Lender of Last Resort and Local Economic Outcomes*

Pawel Janas†

This version: September, 2023

Abstract

Financial crises often lead to slow economic recovery, possibly due to credit rationing by banks. This study explores the relationship between policy, bank failures, and manufacturing performance during the Great Depression, using new archival data from the U.S. Focusing on the lender-of-last-resort policies of the Atlanta Federal Reserve Bank, I assess their impact on the banking sector and firms' financial constraints. While I find strong evidence that these policies bolstered the banking sector, they appear to have had limited influence on local manufacturing outcomes at the county and firm-level, despite the manufacturing sector's reliance on bank credit at the time. These results highlight that simply reinforcing the banking sector may not suffice for broader economic recovery after a financial crisis.

JEL Classification: N21, N62, G01
Keywords: Lender of last resort, Great Depression, manufacturing, financial constraints

*I would like to thank the seminar participants at the Northwestern Economic History Seminar, the Kellogg Finance Brown Bag, and the Mountain West Economic History Conference for suggestions. I would especially like to thank Gustavo Cortes and Sarah Quincy for detailed comments. This research was supported by the Northwestern Kellogg Dean's Office Research Grant and the Dissertation Fellowship from the Economic History Association.

†Division of Humanities and Social Sciences, Caltech, email: pawel@caltech.edu, site: paweljanas.com

1 Introduction

Between 1929 and 1933, more than half of all commercial banks in the United States closed. Some did so temporarily due to liquidity constraints, others shut down permanently after becoming insolvent, and the rest merged with other financial institutions to avoid liquidation. This significant negative shock to financial intermediaries propelled eight decades—and counting—of research into the causes and consequences of bank failures (Friedman and Schwartz (1963), Bernanke (1983), Temin (1976), Wicker (2000)).

One branch of this literature investigates the role of the Federal Reserve. The Federal Reserve has faced criticism for its lack of early interventionist actions during the Depression, especially its failure to stem the decline in the money supply and not acting as a collective lender of last resort for banks. Empirically, however, it is difficult to estimate the causal effects of Federal Reserve policies because changes in aggregate statistics could also be the result of simultaneous and endogenous reactions by households, firms, and subnational governments. The ideal scenario is to observe differences in two places that are ex-ante on a similar economic trajectory but experienced different policy regimes before and after the onset of the Depression.

This paper uses novel, archival, panel data on local manufacturing and banking conditions in the United States to investigate the link between policy, bank failures, and firm production and employment. I examine the divergent policies enacted by the Atlanta Federal Reserve Bank (henceforth "Atlanta"). These policies were first highlighted in the literature by Richardson and Troost (2009) and received additional contributions from Jalil (2014) and Ziebarth (2013). Atlanta, unlike other Federal Reserve banks at the time, acted as a lender of last resort within its region, extending credit to solvent but illiquid banks to prevent runs on otherwise healthy institutions. Given that Federal Reserve borders cut across states and consumer markets, I can analyze local economic trajectories before and during the Great Depression by considering the quasi-exogenous incidence of bank failures.

In the first part of my analysis, I investigate the difference in bank failures between counties just outside the Atlanta border and those just inside it, exploring its robustness. I find that banks failed less often inside the Atlanta region in 1929 and 1930, even after accounting for pre-existing differences in local banking conditions, excluding outliers and individual border segments, and measuring bank distress in different ways. I conduct placebo randomization tests of the Federal Reserve borders and determine that the baseline results are unlikely to have occurred by chance. Moreover, I don't find substantial evidence that bank distress varied across borders of Federal

Reserve districts that adopted similar lender of last resort policies in other regions. Taken together, these results suggest that banking conditions were more favorable in the early years of the Depression within the counties of the Atlanta district.

In the second part of my analysis, I turn to plant- and county-level manufacturing outcomes. By combining an industry-level credit survey with pre-Depression industry-by-county data, I construct proxies for the financial constraints of small and medium-sized manufacturers in each county around the Atlanta region border. The survey indicates that the vast majority of these manufacturers relied on commercial banks to finance both working capital and long-term investment, though the extent of these constraints differed by industry. Exploiting the geographical variations in types of manufacturing along the Atlanta border, I compare economic activity across counties with fewer and more banking failures. Given the higher survival rate of commercial banks inside the Atlanta region, the traditional hypothesis posits that manufacturing output and employment declined less and rebounded faster there compared to counties just outside the Atlanta region. Additionally, I test if the results are most pronounced for counties with firms in the highly constrained industries.

Contrary to the hypothesis in the extant literature, I do not find supporting evidence. Firstly, manufacturing outcomes were *worse* inside the Atlanta region, despite the greater availability of banking resources. Plant-level data suggests that while plants remained operational at a higher rate in Atlanta, their output and labor input were reduced. This finding aligns with the county-level data. Secondly, while I observe that county-level financing constraints predict worse outcomes post-Depression (but not pre-Depression), the interplay between pre-Depression financial constraints and the banking crises of the Depression didn't significantly affect local economic outcomes. Despite the Atlanta Federal Reserve's policies bolstering the banking sector early in the Depression, there was not a subsequent positive impact on firms, possibly due to the banking sector's hesitance to offer credit.

The remainder of the paper is structured as follows: Section 2 outlines the historical context and reviews relevant literature. Section 3 delves into the data, while Section 4 delineates the empirical strategy and shares the robust banking findings. Section 5 examines manufacturing outcomes, and Section 6 offers concluding remarks.

2 Historical Background and Literature Review

This section provides an overview of the historical and institutional backdrop of banks and firms during the Depression.[1] Subsequently, I introduce new survey evidence highlighting the interactions between commercial banks and small to medium-sized manufacturers (Bureau (1935)).

2.1 Banking crises

The events of the Great Recession (2007–2009)—a financial crisis followed by a deep economic recession and a slow recovery—renewed interest in the study of how financial market distress affects households and firms. The Great Depression (1929–1937) serves as the most pertinent historical comparison to the economic challenges faced in the late 2000s. Initiated by a stock market crash in 1929 and exacerbated by subsequent banking failures, the Depression remains a focal point in U.S. economic history. Notably, Friedman and Schwartz (1963) and Bernanke (1983) identify bank panics as pivotal in shaping the economic downturn and determining the Depression's duration and severity. From a policy standpoint, discerning the causes of financial institution failures and the efficacy of preventive measures is crucial for financial market regulators and central banks.

Two main hypotheses underpin the causes of bank failures during the Depression in the United States. The first hypothesis posits that banks faced insolvency as the assets they held—primarily mortgages, business loans, and bonds—diminished in value (Temin (1976), White (1984), Calomiris and Mason (2003)). In essence, banks had made risky investments before 1929: excessive loans to businesses that would later collapse, to stock speculators who suffered significant losses in the 1929 crash, and mortgages during the post-World War I construction boom. Empirical support for this solvency hypothesis manifests in various ways, such as state-level bank failures correlated with economic and loan characteristics, bank-level data on loan quality, and trends in bond yields. Typically, these studies consider the probability or severity of bank suspensions, concluding that underlying economic shocks are potent predictors of bank failure. They suggest that liquidity-assistance policy interventions would likely have had limited impact during the Depression.

The second hypothesis, the illiquidity hypothesis, contends that a surge in withdrawals by panic-stricken depositors crippled the banking sector. The stock market crash sowed doubts about future economic prospects (Romer (1990)). Additionally, news about the failures of major, interconnected institutions stirred concerns about the banking sector's stability. Consequently, public

[1] For a more comprehensive literature review, see Wicker (2000) and Temin (1976).

trust eroded, leading to a rush on banks, which, unable to liquidate assets swiftly, had no choice but to halt operations (Friedman and Schwartz (1963), Wicker (2000)). Under this theory, the crisis might have been mitigated had the Federal Reserve acted as a lender of last resort, offering cash to banks in exchange for illiquid assets at non-fire sale prices. Some critiques center on the Federal Reserve's perceived inaction during the Depression based on this perspective.

Both hypotheses hold conceptual and empirical merit, contingent on the specific timeframe, geographical context, and granularity of the data. No singular cause can encapsulate the magnitude of banking panics during the Great Depression. The most insightful evidence on the solvency and liquidity channels' relative importance comes from Richardson (2007). Utilizing quarterly bank-level data from 1929 to 1933, he observes a temporal evolution in bank failures: initially, small rural banks faced increasing failure rates. The collapse of Caldwell and Company and the Bank of the United States in 1930 triggered bank runs. By 1931, following Britain's exit from the gold standard and declining asset values, the majority of failing banks were indeed insolvent. Nearly three-fourths of these institutions were deemed insolvent, with one-fourth solvent and either resuming business or merging. Among those that suspended operations, half did so due to depositor withdrawals.

2.2 What was the scope of Federal Reserve intervention?

The initial response of the Federal Reserve to the Depression has been a subject of criticism, especially its support (or lack thereof) for the money supply and banking institutions. However, pinpointing its direct impact is intricate due to potential responses from households and local bodies. The ideal approach would involve comparing regions with analogous economic trajectories but divergent policy responses during the Depression. Mississippi serves as a pertinent case study in this regard, with its northern and southern counties subjected to distinct policy regimes up until 1931 (Richardson and Troost (2009), Jalil (2014), Ziebarth (2013)).

The southern counties of Mississippi fell under the purview of the Atlanta Federal Reserve Bank (6th District). Leaders here adhered to "Bagehot's rule", a doctrine advocating that central bankers should provide credit to illiquid but solvent institutions during financial upheavals, thereby preventing losses from runs on otherwise healthy banks. Gamble (1989), in his historical overview of the Atlanta Federal Reserve Bank, recounts instances where bank officials physically transported currency into banks to reassure apprehensive depositors of the bank's solvency. Conversely, in the north, the St. Louis Federal Reserve Bank (8th District) championed the "Real Bills" perspective, asserting that credit supply should diminish during downturns, as reduced economic activity necessitated less credit. This stance persisted until the summer of 1931.[2] Therefore, during the Depression's initial two years, banks in Mississippi experienced two contrasting policy approaches. So, what were the implications?

Drawing from bank-level and county-level data, Richardson and Troost (2009) unveils compelling findings. Banks in the 6th District counties of Mississippi consistently outperformed their counterparts in the 8th District in terms of survival rates, credit availability, and commercial activity, particularly during the panics of 1930-1931. Their research suggests that broad application of 'lender of last resort' policies might have mitigated the onset of banking panics. Broadening the analysis to encompass the entire border of the 6th District, Jalil (2014) investigates whether bank performance in counties within 50 miles of this boundary depended on the specific Federal Reserve policy regime. Utilizing county-level banking data, he discerns that bank suspension rates in 1929 and 1930 were consistently lower inside the 6th District compared to adjacent counties just beyond the border.[3]

2.3 Banking panics and local economic outcomes

Bank closures carry direct costs, such as the wealth loss for depositors who only recover a portion of their claims after a bank's liquidation. However, this is merely one avenue through which bank failures can adversely affect local economies. An alternative channel is the escalation of financial intermediation costs (Bernanke (1983)). In an atmosphere riddled with uncertainty, banks lean towards risk aversion, investing predominantly in secure assets and showing hesitancy in extending credit—even to creditworthy businesses (Cornett et al. (2011)). Consequently, these businesses curtail hiring and production. When these firms seek funds for investment or debt refinancing, the absence of willing lenders leads to a decline in their output.

The experimental scenario in Mississippi, combined with the Atlanta Federal Reserve border, offers a framework to investigate the influence of bank failures on local economic conditions. Ziebarth (2013) assembles plant-level data from the Census of Manufactures during the Depression and employs a difference-in-differences approach to juxtapose plants in northern and southern Mississippi. The findings reveal a 37 percent reduction in physical output in the north with no

[2]The St. Louis Federal Reserve adapted to the seasonal business cycles of its predominant industry, agriculture, by cyclically expanding and contracting credit. Amid panics, the St. Louis Fed mandated double collateral (surrendering 2 dollars of liquid assets for 1 dollar in cash), deterring banks from using the discount window (Wheelock (1997)). This policy shifted in July 1931, easing collateral requirements.

[3]The Atlanta Fed (District 6) bordered four other Federal Reserve Districts: Richmond (District 5), St. Louis (District 8), Cleveland (District 4), and Dallas (District 11).

discernible impact on total workforce numbers. This effect predominantly arises from the intensive margin. When viewed at the county level, a pronounced negative impact on the number of workers is evident.

However, a limitation of this establishment-level data is its lack of financial details, rendering it insufficient in accurately gauging the requirements for external finance. By examining a selection of prominent industrial firms—where both employment and financing needs are observable—Benmelech et al. (2019) unveils compelling evidence attributing a significant portion of employment decline to financial frictions. They estimate that in the absence of these frictions, employment within these large enterprises would have surged by approximately 9–30 percent. Aligning with Ziebarth's findings, they observe a more pronounced employment drop in firms situated in counties that experienced at least one national bank failure.

On a broader scale, at the state level, Mladjan (2019) demonstrates that manufacturing sectors, which were heavily reliant on finance, faced sharper output declines compared to their counterparts. The most significant disparities emerged in states profoundly impacted by banking suspensions. The evidence suggests that these bank suspensions could account for up to a third of the manufacturing output slump during the Great Depression. To estimate external access to credit, he uses the proportion of capital expenditure not funded by cash flow from operations, segmented by industry.

2.4 New evidence on bank lending: the 1935 Survey of Credit Conditions

Were firms credit rationed during the Depression? For small and medium-sized manufacturing businesses, the answer leans towards the affirmative. In reaction to claims from leaders of these manufacturing units—allegations that banks were withholding loans and that accessing credit for both working capital and long-term needs was an uphill task—the U.S. Commerce Department embarked on a credit conditions survey in 1935. These leaders argued that this credit scarcity was stalling industrial recovery. Designed by the U.S. Census Bureau, questionnaires were dispatched to all manufacturing entities employing an average of 30–190 wage earners, as recorded in 1933. Of the 16,500 firms approached, over 46 percent responded, with 6,158 responses deemed suitable for analysis. Within this subset, 71 percent were identified as capital borrowers, and 45 percent of these borrowers reported difficulties in securing credit.

Figure 1 delineates the survey's primary findings, segmented by industry. Three standout observations emerge from the data. Firstly, small manufacturers exhibited a strong dependency on banks for working capital, with around 80 percent acknowledging some degree of reliance on bank loans for operational financing. Secondly, a significant portion of these manufacturers also turned to banks for long-term investment funds, with only a minority resorting to security markets for this purpose. Finally, a substantial segment of firms, despite their need for long-term financing assistance, found themselves in the bracket of credit-constrained entities due to the unavailability of sources.

A potential critique of the survey results might be the notion that only financially vulnerable firms participated. Contrary to this, many small manufacturing units reporting credit challenges appeared financially robust and worthy of credit, as indicated by their current and net-worth-to-debt ratios. For instance, of the 1,964 firms that reported borrowing challenges, 42 percent had ratios of 2.0 or higher—a metric considered indicative of safe credit risks at the time. Furthermore, 23 percent boasted current ratios exceeding 3.0. The survey also highlighted that 33 percent of the total firms reporting credit challenges had net-worth-to-debt ratios of 3 or higher, with half of the respondents showcasing ratios of at least 2.0.[4]

3 Data

I discuss the details of the archival data sources used to construct my sample in this section.

3.1 Banking

I sourced data on bank suspensions from the Federal Deposit Insurance Corporation (Federal Deposit Insurance Corporation (1992)) and gathered new county-level data on national banks' conditions from the annual report of the Office of the Comptroller of Currency (OCC). The FDIC's county-level panel, established in 1937 and accessible through ICPSR, has been a cornerstone in prior research about the Great Depression. This dataset captures the annual total number of suspended banks, deposits within the calendar year, and deposits of operational banks as of the year's end from 1920 to 1936. The data encompasses all continental U.S. counties, excluding Wyoming.

However, the FDIC dataset does not offer insights into local banking conditions at the county level during the 1920s and 1930s, aside from suspensions. To address this gap, I digitized tables from the OCC annual reports, revealing aggregated call report statistics (assets and liabilities) of national banks at the county level (United States Office of the Comptroller of the Currency (1920-

[4]Refer to Tables 15 through 26 in the Survey report. The survey collated data on current liabilities, short-term notes, fixed assets, and long-term obligations.

1932)).[5] The assets data encapsulate total loans and discounts, bond and securities values, total due from other banks, real estate values, and cash holdings. Liabilities data encompass total deposits, capital stock, circulation, rediscounts, and surplus and profits. The reporting period spans the last week of March or the first week of April for all years, except 1928 (reported on February 28). I gathered data from 1924 to 1931, marking the OCC's final year of county-level reporting. Every county housing an active national bank during the call date was considered.[6]

3.2 County manufacturing output and spatial industry composition

Manufacturing revenue, wage-earner employment, and the count of manufacturing establishments are derived from the Census of Manufactures. I digitized biennial observations from 1929 to 1935 from the 1937 publication (Bureau (1937)).[7] Additionally, I digitized the Census's special 1927 tabulation as presented in the Market Data Handbook of the United States (Stewart (1929)).

However, the Census's geographic coverage is not comprehensive. For confidentiality, the Census refrains from reporting aggregated data that may inadvertently reveal firm-level information. They consider establishments (individual plants or factories) reporting products valued at $5,000 or above. Consequently, counties with minimal manufacturing operations are omitted. The Depression's adverse impact on manufacturing establishments caused some counties to fall below the reporting threshold in 1931, 1933, or 1935. Hence, data coverage isn't consistent throughout, though my analysis will strictly use balanced samples.[8]

The 1927 Census's special tabulation in the Market Data Handbook of the United States provides pre-Depression industrial compositions. This offers the total count of establishments per manufacturing industry in each county. I grouped these industries into the 15 primary manufacturing sectors outlined in the Survey of Credit Conditions.[9]

A key limitation of this data is that economic significance varies widely across industries. For instance, the average textile industry establishment employed 63 wage-earners nationwide, while the chemical industry's average was about 33 in 1927. I used state-industry averages from the 1927

[5] The OCC annual report can be accessed on FRASER.

[6] I excluded observations with missing (negative) banking variables, leading to the omission of 23 counties.

[7] To my knowledge, this is a novel source, though some have previously used plant-level or state-level variables from the Census.

[8] For a deeper dive into the Census of Manufactures and its coverage across the years, refer to Vickers and Ziebarth (2019)

[9] The industries include food and kindred products, textiles, iron and steel, forest products, leather, rubber, paper and allied products, printing and publishing, chemicals, petroleum and coal, stone/clay/glass, nonferrous metals, machinery, transportation equipment, and miscellaneous.

Census reports to transform count distributions into revenue and employment distributions.[10]

Lastly, as covered in Section 2.4, I utilized the aggregated results from the 1935 Survey as industry-level metrics of financial constraints, as outlined in Figure 1, Panel B. My analysis draws from three key data points from Tables 2 and 26 of the Survey: (1) the number of borrowing firms, (2) the number of firms struggling to borrow, and (3) the subset of borrowers facing borrowing challenges. Using estimated product shares, I calculated the county-level, industry-weighted average of credit challenges. Figure 2 showcases the distribution of constraints in the sample of counties, leveraging each of the mentioned data points and the aforementioned weighing schemes.

3.3 Plant-level manufacturing data

The plant-level manufacturing data from the Census of Manufactures for 1929, 1931, 1933, and 1935 was first digitized by Vickers and Ziebarth (2023). From the complete 1929 plant dataset, I refined my sample to 582 plants in the Atlanta border regions. The criteria were plants: (a) reporting between 30 and 190 annual wage earners[11], and (b) that remained consistent in the database post-1929 without any hiatus. This filtering aims to minimize the effects of measurement errors and potential sample selection biases.

I then integrated this plant-level data with the industry-level financing constraints measures and county-level characteristics described earlier. A notable challenge was that the vast majority of these plants operated in two industries, both possessing nearly identical constraint measures. This similarity made a nuanced analysis based on these constraints unfeasible. However, in the latter stages of the analysis, I still utilize the plant-level data to discern variations across the Atlanta border, setting aside the constraints' differential impacts.

Figure 3 visualizes the survival rate of the plants in my final sample. A plant is marked as operational in year t if it is present in the database in that year. The raw data reveals that Atlanta plants survived at a higher rate throughout the Depression.

[10] To go from count distributions to revenue and employment distributions, I multiply count shares by state-industry averages of per-establishment wages, number of wage-earners, and output. The state-industry averages come from the same reports of the Census in 1927. To help illustrate, consider a county in Michigan that reported 10 establishments in textile manufacturing and 5 in iron and steel manufacturing in 1927. If Michigan's average output per textile plant is half that of a steel plant, the estimated output shares for this county would be 50:50. I compute analogous shares using total wages paid to wage-earners, total number of wage earners, and the number of establishments.

[11] These thresholds align with the Credit survey discussed earlier.

3.4 Other Data

My spatial data analysis involved two primary components. First, using Geographic Information Systems (GIS) software, I identified counties within a 50-mile radius of all Federal Reserve Districts. These bordering counties were further segmented based on their proximity to specific Federal Reserve Districts (e.g., Atlanta – St. Louis segment). My approach closely mirrors the method employed by Jalil (2014). Figure 4 delineates the Atlanta Federal Reserve District border regions.

Second, I transcribed the consumer markets map from the U.S. Department of Commerce Market Data Handbook. This 1927 map categorizes counties into distinct consumer markets. These 632 areas were crafted from a consumer-centric viewpoint, based on an initiative by the International Magazine Company to optimize sales efficiency. The selection of trading centers or cities was based on parameters like population, geography, economic sources, transportation, and trade channels.

3.5 Summary Statistics

Table 1 presents the summary statistics for both counties (Panel A) and manufacturing plants (Panel B). Overall, county-level banking variables are available for 365 border counties across nine years and for 364 counties for a single year (1934, due to missing bank data for one county). The 1204-1230 observations for manufacturing span between 190-210 border counties reporting manufacturing activities biennially from 1927 to 1937. The aggregated call reports for the condition of national banks cover only 168 to 184 border counties.

A consistent observation across all counties is the pronounced negative correlation between manufacturing activity and bank failures. Figure 5 illustrates this with a binscatter of county-level changes in the logarithm of nominal per-capita manufacturing output between 1933 and 1929 (y-axis) against the cumulative number of bank suspensions as a proportion of all 1927 banks (x-axis). This figure comprises only those counties with at least one suspended bank and documented manufacturing activity in both 1933 and 1929 (totaling 1623 counties).

4 Policy regimes and banking outcomes across Federal Reserve borders

I begin my analysis by probing if banks within the Atlanta District counties failed at a lower rate compared to their counterparts just outside the district. Corroborating the main findings of Jalil (2014), I find that the answer is a resounding "yes". This pattern is particularly pronounced in 1929 and 1930 when policy disparities between the Atlanta District and other Federal Reserve banks were most evident. I further delve into the robustness of these observations.

4.1 Empirical Design

My primary outcome of interest is the rate of bank failure. At the county level, I gauge this using two metrics: suspensions and the proportion of deposits retained by active banks at year-end, with the latter assessed against pre-Depression (1927) data on banks and total deposits. Both these metrics are indispensable, as banks might recommence operations post a brief suspension with minimal alteration in lending trends. However, the suspensions dataset does not differentiate between permanent liquidations and temporary suspensions. Hence, the end-of-year deposit values, reflecting more enduring banking sector shocks, act as a supplementary measure. Additionally, I introduce a binary variable, which is set to 1 if a bank was suspended within the year and 0 otherwise, as a mechanism to mitigate the influence of outliers. This variable is delineated for both national and state-chartered banks.

I introduce various control variables in my analysis. I compute two measures to account for unobserved time-varying confounders due to fundamental banking differences between counties. First, I define the pre-Depression (1927) "capitalization ratio" as the total surplus and capital divided by total assets. Higher capitalization ratios reflect lower leverage of the banking sector and a higher probability of withstanding depositor withdrawals. Second, I compute logarithmic loan growth between 1924 and 1929. Higher loan growth could potentially correlate with decreased loan quality and a higher default rate in the 1930s. Finally, to control for non-financing industry-level time-varying confounders, I use the 1927 manufacturing revenue by industry shares in order to identify the dominant industry in each county. I interact the dominant industry dummy variable with time dummies to account for national industry trends.

Are there underlying differences between counties that could potentially explain differences in bank failure rates? I use several variables from the 1930 Decennial Census to check for significant differences among counties across the border. I define the unemployment rate in 1930 as total unemployed over total population, "crop failure" as the proportion of land crops failed divided by total cropland in the county, and "labor force participation" as gainfully employed workers divided by total county population. Table 2 shows that counties on the border of the Atlanta District were similar. Notably, the counties did not differ in their suspension rates as of 1927 and had the same (estimated) proportion of manufacturing firms facing financial constraints. There are some differences, but they are small. For example, although fewer banks were in the average county inside the District, the total amount of deposits in 1928 was the same. There were slightly fewer manufacturing establishments on average, and the farms were smaller.

I compare county-level outcome variables before and after the onset of the Great Depression across the District boundary using a dynamic difference-in-differences design:

$$S_{jk} = \alpha_j + \beta_k + \sum_{i=1926}^{1933} (Atl_j T_i) \cdot \gamma_i + X_{jk} + \epsilon_{jk} \tag{4.1}$$

where T_i is a year dummy taking the value of 1 if $i = k$ and 0 otherwise and Atl_j takes the value of 1 if the county belongs to the Atlanta District and 0 otherwise. I use county (α_j) and year (β_k) fixed effects to account for all unobserved but static county variables and national trends in bank failure rates. The control variables in X_{jk} include border-region by year fixed effects and, in various specifications, proxies for baseline banking and manufacturing interacted with year dummies. The coefficients of interest are γ_i, which capture the time-varying difference in outcome S in counties inside the District compared to average outcomes within border regions. The omitted interaction year is 1927, and I cluster the standard errors at the county level.

4.2 Baseline Results

Table 3 presents the replication results of Jalil (2014) using the specification in 4.1. Panel A gives the estimates of the coefficients of interest when the outcome variables are suspension rates - proportion of suspended to non-suspended banks - and Panel B presents them for active rates - proportion of active to 1927 active banks and deposits.

In both panels, the estimates show that county bank failure occurred at similar rates around the Atlanta border before the Depression, relative to 1927 levels and controlling for local shocks inside a border region. The results in column (1) show that banks inside the District counties failed at rates 6 and 5 percent lower in 1929 and 1930, respectively, which is consistent with the results in Jalil (2014). At the mean number of banks, this translates to 0.24 and 0.2 fewer suspended banks in each year, or approximately 0.45 more banks remaining on average in a county after 1930 in the Atlanta District. After 1931, the coefficients are not significantly different than zero. These years are also when more banks closed to due solvency issues and when there was a convergence of policy between Atlanta and its neighboring districts. Columns (2) and (3) show that the effect on the suspension rate is similar for both state and national banks. Finally, columns (4) – (6) show that a county in the District was 14 percent less likely to experience any bank failure in 1929, but the effect does not extend to 1930.

In Panel B, I show that the qualitative evidence is very similar when considering the number and deposits of active banks at the end of each year. On average, the estimates reveal that counties in the Atlanta region contained 10 percent more banks by the end of 1930 and 7 percent more deposits compared to banks in neighboring counties after accounting for time-invariant county level characteristics. These results are qualitatively similar to those using suspensions as the outcome variable in Panel A. Interestingly, these effects are pronounced for nationally-chartered banks, where the effect is present even at the end of 1931.

4.3 Robustness Results

Despite generally balanced counties on either side of the border and the plausibly exogenous historical placement of Federal Reserve boundaries, concerns about interpreting the results in Table 3 as the causal effects of the Atlanta Federal Reserve policies remain. Tables 4 and 5 present the results with additional controls and different samples. The stability of the baseline estimates in columns (2) - (11) provides strong evidence in favor of a causal interpretation.

The first concern is that the small pre-Depression differences in county characteristics across the Atlanta border as shown in Table 2(e.g., average farm size) could contribute to the divergence in bank failure rates during 1929 and 1930. For example, if smaller farms tend to default at higher rates on mortgages, the presence of relatively smaller farms just outside the District may explain larger bank failure rates in 1929 and 1930. In column (2), I control for these pre-Depression differences by interacting the non-balanced covariates with time dummies, and I do not find any change in the baseline estimates.

The second concern is that omitted underlying differences in bank conditions – such as bank leverage or historical loan growth before the Depression – could be causing the differences in bank failures. Using the county-level OCC data on nationally-chartered banks, I define the pre-Depression (1927) "capitalization ratio" as the total surplus and capital divided by total assets. Higher capitalization ratios reflect lower leverage of the banking sector and a higher probability of withstanding depositor withdrawals. I also compute logarithmic loan growth between 1924 and 1929. Higher loan growth could potentially correlate with decreased loan quality and a higher default rate in the 1930s. I interact both county-level measures with time dummies and include them in the specification. The results are shown in column (3) and, again, I do not find any meaningful differences with the baseline.

The third concern is that firms in counties just outside the border are in more pro-cyclical industries than are those just inside the Atlanta region and thus caused more strain on the banking sector in 1929 and 1930. To control for industry-level time-varying confounders, I use the 1927 manufacturing revenue by industry shares in order to identify the dominant industry in each county. I interact the dominant industry dummy variable with time dummies to capture dynamic effects and include them in the specification in column (4). The results are slightly attenuated but remain significant.

In columns (5) - (13) I address the remaining concerns of sample selection and standard error clustering. In column (5), I limit the analysis to the counties in Mississippi, and I find larger, but noisier, point estimates consistent with Richardson and Troost (2009) and Ziebarth (2013). Next, to account for unobserved differences in state-level policies, I limit the analysis to counties that belong to consumer market areas bisected by the Federal Reserve border.[12] I then show that potential spillovers across the region are not driving the results by estimating the specification with and without counties within 25 miles (columns 7 and 8). Column 9 reports spatial standard errors using the methods of Colella et al. (2019) and 100 kilometer cutoff distance. Finally, columns 10 - 13 exclude outside of the specified border region. I find quantitatively similar results even after these counties are excluded.

4.3.1 Placebo tests

Next, I conduct a randomization test in which I assign placebo borders within each border-region to all counties in the sample. I do this 1,000 times and estimate equation 4.1 using the main outcome variable, bank suspension rates, and collect the estimated coefficients in γ for 1929 and 1930. I plot the two distributions in Figure 6. The vertical lines indicate the baseline effects estimated using the true Atlanta Federal Reserve borders. As is clear from the figure, the true estimates lie in the tail of the distribution (98th percentile) of the placebo estimates, and the distribution of placebo estimates for both years is centered around zero. These results provide supporting evidence that the estimated baseline impacts of the differing policies of the Atlanta Fed on banking failures is unlikely to have occurred by chance.

Finally, instead of permuting counties into placebo borders, I extend the analysis to actual border counties in regions that did not differ in their policy regimes. If the differences in Federal

[12] With the exception of Mississippi and Tennessee, the border runs along state lines.

Reserve policies are driving these outcomes – and the robustness exercises have pointed to a causal interpretation – then it must also be true that the *absence* of these differences should result in *little or no change* in bank failures. In districts that did not differ in their policies from their neighbors, what is the prevalence of significant differences in bank failures in their border counties? I re-estimate the main specification for the four districts around Atlanta (Kansas City, Dallas, Cleveland, Richmond) and plot the results in Figure 7. The variable Atl_k is defined analogously for each specification: it takes the value of 1 if the county is located inside the Federal Reserve district specified and 0 if it is located in the border region of that same district but outside the border. In the same figure, I plot the Atlanta estimates in red for reference. While some coefficients are statistically large - namely, Dallas and Cleveland counties in 1932 and Richmond counties that appeared worse off throughout - the baseline results for the Atlanta district are still relatively large in 1929 and 1930.

4.3.2 What happened to bank lending?

While the results in the previous subsection provide evidence that the incidence of bank failure differed significantly based on Federal Reserve policies, they say little about how the non-failed banks responded. Banks may respond to local banking panics by refusing to lend and, instead, amassing liquidity and safe assets like government bonds (Cornett et al. (2011)).

Ideally, a full panel of national and state-level banks would be available through 1937. However, the extant data from the OCC is for national banks only and for years up to 1931. Using this limited sample, I next investigate differences in the county-level composition of assets and liabilities for national banks across the Atlanta border.

Table 6 presents the estimates of specification 4.1 using the available OCC data between 1926 and 1931. Columns (1) - (5) use log total loans, bonds, assets, surplus, and number of banks as outcome variables while columns (6) - (9) use the same variables on a per-bank basis. The result in column (1) shows that national banks had in total, on average, 11 percent more outstanding loans as of 1931 inside the District than outside it, as compared to those banks in counties outside the border. They did not, as columns (2) and (3) show, own more bonds or have more assets, but they did report more surplus and profits.

5 Did banking suspensions lead to worse local economic outcomes?

I have shown so far that the commercial banking sector inside the District fared relatively better during the first two years of the Depression than it did just outside it. If the hypothesis that bank suspensions lead to more costs of credit intermediation and if bank lending is an essential input to production, then, *ceteris paribus*, we should see less economic activity outside the district than inside it.

5.1 County Level Results

The empirical strategy is unchanged from the one described in the previous section: using a dynamic difference-in-differences design, I compare manufacturing outcomes between counties 50 miles within and outside the District border, before and after the onset of the Great Depression, accounting for time-varying border-region confounders. I add, however, an additional explanatory variable: the average estimated credit difficulty at the county level based on 1927 count data. I code the variable $constraint_j$ as a binary variable taking the value of 1 if county j is above the median and zero otherwise. In all specifications, the omitted interaction year is 1927, and standard errors are clustered at the county level.

$$S_{jk} = \alpha_j + \beta_k + \sum_{i=1926}^{1933} (Atl_j T_i) \cdot \gamma_i + \sum_{i=1926}^{1933} (constraint_j T_i) \cdot \omega_i + X_{jk} + \epsilon_{jk} \tag{5.1}$$

To check whether the higher incidence of banking failures outside region was worse for financially constrained counties, I conduct a difference-in-difference-in-differences analysis, comparing geographically across the District border, below and above median estimated credit difficulty, and across years where the variable $post_k$ takes the value of 1 for all years k after 1929.

$$S_{jk} = \alpha_j + \beta_k + (constraint_j \times Atl_j \times post_k) \cdot \nu_i + X_{jk} + \epsilon_{jk} \tag{5.2}$$

Table 7 shows the estimated coefficients of the difference-in-differences specification using manufacturing outcomes. Columns (1) - (4) use log output (revenue), log county manufacturing wages, log number of establishments, and log number of wage-earners as the outcome variable, respectively. To ensure that the results are not driven by a handful of outliers, I discard counties in the bottom two or top two percentiles in the change in manufacturing revenue between 1929 and 1931. I control for differences in pre-period banking by interacting the capitalization ratio and log loan growth between 1924 and 1929 with year fixed effects. Finally, to account for differences in business failure rates based on firm size, I include terciles of average manufacturing plant size (defined as number of workers divided by number of plants in 1929) by year fixed effects. In columns (5) - (8), I add the estimated credit difficulty by year fixed effects to the specification.

Unlike the banking suspension and lending results shown so far, I do not find evidence that local manufacturing fared better inside the District. On the contrary, the results show that local economic outcomes were worse across all the outcome variables. Consider the estimates in column (1): the results show a 3 to 10 percent decrease in annual revenue for the manufacturing sector in the Atlanta counties, though noisily estimated. On the other hand, I do find that credit difficulty correlated negatively and significantly with manufacturing output. The estimated effects are all highly significant and stable across the outcome variables, implying that counties with estimated above median credit difficulties had outcomes 20 to 30 percent lower than those without difficulty after, but not before, 1929.

This negative effect is not driven by differential credit demand across counties, as proxied by pre-Depression industrial composition. Figure 8 plots the difference-in-differences estimates ω_i for each year using total borrowing firms, total firms with credit difficulty, and total borrowers with credit difficulty as a proportion of all firms as three measures of $constraint_j$. Each variable is defined as an indicator taking the value of 1 if the county is above the sample median, and 0 otherwise. The figure shows that borrowing activity (green) cannot explain the difference in outcomes.

However, I do not find that the effect of financial constraints was magnified in counties that also experienced a banking panic. Table 8 reports the result of the triple difference. That is, the coefficient estimate on triple interaction term in the last row implies that manufacturing activity was not different across the border in counties that, ex-ante, were more likely to suffer from financial rationing, as was the hypothesis.

5.2 Plant Level Results

One concern with the county level analysis is that it does not provide information about firm exists nor is it able to distinguish, or control for, important heterogeneity with respect to firm size or internal capital markets. Consistent with Figure 3, I find that plants in the Atlanta region did, in fact, survive at higher rates during the Depression. However, consistent with the county-level results, I find *negative* or null results on wages, value of output, and the number of wage earners employed in plants in the Atlanta region.

I compare firm-level outcome variables before and after the onset of the Great Depression across the District boundary in an analogous way. I estimate the following specification:

$$S_{i(j)k} = \alpha_i + \beta_k + \sum_{o=1929}^{1933} (Atl_j T_o) \cdot \gamma_i + X_{i(j)k} + \epsilon_{i(j)k} \tag{5.3}$$

where T_o is a year dummy taking the value of 1 if $o = k$ and 0 otherwise and Atl_j takes the value of 1 if the firm operated in county j located in the Atlanta District and 0 otherwise. I use firm ($\alpha_{i(j)}$) and year (β_k) fixed effects to account for all unobserved but static firm variables and national trends. The control variables in X_{jk} include border-region by year fixed effects, firm size (in 1929) quartile by year fixed effects, and industry by year fixed effects. The coefficients of interest are, again, γ_i, which capture the time-varying difference in outcome S in firms inside the District compared to average outcomes within border regions. The omitted interaction year is 1929, and I cluster the standard errors at the county level.

Table 9 reports the results. The estimates in Panel A were derived using all plants while those in Panel B excluded plants that reported being a subsidiary plant. Consistent with Figure 3, I find that plants survived at higher rates throughout the Depression just inside Atlanta as compared to those plants outside of it. However, the higher survival did not manifest in more local economic activity. In fact, those plants in Atlanta reduced their wage-earning labor force and had lower output.

6 Summary

This paper used novel, archival, panel data on local manufacturing and banking conditions in the United States to investigate the link between policy, bank failures, and, ultimately, firm production and employment. Using the divergent policies enacted by the Atlanta Federal Reserve Bank as my empirical laboratory, I find that credit conditions appeared more favorable in the early years of the Depression inside counties of the Atlanta district. The robustness of this result, as well as a host of placebo checks, points to a causal interpretation of how lender of last resort policies from the Federal Reserve stymied banking panics.

I then combined industry-level credit survey and 1927 industry-by-county data to construct measures of financial constraints for each county. Using manufacturing panel data, I do not find evidence to support the hypothesis that banking panics translated to more local economic distress to counties just outside Atlanta, which contrasts with the results of the existing literature. Manufacturing outcomes were worse, not better, in counties inside the Atlanta region, despite having more banking resources. I do find strong evidence that the county-level financing constraints predict worse outcomes after, but not before, the Depression. However, the interaction between pre-Depression measures of financial constraints and banking panics during the Depression is, surprisingly, not an important determinant of local economic outcomes. Further research should explore the explanations as to why there was a lack of a downstream effect on firms. One explanation, should the data become available, is that the banking sector became more risk-averse and did not lend to businesses.

References

Benmelech, Efraim, Carola Frydman, and Dimitris Papanikolaou, "Financial frictions and employment during the great depression," *Journal of Financial Economics*, 2019, *133* (3), 541–563.

Bernanke, Ben S, "Non-monetary effects of the financial crisis in the propagation of the Great Depression," Technical Report, National Bureau of Economic Research 1983.

Bureau, U.S. Census, "Survey of reports of credit and capital difficulties submitted by small manufacturers," 1935.

_ , "Biennial Census of Manufactures. Alabama to Wyoming.," *Washington: U.S. Government Print Office*, 1937.

Calomiris, Charles W and Joseph R Mason, "Fundamentals, panics, and bank distress during the depression," *American Economic Review*, 2003, *93* (5), 1615–1647.

Colella, Fabrizio, Rafael Lalive, Seyhun Orcan Sakalli, and Mathias Thoenig, "Inference with arbitrary clustering," 2019.

Cornett, Marcia Millon, Jamie John McNutt, Philip E Strahan, and Hassan Tehranian, "Liquidity risk management and credit supply in the financial crisis," *Journal of financial economics*, 2011, *101* (2), 297–312.

Federal Deposit Insurance Corporation, "Federal Deposit Insurance Corporation Data on Banks in the United States, 1920 - 1936," Inter-university Consortium for Political and Social Research 1992. DOI: https://doi.org/10.3886/ICPSR0007.v1.

Friedman, Milton and Anna Jacobson Schwartz, *A monetary history of the United States, 1867-1960*, Vol. 1, Princeton University Press, 1963.

Gamble, Richard H, "A History of the Federal Reserve Bank of Atlanta," 1989.

Jalil, Andrew J, "Monetary intervention really did mitigate banking panics during the Great Depression: Evidence along the Atlanta Federal Reserve District border," *The Journal of Economic History*, 2014, *74* (1), 259–273.

Mladjan, Mrdjan, "Accelerating into the abyss: Financial dependence and the great depression," *Available at SSRN 2366291*, 2019.

Richardson, Gary, "Categories and causes of bank distress during the great depression, 1929–1933: The illiquidity versus insolvency debate revisited," *Explorations in Economic History*, 2007, *44* (4), 588–607.

_ **and William Troost**, "Monetary intervention mitigated banking panics during the great depression: quasi-experimental evidence from a federal reserve district border, 1929–1933," *Journal of Political Economy*, 2009, *117* (6), 1031–1073.

Romer, Christina D, "The great crash and the onset of the great depression," *The Quarterly Journal of Economics*, 1990, *105* (3), 597–624.

Stewart, Paul William, *Market Data Handbook of the United States*, Washington: U. S. Govt. Print. Offs, 1929.

Temin, Peter, "Lessons for the Present from the Great Depression," *The American Economic Review*, 1976, *66* (2), 40–45.

United States Office of the Comptroller of the Currency, "Annual Report of the Comptroller of the Currency," 1920-1932.

Vickers, Chris and Nicolas L. Ziebarth, "United States Census of Manufactures, 1929-1935," Inter-university Consortium for Political and Social Research 2023. DOI: https://doi.org/10.3886/ICPSR37114.v2.

_ **and NL Ziebarth**, "The Census of Manufactures: An Overview," in Claude Diebolt and Michael Haupert, eds., *Handbook of Cliometrics*, 2019.

Wheelock, David C, "The Banking Panics of the Great Depression," *The Journal of Economic History*, 1997, *57* (4), 977–978.

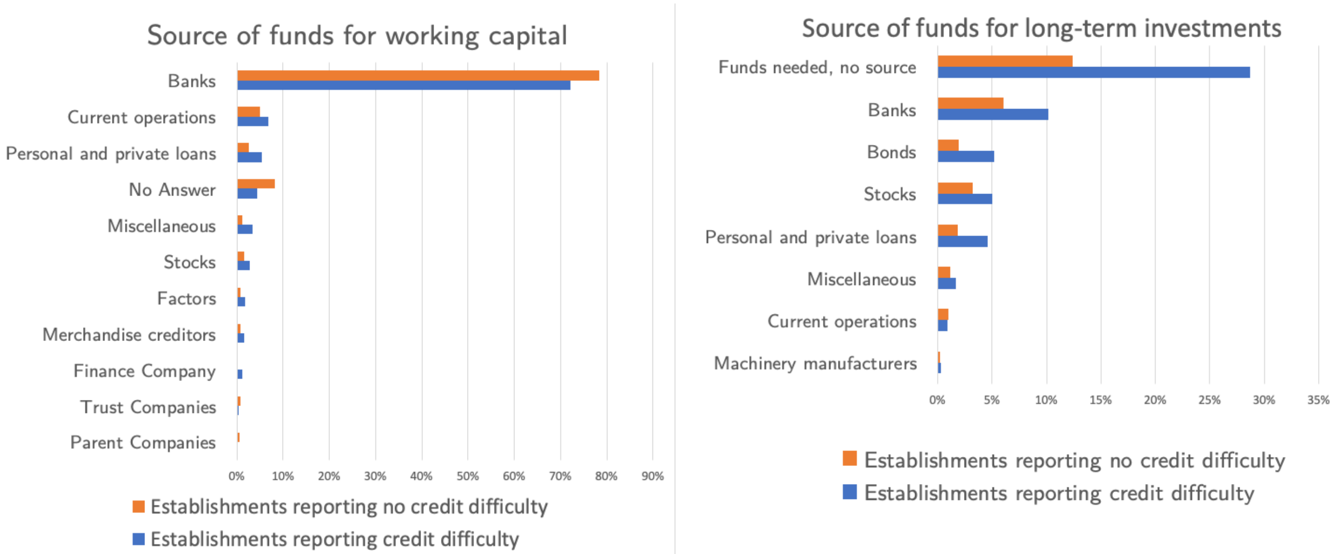
White, Eugene Nelson, "A Reinterpretation of the Banking Crisis of 1930," *The Journal of Economic History*, 1984, *44* (1), 119–138.

Wicker, Elmus, *The banking panics of the Great Depression*, Cambridge University Press, 2000.

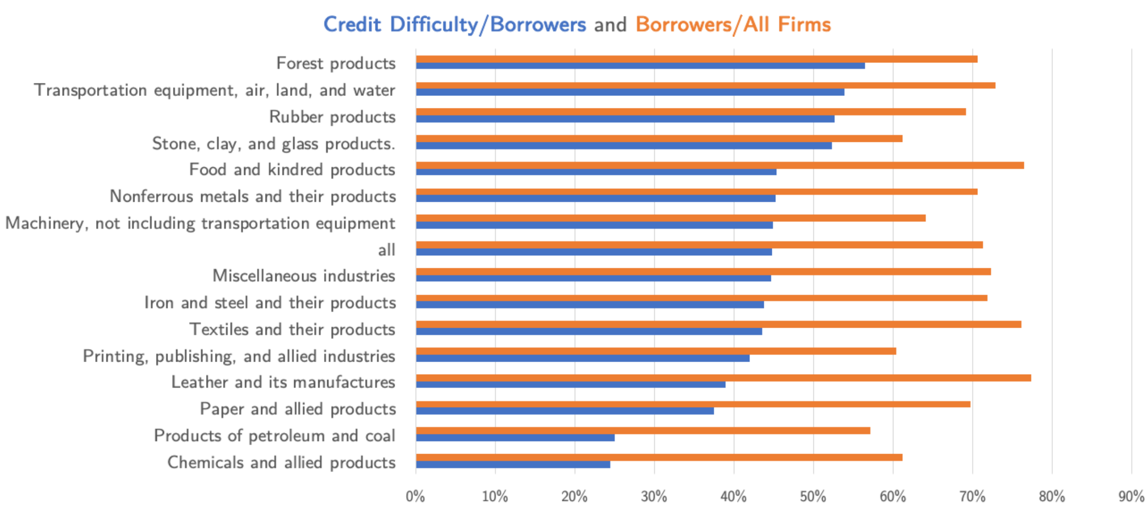
Ziebarth, Nicolas L, "Identifying the effects of bank failures from a natural experiment in Mississippi during the Great Depression," *American Economic Journal: Macroeconomics*, 2013, *5* (1), 81–101.

Figure 1: Financing of Small and Medium U.S. Manufacturers, 1935

Panel A: Sources of funds

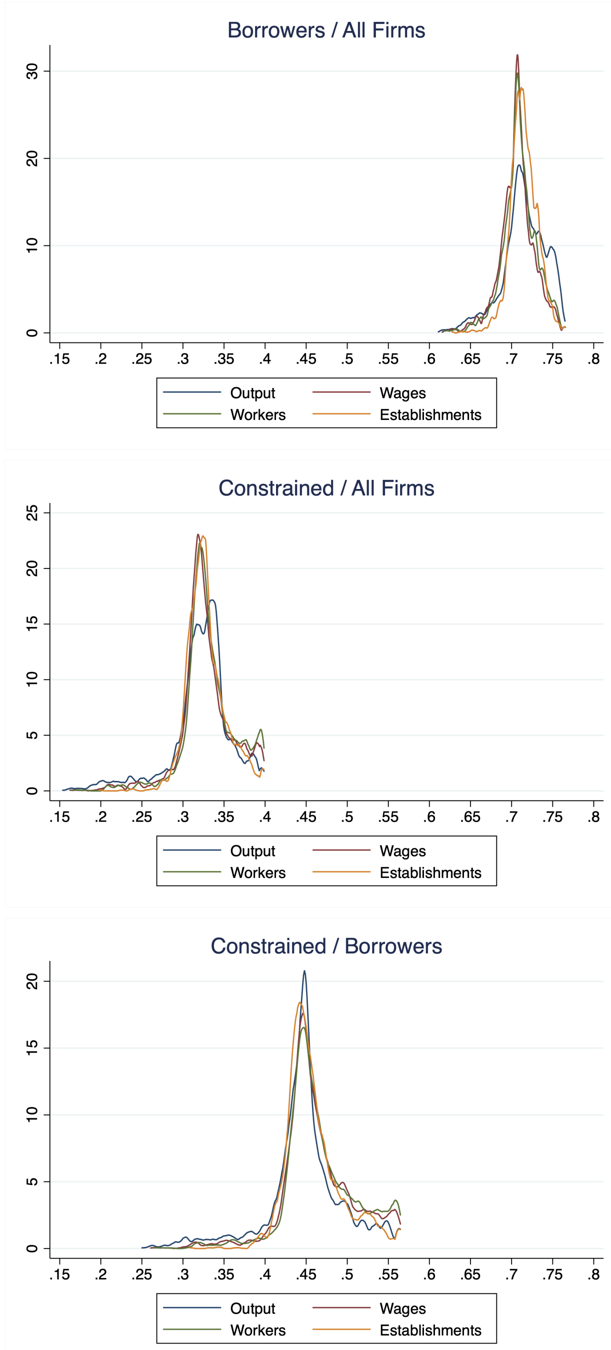


Panel B: Credit difficulty and demand by industry



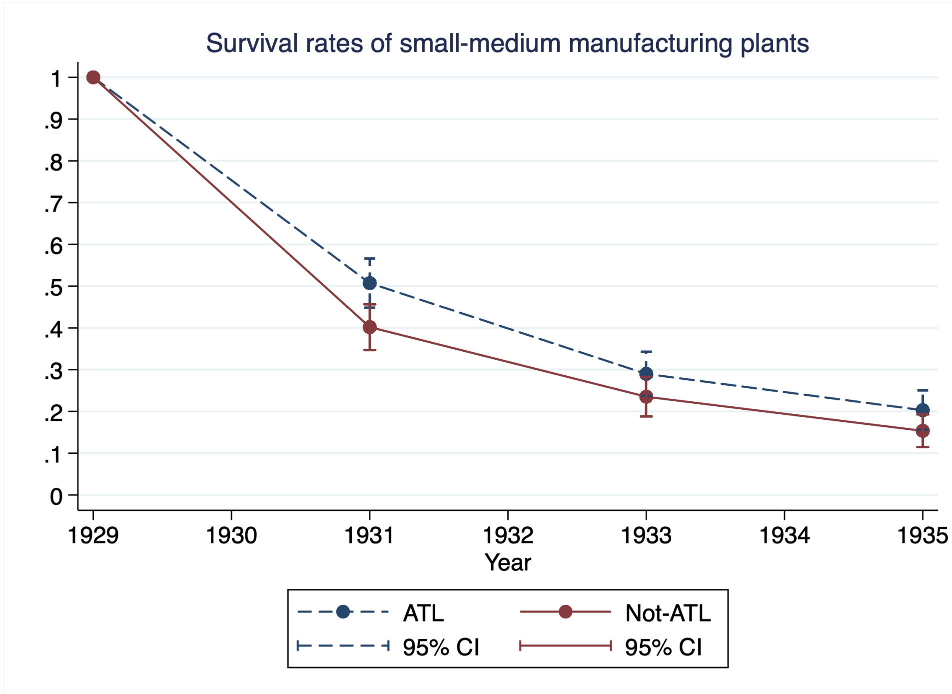
Notes: This figure presents the results of a survey of 6,158 manufacturing firms from the *Survey of reports of credit and capital difficulties* (1935) conducted by the Business Advisory Council for the Department of Commerce. See Section 2.4 for a complete explanation of the representativeness of the sample and survey collection methods. Panel A: author calculation from Table 26 of the *Survey*. Panel B: author calculation of Table 6 of the *Survey*.

Figure 2: Distribution of County-Level Financing Constraints of Small - Medium Manufacturers



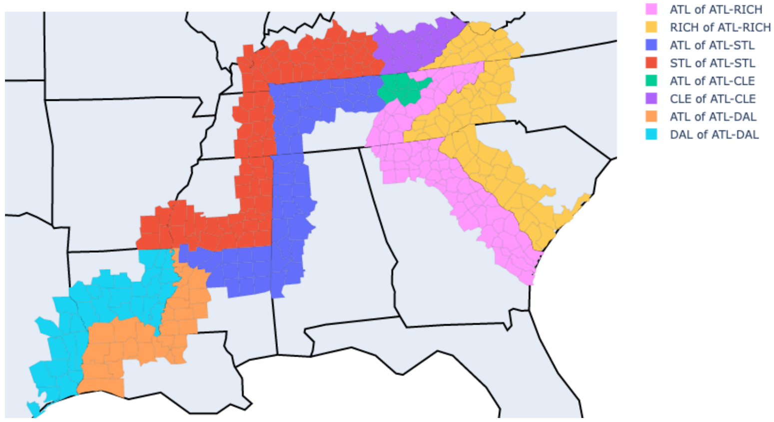
Notes: This figure plots the distribution of county-level financing constraints computed using industry-level measures as reported in the *Survey of reports of credit and capital difficulties* (1935) and industry by county count data as of 1927. Blue line weighs the count data by state-level average output per industry. Red line weighs the counts by state-level industry wages, while the green and yellow lines weigh it by the state-level number of workers and the state-level number of establishments by industry, respectively. "Borrower / All Firms" is the estimated number of borrowers divided by total number of manufacturing firms within a county. "Constrained / All Firms" is the estimated proportion of all manufacturing firms who reported being unable to find financing in 1935. "Constrained / Borrowers" is the estimated proportion of all borrower who also report being unable to find financing in 1935.

Figure 3: Survival rate of small-medium manufacturing plants in the border regions



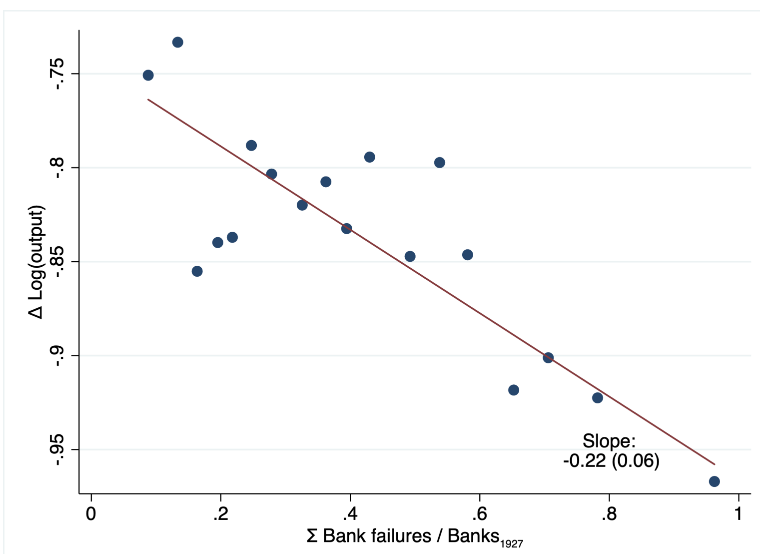
Notes: This figure plots the survival rate of small-medium sized manufacturing plants in the Atlanta Fed border region in the early 1930s. Dashed lines denotes the proportion of firms inside the Atlanta Fed region, and the solid line denotes it for firms just outside the region. 95 percent confidence intervals denoted by the bars. See text for description of the data source.

Figure 4: Counties around the Atlanta Federal Reserve District Border



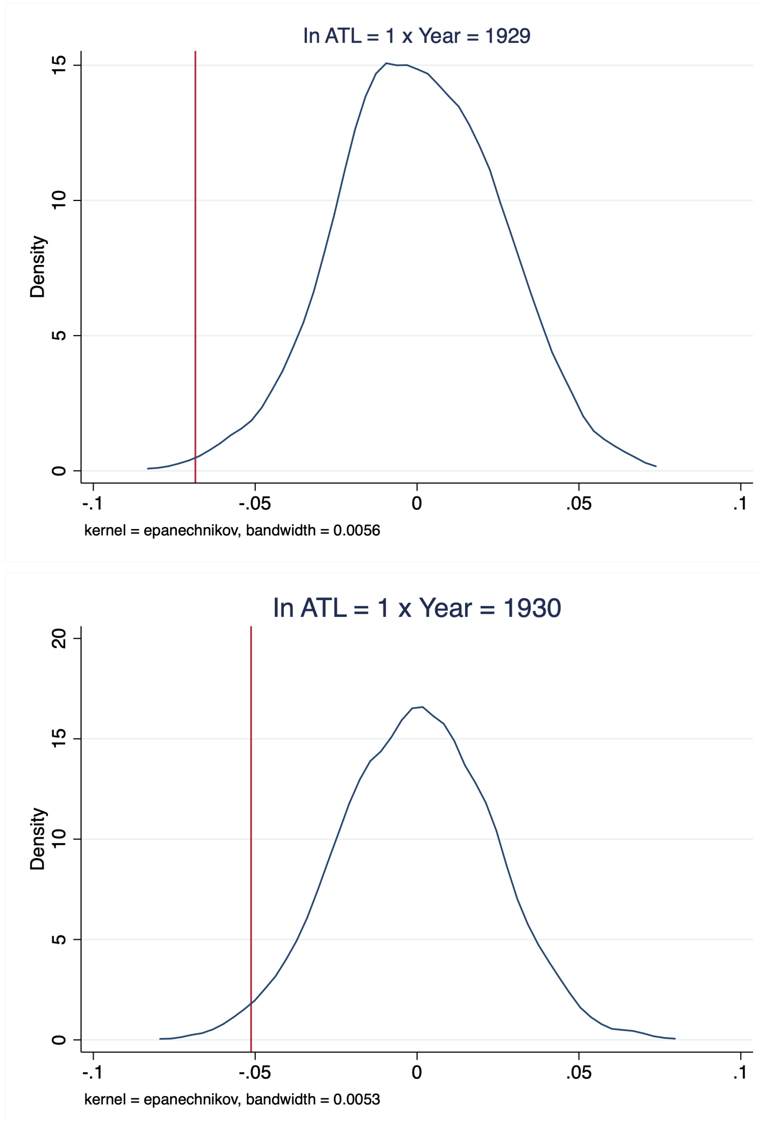
Notes: This maps shows the border regions of the Atlanta Federal Reserve district. The four border regions are: Atlanta - St. Louis, Atlanta - Dallas, Atlanta - Cleveland, and Atlanta - Richmond. The 50 mile buffer was generated using Geographic Information System (GIS) software the the 1996 Census publication of the Census bureau.

Figure 5: Manufacturing decline during the Great Depression and banking failures



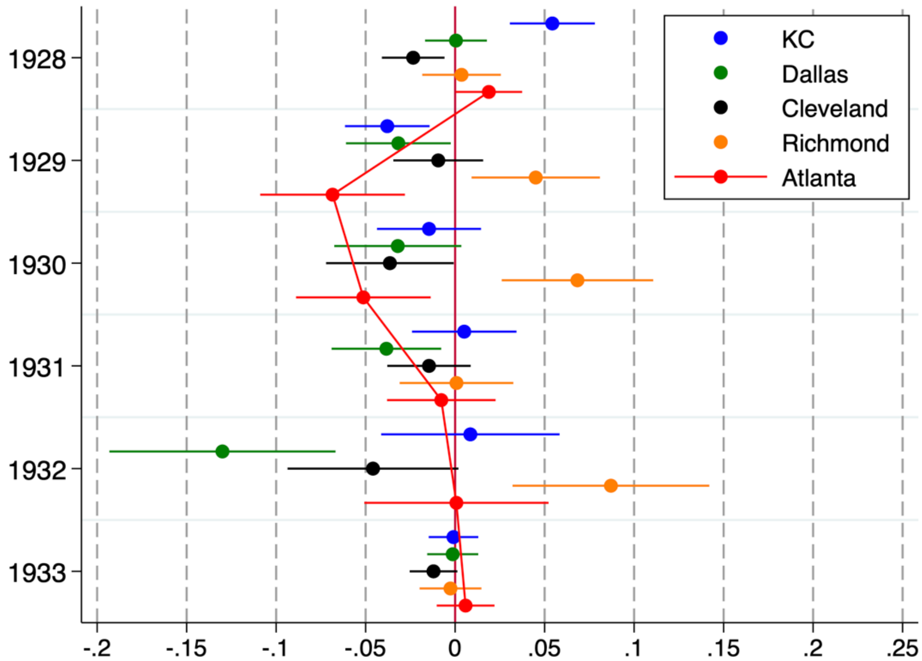
Notes: This figure plots a binscatter plot of county-level change in the log of manufacturing output between 1933 and 1929 (y-axis) and the cumulative number of bank suspensions as a proportion of all banks in 1927 (x-axis). Only the counties with at least one suspended bank and manufacturing activity in 1933 and 1929 are included (1623 counties). Manufacturing data comes from Census of Manufactures and the banking data comes from the FDIC.

Figure 6: Distribution of Estimated Coefficients of 1,000 Placebo Border Permutations



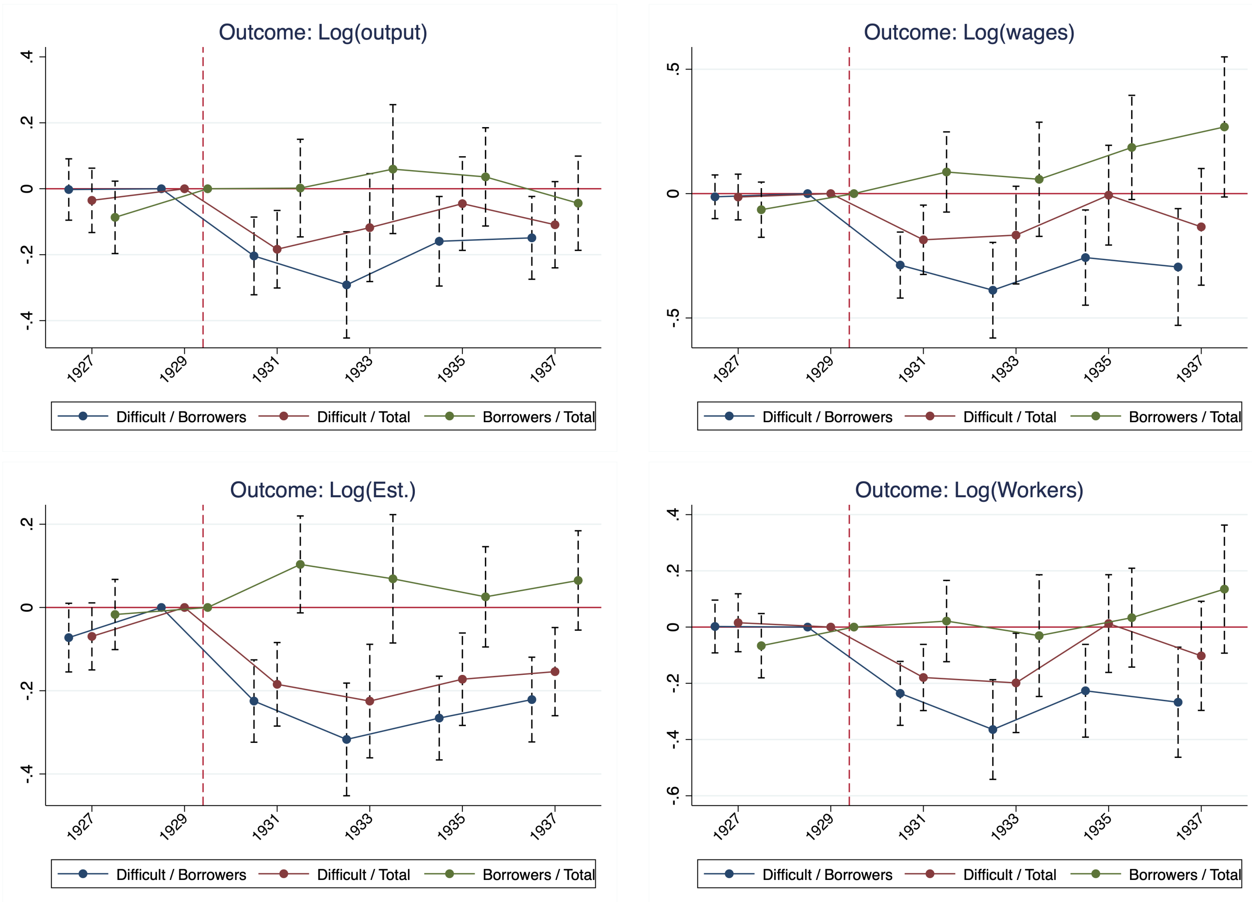
Notes: This figure plots the distributions of placebo effects computed using a randomization test as follows: I assign each county within each border-region without replacement a placebo border with uniform probability. I conduct this 1,000 times and re-estimate Equation 4.1 and store the 1929 and 1930 interaction terms of interest. The outcome variable is the annual suspension rate of all banks within a county. Control variables in X_{jk} include only border-region by year fixed effects. Vertical line shows the point estimates using actual borders.

Figure 7: Estimates across Federal Reserve Boundaries



Notes: This figure plots the estimated coefficients γ_i from Equation 4.1 using the Atlanta, Richmond, Cleveland, Dallas, and Kansas City Federal Reserve border regions in separate regressions. The outcome variable is the annual suspension rate of all banks within a county. Control variables in X_{jk} include only border-region by year fixed effects. Standard errors are clustered at the county level. 90 percent confidence interval shown.

Figure 8: Explaining the Drop in Manufacturing using Credit Demand vs. Credit Difficulty



Notes: This figure plots the estimated coefficients of the *constraint* x year fixed effects in the dynamic difference-in-differences specification of Equation 5.1. The blue line shows the estimates when *constraint* is defined as the estimated share of manufacturing borrowers experiencing difficulty obtaining credit. The green lines shows them when *constraint* is defined as the estimated share of all firms borrowing. Finally, the red line shows them when *constraint* is defined as number of firms reporting borrowing difficulty over total firms. Controls include boundary-region (e.g., Atlanta-St. Louis border) by year fixed effects and the omitted baseline interaction is 1927 across all specifications. The outcome variables come from Census of Manufactures. The time period is 1927 - 1937 (biennially) for all specifications and the standard errors are clustered at the county level. 90 percent confidence intervals shown.

Table 1: Summary Statistics

Panel A: County

	count	mean	sd	p5	p25	p50	p75	p95
Banks (active - all)	4,014	3.44	2.53	1.00	2.00	3.00	5.00	8.00
Banks (suspended - all)	4,014	0.16	0.53	0.00	0.00	0.00	0.00	1.00
Banks (suspended - national)	4,014	0.03	0.18	0.00	0.00	0.00	0.00	0.00
Banks (suspended - state)	4,014	0.13	0.45	0.00	0.00	0.00	0.00	1.00
Deposits (active - all)	4,014	2.64	8.09	0.05	0.40	0.92	1.97	7.66
Deposits (suspended - all)	4,014	0.09	0.78	0.00	0.00	0.00	0.00	0.31
Deposits (suspended - national)	4,014	0.03	0.48	0.00	0.00	0.00	0.00	0.00
Deposits (suspended - state)	4,014	0.05	0.58	0.00	0.00	0.00	0.00	0.19
Capitalization ratio	184	0.15	0.06	0.08	0.11	0.13	0.17	0.25
Loan growth (1924-29)	168	0.11	0.44	-0.37	-0.04	0.10	0.26	0.62
Log(pop)	365	9.87	0.66	8.72	9.44	9.86	10.20	11.07
Unemp. rate	365	0.00	0.01	0.00	0.00	0.00	0.01	0.01
log(farm size)	365	6.59	0.33	6.06	6.43	6.60	6.76	7.11
crop fail	365	0.02	0.03	0.01	0.01	0.01	0.02	0.07
labor force	365	0.36	0.05	0.29	0.32	0.35	0.39	0.46
Products	1,204	6.47	21.89	0.14	0.58	1.47	4.15	20.93
Wages	1,204	1.03	2.44	0.02	0.11	0.29	0.83	3.95
Establishments	1,233	24.41	31.93	5.00	10.00	15.00	26.00	77.00
Workers	1,230	1.36	2.70	0.04	0.22	0.51	1.23	5.22
Difficulty/Borrowers	212	0.47	0.05	0.39	0.44	0.46	0.51	0.56
Difficulty/Total	212	0.34	0.04	0.27	0.32	0.34	0.36	0.40
Borrowers/Total	212	0.72	0.02	0.67	0.70	0.72	0.73	0.75
Observations	4224							

Panel B: Plants

	count	mean	sd	p5	p25	p50	p75	p95
Total days in operation	1,081	254.95	86.80	85.00	200.00	300.00	310.00	365.00
Total wages (k)	1,100	5.70	4.44	1.28	2.86	4.49	7.01	15.02
Wage earners by month, total	1,100	77.42	53.69	24.00	40.00	60.00	96.50	179.00
Value of product (k)	1,099	46.57	50.96	8.48	18.27	32.00	54.51	141.31
I(survive)	2,328	0.47	0.50	0.00	0.00	0.00	1.00	1.00
In ATL	2,328	0.47	0.50	0.00	0.00	0.00	1.00	1.00
I(subsidiary)	2,128	0.18	0.39	0.00	0.00	0.00	0.00	1.00
Observations	2328							

Notes: This table presents the summary statistics at the county-level for all counties within 50 miles of the Atlanta Federal Reserve District border (see Figure 2). Banks (count) and Deposits (millions of nominal dollars) are reported annually between 1926 and 1936. Capitalization ratio is defined as the total surplus and profits divided by assets for nationally chartered banks in 1928. Loan growth is change between the log of all loans between 1924 and 1929 for nationally chartered banks. Loans, surplus, total assets come from the Office of the Controller of Currency. The unemployment rate is defined as the total number of unemployed divided by total population in 1930. Crop fail is the proportion of all crops failed in 1930. Farm size is in acres. Labor force is the number of gainfully employed workers divided by total population in 1930. Products (millions of nominal dollars), Wages (millions of nominal dollars), Establishments (count), and Workers (thousands) come from the Census of Manufacturing, reported biennially between 1927 and 1937.

Table 2: Covariate Balance (Atlanta vs. Rest in Border Regions)

County-level

	All	ATL in	ATL out	Difference
Banks (active - all)	4.31	3.84	4.72	0.88**
	(2.95)	(2.81)	(3.02)	(0.00)
Deposits (active - all)	3188.22	3546.18	2876.15	-670.02
	(8561.38)	(11171.39)	(5347.80)	(0.46)
Log(pop)	9.87	9.78	9.94	0.17*
	(0.66)	(0.71)	(0.60)	(0.02)
Urban share	0.11	0.12	0.10	-0.02
	(0.17)	(0.19)	(0.15)	(0.35)
Unemp. rate	0.00	0.00	0.00	0.00
	(0.01)	(0.01)	(0.00)	(0.65)
log(est)	2.94	3.05	2.84	-0.21*
	(0.78)	(0.80)	(0.76)	(0.02)
log(farm size)	6.59	6.65	6.55	-0.10**
	(0.33)	(0.29)	(0.36)	(0.01)
crop fail pc	2.35	2.37	2.33	-0.04
	(3.14)	(3.63)	(2.66)	(0.89)
labor force	0.36	0.36	0.35	-0.01*
	(0.05)	(0.05)	(0.06)	(0.10)
Bank Suspension Rate (All) pc	1.25	1.02	1.44	0.41
	(5.52)	(4.87)	(6.03)	(0.48)
Difficulty/Borrowers pc	47.12	46.98	47.25	0.28
	(5.26)	(4.98)	(5.52)	(0.70)
Borrowers/Total pc	71.59	71.63	71.55	-0.07
	(2.41)	(2.32)	(2.51)	(0.83)
Difficulty/Total pc	33.88	33.80	33.95	0.15
	(3.82)	(3.61)	(4.02)	(0.77)
Observations	365	170	195	365

Plant-level

	All	ATL in	ATL out	Difference
Log(Output)	10.52	10.54	10.50	-0.04
	(0.79)	(0.79)	(0.79)	(0.55)
Log(Wages)	8.53	8.52	8.54	0.02
	(0.64)	(0.66)	(0.62)	(0.74)
Log(Wage Earners)	4.24	4.29	4.21	-0.08*
	(0.52)	(0.52)	(0.52)	(0.07)
I(subsidiary)	0.18	0.15	0.22	0.07*
	(0.39)	(0.35)	(0.41)	(0.03)
Observations	582	276	306	582

Notes: This table reports variable averages among counties (Panel A) and small-medium manufacturing plants in 1929 (Panel B) within 50 miles of the Atlanta Federal Reserve District ("District") border. Column (1) reports the averages for all counties along the border (365) and columns (2) and (3) report them only for those in the District and for those outside the District, respectively. Column (4) computes the difference and reports the T-test on the equality of means. The variables "Banks (active - all)", "Deposits (active - all)", and "Bank Suspension Rate (All)" reported here are as of 1927 and come from the FDIC. "Difficulty/Borrowers", "Borrower/Total," and "Difficulty/Total" are estimated measures of credit access estimated using 1927 manufacturing industry by county establishment data and the 1935 credit survey of manufacturing industries. All other variables come from the 1930 U.S. Census. For detailed variable descriptions and sources, please see the text.

Table 3: Bank Suspension and Active Rates around the ATL Border

Panel A: Suspension rates

	Bank Suspension Rate			I(Bank Suspended)		
	All	National	State	All	National	State
	(1)	(2)	(3)	(4)	(5)	(6)
In ATL=1 × Year=1926	0.007	0.001	0.009	0.001	-0.001	-0.008
	(0.013)	(0.005)	(0.015)	(0.040)	(0.019)	(0.040)
In ATL=1 × Year=1928	0.019*	-0.032	0.025*	0.071*	-0.030	0.065*
	(0.011)	(0.029)	(0.013)	(0.040)	(0.034)	(0.037)
In ATL=1 × Year=1929	-0.068***	-0.064*	-0.070***	-0.143***	-0.077*	-0.139***
	(0.025)	(0.035)	(0.027)	(0.054)	(0.044)	(0.053)
In ATL=1 × Year=1930	-0.051**	-0.056	-0.044*	-0.004	-0.040	-0.002
	(0.023)	(0.041)	(0.025)	(0.050)	(0.052)	(0.049)
In ATL=1 × Year=1931	-0.008	0.003	-0.003	-0.032	-0.027	-0.035
	(0.018)	(0.029)	(0.020)	(0.048)	(0.044)	(0.046)
In ATL=1 × Year=1932	0.001	0.043	-0.014	-0.006	0.057	-0.034
	(0.031)	(0.059)	(0.033)	(0.056)	(0.075)	(0.054)
In ATL=1 × Year=1933	0.006	-0.013	0.007	0.033	-0.008	0.023
	(0.010)	(0.015)	(0.010)	(0.028)	(0.017)	(0.026)
R-sq	0.14	0.17	0.12	0.13	0.18	0.12
N	2,820	1,340	2,721	2,820	1,340	2,721
Year FE	✓	✓	✓	✓	✓	✓
County FE	✓	✓	✓	✓	✓	✓
Border-region x Year FE	✓	✓	✓	✓	✓	✓

Panel B: Active rates

	Bank Active Rate			Deposit Active Rate		
	All	National	State	All	National	State
	(1)	(2)	(3)	(4)	(5)	(6)
In ATL=1 × Year=1926	-0.001	-0.023	-0.009	-0.004	-0.015	-0.031
	(0.020)	(0.015)	(0.026)	(0.020)	(0.025)	(0.028)
In ATL=1 × Year=1928	0.012	-0.002	0.015	0.006	0.004	0.009
	(0.015)	(0.009)	(0.019)	(0.015)	(0.028)	(0.020)
In ATL=1 × Year=1929	0.011	0.028	0.024	-0.007	0.051	0.003
	(0.020)	(0.037)	(0.025)	(0.020)	(0.049)	(0.031)
In ATL=1 × Year=1930	0.101***	0.142***	0.102***	0.073**	0.096*	0.084**
	(0.029)	(0.054)	(0.034)	(0.030)	(0.055)	(0.040)
In ATL=1 × Year=1931	0.026	0.112*	0.025	0.030	0.038	0.052
	(0.030)	(0.060)	(0.036)	(0.029)	(0.058)	(0.039)
In ATL=1 × Year=1932	0.019	0.086	0.013	0.010	0.022	0.023
	(0.029)	(0.060)	(0.035)	(0.025)	(0.050)	(0.032)
In ATL=1 × Year=1933	0.020	0.054	0.027	0.048*	0.043	0.082**
	(0.033)	(0.068)	(0.037)	(0.028)	(0.062)	(0.038)
R-sq	0.39	0.26	0.32	0.62	0.45	0.52
N	2,863	1,472	2,808	2,861	1,469	2,804
Year FE	✓	✓	✓	✓	✓	✓
County FE	✓	✓	✓	✓	✓	✓
Border-region x Year FE	✓	✓	✓	✓	✓	✓

Notes: This table reports the estimated coefficients of the in-ATL x year fixed effects in the generalized difference-in-differences specification of Equation 4.1. Controls include boundary-region (e.g., Atlanta-St. Louis border) by year fixed effects and the omitted baseline interaction is 1927. Outcome variables are the county x year level and indicated by the column header. "Bank suspension rate" is defined as the number of banks suspended divided by end of year total number of banks in operation. "I(Bank Suspended)" is a binary variable taking the value of 1 if at least one bank suspended operations during the year. "Bank Active Rate" is the number of banks in operation at the end of the year divided by number of banks in operation in the same county in 1927. "Deposit Active Rate" is defined analogously. "National" and "State" refer to nationally chartered vs. state chartered banks. Not all have both a national and state banks. The sample period is 1926 - 1933. The standard errors are clustered at the county level.

Table 4: Robustness: Banks Suspended (All Types)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
In ATL=1 × Year=1926	0.007	0.002	0.002	-0.006	-0.024	-0.048	-0.000	0.021	0.007	0.004	0.014	0.006	0.007
	(0.013)	(0.017)	(0.008)	(0.018)	(0.027)	(0.043)	(0.014)	(0.026)	(0.019)	(0.013)	(0.018)	(0.014)	(0.015)
In ATL=1 × Year=1928	0.019*	0.026**	0.014	0.015	0.017	0.026	0.012	0.029	0.019	0.009	0.024	0.018	0.023*
	(0.011)	(0.012)	(0.015)	(0.014)	(0.055)	(0.024)	(0.013)	(0.024)	(0.018)	(0.011)	(0.015)	(0.012)	(0.013)
In ATL=1 × Year=1929	-0.068***	-0.076***	-0.075**	-0.053*	-0.133	-0.066	-0.066**	-0.078**	-0.068**	-0.052*	-0.061*	-0.083***	-0.070**
	(0.025)	(0.028)	(0.029)	(0.029)	(0.091)	(0.052)	(0.032)	(0.037)	(0.030)	(0.030)	(0.033)	(0.024)	(0.028)
In ATL=1 × Year=1930	-0.051**	-0.047*	-0.054*	-0.038	-0.189	-0.106*	-0.039	-0.075*	-0.051*	-0.031	-0.047*	-0.053**	-0.068**
	(0.023)	(0.027)	(0.031)	(0.033)	(0.118)	(0.063)	(0.028)	(0.040)	(0.029)	(0.029)	(0.025)	(0.024)	(0.027)
In ATL=1 × Year=1931	-0.008	-0.006	0.020	0.018	-0.056	-0.020	-0.022	0.012	-0.008	-0.018	0.005	-0.004	-0.013
	(0.018)	(0.020)	(0.028)	(0.026)	(0.048)	(0.048)	(0.022)	(0.036)	(0.020)	(0.018)	(0.026)	(0.019)	(0.021)
In ATL=1 × Year=1932	0.001	-0.006	0.056	0.022	0.029	0.002	-0.019	0.028	0.001	0.058	0.002	-0.016	-0.023
	(0.031)	(0.033)	(0.036)	(0.037)	(0.091)	(0.061)	(0.039)	(0.054)	(0.039)	(0.039)	(0.045)	(0.031)	(0.033)
In ATL=1 × Year=1933	0.006	-0.001	0.009	0.010	-0.031	-0.010	-0.004	0.021	0.006	0.000	0.012	0.004	0.007
	(0.010)	(0.009)	(0.007)	(0.008)	(0.030)	(0.009)	(0.010)	(0.021)	(0.017)	(0.011)	(0.013)	(0.010)	(0.011)
R-sq	0.14	0.16	0.20	0.20	0.27	0.33	0.15	0.14	0.14	0.18	0.14	0.14	0.11
N	2,820	2,504	1,331	1,672	302	907	1,805	1,015	2,820	1,765	1,715	2,605	2,375
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
County FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pre-period balance x Year		✓											
Pre-period banking x Year			✓										
1927 industry x Year				✓									
Mississippi sample					✓								
Split consumer areas sample						✓							
Distance: 0-25mi							✓						
Distance: 25mi-100mi								✓					
Spatial SE									✓				
Removing border:										RICH	STL	CLE	DAL

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table reports the estimated coefficients of the in-ATL x year fixed effects in the generalized difference-in-differences specification of Equation 4.1. Controls include boundary-region (e.g., Atlanta-St. Louis border) by year fixed effects and the omitted baseline interaction is 1927 across all specifications. Outcome variable is the bank suspension rate for all banks, defined as the number of banks suspended within the year divided by end of year total number of banks in operation. Column (1) includes no additional controls. Column (1) includes 1927 active banks, log population, log number of manufacturing establishments, log of average farm size, labor force x year fixed effects. Column (3) includes 1928 capital ratio, 1924-1929 log growth rate of national bank loans by year fixed effects. Column (4) includes a set of manufacturing industry dummy variables based on the dominant industry within the county as of 1927. Column (5) uses only Mississippi counties and column (6) uses only consumer markets that are bisected by the District border. Column (7) uses only counties within 25 miles. Columns (8) - (11) remove one border segment. The time period is 1926 - 1933 for all specifications and the standard errors are clustered at the county level.

Table 5: Robustness: Deposits Active (All Types)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
In ATL=1 × Year=1926	-0.004	-0.026	-0.016	-0.029	-0.025	0.001	-0.004	0.004	-0.004	-0.003	0.003	-0.006	-0.007
	(0.020)	(0.023)	(0.018)	(0.026)	(0.055)	(0.049)	(0.024)	(0.035)	(0.043)	(0.020)	(0.028)	(0.021)	(0.023)
In ATL=1 × Year=1928	0.006	0.012	0.000	0.009	0.052	-0.048*	-0.004	0.020	0.006	-0.024	0.015	0.006	0.021
	(0.015)	(0.016)	(0.017)	(0.019)	(0.037)	(0.028)	(0.016)	(0.031)	(0.036)	(0.017)	(0.020)	(0.015)	(0.015)
In ATL=1 × Year=1929	-0.007	-0.002	-0.006	0.002	0.043	-0.007	-0.014	0.007	-0.007	-0.038	0.014	-0.006	0.000
	(0.020)	(0.023)	(0.023)	(0.027)	(0.069)	(0.057)	(0.023)	(0.039)	(0.036)	(0.024)	(0.027)	(0.021)	(0.022)
In ATL=1 × Year=1930	0.073**	0.088***	0.044	0.023	0.112	0.029	0.069*	0.075	0.073*	0.019	0.091**	0.080**	0.091***
	(0.030)	(0.034)	(0.035)	(0.033)	(0.082)	(0.074)	(0.039)	(0.050)	(0.040)	(0.035)	(0.040)	(0.032)	(0.035)
In ATL=1 × Year=1931	0.030	0.032	-0.005	0.009	0.069	0.028	0.020	0.040	0.030	-0.018	0.060	0.032	0.039
	(0.029)	(0.032)	(0.041)	(0.035)	(0.076)	(0.057)	(0.036)	(0.054)	(0.040)	(0.033)	(0.039)	(0.031)	(0.033)
In ATL=1 × Year=1932	0.010	0.017	-0.017	-0.005	0.064	-0.041	0.013	0.001	0.010	-0.013	0.033	0.013	0.008
	(0.025)	(0.028)	(0.035)	(0.032)	(0.045)	(0.059)	(0.030)	(0.047)	(0.037)	(0.029)	(0.034)	(0.026)	(0.028)
In ATL=1 × Year=1933	0.048*	0.049	-0.003	0.000	0.082	0.028	0.055	0.030	0.048	-0.002	0.060	0.047	0.077**
	(0.028)	(0.032)	(0.038)	(0.036)	(0.060)	(0.064)	(0.035)	(0.050)	(0.039)	(0.032)	(0.038)	(0.029)	(0.031)
R-sq	0.62	0.64	0.70	0.69	0.79	0.77	0.63	0.63	0.62	0.65	0.60	0.63	0.62
N	2,861	2,534	1,344	1,687	312	919	1,838	1,023	2,861	1,783	1,742	2,645	2,413
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
County FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pre-period balance x Year		✓											
Pre-period banking x Year			✓										
1927 industry x Year				✓									
Mississippi sample					✓								
Split consumer areas sample						✓							
Distance: 0-25mi							✓						
Distance: 25mi-100mi								✓					
Spatial SE									✓				
Removing border:										RICH	STL	CLE	DAL

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table reports the estimated coefficients of the in-ATL x year fixed effects in the generalized difference-in-differences specification of Equation 4.1. Controls include boundary-region (e.g., Atlanta-St. Louis border) by year fixed effects and the omitted baseline interaction is 1927 across all specifications. The outcome variable is bank deposits in active banks at the end of the year divided by bank deposits of active banks in the same county in 1927. Column (1) includes no additional controls. Column (1) includes 1927 active banks, log population, log number of manufacturing establishments, log of average farm size, labor force x year fixed effects. Column (3) includes 1928 capital ratio, 1924-1929 log growth rate of national bank loans by year fixed effects. Column (4) includes a set of manufacturing industry dummy variables based on the dominant industry within the county as of 1927. Column (5) uses only Mississippi counties and column (6) uses only consumer markets that are bisected by the District border. Column (7) uses only counties within 25 miles. Columns (8) - (11) remove one border segment. The time period is 1926 - 1933 for all specifications and the standard errors are clustered at the county level.

Table 6: Banking Results

	County totals					Per bank			
	Loans	Bonds	Total Assets	Surplus	Banks	Loans	Bonds	Total Assets	Surplus
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
In ATL=1 × Year=1926	0.015	0.029	-0.005	0.004	0.041*	-0.026	-0.012	-0.045	-0.036
	(0.041)	(0.055)	(0.039)	(0.056)	(0.023)	(0.034)	(0.050)	(0.032)	(0.046)
In ATL=1 × Year=1928	0.025	-0.045	-0.008	0.010	0.029	-0.004	-0.074	-0.038	-0.019
	(0.038)	(0.062)	(0.036)	(0.053)	(0.019)	(0.035)	(0.059)	(0.032)	(0.049)
In ATL=1 × Year=1929	0.031	-0.010	0.035	0.085	0.023	0.008	-0.033	0.012	0.062
	(0.039)	(0.078)	(0.036)	(0.061)	(0.024)	(0.034)	(0.074)	(0.030)	(0.055)
In ATL=1 × Year=1930	0.025	-0.098	0.014	0.015	0.035	-0.011	-0.133*	-0.021	-0.021
	(0.057)	(0.083)	(0.052)	(0.078)	(0.034)	(0.052)	(0.079)	(0.046)	(0.074)
In ATL=1 × Year=1931	0.116*	0.008	0.090	0.162*	0.059	0.057	-0.051	0.031	0.103
	(0.065)	(0.105)	(0.057)	(0.091)	(0.052)	(0.056)	(0.099)	(0.047)	(0.083)
R-sq	0.15	0.16	0.12	0.07	0.08	0.12	0.20	0.11	0.06
N	1,061	1,061	1,061	1,060	1,061	1,061	1,061	1,061	1,060
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
County FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pre-period cap	✓	✓	✓	✓	✓	✓	✓	✓	✓

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table reports the estimated coefficients of the in-ATL x year fixed effects in the generalized difference-in-differences specification of Equation 4.1. Controls include boundary-region (e.g., Atlanta-St. Louis border) by year fixed effects and the omitted baseline interaction is 1927 across all specifications. The outcome variables come from the OCC and represents county totals for national banks only. The time period is 1926 - 1931 for all specifications and the standard errors are clustered at the county level.

Table 7: County manufacturing outcomes during the Depression

	log(rev.)	log(wages)	log(est.)	log(workers)	log(rev)	log(wages)	log(est.)	log(workers)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
In ATL=1 × Year=1929	-0.08	-0.07	0.04	-0.09	-0.08	-0.07	0.04	-0.09
	(0.05)	(0.05)	(0.05)	(0.06)	(0.05)	(0.05)	(0.05)	(0.06)
In ATL=1 × Year=1931	-0.02	-0.08	-0.06	-0.04	-0.02	-0.08	-0.06	-0.04
	(0.07)	(0.09)	(0.06)	(0.09)	(0.07)	(0.09)	(0.05)	(0.09)
In ATL=1 × Year=1933	-0.02	-0.08	-0.09	-0.06	-0.03	-0.09	-0.09	-0.05
	(0.10)	(0.12)	(0.07)	(0.14)	(0.10)	(0.12)	(0.07)	(0.13)
In ATL=1 × Year=1935	-0.09	-0.08	-0.13*	-0.13	-0.09	-0.09	-0.13*	-0.13
	(0.10)	(0.13)	(0.07)	(0.11)	(0.10)	(0.13)	(0.07)	(0.11)
In ATL=1 × Year=1937	-0.01	-0.08	-0.12*	-0.08	-0.01	-0.09	-0.11*	-0.08
	(0.09)	(0.14)	(0.07)	(0.12)	(0.09)	(0.14)	(0.07)	(0.12)
Above Median: Difficult/Borrow=1 × Year=1929					0.01	0.04	0.03	0.03
					(0.05)	(0.05)	(0.05)	(0.05)
Above Median: Difficult/Borrow=1 × Year=1931					-0.17**	-0.22**	-0.14**	-0.16*
					(0.08)	(0.09)	(0.06)	(0.08)
Above Median: Difficult/Borrow=1 × Year=1933					-0.24**	-0.28**	-0.21**	-0.26**
					(0.11)	(0.13)	(0.08)	(0.12)
Above Median: Difficult/Borrow=1 × Year=1935					-0.19*	-0.25**	-0.23***	-0.24**
					(0.10)	(0.12)	(0.08)	(0.11)
Above Median: Difficult/Borrow=1 × Year=1937					-0.19*	-0.30*	-0.18**	-0.30**
					(0.10)	(0.17)	(0.07)	(0.14)
R-sq	0.65	0.45	0.61	0.34	0.66	0.46	0.63	0.35
N	636	636	678	672	636	636	678	672
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
County FE	✓	✓	✓	✓	✓	✓	✓	✓
No outliers	✓	✓	✓	✓	✓	✓	✓	✓
Pre-period banking x Year	✓	✓	✓	✓	✓	✓	✓	✓
Border-region x Year	✓	✓	✓	✓	✓	✓	✓	✓
Avg. size tercile (1929) x Year	✓	✓	✓	✓	✓	✓	✓	✓

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table reports the estimated coefficients of Equation 4.1. Controls include boundary-region (e.g., Atlanta-St. Louis border) by year fixed effects, the 1928 capital ratio and 1924-1929 log growth rate of national bank loans by year fixed effects, and terciles of the average size of manufacturing plant in 1929 by year fixed effects. The omitted baseline interaction is 1927 across all specifications. The outcome variables come from Census of Manufactures. The time period is 1927 - 1937 (biennially) for all specifications and the standard errors are clustered at the county level.

Table 8: Interaction between financial constraints and bank failure around the Atlanta border

	log(rev.)	log(wages)	log(est.)	log(workers)
	(1)	(2)	(3)	(4)
Above Median: Difficult/Borrow=1 × post=1	-0.24**	-0.29**	-0.22***	-0.34***
	(0.10)	(0.12)	(0.07)	(0.12)
post=1 × In ATL=1	-0.03	-0.06	-0.13**	-0.12
	(0.10)	(0.13)	(0.06)	(0.11)
Above Median: Difficult/Borrow=1 × post=1 × In ATL=1	0.06	0.01	0.03	0.17
	(0.15)	(0.19)	(0.10)	(0.17)
R-sq	0.65	0.46	0.62	0.35
N	636	636	678	672
Year FE	✓	✓	✓	✓
County FE	✓	✓	✓	✓
No outliers	✓	✓	✓	✓
Pre-period banking x Year	✓	✓	✓	✓
Border-region x Year FE	✓	✓	✓	✓

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Notes: This table reports the estimated coefficients of Equation 5.2. Controls include boundary-region (e.g., Atlanta-St. Louis border) by year fixed effects, the 1928 capital ratio and 1924-1929 log growth rate of national bank loans by year fixed effects, and terciles of the average size of manufacturing plant in 1929 by year fixed effects. The variable *post* takes the value of 1 for all years after 1929 and 0 otherwise. The omitted baseline interaction is 1927 across all specifications. The outcome variables come from Census of Manufactures. The time period is 1927 - 1937 (biennially) for all specifications and the standard errors are clustered at the county level.

Table 9: Plant performance during the Depression in the Atlanta border regions

Panel A: Including subsidiary plants

	Survival	Output		Wages		Workers	
		all	balanced	all	balanced	all	balanced
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
year=1931 × In ATL=1	0.14***	-0.02	-0.07	-0.15**	0.07	-0.06	0.02
	(0.04)	(0.06)	(0.07)	(0.08)	(0.12)	(0.06)	(0.13)
year=1933 × In ATL=1	0.08**	-0.08	-0.04	0.02	0.17	0.09	0.19
	(0.04)	(0.09)	(0.10)	(0.11)	(0.11)	(0.08)	(0.13)
year=1935 × In ATL=1	0.07**	0.03	0.03	-0.17	-0.05	-0.04	0.02
	(0.03)	(0.11)	(0.12)	(0.14)	(0.15)	(0.10)	(0.12)
R-sq	0.65	0.46	0.40	0.29	0.23	0.20	0.14
N	2,328	1,057	396	1,057	396	1,055	391
Year FE	✓	✓	✓	✓	✓	✓	✓
Firm FE	✓	✓	✓	✓	✓	✓	✓
Border-region x Year	✓	✓	✓	✓	✓	✓	✓
Size Quartile x Year	✓	✓	✓	✓	✓	✓	✓
Industry x Year	✓	✓	✓	✓	✓	✓	✓

Panel B: Excluding subsidiary plants

	Survival	Output		Wages		Workers	
		all	balanced	all	balanced	all	balanced
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
year=1931 × In ATL=1	0.14***	-0.05	-0.05	-0.18**	0.10	-0.09	0.06
	(0.04)	(0.06)	(0.08)	(0.08)	(0.13)	(0.07)	(0.14)
year=1933 × In ATL=1	0.08*	-0.10	-0.03	-0.00	0.17	0.07	0.21
	(0.04)	(0.10)	(0.11)	(0.12)	(0.12)	(0.09)	(0.14)
year=1935 × In ATL=1	0.07**	0.03	0.06	-0.27**	-0.13	-0.07	0.02
	(0.04)	(0.12)	(0.13)	(0.13)	(0.14)	(0.10)	(0.13)
R-sq	0.61	0.47	0.41	0.30	0.24	0.22	0.17
N	1,736	863	357	865	356	858	351
Year FE	✓	✓	✓	✓	✓	✓	✓
Firm FE	✓	✓	✓	✓	✓	✓	✓
Border-region x Year	✓	✓	✓	✓	✓	✓	✓
Size Quartile x Year	✓	✓	✓	✓	✓	✓	✓
Industry x Year	✓	✓	✓	✓	✓	✓	✓

Notes: This table reports the estimated coefficients of Equation 5.3. Controls include boundary-region (e.g., Atlanta-St. Louis border) by year fixed effects, size-quartile by year fixed effects, and industry by year fixed effects. The omitted baseline interaction is 1929 across all specifications. The outcome variables come from Census of Manufactures, trimmed at the 2-98 percentiles to minimize the influence of outliers. Panel A includes all plants, while panel B excludes plants that reported being a subsidiary. The sample in columns (3), (5), (7), (9) includes only a balanced set of plants. The time period is 1929 - 1935 (biennially) for all specifications and the standard errors are clustered at the county level.