6.

Results of some control variables used in the organizational-level analyses are also quite interesting. First, contrary to economic research (Stiroh and Strahan 2003) and the goal of banking deregulation, it appears that bank size influences to a much greater degree than bank performance which banks acquire other banks. As would be expected based on prior analyses of changes following deregulation in the financial services industry (Haveman, 1993), larger banks are more likely to acquire other firms. Also more likely to acquire other banks are banks in cities, banks organized as multi-bank holding companies, and banks that have previously acquired another bank.

## DISCUSSION AND CONCLUSIONS

This study examined the effect of historical environments on the coordination and growth of large-scale organizations in the US banking industry. I examined two levels of analysis during two key historical eras. My state-level analyses between 1896 and 1978 showed that states in which statewide banking was permitted and transportation infrastructure was more advanced had larger and more geographically dispersed banks than states in which these conditions did not exist. This translated at the organizational level into banks founded when branching was permitted and the technical capability to grow existed being more likely to pursue acquisitions. I argue that banks founded in environments in which coordination over distances was desirable developed capabilities that later disposed them to be more likely to acquire other banks.

These results support my argument that to understand growth and scale in organizations and industries one must understand the environmental conditions that enable coordination particular to the industry-specific type of interdependency. As I argued and found, the growth of service organizations, for which pooled interdependency is most important, was contingent on much different environmental factors than was the growth of industrial firms. In particular, my analyses show the importance of laws that permit organizations to establish multiple locations (Ingram and Rao 2004) and technology that enables them to effectively coordinate between those locations and headquarters.

Beyond the main effect of legal environments on firms, it is important to emphasize the interaction between legal and technical environments. This variable had an effect on both state-level bank size and the likelihood that a bank would acquire another bank, suggesting that it is necessary to understand both legal and technical environments in order to understand the rise of large organizations. Efficiency-oriented theories that emphasize the effects of technological environments (Chandler 1977) and political approaches that emphasize the effects of laws (Roy 1997) on the rise of large organizations are often seen as alternative explanations. My analyses suggest that these explanations might, in fact, be complementary and organizational growth be dependent on both factors. How interaction between the legal and technical environments during the early part of the twentieth century enabled the rise of large industrial firms has not yet been examined.

The imprinting effect of legal and technical environments is also worthy of comment. As I argued, initial conditions would exert both structural and cultural influences on firms' ability to coordinate across locations and, consequently, on their ability to acquire other firms. The effect of the statewide branching and highway interaction and of the geographic dispersion of locations during founding both suggest the early development of a capability that proved useful to banks during the period of inter-state consolidation. These findings, together with the ones discussed above, point to a dual effect of historical environments both as a general influence on economic environment and industry structure and as an enduring influence on social structures based on conditions at founding. To understand social forms one thus needs to study both contemporary conditions and how historical environments have changed over time.

As I observed at the outset, during the period when inter-state banking was not possible this variation had little consequence beyond different patterns of within-state competition. When inter-state banking became possible after 1978, banks in states that had the most favorable laws came to dominate the industry. I argue that this is because they had an advantage in both size and the ability to coordinate across locations. In the contemporary banking market, some banks are clearly advantaged by their states' regulatory history. Statewide banking and advanced transportation infrastructure translated into larger

banks and advantageous founding conditions into a greater likelihood to grow through acquisition. It is also clear that originating in a unit banking state disadvantages banks in the national market context. In both the state-level and organizational-level analyses, unit banking states' banks are, on average, smaller and less likely to acquire other banks than banks in the reference category of limited statewide banking states.

How these developments played out over the twentieth century can be seen in Figure 5, which depicts relative bank size in three states with dramatically different regulatory histories, North Carolina, Alabama, and Colorado. The y-axis plots the z-score of total banking assets for each state which depicts how each state-year observation relates to the mean value of bank size across all 48 contiguous states for that year.

Figure 5 about here

Note that all three states had smaller than average banks prior to the turn of the century. Subsequently, banks in Colorado, which remained a unit banking state for almost the entire twentieth century, remained in the lower half of the distribution. Banks in North Carolina, which permitted statewide banking throughout the twentieth century, gradually increased in size through branching as the transportation infrastructure progressively developed, then became dramatically larger with the advent of inter-state banking. Alabama, which started as a unit banking state, initiated limited statewide banking in 1935, and transitioned to statewide branching in 1991 is an example of a middle ground between states like North Carolina and Colorado. These results suggest that one possible consequence of the recent wave of deregulatory activity across many industries in the United States including transportation, communication, utilities, health care, and agriculture (Wholey and Sanchez 1991; Lounsbury, Hirsch, and Klinkerman 1998) might be an uneven distribution of power based on where and when organizations were founded. In addition to adding to our understanding of the growth of firms in service industries, these results further suggest that the US historical experience of federalism has had a lasting influence on

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economic organization and that the history of state laws plays an important if little recognized role in how industries are organized.

How the effects of historical environments have influenced organizational growth and structures in a wide variety of industries is still an open question; however anecdotal and case-based evidence suggests that understanding historical backgrounds can inform our understanding of growth and structures in organizations and industries.   Consider the early development of airlines such as Southwest and Pacific Southwest in Texas and California, respectively.  These states had among the most favorable state laws for founding an airline and importantly a physical geography composed of large, dispersed population centers that made air travel an attractive alternative to surface travel (Freiberg and Freiberg 1996).  Like North Carolina's banks, these airlines were well positioned when airline deregulation occurred in 1978.  In the past 25 years Southwest has become a major airline and Pacific Southwest also expanded rapidly following deregulation before being acquired by USAir in 1987.

Understanding the disparate historical backgrounds of firms and industries can also provide traction on questions of global competitiveness.  Porter (1990) suggests, for example, that the historical conditions of national industries might help to explain how some firms have come to dominate global environments.  Japan's long-time emphasis on state-sponsorship led to international success in the automotive and electronic industries and Germany came to dominate the synthetic dye industry as a result of the lack of patent controls relative to Britain and France (Murmann 2003).  A more recent example is debate within the European Union about the status of companies and industries that previously enjoyed significant state support (Theil 2004; The Economist 2004).  In much the same way that the US banking market consolidated following national integration, European countries are currently struggling with how their "national champion" firms will fit into a deregulated European market.  While some argue that continuing to protect "national champions" is a threat to the freedom of European markets, in defining freedom as only what occurs after deregulation, this argument fails to recognize the unique historical conditions that may create advantage or disadvantage for some firms based solely on where and when they were founded.

**Appendix A: Assembling Data on Intra-State Banking Laws from 1896-2001**

Data on state-level intra-state banking regulations for the 48 contiguous US states from 1896-2001 were collected from numerous sources. Chapman and Westerfield (1942) report a survey from the Comptroller of the Currency that contains information on branching regulations in 1896. A number of sources cite this as the first survey of branch banking in the United States. Fischer (1968) cites as sources for his report on regulatory changes between 1896 and 1909 the Comptroller of the Currency and, for 1910, the National Monetary Commission. For 1910, I examined Fischer's source, the "Digest of State Banking Statutes," compiled by Weldon Frederick for the National Monetary Commission. Bradford's (1940) "The Legal Status of Branching in the United States" contains information assembled from a periodic publication of the Federal Reserve for the years 1910, 1924, 1929, 1932, 1936, and 1939. I also examined the Federal Reserve publication "State Laws Relating to Branch Banking" (Federal Reserve Bulletin, March 1925; April, 1930; July 1932; November, 1936; October 1939; July 1951 contains the text of the state statutes). Fischer's (1968:62-63) state-by-state breakdown of intra-state banking and regulations between 1924 and 1967 documents the years of changes. The Federal Reserve's monograph-length Compilation of Federal and State Statutes Relating to Branch Banking, published in December 1956, and October 1967, contains the statutes at those times. For the period after 1967 I use various years' of the Conference of State Bank Supervisors A Profile of State-Chartered Banking, published bi-annually beginning in 1965. Berger, Kashyap, and Scalise (1994) have made a summary of laws since 1960, Rhoades's (1981) "Banking Structure and Performance at the State Level During the 1970s" recounts the regulations in effect during the 1970s, and Hannan and Prager's (1998) "The Relaxation of Entry Barriers in the Banking Industry: An Empirical Investigation" has data from 1986-1994. For some of the earlier years I had to make assumptions about branching regulations. Fischer (1968) maintains that regulation during this period was in many cases by custom rather than law and I followed his assessment of the type of branching enforced in a given state. For the few cases for which I did not have branch law information for a particular year I assumed the legal history to be continuous (e.g., if I had information that Illinois was a unit banking state in 1911 and 1915 I assumed that it was a unit banking state from 1912-1914).

## REFERENCES

Abrams, Burton A. and Russell F. Settle. 1993. "Pressure-Group Influence and Institutional Change: Branch-Banking Legislation during the Great Depression." *Public Choice* 76:687-705.

Barnett, William P. and Glenn R. Carroll. 1993. "How Institutional Constraints Affected the Organization of Early American Telephony." *Journal of Law, Economics and Organization* 9:98-126.

Barnett, William P., Henrich Greve, and Douglas Park. 1994. "An Evolutionary Model of Organizational Performance." *Strategic Management Journal* 15:11-28.

Baron, James. N., Michael. T. Hannan, and D. Burton. 1999. "Building the Iron Cage: Determinants of Managerial Intensity in the Early Years of Organizations." *American Sociological Review* 64:527–547.

Beck, Nathaniel. 2001. "Time-Series Cross-Section Data: What Have We Learned in the Last Few Years?" *Annual Review of Political Science* 4:271-293.

Berger, Alan N., Anil K. Kashyap, and Joseph M. Scalise. 1995. "The Transformation of the U.S. Banking Industry: What a Long, Strange Trip It's Been." *Brookings Papers on Economic Activity* 2:55-197.

Boeker, Warren. 1988. "Entrepreneurial and Environmental Imprinting at Time of Founding." Pp. 33-51 in *Ecological Models of Organizations*, edited by G.R. Carroll. Cambridge MA: Ballinger.

Borchert, J.R. 1967. "American Metropolitan Evolution." *Geographical Review* 57(3): 301-302.

Bradford, Frederick. 1940. *The Legal Status of Branch Banking in the United States*. New York: American.

Calomiris, Charles. 1993. "Regulation, Industrial Structure, and Instability in U.S. Banking: A Historical Perspective." Pp. 19-115 in *Structural Change in Banking*, edited by Michael Klausner and Lawrence J. White. New York: New York Business One-Irwin Publishing

Campbell, J.L. and L.N. Lindberg. 1990. "Property Rights and the Organization of Economic Activity by the State." *American Sociological Review* 55:634-647.

Carroll, Glenn R., Lyda Bigelow, Marc-David Seidel, and Lucia Tsai. 1996. "The Fates of De Novo and De Alio Producers in the American Auto Industry 1885-1981." *Strategic Management Journal* 17:117-137.

Chapman, John M. and Ray B. Westerfield. 1942. *Branch Banking: Its Historical and Theoretical Position in America and Abroad*. New York: Harper.

Chandler, Alfred D., Jr. 1977. *The Visible Hand: The Managerial Revolution in American Business*. Cambridge: Harvard University Press.

Collis, Charles Wallace. 1926. *The Branch Bank Question*. New York: MacMillan Company.

Comerica Bank. 1999. *Promises Kept: The Story of Comerica, 1849-1999*. Detroit: Comerica Bank.

Conference of State Bank Supervisors. Bi-annual, beginning in 1965. *A Profile of State-Chartered Banking*. Washington, DC: Conference of State Bank Supervisors.

Covington, Howard and Marion Ellis. 1993. *The Story of NationsBank*. Chapel Hill, NC: University of North Carolina Press.

Davis, Gerald F. and Mark. S. Mizruchi. 1999. "The Money Center Cannot Hold: Commercial Banks in the U.S. System of Corporate Governance." *Administrative Science Quarterly* 44: 215-239.

Dobbin, Frank. 1994. *Forging Industrial Policy: The United States, Britain, and France in the Railway Age*. New York: Cambridge University Press.

Dobbin, Frank and Timothy Dowd. 1997. "How Policy Shapes Competition: Early Railroad Foundings in Massachusetts." *Administrative Science Quarterly* 42:501-529.

------. 2000. "The Market that Antitrust Built: Public Policy, Private Coercion, and Railroad Acquisitions, 1825-1922." *American Sociological Review* 65:635-657.

Dodd, Donald. 1993. *Historical Statistics of the States of the United States*. Westport, CT: Greenwood Press.

Economist, The. 2004. "A Smaller National Champion: French Industrial Policy." *The Economist* June 5, 2004:61.

Edelman, Lauren B. 1990. "Legal Environments and Organizational Governance: The Expansion of Due Process in the American Workplace." *American Journal of Sociology* 95:1401-1440.

FDIC Historical Statistics on Banking. Various Issues. Washington, DC: US Government Printing Office and http://www2.fdic.gov/hsob/index.asp.

Federal Reserve Bulletin. Various Issues. Washington, DC: US Government Printing Office.

Ferguson, Niall. 1998. *The World's Banker: The History of the House of Rothschild*. London: Weidenfeld & Nicolson.

Fischer, Gerald C. 1968. *American Banking Structure*. New York: Columbia University Press.

Fligstein, Neil. 1990. *The Transformation of Corporate Control*. Cambridge: Harvard University Press.

------. 1996. "Markets as Politics: A Political-Cultural Approach to Market Institutions." *American Sociological Review* 61:656-673.

Flood, Mark D. 1998. United States Historical Data on Bank Market Structure, 1896-1955 [Computer file]. ICPSR version. Montreal, Quebec: Mark D. Flood, Concordia University [producer], 1998. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor].

Fombrun, Charles and Edward Zajac. 1987. "Structural and Perceptual Influences on Intraindustry Stratification." *Academy of Management Journal* 30:33-50.

Freiberg, Kevin and Jackie Freiberg. 1996. *Nuts: Southwest Airlines' Crazy Recipe for Business and Personal Success*. New York: Broadway Books.

Galbraith, J.R. 1973. *Designing Complex Organizations*. Reading, MA: Addison-Wesley.

Garbade, Kenneth and William Silber. 1979. "The Payment System and Domestic Exchange Rates: Technological Versus Institutional Change." *Journal of Monetary Economics* 5:1-22.

Gilbert, R. Alton. 1998. "Did the Fed's Founding Improve the Efficiency of the U.S. Payments System?" *Federal Reserve Bank of St. Louis Review* May/June: 121-142.

Guillén, Mauro F. and Sandra L. Suárez. 2005. "Explaining the Global Digital Divide: Economic, Political and Sociological Drivers of Cross-National Internet Use." *Social Forces* Forthcoming.

Hampton, Adriel. 2004. "Chain Stores Locked Out: Supes Give Neighbors Power Over Businesses." *San Francisco Examiner* March 24, 2004.

Hannan, Timothy H. and Robin Prager. 1998. "The Relaxation of Entry Barriers in the Banking Industry: An Empirical Investigation." *Journal of Financial Services Research* 14:171-188.

Haveman, Heather A. 1992. "Between and Rock and a Hard Place: Organizational Change and Performance under Conditions of Fundamental Environmental Transformation." *Administrative Science Quarterly* 37:48-75.

------. 1993. "Organizational Size and Change: Diversification in the Savings and Loan Industry After Deregulation." *Administrative Science Quarterly* 38:20-50.

Haveman, Heather A. and Hayagreeva Rao. 1997. "Structuring a Theory of Moral Sentiments: Institutional and Organizational Coevolution in the Early Thrift Industry." *American Journal of Sociology* 102:1606-1651.

Ingram, P. and H. Rao. 2004. "Store Wars: The Enactment and Repeal of Anti-Chain-Store Legislation in America." *American Journal of Sociology* 110:446-487.

James, Marquis and Bessie James. 1954. *Biography of a Bank: The Story of Bank of America*. New York: Harper and Brothers.

Jayaratne, Jith and Philip Strahan. 1996. "The Finance-Growth Nexus: Evidence from Bank Branch Deregulation." *Quarterly Journal of Economics* 111:639-670.

Kane, Edward. 1996. "De Jure Interstate Banking: Why Only Now?" *Journal of Money, Credit, and Banking* 28:141-161.

Klebaner, Benjamin. 1990. *American Commercial Banking: A History*. Boston: Twayne Publishers.

Knodell, Jane. 1998. "The Demise of Central Banking and the Domestic Exchanges: Evidence from Antebellum Ohio." *The Journal of Economic History* 58:714-730.

Lawrence, P.R. and J.W. Lorsch. 1967. "Differentiation and Integration in Complex Organizations." *Administrative Science Quarterly* 12(1):1-47.

Lee, Everett, Ann Miller, Carol Brainerd, and Richard Easterlin. 1957. *Population Redistribution and Economic Growth, United States, 1870-1950*. Vol. 1. Philadelphia: The American Philosophical Society.

Lounsbury, Michael, Paul Hirsch, and Steven Klinkerman. 1998. "Institutional Upheaval and Performance Variation: A Theoretical Agenda and Illustration from the Deregulation of Commercial Banks." *Advances in Strategic Management*, 15:129-146.

Marquis, Christopher. 2003. "The Pressure of the Past: Network Imprinting in Intercorporate Communities." *Administrative Science Quarterly* 48:655-689.

Meyer, Marshall. W. and M. Craig Brown. 1977. "The Process of Bureaucratization." *American Journal of Sociology* 83:364–385.

Murmann, J. Peter. 2003. *Knowledge and Competitive Advantage: The Coevolution of Firms, Technology, and National Institutions*. Cambridge: Cambridge University Press.

Murray, Matt. 1995. "Banc One Jumps Back into the Hunt for Acquisitions-- After 18-Month Timeout, Bank Makes Two Moves in a Week." *The Wall Street Journal* July 24, 1995:B4.

Nadler, D.A. and M. Tushman. 1997. *Competing by Design: The Power of Organizational Architecture*. New York: Oxford University Press.

North, Douglass C. 1981. *The Economic Growth of the United States, 1790–1860*. Englewood Cliffs, NJ: Prentice-Hall.

Ostrom, Charles W. 1990. *Time Series Analysis Regression Techniques*, 2nd Ed. Newbury Park, CA: Sage.

Porter, Michael. 1990. *The Competitive Advantage of Nations*. London: Macmillan.

Rhoades, Stephen A. 1981. "Banking Structure and Performance at the State Level During the 1970s." Working Paper. Board of Governors of the Federal Reserve.

------. 2000. "Bank Mergers and Banking Structure in the United States, 1980-1998" Staff Study 174, Board of Governors of the Federal Reserve.

Robertson, Ross M. 1968. *The Comptroller and Bank Supervision*. Washington, DC: Office of the Comptroller of the Currency.

Roe, M.J. 1994. *Strong Managers Weak Owners: The Political Roots of American Corporate Finance*. Princeton: Princeton University Press.

Roy, William. 1997. *Socializing Capital: The Rise of the Large Industrial Corporation in America*. Princeton, NJ: Princeton University Press.

Schneiberg, Marc and Tim Bartley. 2001. "Regulating American Industries: Markets, Politics, and the Institutional Determinants of Fire Insurance Regulation." *American Journal of Sociology* 107:101–146.

Scott, W.R. 2001. *Institutions and Organizations*, 2nd Ed. Thousand Oaks, CA: Sage Publications.

------. 1998. *Organizations: Rational, Natural and Open Systems*, 4th Ed. Upper Saddle River, NJ: Prentice-Hall.

Southworth, Shirley Donald. 1928. *Branch Banking in the United States*. New York: McGraw-Hill.

Sprague, O.M.W. 1903. "Branch Banking in the United States." *Quarterly Journal of Economics* 27:242-269.

Stearns, L.B. and K.D. Allan. 1996. "Economic Behavior in Institutional Environments: The Corporate Merger Wave of the 1980s." *American Sociological Review* 61:699-718.

Stinchcombe, A.L. 1965. "Social Structure and Organizations." Pp. 142-193 in *Handbook of Organizations*, edited by J.G. March. Chicago: Rand McNally & Co.

Stiroh, K. J. and J.P. Poole. 2000. "Explaining the Rising Concentration of Banking Assets in the 1990s." *Current Issues in Economics and Finance* 6(August):1-6.

Stiroh, Kevin and Phillip Strahan. 2003. "Competitive Dynamics of Deregulation: Evidence from U.S. Banking." *Journal of Money, Credit and Banking* 35:801-828.

Sutton, John R., Frank Dobbin, John W. Meyer, and W. Richard Scott. 1994. "The Legalization of the Workplace." *American Journal of Sociology* 99:944-971.

Swaminathan, Anand. 1996. "Environmental Conditions at Founding and Organizational Mortality: A Trial-by-Fire Model." *Academy of Management Journal* 39:1350-1377.

Theil, Stefan. 2004. "What Could They Be Thinking? France Riles Neighbor Germany with Its Efforts to Promote 'National Champion' Companies." *Newsweek* June 21, 2004.

Thompson, J.D. 1967. *Organizations in Action*. New York: McGraw-Hill.

Tucker, D.J., J.V. Singh, and A.G. Meinhard. 1990. "Founding Characteristics, Imprinting and Organizational Change." Pp. 182-200 in *Organizational Evolution: New Directions*, edited by J.V. Singh. Newbury Park, CA: Sage.

US Department of Transportation, Various Issues. *Highway Statistics*. Washington, DC: Federal Highway Administration

Wade, James B., Anand Swaminathan, and Michael Scott Saxon. 1998. "Normative and Resource Flow Consequences of Local Regulations in the American Brewing Industry, 1845-1918." *Administrative Science Quarterly* 43:905-935.

Wheelock, David and Paul Wilson. 2002. "Consolidation in US Banking: Which Banks Engage in Mergers?" Working Paper 2001-003, Federal Reserve Bank of St. Louis.

Whipple, Howard. 1935. "Credit Management in Branch Banking." (Four-part series). *Banking*: February: 20-21, 68; March: 20-21, 69; April: 42-43, 70; May: 42-43, 84-85.

Wholey, D.R. and S.M. Sanchez. 1991. "The Effects of Regulatory Tools on Organizational Populations." *Academy of Management Review* 16:743-767.

Williamson, O.E. 1975. *Markets and Hierarchies: Analysis and Antitrust Implications*. New York: Free Press.

White, Eugene. 1984. "Voting for Costly Regulation: Evidence from Banking Referenda in Illinois, 1924." *Southern Economic Journal*: 1084-1098.

**Table 1: Descriptive Statistics and Correlations, State-level Analyses 1896-1978**

| | | Mean | S. D. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Average Size (log) | 10.488 | 1.381 | | | | | | | | | | | | | | | | | |
| 2 | Statewide Banking | 0.307 | 0.461 | 0.260 | | | | | | | | | | | | | | | | |
| 3 | Unit Banking | 0.407 | 0.491 | -0.453 | -0.552 | | | | | | | | | | | | | | | |
| 4 | Statewide * Highway | -0.040 | 0.427 | 0.423 | -0.142 | 0.078 | | | | | | | | | | | | | | |
| 5 | Unit * Highway | -0.173 | 0.576 | 0.459 | 0.201 | -0.363 | -0.029 | | | | | | | | | | | | | |
| 6 | Total Population (log) | 14.367 | 1.073 | 0.354 | -0.204 | -0.140 | 0.241 | 0.312 | | | | | | | | | | | | |
| 7 | Per Capita Income | 9839 | 5216 | 0.806 | 0.114 | -0.232 | 0.396 | 0.392 | 0.230 | | | | | | | | | | | |
| 8 | Percent Urban | 0.499 | 0.210 | 0.810 | 0.038 | -0.236 | 0.300 | 0.400 | 0.438 | 0.689 | | | | | | | | | | |
| 9 | State Urban Centralization | 0.473 | 0.378 | 0.078 | 0.026 | -0.019 | -0.112 | 0.039 | 0.221 | -0.001 | 0.222 | | | | | | | | | |
| 10 | Percent Manufacturing | 0.075 | 0.048 | 0.435 | 0.057 | -0.223 | 0.079 | 0.113 | 0.296 | 0.284 | 0.627 | 0.150 | | | | | | | | |
| 11 | Average Farm Acres (log) | 5.304 | 0.954 | 0.147 | 0.038 | 0.132 | 0.137 | 0.085 | -0.407 | 0.337 | 0.039 | -0.203 | -0.508 | | | | | | | |
| 12 | Highway | -0.148 | 0.805 | 0.697 | 0.013 | -0.287 | 0.518 | 0.725 | 0.471 | 0.656 | 0.557 | -0.027 | 0.168 | 0.149 | | | | | | |
| 13 | Number Banks/Capita | 0.000 | 0.000 | -0.675 | -0.297 | 0.513 | -0.108 | -0.407 | -0.312 | -0.355 | -0.473 | -0.079 | -0.332 | 0.124 | -0.420 | | | | | |
| 14 | Average Size (t-1) | 10.447 | 1.374 | 0.998 | 0.257 | -0.450 | 0.422 | 0.457 | 0.355 | 0.807 | 0.812 | 0.079 | 0.439 | 0.145 | 0.695 | -0.670 | | | | |
| 15 | Num. Banks/ Capita 1896 | 363.3 | 406.0 | 0.462 | 0.029 | -0.237 | 0.046 | 0.018 | 0.269 | 0.236 | 0.584 | 0.110 | 0.599 | -0.297 | 0.069 | -0.283 | 0.465 | | | |
| 16 | Square Miles | 64580 | 47182 | -0.091 | -0.083 | 0.214 | 0.052 | 0.042 | 0.020 | 0.014 | -0.093 | -0.114 | -0.520 | 0.594 | 0.035 | 0.142 | -0.094 | -0.316 | | |
| 17 | Time | 42.850 | 23.53 | 0.757 | 0.081 | -0.297 | 0.496 | 0.626 | 0.277 | 0.783 | 0.511 | -0.062 | 0.084 | 0.307 | 0.914 | -0.460 | 0.755 | -0.008 | 0.013 | |
| 18 | Percent Locations out HQ | 0.149 | 0.212 | 0.721 | 0.566 | -0.550 | 0.421 | 0.203 | 0.062 | 0.578 | 0.361 | -0.021 | 0.145 | 0.177 | 0.458 | -0.478 | 0.717 | 0.129 | -0.060 | 0.578 |

## Table 2: Descriptive Statistics and Correlations, Organizational-level Analyses 1978-2001

| | mean | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 Return on Equity (t-1) | 0.953 | 3.670 | | | | | | | | | | | | | | | | | | | | | |
| 2 Income/Assets (t-1) | 0.079 | 0.100 | 0.065 | | | | | | | | | | | | | | | | | | | | |
| 3 Bank Total Assets (log, t-1) | 11.152 | 1.285 | 0.016 | -0.036 | | | | | | | | | | | | | | | | | | | |
| 4 Acquisition (DV) | 0.013 | 0.113 | 0.002 | -0.004 | 0.222 | | | | | | | | | | | | | | | | | | |
| 5 Unit Bank State at Founding | 0.641 | 0.480 | -0.001 | -0.026 | -0.150 | -0.025 | | | | | | | | | | | | | | | | | |
| 6 Statewide Bank State at Founding | 0.167 | 0.373 | 0.002 | 0.034 | 0.092 | 0.026 | -0.599 | | | | | | | | | | | | | | | | |
| 7 Highway at Founding | -0.490 | 1.176 | 0.018 | 0.041 | -0.054 | -0.023 | -0.341 | 0.214 | | | | | | | | | | | | | | | |
| 8 Unit Bank * Highway at Founding | 5901 | 30219 | 0.030 | 0.005 | -0.073 | -0.013 | 0.146 | -0.087 | 0.328 | | | | | | | | | | | | | | |
| 9 Statewide Bank*Highway at Founding | 10618 | 53710 | -0.009 | 0.017 | -0.009 | -0.003 | -0.264 | 0.442 | 0.363 | -0.039 | | | | | | | | | | | | | |
| 10 HQ in MSA | 0.459 | 0.498 | 0.020 | 0.031 | 0.328 | 0.060 | -0.156 | 0.138 | 0.309 | 0.108 | 0.164 | | | | | | | | | | | | |
| 11 Bank Age (log) | 4.118 | 0.708 | -0.013 | -0.057 | 0.114 | 0.030 | 0.352 | -0.301 | -0.911 | -0.314 | -0.518 | -0.285 | | | | | | | | | | | |
| 12 Multi-BHC | 0.495 | 0.500 | 0.004 | -0.018 | 0.233 | 0.083 | 0.104 | -0.086 | -0.055 | -0.042 | -0.061 | -0.006 | 0.057 | | | | | | | | | | |
| 13 Previous Merger | 0.055 | 0.229 | -0.001 | -0.011 | 0.370 | 0.212 | -0.035 | 0.034 | -0.037 | -0.024 | -0.01 | 0.080 | 0.053 | 0.163 | | | | | | | | | |
| 14 Unit Banking | 0.179 | 0.384 | 0.006 | 0.013 | -0.159 | -0.042 | 0.344 | -0.209 | -0.041 | 0.061 | -0.092 | -0.056 | 0.039 | -0.098 | -0.093 | | | | | | | | |
| 15 Statewide Banking | 0.500 | 0.500 | -0.013 | -0.032 | 0.172 | 0.045 | -0.194 | 0.278 | 0.130 | 0.035 | 0.198 | 0.121 | -0.173 | 0.123 | 0.165 | -0.468 | | | | | | | |
| 16 Inter-state Banking | 0.548 | 0.498 | -0.020 | -0.039 | 0.146 | 0.036 | -0.103 | 0.095 | 0.103 | 0.056 | 0.140 | 0.077 | -0.139 | 0.1361 | 0.288 | -0.445 | 0.586 | | | | | | |
| 17 Per Capita Income | 16830 | 6475 | -0.028 | -0.035 | 0.165 | 0.037 | -0.073 | 0.117 | 0.127 | 0.027 | 0.233 | 0.120 | -0.172 | 0.1447 | 0.306 | -0.386 | 0.641 | 0.766 | | | | | |
| 18 Percent Urban | 0.706 | 0.122 | 0.009 | 0.004 | 0.142 | 0.006 | -0.053 | 0.109 | 0.275 | 0.135 | 0.196 | 0.331 | -0.233 | 0.0173 | -0.028 | 0.016 | 0.201 | 0.167 | 0.354 | | | | |
| 19 Number of Banks | 514.22 | 407.01 | 0.015 | 0.009 | -0.151 | -0.039 | 0.426 | -0.281 | 0.058 | 0.309 | -0.097 | 0.012 | -0.005 | -0.085 | -0.033 | 0.416 | -0.371 | -0.206 | -0.181 | 0.375 | | | |
| 20 Average Bank Size | 18.235 | 1.036 | 0.006 | -0.005 | 0.171 | 0.009 | -0.039 | 0.037 | 0.203 | 0.157 | 0.178 | 0.262 | -0.123 | 0.0173 | -0.059 | -0.002 | 0.063 | 0.151 | 0.226 | 0.702 | 0.510 | | |
| 21 % Locations out HQ | 0.0993 | 0.224 | -0.0003 | 0.0086 | 0.0786 | 0.0444 | -0.5657 | 0.5474 | 0.5759 | -0.0691 | 0.6006 | 0.2465 | -0.6553 | -0.0893 | 0.0008 | -0.2006 | 0.2775 | 0.1216 | 0.1366 | 0.2239 | -0.267 | 0.1218 | |
| 22 Early New York | 0.0098 | .0988 | 0.0112 | 0.0037 | -0.0156 | 0.1475 | 0.0724 | -0.0425 | -0.0992 | -0.0194 | -0.0194 | 0.057 | 0.1164 | -0.0373 | 0.0215 | -0.0464 | 0.0997 | 0.0372 | 0.0446 | 0.1179 | -0.079 | 0.2391 | -0.0432 |

**Table 3: State-level Analyses of Bank Size and Geographic Dispersion, 1896-1978**
Prais-Winston Time Series Panel Regression (PSAR1 disturbance), with Year Fixed Effects

| | DV: Average Bank Size per State (log) | | | DV: Percent Locations Outside HQ City | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Statewide Banking | | 0.0145** | 0.0198** | | 0.0278** | 0.0389** |
| | | (0.0044) | (0.0043) | | (0.0052) | (0.0057) |
| Unit Banking | | -0.0165** | -0.0200** | | -0.0034 | -0.0121** |
| | | (0.0054) | (0.0056) | | (0.0035) | (0.0035) |
| Statewide * Highway[†] | | | 0.0101* | | | 0.0367** |
| | | | (0.0047) | | | (0.0065) |
| Unit * Highway[†] | | | -0.0090+ | | | -0.0135* |
| | | | (0.0050) | | | (0.0053) |
| Total Population (log) | 0.0003 | 0.0047 | 0.0029 | -0.0127 | -0.0116 | -0.0120 |
| | (0.0033) | (0.0036) | (0.0036) | (0.0101) | (0.0095) | (0.0098) |
| Per Capita Income[†] | 2.753+ | 2.940+ | 2.495 | 0.586 | 0.723 | 0.906 |
| | (1.472) | (1.510) | (1.523) | (1.090) | (1.097) | (1.111) |
| Percent Urban | -0.0171 | 0.0082 | 0.0277 | -0.0564 | -0.0694 | -0.1315* |
| | (0.0245) | (0.0253) | (0.0245) | (0.0666) | (0.0599) | (0.0581) |
| State Urban Centralization | 0.0020 | -0.0001 | 0.0009 | 0.0489** | 0.0389** | 0.0423** |
| | (0.0059) | (0.0060) | (0.0060) | (0.0105) | (0.0102) | (0.0102) |
| Percent Manufacturing | -0.0186 | 0.0282 | 0.0240 | -0.1506 | -0.1288 | -0.0092 |
| | (0.1305) | (0.1262) | (0.1254) | (0.1472) | (0.1338) | (0.1375) |
| Average Farm Acres (log) | -0.0003 | 0.0036 | 0.0031 | -0.0370** | -0.0143 | -0.0195 |
| | (0.0052) | (0.0049) | (0.0048) | (0.0142) | (0.0134) | (0.0135) |
| Highway | -0.0054 | -0.0172 | -0.0064 | -0.0201+ | -0.0257* | -0.0181 |
| | (0.0102) | (0.0107) | (0.0118) | (0.0104) | (0.0109) | (0.0117) |
| Number Banks/Capita | | See note 4 | | -139.9** | -133.1** | -159.5** |
| | | | | (2.316) | (2.222) | (2.393) |
| Average Bank Size (t-1) | 0.9946** | 0.9815** | 0.9762** | 0.0544** | 0.0600** | 0.0593** |
| | (0.0058) | (0.0063) | (0.0065) | (0.0058) | (0.0059) | (0.0057) |
| Deposits/Capita 1896[†] | 0.5013 | 1.1819 | 1.4818 | 4.7922+ | 3.6880+ | 0.1059 |
| | (0.9094) | (0.9101) | (0.9236) | (2.697) | (2.133) | (1.8200) |
| Square Miles[†] | 0.0053 | 0.0075* | 0.0091* | 0.2001** | 0.1715** | 0.1551** |
| | (0.0346) | (0.0354) | (0.0362) | (0.0392) | (0.0340) | (0.0294) |
| Time[†] | 0.0010 | 0.0016 | 0.0026* | 0.0013 | -0.0009 | 0.0000 |
| | (0.0013) | (0.0012) | (0.0012) | (0.0022) | (0.0021) | (0.0021) |
| Constant | 5.474** | 5.568** | 6.017** | -0.6936** | -7.088** | -1.002** |
| | (1.3195) | (1.297) | (1.345) | (0.2265) | (2.1677) | (2.295) |
| Observations | 3896 | 3896 | 3896 | 3896 | 3896 | 3896 |
| Number of groups (state) | 48 | 48 | 48 | 48 | 48 | 48 |
| Wald Chi Sq | 104109.67 | 121502.43 | 127162.88 | 505.999 | 663.35 | 687.57 |

Year Dummies omitted. Standard errors in parentheses. Two tail tests: + significant at 10%; * significant at 5%; ** significant at 1%. [†]Coefficients multiplied by 1,000,000.

**Table 4: Organizational-level Analyses of Bank Acquisitions, 1978-2001**
Random Effects Logistic Regression w/ State and Year Fixed Effects (Acquisition = 1)

| | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|
| Unit Bank State at Founding | | -0.1354 | -0.1363 | | -0.1464 |
| | | (0.1020) | (0.1037) | | (0.1048) |
| Statewide Bank State at Founding | | 0.0340 | -0.0294 | | -0.0461 |
| | | (0.1217) | (0.1253) | | (0.1287) |
| Unit Bank* Highway at Founding | | | -0.1625 | | -1.416 |
| | | | (0.1272) | | (1.333) |
| Statewide Bank* Highway at Founding[†] | | | 0.1274* | | 1.777* |
| | | | (0.6038) | | (0.7973) |
| Percent Locations Outside HQ City at Founding[†] | | | | 0.4277* | 0.2057 |
| | | | | (0.2094) | (0.2264) |
| *Organizational-level Controls* | | | | | |
| Return on Equity (t-1) | -0.0020 | -0.0019 | -0.0019 | -0.0019 | -0.0018 |
| | (0.0050) | (0.0050) | (0.0050) | (0.0050) | (0.0051) |
| Income/Assets (t-1) | -4.155* | -4.134* | -4.074* | -4.612** | -4.4888* |
| | (1.7112) | (1.7126) | (1.7027) | (1.7704) | (1.763) |
| Bank Total Assets (log, t-1) | 0.7540** | 0.7521** | 0.7503** | 0.7549** | 0.7518* |
| | (0.0221) | (0.0221) | (0.0221) | (0.0222) | (0.0223) |
| HQ in MSA | 0.0705 | 0.0757 | 0.0793 | 0.0735 | 0.0789 |
| | (0.0620) | (0.0620) | (0.0620) | (0.0623) | (0.0623) |
| Bank Age (log) | -0.0850 | -0.0550 | 0.0390 | -0.0374 | -0.0021 |
| | (0.0970) | (0.1016) | (0.1148) | (0.1366) | (0.1481) |
| Multi-BHC | 0.8624** | 0.8621** | 0.8676** | 0.8603** | 0.8671* |
| | (0.0669) | (0.0669) | (0.0670) | (0.0672) | (0.0673) |
| Previous Merger | 0.4935** | 0.4916** | 0.4997** | 0.5056** | 0.5109* |
| | (0.0767) | (0.0766) | (0.0765) | (0.0770) | (0.0769) |
| Early New York Bank | 0.7901* | 0.9042** | 0.9206** | 0.8432** | 0.9811** |
| | (0.3139) | (0.3236) | (0.3224) | (0.3156) | (0.324) |
| *State-level Controls* | | | | | |
| Highway at Founding | 0.0030 | -0.0085 | -0.0090 | -0.0122 | -0.0082 |
| | (0.0169) | (0.0163) | (0.0155) | (0.0181) | (0.0188) |
| Unit Banking | -1.318** | -1.321** | -1.330** | -1.320** | -1.3264* |
| | (0.1340) | (0.1342) | (0.1342) | (0.13445) | (0.1345) |
| Statewide Banking | -0.3619** | -0.3648** | -0.3572** | -0.3452** | -0.3394* |
| | (0.0888) | (0.0889) | (0.0889) | (0.0890) | (0.0892) |
| Inter-state Banking | -0.2345* | -0.2346* | -0.2313* | -0.2262* | -0.2239* |
| | (0.1008) | (0.1008) | (0.1008) | (0.1009) | (0.1008) |
| Per Capita Income | -0.0001** | -0.0001** | -0.0001** | -0.0001** | -0.0001* |
| | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| Percent Urban | 2.315 | 2.342 | 2.261 | 2.731 | 2.7333 |
| | (1.933) | (1.933) | (1.932) | (1.955) | (1.9552) |
| Number Banks (t-1) | -0.0015** | -0.0014** | -0.0015** | -0.0015** | -0.0015* |
| | (0.0003) | (0.0003) | (0.0003) | (0.0003) | (0.0007) |
| Average Bank Size (t-1) | -0.3554** | -0.3547** | -0.3500** | -0.3557** | -0.3535* |
| | (0.0822) | (0.0823) | (0.0822) | (0.0835) | (0.0835) |
| Number of Mergers (t-1) | 0.0134** | 0.0134** | 0.0134** | 0.0134** | 0.0134** |
| | (0.0026) | (0.0026) | (0.0026) | (0.0026) | (0.0026) |
| Constant | -6.9726** | -7.0209** | -7.4601** | -8.6689** | -7.6514* |
| | (2.374) | (2.385) | (2.395) | (2.6526) | (2.4696) |
| Wald Chi Sq | 695.26 | 4382.68 | 4595.11 | 4594.81 | 4611.43 |
| Observations | 221921 | 221921 | 221921 | 219231 | 219231 |
| Number of Banks | 24712 | 24712 | 24712 | 23797 | 23797 |

Year and state dummies omitted. Standard errors in parentheses + significant at 10%; * significant at 5%; ** significant at 1%. [†]Coefficients multiplied by 1,000,000.

Figure 1: State Banking Laws. 1896. 1931. 1966 and 2001

**Figure 2: Number of Banks and Total Assets, 1978-2001**



**Figure 3: Predicted Effects of Highways on Bank Size**



**Figure 4: Predicted Effects of Highways on Branch Dispersion**



**Figure 5: Relative Size of Banks in Three States, 1896-2001**