PRELMINARY DRAFT

REGULATION & DEREGULATION OF THE U.S. BANKING INDUSTRY: CAUSES, CONSEQUENCES AND IMPLICATIONS FOR THE FUTURE*

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I. Introduction

The banking industry has been subject to extensive government regulation covering what prices (that is, interest rates) they can charge, what activities they can engage in, what risks they can and cannot take, what capital they must hold, and what locations they can operate in. Banks are subject to regulation by multiple regulators at both the state and federal level. Each state has its own regulatory commission. As the federal level the primary bank regulators are the Office of the Comptroller of the Currency (OCC), the Federal Deposit Insurance Corporation (FDIC), and the Federal Reserve Board. Even banks that operate at a single location are likely to be regulated by at least one state and two federal bodies.

The banking industry also plays a significant part in both the financial system and economy as a whole. But the importance of the banking industry for the economy goes beyond its mere size; numerous studies (as we describe below) have shown that the health of this sector has significant effects on overall economic activity. Banks (along with other financial institutions) encourage and collect savings that finance a country's economic growth. By allocating that savings and monitoring the use of those funds, banks play an integral role in assuring the productivity of resource use throughout the economy. Banks are also a crucial provider of liquidity to both individuals and firms, and this role becomes particularly important in times of economic stress and crisis. The quality of bank regulation, which affects the stability, efficiency, and size of the sector, thus has an important effect on the level and volatility of economic growth.

Regulation of banking has undergone tremendous changes over time, with extensive regulations put into place in the 1930s, and later removed in the last quarter of the 20th century. Regulatory change has been driven by both macroeconomic shocks as well as competition among interest groups within banking and between banks and other financial services providers. As we show, the role of both private interests and public interests play a key role in the analysis. This paper focuses on the key regulations affecting the banking industry in the United States, and

attempts to explain both their origins and reforms in recent years.

Our paper has four main goals. First, we provide an overview of the major regulations that have affected the structure and efficiency of the banking industry. In Section II, we explain the origins of state and federal banking regulation and briefly describe how the laws and regulations have evolved. We focus on five areas: restrictions on entry and expansion; product-line and activity restrictions; deposit insurance; pricing restrictions; and capital regulation.

Second, we evaluate the consequences of these regulations for the banking industry as well as for the financial system more broadly. Glass-Steagall regulation, to take one example, prevented commercial bank involvement in the corporate bond and equity underwriting until its recent repeal. Glass-Steagall not only kept commercial banks from competing with investment banks, but also spawned a variety of innovations and institutions such as venture capital to substitute where banks could not go. Market adaptation to constraints has generated change in the banking and financial services industry, as banks and their competitors attempt to circumvent the costs of regulations. Moreover, a regulation that at one point helped the industry, may later sow the seeds of its own demise. Interest rate restrictions that eliminated price competition among bank lost the support of the industry when new financial institutions and markets emerged to provide market rates of interest on checking-like accounts (e.g., the Merrill Lynch Cash Management Account from the 1970s). The first half of Section III provides a brief overview of such consequences, adaptations, and regulatory responses.

Third, we investigate the real effects of bank regulation, on both the industry and the economy. The elimination of geographic restrictions on bank expansion that limited competition, for example, had very positive consequences on the industry (by reducing the riskiness of banks and increasing their efficiency), on credit supply (by providing lower pricing of loans) and on the economy (by increasing economic growth and reducing economic fluctuations).

Finally, we provide a positive explanation for regulatory change (Section IV). A variety

of technological, legal and economic shocks have altered the relative strengths, effectiveness, and interests of different groups competing for support or reform of banking regulation. The development of the automated teller machine (ATM) in the early 1970s, for example, reduced the value of geographic protections to smaller local banks, thereby reducing their willingness to fight to maintain restrictions on branching. A number of court decisions also changed the impact of long-standing regulations in areas such as usury ceilings. Economic crises, either system wide as in the 1930s or to parts of the financial system as in the Savings and Loan Crisis of the 1980s, have also had important distributional impacts that led to regulatory change. We provide some explanations for both the timing of regulatory changes broadly, and for the patterns of change across states.

II. Evolution of Key Dimensions of Bank Regulations

We begin by describing the historical origins and evolution of the most important dimensions of banking regulation in the United States: restrictions on bank entry and expansion; regulation of bank products; deposit insurance; pricing restrictions; and capital requirements. As noted in the introduction, Table 1 summarizes this history with the origins and evolution of the key legislative and regulatory decisions.[1]

A. Historical Background: States and the Federal Government

As we discuss in more detail in the next section, the origin of power of the states in the U.S. to regulate banking goes back to 1789. The Constitution gave states the right to charter banks as well as to regulate their activities. Alexander Hamilton, however, advocated the creation of a federally-chartered bank to deal with debt from the Revolutionary War and to unify the currency. First Bank of the United States was created in 1791 and operated until 1811. The

[1]An another important and growing area of regulation are fair lending laws that attempt to expand credit to low-income areas and to reduce lending discrimination (e.g. The Community Reinvestment Act and the Home Mortgage Disclosure Act). We are not going to discuss these laws because this dimension of banking regulation, while very important, has not had major effects on the structure of the banking industry. For a comprehensive review of these laws, see Thomas (1993).

accumulation of federal debt due to the War of 1812 then revived interest in a federal bank and the Second Bank of the United States was chartered in 1816. Farm interests and generally interests outside of the northeast strongly opposed the Second Bank, arguing that it involved excessive centralized control of the financial system, usurped states' rights to charter banks, inappropriately drew resources from around the country into the hands of wealthy members of the northeast elite, and unfairly competed with state-chartered banks (see Bray Hammond 1957). Andrew Jackson built a coalition of anti-bank forces to win re-election in 1832 and vetoed the re-chartering of the Second Bank. During the 1830s and 1840s, a number of states passed "free banking" statutes that encouraged entry of more banks.[2]

This veto took the federal government out banking and its regulation until the Civil War, when a variety of Acts, including the National Banking Act of 1863, created a federal charter for banks and initiated the so-called "dual" banking system of competing state and federal regulation (see White 1983). This new class of "national" banks were enticed to hold federal government debt, and thereby helped finance the Civil War, and taxed the issuance of bank notes by state-chartered institutions, thereby giving an incentive for banks to switch from state to federal charter. In addition to the state and federal governments, private clearinghouse systems developed to provide some forms of private sector monitoring and "regulation" of bank activities. Although there is much controversy concerning the efficacy of the private clearinghouse system, the Panic of 1907 and the inability of the New York clearinghouses to prevent the collapse of important parts of the banking system again revived interest in federal involvement in banking.[3] The Federal Reserve Act of 1913 created a federally-chartered central bank with important federal bank regulatory powers and a system of regional Federal Reserve

[2] There is a large literature debating the merits of "free banking" in the US and elsewhere. See, for example, Rockoff (1975), Rolnick and Weber (1982), White (1984), Selgin (1988), Cowen and Kroszner (1989), Kroszner (1997), Dowd (1992), and Bodenhorn (2003).

[3] See, for example, Calomiris and Kahn (1996), Calomiris (1998), Kroszner (1998, 1999 and 2000), and others to be added.

Banks. This decentralized structure reflected the continuing struggle between the financial elites in the northeast and interests in the rest of the country.

B. Chartering restrictions and restrictions on geographic expansion

After the United States Constitution prevented the states from issuing fiat money and from taxing interstate commerce, states used their powers over banks to generate a substantial part of their revenues (Sylla, Legler, and Wallis 1987). States received fees for granting bank charters, and state governments often owned or purchased shares in banks and levied taxes on banks. During the first third of the nineteenth century, for example, the bank-related share of total state revenues exceeded 10 percent in a dozen states. In Massachusetts and Delaware, a majority of total state revenue was bank-related.

States used their regulatory authority over banks to enhance revenues coming from this source.[4] In particular, each state had an interest in restricting competition among banks, and many of the restrictions on the geographical expansion of banks originate in this period. To enter the banking business, one had to obtain a charter from the state legislature. States received no charter fees from banks incorporated in other states, so the states prohibited out-of-state banks from operating in their territories—hence the origin of the prohibition on interstate banking.[5]

In addition to excluding banks from other states, the legislatures often restricted intra-state expansion. States would grant a charter for a specific location or limit bank branches to that city or county, but these restrictions would also typically protect the bank from intrusion by

[4] Noll (1989) has characterized conceiving of governments as distinct interest groups concerned about financing their expenditures as the Leviathan Approach; see Buchanan and Tullock (1962), Niskanen (1971), and Brennan and Buchanan (1977).

[5] Until the 1994 Riegle-Neal IBBEA, state authorities effectively had the right to restrict a bank's geographical expansion within the state. The 1927 McFadden Act had clarified the state authority over the national banks' branching activities within their borders. Hubbard, Palia, and Economides (1996) examine the political-economy of the passage of the McFadden Act and finds results consistent with a triumph of the numerous small and poorly capitalized banks over the large and well-capitalized banks. See also White (1983) and Abrams and Settle (1993).

branches of another bank.[6] By adopting branching restrictions, the states were able to create a series of local monopolies from which they could extract at least part of the rents. Some state legislatures even passed "unit banking" laws that prevented a bank from having any branches. Such regulations, naturally, produce beneficiaries who are loathe to give up their protections and privileges. Benefits tend to be concentrated, while costs to consumers of a less efficient and competitive financial sector tend to be diffuse (e.g., Stigler, 1971; Peltzman, 1976), as we describe more fully in the political-economy section below.

State authority to restrict bank branching was clarified with passage of the McFadden Act in 1927 (Hubbard, Palia and Economides, 1996). Although there was some deregulation of branching restrictions in the 1930s, most states continued to enforce these policies into the 1970s. For example, only 12 states allowed unrestricted statewide branching in 1970. Between 1970 and 1994, however, 38 states deregulated their restrictions on branching. Reform of restrictions on intrastate branching typically occurred in a two-step process. First, states permitted multi-bank holding companies (MBHCs) to convert subsidiary banks (existing or acquired) into branches. MBHCs could then expand geographically by acquiring banks and converting them into branches. Second, states began permitting *de novo* branching, whereby banks could open new branches anywhere within state borders. See Map, which describes the timing of geographic deregulation (branching) across the states.

In addition to branching limitations within a state, until the 1980s states prohibited cross-state ownership of banks. Following passage of the McFadden Act, banks had begun circumventing state branching restrictions by building multi-bank holding companies with operations in many states. The Douglas Amendment to the 1956 Bank Holding Company (BHC) Act ended this practice by prohibiting a BHC from acquiring banks outside the state where it was headquartered unless the target bank's state permitted such acquisitions. Since all states chose to

[6] Until the early 1990s, for example, the Illinois Banking Commission would grant "home office protection" which prohibited a bank from opening a branch within a certain number of feet of another bank's main office.

bar such transactions, the amendment effectively prevented interstate banking. Change began in 1978, when Maine passed a law allowing entry by out-of-state BHCs if, in return, banks from Maine were allowed to enter those states. (Entry in the case means the ability to buy incumbent banks.) No state reciprocated, however, so the deregulation process remained stalled until 1982, when Alaska and New York passed laws similar to Maine's. State deregulation of interstate banking was nearly complete by 1992, by which time all states but Hawaii had passed similar laws. The transition to full interstate banking was completed with passage of the Reigle-Neal Interstate Banking and Branching Efficiency Act of 1994, which effectively permitted banks and holding companies to enter another state without permission.

C. Product-Line Restrictions

Explicit restrictions prohibiting bank involvement in underwriting, insurance and other "non-bank" financial activities began with passage of the Banking Act of 1933. The four sections of the Act that separate banking and non-banking activity—16, 20, 21, 32—are collectively known as the "Glass-Steagall Act" (Mester 1996). The Bank Holding Company Act of 1956 (and the Amendment to the Act in 1970) further strengthened the demarcation between banks, insurance, and securities firms. It was not until the mid-1980s that the Federal Reserve and the Office of the Comptroller of Currency (OCC) began loosening restrictions on bank participation in investment banking and insurance.

Although Glass-Steagall and the subsequent Banking Acts of 1956 and 1970 disallowed underwriting by banks and bank holding company (BHC) affiliates, certain securities, deemed 'eligible' securities by regulators, were exempted from the original Act, and were therefore never in question by regulators. These eligible securities included municipal general obligation bonds, U.S. government bonds, and real estate bonds (Kwan 1998). At the behest of the banking industry, the Federal Reserve began the expansion of BHC powers with a decision in 1987 to allow subsidiaries of three BHCs to underwrite certain previously prohibited securities on a

limited basis.[7] The Federal Reserve derived legal authority for the decision from a clause in Section 20 of the 1933 Banking Act that prohibits banks from affiliating with a company 'engaged principally' in underwriting or dealing securities (Mester 1996). On April 30, 1987, the Federal Reserve argued that the 'engaged principally' clause allowed BHC subsidiaries to underwrite certain 'ineligible securities' such as municipal revenue bonds, commercial paper, and mortgage-related securities as long as the revenue from such underwriting did not exceed 5 percent of the subsidiary's gross revenue (Bhargava and Fraser 1998).

On January 18, 1989, Federal Reserve allowed the 'Section 20 subsidiaries' to underwrite corporate debt and equity securities contingent on the 5 percent revenue limitation. The Federal Reserve continued its incremental lifting of restrictions by increasing the revenue limit on Section 20 subsidiaries to 10 percent on September 13, 1989 and to 25 percent on December 20, 1996 (Bhargava and Fraser 1998, Ely and Robinson 1999). To relax this revenue restriction further, banks also placed other activities, such as those related to government securities, in these subsidiaries.

Throughout the debate on BHC involvement in non-bank financial operations, the Federal Reserve enforced firewalls between banking and non-banking activity within the subsidiary structure of the BHC. These firewalls were instituted to prevent financial and information flows between securities and banking subsidiaries, and to insulate banking activity from unforeseen shocks to non-bank activity (Shull and White, 1998). For example, bank lending to non-bank subsidiaries was limited, and restrictions were placed on payments from banks to the holding company (Boyd and Graham, 1986). Beginning in July of 1996, the Federal Reserve began loosening the barriers between banking and non-banking activities. Interestingly, similar firewalls had emerged endogenously during the 1920s as investment companies affiliated with banks sought to commit credibly to markets not to abuse private information from lending

[7]See Stratman (2001) on the politics behind legislation aimed at removing restrictions on Glass-Steagall.

relationships (Kroszner and Rajan, 1997).

While the Federal Reserve oversaw BHC expansion into securities, OCC rulings backed by the federal courts simultaneously loosened restrictions on national banks' insurance activity. These regulatory changes allowed BHCs to make some inroads into non-banking financial services. Lown, Osler, Strahan and Sufi (2000) show, for example, that BHCs' percentage of the securities industry's aggregate revenue went from 9 percent in 1993 to over 25 percent in 1999. Bhargava and Fraser (1998) report similar findings, and show that bank underwriting activities broadened considerably and included a full range of debt and equity issues. Lown, et al (2000) also show that BHCs greatly expanded annuity sales after the court ruling in *VALIC*. Although BHCs were exploring the insurance sales sector, the authors show that BHC involvement in the insurance market remained small, in part because strict barriers between insurance underwriting remained a significant impediment to the joint production of cross-sector financial services.

Congress finally completed to dismantling of Glass-Steagall altogether by passing the Financial Modernization Act in 1999, which allows Financial Holding Companies (FHCs) to own affiliates engaged in banking, insurance underwriting and securities activities. The Act, known also the Gramm-Leach-Bliley Act or "GLBA," was passed a little more than six months following the merger of Citicorp and Travelers, which formed the first full-service financial conglomerate in the United States since the 1920s. While the newly formed Citigroup has subsequently divested much of its insurance holdings, the lines between commercial and investment banking have become increasingly blurred during the past five years. Sufi (2005) shows, for example, that financial conglomerates have come to dominate the market for debt underwriting (see Figure 1). In 1996, the top five debt underwriters were all stand-alone investment banks (Morgan Stanley, Salomon Brothers, Goldman Sachs, Merrill Lynch and First Boston). By 2003, however, four of the top five underwriters were owned by full-service financial conglomerates (Citigroup, JPMorganChase, Bank of America, Merrill Lynch and Credit Suisse). At the same time, traditional investment banks have made inroads into the commercial

lending. According to Loan Pricing Corporation, for example, Goldman Sachs ranked seventh and Lehman Brothers ranked ninth in arranging syndicated loans during the first half of 2005.[8]

This convergence offers a striking parallel between recent times and the 1920s, particularly with respect to pressures on commercial banks to become more involved in the corporate securities markets (Kroszner 1998). One of the most notable developments then was the increasing frequency with which firms accessed the public equity and debt markets. The volume of new equity issues grew during the 1920s, skyrocketing in late 1928 and 1929. The 1980s also was a period that witnessed a dramatic increase in the number of the initial public offerings (IPOs). The number of IPOs nearly tripled from the 1970s to the 1980s, from an average of 120 per year to an average of 350 per year (Loughran and Ritter, 1994).

More firms also were beginning to use bond financing in both periods. Smaller and lesser known firms were enjoying new access to the bond markets in both the 1920s and 1980s. With the entrance of a new class of firms, the average rating of corporate bonds declined. The proportion of bonds that were initially rated below investment grade rose steadily during the 1920s, from 12 percent in 1921 to 43 percent by 1929 (Kroszner and Rajan, 1994). The same phenomenon occurs during the 1980s with the growth of original issue high yield debt (so-called junk bond) market. The number of initially rated below investment grade bonds grows from 24 in 1981 to 200 by 1986, and the amount issued rises from $1.2 billion to $30.9 billion during this period (Asquith et al. 1989).[9]

With the growth of the public markets as a source of funds for firms came a corresponding decline in reliance on commercial bank borrowing. In addition, banks were facing greater competition from other financial institutions. As Table 2 illustrates, commercial bank share of the total assets of U.S. financial institutions had held steady at 60 to 65 percent from

[8] See http://www.loanpricing.com/.

[9] The "junk bonds" of the 1980s often had equity-like characteristics so it is possible to interpret the turning toward equity and away from debt in the late 1920s as a form of this type of financing.

1880 to 1922. Commercial banks then experienced a sharp decline in share between 1922 and 1929 to 54 percent, while investment companies (i.e., mutual funds), securities brokers and dealers, finance companies, and insurance companies grew in share.[10] Between 1980 and 2004, commercial banks again saw a sharp drop in their share, which had held relatively steady between 1960 and 1980 at between 35 and 38 percent, to 24 percent by 2004.

The disintermediation through the rise in the securities markets and the increased competition from alternative financial institutions had three notable effects on commercial bank balance sheets in both periods. First, commercial loans fell as a proportion of bank earning assets. Second, banks moved rapidly into real estate (mortgage) lending. Third, as the public markets grew, so did the relative size of their securities holdings, from 25 percent to 33 percent of their portfolio during the 1920s and 16 percent to 18 percent in the 1980s, rising to more than 25 percent by 1993.[11] One final comparison and contrast between the economic and financial conditions of the 1920s and 1980s is of note (see Kroszner 1998). Both decades began and ended with recessions and had a lengthy period of economic growth in between. The recession at the beginning of the 1920s, like the one at the beginning of the 1980s, was sharp and short-lived. Both periods witnessed a major stock market crash (October 1929 and October 1987) toward the end of each period. The economic downturns that ended each decade were decidedly different -- one was the start of the Great Depression whereas the other was quite mild. Both cases, however, were accompanied by a major wave of depository institution failure and closure. The banking problems in the Great Depression were system-wide and led to a near collapse of the

[10] As Boyd and Gertler (1994) and Kaufman and Mote (1994) note, a reduction in the share of assets of all financial institutions itself does not address the broader issue of whether the banking industry is declining or in trouble.

[11] The Basle Bank Capital Accord is a very important factor today, not present in the 1920s, leading banks to desire to hold relatively more securities. Unlike the early period, during the late 1980s and early 1990s, the increase in securities holdings was primarily in terms of government rather than corporate issues. By raising and risk-adjusting the minimum capital requirements and giving government securities a zero "risk weight," the Basle Accord has given banks a strong incentive to increase their holdings of government securities.

entire financial system (see e.g., Friedman and Schwartz 1963; Calomiris and Mason, 2003), whereas the troubles in the thrift and banking industries in the 1980s and early 1990s, while considerable, did not have the same consequences (see, e.g., Barth 1991, Kane 1989, Kroszner and Strahan 1996, and White 1991).

The difference in the severity of the end-of-decade downturns and banking problems can account for at least part of the sharp contrast in the bank regulatory response in 1933 compared to the opposing deregulatory response in the 1990s (discussed in Section IV below). In the early period, Congress began seriously to debate the restriction of bank powers soon after the stock market crash. Three years later, these restrictions were enacted in the first hundred-day wave of New Deal legislation as part of a broad bill to reform the banking system, including the creation of federal deposit insurance.

D. Deposit Insurance

Federal deposit insurance in the United States dates back to 1933, when Congress passed a series of laws designed to restore confidence in the financial and banking systems. Early debate over deposit insurance illustrates a clear understanding of the idea that while insurance could reduce bank runs and the associated disruptions to bank-loan supply, the cost was likely greater risk taking by banks. This understanding reflected the experiences of earlier state-run deposit insurance regimes during the late 19th and early 20th Century. Half of the state-run deposit insurance systems set up after the Civil War failed. Later, eight states created deposit insurance systems between 1907 and 1917, and all eight systems failed during the 1920s due to excessive risk taking by banks in those states (Calomiris and White, 2000). The deposit insurance legislation itself was initially opposed by the Roosevelt administration and many of the major Congressional leaders. Calomiris and White argue that federal insurance was ultimately adopted only because the general public, concerned about bank safety following the banking collapse in the early 1930s, became aligned with small and rural banks, the traditional supporters and main beneficiaries of deposit insurance.

Both political debate as well as some limited evidence from roll call voting patterns leading up to deposit insurance passage indicate that small and rural banks supported both restrictions on bank branching (to reduce competitive pressure from large banks) and deposit insurance (to increase deposit supply). In contrast, large and urban banks pushed for branch banking to allow them to compete with small banks directly, and generally opposed deposit insurance as a subsidy to small, poorly diversified banks. Calomiris and White (2000) compare bank characteristics in states with relatively high support for a federal insurance bill brought to a vote in 1913 (H.R. 7837). They show in states with high support, banks were larger (particularly state banks) and branching was more prevalent.

Small banks won the political battle in the 1930s, and continued to win subsequent battles over the next several decades. Deposit insurance coverage had been increased in 1950 (from $5,000 to $10,000), in 1966 (to $15,000), in 1969 (to $20,000), in 1974 (to $40,000) and in 1980 with passage of DIDMCA (to $100,000). White (1998) argues that small banks supported each of these increases, while large banks opposed them. As a result, the real value of deposit insurance rose from $5,000 (1934$s) initially to $10,000-$15,000 during the 1970s. Since 1980, deposit insurance coverage has remained flat, with inflation eroding its real value by about 50 percent over the past 25 years. Deposit insurance has also been expanding globally (Demirguc-Kunt and Kane, 2002). Similar political forces seem to explain coverage levels across countries. For example, Laeven (2004) shows that coverage levels are higher in countries with weaker and riskier banking systems.

The large number of bank and thrift failures during the 1980s and early 1990s halted the increasing coverage of deposit insurance in the U.S. (see Figure 2). During the 1980s, to take the most extreme example, the federal insurer of thrift deposits (the Federal Savings and Loan Insurance Association (FSLIC)) itself became insolvent. The S&L crisis had its roots in the basic lack of diversification of thrift assets (long-term mortgages financed with short-term deposits), coupled with regulators' failure to close market-value insolvent thrifts after the run-up of interest

rates in the early 1980s. FSLIC was dismantled in 1989 when the Financial Institutions Reform, Recovery and Enforcement Act (FIRREA) both recapitalized the Savings Association Insurance Fund (SAIF) and gave the FDIC responsibility for overseeing deposit insurance for thrifts.[12]

This very costly experience with deposit insurance led to reform in the early 1990s. The FDIC Improvement Act of 1991 attempts to reduce the risk-taking incentives inherent in deposit insurance by introducing risk-based premiums and by directing the FDIC to resolve failed banks in the least costly way to the deposit insurance fund. The motivation behind the least-cost resolution provisions were the failure of large banks such as Continental Illinois and Bank of New England during the 1980s in which *all* creditors had been bailed out to avoid 'systemic' disruptions. The Comptroller of the Currency even announced publicly after Continental Illinois that some large banks were 'too big to fail'.[13] This public announcement was quickly seen as unwise, and the 1991 law attempted to correct market perceptions that some banks were too big to fail and thereby reign in excessive risk taking incentives.

In recent years, the tide has turned again, toward expansion of deposit insurance. In 2002, small banks began issuing fully insured certificates of deposit through the Certificates of Deposit Account Registry Service (CDARS). CDARS works through a network of banks whereby a customer's large deposits are split up and placed as accounts under the $100,000 deposit insurance limit at bank members of the system. Thus, large depositors can effectively get around deposit insurance limits. At the same time pressure for extended *de jure* coverage seems to be coming from small banks. For example, the Independent Community Bankers Association, "has been in the forefront of the campaign for comprehensive Federal deposit insurance reform including automatic inflation adjustments of coverage levels. In the 24 years since FDIC

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[12]Much has been written about the S&L crisis of the 1980s, and we will not review that very large literature here. See, for example, Kane (1989), Kroszner and Strahan (1996), White (1989) and others to be added.

[13]Stock prices of those banks listed in the Wall Street Journal as 'too big to fail' rose on hearing the Comptroller's unwillingness to close them (O'Hara and Shaw, 1990)!

coverage was last adjusted, inflation has eroded away more than half its value. The stability of our financial system depends on consumer confidence that their funds will be protected. We are working with key Members of Congress to make comprehensive deposit insurance reform with automatic inflation adjustments a reality."[14] These market and political pressures seem to be having an effect. On May 5, 2005 The U.S. House of Representative voted 413-10 to approve the Federal Deposit Insurance Reform Act of 2005 (H.R. 1185), which would increase coverage for bank and credit union accounts to $130,000 and would index the coverage limit to inflation.

E. Restrictions on Pricing

Regulations have historically constrained pricing of both bank deposits and bank loans. Ceilings on bank deposit interest rates, for example, were in effect into the early 1980s under the Federal Reserve's Regulation Q. During periods when market interest rates rose above these ceilings, banks and other depositories faced reduced deposit supply, forcing them to cut back on lending. This disintermediation became acute during the 1970s as market rates soared in response to high inflation and loose monetary policy. Moreover, the costs of holding non-interest bearing required reserves at bank members of the Federal Reserve System rose sharply with inflation. In response to the plight of banks (and as a consequence of bank political influence, as described more in the political economy section below), Congress passed the Depository Institutions Deregulation and Monetary Control Act (DIDMCA) in 1980, which lowered reserve requirements and gradually phased out most deposit rate ceilings. DIDMCA substantially leveled the competitive playing field across depository institutions by imposing uniform reserve requirements and access to Federal Reserve services, and by allowing banks to pay interest on NOW accounts nationwide (checkable deposits).

On the lending side, usury laws restricting the rates banks may charge date back to the Colonial period in the United States and have a very long history before that (e.g., Ellis, 1998; Glaeser and Scheinkmann, 1998). Conventional interpretation of these laws is that they exist to

[14] See http://www.ibaa.org/advocacy/.

protect politically powerful borrowers, although Glaeser and Scheinkmann (1998) suggest that their pervasiveness across the world, as well as their persistence over time, implies that such laws exist to reduce the impact of incomplete credit markets. In their model, agents borrow to smooth consumption in the face of negative income shocks, and usury laws transfer wealth to such low-income states, thus moving toward optimal risk sharing.

The importance of state usury laws was permanently reduced in 1978 when the Supreme Court undermined states' ability to enforce them in the *Marquette National Bank v. First Omaha Service* case. The court ruled that Section 85 of the National Banking Act allowed a lender to charge up to the maximum amount allowed in its home state, *regardless of the location of the borrower*. Because credit card lending is not geographically based (in contrast to small business lending), this decision created an incentive for states to raise their usury limits to compete for banks. In fact, Delaware and South Dakota eliminated them entirely, leading to rapid entry of credit card banks in those two states. By 1988, 18 states had removed interest rate ceilings, and the supply of credit card loans expanded rapidly over the subsequent 20 years. This increase in supply was concentrated most among high-risk borrowers because the interest rate ceilings restrict credit most among that segment of the market. As a consequence, personal bankruptcy rates began a long and steady increase, starting in 1978 with the Marquette decision (see Figure in Ellis, 1998).[15]

DIDMCA of 1980 also relaxed some constraints on usury ceilings. Although state usury ceilings continue to be in place in most states, they are generally not indexed to inflation, so in the recent low inflation environment they have not been binding on traditional bank lending. For "sub-prime" borrowers who may be riskier, however, the ceilings may still bind in some circumstances. Credit to sub-prime borrowers from alternative financial institutions, such as pawn shops and payday loan companies, also are subject to interest rate ceilings. Payday lenders,

[15] Recent tightening of the personal bankruptcy code has occurred in part to reduce personal banktruptcy rates.

which provide small-value short-term loans (typically under $300 for roughly two-weeks), typically charge annualized interest rates that are at the state level maximum (see Flannery and Samolyk, 2005).

F. Regulation of Bank Capital

Regulations designed to ensure sufficient capital in the banking industry date to the 19th Century. For example, receiving a bank charter typically came with a minimum absolute amount of capital. Regulations of bank capital-asset ratios did not emerge until the 1980s, however, after capital ratios in the banking industry had reached historical lows. In fact, leverage ratios in the U.S. banking system increased gradually but consistently starting in the 19th Century until the early 1980s. Part of the increase in leverage is due to the introduction of deposit insurance at the start of 1934, but part is likely to due increased bank size and diversification, as well as better risk management practices that evolved over time (see Peltzman 1970 and Calomiris and Wilson 1996).

In the past two decades, regulations dictating minimum capital-asset ratios (maximum leverage ratios) have become increasingly complex and comprehensive. Banks first faced minimum requirements based on the raw ratio of equity capital to total assets. These regulations, however, were quickly seen as inadequate as a greater share of bank business was associated with off-balance sheet activities such as credit guarantees and unfunded loan commitments (Boyd and Gertler, 1994). These off-balance sheet activities came with a sharp increase in bank revenues from non-interest sources (Mishkin and Strahan, 2000), and also represented an important component of bank risk that was not measured at all by total assets or loans. The 1988 Basel Capital Accord addresses this changing nature of banking (or bank accounting) by including off balance sheet exposures and by accounting for credit risk in constructing risk-based assets. Under the simple scheme, loans with different risks face different marginal capital requirements. For example, banks had to fund business loans with at least eight percent capital, whereas residential mortgages could be funded with only four percent capital. The1988 Accord also

addressed perceived inequities in capital requirements across countries, and attempted to level the competitive playing field for internationally active banks.

During the past decade, banks have adopted increasingly sophisticated risk management models, and these new financial technologies have spurred changes to capital requirements. For example, new capital requirements for market risks were adopted using banks' internal risk measurement models in 1996. The key innovation leading to the regulatory change was the introduction of Value-at-Risk models (e.g. JP Morgan's *RiskMetrics* model), which estimate quantiles of profit and loss distributions for bank trading positions. These models are useful because they quantify the likely magnitude of bank losses during 'normal' market conditions such as conditions covering 99% of trading days, and sophisticated versions of such models can avoid making strong distributional assumptions (Jorion, 2000).

Following the successful introduction of market risk capital requirements, international bank regulators began to negotiate a more complex and comprehensive capital regime to correct deficiencies in the original Basel Accord. As with both the 1988 Accord and the 1996 Market Risk Amendment, the move to update the capital requirements has been driven by advances in financial technology. For example, innovations such as securitization and credit derivatives in the late 1990s have made it easier for banks to trade risk, but such trading allows banks to undermine the simple measurement of asset risk behind the 1988 Accord (e.g. Calomiris and Mason, 2004). At the same time, credit risk measurement tools similar to those used for market risk have become increasingly available. Thus, the capital required under the Revised Basel Accord ('Basel II') will depend on model-based construction of the main dimensions of risk (market, operational and credit risks), and the system is designed to encourage banks to develop internal models rather than rely on externally imposed supervisory models.

It is important to recognize that capital regulations not only respond to changes in financial technology but may also spur such innovations. For example, efforts to avoid capital may in part explain the rise in off balance sheet banking during the 1980s. Similarly, the 1988

Accord may have encouraged banks to securitize loans in order to reduced required capital ratios, and to trade risks via products such as credit default swaps.

III. Consequences of Regulation and Deregulation

This section describes the consequences of banking regulations for the financial industry and for the economy. Much of our understanding of these effects comes from research testing how the banking system evolves following regulatory changes, which are concentrated in the period of regulatory tightening during the early 1930s, and the de-regulatory period of the 1980s and 1990s. As we describe, the increased regulations of banking and the securities markets in the 1930s was followed by a decline in securities markets. Later, alternative and less tightly regulated financial institutions emerged to get around regulatory constraints and provide services to investors that had previously been rendered by banks. The experience of the last two decades has reversed the process. Regulations on banks and markets have eased, and this deregulation has occurred in part in response to the emergence of competing financial institutions during the earlier period. Despite market adaption that likely mitigated the costs of the 1930s regulations, the recent wave of deregulation was followed by substantial restructuring of banking leading to greater efficiency, improved credit access and better economic performance.

A. 1933 to 1980: Adaption to Financial Regulation after Glass-Steagall

A.1 Decline of Securities Markets

The Glass-Steagall Act of 1933 effectively precluded banks from underwriting corporate securities (see Macey and Miller 1992), but for almost two decades after its enactment, the securities markets saw much less activity than in the 1920s. Almost no corporate securities were issued between 1932 and 1935, even though the industrial production was rebounding strongly from the depths of 1932. Although the economy was recovering, output was still below its 1928 peak so there may not have been much desire on the part of firms to issue securities to finance operations. Alternatively, the removal of the commercial banks from underwriting and the new

federal regulation of securities market through the Securities Acts of the 1930s could have increased the cost of securities issuances to prohibitive levels.

Even after the public issuance market revives a bit by the late 1930s, total issuance remained below the levels following World War I. During the 1930s and much of the 1940s, however, there was an enormous increase in government bond issuance. The growth of this market was favorable to commercial banks since they had a major role in this market. As shown in Table 2, from the late 1930s to the late 1940s, commercial banks actually increased their share of total assets held by financial institutions. By the early 1950s, the corporate securities markets were once again reviving and beginning to pose more of a challenge to bank lending. This situation led some bankers to attempt to avoid the Glass-Steagall prohibitions and reenter the securities markets through a holding company structure (see Blair 1994). The Bank Holding Company Act of 1956, and its subsequent amendments in 1966 and 1970, thwarted this movement by effectively extending the Glass-Steagall restrictions on banks to holding companies which had banking subsidiaries (see Blair 1994).

A.2 Market Adaptation: The Growth of Alternative Financial Insitutions

Recent reinterpretations by the regulators and the courts of various provisions of the National Banking Act, Glass-Steagall Act, Federal Reserve Act, and Banking Holding Company Act (and its amendments) have permitted banks to set up "section 20" subsidiaries to engage in limited amounts of corporate security underwriting. With these limited recent exceptions, U.S. commercial banks were effectively prohibited from universal banking. This situation contrasts sharply with Germany, and to some extent Japan, where banks are able to play a much more central role in the financing of private enterprise (see Edwards and Fischer 1994 and Aoki et al. 1994). Interestingly, a variety of other financial organizations have arisen in the U.S. that can be interpreted as means of filling the gap that is the legacy of Glass-Steagall. The organizations discussed below are much more developed in the U.S. than in other countries, perhaps stimulated by Glass-Steagall. If we are to look for the silver lining in the cloud of Glass-Steagall, the richer

variety of alternative sources of funds for enterprise that the U.S. has relative to other countries could be it.

As Table 2 illustrates, there are a number of important financial actors in the U.S. besides commercial banks.[16] Pension funds, insurance companies, and investment companies (i.e., open and closed end mutual funds), for example, have come to control large shares of the total assets in financial institutions in the U.S. Firms therefore have a rich variety of funding sources. Each set of financial institutions has a distinct set of regulations and a distinct set of interests. These institutions compete to influence financial legislation and regulation (see Kroszner and Stratmann 1995), and the regulatory agencies themselves compete to increase their domains of influence (see Kane 1988). Expanding banking powers in such an environment is unlikely to cause one group to capture all of the financial regulators and use them to impede competition.

In the post-WWII era, a variety of alternative organizations and contractual structures have arisen in the U.S. which, at least in part, substitute for a universal bank.[17] Perhaps the alternative which has been able to come closest is the venture capital (VC) organization. The first modern VC organization dates back to 1946 when a group of Boston investors formed American Research and Development to invest in firms adapting war-related technological innovations for commercial use (Gompers 1994 and Gompers and Lerner 1995). The company met great success backing such firms as Digital Equipment Corporation. American Research and Development, like most VC firms, was organized as a publicly-traded closed-end mutual fund.

The VC industry, however, did not begin to grow rapidly until the late 1970s. In 1979, the "prudent expert" standard which governs permissible investments for pension funds was

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[16] Kaufman and Mote (1994) note that ignoring the trust services of banks, as the table does, may significantly understate the actual overall share of commercial banks.

[17] Jensen (1989) has argued that these alternatives arose directly in response to restrictions like Glass-Steagall. Also note that this now broadens the definition of universal banking to include ownership and active monitoring roles by the banks rather than simply corporate securities dealing and underwriting.

broadened to allow pension funds to invest in VC funds.[18] This change was extremely important since the regulations associated with ERISA discourage pension funds from directly becoming "active investors," that is, investors who participate in both the financing and management of an enterprise (see Roe 1994). Following the change in the "prudent expert" standard, annual investment in VC funds grew from $424 million in 1978 to a peak of $5.3 billion in 1987, due primarily to the inflow of pension fund money (Gompers and Lerner 1995). As a source of investment in VC funds, between the late 1970s and the late 1980s, pension funds and investment companies' share of total VC investment grew dramatically while the share from individual investors dropped significantly.

The VC form has therefore permitted pension fund managers and other fund managers to pool their resources in VC funds and act indirectly as active investors. VC funds typically provide not only equity and debt financing but also management expertise and strategic consulting, activities that regulations and tax incentives strongly discourage the pension funds and investment companies themselves from doing (Roe 1994). The VC industry has helped to finance numerous start-up firms that then go public so it has an important effect on the growth of the IPO market.

Another closely related form, the leveraged-buy-out organization (LBO) also has had a large impact on corporation finance and restructuring (see Jensen 1989 and Kaplan 1989). Much like VC, LBO organizations take debt and equity stakes in firms and become active in the management of the firm. Unlike VC, they purchase existing firms or divisions of firms, typically by using debt to purchase equity, thereby increasing the financial leverage of the enterprise. LBOs involving the purchase of public companies rose from 16 in 1979 to a peak of 125 in 1988, and the annual dollar volume grew from $65 million to nearly $500 million (see Jensen 1989). Jensen (1989) has argued that LBOs are effectively a form of universal banking that is an "end-

[18] In addition, in 1978 the tax rate on capital gains was reduced from 49.5 percent to 28 percent, thereby making VC more attractive for taxable investors also.

run" around Glass-Steagall. Starting in the late 1990s, hedge funds have also emerged as an important pool of (unregulated) capital invested in private equity.

B. 1980 - 2000: Financial Deregulation

B.1 The Structure of Banking

Deregulation of restrictions on bank expansion and on restrictions on products have generally led to a less concentrated banking system with larger and better diversified banking organizations. Relaxation of restrictions on bank expansion during the 1980s (removal of branching and interstate banking restrictions), in particular, led to larger banks operating across wider geographical areas. Figure 2 shows graphically how the number of banks has changed over time due to *de novo* banking (new charters), mergers and failures. During the period from 1934 until the middle of the 1970s (the period of regulation), the figures are fairly stable, with very low levels of banks failures, additions to the number of banks from 100-200 new charters per year (this series is quite cyclical), offset by a reductions in the number of banks by 150 banks per year through mergers. Starting in the middle of the 1970s, as the industry begins to experience deregulation (and as the Office of the Comptroller of the Currency and states both loosen chartering restrictions), both the number of mergers and the number of new bank charters take off.[19] Moreover, the number of bank failures spikes during the second half of the 1980s and the first five years of the 1990s in response to losses in agriculture, emerging market debt, and commercial real estate lending. Figures 3-5 illustrate the effects of these changes: fewer, but much larger, banks with more branches.

This dramatic increase in M&A activity did *not* increase in local market concentration did not occur. Restrictions on branching and interstate banking generally did not constrain banks' ability to expand *within* a local market such as a city or county, with the exception of a few unit banking states that did not permit branching in any form. Thus, deregulation led banks to enter new markets, but it did not spur banks to consolidate within a local market. Figure 6 illustrates

[19]See FDIC, "History of the 1980s," at http://www.fdic.gov/bank/historical/history/vol1.html.

the trend toward a better integrated banking system, and also shows in a simple way the crucial necessary condition of financial deregulation: state integration - measured in a simple way by the share of a state's bank assets owned by a bank holding company operating banks in other states - only increases sharply after interstate banking reform. In fact, the staggered timing of state-level action to deregulate both branching as well as interstate banking provides an ideal laboratory to explore empirically how these regulatory changes affected banking structure and the real economy while controlling for potentially confounding variables.

To explore systematically how branching and interstate banking reform affected banking and the economy (rather than just to report trends), we report a series of regression results using the following unified framework:

$$\boldsymbol{y}_{st} = \alpha_t + \beta_s + \gamma^1 \boldsymbol{Branch}_{st} + \gamma^2 \boldsymbol{Bank}_{st} + \boldsymbol{OtherControls}_{st} + \epsilon_{st} \qquad (1)$$

where s indexes states, t indexes time, y_{st} is the dependent variable of interest, α_t is a year-specific fixed effect (estimated by including year indicator variables), β_s is a state-specific fixed effect (estimated by including state indicator variables), $Branch_{st}$ is an indicator set to one after a state permits branching, and $Bank_{st}$ is an indicator set to one after a state permits interstate banking.

Due to the cross-state and over-time variation in the regulatory status of different states, both unobserved state differences and aggregate shocks (and any trends) can be fully absorbed with the inclusion of fixed effects, while leaving sufficient variation in the regulatory variables to estimate their effects on state-level financial and real variables. Moreover, by using the state rather than the firm as the relevant unit of observation, the resulting panel data set is balanced because states do not enter or exit the sample. Thus, there is no need to worry about (or attempt to correct for) survivorship biases that can plague attempts to draw inferences from bank-level or firm-level data.[20] The coefficients on the deregulation indicators reflect state-specific *changes* in

[20]These issues are especially important for studies of entry regulations because the competitive shakeout that occurs after regulatory change increases the odds that some banks will not survive.

the dependent variable following deregulation.[21]

Table 3 documents very briefly how states' banking systems change following removal of restrictions on geographic expansion. The tables reports estimates of equation (1) with data for 49 states between 1976 and 1994, the period of rapid regulatory change.[22] In column 1, the dependent variable equals the degree of a state's *integration* with other states, defined as the share of the state's banks that are owned by a BHC with banking assets in other states. The results suggest that, on average, 0.17 of a state's banking assets become integrated with banks in other states after interstate banking deregulation. This increase is both statistically and economically large, equal to about 50 percent of the overall mean level of integration in the sample. Hence, state banking systems become better diversified following interstate deregulation through ownership ties with banks operating elsewhere.

The third column of Table 3 shows that local market concentration does *not* increase following deregulation despite the increased acquisition activity; if anything, there is a slight drop following interstate banking reform.[23] We build local market concentration using the deposit Herfindahl-Hirschmann Index (HHI), calculated as the deposit-weighted average of the HHIs of the metropolitan statistical areas (MSAs) in a state-year. The HHI for each local market is defined as the sum of squared market shares, where market shares are based on branch-level deposit data from the Federal Deposit Insurance Corporation's *Summary of Deposits* dataset. To illustrate how this variable is computed, consider a bank (or banking company) that owned 10 branches within an MSA. This bank's market share (measured in percentage terms) would equal the sum of all of its deposits in those 10 branches, divided by the total deposits held by all bank

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[21]I drop observations during the year of deregulation. In addition, I do not include Delaware and South Dakota in any of the analyses because these states had a unique history due to the growth of the credit card business there.

[22] We drop the states of South Dakota and Delaware because the entry of credit card banks into these two state makes their historical evolution during the 1980s unique.

[23]Concentration at the state and national levels has increased substantially, however, in part because of these regulatory changes.

branches within that MSA, multiplied by 100. For a market with a single bank owning all of the branches, the HHI would equal 10,000, whereas in a perfectly atomistic market the HHI would approach zero.

The last column of Table 3 shows that the market share of small banks declines, particularly after within-state branching reform. The share of assets held by banks with under $100 million (1994 $s) in assets falls by 3.1 percentage points after branching is permitted (relative to a mean a little more than 19 percent). Overall, relaxation of restrictions on geographic expansion is followed by expansion of large banks into new markets through acquisition of smaller banks, leading to a better integrated banking system with similar, or perhaps lower, levels of local market concentration.

B.2 Bank Risk

As noted above, geographic deregulation in the 1980s led to larger and better diversified banks, suggesting a reduction in bank risk. Historical evidence also suggests that branch banking reduced risk. Gorton (1996) offers some unique evidence that markets understood the stabilizing effect of branch banking. He shows that during the 19th Century when private banks issued currency, notes in circulation that were issued by new banks from branch banking states were discounted substantially less than notes issued by banks from unit banking states. Calomiris (1993) shows that both bank reserves and bank capital were lower in states with branch banking. He also studies bank failure rates in three states allowing branching but affected by the agricultural bust of the 1920s - Arizona, Mississippi and South Carolina. Failure rates in these three states were much lower for banks with branches than those without. Comparing states that allowed branching with those that limited it, Calomiris (1992) also finds faster asset growth during the agricultural recession of the 1920s in states that allowed branching. And, as is widely recognized, the Canadian banking system, which contained a small number of large, banks with nationwide branching, experienced no bank failures during the 1930s.

Reduction of competitive pressure from limits to bank competition, however, may offset

the obvious diversification benefits of branch banking. Keeley (1990) and Hellman and Stiglitz (2000) emphasize that risk-taking incentives from deposit insurance are mitigated by access to monopoly rents fostered by regulatory barriers to aggressive competition. Thus, bank stability during the period between 1940 and 1970 may be explained by the absence of competition in the face of pricing restrictions and restrictions on branching and interstate banking. As evidence, Keeley (1990) and Demsetz, Saidenberg and Strahan (1997) show that high stock market valuation of banks relative to book values ('franchise value') is associated banks holding lower risk loans and to more capital.

Removal of restrictions on bank underwriting activities also has the potential to enhance bank diversification. Whether such diversification leads to less risk depends on how bank operating and financial policies adapt to the deregulation. Demsetz and Strahan (1996) find, for example, that large banks, while better diversified, are no less risky than small banks because they tend to hold riskier loans and less capital. Given this fact, it is perhaps not surprising that the evidence on the effects of cross-sector expansion of banks into securities and underwriting is mixed. Kwast (1989) examines banks' balance sheets and compares returns on trading account and non-trading account assets. He examines the correlation and volatility of the returns to assess the potential diversification benefits from securities underwriting by banks. He finds a slight but limited potential for diversification benefits. Boyd and Graham (1988) and Boyd, Graham, and Hewitt (1993) use a combination of merger simulations and portfolio weighting to find that bank involvement in life and property/casualty insurance could, ceteris paribus, reduce the risk of bank failure. Involvement in securities or real estate, however, would likely increase the risk of failure. Lown, Strahan and Sufi (2000) simulate mergers between financial companies over a more recent time period and find a potential reduction in the risk of failure as a result of hypothetical mergers between life insurance firms and BHCs. Kwan (1998) finds that BHC securities activity is associated with greater risk, but provides potential diversification benefits

due to the low correlation between returns on banking and securities activities.[24]

Deposit insurance also of course played a role in shaping the risk of banking. Deposit insurance creates incentive for banks to maximize asset risk and minimize capital because bank shareholders capture all upside gains but do not face the full costs of bank risks (Peltzman, 1970; Merton, 1978). As noted, the U.S. banking system was stable throughout the first 35 years after federal deposit insurance, and much of that stability occurred because banks enjoyed limited competition. With limits on both price competition and entry, banks had access to high profits and thus low failure rates. Moreover, the incentive to take advantage of deposit insurance by increasing asset risk and reducing capital were offset by monopoly rents. During the 1980s, however, increased competition both within the financial industry and from the development of securities markets reduced profitability in banking and came with dramatically increased failures.

The experiences of the Savings and Loan (S&L) industry in particular indicate that badly structured deposit insurance can encourage excessive risk taking. Kroszner and Strahan (1996) show, for example, that S&Ls that converted from mutual to stock ownership grew faster, expanded their holdings of risky assets (e.g. junk bonds), and disgorged cash in the form of dividend payments. In fact, there were even instances of insolvent S&Ls paying dividends. Thus, those firms that explicitly altered their ownership form to be able to profit from deposit insurance tended to increase risk most dramatically to exploit the government subsidy. More broadly, Kane (1989) emphasizes the failure of regulators to close failing institutions despite the costs to the deposit insurance regime, thus increasing the problem of excessive risk taking.

B.3 Efficiency & Pricing

Do regulatory changes lead to meaningful improvements in the efficiency of banks, reductions in costs, and reductions in the price of bank services? As noted above, interest rate

[24] Kwan and Laderman (1999) provide a comprehensive review of the literature on risk/return effects of financial conglomeration across sectors. They conclude that securities and insurance activity by BHCs offers higher returns and risks, and the diversification gains from BHC expansion reduces the probability of bankruptcy and overall BHC risk.

regulation - maximum lending and deposit rates - had effects on prices during periods when market interest rates made these constraints binding. For deposit markets, the effects were relatively homogeneous because there are limited differences in risk due to government guarantees. Banks facing binding Regulation Q interest rate ceilings did face disintermediation, which became acute in the 1970s both because market rates soared and because non-bank financial firms began to offer close substitutes for checkable deposits. Banks attempted to compete for funds by providing higher quality service (more branches), and by offering gifts and other inducements for deposit, thereby dissipating much of the potential rents generated by the absence of price competition.

Usury limits on loan interest rates also restricted credit supply overall, but probably restricted credit most among high-risk borrowers. As noted above, the Marquette decision, which effectively undermined states' ability to limit credit card interest rates, was followed by a steady increase in bankruptcy as higher risk households gained access to unsecured credit.

Removal of restrictions on geographic expansion also came with better efficiency and pricing. Jayaratne and Strahan (1998) report that non-interest costs, wages, and loan losses all fell following branching reform. These cost reductions led, in turn, to lower prices on loans (although not on deposits). The mechanism for this better performance seems to be changes in the market shares of banks following deregulation. Prior to regulatory reform, well-run banks faced binding constraints on the markets in which they could operate. When these constraints were lifted, however, assets moved toward the better-run banks as they gained the opportunity to acquire market share.[25]

These beneficial dynamic effects of competition following deregulation can be seen graphically in Figures 7-9.[26] Figure 7 simply plots the correlation between a bank's profit rate

[25]Hubbard and Palia (1995) also show that management compensation became more sensitive to performance after deregulation.

[26]These figures are taken from Stiroh and Strahan (2003).

(return on equity) and its subsequent asset growth. This correlation is low during the late 1970s, when the better banks were constrained by regulations, then rose sharply during the period of regulatory change – the period when better banks were gobbling up market share – and fell back during the 1990s, as the effects of deregulation began to wane. The figure illustrates, somewhat crudely, the competitive shakeout that occurs when regulations no longer constrain bank expansion: better-run banks gain at the expense of higher-cost, less efficient ones.

Figures 8 and 9 show the long-run effects of these dynamics by plotting the average market share of banks with above-median profits, averaged across states, after first separating them into three groups: (i) states that have permitted branching since the 1930s or before (12 states); (ii) states that limited branching (23 states); and (iii) the unit banking states that did not permit any form of branching (16 states). The figures illustrate the detrimental effects of these constraining regulations. For example, in unit banking states, the higher-profit banks typically held 50 percent or less of the assets in a state; after those states relaxed their regulations, however, these better banks' share rose to 65 to 75 percent of the state's assets. States that limited but did not prohibit branching experienced qualitatively similar effects following deregulation, although these effects were somewhat smaller.

A separate category of research examines the production advantages of financial conglomeration across business lines. Once again, there are many studies of efficiency and profitability *within* banking, securities, and insurance, but research on advantages of *cross*-sector consolidation is limited.[27] The existing research concentrates on bank underwriting of corporate debt and equity securities, and emphasizes information scope economies in the joint production of commercial lending and underwriting. Gande, Puri, Saunders, and Walter (1997) find a "net certification effect" that banks establish by forming lending relationships with lower credit-rated

[27] Studies that examine efficiency gains for within-sector consolidation include, for banks: Berger (1998), Hughes, Lang, Mester, and Moon (1999); for securities: Goldberg, Hanweck, Keenan and Young (1991); for insurance: Berger, Cummins, Weiss and Zi (1999).

firms. They argue that banks' unique information advantage with respect to these firms results in relatively higher prices (lower yields) on underwritten debt securities. Yasuda (1999) reaches the same conclusion; she finds that client-specific relationship capital is a unique bank advantage in underwriting when banks have strong prior lending relationships with the issuing company.

While banks' information advantage in principle could create conflicts of interest (Kanatas and Qi, 1998), the empirical research suggests that banks are not abusing their information to mislead the market. Indeed, research on bank underwriting prior to Glass-Steagall (Kroszner and Rajan, 1994, 1997 and Ang and Richardson, 1994) suggests that debt securities underwritten by banks had a *better* default record than those underwritten by investment banks. Puri (1996) finds that prior to Glass-Steagall investors typically accepted higher prices (lower yields) for bank-underwritten securities. She argues that investors viewed underwriting by banks not as a potential conflict of interest but as an opportunity for issuer certification. After Glass-Steagall reform, underwriter fees are lower for bank-underwritten debt securities relative to similar securities issued by stand-alone investment banks (Sufi, 2005). Drucker and Puri (2005) find that evidence that banks bundling lending and underwriting services reduce costs to customers. Schenone (2005) finds lower underpricing during initial public offerings at firms which have established a lending relationship with a commercial bank capable of underwriting the IPO, consistent with the idea that informed banks can certify the value of securities.

Given the lack of data, it is not surprising that there is little research on either bank production advantages in insurance or on the joint production of insurance and securities services in the United States. Lown, et al (2000) argue that Europe provides a convenient model for how the U.S. financial system could be affected by GLBA because most European countries permit financial conglomerates. They show that banks have become increasingly involved in insurance activities and argue that economies of scope in market and distributing both banking and insurance products through the branch network can explain their success. In fact, about 10 percent of all financial M&A activity in Europe occurred between banks and life insurance

companies over the past 15 years.

B.4 Growth & Entrepreneuship

Did the beneficial changes in banking have quantitatively important effects on the real economy? Schumpeter (1969) argued in the early part of the 20th Century that efficient financial systems promote innovations; hence, better finance leads to faster growth. Robinson (1952) countered that the causality was reversed; economies with good growth prospects develop institutions to provide the funds necessary to support those good prospects. In other words, the economy leads and finance follows. Recent theoretical developments have fleshed out two potential causal links from financial systems to growth, even in the long run. Financial markets can matter either by affecting the volume of savings available to finance investment or by increasing the productivity (or quality) of that investment. These theories show that an improvement in financial market efficiency can act as a lubricant to the engine of economic growth, allowing that engine to run faster.

Empirical research has increasingly provided support for the Schumpterian view that financial market development can play an important causal role in driving long-run growth. For example, King and Levine (1993) demonstrated that the size and depth of an economy's financial system is positively correlated with its future growth in per-capita, real income. While this evidence is appealing, it can not rule out the possibility that financial development and growth are simultaneously driven by a common factor not controlled in the empirical analysis. Rajan and Zingales (1998) and Cetorelli and Gambera (2001) attempt to answer this criticism by exploiting cross-industry differences in financial dependence. They show that in countries with well developed financial markets, industries that require more external finance grow faster than "cash cow" industries that can finance investment with internally generated funds.[28] Levine,

[28]Cetorelli (2001, 2003) attempts to gain a better understanding of the channels through which better finance can affect economic performance. He shows that countries with concentrated banking sectors tend to have more concentrated industrial sectors, particularly in those sectors where external finance is important. On the other hand, Bonaorrsi di Patti and Dell-ariccia (2001) find that banking concentration in Italy helps foster creation of new firms.

Loayza, and Beck (2000) attempt to establish a causal link from finance to growth by using preexisting legal differences across countries as instruments for the development of the banking system; they show that the exogenous component of banking development is positively related to growth performance.

Another way to establish that better finance (or, specifically, better banking) can lead to faster growth is to find policy changes that lead to more efficient finance (banking) and see how the economy responds.[29] Bekaert, Harvey, and Lundblad (2003) do this for equity markets, showing that economic growth sped up after liberalization. Jayaratne and Strahan (1996) study state-level branching deregulation and find that this improvement in banking market openness spurred faster economic growth.[30] Using data from 1972 to 1992, we estimate the change in economic performance before and after deregulation and found that annual growth rates accelerated by 1/2 to 1 percentage point. In that study, we worked hard to rule out other interpretations of the finding. For example, we showed that states did *not* deregulate their economies in *anticipation* of future good growth prospects. We also found no other concomitant policy changes that could account for the result and no consistent political changes, such as a change in the party controlling the state government, around the time of deregulation.

In Table 4, we re-estimate a growth model similar to the one in Jayaratne and Strahan using a slightly different sample period (1976 to 1994). The table reports the results of the growth regressions for both overall employment, for growth in real per-capita income, and for growth in the number of new business incorporations, again using the structure of equation (1) above. We report both a simple specification (with year and state effects), and a more complicated one with a set of variables controlling for the share of employment in each state coming from eight one-digit SIC industries. These share variables account for the possibility that

[29]For a comprehensive review, see Levine (2003).

[30]More recently, Collender and Shaffer (2002) explore how other aspects of banking structure affect economic growth.

different sectors exhibit different levels of average growth. The results in column 1 and 2 suggest that average per-capital income growth accelerated by about 0.66 percentage points following branching reform; following interstate banking reform the point estimate is also positive but not significant. Employment growth also accelerated after deregulation (columns 3 and 4).[31]

The results so far suggest that growth accelerated after deregulation. But following the logic of Rajan and Zingales, just as cash-constrained firms benefitted most from financial development, bank-dependent firms ought to have benefitted the most from the banking deregulation and associated improvements in finance. Entrepreneurs or potential entrepreneurs are likely to be highly dependent on banks and other financial markets because they have not had the opportunity (yet) to generate cash flow that can support investment. Indeed, Schumpeter (1969) himself emphasized the role of financial markets in getting funds to young firms as a key channel through which finance can affect long-run growth. To test this idea, the last two columns in Table 4 estimate how the new business formation changes following banking reform.[32]

To measure business formation, we use new business incorporations in each state, again from 1976 to 1996. This series comes from the individual states, as reported and compiled by Dun & Bradstreet. Business incorporations is not a perfect measure of the rate of business formation in a state, but it offers the best proxy available that is compiled on a consistent basis over a relatively long period. Dun & Bradstreet also report a series on business "starts" that is an offshoot of their credit database. Since this series goes back only to 1985, it is not helpful in

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[31]Jayaratne and Strahan (1996) also show that gross state product grows faster after branching reform. Moreover, they are careful to rule out the possibility that the growth increases were driven by just a few states; that growth accelerated because reform occurred during business cycle troughs or around banking crises; and that growth accelerated because other policies changed at the same time as banking reform.

[32]In Black and Strahan (2002), we explore how differences in banking structure across states affect new business formation.

exploring how the changes in banking that began in the mid-1970s affected entrepreneurship and business formation.[33] Nevertheless, the starts data can help verify that business incorporations closely tracks the rate of business formation in a state. It turns out that new incorporations per capita and business starts per capita are consistently positively correlated with each other; the cross-state correlation ranged from a low of 0.58 in 1994 to a high of 0.72 in 1988. There is one important exception, however. The number of incorporations in Delaware is about *20* times the average number of incorporations in the other states (per capita), while the number of starts in Delaware is very close to the average. This difference reflects favorable legal treatment of incorporations in that state. In addition, measures of banking structure in both Delaware and South Dakota are skewed by the presence of credit card banks in those states. We therefore drop both of these states from all of our regressions.

As a further check on the data, incorporations per capita and starts per capita can be compared with the number of new establishments per capita, which is available from the Small Business Administration starting in 1989.[34] An establishment is not a firm; rather, it is an economic unit such as a plant, a factory, or a restaurant that employs people. Nevertheless, we think that the number of new establishments ought to be highly correlated with the economic quantity that we are trying to observe – the rate of creation of new businesses. Again, it is highly correlated with both incorporations and starts. From 1989 to 1994, the cross-state correlation between incorporations and new establishments ranges from 0.52 to 0.57, and cross-state correlation between starts and new establishments ranges from 0.41 to 0.65. Thus, new incorporations in a state seems to be a good proxy for new business formation.

Using the new incorporations data, Table 4 reports how entrepreneurial activity changed following banking deregulation. Consistent with the Schumpterian logic, the growth of

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[33]Moreover, the starts series depends on a firm's actively seeking to raise funds, because it is based on Dun and Bradstreet's credit database.

[34]Again, since the new establishments series goes back only to 1989, it is not useful in exploring the effects of banking deregulation, which was nearing completion by this time.

entrepreneurial activity increased following banking deregulation. The regression coefficients suggest, for example, that the growth of new incorporations per capita increased by 3.2 percent after branching deregulation. As before, the coefficient on interstate banking deregulation is small and not statistically significant. Thus, the effects of geographic banking reform on entrepreneurial activity are substantially larger than their effects on overall growth of personal income. This makes sense because bank credit is most important in financing small businesses without access to public securities markets, and suggest that the reason why growth accelerates after geographic deregulation is that credit supply to the entrepreneurial sector expands.

B.5 Stability and Business Cycles

The evidence so far points to substantial benefits of opening up banking markets to potential entry and greater competition through deregulation. Entrepreneurs appear better able to start businesses and, perhaps through their efforts, economic growth accelerates. Cross-country evidence is beginning to emerge suggesting that opening up financial markets to foreign entry can also create benefits associated with macroeconomic stability (Barth, Caprio, and Levine, 2002). As noted above, however, there is also evidence from studies at the bank level that risk-taking may increase with the reductions in franchise value that come following banking deregulation.

How did banking reform in the U.S. affect macroeconomic stability? In a recent paper, Morgan, Rime and Strahan (2004) analyze this question from both a theoretical and an empirical standpoint. As shown in Table 3, U.S. banking became substantially better integrated nationally after reform. In the 1970s and before, the U.S. had a balkanized system composed effectively of 50 little banking systems, one per state. After interstate deregulation, however, an average of about 60 percent of a state's banking assets were owned by a multi-state (or sometimes multinational) banking company, and much of the increase can be explained by deregulation. The theoretical effect of this banking integration on business cycles, however, is ambiguous. Morgan et al start with a banking model in which bankers can *prevent* moral hazard—by

monitoring firms—as well as *commit* moral hazard—by neglecting to monitor. These hazards make the equilibrium rate of investment in the economy depend on the level of firm collateral and bank capital; these state variables give firms and bankers a stake in future investment outcomes, but shocks to either variable cause equilibrium investment to fall, i.e., collateral crunches and bank capital crunches are both contractionary.

Morgan et al then show how integration of banking – that is, linking up the banking systems of two formerly separate economies – changes the effects of these two kinds of shocks. They show that both collateral and capital shocks remain contractionary after integration, but their magnitudes change: Bank capital shocks become less important after integration, but the effect of collateral shocks gets bigger. The intuition for this results is straightforward and general. A banking company that is diversified across two economies can import capital if lending opportunities in one economy are strong relative to the availability of local bank capital. In contrast, a collateral shock in one economy will lead the integrated bank to *export* their capital and lending, thus worsening the resulting downturn. Overall, Morgan et al find that economic volatility declines with interstate banking deregulation but not with instate branching reform.

Some of the findings in Morgan et al are summarized in Table 5, where we again report regressions fitting into the panel structure outlined in equation (1). In these regressions, the dependent variable equals the absolute value of the growth residual from the models reported in Table 4. That is, the dependent variable equals the magnitude of the deviation from a state's expected growth rate. These shocks become smaller on average after interstate banking reform.[35]

The theoretical analysis suggests better macroeconomic stability following deregulation because state economies become insulated from shocks to their own banks. In a disintegrated banking system, such as the one we had in the 1970s and early 1980s, shocks to bank capital lead to reductions in lending, thereby worsening the downturn. In contrast, with integration a state

[35]Morgan et al measure banking integration in more detail - for example by taking account of transition following interstate reform - and find larger and more robust declines in volatility than those reported here.

can import bank capital from abroad (i.e., from other states) when its banks are down, thus continuing to fund positive NPV projects. If this explanation really holds, then the correlation between loan availability in a state with the financial capital of local banks ought to weaken with deregulation and integration.

Table 6 puts this notion to the test by regressing state-level loan growth on the growth rate of total bank capital in the state, along with interactions between bank capital growth and the deregulation indicator variables. The structure of the model follows:

$$\begin{aligned} \textit{LoanGrowth}_{st} &= \alpha_t + \beta_s + \gamma^1 \textit{Branch}_{st} + \gamma^2 \textit{Bank}_{st} + \gamma^3 \textit{CapitalGrowth}_{st} + \\ &\gamma^4 (\textit{Branch}_{st} * \textit{CapitalGrowth}_{st}) + \gamma^5 (\textit{Bank}_{st} * \textit{CapitalGrowth}_{st}) \qquad (2) \\ &+ \textit{OtherControls}_{st} + \epsilon_{st} . \end{aligned}$$

If interstate banking insulates local loan supply from local shocks to bank capital, we would expect $\gamma^5 < 0$. We also include an interaction between state-level capital growth and branching reform, although branching only permits integration within states, so there is no reason to expect this interaction effect (γ^4) to enter significantly.[36] The results provide strong support for this idea. Interstate banking deregulation reduced the link between local lending and local bank performance.[37] According to the estimated coefficients, prior to banking deregulation there is almost a one-to-one correspondence between state-level loan growth and capital growth (i.e. the coefficient on capital growth equals 0.83). In contrast, this link falls by about 40 percent after interstate deregulation. So, integration has salutary effects on business cycles by insulating the local economy from the ups and downs of its local banking system. Of course, the kind of cross-state integration that we experienced following interstate deregulation would not be expected to

[36]In contrast, branching may weaken the link between local banking resources and lending at the city or county level. This channel merits further research.

[37]Local banks here means banks headquartered within the state.

insulate states from shocks to *all* banks in the United States.

IV. Deregulation: Why so Long in Coming?

As we have explained, the early part of the 20th Century was characterized by financial deepening, particularly in the 1920s. This process came to a halt with the Depression, and was dramatically slowed over the subsequent 40 years by regulation of banking and securities markets passed during the first half of the 1930s. Markets adapted to regulatory constraints, but the beneficial changes following deregulation suggest that restrictions on competition in particular reduced the quality and availability of financial resources and hampered economic performance. Given the costs of these regulations, why was deregulation so long in coming?

A. *The Politics of Deregulation*

As we explained in Section II, much of the Depression-era regulation can be understood by interest group competition. Small bank interests in reduced competition through branching limits and deposit insurance won the day after the general public came to distrust banking and feared continued financial disruptions. What about recent deregulation? The same interest group politics seem to be at work today. To take one anecdote, the Pennsylvania legislature faced lobbying pressure from large banking companies such as Mellon Bancorp to relax restrictions on expansion. Mellon argued that "they [Mellon et al] needed broader powers to meet challenges from national financial institutions and to bolster themselves to compete in an anticipated era of interstate banking" (Wall Street Journal, 03/05/82).

The process of deregulation was often driven by regulators acting on behalf of interest group within the financial industry. For example, as we described in Section II, the Federal Reserve took the lead on behalf of banks in pushing for reform of Glass Steagall more than 10 years before Congress finally passed the Financial Modernization Act in 1999 (see Stratman, 2001 for evidence from roll-call votes on Glass-Steagall reform). The Comptroller of the Currency (OCC) similarly pushed for liberalization of restrictions on banks' ability to enter the

insurance business. Prior to 1986, state insurance regulators imposed limitations on national banks' insurance sales and underwriting. At the behest of banks, the OCC recalled a previously overlooked section of the 1917 National Bank Act (Section 92) that allowed a national bank to *sell* insurance anywhere with the condition that one of its branches be located in a town with fewer than 5,000 people (McGuire 1996). In 1993, a U.S. Court of Appeals ruling in *Independent Insurance Agents of America v. Ludwig* upheld the OCC decision. State regulators continued fighting the court decision until the U.S. Supreme Court ruling in *Barnett Bank v. Nelson* upheld the *Ludwig* ruling and gave national banks with a branch in a town with fewer than 5,000 people the right to sell insurance anywhere (Thomas, 1997). The decision forced state legislatures to level the playing field by passing new laws allowing both national *and* state-chartered banks to sell insurance through subsidiaries or directly through bank branches. National banks won another court victory in an unrelated 1995 U.S. Supreme Court decision. In *Nationsbank v. VALIC*, the U.S. Supreme Court ruled that state law could not prohibit the sale of annuities by national banks. The court maintained that both fixed and variable annuities were analogous to activities of savings banks, and therefore were not subject to the state's jurisdiction over insurance (Thomas 1997).

In at least six states--Texas, Florida, Mississippi, Tennessee, Louisiana, New Mexico--the relaxation of branch restrictions was also initiated by the OCC. Their push to loosen branching restrictions begin when the Comptroller allowed the Deposit Guaranty National Bank of Jackson, Mississippi to open a branch in Gulfport, Mississippi. Gulfport is more than 100 miles from Jackson. At the time, state banks in Mississippi were allowed to branch only within the county where their principal office was located, or within a 100-mile radius. The OCC exploited a provision of the National Bank Act (1864) which specified that a national bank may branch within the state of its location to the same extent that state banks could. The agency ruled that since state savings banks in Mississippi offered traditional banking services, and since such thrifts were allowed to branch freely within the state, the provisions of the National Bank Act

allowed commercial banks with national charters to branch freely as well. Commercial banks with national charters in Texas, Florida, Louisiana, Tennessee and New Mexico soon followed suit in requesting and being granted permission to branch. Faced with this *fait accompli*, state-chartered banks demanded and won similar rights.

In two earlier papers, we offer more systematic evidence consistent with the importance of interest group politics in shaping regulatory change. We use information in the timing of state deregulation of branching as well as Congressional voting patterns on several legislative amendments to allow nationwide branching and to limit deposit insurance coverage (Kroszner and Strahan, 1999; Kroszner and Strahan, 2000). Both pieces of evidence support idea that private interests within banking can help explain deregulation. For example, states where large banks held a greater *ex ante* share of assets deregulated restrictions on branching earlier than other states, and states where large banks were more financially well-off relative to small banks also deregulated earlier. Similarly, Representative from states where large bank market share was high tended to vote for legislative Amendments to scale back deposit insurance and to remove branching restrictions.

Financial services interests outside of banking also have played an important role in the battle over deregulation. The insurance industry, particularly the independent insurance agents, have traditionally opposed the removal of interstate banking barriers. The National Banking Act of 1864 and subsequent related legislation appeared to limit strictly national bank involvement in insurance, for example, to banks in cities with a population of no more than 5,000. Some states, however, permit state banks to sell various insurance products. The precise interpretation of these laws, including what contracts are defined as "insurance" and whether a bank located in one "small" city may sell insurance to customers throughout the country, has been the source of longstanding litigation between the insurance and banking sectors. The insurance agents were particularly concerned that, if the courts do broaden the insurance powers of banks (and the court decisions have been leaning increasingly in this direction), unrestricted development of a branch

network might give the banks a competitive advantage in insurance distribution.

Again, both the timing of state-level moves to deregulate branching as well as voting patterns by Congressional Representative supports these ideas systematically. Kroszner and Strahan (1999) find that states where the insurance industry was relative small compared to banks, and where banks could compete with agents by selling their products through branches, tended to deregulate earlier. And, when branching was considered at the national level, voting patterns by Representatives reveal a similar pattern.

B. Why so long in coming?

These studies illustrate the importance of interest group pressures in driving political outcomes, but they do not explain the broad timing of deregulation. Why the 1980s rather than the 1950s? The market for financial regulation, like all regulation, involves competition among special interest groups, with significant campaign contributions at both the state and national levels and with members providing votes to supportive politicians (see Makinson 1992, pp. 42-45, and Kroszner and Stratmann 1997). Financial services interests, for example, rarely comprise a unified block, with much of their lobbying effort involving competition among themselves. The beneficiaries were able to support an equilibrium coalition in favor of geographical restrictions from the 1930s through the early 1980s despite their costs to (unorganized) consumers of financial services long after the value of them to governments as a key source of revenue had faded.

While political economists have often had success in identifying the group that receives concentrated benefits of a particular regulation in order to explain the persistence of that regulation, deregulation has been more difficult to explain. As we have seen, smaller banks were the main beneficiaries of the branching restrictions and fought to maintain them. To understand the broad timing of deregulation, one must look for technological, legal, and economic shocks that would alter the old equilibrium. We now consider the shocks in detail.

Beginning in the 1970s, three major innovations reduced the value to the protected banks

of local geographic monopolies by increasing the elasticity of depositors' funds. First, the invention of the automatic teller machine (ATM) helped to erode the geographic ties between customers and banks. After some legal challenges, an ATM was determined not to constitute a branch, thereby permitting ATM networks to spread throughout the United States and the world. Table 7 shows the rapid proliferations of ATMs, which did not exist before 1970. Second, consumer-oriented money market mutual funds also originated in the 1970s (see Nocera 1994). Checkable money market mutual funds and the Merrill Lynch Cash Management Account demonstrated that banking by mail and telephone provided a convenient alternative to local banks.[38] From zero in 1970, Table 7 shows that money market mutual funds are roughly one quarter the size of deposits held at banks. Third, technological innovation and deregulation have reduced transportation and communication costs, particularly since the 1970s. Customers thus now have lower costs of using banks located farther away from them than in the past.

Since the increasing elasticity of deposits supplied to banks reduces the value of geographical restrictions to their traditional beneficiaries, we argue that these beneficiaries had less incentive to fight strenuously to maintain them. While any deregulation that eliminates inefficient regulation is broadly consistent with the public interest theory, the timing of the deregulation is difficult to explain by that approach. The deregulation occurs precisely when the branching restrictions are becoming less burdensome for the public, due to the elasticity-increasing innovations discussed above (see Peltzman 1976). If deregulation were motivated by public interest concerns, the lifting of branching restrictions would have happened much earlier when depositors were more dependent on local banks for both asset management and payments services.

On the lending side, increasing sophistication of credit-scoring techniques, following innovations in information processing technology, financial theory, and the development of large

[38] Regulation Q, which limited the interest rates that banks could pay on deposits, may have helped to drive depositors away from banks when the gap between market rates and deposit ceilings grew during the 1970s.

credit data bases, have begun to change the relationship-character of bank lending towards less personal and more standardized evaluation. As a result of these innovations, a national market developed for residential mortgages in the late 1970s. In the 1980s, consumer lending relied increasingly on automated information processing, leading to the development of credit card securitization. In recent years even banks' lending to small businesses has become increasingly automated, relying on standardized credit scoring programs rather than the judgement of loan officers.

Technological change thus has diminished the value of specialized local knowledge that long-established local bankers might have about the risks of borrowers in the community. Such changes have increased the feasibility and potential profitability for large banks to enter what had traditionally been the core of small bank activities. The large banks have therefore had an incentive to increase their lobbying pressure to attain the freedom to expand into these markets. In addition, as the value of a local banking relationship declined, small firms (borrowers) also would be more likely to favor the entry of large banks into local markets. These factors combined to start undermining the economic performance of the small banks that had benefitted most from the geographic restrictions. Table 7 shows the relative decline in small banks' market share even prior to the branching deregulation that begins in the early 1970s.

One can also point to 'exogenous' forces outside the development of new technologies in the financial sector. For example, Kane (1996) argues that a major shock to the old equilibrium is an increase in the public's awareness of the costliness of having government-insured but (geographically) undiversified financial institutions. In the late 1970s, as Table 7 shows, the failure rate of banks begins to rise. In the 1980s, the Savings and Loan crisis and taxpayer bail-out further heighten the awareness by the public of the costs of restrictions that make depository institutions more fragile and more likely to require infusions of taxpayer funds. The failures thus may have heightened public awareness of and support for branching deregulation. For example, West Virginia's state legislature passed a bill lifting most branching restrictions to help an ailing

economy. The legislature's actions were "...inspired by the state's need for industrial expansion and a greater job base. West Virginia leads the nation in unemployment" (American Banker, 04/17/84).

Consistent with Kane's argument, economic conditions also played a part in relaxing restrictions on interstate banking. The Garn St Germain Act of 1982 amended the Bank Holding Company Act by permitting the acquisition of *failed* thrifts and banks by out-of-state banks or holding companies. Banks and thrifts failed by the hundreds in some states in the early 1980s after the recessions of 1980 and 1981-82 and the "third world debt" crises. Surviving institutions in hard-hit states were often not fit to re-capitalize the failed ones, so Congress acted to let in healthy banks from out-of-state. Note that the interstate banking boom following this act coincided with severe downturns in certain states. Many states then allowed out-of-state banks to buy their banks, but typically these moves were done on a reciprocal basis. For example, when Maine first allowed entry by out-of-state BHCs, the law stipulated that banks from Maine must be allowed to enter those states. Over time state reciprocal agreements to allow interstate banking grew, and the transition to full interstate banking was completed with passage of the Reigle-Neal Interstate Banking and Branching Efficiency Act of 1994. Reigle-Neal made interstate banking a bank right, rather than state right; banks or holding companies could now enter another state without permission. This act also permits banks to operate branches across state lines for the first time, allowing multi-bank holding companies to consolidate their operations.

V. Conclusions (Incomplete)

Banking regulations have been changing dramatically during the last three decades. Recent reforms, which have removed many of the constraints binding on the banking industry since the 1930s or before, have re-shaped the financial industry and, in turn, the economy. Technological change and financial innovation have been responsible for driving many of these

regulatory changes. Such shocks are likely to create conditions for further erosion of regulatory barriers, both domestically and internationally.

References (Incomplete)

Ang, James S. and Richardson, Terry, 1994, "The Underwriting Experience of Commercial Bank Affiliates Prior to the Glass Steagall Act: A Re-examination of Evidence for Passage of the Act," *Journal of Banking and Finance*.

Abrams, Burton A., and Russell F. Settle. 1993. "Pressure-group Influence and Institutional Change: Branch-banking Legislation during the Great Depression." Public Choice 77: 687-705.

Asquith, Paul, Mullins, David and Wolff, Eric, "Original Issue High Yield Bonds: Ageing Analysis of Defaults, Exchanges, and Calls," *Journal of Finance*, September 1989, 44, 923-52.

Ausubel, Lawrence, 1991, "The Failure of Competuition in Credit Card Markets," *American Economic Review* 81(1).

Barth, James. *The Great Savings and Loan Debacle*. Washington, DC: AEI Press, 1991.

Barth, James R., Gerald Caprio and Ross Levine, 2002, "Bank Regulation and Supervision: What Works Best?" Mimeo, January 2002.

Becker, Gary S (1983). "A Theory of Competition among Pressure Groups for Political Influence," *Quarterly Journal of Economics,* 371-400.

Bekaert, Geert, Campbell Harvey and Christian T. Lundblad, 2003, "Equity Market Liberalization in Emerging Markets," *Federal Reserve Bank of St. Louis Review*.

Berger, Allen N., Rebecca S. Demsetz, and Philip E. Strahan, 1999, "The consolidation of the financial services industry: Cause, consequences and implications for the future," *Journal of Banking and Finance* 23, 135-94.

Black, Sandra E. and Philip E. Strahan, 2002, "Entrepreneurship and Bank Credit Availability," *Journal of Finance*, December.

Benston, George J., *The Separation of Commercial and Investment Banking*, Oxford: Oxford University Press, 1990.

Berger, Allen, Rebecca Demsetz and Philip Strahan (1999). "The Condolidation of the Financial Services Industry: Causes, Consequences, and Implications for the Future," *Journal of Banking and Finance*, Vol. 23: 2-4 (February), pages 135-194.

Bhargava, Rahul and Donald R. Fraser (1998). "On the Wealth and Risk Effects of Commercial Bank Expansion into Securities Underwriting: An Analysis of Section 20 Subsidiaries," *Journal of Banking and Finance*, 22: 447-465.

Boyd, John and Mark Gertler, "Are Banks Dead? Or Are the Reports Greatly Exaggerated?" Federal Reserse Bank of Minneapolis Quarterly Review, Summer 1994, 2-23.

Boyd, John H. and Stanley L. Graham (1986). "Risk, Regulation, and Bank Holding Company Expansion into Nonbanking," Federal Reserve Bank of Minneapolis *Quarterly Review*, 10, No. 2 (Spring): 2-17.

Boyd, John H, and Stanley L. Graham (1988). "The Profitability and Risk Effects of Allowing Bank Holding Companies to Merge with Other Financial Firms: A Simulation Study," Federal Reserve Bank of Minneapolis *Quarterly Review* 12, No. 2 (Spring): 3-20.

Boyd John H., Stanley L. Graham, and Shawn Hewitt (1993). "Bank Holding Company Mergers with Nonbank Financial Firms: Effects on the Risk of Failure," *Journal of Banking and Finance* 17: 43-63.

Brook, Yaron, Robert Hendershott, and Darrell Lee (1998). "The Gains from Takeover Deregulation: Evidence from the End of Interstate Banking Restrictions," *Journal of Finance*, 53:6 (December): 2185-2204.

Buchanan, James and Gordon Tullock. 1962. *Calculus of Consent*. Ann Arbor: University of Michigan Press.

Calomiris, Charles W., 1992, "Do Vulnerable Economies Need Deposit Insurance? Lessons from U.S. Agriculture in the 1920s," in Philip L. Brock, ed., *If Texas were Chile: A Primer on Bank Regulation*, San Francisco (Sequoia Institute).

Calomiris, Charles W., 1993, "Regulation, Industry Structure and Instability in U.S. Banking: A Historical Perspective," in Michael Klausner and Lawrence J. White, eds., Structural Change in Banking, New York (NYU), 19-116.

Calomiris, Charles W., 1995, "The Costs of Rejecting Universal Banking: American Finance in the German Mirror, 1870-1914," in Naomi Lamoreaux and Daniel Raff, eds., *Coordination and Information*, Chicago: University of Chicago Press.

Calomiris, Charles W. and Joseph Mason, 2003, "Fundamentals, Panics and Bank Distress During the Depression," *American Economic Review* 93(5) 1615-47.

Calomiris, Charles W. and Joseph Mason, 2004, "Credit Card Securitization and Regulatory Arbitrage," *Journal of Financial Services Research*, 5-27 .

Calomiris, Charles W. and Eugene N. White, 2000, "The Origins of Federal Deposit Insurance," in *U.S. Bank Deregulation in Historical Perspective*, Charles W. Calomiris, Cambridge University Press, 164-211.

Cetorelli, Nicola, and Michele Gambera, 2001, "Bank structure, financial dependence and growth: International evidence from industrial data," *Journal of Finance* 56(2), 617-48.

Collender, Robert N., and Sherrill L. Shaffer, 2002, "Bank Market Structure and Local Employment Growth," United States Department of Agriculture, technical bulletin no. 1900.

Demirguc-Kunt, Asli, Ross Levine and H.G. Min, 1999, "Opening Foreign Banks: Issues of Stability, Efficiency and Growth," *The Implications of Globalization of World Financial Markets Korea*, Bank of Korea.

Demsetz, Rebecca, S., Marc R. Saidenberg, and Philip E. Strahan, 1996, "The disciplinary role of franchise value: Banks with something to lose," *Economic Policy Review* 2(2), Federal Reserve Bank of New York.

Demsetz, Rebecca S., and Philip E. Strahan (1997). "Diversification, Size, and Risk at

Bank Holding Companies," *Journal of Money, Credit, and Banking*, 29, 300-313.

Drucker, Steven and Manju Puri, 2005, "On the Benefits of Concurrent Lending and Underwiting," *Journal of Finance.*

Ellis, Diane, 1998, "The Effect of Consumer Interest Rate Deregulation on Credit Card Volumes, Charge Offs, and the Personal Bankruptcy Rates," FDIC working paper number 98–05.

Ely, David P. and Kenneth J. Robinson (1998). "How Might Financial Institutions React to Glass-Steagall Repeal? Evidence from the Stock Market," Federal Reserve Bank of Dallas *Financial Industry Studies*, September: 1-11.

Flannery, Mark and Katherine Samolyk, "Payday Lending: Do the Costs Justify the Price?" FDIC Working paper 2005-09, June 2005.

Gande, Amar, Manju Puri, Anthony Saunders, and Ingo Walter (1997). "Bank Underwriting of Debt Securities: Modern Evidence," *The Review of Financial Studies*, vol 10: 4, pages 1175-1202.

Goldberg, L.G., G.A. Hanweck, M. Keenan, and A. Young (1991). "Economies of Scale and Scope in the Securities Industry," *Journal of Banking and Finance*, 15, 91-107.

Herlihy, Edward D., Craig Wasserman, Richard Kim, and Lawrence Makow (1999). "Financial Reform Legislation Finally Nears Passage," *Banking Policy Report*, 18:2 (November 15).

Hellman, Thomas, Kevin Murdock and Joseph Stiglitz, 2000, "Liberalization, Moral Hazard in Banking and Prudential Regulation: Are Capital Requirements enough?" *American Economic Review*, 2000, 90(1), 147-165.

Hubbard, R. Glenn, Darius Palia, and Nicolas Economides. 1996. "The Political Economy of Branching Restrictions and Deposit Insurance," *Journal of Law and Economics*.

Jarrell, Gregg. 1984. "Change at the Exchange: The Causes and Effects of Deregulation." *Journal of Law and Economics* 27 (October): 273-312.

Jayaratne, Jith, and Philip E. Strahan, 1996, "The finance-growth nexus: Evidence from bank branch deregulation," *Quarterly Journal of Economics* 101, 639-70.

Jayaratne, Jith and Philip E. Strahan (1998). Entry Restrictions, Industry Evolution and Dynamic Efficiency: Evidence from Commercial Banking." *Journal of Law and Economics*, 41:1, 239-74.

Joskow, Paul and Roger Noll. 1981. "Regulation in Theory and Practice: An Overview," in Gary Fromm, ed., Studies in Public Regulation, Cambridge: MIT Press, pp. 1-65.

Jensen, Michael C. and Richard S. Ruback (1983). "The Market for Corporate Control: The Scientific Evidence," *Journal of Financial Economics* 11, 5-50.

Kane, Edward. *The S&L Insurance Mess: How Did It Happen*? Washington, DC: Urban Institute, 1989.

Kane, Edward J. 1996. "De Jure Interstate Banking: Why Only Now?" *Journal of Money, Credit, and Banking.* 28(2, May): 141-61.

Kantas, George and Jianping Qi (1998). "Underwriting by Commercial Banks: Incentive Conflicts, Scope Economies, and Project Quality," *Journal of Money, Credit, and Banking*, Vol: 30: 1 (February), pages 119-133.

Kaufman, George and Mote, Larry. "Glass-Steagall: Repeal by Regulatory and Judicial Reinterpretation," *Banking Law Journal*, September-October 1990, 388-421.

Kaufman, George and Mote, Larry. "Commercial Bank Securities Activities: What Really Happened in 1902," *Journal of Money, Credit, and Banking*, August 1992, 370-74.

Keeley, Michael, 1990, "Deposit insurance, risk and market power in banking," *American Economic Review* 80, 1183-1200.

King, Robert and Ross Levine, 1993, "Finance and Growth: Schumpeter Might Be Right," *Quarterly Journal of Economics* 108, 717-738.

Kroszner, Randall S. 1996. "The Evolution of Universal Banking and Its Regulation in Twentieth Century America." Pp. 70-99 in Universal Banking: Financial System Design Reconsidered, edited by Anthony Saunders and Ingo Walter. New York: Irwin Professional Publishers.

Kroszner, Randall S. "The Political Economy of Banking and Financial Regulation in the U.S." pp. 200-13 in George M. von Furstenberg, ed., The Banking and Financial Structure in the NAFTA Countries and Chile, Boston: Kluwer Academic Publishers, 1997.

Kroszner, Randall S. and Raghuram G. Rajan (1994). "Is the Glass-Steagall Act Justified? A Study of the U.S. Experience with Universal Banking before 1933," *American Economic Review*, 84, 810-32.

Kroszner, Randall S. and Raghuram G. Rajan (1997). "Organization Structure and Credibility: Evidence from Bank Securities Activities before the Glass-Steagall Act," *Journal of Monetary Economics,* 39 475-516.

Kroszner, Randall S. and Philip E. Strahan. 1996. "Regulatory Incentives and the Thrift Crisis: Dividends, Mutual-to-Stock Conversions, and Financial Distress." *Journal of Finance*, 51 (September): 1285-1320.

Krozner, Randall S. and Philip E. Strahan (1999). "What Drives Deregulation? Economics and Politics of the Relaxation of Bank Branching Restrictions." *Quarterly Journal of Economics*, 114(4), 1437-67.

Kroszner, Randall S., and Philip E. Strahan, 2001, "Obstacles to Optimal Policy: The Interplay of Politics and Economics in Shaping Banking Supervision and Regulation Reforms," in *Prudential Supervision: What Works and What Doesn't*, edited by Frederic S. Mishkin, NBER.

Kroszner, Randall S. and Thomas Stratmann (1998), "Interest Group Competition and the Organization of Congress: Theory and Evidence from Financial Services Political Action Committees," *American Economic Review* 88, 1163-87.

Kwan, Simon (1998), "Securities Activities by Commercial Banking Firms' Section 20

Subsidiaries: Risk, Return, and Diversification Benefits," Federal Reserve Bank of San Francisco Working Paper, May.

Kwan, Simon and Richard Eisenbeis (1999). "Mergers of Publicly Traded Banking Organizations Revisited," Federal Reserve Bank of Atlanta *Economic Review*, Fourth Quarter, 26-37.

Kwan, Simon and Elizabeth Laderman (1999). "On the Portfolio Effects of Financial Convergence—A Review of the Literature," Federal Reserve Bank of San Francisco *Economic Review*, No. 2, pages 18-31.

Kwast, Myron L (1989). "The Impact of Underwriting and Dealing on Bank Returns and Risks," *Journal of Banking and Finance*, 13: 101-125.

Levine Ross, Norman Loayza, and Thorsten Beck, 2000, "Financial intermediation and growth: Causality and Causes," *Journal Of Monetary Economics* 46(1), 31-77.

Lown, Cara, C.L. Osler, Philip E. Strahan, and Amir Sufi (2000). *"The Changing Landscape of the Financial Services Industry: What Lies Ahead?"* Federal Reserve Bank of New York, *Economic Policy Review.*

Macey, Jonathan and Miller, Geoffrey, *Banking Law and Regulation*, Boston: Little, Brown and Company, 1992.

Mester, Loretta J. (1996). "Repealing Glass Steagall: The Past Points the Way to the Future," Federal Reserve Bank of Philadelphia *Business Review*, (July/August), 3-18.

Mishkin, Frederic S. and Philip E. Strahan (1999). "What Will Technology do to Financial Structure?" in *The Effect of Technology on the Financial Sector*, Brookings-Wharton Papers on Financial Services. Edited by Robert Litan and Anthony Santomero, 249-87.

Morgan, Donald P., Bertrand Rime and Philip E. Strahan, 2004, "Bank Integration and State Business Cycles," *Quarterly Journal of Economics* 119(4), 1555-85.

Niskanen, William. 1971. *Bureaucracy and Representative Government*. Chicago: Aldine-Atherton.

Noll, Roger. 1989. "Comment on Peltzman." *Brookings Papers: Microeconomics.* 48-58.

Peach, W. Nelson, *The Security Affiliates of National Banks*, Baltimore: Johns Hopkins Press, 1941.

Peltzman, Sam (1976). "Toward a More General Theory of Regulation," *Journal of Law and Economics* 19, 109-148.

Peltzman, Sam (1989). "The Economic Theory of Regulation after a Decade of Deregulation," *Brookings Papers: Microeconomics,* 1-41.

Puri, Manju (1996). "Commercial Banks in Investment Banking: Conflict of Interest or Certification Role?" *Journal of Financial Economics* Vol 40, pages 373-401.

Rajan, Raghuram and Luigi Zingales, 1998, "Financial Dependence and Growth," *American*

Economic Review 88 559-586.

Robinson, Joan, 1952, *The Rate of Interest and Other Essays*, (London: Macmillan, 1952).

Schumpeter, Joseph, 1969, *The Theory of Economic Development*, (Oxford: Oxford University Press, 1969).

Shull, Bernard and Lawrence J. White, 1998, "Of Firewalls and Subsidiaries: The Right Stuff for Expanded Bank Activities," *Journal of Banking Law*, May.

Stigler, George J. 1971. "The Theory of Economic Regulation." *Bell Journal of Economics and Management Science* 2 (1, Spring): 3-21.

Stiroh, Kevin and Philip E. Strahan, 2003, "The Competitive Dynamics of Competition: Evidence from U.S. Banking Deregulation," *Journal of Money, Credit and Banking*.

Sufi, Amir, 2005, "The Joint Production of Lending and Debt Underwriting: The Effect of Deregulation on Firms," mimeo, May 20, 2004.

Thomas, Jeffrey H. (1997). "Barnett Bank Brings the Business of Insurance to the Attention of Congress," *University of Arkansas at Little Rock Law Journal*, 20:129 (Fall).

Thomas, Kenneth, 1993, *Community Reinvestment Performance*.

Sylla, Richard, John Legler, and John Wallis. 1987. "Banks and State Public Finance in the New Republic: The United States, 1790-1860." *Journal of Economic History* 47 (2, June): 391-403.

White, Eugene. 1983. *The Regulation and Reform of the American Banking System, 1900-1929*. Princeton: Princeton University Press.

White, Eugene, 1998 "The Legacy of Deposit Insurance: The Growth, Spread, and Cost of Insuring Financial Intermediaries," in *The Defining Moment*, edited by Michael Bordo, Claudia Goldin and Eugene White, Chicago UP, 1998

Yasuda, Ayako (2004). "Do Bank Relationships affect the Choice of Underwriter," Journal of Finance 60(3), 1259-92.

TABLE 1
A BRIEF HISTORY OF BANKING REGULATIONS

	Origin of Regulation	History of Deregulation
Restrictions on Entry and Expansion	19th Century: States and Comptroller of the Currency limit access to bank charters & restrict branching. 1927: McFadden Act permits states to restrict branching of national banks. 1956: Bank Holding Company Act give states authority to restrict entry by out-of-state banks and holding companies.	1970s-80s: States gradually relax restrictions on in-state branching and cross-state ownership; OCC and states relax chartering restrictions. 1982: Garn St Germain Act permits banks to purchase failing banks or thrifts across state lines. 1994: Interstate Banking and Branching Efficiency Act permits banks and holding companies to purchase banks across state lines and permits national banks to branch across state lines.
Product Restrictions	1934: Glass-Steagall Separates commercial lending and underwriting. 1956: Bank Holding Company Act prevents holding companies from owning insurance or securities affiliates.	1987: Federal Reserve allows banks to underwrite corporate debt and equity 1989-1996: Federal reserve relaxes revenue restrictions on bank securities affiliates 1999: Financial Modernization Act allows banks to underwrite insurance and securities through affiliates
Deposit Insurance	Early 20th Century: Some states introduce mutual-guarantee deposit insurance systems. 1933: Federal deposit insurance adopted. 1950-1980: Deposit insurance limit raised. periodically, ending with an increase to $100,000 in 1980.	1987: Competitive Equality in Banking Act allocates $10.8 billion to recapitalize the FSLIC. 1989: Financial Institutions Reform, Recovery and Enforcement Act adds additional funds to deposit insurance and restricts activities of thrifts. 1991: FDIC Improvement Act imposes risk-based deposit insurance and requires 'prompt corrective action' of poorly capitalized depository institutions.
Limits on Pricing	19th Century and earlier: State usury laws limit interest on loans. 1917: Federal Reserve limits interest on deposits under Regulation Q.	1978: Marquette decision allows banks to lend anywhere under the usury laws of the banks home state. 1980: Depository Institutions Deregulation and Monetary Control Act (DIDMCA) phases out interest rate ceilings on deposits. 1980s: Credit card business flocks to South Dakota and Delaware to take advantage of elimination of usury laws.
Capital Requirements	19th Century and earlier: State and national banks required to invest a minimum amount of equity to attain a bank charter.	1980s: Minimum capital-asset ratios required for banks. 1988 (effective 1992): Basel Accord mandates minimum ratio of capital to risk-weighted assets, which accounts crudely for differences in credit risk across loans and for bank off-balance sheet exposures. 1996: Market risk amendment to the Basel Accord introduces model-based capital requirement for trading positions. 2004 (effective year-end 2006): Consensus between international regulators achieved on Basel II Accord, which moves toward a comprehensive risk-based capital adequacy standard incorporating market, credit and operational risk and encourages bank to use internal models to measure risk.

TABLE 2
PERCENTAGE SHARES OF ASSETS OF FINANCIAL INSTITUTIONS IN THE UNITED STATES
(1860-2004)

	1860	1880	1900	1912	1922	1929	1939	1948	1960	1970	1980	1993	2004
Commercial banks	71.4	60.6	62.9	64.5	63.3	53.7	51.2	55.9	38.2	37.9	34.8	25.4	24.4
Thrift institutions	17.8	22.8	18.2	14.8	13.9	14.0	13.6	12.3	19.7	20.4	21.4	9.4	6.7
Insurance companies	10.7	13.9	13.8	16.6	16.7	18.6	27.2	24.3	23.8	18.9	16.1	17.4	15.2
Investment companies	--	--	--	--	0.0	2.4	1.9	1.3	2.9	3.5	3.6	14.9	21.7
Pension funds	--	--	0.0	0.0	0.0	0.7	2.1	3.1	9.7	13.0	17.4	24.4	21.7
Finance companies	--	0.0	0.0	0.0	0.0	2.0	2.2	2.0	4.6	4.8	5.1	4.7	4.2
Securities brokers and dealers	0.0	0.0	3.8	3.0	5.3	8.1	1.5	1.0	1.1	1.2	1.1	3.3	5.3
Mortgage companies	0.0	2.7	1.3	1.2	0.8	0.6	0.3	0.1	[a]	[a]	0.4	0.2	0.1
Real estate investment trusts	--	--	--	--	--	--	--	--	0.0	0.3	0.1	0.1	0.7
Total *(percent)*	100	100	100	100	100	100	100	100	100	100	100	100	100
Total *(trillion dollars)*	.001	.005	.016	.034	.075	.123	.129	.281	.596	1.33	4.0	13.9	34.9

[a] Data not available.

Sources: Data for 1860-1948 (except 1922) from Goldsmith (1969, Table D-33, pp. 548-9); data for 1922 from Goldsmith (1958, Table 10, pp. 73-4); and data for 1960-1993 from Board of Governors of the Federal Reserve System, "Flow of funds accounts," various years. The table is expanded from Kaufman and Mote (1994). Assets held by government-sponsored enterprises and asset-backed securities issuers are not included.

TABLE 3
PANEL REGRESSION OF BANK STRUCTURAL VARIABLES ON BANKING DEREGULATION INDICATORS
(Standard errors in parentheses)

	Share of total state assets held by banks owned by out-of-state BHCs	Local-market deposit HHI	Share of total state assets held by banks with less than $100 million in assets (1994 $s)
Post-Branching	-0.007	-18.9	-0.031*
	(0.035)	(61.3)	(0.011)
Post-Interstate Banking	0.171*	-78.8*	-0.012
	(0.035)	(55.9)	(0.007)
Control Variables included?			
State Fixed Effects	yes	yes	yes
Year Fixed Effects	yes	yes	yes
Dependent Variable Statistics:			
Mean	0.34	1909	0.196
(Standard Deviation)	(0.28)	(665)	(0.170)
N	931	931	931
R^2	0.13	0.86	0.95

The local deposit HHI is the sum of squared market shares for all banking organizations operating within a local market, defined as an MSA. For states with multiple MSAs, we average the HHI across MSAs within the state, weighted by the amount of deposits in the MSA. The model is estimated using a fixed effects model with both year and state effects. These regressions are estimated using a fixed-effects model with both year and state effects. Sample includes 49 states (DC included, South Dakota and Delaware dropped) and 19 years (1976-1994). *Statistically significant at the 10 percent level. Standard errors are constructed assuming that residual is clustered across states.

TABLE 4
PANEL REGRESSION OF STATE GROWTH ON BANKING DEREGULATION INDICATORS
(Standard errors in parentheses)

	Real per-capita state-level income growth		Employment growth		Growth of new incorporations	
Post-Branching	0.0066*	0.0068*	0.0083*	0.0085*	0.032*	0.034*
	(0.0027)	(0.0025)	(0.0028)	(0.0029)	(0.012)	(0.013)
Post-Interstate Banking	0.0025	0.0020	0.0047*	0.0024	-0.011	-0.008
	(0.0036)	(0.0034)	(0.0028)	(0.0029)	(0.016)	(0.015)
Control Variables included?						
State Fixed Effects	yes	yes	yes	yes	yes	yes
Year Fixed Effects	yes	yes	yes	yes	yes	yes
1-Digit SIC Employment Shares	no	yes	no	yes	yes	yes
Dependent Variable Statistics:						
Mean	0.015		0.021		0.039	
(Standard Deviation)	(0.027)		(0.022)		(0.119)	
N	931	931	931	931	931	931
R^2	0.52	0.56	0.55	0.62	0.23	0.24

These regressions are estimated using a fixed-effects model with both year and state effects. Sample includes 49 states (DC included, South Dakota and Delaware dropped) and 19 years (1976-1994). *Statistically significant at the 10 percent level. Standard errors are constructed assuming that residual is clustered across states.

TABLE 5
PANEL REGRESSION OF STATE GROWTH VOLATILITY ON BANKING DEREGULATION INDICATORS
(Standard errors in parentheses)

	Absolute value of real per-capita income growth residual		Absolute value of employment growth residual		Absolute value of growth of new incorporations residual	
Post-Branching	0.0006	0.0011	-0.0019	-0.0012	-0.0074	-0.0037
	(0.0014)	(0.0015)	(0.0013)	(0.0013)	(0.012)	(0.0101)
Post-Interstate Banking	-0.0006	-0.0018	-0.0026*	-0.0029*	-0.015	-0.014
	(0.0016)	(0.0013)	(0.0011)	(0.0011)	(0.012)	(0.011)
Control Variables included?						
State Fixed Effects	yes	yes	yes	yes	yes	yes
Year Fixed Effects	yes	yes	yes	yes	yes	yes
1-Digit SIC Employment Shares	no	yes	no	yes	yes	yes
Dependent Variable Statistics:						
Mean	0.012		0.010		0.069	
(Standard Deviation)	(0.013)		(0.009)		(0.078)	
N	931	931	931	931	931	931
R^2	0.34	0.36	0.26	0.27	0.07	0.07

These regressions are estimated using a fixed-effects model with both year and state effects. The dependent variable equals the absolute value of the growth residuals from the models reported in Table 4. Sample includes 49 states (DC included, South Dakota and Delaware dropped) and 19 years (1976-1994).
*Statistically significant at the 10 percent level. Standard errors are constructed assuming that residual is clustered across states.

TABLE 6
PANEL REGRESSION OF STATE-LEVEL REAL LOAN GROWTH ON BANKING DEREGULATION INDICATORS AND BANK CAPITAL
(Standard errors in parentheses)

	Real growth in total loans		Real growth in commercial & industrial loans	
Post-Branching	0.029*	0.026*	0.039*	0.041*
	(0.011)	(0.011)	(0.014)	(0.013)
Post-Interstate Banking	0.021	0.013	0.028*	0.018
	(0.013)	(0.012)	(0.016)	(0.015)
Growth in Bank Capital	0.833*	0.757*	0.580*	0.442*
	(0.089)	(0.092)	(0.160)	(0.159)
Growth in Bank Capital *	-0.043	-0.019	0.061	0.099
Post-Branching	(0.113)	(0.101)	(0.181)	(0.152)
Growth in Bank Capital *	-0.332*	-0.318*	-0.300*	-0.249*
Post-Interstate Banking	(0.094)	(0.127)	(0.130)	(0.110)
Control Variables included?				
State Fixed Effects	yes	yes	yes	yes
Year Fixed Effects	yes	yes	yes	yes
1-Digit SIC Employment Shares	no	yes	no	yes
Dependent Variable Statistics:				
Mean	0.024		0.008	
(Standard Deviation)	(0.092)		(0.109)	
N	882	882	882	882
R^2	0.56	0.62	0.46	0.51

These regressions are estimated using a fixed-effects model with both year and state effects. Sample includes 49 states (DC included, South Dakota and Delaware dropped) and 19 years (1977-1994). *Statistically significant at the 10 percent level. Standard errors are constructed assuming that residual is clustered across states.

TABLE 7
BROAD TRENDS IN COMMERCIAL BANKING, 1950-1995

Year	Number of ATMs	Domestic bank deposits (billions)	Money market mutual fund (billions)	Percent of deposits + money funds held by banks	Small banks' percent of banking assets	Average number of bank failures
	(1)	(2)	(3)	(4)	(5)	(6)
1950	0	$154	$0	100	NA	4
1955	0	191	0	100	NA	3
1960	0	228	0	100	24	2
1965	0	330	0	100	20	4
1970	0	479	0	100	18	6
1975	9,750	775	4	99	18	6
1980	18,500	1,182	76	94	17	10
1985	61,117	1,787	242	88	14	60
1990	80,156	2,339	493	83	11	179
1995	122,706	2,552	745	77	8	61

Column 1: ATM figures are from Bank Network News, The EFT Network Data Book (New York: Faulkner and Gray, Inc.). The 1975 figure was unavailable. 9,750 is the number of ATMs in 1978, the first year for which complete data are available. Columns 2-4: Banks domestic deposits are from the Reports of Income and Condition; money market mutual funds are from the Flow of Funds. Data on all bank deposits, foreign plus domestic are only available beginning in 1970. The trend in banks' share (column 4) is the same using total deposits instead of domestic deposits. Column 5: Percent of banking assets held by small banks, where a small bank is defined as a commercial bank less than $100 million in assets in 1994 dollars. These data are based on the Reports of Income and Condition. Data on small banks are not available before 1960. Column 6: Five year average number of bank failures, where the final year is indicated in the first column. These data are from FDIC, Annual Report and the Quarterly Banking Profile.

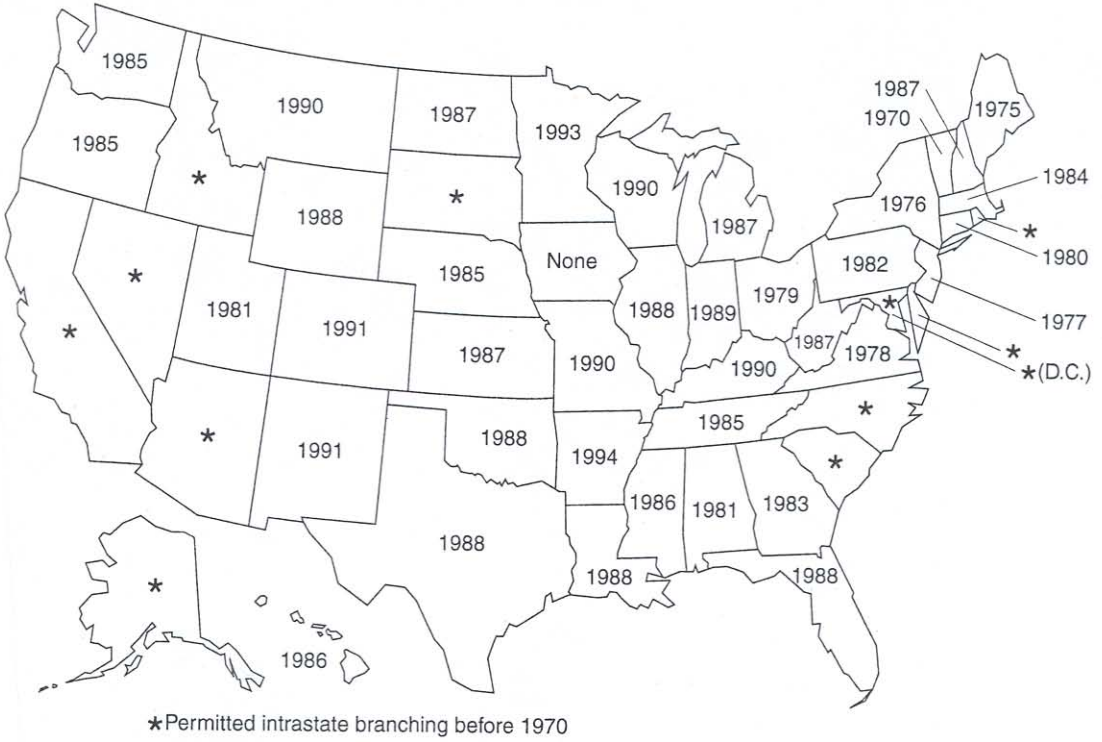
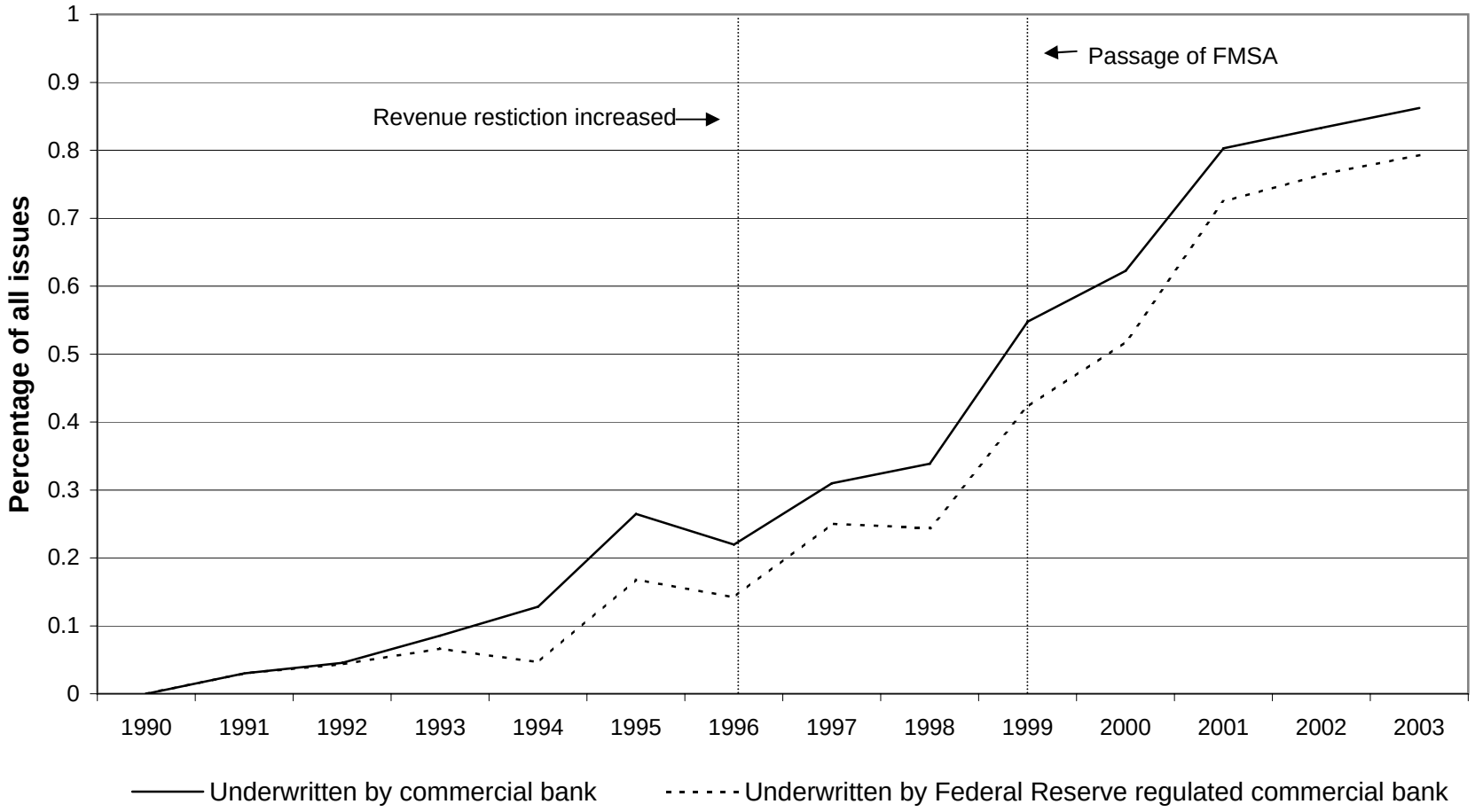

1985
1985
1990
1987
1993
1987
1970
1975
1984
1976
1980
1977
1978
(D.C.)
1990
1988
1985
None
1988
1989
1979
1982
1987
1990
1981
1991
1987
1990
1985
1988
1994
1986
1981
1983
1988
1988
1988
1986
1991
*Permitted intrastate branching before 1970

Figure 1

Figure 1
Commercial Bank Entry into Debt Underwriting

Notes: An underwriter is a commercial bank if its parent is a U.S. based financial institution filing a Y-9C report with the Federal Reserve, or if its parent is a foreign international firm with an SIC code of 6020 or 6029. A Federal Reserve regulated commercial bank underwriter is a Section 20 subsidiary of a commercial bank. Source: Sufi (2005).



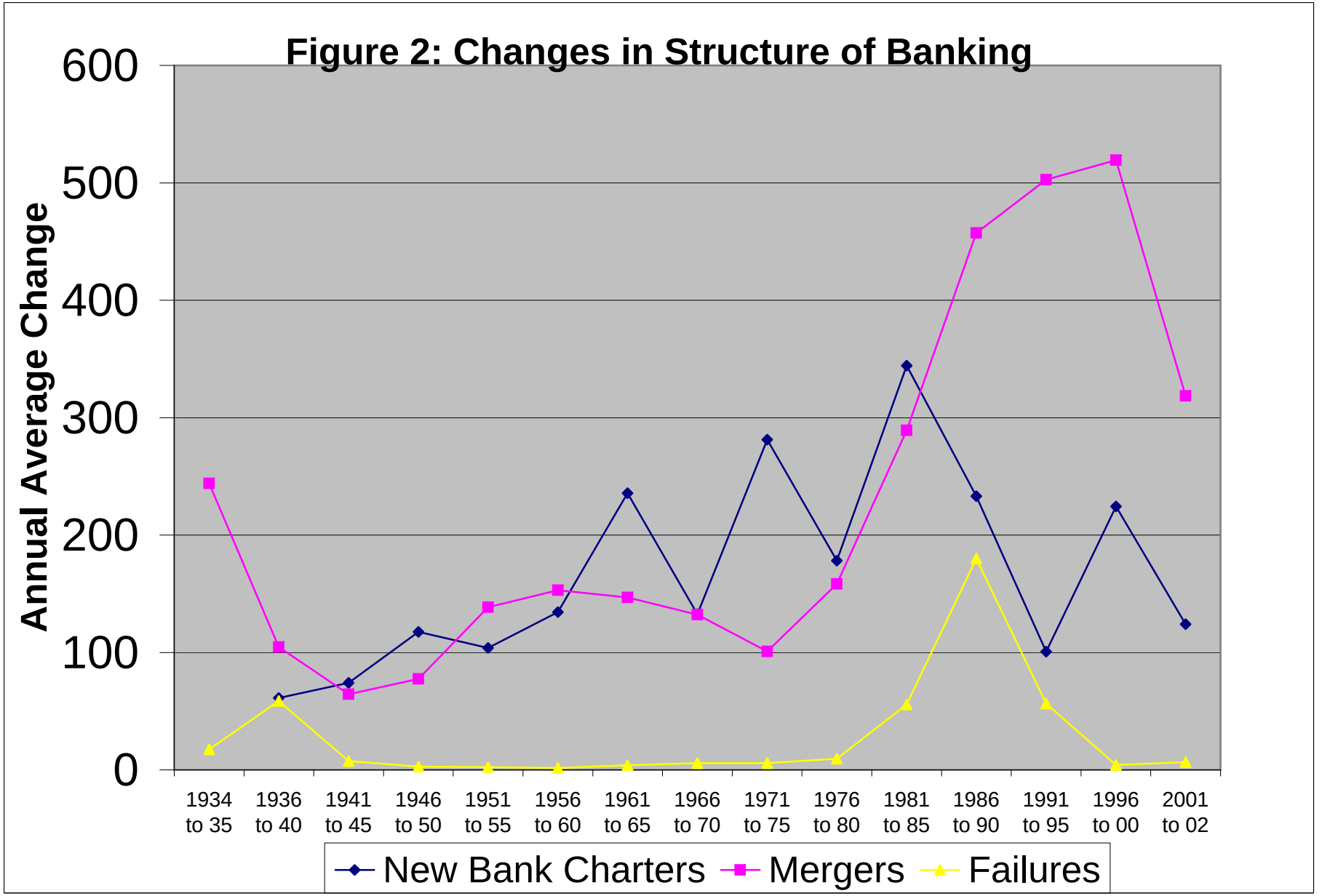


Figure 2: Changes in Structure of Banking
Annual Average Change
600
500
400
300
200
100
0
1934 to 35
1936 to 40
1941 to 45
1946 to 50
1951 to 55
1956 to 60
1961 to 65
1966 to 70
1971 to 75
1976 to 80
1981 to 85
1986 to 90
1991 to 95
1996 to 00
2001 to 02
New Bank Charters
Mergers
Failures

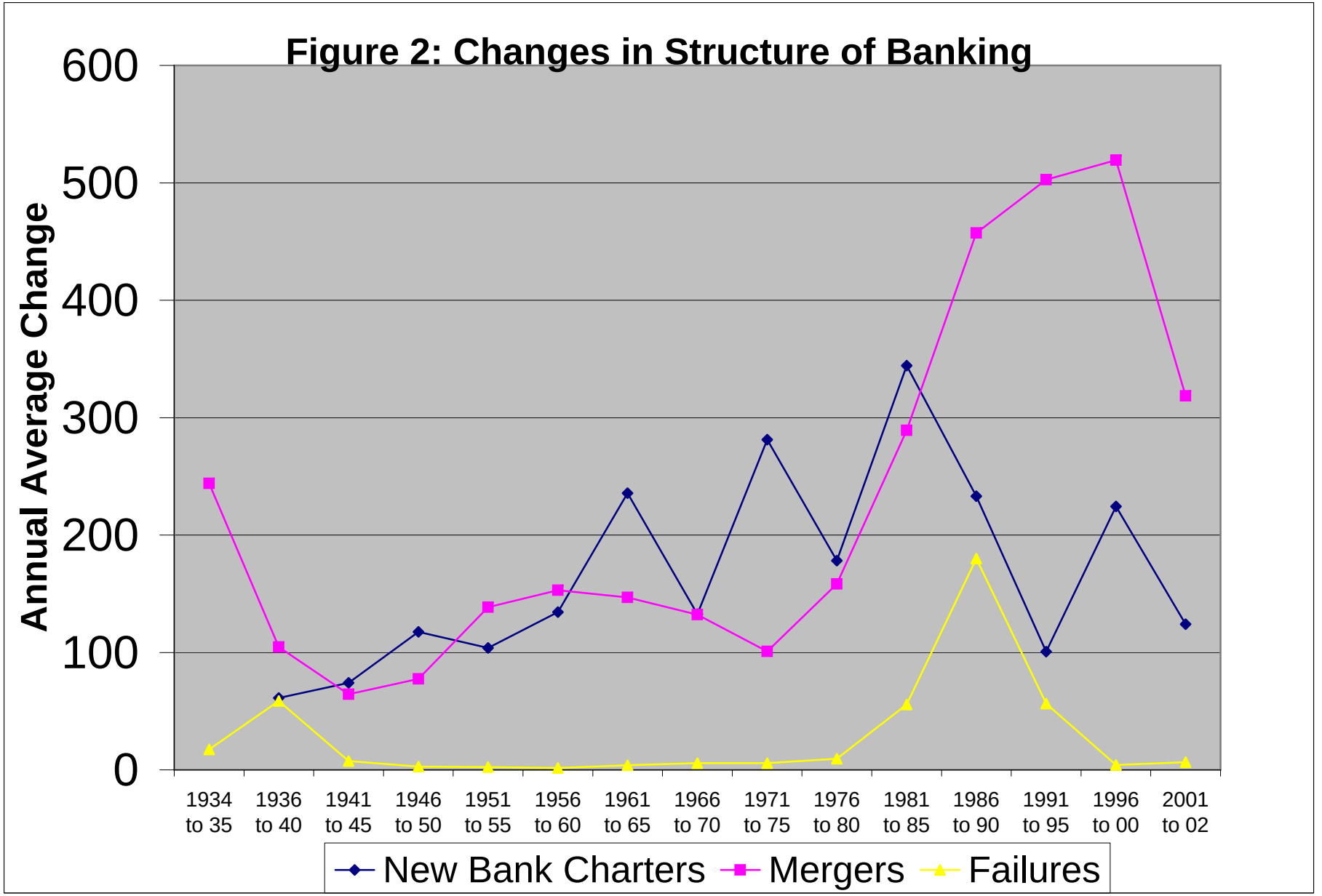


Figure 2: Changes in Structure of Banking
Annual Average Change
600
500
400
300
200
100
0
1934 to 35
1936 to 40
1941 to 45
1946 to 50
1951 to 55
1956 to 60
1961 to 65
1966 to 70
1971 to 75
1976 to 80
1981 to 85
1986 to 90
1991 to 95
1996 to 00
2001 to 02
New Bank Charters
Mergers
Failures

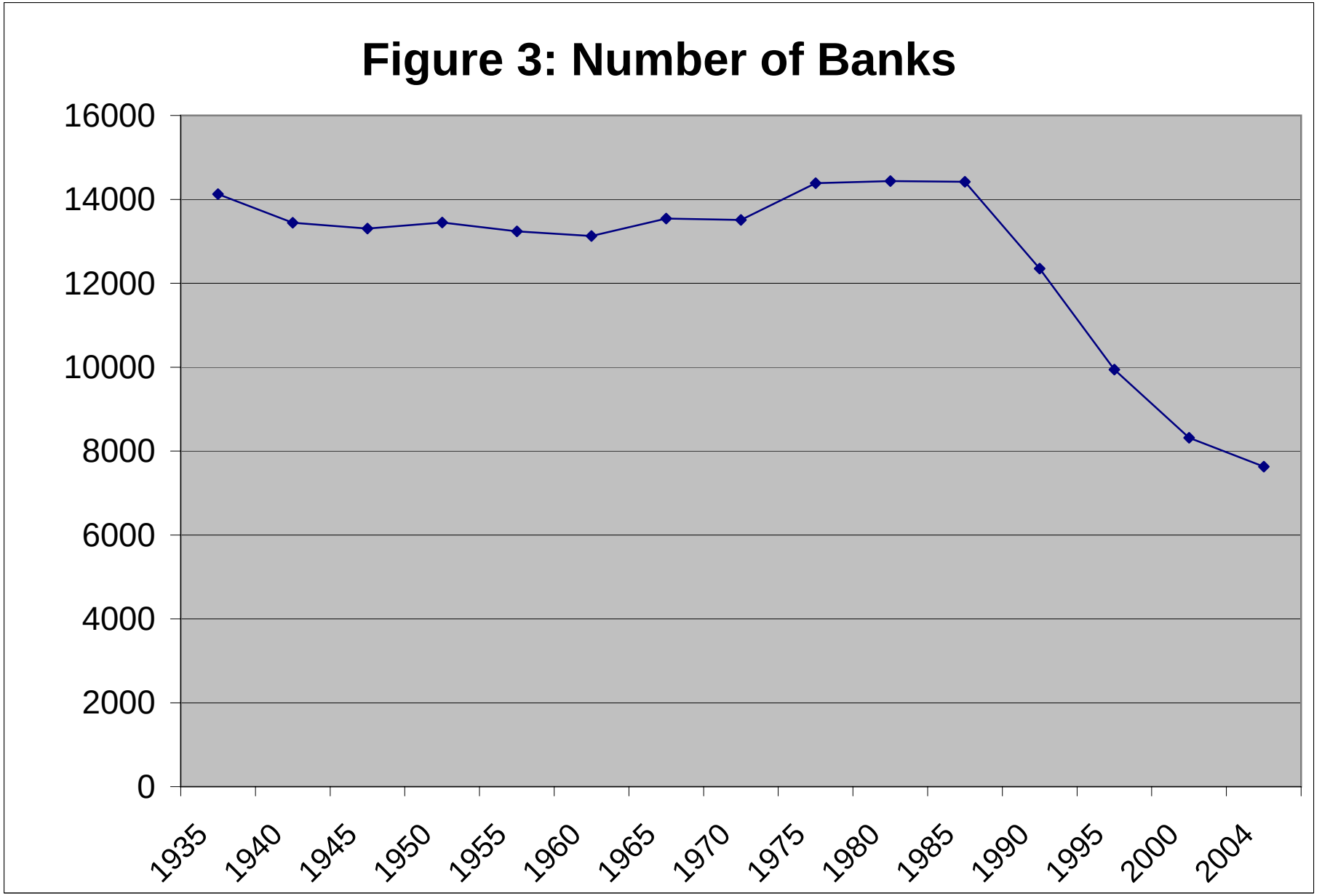
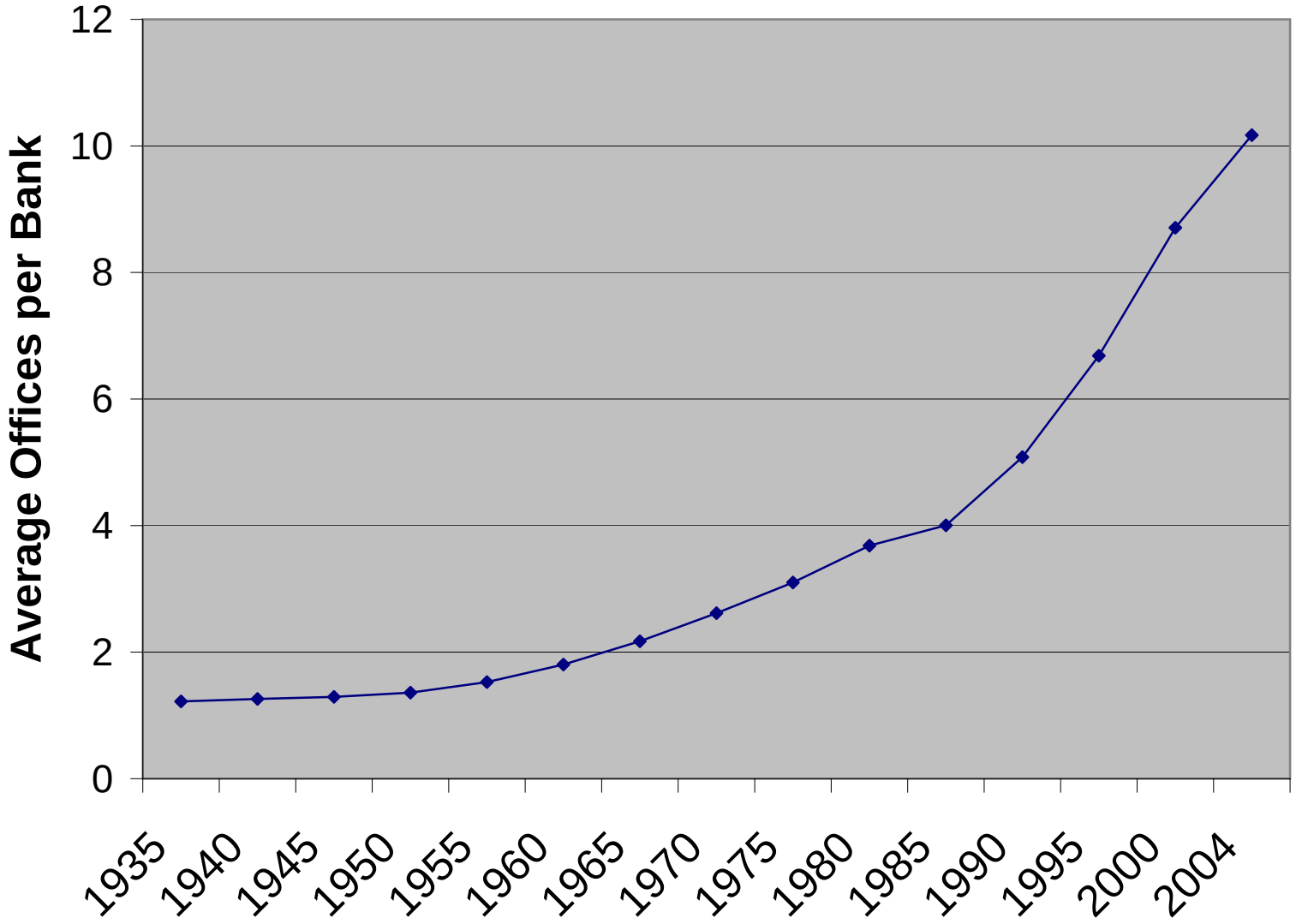


Figure 3: Number of Banks
16000
14000
12000
10000
8000
6000
4000
2000
0
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
2004

Figure 4: Trends in Branch Banking



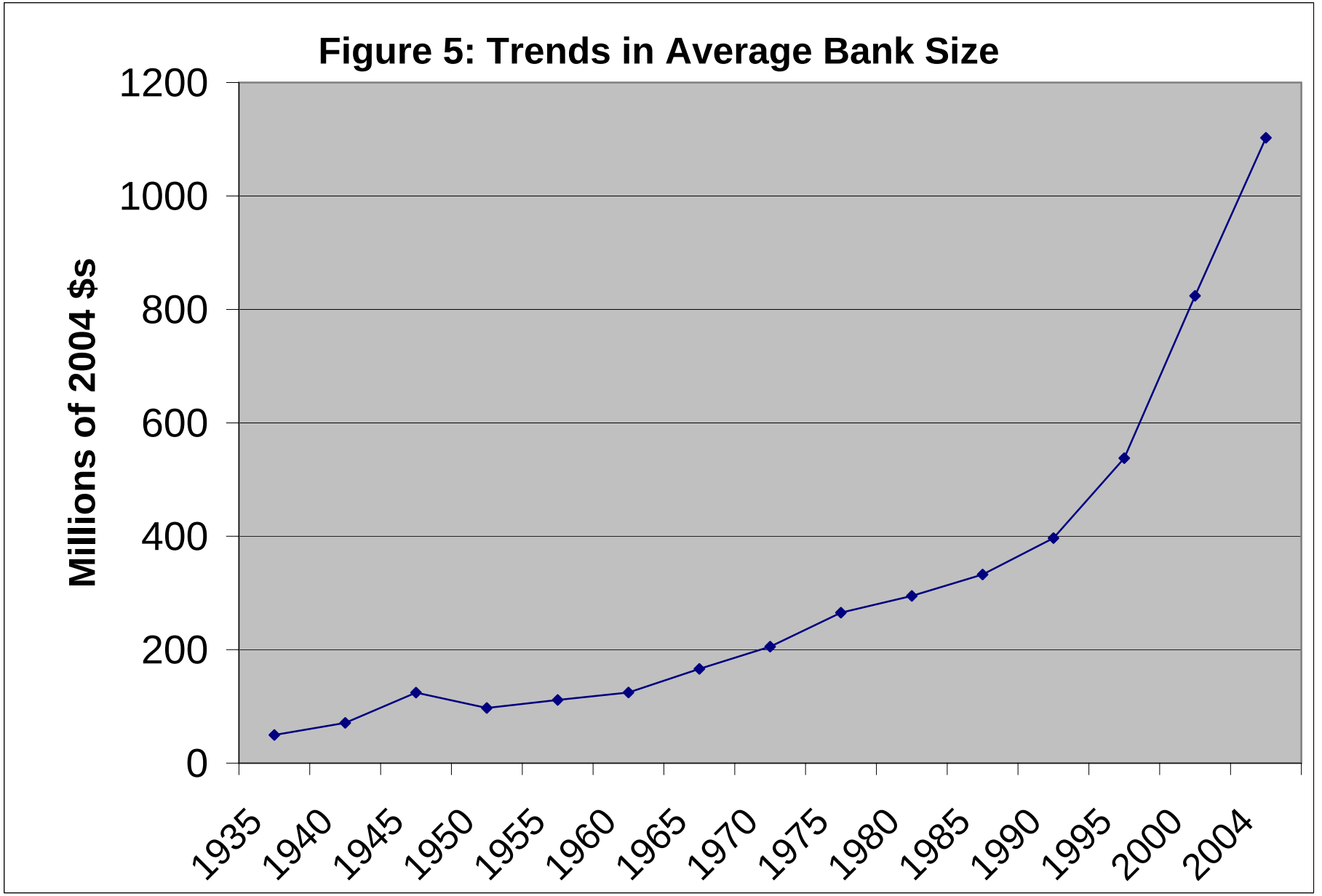
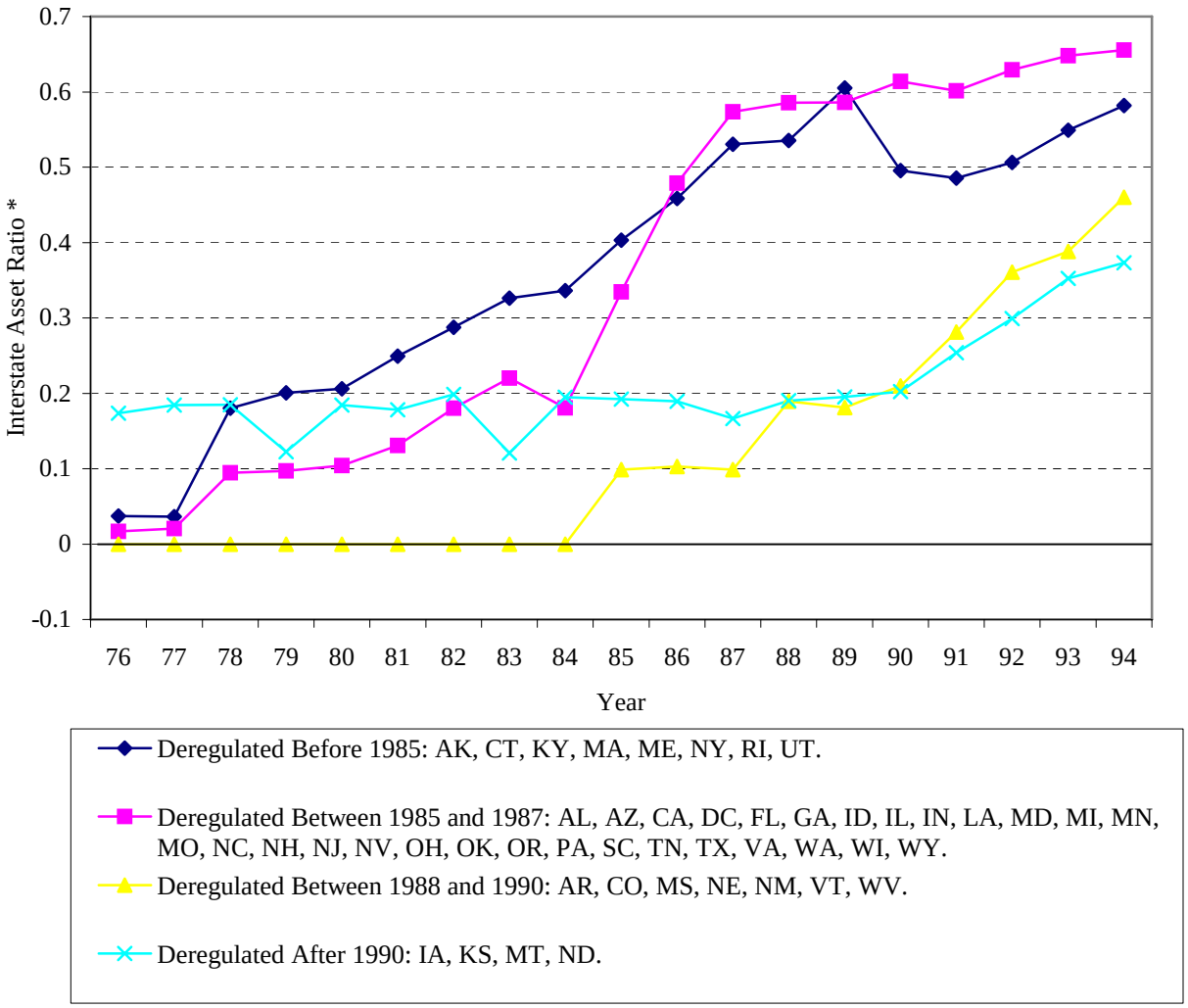


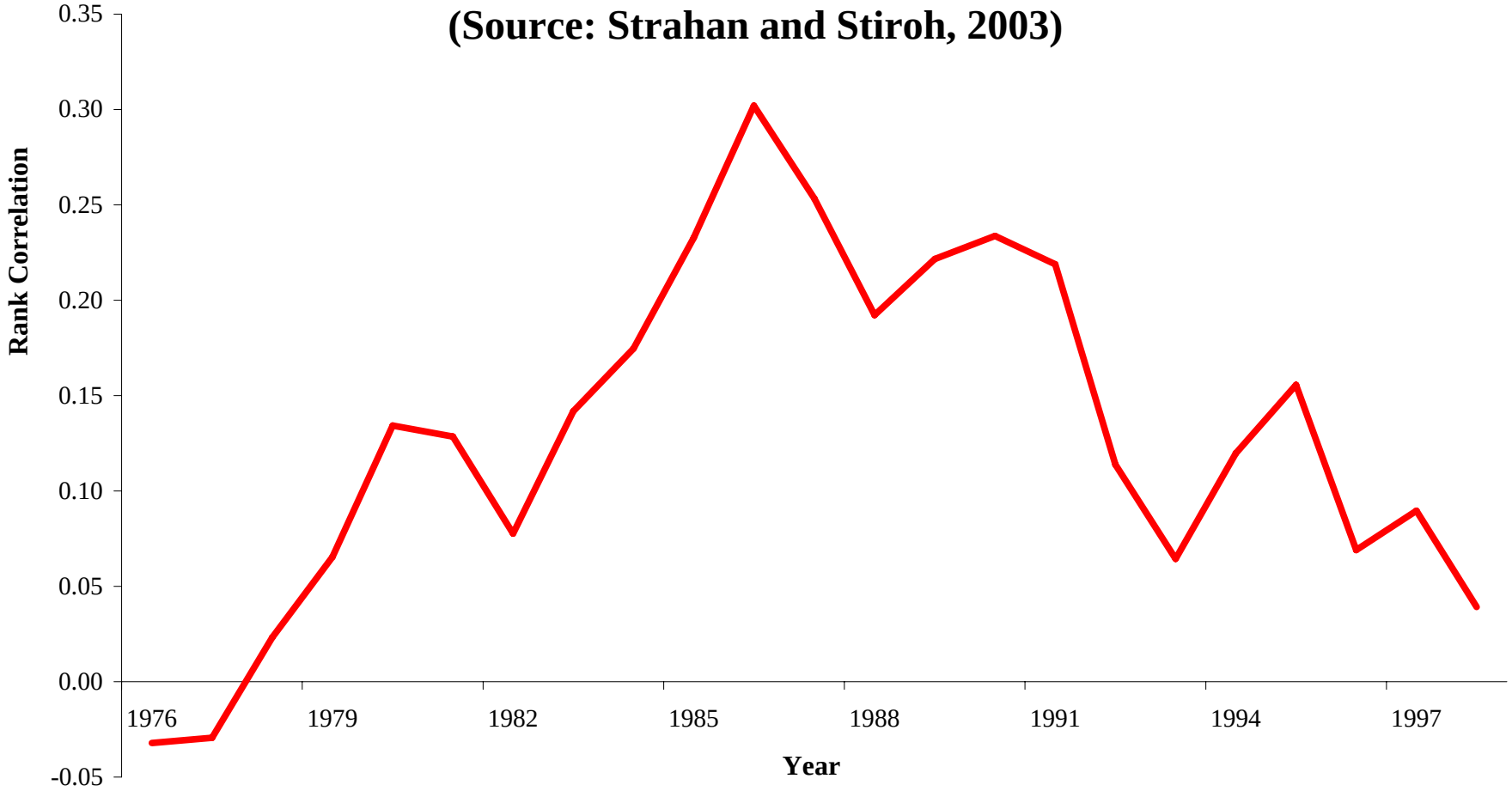
Figure 5: Trends in Average Bank Size
Millions of 2004 $s
1200
1000
800
600
400
200
0
1935
1940
1945
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
2004

Figure 6
Interstate Asset Ratio by State Deregulation
(Source: Morgan et al, 2004)



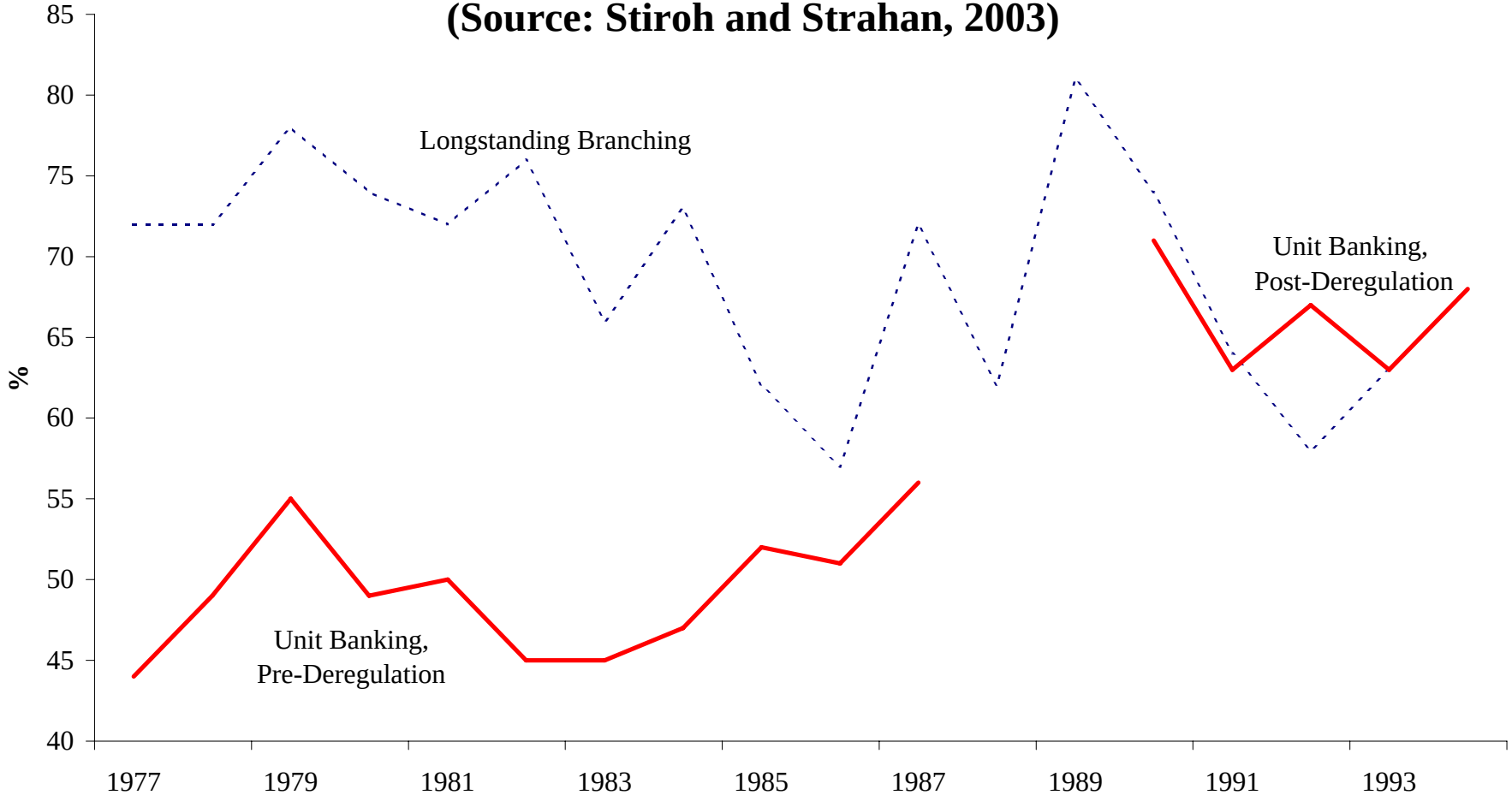
Interstate asset ratio = percent of bank assets in a state held by out-of-state bank holding companies (including foreign BHCs)

Figure 7
Correlation of Performance and Asset Growth
(Source: Strahan and Stiroh, 2003)



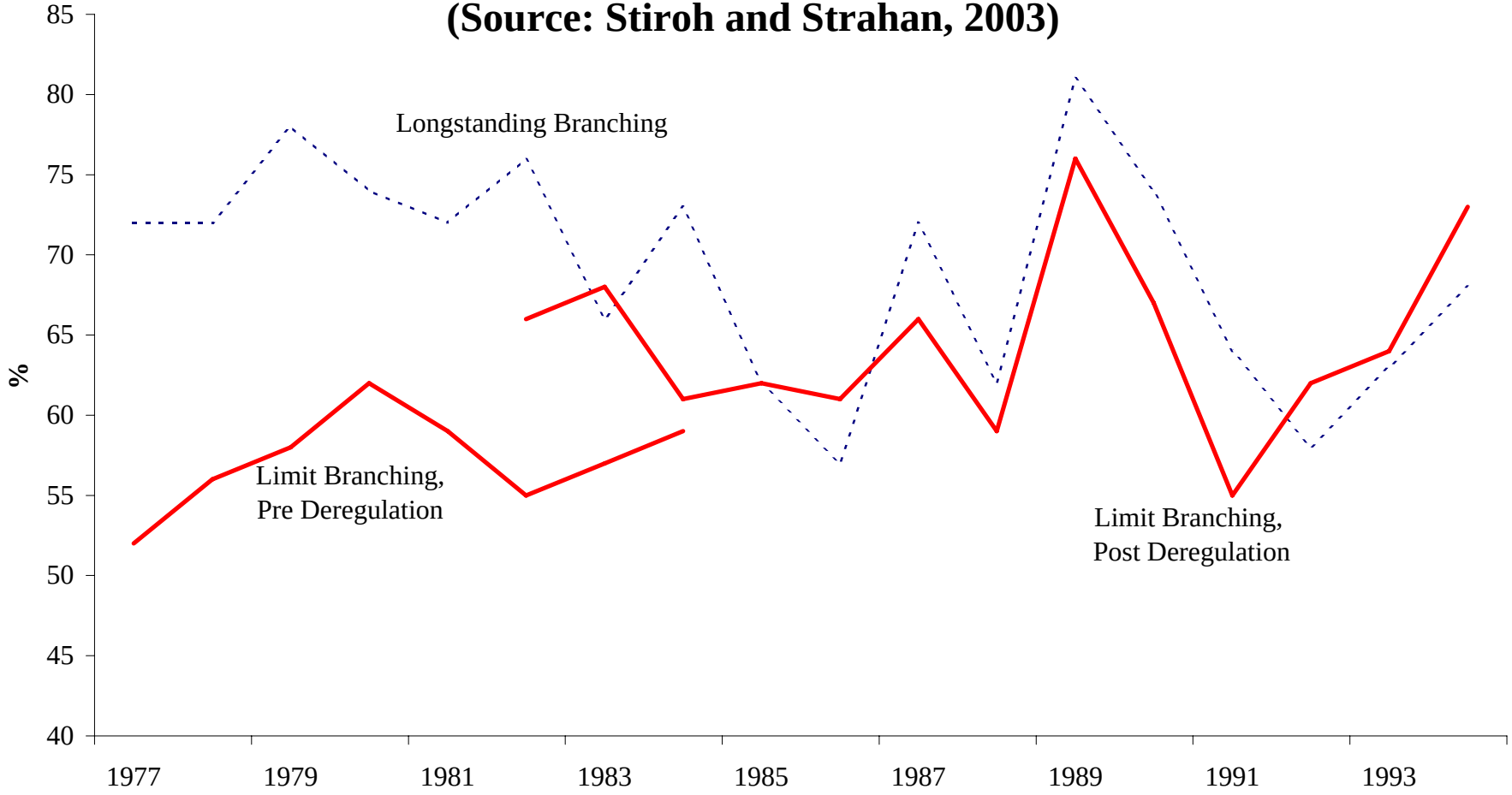
Note: Charts plots the Spearman rank correlation for each year between a bank's ROE, normalized relative to the economy average, and the change in the economy-wide share of the bank's assets. Correlations only include banks that survive for two adjecent years.

Figure 8: Market Share of High-ROE Banks: Unit Banking States vs. Longstanding Branching States (Source: Stiroh and Strahan, 2003)



Notes: Each line represents the market share of banks with above-median ROE, averaged across each type of state. If there are less than 10 states for a particular type in a given year, we do not report the result.

Figure 9: Market Share of High-ROE Banks: Limited Branching States vs. Longstanding Branching States (Source: Stiroh and Strahan, 2003)



Notes: Each line represents the market share of banks with above-median ROE, averaged across each type of state. If there are less than 10 states for a particular type in a given year, we do not report the result.