

MONETARY INTERVENTION REALLY DID MITIGATE BANKING PANICS DURING THE GREAT DEPRESSION: EVIDENCE ALONG THE ATLANTA FEDERAL RESERVE DISTRICT BORDER

By

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Abstract

This paper argues that monetary intervention alleviated banking panics during the early stages of the Great Depression. Throughout the course of the depression, the Federal Reserve Bank of Atlanta aggressively intervened to stabilize its banking system. To assess the effectiveness of these policies, I analyze the performance of banks along counties straddling the border of the Atlanta Federal Reserve District. My results indicate that expansionary initiatives designed to inject liquidity into the banking system reduced the incidence of bank suspensions by 32 to 48% in some regions. Moreover, an analysis of the balance sheets of individual Federal Reserve Districts suggests that liquidity intervention did not expend large resources and that a concerted, system-wide interventionist policy response was feasible during the first half of the depression. Thus, the Federal Reserve System committed a major policy mistake by not acting as a lender of last resort to stabilize the country's banking system in the early stages of the depression.

“Why was monetary policy so inept?...The monetary system collapsed, but it clearly need not have done so....pursuit of the policies outlined by the System itself in the 1920’s, or for that matter by Bagehot in 1873, would have prevented the catastrophe.”

[Friedman and Schwartz, *A Monetary History of the United States, 1867-1960*, p. 407]

The causes of bank failures during the Great Depression remain one of the most important issues scholars face in attempting to explain the severity of the contraction of 1929-1933. Two schools of thought dominate the debate. Friedman and Schwartz (1963), the leading proponents of one of these views, argue that the massive waves of banking panics reflected liquidity crises. As fear spread throughout the country, deposit withdrawals accelerated and bank runs became self-fulfilling panics, forcing many solvent but illiquid institutions to fail or suspend operations. In contrast, advocates of the second school of thought, such as Peter Temin (1976), contend that the banking panics were crises of fundamental solvency. Mounting default rates, deteriorating bank loan portfolios, and a downward trend in the value of bank assets contributed to a decline in the fundamental health of banks, undermining the solvency of financial institutions throughout the country. According to this view, banks failed because they were insolvent, rather than simply illiquid.

This debate is particularly relevant for policymakers. If the banking crises were liquidity crises, then more interventionist monetary policy would have mitigated banking panics. Friedman and Schwartz argue that the Federal Reserve committed a catastrophic policy mistake by failing to act as a lender of last resort to stabilize the nation’s banking system. Alternatively, if the banking crises were solvency crises, then the Federal Reserve could not have contained banking panics by simply injecting liquidity into the country’s banking system.

This paper seeks to clarify this debate by exploiting quasi-random variation in monetary regimes during the Depression. Between 1929 and 1933, policies differed across Federal Reserve Districts. The Atlanta Federal Reserve District aggressively intervened to stabilize its banking system, adhering to a rule known as Bagehot’s Law. This rule dictated that during times of panic, the central bank should act as a lender of last resort, extending credit to banks and rushing money to ailing financial institutions. By contrast, the other Federal Reserve Districts, as a whole, adhered to a liquidationist ideology known as the “Real Bills Doctrine.” These districts did not intervene to stabilize their banking systems.

To identify the effects of monetary intervention, this paper studies the performance of banks along counties straddling the Atlanta Federal Reserve District border. Due to geographic proximity, neighboring counties should share a similar propensity to suffer from a panic by depositors. However, by restricting my analysis to counties located close to the Atlanta Federal

Reserve District border, I isolate counties that are geographically close to one another, but that are under the jurisdiction of different Federal Reserve districts and hence, different monetary regimes. Specifically, the Atlanta Federal Reserve District shared its border with four other Federal Reserve Districts: Richmond, St. Louis, Cleveland, and Dallas.

Section 1 begins by describing the work of previous studies in this area and by making the case for a new test. Section 2 formulates this new test and section 3 presents the raw results. I find that, overall, banks suspended at lower rates in counties under the jurisdiction of the Atlanta Fed than neighboring counties across the border during the first half of the depression.

Section 4 then develops an empirical model. I estimate a panel regression with bank suspension rate as the dependent variable. I index observations by county and year. I interact region and year dummies to measure the average level of bank suspension rates among counties in a region in a given year. I interact monetary regime and year dummies to measure the average effect on bank suspension rates of being in the Atlanta Federal Reserve district in each year. These latter interaction terms provide estimates of the effectiveness of monetary intervention in mitigating banking panics.

My results indicate that monetary intervention had large effects during the early stages of the depression. In 1929 and 1930, the early stages of the depression, the coefficients on the Atlanta Fed fixed effects are negative and strongly significant. According to the baseline regression, by the end of 1930, the percentage of bank suspensions in counties located in the Atlanta Federal Reserve district were on average 11.8 percentage points lower than the percentage of bank suspensions in neighboring counties under the jurisdiction of the St. Louis, Richmond, Cleveland, or Dallas Federal Reserve district. Moreover, the Atlanta Fed and region fixed effects indicate that expansionary initiatives reduced the incidence of bank suspensions by 32 to 48% in some regions in 1929 and 1930.

Section 5 then investigates whether the Federal Reserve System as a whole had the resources to act as aggressively as the Atlanta Federal Reserve District in combating banking panics during the early stages of the depression. By examining the balance sheets of individual Federal Reserve Districts, I find that aggressive intervention did not impair the reserve position of the Atlanta Fed. Moreover, a reading of narrative sources, such as contemporary newspapers, reveals that the Atlanta Fed was able to pursue such aggressive intervention, without jeopardizing its reserve position, in part because its public commitment to aid banks, along with visible displays of rushing cash to institutions undergoing runs, went a long way in allaying depositor concerns that banks would fail. This suggests that monetary intervention did not expend large resources during the early stages of the depression and that the Federal Reserve System could

have intervened to stabilize the country's banking system without jeopardizing its reserve position.

Taken together, these findings suggest that monetary intervention alleviated banking panics during the early stages of the Depression and that a concerted system-wide response was feasible. Therefore, the Federal Reserve committed a major policy mistake by not acting as a lender of last resort to stabilize the country's banking system during the Great Depression.

Part I. Prior Studies

Were the banking crises of the Great Depression liquidity or solvency crises? Two recent excellent studies have made substantial headway on this issue. In one study, Calomiris and Mason (2003) seek to identify the connection between bank failure rates and fundamentals. Using a disaggregated, panel data set of individual bank characteristics, Calomiris and Mason conclude that fundamentals describe bank failure risk well and that, as a consequence, Friedman and Schwartz exaggerated the extent to which the banking panics of 1929-1933 were liquidity crises. According to their analysis, efforts by the Federal Reserve to act as a lender of last resort to provide liquidity assistance to struggling banks would have proven ineffective.

In the second study, Richardson and Troost (2009) analyze the performance of banks in Mississippi during the depression. The Federal Reserve Act of 1913 separated the northern half of Mississippi from its southern half. The northern half of the state fell under the jurisdiction of the St. Louis Federal Reserve District, whereas the southern half fell under the jurisdiction of the Atlanta Federal Reserve District. These two districts pursued divergent policies. The St. Louis Fed was a staunch advocate of the Real Bills Doctrine, a principle that called for a contraction of the supply of credit during recessions and limited intervention in the face of banking panics. By contrast, the Atlanta Fed governed with great monetary activism and adhered to Bagehot's Law. During periods of panic, it rushed money to ailing banks and acted as a lender of last resort. Richardson and Troost place particular emphasis on the major banking panic of 1930—a panic triggered by the collapse of Caldwell and Company, a Knoxville, Tennessee-based investment banking firm that controlled the largest financial conglomerate in the South. Richardson and Troost track bank survival rates in Mississippi and conclude that bank performance in 1930 was far superior in the portion of Mississippi that fell under the jurisdiction of the Atlanta Federal Reserve District. As a consequence, Richardson and Troost conclude that liquidity intervention mitigated banking panics during the depression.

Both studies provide first-rate analysis. Yet, because these two studies offer contradictory policy implications, it is difficult to determine the extent to which liquidity

intervention could have mitigated the banking panics of the Great Depression. Moreover, both studies have some limitations, making it even trickier for researchers to evaluate these competing arguments. Regarding the first study, Calomiris and Mason confine their sample and analysis to Fed member banks even though most banks that failed during the depression were nonmember banks—a caveat that they emphasize in their paper—and due to data deficiencies, are forced to rely on biennial data (available on two dates: Dec 31, 1929 and Dec 31, 1931) in assembling their bank-specific characteristics—a constraint that may render their data unrepresentative of the health of institutions at the timing of failures. Regarding the second study, Richardson and Troost limit their analysis to one observation—Mississippi, raising the possibility that some other force could be driving their results rather than Fed policies.

Part II. A New Test

The debate over the nature of these banking panics continues. Economists remain divided as to whether liquidity intervention could have alleviated the nation's banking panics. A new test—one that could provide additional evidence to evaluate the merits of Friedman and Schwartz's classic claim that the Fed could have stabilized the country's banking system had it acted as a lender of last resort—would be beneficial for this debate. As a consequence, I propose a new test in this paper—one that is similar in nature to that proposed by Richardson and Troost, but more expansive in geographic scope.

Throughout the course of the depression, the Federal Reserve Bank of Atlanta championed monetary activism and aggressively intervened to support its banking system. In the midst of panics, the Atlanta Fed acted as a lender of last resort, extending credit and rushing money to ailing financial institutions. Richardson and Troost (2009) draw on myriad sources to document the policy regime of the Atlanta Fed. They cite memos from Eugene Black, the Governor of the Atlanta Fed, showing that agents rushed large sums of cash to banks during the panic that broke out following the collapse of Caldwell and Company in Knoxville, Tennessee in 1930. Richardson and Troost also cite Richard Gamble's *A History of the Federal Reserve Bank of Atlanta, 1914-1989* to document that such interventionist actions were not isolated instances and that the Atlanta Fed continually responded to banking panics with expansionary measures. Moreover, they document that these policies predated the Great Depression and that the Atlanta Fed adhered to Bagehot's law as far back as the early 1920s.

Richardson and Troost note that the other Federal Reserve districts adhered to the Real Bills doctrine. Friedman and Schwartz (1963) also document that the Federal Reserve System as a whole did not intervene to support its banking system. Fed officials from these other districts

espoused liquidationist ideologies. They believed that occasional recessions helped purge economies by removing inefficient firms and institutions from the market. According to this view, expansionary monetary initiatives would impede these healthy market corrections and hinder economic recovery. As a consequence, the Federal Reserve System as a whole did not intervene to support the country's banking system.

I propose a new test of the effects of monetary intervention by exploiting this diversity in monetary regimes. Specifically, I focus on the performance of banks in counties straddling the border of the Atlanta Federal Reserve District (District 6). The Atlanta Fed shared a border with four other Federal Reserve Districts: Richmond (District 5), St. Louis (District 8), Cleveland (District 4) and Dallas (District 11). In contrast to the Atlanta Fed, these districts adhered to the Real Bills doctrine.

The logic of my proposed strategy is as follows. Due to geographic proximity, neighboring counties should share a similar propensity to suffer from a depositor panic. However, by restricting my analysis to counties straddling the Atlanta Federal Reserve District border, I isolate counties that are geographically close to one another, but that are under the jurisdiction of different Fed policy regimes. Consequently, an analysis of bank performance in counties along the Atlanta Federal Reserve District border should shed insights into the effects of liquidity intervention on banking panics. For example, if the Atlanta Fed's interventionist policies had no effect on outcomes, then bank suspension rates in counties under the jurisdiction of the Atlanta Federal Reserve District should be similar to bank suspension rates in neighboring counties across the Fed border. On the other hand, if the Atlanta Fed's interventionist policies had substantial effects, then bank suspension rates should be lower in counties located under the jurisdiction of the Atlanta Federal Reserve District than bank suspension rates in neighboring counties across the border.

To construct my sample, I propose a simple rule: I include counties located within 50 miles of the Atlanta Federal Reserve District border. Moreover, for organizational reasons, I partition my sample into distinct regions, based on state boundaries. This procedure generates eleven regions for analysis. Figure 1 presents these counties as the shaded areas.¹ The eleven regions—each broken down into a pairing (Atlanta vs non-Atlanta)—are as follows: (1) Georgia (District 6) vs South Carolina (District 5), (2) Georgia (District 6) vs North Carolina (District 5),

¹ To generate the maps and to create a list of counties within 50 miles of the Atlanta Federal Reserve District border, I use Geographic Information System (GIS) analysis. Moreover, in partitioning counties into these eleven regions based on state boundaries, I include counties that are located within a 50-mile buffer that is perpendicular to the Atlanta Fed border. I use a buffer that is perpendicular to the Fed border because it generates regions that are roughly symmetric. Dropping the requirement that the buffer be perpendicular to the Fed border does not change any of the following results, however.

(3) Tennessee (District 6) vs North Carolina (District 5), (4) Tennessee (District 6) vs Virginia (District 5), (5) Tennessee (District 6) vs Kentucky (District 4 & District 8), (6) Tennessee (District 6) vs Tennessee (District 8), (7) Alabama (District 6) vs Mississippi (District 8), (8) Mississippi (District 6) vs Mississippi (District 8), (9) Mississippi (District 6) vs Louisiana (District 11), (10) Louisiana (District 6) vs Louisiana (District 11), and (11) Louisiana (District 6) vs Texas (District 11).

Because my algorithm for constructing these eleven pairings places particular emphasis on geographic proximity, this partitioning procedure identifies regions that share a similar susceptibility to experience a panic, but that are exposed to different Fed policy regimes. Counties under the jurisdiction of the Atlanta Federal Reserve District (6) serve as the experimental group. They were exposed to the policies dictated by Bagehot's Law—aggressive support in the form of liquidity intervention from monetary authorities. Neighboring counties under the jurisdiction of the Dallas (11), St. Louis (8), Cleveland (4) and Richmond (5) Federal Reserve districts serve as the control group. They were exposed to the policies dictated by the Real Bills Doctrine—little-to-no assistance from monetary authorities. Therefore, these eleven pairings possess key characteristics of natural experiments.

Part III. Raw Results

The data used in this paper come from a study conducted by the Federal Deposit Insurance Corporation.² The FDIC data set contains county level, annual data that reveal the number of banks in operation, the number of banks suspending, and the total number of deposits from 1920 to 1936. According to the accompanying documentation, “these data were originally collected under WPA [Works Project Administration] auspices and were obtained in manuscript form from the University of Wisconsin's Department of Economic History.”³ *Historical Statistics* reports that there was a joint effort by the Federal Deposit Insurance Corporation and Federal Reserve Board of Governors to collect data from the Office of the Comptroller of the Currency to develop a consistent series on bank performance as far back as 1920. Richardson (2006) discloses that this joint project was funded by the Works Project Administration between 1935 and 1941 and Chung and Richardson (2006) report that the Comptroller of the Currency's data derives from state regulatory reports and from communication with state banking authorities.

² This data set was transferred to computer format by the University of Michigan's Inter-University Consortium for Political Science Research (ICPSR) and is readily downloadable on their website.

³ Inter-University Consortium for Political and Social Research, p. 12.

I utilize this data set to construct bank suspension rates for each year. In calculating suspension rates, the denominator is the number of banks in operation at the start of 1929 and the numerator is the number of banks suspending in that particular year. Figures 2 to 6 present bank suspension rates for the eleven pairings described in the preceding section, broken down by year. I consider the results chronologically.

In 1929, counties under the jurisdiction of the Atlanta Fed outperformed neighboring counties across the border overall. In 9 of 11 regions, bank suspension rates were lower in counties under the jurisdiction of the Atlanta Fed: (1) Louisiana–Texas (0% vs 4%), (2) Mississippi – Louisiana (2% vs 4%), (3) Tennessee – Tennessee (2% vs 6%), (4) Louisiana – Louisiana (6% vs 7%), (5) Georgia – South Carolina (11% vs 15%), (6) Mississippi – Mississippi (14% vs 22%), (7) Tennessee – North Carolina (8% vs 30%), (8) Alabama – Mississippi (7% vs 32%), and (9) Georgia – North Carolina (16% vs 41%). In the two remaining regions (Tennessee—Kentucky and Tennessee—Virginia), bank suspensions rates were higher in counties under the jurisdiction of the Atlanta Fed, but the percentage of banks suspending and the difference in bank suspension rates are small in both pairings (7% vs 6% and 8% vs 6%, respectively).

Similar—though less strong—trends continue in 1930 and 1931. In 1930, for 6 of the 11 regions, bank suspension rates were lower in counties under the jurisdiction of the Atlanta Fed: (1) Louisiana—Texas (0% vs 2%), (2) Tennessee—Virginia (4% vs 8%), (3) Georgia—North Carolina (3% vs 12%), (4) Georgia-South Carolina (6% vs 18%), (5) Alabama—Mississippi (10% vs 22%), and (6) Mississippi—Mississippi (11% vs 22%). In the five remaining regions, bank suspension rates were higher in counties under the jurisdiction of the Atlanta Fed, but three of these (Tennessee—North Carolina, Tennessee—Tennessee, and Tennessee—Kentucky) include Tennessee as the area under the jurisdiction of the Atlanta Fed. The collapse of Caldwell and Company—the event that precipitated the banking panic of 1930—occurred in the 6th District portion of the state. Such a shock could conceivably bias the results in this area. Richardson and Troost (2006), for example, mention that they focus on Mississippi rather than Tennessee—both of which are divided by the Atlanta Fed District border—in part because the collapse of Caldwell and Company occurred in the 6th district portion of Tennessee and could bias the results against the Atlanta Fed in that area. The other two exceptions are Louisiana—Louisiana (8% vs 0%) and Mississippi—Louisiana (15% vs 0%), though the sample size is relatively small in both pairings (3 banks suspended in the former and 7 in the latter).

Likewise, in 1931, for 6 of the 11 regions, bank suspension rates were lower in counties under the jurisdiction of the Atlanta Fed: (1) Louisiana—Texas (0% vs 2%), (2) Tennessee—

Tennessee (0% vs 6%), (3) Tennessee—Kentucky (5% vs 7%), (4) Mississippi-Mississippi (2% vs 9%), (5) Tennessee—North Carolina (5% vs 9%), and (6) Georgia-North Carolina (6% vs 18%). In one region (Tennessee—Virginia), bank suspension rates were identical (at 4%). In the four remaining regions (Louisiana—Louisiana, Alabama—Mississippi, Mississippi-Louisiana, and Georgia—South Carolina), bank suspension rates were higher in counties under the jurisdiction of the Atlanta Fed, though the differences are small in general (6% vs 0%, 3% vs 2%, 4% vs 0%, and 6% vs 4%, respectively).

In 1932 and 1933, there appears to be no systematic relationship between bank suspension rates and Fed regime. In 1932, for six of the eleven pairings (Tennessee—Kentucky, Tennessee—Tennessee, Georgia—South Carolina, Tennessee—North Carolina, Mississippi-Louisiana, and Georgia—North Carolina), bank suspension rates were lower in counties under the jurisdiction of the Atlanta Fed (6% vs 8%, 8% vs 12%, 5% vs 15%, 12% vs 19%, 17% vs 31%, and 3% vs 35%, respectively), but for the other five pairings (Alabama—Mississippi, Mississippi—Mississippi, Tennessee—Virginia, Louisiana—Louisiana, and Louisiana—Texas), bank suspension rates were higher in counties under the jurisdiction of the Atlanta Fed (12% vs 3%, 19% vs 7%, 18% vs 8%, 22% vs 20%, and 50% vs 5%, respectively). Moreover, the strong over performance of Atlanta in some pairings—such as Mississippi—Louisiana and Georgia—North Carolina—seems to be matched by a strong underperformance of Atlanta in other pairings—such as Louisiana—Texas. In 1933, bank suspension rates drop close to zero in counties along the Atlanta Federal Reserve District border and therefore, do not differ much.

The raw results indicate that overall, banks suspended at lower rates in counties under the jurisdiction of the Atlanta Federal Reserve District than neighboring counties across the border during the early stages of the depression, but not during the later stages of the depression. Among the thirty-three groups in 1929, 1930 and 1931 (eleven per year), bank suspension rates were lower in counties under the jurisdiction of the Atlanta Fed in twenty-one pairings. In one pairing, bank suspension rates were identical, but small. For the remaining eleven groups, banks suspended at higher rates under the jurisdiction of the Atlanta Fed, but for nine of these, the difference in bank suspension rates was small, not exceeding 6 percentage points. In addition, for three of these groups, the area under the jurisdiction of the Atlanta Federal Reserve District includes Tennessee in 1930, where Caldwell and Company collapsed. That bank suspension rates do not rise above 10% in any of the Tennessee regions in 1930—in spite of such a large shock occurring in the 6th district portion of the state—may well serve as powerful evidence that liquidity intervention helped to contain the panic, even if Atlanta underperformed non-Atlanta in some of these pairings.

Furthermore, it is interesting to note that the results differ over the course of the depression. Why might bank suspension rates have been lower in counties under the jurisdiction of the Atlanta Federal Reserve District than neighboring counties across the border during the early stages of the depression, but not during the later stages? One likely possibility is that as economic conditions deteriorated between 1929 and 1933, monetary measures designed to rush liquidity to ailing institutions became less effective over time. Therefore, it is possible that the effects of liquidity intervention varied over the course of the depression.

Part IV. Empirical Model

The raw results provide suggestive evidence that overall, during the early stages of the depression, bank performance was superior in counties under the jurisdiction of the Atlanta Fed than neighboring counties across the border. However, an empirical model—one that can statistically test for the effects of liquidity intervention on bank performance—is necessary to formulate strong conclusions from these results.

To empirically test for the effects of monetary intervention, I estimate a panel regression model. The sample includes all counties located within 50 miles of the Atlanta Federal Reserve District border. I index observations by county and year and I divide observations into distinct geographic regions and monetary regimes. Since the Atlanta Federal Reserve District shared its border with four other Federal Reserve Districts, I define four geographical regions: Atlanta-Richmond, Atlanta-St.Louis, Atlanta-Cleveland and Atlanta-Dallas. Each county is allocated to one geographic region, based on closest proximity. Figure 7 presents these regions. A “monetary regime” includes all of the counties under the jurisdiction of a particular policy regime. One monetary regime—the Atlanta Federal Reserve District—aggressively intervened to stabilize its banking system, whereas the other districts did not intervene to support their banking systems. Therefore, I formulate the following model:

$$S_{it} = \sum_{j=1}^4 \sum_{t=1929}^{1933} \beta_{jt} (R_{ij} D_t) + \sum_{t=1929}^{1933} \alpha_t (A_i D_t) + \Psi_i + \varepsilon_{it}$$

where S_{it} represents bank suspension rate in county i in year t , R_j represents geographical region dummies ($j=1$ Atlanta-Richmond, $j=2$ Atlanta-St. Louis, $j=3$ Atlanta-Cleveland, $j=4$ Atlanta-Dallas), A represents a dummy variable for the Atlanta Federal Reserve District, D_t represents yearly dummies ($t=1929, 1930, 1931, 1932, 1933$), and Ψ represents county-level controls.

I interact region and year dummies to capture region-year fixed effects. These interaction terms measure the average level of bank suspension rates among counties in a region in a given year. They reveal the extent to which banking panics gripped a particular region in a given year.

Moreover, I interact the Atlanta Fed dummy with year dummies to capture monetary regime-year fixed effects. These interaction terms measure the average effect on bank suspension rates of being in the Atlanta Federal Reserve district in each year. Hence, they provide yearly estimates of the effectiveness of monetary intervention in mitigating banking panics. Lastly, to control for economic and demographic differences across counties, I include a set of county-level control variables taken from the 1930 census.⁴

Table 1 describes the sample size. It reports the number of counties and the number of banks in operation in each region on January 1, 1929. The sample includes 356 counties (166 in Atlanta and 190 in non-Atlanta) and 1461 banks (615 in Atlanta and 846 in non-Atlanta).

Table 2 presents the regression results. It reports two specifications. Regression 1 presents the full model with county-level control variables. Regression 2 excludes the county controls. The results are similar across the two specifications. Nonetheless, for sake of completeness, I report the results for both regressions.

First, consider the results from the full model—regression 1. The region-year fixed effects reveal the extent to which banking panics gripped these four regions in each year. They show that during the first half of the depression—1929 to 1931, banking panics were most severe in Atlanta-Richmond and Atlanta-St. Louis in 1929 and 1930 and in Atlanta-Cleveland in 1929. The region-year fixed effects were 0.213 in 1929 and 0.134 in 1930 for Atlanta-Richmond, 0.176 in 1929 and 0.136 in 1930 for Atlanta-St. Louis, and 0.184 in 1929 for Atlanta-Cleveland. The other region-year fixed effects are below 0.11 from 1929 to 1931. Moreover, the Atlanta-Dallas region has the smallest region-year fixed effects from 1929-1931, indicating that this region was not as severely affected by banking panics as the other three. In 1932, region-year fixed effects increase to 0.152, 0.109, 0.172, and 0.223 in the Atlanta-Richmond, Atlanta-St. Louis, Atlanta-Cleveland, and Atlanta-Dallas regions, respectively. In 1933, the region-year fixed effects drop to levels that are insignificantly different from zero across all four regions.

The monetary regime-year fixed effects show the impact of being in the Atlanta Federal Reserve district on bank suspension rates. In 1929 and 1930, the early stages of the depression, the Atlanta Fed fixed effects are negative and strongly significant. They are -0.074 and -0.044, with p-values of 0.003 and 0.016, indicating that being under the jurisdiction of the Atlanta Federal Reserve District reduced the incidence of banking panics. These results support the

⁴ The control variables include total population, population per square mile, fraction of population in labor force, urban population share, unemployment rate, value of farm assets, size of farms, percentage value added by manufacturing sector, number of manufacturing establishments, percentage of cropland with failures, and ratio of debt to farm value. Data come from the censuses of population, manufacturing, and agriculture for 1930.

hypothesis that monetary intervention mitigated banking panics. According to these results, by the end of 1930, the percentage of bank suspensions in counties located in the Atlanta district were on average 11.8 percentage points lower than the percentage of bank suspensions in neighboring counties across the border in the St. Louis, Richmond, Cleveland, or Dallas district. Moreover, the magnitude of these results is comparable to those of Richardson and Troost (2009). Richardson and Troost show that approximately 75 percent of the banks in the St. Louis district of Mississippi were still in operation by mid 1931, whereas approximately 85 percent of the banks in the Atlanta district of Mississippi were still in operation by mid 1931—a difference of roughly 10%.

In 1931, the Atlanta Fed fixed effect is still negative (-0.011), but no longer significantly different from zero (p -value = 0.471). In 1932 and 1933, the Atlanta Fed fixed effects become positive (0.005 and 0.002), but are statistically indistinguishable from zero.

The results from the second specification are similar to those from the first specification.⁵ In 1929 and 1930, the Atlanta Fed fixed effects are negative and statistically significant (-0.070 and -0.037, with p -values of 0.004 and 0.032). They indicate that by the end of 1930, the percentage of bank suspensions in counties located in the Atlanta district were on average 10.7 percentage points lower than the percentage of bank suspensions in neighboring counties across the Fed border. Moreover, in 1931, 1932 and 1933, the Atlanta Fed fixed effects again drop to levels that are statistically indistinguishable from zero.

Taken together, these results indicate that monetary intervention alleviated banking panics early in the depression, but that such intervention was rendered ineffective subsequently. One likely explanation is that as economic conditions and fundamentals deteriorated over the course of the depression, interventionist monetary initiatives to prop up ailing banks became less effective.⁶

These results are strong. They suggest that monetary intervention mitigated banking panics during the early stages of the depression. As noted earlier, however, one potentially complicating factor is the collapse of Caldwell & Company, which occurred in the Atlanta

⁵ One subtle difference between the first and second specification is that the region-year estimates tend to be smaller in the second specification than in the first.

⁶ An alternative explanation could be that policies across Fed Districts began to converge in 1931. Richardson and Troost (2009) note that the St. Louis Fed's policies moved closer to those of the Atlanta Fed after the summer of 1931. Indeed, they adopt this explanation to account for the convergence of bank suspension rates across the 6th and 8th district portions of Mississippi following the summer of 1931. However, this can only partly explain these results because the Federal Reserve System as a whole—including the other Federal Reserve Banks that shared borders with the Atlanta Fed—did not move closer to the interventionist policies of the Atlanta Fed during the second half of the depression. Therefore, it is more likely that the nature of the banking difficulties changed toward the later stages of the depression, rendering liquidity intervention less effective.

Federal Reserve District portion of Tennessee in 1930. Richardson and Troost (2006) argue that the Collapse of Caldwell and Company—the event that unleashed the major banking panic of 1930—could bias the results against the Atlanta Fed. Thus, the strength of the results—in spite of the collapse of Caldwell and Company—is noteworthy. Nonetheless, to check whether this source of bias might be present, I re-estimate the preceding regressions, but exclude the area surrounding the collapse of Caldwell and Company. Specifically, I exclude all counties in one of the Tennessee pairings in 1930.

Table 3 presents the results. The monetary regime-year and region-year estimates for 1929, 1931, 1932 and 1933 are virtually unchanged from the previous regressions. However, the Atlanta Fed fixed effect for 1930 increases dramatically to -0.092 (p-value = 0.002) for regression 1, which includes county controls, and to -0.085 (p-value = 0.003) for regression 2, which omits county controls. These results indicate that this source of bias is likely real: excluding the area surrounding the collapse of Caldwell and Company more than doubles the Atlanta Fed fixed effect in 1930. Moreover, taking the new 1929 and 1930 Atlanta Fed fixed effects now indicates that by the end of 1930, the percentage of bank suspensions in counties located in the Atlanta district were on average 16.6 percentage points lower than the percentage of bank suspensions in neighboring counties located in the St. Louis, Richmond, Cleveland, or Dallas district according to the first specification, and 15.5 percentage points lower according to the second.

These results strongly support the hypothesis that monetary intervention mitigated banking panics during the early stages of the depression. To gauge the magnitude of these effects, note Table 4, which presents the Atlanta Fed fixed effects and the region-year fixed effects for Atlanta-Richmond and Atlanta-St. Louis in 1929 and 1930, taken from the regression models from Tables 2 and 3 that include county-level control variables.⁷ According to the estimates from Table 2, the Atlanta Fed fixed effects are -0.074 and -0.044 in 1929 and 1930, compared to region-year fixed effects of 0.213 and 0.176 in 1929 and 0.134 and 0.136 in 1930 for the Atlanta-Richmond and Atlanta-St. Louis regions, respectively. Dividing the Atlanta Fed fixed effects, which measure the impact on bank suspension rates of being in the Atlanta Federal Reserve District in each year, by the region-year fixed effects, which measure the average level of bank suspension rates among counties in a region in a given year, indicates that the Atlanta Fed reduced the extent of bank suspensions by approximately 35% in 1929 and 33% in 1930 in Atlanta-Richmond and by approximately 42% in 1929 and 32% in 1930 in Atlanta-St. Louis. Using the corresponding results from Table 3 yields even stronger estimates for 1930. They

⁷ Using the fixed effects from the regressions that do not include county-level controls does not change the results.

indicate that the Atlanta Fed reduced the extent of bank suspensions by 48% in Atlanta-Richmond and by 41% in Atlanta-St. Louis in 1930.

Moreover, these estimates must be viewed as lower bounds. For instance, suppose that monetary intervention was effective in reducing bank suspension rates in Atlanta counties. Such outcomes might have had externality effects in neighboring regions across the border. By reducing the incidence of banking panics in Atlanta counties, the Atlanta Fed may have reduced the incidence of banking panics in neighboring counties across the border by calming depositor fear. These externality effects would act to decrease the Atlanta Fed fixed effects in these regressions by reducing the difference in bank suspension rates between Atlanta and non-Atlanta. Hence, these estimates must be viewed as lower bounds for the percentage of banks that the Atlanta Fed was able to prevent from suspending operations.

Part V – The Impact of Monetary Intervention on the Fed Balance Sheet

The results from the previous sections indicate that monetary intervention—on the part of the Atlanta Fed—mitigated banking panics during the first half of the depression. This suggests that interventionist policies from the Federal Reserve System as a whole would have alleviated the banking panics of the early stages of the depression.

However, this finding poses a related question: would such a concerted system-wide response have been feasible? The Federal Reserve was on a fixed exchange rate regime, the gold standard, during the Great Depression. As a consequence, a potential constraint on Fed policy might have been its reserve position. If liquidity intervention expended large resources, then it might be the case that all twelve Federal Reserve Districts would not have been able to extend support to their banking systems without jeopardizing the reserve position of the Federal Reserve System as a whole.⁸

To investigate this issue further, I analyze the balance sheet of the Atlanta Fed to determine whether its actions impaired its reserve position. Figure 8 displays the reserve position of the Atlanta Fed from July 1, 1929 to December 31, 1930.⁹ For sake of comparison, I include the reserve position of two other Federal Reserve Districts that experienced serious banking panics during the first two years of the Depression, but that did not intervene to support their banking systems—St. Louis and Richmond.

⁸ See, for example, Hsieh and Romer (2006) for a discussion of the role of the gold standard in Federal Reserve policymaking during the Great Depression.

⁹ The data come from the 1929 and 1930 Annual Reports of the individual Federal Reserve Districts.

Figure 8 reveals that the reserve position of the Atlanta Fed did not become impaired in 1929 and 1930. Even during November and December of 1930—the months that coincided with the banking panic that followed the collapse of Caldwell and Company—the reserve position of the Atlanta Fed held steady. This suggests that monetary intervention did not impair the balance sheet of the Atlanta Fed during the early stages of the depression.

What explains the strong reserve position of the Atlanta Fed in the midst of such large-scale intervention? To help answer this question, I read contemporary newspaper reports that described the banking panics that occurred in the Atlanta Federal Reserve District in 1929 and 1930. According to the newspaper reports, officials from the Atlanta Fed made their commitment to the banks well known. A July 18, 1929 article in the *Baltimore Sun* describes the efforts of Atlanta Fed officials to publicize their commitment to support banks following the outbreak of a panic in Florida:

To bolster up public confidence, \$1,000,000 in cash was brought here by airplane today from Atlanta and delivered to the First National Bank of Tampa, a member of the Federal Reserve...Creed Taylor, Deputy Governor of the Federal Reserve Bank at Atlanta, who arrived here today, also declared that local bankers could ‘have all the money they need with which to meet the situation.’¹⁰

According to the newspaper reports, these actions calmed depositor anxiety. A July 18, 1929 *New York Times* article reports that the sight of the arrival of cash was sufficient to restore confidence and allay the panic in Florida:

Indications were that confidence had been restored and that in the next few days most of the money withdrawn yesterday and today will be returned to the vaults of the banks. The arrival of \$5,000,000 here today and yesterday from the Atlanta Federal Reserve Bank and the sight of the money in huge stacks in the cages of the bank tellers had a reassuring effect. Crowds about the banks were much smaller than yesterday and were there out of curiosity.¹¹

Moreover, a November 14, 1930 *New York Times* article describes how the actions of the Atlanta Fed following the collapse of Caldwell and Company reassured depositors, inducing them to redeposit their money:

Knoxville’s banking public was in a more peaceful frame of mind today and the banks had to contend with no more runs. Many depositors who had withdrawn their money from the East Tennessee National and the City National Banks redeposited it today, and business was again almost normal...huge stacks of cash and currency reassured the most timid. Several million dollars in currency was sent here Tuesday and Wednesday by the Federal Reserve Bank of Atlanta.¹²

These reports suggest that the Atlanta Fed was able to rush cash to banks without impairing its reserve position because its promise to extend aid to banks, coupled with visible displays of rushing cash to banks, had a powerful effect in restoring confidence.

¹⁰ July 20, 1929. *Commercial and Financial Chronicle*. “The Florida Bank Failures.” p. 422.

¹¹ July 20, 1929. *Commercial and Financial Chronicle*. “The Florida Bank Failures.” p. 422.

¹² November 14, 1930. *The New York Times*. “Money Redeposited in Knoxville.” p. 19.

These findings indicate that the Federal Reserve System as a whole had the resources to act as aggressively as the Atlanta Fed in combating banking panics. A system-wide defense of the U.S. banking system would not have impaired the reserve position of the Federal Reserve System during the early stages of the depression. A public commitment to extend aid to illiquid institutions—backed by rushing cash to banks undergoing runs—would have gone a long way in alleviating panics.

Part VI – Conclusions

This paper develops a new test of the effectiveness of monetary intervention by focusing on bank performance along counties straddling the border of the Atlanta Federal Reserve District. I find that banks suspended at lower rates in counties under the jurisdiction of the interventionist Atlanta Fed than neighboring counties across the border. According to my empirical estimates, liquidity intervention reduced the incidence of bank suspensions by 32 to 48% in some regions. Furthermore, narrative evidence—derived from contemporary news sources—indicates that the Atlanta Fed’s actions alleviated banking panics because its promise to extend aid to illiquid institutions—coupled with public displays of rushing cash to banks undergoing runs—had a powerful effect in restoring depositor confidence. These findings corroborate those of Richardson and Troost (2009) and support the assertion that the Federal Reserve System could have mitigated the banking panics of the early stages of the depression had it acted as a lender of last resort.

But the follow-up question is less clear: would monetary intervention during the early stages of the depression have been sufficient to prevent subsequent panics? According to Friedman and Schwartz (1963), the banking panics of the Great Depression were liquidity crises. In their view, the Federal Reserve could have contained the banking panics had it rushed cash to banks undergoing runs and injected liquidity into the country’s banking system. In the case of the Great Depression, however, a categorical distinction between liquidity and solvency crisis may not apply. Some banks that failed may have been simply illiquid, whereas others may have been insolvent. Moreover, as the severity of the depression intensified between 1929 and 1933, the nature of the banking panics likely changed. That monetary intervention had big effects during the early stages of the depression, but not during later stages suggests that the banking panics of the first half of the depression might have been primarily liquidity crises and that the banking panics of the later half of the depression might have been primarily solvency crises. This might reconcile the findings of Richardson and Troost (2009) with those of Calomiris and Mason (2003). It also indicates that the scope for action—via liquidity support—was strongest during the

initial stages of the depression. Unfortunately, because the counterfactual—bank performance between 1929 and 1933 with the Federal Reserve System acting as a lender of last resort—is unobservable, it may be impossible to know with certainty whether monetary intervention would have been sufficient to stop a nationwide banking crisis and avert the worst of the depression. Nonetheless, the results of this paper suggest that monetary intervention was strongly effective during the early stages of the depression. As a consequence, the failure of the Federal Reserve System to act as a lender of last resort during the first half of the depression was a squandered opportunity.

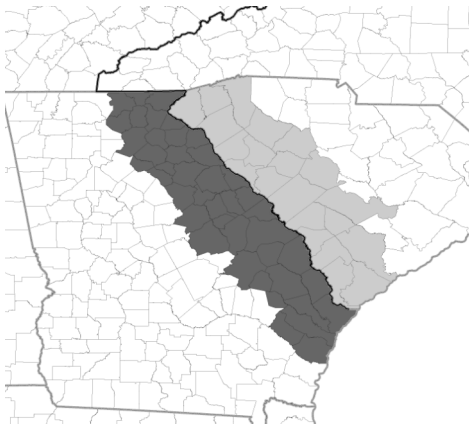
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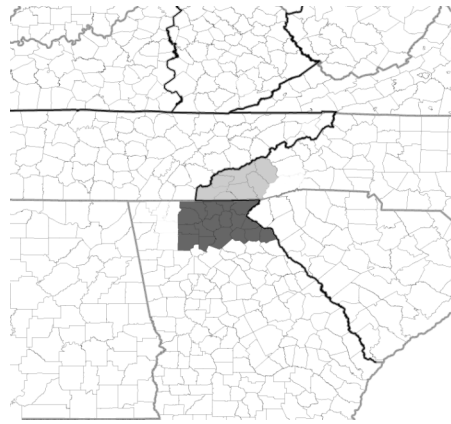
FIGURE 1
ELEVEN REGIONS: ATLANTA VS NON-ATLANTA

Georgia (6) – South Carolina (5)



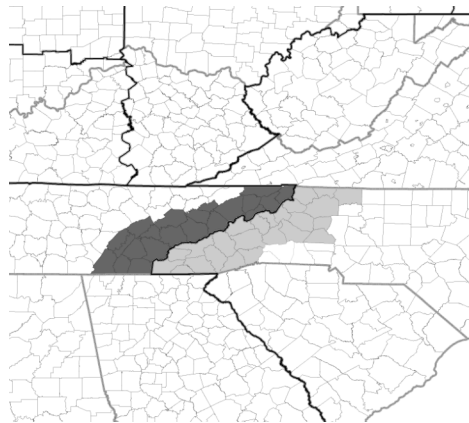
64 Counties (43 in GA, 21 in SC)
198 Banks (109 in GA, 89 in SC)

Georgia (6) – North Carolina (5)



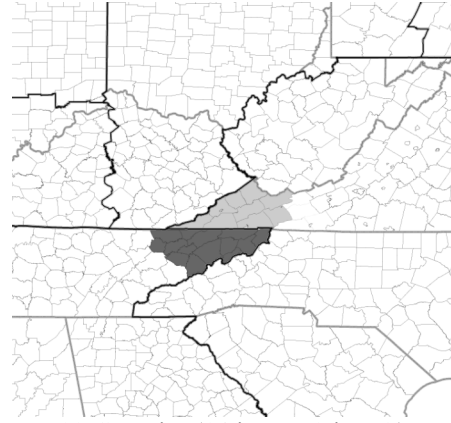
24 Counties (17 in GA, 7 in NC)
49 Banks (32 in GA, 17 in NC)

Tennessee (6) – North Carolina (5)



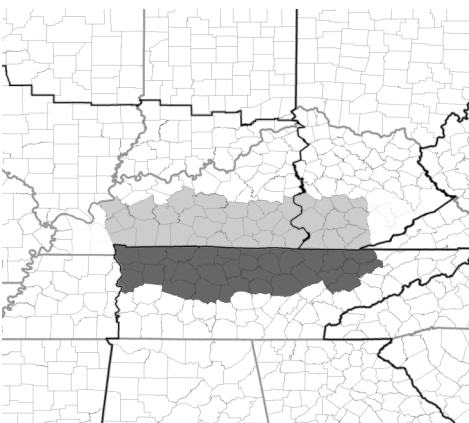
45 Counties (21 in TN, 24 in NC)
189 Banks (104 in TN, 85 in NC)

Tennessee (6) – Virginia (5)



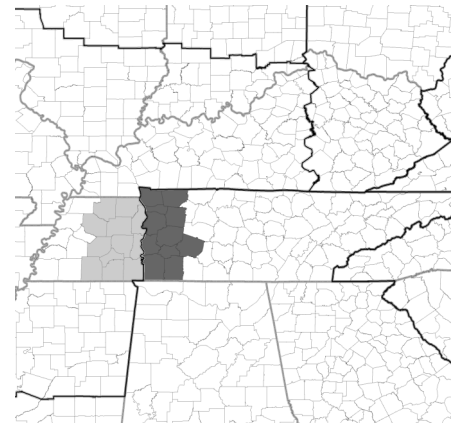
23 Counties (14 in TN, 9 in VA)
98 Banks (49 in TN, 49 in VA)

Tennessee (6) – Kentucky (4 & 8)



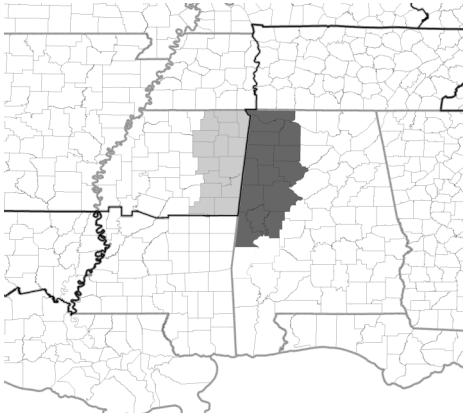
72 Counties (33 in TN, 39 in KY)
306 Banks (149 in TN, 157 in KY)

Tennessee (6) – Tennessee (8)



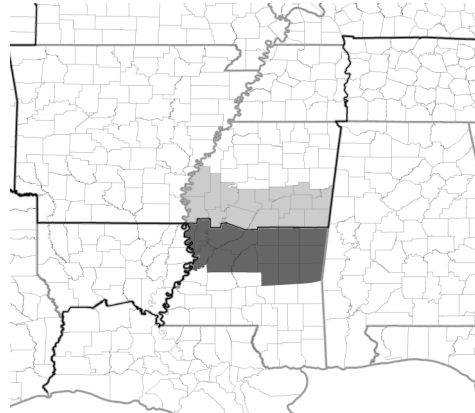
33 Counties (11 in TN-6, 12 in TN-8)
132 Banks (48 in TN-6, 84 in TN-8)

Alabama (6) – Mississippi (8)



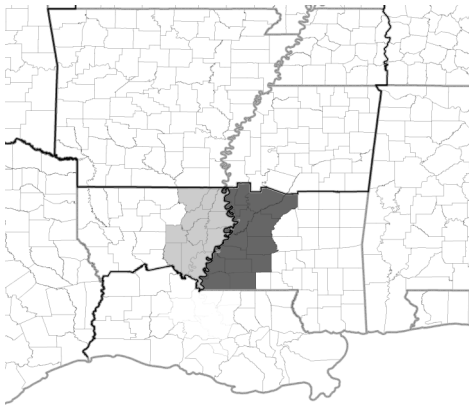
29 Counties (14 in AL, 15 in MS)
119 Banks (60 in AL, 59 in MS)

Mississippi (6) – Mississippi (8)



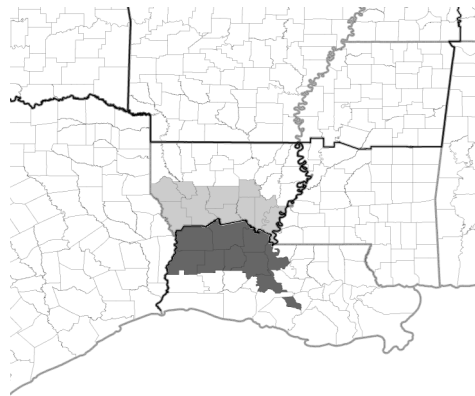
32 Counties (16 in MS-6, 16 in MS-8)
145 Banks (63 in MS-6, 82 in MS-8)

Mississippi (6) – Louisiana (11)



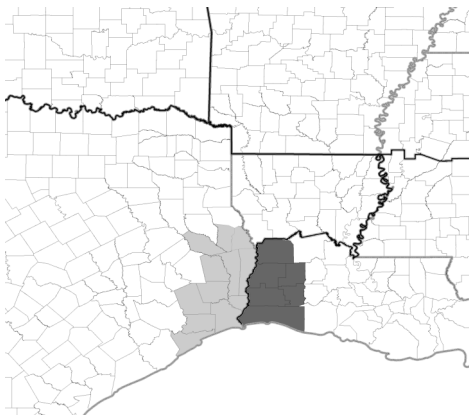
25 Counties (14 in MS, 11 in LA)
72 Banks (46 in MS, 26 in LA)

Louisiana (6) – Louisiana (11)



19 Counties (9 in LA-6, 10 in LA-11)
66 Banks (36 in LA-6, 30 in LA-11)

Louisiana (6) – Texas (11)



18 Counties (6 in LA, 12 in TX)
67 Banks (12 in LA, 55 in TX)

FIGURE 2
BANK SUSPENSION RATES, 1929

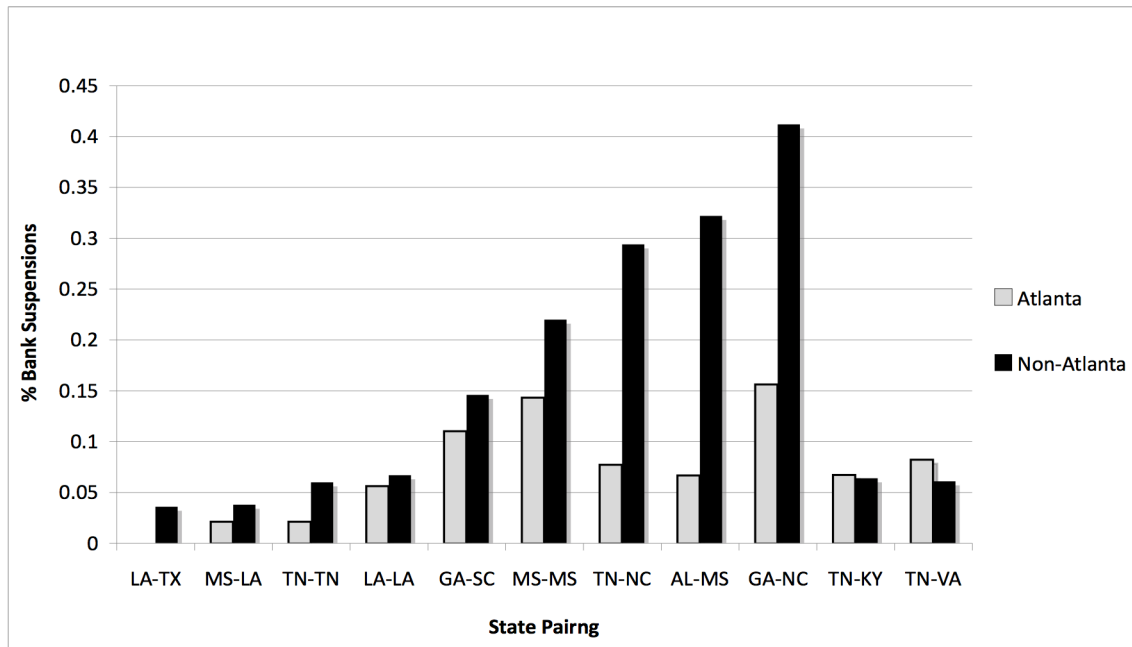


FIGURE 3
BANK SUSPENSION RATES, 1930

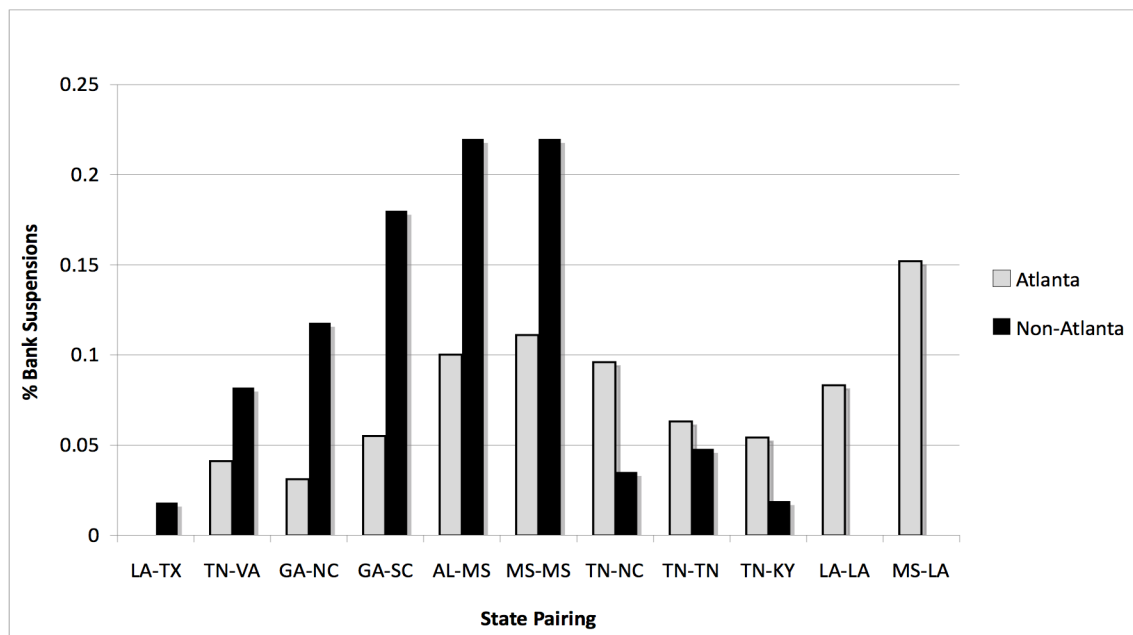


FIGURE 4
BANK SUSPENSION RATES, 1931

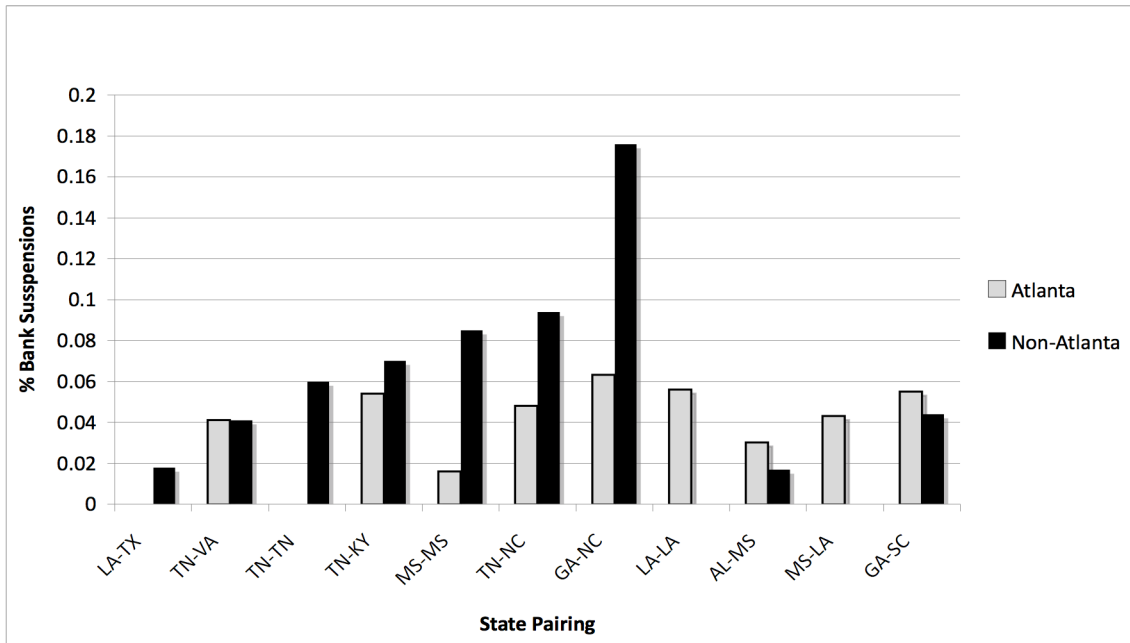


FIGURE 5
BANK SUSPENSION RATES, 1932

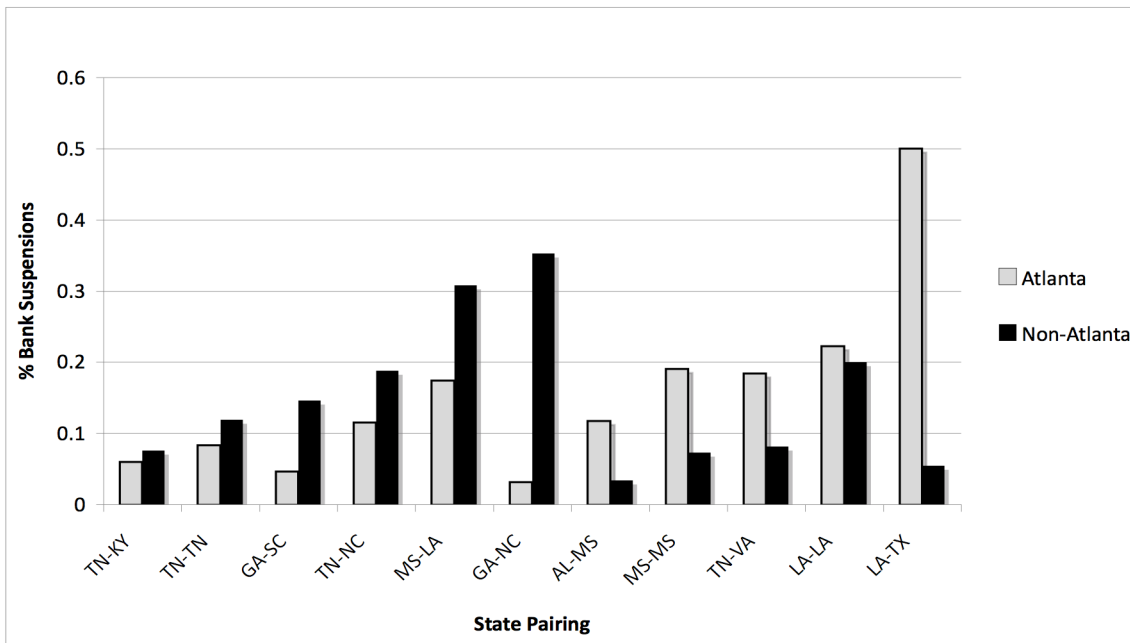


FIGURE 6
BANK SUSPENSION RATES, 1933

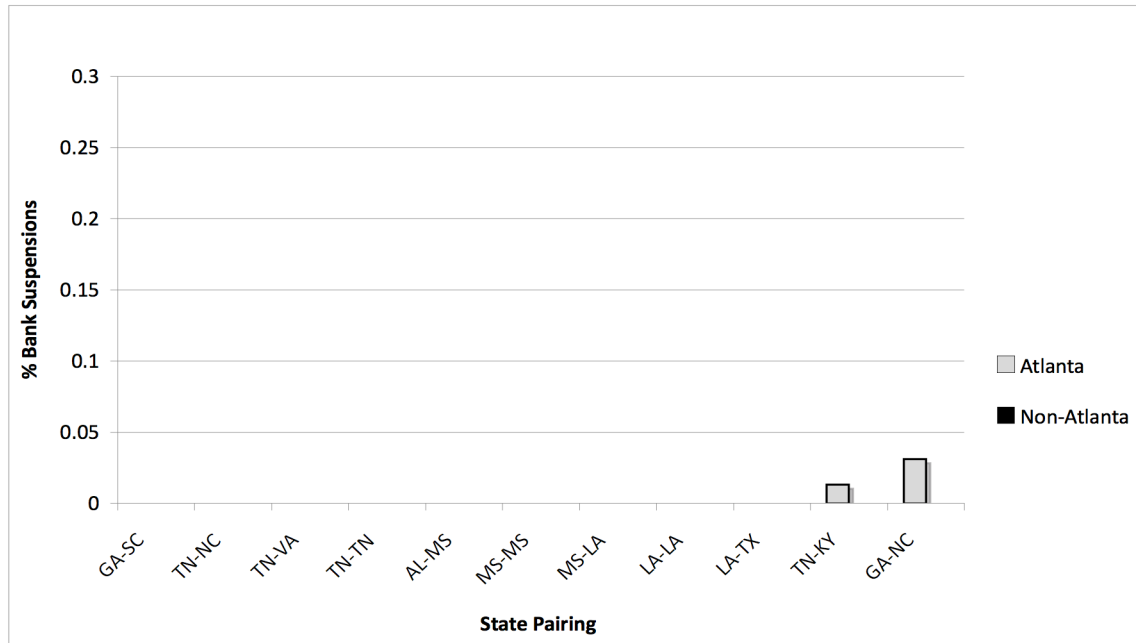


FIGURE 7
COUNTIES WITHIN 50 MILES OF ATLANTA FED DISTRICT BORDER

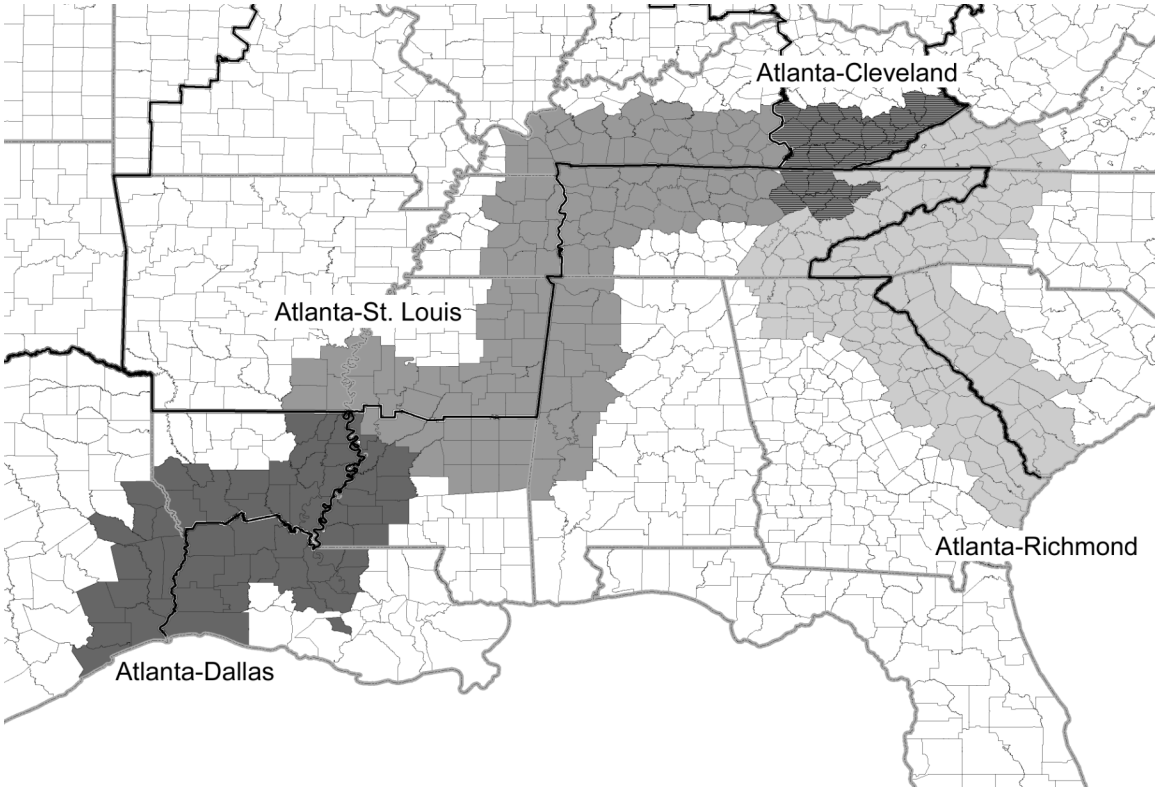


FIGURE 8
CASH RESERVES OF ATLANTA, ST. LOUIS AND RICHMOND FEDERAL
RESERVE BANKS

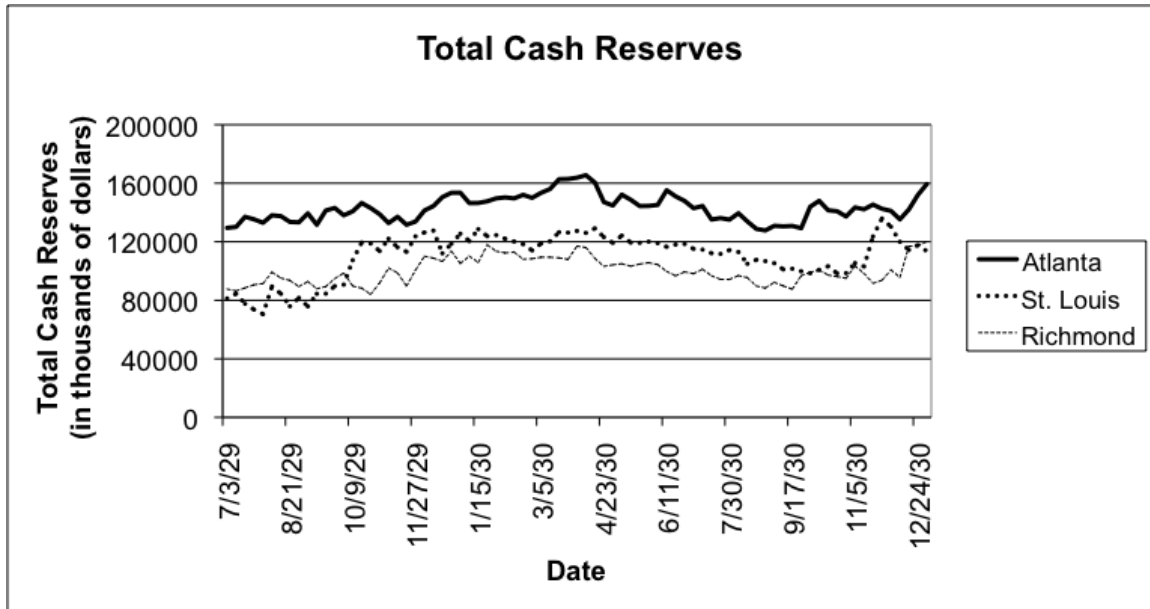


TABLE 1
SAMPLE SIZE

	Counties		Banks	
Atlanta-Richmond	135		516	
Atlanta		73		234
Richmond		62		282
Atlanta-St. Louis	138		641	
Atlanta		60		258
St. Louis		78		383
Atlanta-Cleveland	24		89	
Atlanta		6		26
Cleveland		18		63
Atlanta-Dallas	59		215	
Atlanta		59		97
Dallas		32		118
Total	356		1461	
Atlanta		166		615
Non-Atlanta		190		846

TABLE 2
PANEL REGRESSION MODEL
DEPENDENT VARIABLE: COUNTY BANK SUSPENSION RATE

		Regression 1		Regression 2	
		Coefficient	p-value	Coefficient	p-value
Monetary Regime Fixed Effects					
	Atlanta1929	-0.074 (0.024)	0.003	-0.070 (0.024)	0.004
	Atlanta1930	-0.044 (0.018)	0.016	-0.037 (0.017)	0.032
	Atlanta1931	-0.011 (0.016)	0.471	-0.006 (0.015)	0.697
	Atlanta1932	0.005 (0.024)	0.823	0.010 (0.024)	0.672
	Atlanta1933	0.002 (0.007)	0.819	0.007 (0.006)	0.194
Region Fixed Effects					
1929					
	Atlanta-Richmond	0.213 (0.045)	0.000	0.173 (0.025)	0.000
	Atlanta-StLouis	0.176 (0.043)	0.000	0.151 (0.023)	0.000
	Atlanta-Cleveland	0.184 (0.070)	0.009	0.148 (0.059)	0.013
	Atlanta-Dallas	0.087 (0.045)	0.054	0.075 (0.026)	0.004
1930					
	Atlanta-Richmond	0.134 (0.039)	0.001	0.093 (0.020)	0.000
	Atlanta-StLouis	0.136 (0.040)	0.001	0.110 (0.020)	0.000
	Atlanta-Cleveland	0.088 (0.039)	0.023	0.052 (0.023)	0.027
	Atlanta-Dallas	0.056 (0.036)	0.117	0.043 (0.013)	0.001
1931					
	Atlanta-Richmond	0.108 (0.040)	0.008	0.067 (0.018)	0.000
	Atlanta-StLouis	0.069 (0.037)	0.060	0.043 (0.012)	0.000
	Atlanta-Cleveland	0.101 (0.042)	0.017	0.065 (0.028)	0.020
	Atlanta-Dallas	0.030 (0.035)	0.388	0.017 (0.010)	0.078
1932					
	Atlanta-Richmond	0.152 (0.044)	0.001	0.112 (0.023)	0.000
	Atlanta-StLouis	0.109 (0.041)	0.007	0.086 (0.018)	0.000
	Atlanta-Cleveland	0.172 (0.058)	0.003	0.136 (0.049)	0.005
	Atlanta-Dallas	0.223 (0.047)	0.000	0.212 (0.036)	0.000
1933					
	Atlanta-Richmond	0.044 (0.034)	0.203	0.003 (0.005)	0.475
	Atlanta-StLouis	0.025 (0.034)	0.470	-0.001 (0.003)	0.760
	Atlanta-Cleveland	0.034 (0.031)	0.271	-0.002 (0.002)	0.236
	Atlanta-Dallas	0.010 (0.033)	0.772	-0.003 (0.003)	0.201
County-Level Controls		Yes		No	
R²		0.248		0.226	

Note: Robust standard errors, clustered at the county level are in parentheses.

TABLE 3
PANEL MODEL, WITHOUT CALDWELL ADJACENT COUNTIES
DEPENDENT VARIABLE: COUNTY BANK SUSPENSION RATE

		Regression 1		Regression 2	
		Coefficient	p-value	Coefficient	p-value
Monetary Regime Fixed Effects					
	Atlanta1929	-0.074 (0.025)	0.003	-0.070 (0.024)	0.004
	Atlanta1930	-0.092 (0.030)	0.002	-0.085 (0.028)	0.003
	Atlanta1931	-0.011 (0.016)	0.474	-0.006 (0.015)	0.697
	Atlanta1932	0.006 (0.024)	0.819	0.010 (0.024)	0.672
	Atlanta1933	0.002 (0.007)	0.804	0.007 (0.006)	0.194
Region Fixed Effects					
1929					
	Atlanta-Richmond	0.230 (0.047)	0.000	0.173 (0.025)	0.000
	Atlanta-StLouis	0.195 (0.044)	0.000	0.151 (0.023)	0.000
	Atlanta-Cleveland	0.201 (0.070)	0.004	0.148 (0.059)	0.013
	Atlanta-Dallas	0.108 (0.047)	0.021	0.075 (0.026)	0.004
1930					
	Atlanta-Richmond	0.192 (0.050)	0.000	0.130 (0.032)	0.000
	Atlanta-StLouis	0.225 (0.058)	0.000	0.194 (0.039)	0.000
	Atlanta-Cleveland	-----	-----	-----	-----
	Atlanta-Dallas	0.099 (0.040)	0.014	0.065 (0.017)	0.000
1931					
	Atlanta-Richmond	0.125 (0.042)	0.003	0.067 (0.018)	0.000
	Atlanta-StLouis	0.089 (0.039)	0.022	0.043 (0.012)	0.000
	Atlanta-Cleveland	0.119 (0.043)	0.006	0.065 (0.028)	0.020
	Atlanta-Dallas	0.051 (0.037)	0.171	0.017 (0.010)	0.078
1932					
	Atlanta-Richmond	0.169 (0.047)	0.000	0.112 (0.023)	0.000
	Atlanta-StLouis	0.129 (0.043)	0.003	0.086 (0.018)	0.000
	Atlanta-Cleveland	0.189 (0.059)	0.002	0.136 (0.049)	0.006
	Atlanta-Dallas	0.243 (0.049)	0.000	0.212 (0.036)	0.000
1933					
	Atlanta-Richmond	0.061 (0.036)	0.094	0.003 (0.005)	0.476
	Atlanta-StLouis	0.044 (0.036)	0.221	-0.001 (0.003)	0.760
	Atlanta-Cleveland	0.052 (0.033)	0.117	-0.002 (0.002)	0.236
	Atlanta-Dallas	0.030 (0.035)	0.393	-0.003 (0.003)	0.201
County-Level Controls		Yes		No	
R²		0.255		0.239	

Note: Robust standard errors, clustered at the county level are in parentheses.

TABLE 4
MAGNITUDE OF RESULTS

	<u>Results from Table 2</u>		<u>Results from Table 3</u>
	1929	1930	1930
Monetary Regime Fixed Effects			
Atlanta Fed	-0.074	-0.044	-0.092
Geographic Region Fixed Effects			
Atlanta-Richmond	0.213	0.134	0.192
Atlanta-St. Louis	0.176	0.136	0.225
Monetary Regime / Geographic Region			
Atlanta-Richmond	-0.350	-0.326	-0.480
Atlanta-St. Louis	-0.424	-0.321	-0.410