

The Effects of Branch Banking on Financial Stability and Bank Competition

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One of the chestnuts of the theoretical literature on banking regulation is that branch banking leads to more stable banking systems by enabling banks to better diversify their assets and widen their depositor base (Gart, 1994; Hubbard, 1994). This conventional wisdom has been reinforced by studies which have argued that historical banking crises in the United States, especially those of the 1930s, would have been less severe had the U.S. permitted widespread branch banking (Friedman and Schwartz, 1963). The empirical literature, however, has not universally confirmed this prediction. In fact, existing research on the Great Depression presents a paradox. Studies using aggregate bank failure data from the Depression find that states that allowed branch banking had lower failures rates than those that only allowed unit banking (Wheelock 1995; Mitchener, 2000a, 2000b), while studies using individual bank data find that banks that had branches were more likely to fail than unit (or single office) banks (Calomiris and Mason, 2000; Carlson, 2001).

The standard diversification story is inconsistent with the evidence from the Great Depression. To resolve this empirical puzzle, this paper focuses on an alternative channel through which branch banking affects financial stability: increased competition. Our hypothesis is that, faced with heightened competition, banks that are only marginally profitable are forced out of the banking system either through merger or liquidation. As these weaker banks close, the overall stability of a state's banking system improves through consolidation.

Since there could be lower failure rates in states allowing branch banking without the branch banks themselves being the strongest banks, our hypothesis allows us to reconcile research from the Great Depression that, at first blush, seems contradictory. According to our view, at the onset of the Great Depression there were still many weak banks in states prohibiting branch banking; the economic downturn of the 1930s caused many of these to fail. However, in states that permitted branching, weak banks had been pruned from the system, and failures were consequently lower at the systemwide level. Our hypothesis also fills a void in the literature. According to Allen and Gale (2000), the relationship between stability and competition has received little previous attention.

Our competition hypothesis has several testable propositions, including one that enables us to discriminate it from the diversification hypothesis. First, if branching does remove weaker banks from the system, then states that permit branch banking should

experience higher rates of mergers and voluntary liquidations and lower rates of entry than states prohibiting branching. Second, if the lower failures rate in branch banking states are the result of weak banks exiting the system rather than diversification, then failures rates should be more strongly related to a measure of bank mergers and liquidations than an indicator of branch banking.

Since our hypothesis is dynamic in that it emphasizes changes in the competitive environment of banking, testing it requires analyzing a period when branch banking was relatively new and expanding. Moreover, because we want to test how branching influences the stability of banking systems, it is also necessary to examine a period when there were numerous failures. In this respect, the experience of the U.S. banking system during the 1920s is ideal since branching was in its infancy, but expanding rapidly (Figure 1), and because this decade was characterized by a large number of bank failures (Figure 2). Moreover, studying this period allows us to compare our results to existing research, which has used data from the 1920s and 1930s to draw conclusions about the effects of branching.

Our empirical results show that states that adopted branching laws experienced fewer failures in the 1920s and during the first years of the Great Depression. This was not the result of improved opportunities for portfolio diversification, but was instead driven by increased competition. Branch banking states experienced more mergers and voluntary liquidations during the 1920s, which resulted in industry consolidation and the removal of weak and inefficient unit banks from the system.

The Effects of Branch Banking on Financial Stability

Restrictions on entry or competition have been linked to the stability of banking systems (Mishkin, 2001). In particular, a number of scholars have argued that the lack of branch banking contributed to the number and severity of the financial crises in the United States. Bordo (1985) suggests that the prevalence of panics in the United States during the 19th century may in part be related to its predominantly unit banking system. Friedman and Schwartz (1963) argue that the absence of branching in the U.S. increased the severity of the banking panics in the Depression. Moreover, they argue that the U.S. experience stands

in contrast to Canada, which experienced banking distress during the Depression but not widespread failures and a collapse of its banking system.

Studies testing the effects of branching on the stability of banking systems at the aggregate level tend to find support for the hypothesis that allowing branch banking increases the stability of the banking system. Wheelock (1995) examines how various regulations affected bank failures rates in different states during the years 1929-1932 and shows that states that allowed branch banking tended to have lower failures rates. Mitchener (2000a, 2000b) further examines state- and county-level bank failures rates. Controlling for economic fundamentals and differences in both state supervision and regulation, he also finds that states that explicitly legalized branching had lower failures rates than those that did not. Comparing 25 different countries during the Great Depression, Grossman (1994) finds that countries with large branch networks were less likely to experience banking crisis. And using data from the postwar period in the U.S., Rose and Scott (1978) found that bank failures from 1946-75 were concentrated in states limiting or prohibiting branch banking.

The standard argument as to how branch banking stabilizes banking systems is that restrictions on branching make banks especially vulnerable to local economic shocks. It follows that if widespread branching were permitted, banks would be able to diversify their loans and deposits over a wider geographical area or customer base, and insulate themselves from shocks that are particular to certain regions or sectors of the economy. This is not a new argument. Indeed, proponents of branch banking in the U.S. used it to encourage states to adopt laws permitting banks to establish branches (Preston, 1924; Southworth, 1928). Moreover, there is some evidence that branch-banking networks may reduce variation in depositor flows or increase asset diversification (Wacht, 1968; Lauch and Murphy, 1970; and Cherin and Melicher, 1988). But few studies using aggregate data (especially from the 1920s and 1930s when banking instability was widespread) have directly linked the purported benefits of diversification to financial stability.

Studies using data on individual banks paint a different picture as to how branching affects the survivorship of individual banks, and they cast doubt on the notion that branching laws stabilized state banking systems in the 1920s and 1930s by increasing diversification opportunities. Calomiris and Mason (2000) find that, during the Depression,

Federal Reserve members that were branch banks tended to fail sooner than unit banks. Also using data on individual state banks from this period, Carlson (2001) examines three states where branch banking was relatively widespread and finds that branched banks were more likely to fail than unit banks. Furthermore, he rejects some potential reasons for this phenomenon including insufficient diversification and over-expansion on the part of banks. Instead, he finds that branch banks used diversification to reduce their reserves rather than lower the risk of their portfolios – a strategy that worked poorly during the global shock of the Great Depression.

Branch Banking and Competition

We now outline our hypothesis for reconciling the microeconomic and macroeconomic evidence. During the 1920s, the number of branches tripled, and those located outside the home-office city more than doubled (Federal Reserve 1943). We hypothesize that the expansion of branch networks increased the level of competition in states that allowed branching to occur. Many banks that were only marginally profitable prior to the increase in competition would not be profitable with the increase in competition. In turn, these banks would likely merge with existing banks or voluntarily liquidate. Also, because of the increased level of competition, it is likely that fewer banks would be able to find a profitable niche and enter the market. With the exit of the weakest banks, the economic viability of average bank would increase, and the stability of a state's banking system would improve.

Laws permitting statewide branching applied only to state chartered banks; however, the data used in the statistical analysis below are for national banks. The logic of our hypothesis nevertheless still applies: national banks would be subject to increased competition from the state banks in states where branching was legal. Moreover, state banks that converted into national banks were allowed to operate branches they had established while they were state banks, thus enabling some branch-banking networks to exist even with national bank charters.

It has been shown by Calomiris and Mason (2000), among others, that new banks and less profitable banks were most likely to fail during the Great Depression. It follows

that in states that allowed branch banking, fewer of these banks would exist because the competitive pressures associated with the rise of branch banking networks would have caused exit from the banking system prior to the Depression. In states without the competitive pressures of branch banking, more weak banks would likely exist at the start of the Depression and therefore fail during the economic decline. This interpretation is consistent with the findings in Mitchener (2000a, 2000b) and Wheelock (1995): states allowing branch banking would have had lower failure rates than states prohibiting it. And it would also be true even if branch banks were not necessarily the survivors.

Testing the Competition-Consolidation Hypothesis

This section tests several predictions of our hypothesis using data on national banks from the 1920s and 1930s. We sequentially test two prime features of our hypothesis: (1) that the number of mergers and liquidations was higher (and the number of entrants lower) in states that permitted branch banking and (2) that the “exit/no entrance” rate better explains failure rates than simply whether branch banking was allowed. The first test is straightforward and can be analyzed using either counts or rates of exits and entrances. The second test is somewhat more complicated. To implement it, we start by reproducing the standard aggregate data results regarding branch banking using data on national banks. We then construct an index that measures the extent of consolidation in the state’s bank system. The index is then used in the failure rate regression and we test whether it is significant and whether the indicator for being a state that allows branch banking becomes insignificant.

Data

We use information on national banks between 1926 and 1930. Data on the number of national banks in each state are drawn from the Federal Reserve’s *Report on Branch, Chain and Group Banking, Volume 9: Bank Profits*. Since these data are categorized by size (based on the sum of loans and investments) and disaggregated by state, we are able to exploit both of these dimensions (size and geography) in our

estimation strategy. The information on size categories also facilitates the construction of a state-level Herfindahl index of banking concentration by computing the share of banks in a particular size category and weighting the categories by loan and investment volume.

Bank failures are taken from the *Annual Report of the Comptroller of the Currency* (1932) and the Comptroller of the Currency's *Statements of National Banks* (1923-1929), and are matched to the appropriate size category for the appropriate state. The size of each failed bank corresponds to its loans and investments just prior to the bank's failure. Thus the failures rates we examine are indexed by state and by size category. This specification allows controls for bank size – a factor that has associated with the probability of failures in previous studies (Calomiris and Mason, 2000; Carlson, 2001; and White, 1984). Information on mergers, voluntary liquidations, and new banks are taken from the *Annual Report of the Comptroller of the Currency* (1921-1930).

State laws regarding branching are from the Federal Reserve's *Report on Branch, Chain and Group Banking, Volume 2: Branch Banking in the United States*, which provides a record of branching laws for each state from 1909 until 1931. We divide the states into four groups: states prohibiting branching, states allowing restricted branching (generally branches within the city of the home office), states allowing statewide branching, and states with no laws. In states where the *de jure* situation differs from the *de facto* situation (such as New Hampshire where the laws allowed branching but the state banking commissioner refused all applications to establish branches), the *de facto* situation is used instead of the *de jure*.

As in other studies examining variation in failure rates or bank competition, we include a variety of other covariates to control for differences in real factors. To capture differences in business conditions across states, a measure of lagged business failures is computed using data from the U.S. Department of Commerce, *Statistical Abstract of the United States* (various years). We include two variables to capture state-level differences in agricultural conditions: (1) an index of lagged farm real estate farm prices from U.S. Department of Agriculture (1939) and (2) farm foreclosure (bankruptcies) rates, computed using data from U.S. Department of Agriculture (1936).

Mergers, Liquidations, and Entry in Branch Banking States

The first test of the hypothesis considers banking industry consolidation – whether there are more mergers, voluntary liquidations, and fewer entries in states that permit branch banking. To test this prediction, we regress the number of exits and entries on dummies for the prevailing law regarding branching and year dummies. (The omitted category of branching laws is states that prohibited branching). Since the number of exits and entries are whole numbers, and some states have relatively few entries and exits, we use count data analysis. Because the number of banks in each state differs, we control for differences in the number of banks in the state as well as the population of the state. We impose the restriction that the effect of the log of the “at risk population” is equal to one following Cameron and Trivedi (1998). No restrictions are placed on the effect of population.

The estimated coefficients support the hypothesis that branch banking leads to consolidation in a state’s banking system. States that allowed statewide branch banking had significantly more voluntary liquidations than states prohibiting branching, and mergers were more prevalent in states that allowed statewide branching (Table 1). The evidence on new entrants is somewhat weaker. Branch banking states have fewer entrants, as predicted, but the effect is statistically insignificant at conventional levels.

Branch Banking, the Index, and Bank Failure Rates

To test whether consolidation in a state’s banking sector, induced by branch banking, improves the stability of banking systems, we construct an annual index of consolidation to measure the degree to which inefficient banks have exited a state’s banking system. By analyzing the relationship between branch banking and failure rates with and without the inclusion of this index, we are able to test our hypothesis against the alternative, i.e. whether branch banking improved stability in the 1920s through consolidation rather than diversification. As before, due to the granularity of the dependent variable, we use count data analysis to estimate the number of failures. We include bank dummies for bank size and for years, dummies for branch-banking laws, and covariates for

our previously described measures of agricultural and business sector distress in order to control for differences in real shocks across states. We also include an indicator variable for whether the state had banks failures associated with the failures of Caldwell and Company in 1930 (Wicker 1996).

The econometric results support the hypothesis that branch banking improves financial stability by weeding out inefficient banks through increased competition and consolidation. When the index of bank consolidation is not included, states permitting branch banking had lower failure rates (Table 2). This negative relationship is similar to the results shown in previous studies using aggregate data on bank failures. However, when the index of bank consolidation is included as an additional covariate, then branch banking no longer has any predictive power regarding failure rates. This might simply indicate that previous research suffered from misspecification by failing to include a measure of bank-industry consolidation during previous years. But the results indicate something more was taking place in the 1920s. The consolidation index is negatively associated with failure rates and is statistically significant, suggesting that consolidation in the banking industry (which occurred to a greater extent in states permitting branch banking) stabilized state banking systems in the 1920s and 1930s. This relationship persists and is robust to the inclusion of differences in real factors, including agricultural distress, which has previously been identified as the main determinant of bank failures in the 1920s (Alston, Grove, and Wheelock, 1994). Moreover, our results confirm what some economic historians have suggested, but not shown. As White (1985) contends, “The number of small banks in rural areas needed to be reduced, and the mergers assisted the weaker institutions with less pain than the massive failures that followed. Unfortunately, this development was stifled by regulations in most states that forbade branch banking.”

Conclusion

This paper revises our understanding of how branching affects financial stability. We argue that states that permitted statewide branching experienced lower failures rates, not because branch banks are more diversified, but because these laws had transforming effects on state banking systems. They increased the level of competition by breaking up

local geographic monopolies, and encouraged consolidation by forcing inefficient banks to merge or exit the system. Using data on national banks from the 1920s, we find that branch- banking states had more voluntary liquidations and mergers, and consequently had lower failure rates during this period.

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Figure 1

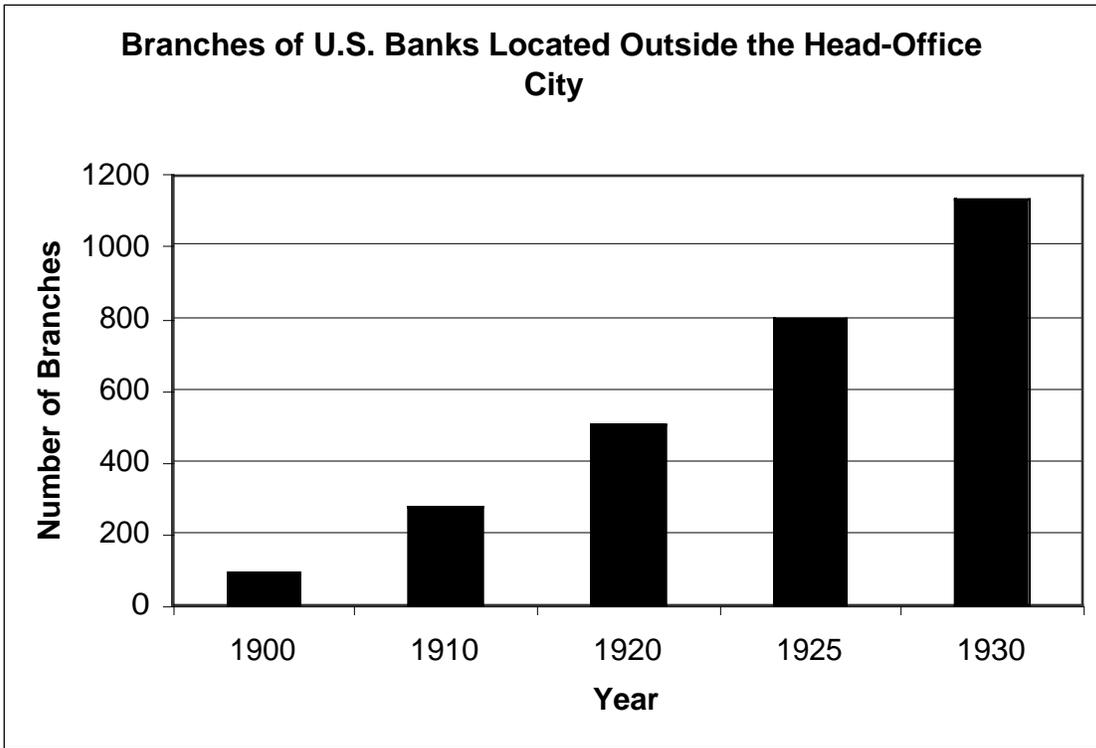


Figure 2

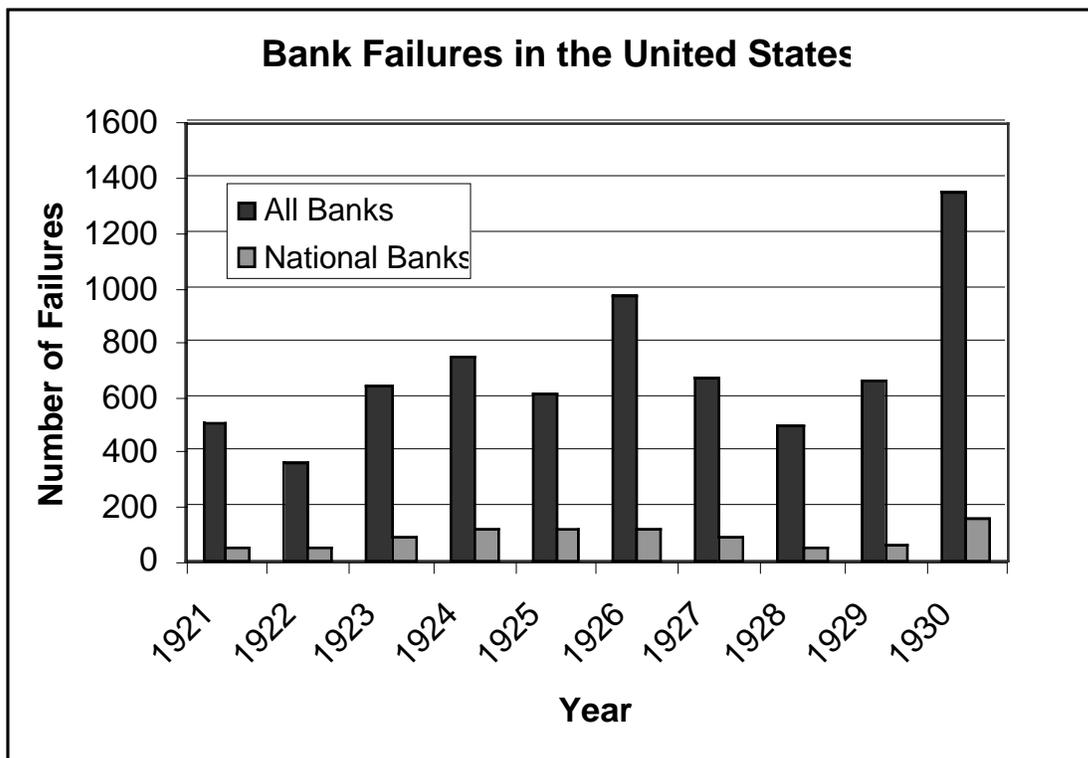


Table 1 – The Effect of Branching on Exits and Entrances
(Dependent Variable is Shown in Column Heading)

	Liquidations		Mergers		New Banks	
	Estimate	S.E.	Estimate	S.E.	Estimate	S.E.
Intercept	-0.10	0.12	-0.21 *	0.12	0.17	0.17
Population	0.00 ***	0.00	0.00***	0.00	0.00***	0.00
No Law	0.49 ***	0.11	0.48***	0.10	0.26*	0.15
Branching Restricted	-0.46 ***	0.10	-0.45 ***	0.10	-0.31 **	0.15
Statewide Branching	0.19 **	0.09	0.16*	0.09	-0.17	0.13
1922	0.06	0.15	0.20	0.15	0.21	0.22
1923	0.12	0.15	0.34**	0.15	0.05	0.22
1924	0.25	0.15	0.35**	0.15	-0.14	0.22
1925	0.13	0.15	0.23	0.15	0.24	0.22
1926	0.23	0.15	0.36**	0.15	-0.08	0.22
1927	0.26 *	0.15	0.44***	0.15	-0.20	0.22
1928	0.26 *	0.15	0.39***	0.15	-0.27	0.22
1929	0.53 ***	0.15	0.73***	0.15	-0.14	0.22
1930	0.74 ***	0.15	0.67***	0.15	-0.26	0.22
Observations	480		480		480	
Log-Likelihood	-544.2		-523.8		-719.9	

Sample period: 1921-1930

*** = significant at the 1% level, ** = significant at the 5% level, * = significant at the 10% level

Table 2 - Effect of Branching on Bank Failures
 Dependent Variable: National Bank Failures

	Without Consolidation Index		With Consolidation Index	
	Estimate	S.E.	Estimate	S.E.
Intercept	0.04	0.02	0.03	0.02
Statewide Branching	-0.02 *	0.01	-0.02	0.01
No Law	-0.01	0.01	-0.01	0.01
Restricted Branching	-0.07 ***	0.01	-0.08 ***	0.01
Consolidation Index			-0.11 *	0.06
Population	0.00 ***	0.00	0.00***	0.00
Herfindahl Index	0.00	0.00	0.00	0.00
Business Failure Rate	-0.03 **	0.01	-0.03**	0.01
Farm Failure Rate	7.13 **	3.09	8.36***	3.15
Farm Price Index	-0.67 ***	0.15	-0.65 ***	0.15
Size Category 1	0.03	0.02	0.03	0.02
Size Category 2	0.05 ***	0.02	0.05***	0.02
Size Category 3	0.08 ***	0.02	0.08***	0.02
Size Category 4	0.02	0.02	0.02	0.02
Size Category 5	-0.02	0.02	-0.02	0.02
Size Category 7	-0.03	0.02	-0.03	0.02
Size Category 8	-0.04 **	0.02	-0.04 **	0.02
Size Category 9	-0.05 **	0.02	-0.05 **	0.02
Size Category 10	-0.07 **	0.03	-0.07 **	0.03
1927	0.00	0.01	0.00	0.01
1928	0.01	0.01	0.01	0.01
1929	0.03 **	0.01	0.03**	0.01
1930	0.09 ***	0.01	0.09***	0.01
Caldwell Indicator	0.15 ***	0.03	0.14***	0.03
Observations	2014		2014	
Log-Likelihood	-441.9		-443.7	

Sample period: 1926-1930

*** = significant at the 1% level, ** = significant at the 5% level, * = significant at the 10% level