Credit Relationships and Business Bankruptcy During the Great Depression *

Mary Eschelbach Hansen
American University
mhansen@american.edu

Nicolas L. Ziebarth
University of Iowa and NBER
nicolas.lehmannziebarth@gmail.com

October 31, 2014

Abstract

Credit relationships are sticky. Stickiness makes relationships beneficial for borrowers in distress, but potentially problematic for them when lenders face distress. To examine stickiness in a time of distress, we exploit a natural experiment during the Depression that generated differences in banking outcomes. Using a new dataset drawn from Dun & Bradstreet and original bankruptcy filings, we show that greater distress increased exit by up to 16 percent. Distress did not generate more bankruptcies, but it changed the geographical distribution of creditors of bankrupt businesses. This is consistent with a contraction of business-to-business credit where there was greater distress.

1 Introduction

Lending relationships are always fraught with potential pitfalls stemming from moral hazard or adverse selection. One solution to both of these problems is the formation of long-lasting relationships that mitigate incentives to take advantage of short-run gains arising from, say, the ability to divert funds on the part of the borrower. The durability of credit relationships also has the potential benefit of providing stability to borrowers when they face temporary shortfalls in demand because the lender has an incentive to continue the partnership as long as the long-run surplus is still positive. At the same time, if the *lender* faces the possibility of failure, the sticky nature of

*This paper has been much improved by comments from Jeremy Atack, Robert Feinberg, Gabe Mathy, Hugh Rockoff, and participants at the Economic History Association Annual Meetings. Funding for the bankruptcy case file sample for Mississippi came from an American University Faculty Research Support Grant and a Mellon Grant from the AU College of Arts and Sciences. Funding from the University of Iowa and the AU College of Arts and Sciences and Economics Department supported collection of data from the Dun & Bradstreet *Reference Book of American Business*. Computing resources were provided through an NSF Major Research Instrumentation Program Grant (BCS-1039497). Thanks to the staff at the Atlanta Regional Branch of the National Archives for their enthusiasm and patience. Thanks also to Rebecca Warlow and Mary Rephlo in NARA administration for facilitating the project. Research assistance from Megan Fasules and Zach Duey was essential. A complete list of research assistants and funders for the national sample of bankruptcy case files is available on the project home page (<http://www.american.edu/cas/economics/bankrupt/>). Errors belong to the authors.

the relationship threatens, in principle, still-profitable borrowers who would struggle to find new lenders. While creditors usually have an incentive to restructure debt, and while borrowers can find new creditors in normal circumstances, this potential for fragility may have been quite important in the early months of the Depression when circumstances were far from normal. Banks that survived credit crises sought to limit losses by requiring collateral (Duca, 2013). But many banks, and possibly other creditors, simply disappeared. Were profitable businesses compelled to cease operations merely because they could not roll over their short-term unsecured commercial paper due to problems facing their *lender*?

We measure the effects of the stickiness of credit relationships by studying the state of Mississippi during the first few years of the Great Depression. We exploit a natural experiment created by the rather arbitrary splitting of the state between the Atlanta and St. Louis Federal Reserve districts. The setup, first utilized by Richardson and Troost (2009),¹ leverages the fact that in 1930 the Atlanta Fed acted aggressively to stem bank runs while the St. Louis Fed did nothing to slow them. Atlanta’s policy allowed more banks to survive in southern Mississippi. The differences are not driven by differences in local economic circumstances, which allow us to isolate the effects of the credit relationships channel.

Using newly collected information on the credit-worthiness and net worth of the population of businesses as reported in selected volumes of Dun & Bradstreet’s *Reference Book of American Business* (hereafter D&B) for 1926 through 1935, we find that northern Mississippi experienced business exit rates following banking crisis that were up to 16 percent higher than in southern Mississippi. This demonstrates that the real effects of the distress in the banking sector extended to a wide swathe of businesses going beyond the focus on manufacturing in Ziebarth (2013a).

The D&B records, however, do not allow us to observe a business’ network of creditors. For this, we link the D&B listings to all extant court bankruptcy dockets and to a new sample of detailed court case files. The original case files are seldom used but provide a wealth of information about the amount of debt owed by the petitioner, and who holds the debt, and where both are located. Of course, these data are restricted to the creditors of businesses that file for bankruptcy.

Of course, most businesses that exited did not default or file for bankruptcy. Most business exit

¹Earlier work by Wicker (1996) noted the differences between the policies of regional reserve banks and their impact on regional bank failure rates. Jalil (2014) recently confirmed that the conclusions of Richardson and Troost (2009) apply to all counties bordering the Atlanta district.

merely represents owners' decisions to seek higher profits elsewhere, and most businesses pay their debts in full when they exit. Even for struggling businesses, default can usually be delayed. In fact, although our data are consistent with published statistics in showing small annual increases in bankruptcy in the state (U.S. Bureau of the Census, 1945; Dun & Bradstreet, 1945), we find little difference in the probability of bankruptcy in northern Mississippi immediately after the banking crisis as compared to the 18 months preceding it. The probability of filing for bankruptcy actually decreased in the north relative to the south as the Depression wore on.

We argue that the absence of an impact of banking distress on the overall bankruptcy rate does not imply that the distress had no effects on credit relationships. The bankruptcy rate is of limited value because in the wake of the crisis, creditors – particularly creditors in northern Mississippi and other “Real Bills” Fed regions – may have had many debtors in default, and likely had to choose which to pursue. We argue that the composition of who files and who their creditors are is much more informative. We find a change in the geographical composition of creditors and debts owed. There was a large increase in the representation of creditors – not primarily banks, but all trade creditors – from the more distressed areas of the country in the debt the bankrupt in northern Mississippi. The difference is not due to separation of the credit markets. Further, we argue that the difference is not consistent with a mechanism that transmits banking distress to businesses through decreased demand. We conclude that the pattern of changes in the creditors and debts of the bankrupt is evidence, albeit indirect, that the distress faced by a business' creditors was an important determinant of its own survival.

The results presented here dovetail with those in Chodorow-Reich (2014) who studies the Great Recession and the role of pre-crisis credit relationships. Put simply, who a firm borrowed from before the 2007-2009 crisis, irrespective of the firm's own condition, affected its ability to borrow and maintain employment during the crisis. The same holds true for the Great Depression. The results are also reminiscent of the literature on so-called zombie banks in Japan during the 1990s (Caballero et al., 2008). These banks delayed their own demise by refusing to realize losses on loans to unproductive firms, which in turn kept insolvent debtor-businesses alive as well. The similarity of Japan in the 1990s to Mississippi in the Great Depression is in the centrality of credit relationships in determining whether a particular business survives. The actual quality of the business itself was a poor predictor.

This paper provides additional evidence confirming Bernanke (1983, 's) so-called non-monetary effects of the banking crisis in the Great Depression. It has not been easy to separate the direct effects of banking distress on the money supply from its other effect, as noted by a wide range of scholars from Temin (1976) to Cole and Ohanian (2000). Calomiris and Mason (2003) offer an instrumental variables strategy to identify real effects, and, as noted above, Ziebarth (2013a) drew on the same natural experiment in Mississippi as we do here. Both of these works found large negative real effects of the banking crisis. This paper broadens the focus of Ziebarth (2013a), who relied on establishment-level data from the Census of Manufacturers. We not only consider the universe of businesses including manufactures as well as retailers, wholesalers and so on, but we also more carefully draw out the credit channel using our new data.² Finally, we note that the type of credit networks we use is wider than those discussed in Mitchener and Richardson (2013), which focuses on relationships between banks and wholesalers.

To our knowledge, our two sources of business-level information, D&B and bankruptcy filings, have never been examined for the Depression. Their use, in fact, has been quite limited. The D&B records from southern states for the postbellum period are used by sociologists (for example, Ruef and Patterson (2009b) and Ruef and Reinecke (2011)) to study patterns in business classification and formation. In economics, Kim (2003) links D&B records for two counties to the nineteenth century Census of Manufactures (CoM) to study exit rates and the growth of the partnership model. Published data compiled by D&B (and its predecessors), such as *Dun's Review*, has been more thoroughly explored. Recently, Richardson and Gou (2011) used these to construct a series on business failures by industry from about 1890 to the Great Depression. Work using bankruptcy filings before 1980 focuses on the nineteenth century (for example, Cronon (1991) on credit networks in Chicago and St. Louis in the 1870s, Gross et al. (1996) on bankruptcy among women in the nineteenth century, and Balleisen (2001) on antebellum commercial bankruptcy).

²Additionally, the D&B records allow us to include a pre-treatment year in estimating the effects on exit. The Census of Manufactures is only available for 1929, 1931, 1933, and 1935 meaning that the first observation on exit from 1929 to 1931 falls during the shock.

2 The Natural Experiment: Mississippi during the Depression

To begin, we briefly summarize the natural experiment. Richardson and Troost (2009) provide a detailed exposition. The experiment relies on two historical twists of fate. First, the state of Mississippi was split across two Federal Reserve districts. Second, those districts pursued different policies.

As shown in Figure 1, the northern part of the Mississippi, including all counties shaded on the map, is in the St. Louis district, while the southern part is in the Atlanta district. The division of Mississippi across these districts appears to be relatively arbitrary. Congress left the determination of the boundaries of the Federal Reserve districts and the locations of the regional headquarters to a Reserve Bank Organizing Committee. The committee requested a survey of the preferences of national bank officers, which was conducted by the Treasury, and it commissioned a preliminary report from the former director of the National Monetary Commission. The report considered the flow of business, transportation networks, and the distribution of banking capital. It offered several plans, none of which paid much attention to state boundaries (Hammes, 2001). The Committee decided to minimize the number of states that were divided by districts and to consider the survey results. Its choice to divide the small state of Mississippi, in particular, appears arbitrary. It does, however, appear that when New Orleans was rejected as a district headquarters, southern Mississippi was assigned to Atlanta rather than Dallas because the former had been listed by a small number of Mississippi banks as a second or third choice of preferred headquarters (Odell and Weiman, 1998; McAvoy, 2012).

The division of the state across districts would not have mattered if the districts followed similar policies during the period of regional autonomy from 1913 to 1935. The early Atlanta Fed hewed quite closely to Bagehot’s Rule, which stated that central banks should operate as lenders of last resort in times of panic. On the other hand, the St. Louis Fed, along with the Chicago and Cleveland Feds, was a strong proponent of the “Real Bills” doctrine that recommended credit should be allowed to expand and contract with the business cycle. Richardson and Troost (2009) suggest that this was partly related to the fact that St. Louis served as a major agricultural trading post and, hence, the St. Louis Fed was focused on accommodating the natural credit cycle of agriculture. They also argue that part of the reason for the difference was historical contingency

in who led the Atlanta Fed during this time. The Atlanta Fed Governor Eugene Black was a staunch proponent of credit easing through open market operations and discount lending. He was eventually appointed by Franklin Delano Roosevelt to be chairman of the Federal Reserve Board in 1933. It is unlikely, though, that conditions in Mississippi particularly mattered to regional Fed policy. The state itself, let alone its halves, was too small to carry much weight.

The experiment commenced in November of 1930, when Caldwell and Company, an important bank headquartered in Nashville, collapsed in a cloud of controversy over misappropriation of funds and its excessive leverage. Banks at this time were linked through correspondent networks in a pyramid structure. These networks were a key source of short-term funding akin to today's "repo" markets and were a key source of contagion (Richardson, 2008). It is important to note for our empirical strategy that Caldwell's correspondent network did not extend into Mississippi. So there is no reason to believe the collapse itself would have greater impact in a particular part of the state. After the collapse, the banking system was stable in Mississippi for six weeks. However, bad press surrounding Caldwell's failure was compounded by the closing of the Bank of the United States and growing reports of a decline in industrial output. This negative news took a toll and panic struck Mississippi in the middle of December 1930. Over the next two months, the deposits in Mississippi banks fell by 55 percent. Deposits and loans did not begin to recover until 1934 (Richardson and Troost, 2009).

In response to the panic, the Atlanta Fed extended credit and rushed cash to the banks. The St. Louis Fed made no such effort within its district. Indeed, the St. Louis Fed may have actually slowed lending by more carefully examining the assets of banks looking for short-term loans. When the St. Louis Fed did rediscount eligible paper, it imposed onerous collateral requirements that in essence required banks to turn over \$2 worth of their most liquid assets for \$1 of cash. The St. Louis Fed reversed course in July 1931, but the damage had already been done. A few months after the collapse of Caldwell, only 65 percent of banks were in operation in the northern part of Mississippi, while the southern part had 80 percent of its banks in operation (Richardson and Troost, 2009).³ In sum, both parts of the state experienced banking distress, but they experienced it on a different scale. This difference is the variation we exploit using data on firms in Mississippi.

³Banks "in operation" continued to redeem deposits. Banks, on the hand, that were "in business" but not "in operation" temporarily suspended redemptions.

3 Data Sources

We utilize two sources of data on firms. We identify firms that exited from listings of all firms in Mississippi compiled by Dun & Bradstreet. We then link the D&B listings to two types of court records. To identify the firms that filed for bankruptcy – and when they filed – we link the D&B listings to all extant bankruptcy dockets. To compare the credit networks and balance sheets of firms that filed for bankruptcy before the Caldwell crisis to firms that filed after, we use detailed information about a sample of bankrupt firms digitized from the original court case documents.

3.1 Data on All Businesses from D&B

D&B was a major credit rating or reporting agency of the time that collected information on local businesses as a pay-for service to potential creditors.⁴ We digitized its *Reference Books* for Mississippi published in January 1926, 1929, 1930, 1931, and 1935. These allow us to trace individual firms across years to identify when firms exited. Each business was classified by D&B into one of over 100 “trades,” which were as detailed as “pickle maker.” We reclassify the trades into the broadest (one digit) SIC industry categories. Table 1 shows that nearly 70 percent of businesses listed in Mississippi each year were retailers. Manufacturers made up the next largest group, with about 10 to 12 percent of firms in each. Wholesalers and service-sector firms made up smaller categories with five to 10 percent of firms in each. About four percent of all firms were in the agriculture, forestry and fishing sector, while very small numbers of firms were in mining or transportation.

An important question is how comprehensive these listings are, particularly when attempting to infer exit. D&B reported that they listed 2.2 million businesses in the US in 1929. Although

⁴D&B was formed in the 1933 merger between R.G. Dun & Co. and J.M. Bradstreet & Son, both agencies that were founded a century before. In their early years, the agencies collected information on businesses from local correspondents working on contract. Correspondents were often local lawyers or postmasters that anonymously collected information and reported it to agency headquarters. Over time, the agencies transitioned to a system of employee-reporters who worked exclusively for an agency and who solicited information directly from businesses, as well as gathering it from public sources and local “investigative reporting.” The agencies sold subscriptions to creditors. At first, subscribers requested information about specific borrowers from agency headquarters. All of the qualitative and quantitative information gathered by correspondents was simply disseminated in narrative form. Potential lenders were to come to their own conclusions about the creditworthiness of a borrower. Over time, the “soft” information was “hardened” into an overall rating for credit and selling. Eventually the lists were printed quarterly as *Reference Books* organized by state and city. Relatively few complete collections of the books are extant because subscribers were to return old issues before receiving revised ones. On the history of the agencies, see Madison (1974), Olegario (2003), Olegario (2006), Carruthers (2013), and Lipartito (2013).

its stated aim was universal coverage, determining if the source is indeed comprehensive is no easy matter. To assess coverage, we link the D&B listings to the plants enumerated in the 1929 Census of Manufactures. The census was intended to canvas all manufacturing plants, and, hence, serves as a useful benchmark. We find that the coverage of plants by D&B is quite good. Missing plants are concentrated in the timber industry, where 301 plants listed in the census manuscripts had no match in the *Reference Books*. However, there is very strong circumstantial evidence that the census over-counted timber plants by as much as 20 percent (Ziebarth, 2013a).

By the 1920s, the *Reference Books* contained a summary credit rating and an estimated “pecuniary strength.”⁵ “Pecuniary strength” captured firm size. The underlying information came mainly from assets and debts in the public record, such as deeds and mortgages (Olegario, 2006). Cohen (2012) considers it an estimate of “net worth,” and we refer to it that way was well, though some scholars argue that it captured assets much better than debts, particularly unsecured debts (Lipartito, 2013; Olegario, 2006). Firms were placed into size categories as shown in Figure 2, which reproduces the key from the 1929 D&B volume. We use the four major groupings shown on the far left. The cutoffs between the groups did not change over our period, despite the deflation during the Depression.⁶ The middle panel of Table 1 shows that half of firms listed over the 1926-35 period had net worth less of than \$10,000, while only 2.5 to 3.5 percent of firms had net worth above \$125,000.

The credit rating summarized information about payment history and reputation. Though D&B provided instructions on how to assign ratings, the ratings ultimately reflected subjective judgments. For example, employees were to assign the second-highest rating to a firm if it was “a well established house, doing well, of undoubted business character and ability – easy as regards money matters, prompt and careful, in excellent credit” (Cohen (2012), figure 5.7). We use the four “general credit” categories listed at the top of Figure 2. As was the case with net worth groups, the descriptions of the credit ratings did not change. “There has been no fundamental change in Agency reporting in the last fifty years,” stated Dun’s handbook in 1944, “simply because there has been no change in the attitude of creditors toward debtors, actual or prospective” (Lipartito

⁵Agencies continued to encourage subscribers who received the hardened information via the *Reference Book* to also request, for an additional fee, the detailed narrative.

⁶In fact, as far as we can tell, the ranges defined for 1935 were the same as the ranges for 1882, even though prices were about 40 percent higher.

(2013), p. 20). The bottom panel of Table 1 shows that only four percent of firms received the highest general credit rating, while 20 to 25 percent received the lowest rating. Not surprisingly, the highest credit ratings were reserved for the firms with the largest net worth.⁷

The information is not complete for every firm. About 25 percent of listings are missing an estimate of net worth, and 45 percent are missing a credit rating. About 19 percent have neither. The key to the ratings in the front matter of the *Reference Books* notes that an absence of a rating means the reporters had insufficient information to assign one. It seems likely that most firms missing a net worth estimate or rating were small and new. In the empirical exercises that follow, we provide specifications that include a fixed effect for businesses missing information and specifications in which the observations are dropped.

3.1.1 Identifying Businesses that Exit

Because D&B did not create a unique business identifier, to identify firms that exited we must link firms within cities or rural counties across *Reference Books*. In other words, a firm that exits is one with a particular name in a particular location in one year that, in a subsequent year, is no longer operating under that name in that location. Our measure of exit is comparable to what is sometimes called business “discontinuance.” We assume that most discontinued firms probably did leave the market, as opposed to moving or changing names.

We match names of firms algorithmically using a “fuzzy” matching technique to account for the possibility of small changes or errors in the way names are listed. Beginning with a firm in the first year’s listing (1926), the algorithm loops through firm names in the next year (1929) and considers a true match to be one with 90 percent or more matching characters. For example, consider a firm named “Red Rover Cars” in 1926. A listing in 1929 of “Ned Rover Cars,” “Ted Rover Cars,” or “Yed Rover Cars” would all be equally good matches (even though the name “Yed” is rather implausible). If the name of the firm is quite short, then a typographic error could result in a false negative. The opposite problem could arise for longer-named firms where one-to-many matches are possible. We tested different thresholds on a randomly-drawn subset of the data and hand-checked the results. The 90 percent threshold provided 97 percent accurate results with no multiple

⁷The correlation between the major net worth and credit ratings groups is 0.6. The finer gradations of net worth and credit ratings have a correlation coefficient of 0.9.

matches.⁸

We match 54 percent of firms listed in 1926 to a 1929 listing, so we have a gross exit rate of 46 percent over the three-year period. The gross exit rate from 1929 to 1931 is 32 percent, and from 1931 to 1935 it is 57 percent. For comparison, D&B reported adding and deleting over 400,000 businesses nationally in 1929, implying that 18 percent of the 2.2 million listed businesses exited (Dun & Bradstreet, 1945).⁹ Figure 3 shows that the national exit rate reported by D&B is within four percentage points of the annual exit rates for Mississippi implied by our procedure. To create the comparison in Figure 3, we estimate an implied *annual* exit rate based on our gross rates. Let s denote the (unobserved) annual *survival* rate. Then the probability a firm exits within t years (assuming a constant annual exit rate) is

$$Exit = 1 - s^t$$

where $Exit$ is the observed gross exit rate over the t years. The implied annual exit rate $e = 1 - s$ is given by

$$e = 1 - (1 - Exit)^{1/t}$$

Had we missed many true matches, our implied exit rate would be higher, not lower. Similarly, if there were large numbers of name changes or location changes not actually associated with a business closing, and these were correctly accounted for by D&B while they were missed by us, our implied rate would be higher. Note that both our implied exit rate for Mississippi and D&B for the US *fall* during the Depression. The likely cause is falling *entry* rates, but it may also suggest difficulties on the part of D&B in tracking exiting firms around business cycle turning points.

3.2 Data on Bankrupt Firms

While states have their own laws governing the collection of unpaid debts, the Constitution reserves the power to enact laws on bankruptcy to Congress. During the period we study, bankruptcy cases

⁸Ruef and Patterson (2009a) do not report any major problems in matching 19th century businesses from these records. They use multiple matching criteria, but do not explain the weighting.

⁹It is not clear whether the additions and deletions reflect entry and exit of entire business concerns, or whether new listings (de-listings) included newly-opened (freshly-closed) locations or plants of existing business concerns. The *Reference Books* we use include plant-level listings: If a business operated in multiple places, the D&B books list the business in each place. Thus, we identify exit on the plant level.

were filed directly in federal district court.¹⁰ There are two federal court districts in Mississippi: northern and southern. Court convened in seven cities. The locations of court cities are marked with stars in Figure 1. Courts were to serve residents of particular counties¹¹ The boundary between court districts is nearly the same as the boundary between the Federal Reserve districts; we therefore cannot control for differences between them. There is just one exception: Noxubee County, shaded darkly in 1, which is part of southern district court but the St. Louis Fed’s territory. Filers in Noxubee are counted as filing in the St. Louis Fed district in our regressions.

3.2.1 Information on All Filers from Dockets

A complete listing of firms and individuals that utilize the bankruptcy law appears on the federal court dockets. The dockets provide information on the personal and/or business name of the debtor, the date the petition was filed, and the city or county of residence or of business operation of the debtor.¹² We digitized all extant bankruptcy dockets from the federal courts in Mississippi for the calendar years 1929 to 1936. The dockets are nearly complete for four of the seven courts. They survive for Aberdeen and Oxford in the northern district and for Vicksburg and Jackson in the southern district for almost all of the period, although 1936 dockets from Aberdeen have been lost. From the remaining three courts we have partial docket books, as well as information from a sample of case files, which we discuss below. We have data on about 60 percent of all cases filed. Slightly more dockets survive for the southern district, and more survive for the early years of the period than for the later years. In the empirical exercises, we consider specifications that include all information we have collected, but also show specifications that restrict the sample to the parts of the state for which all of the dockets survive.

We searched for each debtor listed on the dockets among all businesses listed in the D&B

¹⁰Separate bankruptcy courts were established in each district in 1978.

¹¹In the northern district court met at Clarksdale, Oxford, and Aberdeen. In the southern district court met at Vicksburg, Jackson, Meridian, and Biloxi.

¹²Dockets also contain an entry for each event in the case, including hearings, dismissals, petitions and orders of discharge, and appeals. For administrative purposes, the dockets have the names of attorneys and representatives of the court. In Mississippi, all cases filed in a court were attended to by the same representatives of the court, so assignment to court officials is not a possible instrument. Other information is idiosyncratically recorded by clerks of the court. For example, some noted whether the bankruptcy was initiated by the debtor (a voluntary petition) or by creditors (an involuntary petition). Some also provided information about occupation or trade of the debtor. Unfortunately, in the many cases in which the business contains a personal name, it is not possible to assign an SIC industry code. For example, we cannot ascertain from court documents whether James Smith “doing business as Smith’s Trading Company” was operating a retail or wholesale business.

books. Manual matching proved more accurate and efficient than machine matching because of the variation in the way names were abbreviated in the dockets. We linked 1,343 unique bankruptcy cases, or about 54 percent of cases in the extant dockets, to a business listed at least once by D&B.¹³ Most of the unmatched cases were personal bankruptcies (that is, there was no business debt).¹⁴

As shown in Table 2, we observe 422 business bankruptcies filing for bankruptcy between January 1929 and the start of the Caldwell crisis and 921 filing from the start of the crisis and the end of 1936.¹⁵ More than 75 percent of business bankrupts had retail stores, less than 10 percent had wholesale or manufacturing firms, and a small number had a firm in the other major SIC groups. The distribution of bankrupts across major SIC groups is similar to the distribution of firms in the D&B books, as described in Table 1.

3.2.2 Detailed Data on a Sample of Bankruptcy Cases

The bankruptcy process generates considerable information about debtors beyond what is reported on the docket. Debtors are required to make a full declaration of assets and debts for the process of resolving their unpaid claims. This detailed declaration of debts is submitted at or shortly after the petition for bankruptcy protection. Figure 5 shows part of the listing of unsecured debts of a retail merchant. It shows individual debts such as stock purchased on account, store fixtures purchased on credit, utility bills, and endorsed notes. The name of each creditor is given, and the location of each creditor is noted so that the court can announce the bankruptcy filing in local papers to alert the creditor.

We collected details from a sample of 780 bankruptcy case files. Here we use only the 514 business cases.¹⁶ To construct the sample, we randomly selected one storage box from each court

¹³In cases of bankruptcy of multi-plant firms; we retained the link to the D&B observation that corresponded to the business location listed in the court records. In cases involving partnerships, in which a business was associated with more than one debtor, we consolidated the information to create a single observation for the business and used the date of the first bankruptcy filing.

¹⁴We were unable to match just 163 debtors whose court records indicated they had owned a business. Overall, this is an excellent linkage rate, given the many possible variations in spelling and abbreviation, as well as transcription errors. For comparison, the success rate in matching between censuses seldom exceeds 40 percent (Ruggles, 2002)

¹⁵January is the most popular month for filing: 13 percent of all filings occur in January. 32 percent are in the first quarter. In the empirical work below, we control for quarter of filing.

¹⁶The proportion of business to personal bankruptcies is consistent with the published statistics, which show that two-thirds of bankruptcy cases closed between 1929 and 1936 in Mississippi involved business or professional debt. Note that a smaller proportion of the debtors listed in the dockets were business debtors. The reason is that the northern district court at Aberdeen, which is in the docket data but has only one case in our sample data, served

city’s archives for each year from 1929 through 1936.¹⁷ The cases are boxed in the order that they had been filed. The sample for each court therefore has clusters in time, but the sample overall contains observations of cases filed in most months. 195 cases in the sample were filed before the Caldwell crisis; 319 were filed after (see Table 3). About 68 percent of cases in the sample were filed in the southern district. This is consistent with the published statistics, which report that 65 percent of cases in Mississippi were from the south.

4 Estimating the Effects of Financial Distress on Business Exit

To estimate the extent to which the differences in regional banking distress caused by the difference in Fed policy led to differences in the probability of exit across the two regions, we use a difference-in-differences approach. As is typical in quasi-experimental studies, we first demonstrate that the regions of Mississippi were similar before the crisis, then we proceed to the results.

4.1 Similarity of Regions Before Caldwell

In terms of observables, there is very little difference between the halves of Mississippi; in fact, the differences in the data from D&B are even smaller than the differences in the data from the Census of Manufacturing (Ziebarth, 2013a). The distributions of credit ratings and net worth are quite comparable, as shown in Table 4. Even the fractions of businesses that are missing ratings is nearly identical. There were more agriculture-related firms in the St. Louis-controlled region and more construction-related firms in the Atlanta-controlled region. These minor differences can be accounted for by the geography. The southern half of the state has the Gulf Coast and businesses associated with it. The northern half of the state contains part of the Mississippi Delta, a key cotton-growing region in the country. The Great Flood of 1927 and a major drought in 1929 affected the Delta, and these events may be reflected in the regional fixed effects in our regressions. To verify that events in the Delta do not influence our conclusions, we provide specifications that exclude Delta counties.

a considerable number of personal debtors and farmers. Unfortunately, except for one large case that was boxed separately, the clerk of the court at Aberdeen interfiled bankruptcy cases with civil and criminal cases. The volume of boxes – over 500 cubic feet – made it impractical to separate the bankruptcy cases from the other cases filed there.

¹⁷To ensure a large enough sample, if the selected box contained fewer than five cases, the next box was also collected.

4.2 Financial Distress Increased the Probability of Exit

Define $Exit_{it}$ as the failure to match a firm between years $t - 2$ and t . We estimate

$$Exit_{it} = \beta_0 + \beta_1 StLouis_i * Year_t + StLouis_i + Year_t + \epsilon_{it}$$

where $StLouis_i * Year_t$ is an interaction between the St. Louis region and a particular year dummy. We estimate one-year (short-term) and four-year (long-term) impacts of banking distress on business exit.

4.2.1 Short Term Impact

To measure the short term impact of differences in financial distress, we compare the probability of exit in the pre-crisis years of 1929 and 1930 to exit between 1930 and 1931. Results are reported in the top panel of Table 5. We consider six specifications. Specification (1) is a baseline linear probability model with no fixed effects beyond those required for a diff-in-diff specification. Specification (2) is a baseline logit model. Because the results are similar in both statistical significance and magnitude, in subsequent specifications we use OLS for ease of interpretation. Specification (3) adds industry-specific time trends, and (4) adds controls for net worth group and credit rating, including unrated groups. Specification (5) drops unrated businesses, and specification (6) drops businesses in the Delta region.

There was a large and statistically significant increase in the exit of businesses stemming from the relative collapse of the banking sector in the St. Louis part of the state. Using 1929-30 as the pre-treatment period, the exit rates for 1930-31 in the St. Louis region are 16 to 20 percentage points higher than in the Atlanta region. The size and statistical significance of the effect do not vary much across the difference specifications.

Somewhat surprisingly given the evidence on the similarity of the regions discussed earlier, we find differences in exit rates in the pre-treatment period. The baseline exit rate is nine percentage points *lower* in the St. Louis region than in the Atlanta region. As noted above, a possible explanation is that Great Flood of 1927 and associated out-migration from the Delta region temporarily inflated the exit rates and depressed entry rates during the late 1920s (Hornbeck and Naidu, 2014). Out-migration may have also resulted in low entry rates during the period, which would drive down

exit rates shortly thereafter, since new businesses have a higher propensity to exit (Siegfried and Evans, 1994). However, any such effect must have extended beyond the Delta proper, because the effect persists even after dropping counties that make up the Mississippi Delta (specification 6).

4.2.2 Long Term Impact

To measure the impact of the financial distress over the long term, we compare exit in pre-crisis years to exit between 1931 and 1935 as reported in the bottom panel of Table 5. This also captures the impact of stabilization in the banking system in the northern part of the state after the St. Louis Fed reversed course in July 1931. We estimate an 11-12 percentage point positive differential in exit in the St. Louis four-year period after the crisis (or about 3.5 percent annually). Taken together, our results in the short-run and long-run emphasize the rapid deterioration of the economy in 1929-1930, and they are consistent with the conclusions of Ziebarth (2013b) who found high short-run exit rates in manufacturing plants. The higher exit rates we find among all sectors in northern Mississippi persisted through 1935, which is a longer time frame than the decline in revenue and output in manufacturing detected by Ziebarth (see also Andrade and Kaplan (1998)).

5 From Exit to Bankruptcy

To understand more clearly the role of credit relationships, we transition from studying exit to studying bankruptcy, where we have detailed information on the creditors. To make clear the underlying processes our logic, we first lay out background on the relationship between exit and bankruptcy and the nature of the legal process of bankruptcy.

Most firms that exit pay their debts, but a small percentage do not. To our knowledge, neither D&B or any other agency published lists of the names of business that failed to pay their debts, but D&B published statistics on the number of firms that “failed.” From 1899-1962, there were on average only about 12 failures *per 10,000 businesses* per year (Sutch and Carter (2000), Series Ch411 and Ch408). As the Mississippi statistics in Figure 4 illustrate, business failures closely tracked business bankruptcies during this period, but the two numbers did not measure exactly the same thing. A firm was considered by D&B to have failed if it was involved in a voluntary negotiation that resulted in losses to creditors, or faced debt collection action in state court, or

filed for bankruptcy in federal court. However, the number of business failures reported by D&B exclude very small businesses and professionals, while business bankruptcy numbers include firms of all sizes and types. Since the number of business bankruptcy filings is greater than the reported failures, it is clear that the number of small businesses in bankruptcy was greater than the number of larger businesses that failed but did not seek bankruptcy protection.

The Bankruptcy Act in effect during the period we study allowed a debtor to file “voluntarily” for bankruptcy protection, and it also allowed “involuntary” petitions in which creditors ask the court to begin bankruptcy proceedings against a business debtor.¹⁸ When either sort of petition for bankruptcy was filed, collection actions under state law were stopped; a meeting of creditors was called; the debtors non-exempt assets were liquidated; and the proceeds were distributed on a *pro rata* basis among creditors with similar claims. Since business assets were liquidated, bankruptcy implies exit. Of course, many bankrupt business owners subsequently open new businesses. Procedures for court-supervised “reorganization” of business debts were not added until 1933.

5.1 The Effect of Lender Distress on Borrower Bankruptcy

A bank failure has an obvious negative impact on the firms it lends to. Moreover, during this period banks re-evaluated risks, replaced unsecured commercial paper with secured debt in their portfolios (Duca, 2013), and demanded the payment of unsecured debts they would have normally rolled over. As discussed in the introduction, it is likely that the sticky nature of credit relationships that yielded informational advantages in normal circumstances (Petersen and Rajan, 1994) made it difficult to secure new sources of unsecured credit even for firms in good condition. Since the most bank-dependent firms were wholesalers (Richardson and Gou, 2013), who were themselves important sources of trade credit, banking distress had the potential to spread quickly to retailers and manufacturers. If a debtor-business had no alternative source of credit, and revenue plus retained earnings were insufficient, it would default. Either the collection efforts of the creditor could lead the defaulting business to file for bankruptcy protection, or the creditor (along with its peers) could submit an “involuntary” petition to the court.¹⁹

¹⁸The first permanent bankruptcy law was passed in 1898. For more information on the 1898 Bankruptcy Act see Hansen (1998), Balleisen (2001), and Skeel (2003)

¹⁹Creditor-initiated involuntary filings were (and still are) extremely rare. In Mississippi, only about seven percent of all cases between 1928 and 1935 were involuntary. In our docket book data, involuntary filings peaked at 15 percent of business filings in the months between the crash of 1929 and *before* the collapse of Caldwell. There were just for

In normal circumstances, the time between default and filing for bankruptcy could be substantial. The 1898 Act was designed to encourage both creditors and debtors to take the time to negotiate before coming to court, and Hansen and Hansen (2007) argue that this aspect of the Act was particularly successful.²⁰ Therefore, differences in business bankruptcy rates at any time may not be particularly informative of present conditions.²¹

To search for an effect of banking distress on bankruptcy filings, we estimate the probability of filing for bankruptcy before and after the Caldwell crisis with linear probability and logit models. We restrict the sample to firms linked to the D&B *Reference Book* for 1929 because for these firms we observe net worth and credit rating before the collapse. We control for quarter of filing in all specifications, and we control for industry, net worth, and credit rating as indicated in the tables. Because the number of bankruptcy filings is quite small across both regions, it is difficult to estimate a difference-in-differences specification. Instead we estimate separate regressions for the pre-crisis period and immediately afterwards. Filing for bankruptcy before the crisis was from one-half to one percent less likely for a firm in the St. Louis-controlled part of Mississippi than for a firm in the Atlanta-controlled part, as shown in the top half of Table 6. These effects are fairly consistent across the various specifications. The lower bankruptcy rates in the St. Louis-controlled region are consistent with the comparatively low exit rate there between 1929 and 1930, as estimated above.

The bottom half of Table 6 shows that this small difference in bankruptcy rates persists in the immediate after of the Caldwell collapse. The point estimates are smaller though not in an economically meaningful way. This is not just due to the narrow window of time that we consider, during which the regional Fed policies differed. When we include all bankruptcies between the collapse and the end of the bankruptcy sample in 1936 (not reported here), the lower rate in the St. Louis region persists. These results stand in contrast with time series evidence that banking distress had negative consequences for business as expressed, for example, in Richardson and Gou (2013); however, we emphasize again that the business bankruptcy rate does not necessarily reflect current conditions.

seven involuntary petitions filed between the collapse of Caldwell and the loosening of the St. Louis Fed's policy. Nearly all debtors we observe filed for bankruptcy protection voluntarily in reaction to the collection efforts of their creditors.

²⁰Renegotiations between debtors and creditors has mainly been studied theoretically in the context of the understanding how many credit relationships firms ought to have, and how they ought to spread their debt among their creditors (Bolton and Scharstein, 1996; Bris and Welch, 2005; Guiso and Minetti, 2010; Ongena et al., 2012).

²¹Personal bankruptcy is also a poor indicator of crisis, as shown by Hansen and Hansen (2012)

5.2 Effects of Creditor Distress on Balance Sheets of those Filing for Bankruptcy

We now consider the effects of credit relationships in a time of distress for creditors on the balance sheets of those filing for bankruptcy. If it were possible to obtain information on the balance sheets of those that do *not* file for bankruptcy, from publicly traded firms to the corner store and the pickle maker, then we could better control for differences in the characteristics of the underlying population from which bankruptcies come. Such data are a challenge to collect today – which is why studies of business bankruptcies use special samples such as highly-leveraged firms (Asquith et al., 1994) or very large firms from Compustat (Bharath and Shumway, 2008) – and they do not exist for the Depression.²² Instead we must lean on the assumption of homogeneity across regions.

We focus on the amount of debt and the location of the creditors that own the debt. First consider banks as creditors. If banking distress leads banks to pressure their business debtors to pay rather than to roll over debt as they would usually do, then firms with more bank debt will be more likely to file for bankruptcy than firms with less bank debt. Firms that owe debt to banks located in the regions of greatest distress will be more likely to file than firms that owe debt to banks located in less-distressed regions. Now consider all creditors. If banking distress creates a widespread contraction of trade credit, then firms that owe more debt to suppliers or other creditors in the most distressed regions will be more likely to file than firms with credit networks centered in other regions.

In such a time of widespread distress, a creditor may have many debtors who are in default. Since pursuing collection action is costly, the creditor is unlikely to pursue collection against all defaulting debtors immediately. We expect a creditor to maximize the expected net return: it would try to maximize the amount recovered while minimizing the cost of its collection actions. The net return is likely to be greatest from pursuing the debtors with the largest debts, provided that those debtors are also known to have substantial assets.²³ Therefore, we expect larger firms with larger

²²In addition to digitizing the D&B *Reference Books*, we have searched for data on the balance sheets of non-filers. Summaries of the balance sheets of a small number of very large corporations are available through collections of annual reports. For example, Mergent Archives' historical annual report collection dates back to as early as 1925. There are just two Mississippi companies (a railroad and a power company) in this archive. Also, NBER did a survey of business debt in 1939 (Kaysen, 1938), but correspondence with Claudia Goldin (April 8, 2014) confirmed the original data have been lost.

²³Some creditors might have chosen not to pursue collection actions because they believed the value of the debtors' assets had fallen too far to make it worth the effort. Such a fire sale effect has been identified theoretically in Shleifer and Vishny (1992) and empirically in Acharya et al. (2007). This may be another interpretation of why we find lower bankruptcy rates in the northern half of the state.

debts to be targets of collection and more likely to file for bankruptcy during a time of distress. Finally, the costs of a collection action such as travel, lawyers' fees, court costs, and monitoring costs, are sure be inversely related to the distance between debtor and creditor. Therefore, we expect debtors who are closer to creditors in the most distressed areas to be more likely to file, all other things equal.

To sum up: If banking distress had a direct effect on firms, we expect there to be more bank debt among the creditors of the bankrupt firms that filed after the Caldwell crisis compared to those who filed before it, and we expect an increase in debt owed by filers to banks in the St. Louis Fed region and the other Real Bills districts. An increase in debt that the bankrupt owed to non-bank trade creditors, such as wholesalers from the most distressed areas, indicates that the banking crisis had meaningful spillovers to trade credit. We expect to see larger firms and firms with more debt in bankruptcy after the crisis as creditors with many debtors in default selectively pursued costly collection. Note there should also be a "St. Louis effect" in all of these before-and-after comparisons because debtors in the northern part of Mississippi were geographically closer to the most distressed creditors.

Table 7 shows descriptive statistics on the assets, debts, and leverage ratio, as well as information about the geographic distribution of the bankrupt and their creditors. Note that while there were 514 bankrupt businesses in the sample, not all case files were complete. As a result, the number of observations for different elements of the balance sheet varies. The first set of statistics describes the full sample; the second set describes the subsample that was linked to the 1929 D&B books. The bankrupt businesses linked to the D&B books were larger than the typical bankrupt firm, most likely because they were older.

Table 8 reports the effects of the Caldwell shock on (the logarithms of) total assets, debts, and the leverage ratio for those filing. In each pair of OLS regressions, the first specification includes all business bankrupts in the sample, while the second specification includes industry controls derived from the 1929 D&B data. In the regressions without industry controls, we see the expected increase in the assets and debts of firms in bankruptcy. Bankrupts who filed after the crisis were more than 60 percent larger. However, the St. Louis effect is negative, indicating that creditors were more choosy about pursuing collection over longer distances. Note that bankrupt firms were larger in the northern part of the state at baseline, so the net difference in the size of the bankrupt firms after

the crisis was relatively small. The relative sizes of the coefficients on in specifications (1) and (3) suggest a *decrease* in the leverage of bankrupt firms in the south, and a increase in leverage among the bankrupt in the north, though specifications (5) and (6) show that differences in the leverage ratio are imprecisely estimated. When we control for industry, we lose statistical significance but the signs of the coefficients are unchanged.

Table 9 describes changes in the prevalence of bank debt among the firms in bankruptcy. The top panel considers debt owed to any bank, regardless of location; the bottom panel focuses on banks under the control of the St. Louis Fed and other Real Bills Feds. In each panel, specifications (1) and (2) are Poisson regressions where the dependent variable is equal to the number of banks listed as creditors of the bankrupt. Specifications (3) and (4) are estimated by OLS with the dependent variable equal to the fraction of total debts that are owed to the banks under consideration. As above, the first regression in each pair includes all bankrupts in the sample, while the second includes industry controls derived from the 1929 D&B data.

It is important to note that bank credit was not directly relevant to most bankrupt firms. As summarized in (Hansen, 2015, forthcoming), the bank-to-business lending channels that are common today were only beginning to develop in the 1930s. In fact, the median bankrupt firm in the sample did not have *any* banks as creditors, either before or after the Caldwell crisis. Yet, banks may have mattered on the margin. Looking at specifications (1) and (3) in the top panel of Table 9, we see that, as expected, firms in the St. Louis-controlled region who filed before the crisis had more bank-creditors and owed more debt to banks located in Real Bills regions, including banks in northern Mississippi. After controlling for industry this difference is eliminated, which is indicative of the extent of financial integration across the regions. Surprisingly – given the significant numbers of bank failures there over this period – there was no change in prevalence of banks from Real Bills regions after the crisis in either region of the state. Nor was there a difference in prevalence of banks generally, as shown in specifications (1) and (2) of the bottom panel of the table. Looking at specification (3) in the bottom panel, we see that there was twice as much debt owed to banks among filers after the Caldwell crisis, regardless of whether the bankrupt was in the north or the south, though again industry controls reduce the precision of the estimate.

The effect of banking distress is amplified by business-to-business credit relationships. Table 10 shows the results of regressions similar in specification to those in Table 9, but with dependent

variables equal to the total number of creditors in Real Bills regions (again including northern Mississippi itself) and the logarithm of debt owed to those creditors. We see the expected positive and statistically significant regional fixed effect in specifications (1) and (2), indicating the large number of local credit connections in northern Mississippi. Critically for our argument, the coefficients on the interaction terms in all of the specifications are positive and large and their size and statistical significance increases when industry controls are added. The size of the debt owed to creditors located in Real Bills regions, including nearby creditors, was four times greater after the crisis in the northern part of the state than in the southern part. And, as we have already shown in Table 8, the assets and total debt of bankrupts in the north did not increase.²⁴

Taken together, we interpret the totality of the results as providing clear evidence of that banking distress affected businesses by causing a contraction in trade credit in the Real Bills region that led distressed creditors to step up their collection efforts. Though trade credit markets were integrated across federal reserve regions, the contraction in the St. Louis Region did not have a strong impact on firms in southern Mississippi because distressed creditors appear to have strongly preferred to pursue collections against the nearer defaulting debtors – who were cheaper to sue and easier to monitor – rather than to incur the expense of going to court farther south more often.

It seems unlikely that we would observe a such a change in the geographical composition of creditors and debts owed if businesses seeking bankruptcy protection were merely victims of a relative decline in demand for goods and services in the St. Louis Fed-controlled part of the state. A decline in demand would not be so strongly correlated with the locations of *creditors*. Moreover, the short-lived decline in production and revenue among small manufacturers documented by Ziebarth (2013a) is also consistent with a the contraction of trade credit. Small manufacturers would have been unable to keep producing if the system of trade credit was disrupted, while large manufactures would have been more able to use their assets to obtain a secured loan.

²⁴None of our results in Table 10 show a change in the geographical composition of creditors or debts owed among the bankrupt in southern Mississippi. This is not an artifact of complete segregation between the credit markets of bankrupt business in the two halves of the state. Twenty-two percent of the creditors of southern businesses that went bankrupt before the crisis were owed to creditors in Real Bills regions.

6 Conclusion

We have exploited a natural experiment in Mississippi during the early part of the Great Depression to understand the connection between banking distress and business distress. To do this, we linked two new resources: business information from the credit rating agency D&B and bankruptcy court records. We have shown that the added financial distress caused by the St. Louis Fed's decision to allow banks to suspend operations and close in the aftermath of the Caldwell collapse led to higher rates of business exit in the north of Mississippi compared to the south.

We have also shown that credit relationships were a mechanism through which banking distress was transmitted. As banks (and probably other creditors) became unwilling to issue unsecured loans, trade credit dried up. Banking distress was felt most keenly and immediately, not among the largest businesses that had enough collateral to obtain at least some secured loans, but among businesses whose credit came from other businesses and among those who borrowed from the creditors who faced the greatest distress themselves. Creditors located in the parts of Mississippi and the country on which the credit crisis weighed most heavily attempted to collect from relatively nearby debtors in the north of Mississippi (where the cost of collection was lowest) and better quality debtors at greater distances (where the potential payoff from collection efforts was highest).

Our results echo Chodorow-Reich (2014), who uses the sticky nature of credit relationships to estimate the causal effects of the 2007-2008 credit freeze on employment. In the modern story, it was the businesses unfortunate enough to be customers of unhealthy banks that laid off the most workers. In our Depression-era story, it was the debtors who were unfortunate enough to rely on distressed creditors that faced the greatest risk of collection actions and turned to the court for bankruptcy protection. The outcome for a business seems to have had little to with the quality of the business itself, as was the case when zombie banks allocated credit in Japan in the early 90s (Caballero et al., 2008). Understanding whether their unfortunate circumstances had permanent scarring effects on the owners of the businesses is an important avenue for future research.

	1926		1929		Year 1931		1935		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
SIC Group										
Retailer	13822	69.5	14693	70.7	13077	69.4	11449	68.2	53041	69.5
Wholesaler	1500	7.5	1860	8.9	1562	8.3	1416	8.4	6338	8.3
Construction	267	1.3	332	1.6	259	1.4	304	1.8	1162	1.5
Manufacturer	2358	11.9	2193	10.5	1877	10.0	1645	9.8	8073	10.6
Mining	0	0.0	1	0.0	1	0.0	1	0.0	3	0.0
AgForestFish	592	3.0	671	3.2	832	4.4	853	5.1	2948	3.9
Services	1335	6.7	1018	4.9	1209	6.4	1081	6.4	4643	6.1
Transport	21	0.1	24	0.1	30	0.2	41	0.2	116	0.2
General Credit Rating										
High	759	3.8	893	4.3	789	4.2	561	3.3	3002	3.9
Good	1196	6.0	1469	7.1	1176	6.2	977	5.8	4818	6.3
Fair	4122	20.7	4743	22.8	4396	23.3	4039	24.1	17300	22.7
Limited	4789	24.1	4388	21.1	3931	20.9	3593	21.4	16701	21.9
Not Known	9029	45.4	9299	44.7	8555	45.4	7620	45.4	34503	45.2
Net Worth Group										
More than \$125K	664	3.3	746	3.6	659	3.5	431	2.6	2500	3.3
\$10K to \$125K	1648	8.3	1876	9.0	1770	9.4	1291	7.7	6585	8.6
\$2K to \$10K	4510	22.7	5437	26.1	5174	27.5	4386	26.1	19507	25.6
Less than \$2K	7213	36.3	7480	36.0	7001	37.1	7052	42.0	28746	37.7
Not Known	5860	29.5	5253	25.3	4243	22.5	3630	21.6	18986	24.9

Table 1: Businesses listed in D&B by SIC major groups, estimate of net worth, and credit rating.
Source: D&B Reference Books for Mississippi.

SIC Group	Before Caldwell		Filed... After Caldwell		Total	
	No.	%	No.	%	No.	%
Retail	318	75.4	703	76.3	1021	76.0
Whole.	37	8.8	81	8.8	118	8.8
Constr.	2	0.5	19	2.1	21	1.6
Mfg.	44	10.4	82	8.9	126	9.4
AgForFish	15	3.6	11	1.2	26	1.9
Services	6	1.4	24	2.6	30	2.2
Transport	0	0.0	1	0.1	1	0.1
Total	422	100.0	921	100.0	1343	100.0

Table 2: Unique bankruptcies among firms listed in D&B books by major SIC industry and time of filing for bankruptcy relative to the Caldwell crisis. *Source:* Linked D&B *Reference Books* and bankruptcy dockets for Mississippi.

	Before Caldwell		Filed After Caldwell		Total	
	No.	%	No.	%	No.	%
Northern	72	36.9	91	28.5	163	31.7
Southern	123	63.1	228	71.5	351	68.3
Total	195	100.0	319	100.0	514	100.0

Table 3: Number of business cases in the sample of bankruptcy case files, by time of filing relative to the Caldwell crisis. These are cases for which we have detailed creditor, asset, and liability information, though all information is not complete for every case.

	Atlanta		Area Controlled by... St. Louis		Total	
	No.	%	No.	%	No.	%
SIC Group						
Retailer	7254	71.0	7439	70.3	14693	70.7
Wholesaler	885	8.7	975	9.2	1860	8.9
Construction	230	2.3	102	1.0	332	1.6
Manufacturer	1121	11.0	1072	10.1	2193	10.5
Mining	1	0.0	0	0.0	1	0.0
AgForestFish	203	2.0	468	4.4	671	3.2
Services	505	4.9	513	4.8	1018	4.9
Transport	11	0.1	13	0.1	24	0.1
Net Worth Group						
More than \$125K	361	3.5	385	3.6	746	3.6
\$10K to \$125K	991	9.7	885	8.4	1876	9.0
\$2K to \$10K	2552	25.0	2885	27.3	5437	26.1
Less than \$2K	3806	37.3	3674	34.7	7480	36.0
Not Known	2500	24.5	2753	26.0	5253	25.3
General Credit Rating						
High	420	4.1	473	4.5	893	4.3
Good	674	6.6	795	7.5	1469	7.1
Fair	2315	22.7	2428	22.9	4743	22.8
Limited	2224	21.8	2164	20.4	4388	21.1
Not Known	4577	44.8	4722	44.6	9299	44.7

Table 4: Comparing businesses across Federal Reserve district regions of Mississippi for 1929. SIC Groups are the nine major SIC categories. Net worth groups are based upon D&B's estimate of net worth, and general credit is based on reporter information as described in text. *Source:* D&B *Reference Books* for Mississippi.

	Exit					
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Short-run</i>						
St. Louis	-0.0736*** (0.00681)	-0.313*** (0.0291)	-0.0729*** (0.00684)	-0.0721*** (0.00679)	-0.0767*** (0.00891)	-0.0807*** (0.00817)
St. Louis * (1930→1931)	0.146*** (0.00967)	0.649*** (0.0435)	0.147*** (0.00970)	0.147*** (0.00966)	0.214*** (0.0256)	0.159*** (0.0118)
<i>Long-run</i>						
St. Louis	-0.0736*** (0.00681)	-0.313*** (0.0291)	-0.0729*** (0.00684)	-0.0721*** (0.00680)	-0.0765*** (0.00892)	-0.0815*** (0.00817)
St. Louis * (1931→1935)	0.117*** (0.00965)	0.513*** (0.0426)	0.120*** (0.00968)	0.119*** (0.00953)	0.132*** (0.0130)	0.128*** (0.0115)
Observations	39050	39050	38930	38929	21420	27852
Specification	Linear	Logit	Linear	Linear	Linear	Linear
Controls?	None	None	Industry	Net worth, rating	None	None
Drop?	None	None	None	None	No Rating	Delta Counties

Standard errors in parentheses

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

Table 5: Differences in the probability of exit from 1930 to 1931 and from 1931 to 1935 across Federal Reserve districts of Mississippi. Exit rates from 1929 to 1930 serve as the pre-treatment year. All regressions include year fixed effects. Standard errors are robust. Specifications: (1) baseline linear, (2) baseline logit, (3) with SIC trends, (4) with controls for net worth and rating, (5) dropping firms with no rating, (6) dropping Delta counties.

	(1)	(2)	(3)	(4)	(5)
<i>Before Caldwell</i>					
St. Louis (d)	-0.00634*** (0.00168)	-0.00533*** (0.00142)	-0.00658*** (0.00172)	-0.00664*** (0.00172)	-0.00929*** (0.00215)
Observations	20185	20185	20064	20064	14204
<i>Immediately After Caldwell</i>					
St. Louis	-0.00383*** (0.00111)	-0.00247*** (0.000740)	-0.00385*** (0.00113)	-0.00402*** (0.00114)	-0.00547*** (0.00155)
Observations	19858	19858	19738	19738	13942
Specifications	Linear	Logit	Linear	Linear	Linear
Controls	None	None	Industry Trends	Net worth, Rating	No
Drop?	None	None	None	None	Extant Courts

Marginal effects; Standard errors in parentheses

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

Table 6: Differences in the probability of filing for bankruptcy across Federal Reserve districts of Mississippi before and immediately after the the Caldwell crisis. Regressions take as the reference population the set of businesses from D&B in 1929. All specifications control for filing in the first quarter of the calendar year. Specifications: (1) baseline linear, (2) baseline logit, (3) linear with SIC trends, (4) linear with controls for net worth and rating, (5) restricted to the counties assigned to the courts where dockets are extant.

	Full Sample			Sample Linked to 1929 D&B		
	Mean	Std. Dev.	N	Mean	Std. Dev.	N
Total Assets (1929\$)	17760.54	90096.15	434	25931.93	131702.00	195
Total Debts (1929 \$s)	18096.48	49884.19	461	21593.99	67784.69	207
Leverage	3.94	11.43	432	3.70	12.65	195
No. of Banks Owed	0.91	1.79	495	0.99	1.69	219
Debt Owed to Banks (1929\$)	3270.26	14726.51	495	3930.85	18203.81	219
<i>Restricted to Debts from Real Bills Regions</i>						
No. of Banks Owed	0.21	0.91	495	0.21	0.76	219
Debt Owed to Banks(1929 \$s)	604.64	3330.77	495	719.80	4060.02	219
No. of Creditors	11.89	18.04	495	13.44	21.63	219
Debt Owed to All Creditors (1929 \$s)	5045.93	13503.61	495	5494.41	13617.44	219

Table 7: Descriptive statistics for bankrupts and their creditors in the sample. The first three columns include statistics for all business bankrupts. The second three columns show the same statistics for firms linked to the 1929 D&B books. The number of observations varies because of missing information.

	Assets		Debt		Leverage	
	(1)	(2)	(3)	(4)	(5)	(6)
St. Louis	0.414*	-0.0427	0.255	0.0424	-0.150	0.0717
	(0.233)	(0.358)	(0.191)	(0.304)	(0.142)	(0.185)
After Caldwell	0.643***	0.360	0.345**	0.168	-0.170	-0.0714
	(0.203)	(0.313)	(0.160)	(0.287)	(0.125)	(0.159)
St. Louis * After Caldwell	-0.801***	-0.544	-0.510**	-0.300	0.207	0.169
	(0.305)	(0.473)	(0.254)	(0.396)	(0.204)	(0.289)
Observations	434	195	461	207	432	195
Sample	All	Linked	All	Linked	All	Linked

Standard errors in parentheses

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

Table 8: Differences in the logarithm of assets, debts, and leverage at time of filing for bankrupt firms across Federal Reserve districts, before and after the Caldwell crisis. The first specification in each pair includes all business bankrupts in the sample. The second specification in each pair restricts to firms linked to the 1929 D&B books and includes industry controls. Number of observations differs across specifications because of missing or illegible information in bankruptcy documents for a some cases. Standard errors are robust.

	Number of Banks		Bank Debt	
	(1)	(2)	(3)	(4)
<i>All Banks</i>				
St. Louis	-0.223 (0.288)	-0.735* (0.404)	-0.201 (0.548)	-0.659 (0.946)
After Caldwell	0.333 (0.235)	-0.0334 (0.336)	1.076** (0.427)	1.104 (0.810)
St. Louis * After Caldwell	-0.266 (0.409)	-0.128 (0.526)	-0.994 (0.733)	-1.828 (1.153)
<i>Banks from Real Bills Regions</i>				
St. Louis	0.939* (0.561)	0.453 (0.860)	0.929** (0.394)	1.066* (0.617)
After Caldwell	-0.639 (0.614)	-0.509 (0.867)	-0.216 (0.205)	0.110 (0.379)
St. Louis * After Caldwell	1.159 (0.747)	1.179 (1.072)	0.818 (0.554)	0.251 (0.807)
Observations	495	219	495	219
Sample	All	Linked	All	Linked

Standard errors in parentheses

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

Table 9: Differences in number of creditor-banks and debt owed at time of filing to banks across Federal Reserve districts of Mississippi, before and after the Caldwell crisis. In Panel A the dependent variable refers to debts owed to banks in anywhere, Panel B refers to debts owed to banks in Real Bills (RB) Fed Districts. Columns (1) and (2) in each panel are estimated by Poisson regression; exponentiated coefficients are reported. Columns (3) and (4) are estimated by OLS; standard errors are robust. The first specification in each pair includes all business bankrupts in the sample. The second specification in each pair restricts to firms linked to the 1929 D&B books and includes industry controls.

	Number of Creditors		Debt	
	(1)	(2)	(3)	(4)
St. Louis	0.475*	0.161	0.811	-0.629
	(0.279)	(0.490)	(0.603)	(0.952)
After Caldwell	-0.277	-0.452	-0.0776	-0.412
	(0.235)	(0.408)	(0.406)	(0.639)
St. Louis * After Caldwell	0.679**	1.112**	2.696***	4.115***
	(0.303)	(0.547)	(0.694)	(1.068)
Observations	495	219	495	219
Sample	All	Linked	All	Linked

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 10: Differences in number of creditors and debt owed at the time of filing to all creditors in Real Bills Fed regions (including in northern Mississippi) across Federal Reserve districts of Mississippi before and after the Caldwell crisis. Specifications (1) and (2) are estimated by Poisson regression; exponentiated coefficients are reported. Columns (3) and (4) are estimated by OLS; standard errors are robust. The first specification in each pair includes all business bankrupts in the sample. The second specification in each pair restricts to firms linked to the 1929 D&B books and includes industry controls.

Figure 1: Map of Mississippi counties. Shaded counties are controlled by St. Louis Fed; white counties are controlled by Atlanta Fed. Stars indicate locations of cities where the federal district courts for northern and southern Mississippi met and where bankruptcy cases were filed. The boundary between the district courts and Fed districts coincide, except that the darkly shaded county is part of the Southern District Court.

ESTIMATED PECUNIARY STRENGTH								GENERAL CREDIT			
								<i>High.</i>	<i>Good.</i>	<i>Fair.</i>	<i>Limited.</i>
*1	AA	Over	\$1,000,000,	-	-	-	-	A1	1	1½	2
	A+	Over	750,000,	-	-	-	-	A1	1	1½	2
	A	\$500,000 to	750,000,	-	-	-	-	A1	1	1½	2
	B+	300,000 to	500,000,	-	-	-	-	1	1½	2	2½
	B	200,000 to	300,000,	-	-	-	-	1	1½	2	2½
*2	C+	125,000 to	200,000,	-	-	-	-	1	1½	2	2½
	C	75,000 to	125,000,	-	-	-	-	1½	2	2½	3
	D+	50,000 to	75,000,	-	-	-	-	1½	2	2½	3
	D	35,000 to	50,000,	-	-	-	-	1½	2	2½	3
	E	20,000 to	35,000,	-	-	-	-	2	2½	3	3½
*3	F	10,000 to	20,000,	-	-	-	-	2½	3	3½	4
	G	5,000 to	10,000,	-	-	-	-		3	3½	4
	H	3,000 to	5,000,	-	-	-	-		3	3½	4
	J	2,000 to	3,000,	-	-	-	-		3	3½	4
*4	K	1,000 to	2,000,	-	-	-	-		3	3½	4
	L	500 to	1,000,	-	-	-	-			3½	4
	M	Less than	500,	-	-	-	-			3½	4

Figure 2: Summary of ratings from a volume of Dun & Bradstreet

Figure 3: National annual exit rates reported by D&B and our implied annual exit rates for MS. The implied annual exit rate e is calculated as $e = 1 - (1 - Exit)^{1/2}$ where $Exit$ is the gross exit rate over a two year period. Sources: Dun & Bradstreet (1945) and D&B *Reference Books* for Mississippi.

Figure 4: Number of business failures and business bankruptcies in Mississippi. The Department of Justice did not report the number of bankruptcy cases filed by occupation from 1933 through 1940, but instead reported only cases closed. Since closure generally more than a year from filing, and can be much longer for businesses, we do not show closure statistics here. See text for additional information. Sources: Statistical Abstracts and DOJ Annual Reports.

OFFICIAL FORM IN BANKRUPTCY

Legal Blank and Book Co., Bluefield, W. Va.

Schedule A. (3)

Creditors Whose Claims Are Unsecured.

N.B.—When the name and residence (or either) of any drawer, maker, and indorser, or holder of any bill or note, etc., are unknown, the fact must be stated and also the name and residence of the last holder known to the debtor. The debt due to each creditor must be stated in full, and any claim by way of set-off stated in the schedule of property. This sheet must be signed by the bankrupt at the end of the statement.

Names and residences of Creditors. If Residence Unknown, that fact must be stated.	When and Where Contracted.	Nature and consideration of the debt, and whether any judgment, bond, bill of exchange, promissory note, etc., and whether contract- ed as a partner or joint contractor with any other person, and if so, with whom?	Amount
Ozark Pencil Co., St. Louis, Mo.	8/21/31 Drew, Miss.	Goods purchased open acct. individually	\$18 70
Fanno & Rossetta Inc. New Orleans, La.	3-5 to 10-14-31 Drew, Miss.	Goods purchased open Acct individually	41 30
Plough Chemical Co., Memphis, Tenn.	10-14-30 to 9-14- 31; Drew, Miss.	Goods purchased open Acct individually	66 16
Procter & Gamble Dist. Co., Memphis, Tenn.	Aug. 8, 1931 Memphis, Tenn.	Goods purchased open Acct individually	26 20
Rudolph Jacobs & Co. Cincinnati, Ohio	April 21, 1931 Drew, Miss.	Goods purchased open account individually	73 15
Rigo Mfg. Co., Nashville, Tenn.	April 2, 1930 to July, 1931. Drew, Miss.	Goods purchased open account individually	53 30
Standard Oil Co.	July 7th. to Oct. 3d. 1931; Drew, Miss.	Goods purchased open account individually	46 75
Standard Candy Co., Nashville, Tenn.	Sept. 17, 1931 Drew, Miss.	Goods purchased open account individually	53 79
Taylor Paper Co., Memphis, Tenn.	Aug. 4 to Sept. 22 1931; Drew, Miss.	Goods purchased open account individually	52 61
Yale University Press New York, N.Y.	Feb. 27, 1930 Drew, Miss.	Goods purchased open account individually	20 00
Miss. Power & Lt. Co. Drew, Miss.	Aug. Sept & Oct. 1931; Drew, Miss.	Light & Power for store individually	75 00
Sou. Bell Tel & Tel Co Drew, Miss.	Sept & Oct. 1931 Drew, Miss.	Telephone for store individually	3 50
Miller & Hart, Chicago, Ill.	Aug. 3, 1931 Drew, Miss.	Goods purchased open account individually	23 14
J.O. Lampkin, Receiver Drew, Miss.	December 1930 Drew, Miss.	Note due on demand individually endorsed by S.M. Ruscoe	\$1.000 00
Burroughs Adding Mach. Co., Jackson, Miss.	June 1931 Drew, Miss.	Work on adding machine individually	2 50
Drew Insurance Agency Drew, Miss.	Sept. 1931 Drew, Miss.	Insur., ce on stock & fixtures; individually	11 92
C.C. Hay Drug Co., Como, Miss.	1930 Drew, Miss.	Goods purchased open account individually	12 36
Bob Cap Co., St. Louis Mo.	1931 Drew, Miss.	Goods purchased open account individually	5 63
TOTAL			

Petitioner.

Figure 5: Example of "List of Unsecured Creditors." Source: MS Northern District Clarksdale Division 1932 Accession 54A0463 Box 72x Case No. 1410

References

- Acharya, V. V., S. T. Bharath, and A. Srinivasan (2007). Does industry-wide distress affect defaulted firms? Evidence from creditor recoveries. *Journal of Financial Economics* 85, 787–821.
- Andrade, G. and S. Kaplan (1998). How costly is financial (not economic) distress? Evidence from highly leveraged transactions that became distressed. *Journal of Finance* 53, 1443–1493.
- Asquith, P., R. Gertner, and D. Scharfstein (1994). Anatomy of financial distress: An examination of junk-bond issuers. *Quarterly Journal of Economics* 109, 625.
- Balleisen, E. J. (2001). *Navigating Failure: Bankruptcy and Commercial Society in Antebellum America*. The University of North Carolina Press.
- Bernanke, B. S. (1983). Nonmonetary effects of the financial crisis in the propagation of the Great Depression. *American Economic Review* 73, 257–276.
- Bharath, S. T. and T. Shumway (2008). Forecasting default with the Merton distance to default model. *Review of Financial Studies* 21, 1339–1369.
- Bolton, P. and D. S. Scharstein (1996). Optimal debt structure and the number of creditors. *Journal of Political Economy* 104, 1–25.
- Bris, A. and I. Welch (2005). The optimal concentration of creditors. *Journal of Finance* 60, 2193–2212.
- Caballero, R., T. Hoshi, and A. Kashyap (2008). Zombie lending and depressed restructuring in Japan. *American Economic Review* 98, 1943–1977.
- Calomiris, C. and J. R. Mason (2003). Consequences of bank distress during the Great Depression. *American Economic Review* 93, 937–947.
- Carruthers, B. G. (2013). From uncertainty toward risk: The case of credit ratings. *Socio-Economic Review* 11, 525–551.
- Chodorow-Reich, G. (2014). The employment effects of credit market disruptions: Firm-level evidence from the 2008-09 financial crisis. *Quarterly Journal of Economics* 129, 1–59.
- Cohen, B. (2012). *Constructing an Uncertain Economy: Credit Reporting and Credit Rating in the Nineteenth Century United States*. Ph. D. thesis, Northwestern University.
- Cole, H. L. and L. Ohanian (2000). Reexamining the contributions of monetary and banking shocks to the U.S. Great Depression. *NBER Macroeconomics Annual* 2001 15, 183–227.
- Cronon, W. (1991). *Nature’s Metropolis: Chicago and the Great West*. WW Norton and Company.
- Duca, J. V. (2013). The money market meltdown of the Great Depression. *Journal of Money, Credit and Banking* 45, 493–504.
- Dun & Bradstreet (1945). *Vital statistics of American business from 1900 to the beginning of 1945*.
- Gross, K., M. S. Newman, and D. Campbell (1996). Ladies in red: Learning from America’s first female bankrupts. *American Journal of Legal History* 40, 1–40.

- Guiso, L. and R. Minetti (2010). The structure of multiple credit relationships: Evidence from u.s. firms. *Journal of Money, Credit and Banking* 42, 1037–1071.
- Hammes, D. (2001). Locating Federal Reserve districts and headquarters cities. *The Region*.
- Hansen, B. (1998). Commercial associations and the creation of a national economy: The demand for federal bankruptcy law. *Business History Review* 72, 86–112.
- Hansen, B. A. and M. E. Hansen (2007). The role of path dependence in the development of U.S. bankruptcy law. *Journal of Institutional Economics* 3, 203–225.
- Hansen, M. E. (2015). Sources of credit and the extent of the credit market: A view from bankruptcy records, Mississippi 1929-1936. In W. Collins and R. Margo (Eds.), *Enterprising America*. University of Chicago Press.
- Hansen, M. E. and B. A. Hansen (2012). Crisis and bankruptcy: The mediating role of state law, 1920-1932. *Journal of Economic History* 72, 448–468.
- Hornbeck, R. and S. Naidu (2014). When the levee breaks: Black migration and economic development in the American South. *American Economic Review* 104, 963–990.
- Jalil, A. J. (2014). Monetary intervention really did mitigate banking panics during the Great Depression: Evidence along the Atlanta Federal Reserve District border. *Journal of Economic History* 74, 259–273.
- Kaysen, C. (1938). Industrial and commercial debt - A balance sheet analysis. NBER Financial Research Program, Ms. 1942.
- Kim, D. (2003). The popularity of partnerships in United States manufacturing during the Nineteenth Century. Unpublished, UC-Davis.
- Lipartito, K. (2013). Mediating reputation: Credit reporting systems in American history. *Business History Review* 87, 655–677.
- Madison, J. H. (1974). The evolution of commerical credit reporting agencies in the Nineteenth-Century America. *Business History Review* 48, 164–186.
- McAvoy, M. (2012). Bankers’ preferences and locating Federal Reserve bank locations. *Essays in Economic & Business History* 22.
- Mitchener, K. J. and G. Richardson (2013). Shadowy banks and financial contagion during the Great Depression: A retrospective on Friedman and Schwartz. *American Economic Review* 103, 73–78.
- Odell, K. A. and D. F. Weiman (1998). Metropolitan development, regional financial centers, and the founding of the Fed in the Lower South. *Journal of Economic History* 58, 103–125.
- Olegario, R. (2003). Credit reporting agencies: A historical perspective. *Credit Reporting Systems and the International Economy*, 115–159.
- Olegario, R. (2006). *A Culture of Credit: Embedding Trust and Transparency in American Business*. Harvard University Press.

- Ongena, S., G. Tümer-Alkan, and N. V. Westernhagen. (2012). Creditor concentration: An empirical investigation. *European Economic Review* 56, 830–847.
- Petersen, M. and R. G. Rajan (1994). The benefits of lender relationships: Evidence from small business data. *Journal of Finance* 49, 3–37.
- Richardson, G. (2008). Quarterly data on the categories and causes of bank distress during the Great Depression. *Research in Economic History* 25, 37–115.
- Richardson, G. and M. Gou (2011). Business failures by industry in the United States, 1895 to 1939: A statistical history. NBER WP 16872.
- Richardson, G. and M. Gou (2013). Bank failures trigger firm bankruptcies: Causal evidence from the Federal Reserve’s formative years. Unpublished, UC-Irvine.
- Richardson, G. and W. Troost (2009). Monetary intervention mitigated banking panics during the Great Depression: Quasi-experimental evidence from a Federal Reserve district border, 1929–1933. *Journal of Political Economy* 117, 1031–1073.
- Ruef, M. and K. Patterson (2009a). Credit and classification: The impact of industry boundaries in Nineteenth-century America. *Administrative Science Quarterly* 54, 486–520.
- Ruef, M. and K. Patterson (2009b). Organizations and local development: Economic and demographic growth among southern counties during Reconstruction. *Social Forces* 87, 1743–1776.
- Ruef, M. and D. Reinecke (2011). Does capitalism produce an entrepreneurial class? *Research in Organizational Behavior* 31, 225–252.
- Ruggles, S. (2002). Linking historical censuses: A new approach. *History and Computing* 14, 213–224.
- Shleifer, A. and R. Vishny (1992). Liquidation values and debt capacity: a market equilibrium approach. *Journal of Finance* 47, 1343–1366.
- Siegfried, J. J. and L. B. Evans (1994). Empirical studies of entry and exit: a survey of the evidence. *Review of Industrial Organization* 9, 121–155.
- Skeel, D. A. (2003). *Debt’s Dominion: A History of Bankruptcy Law in America*. Princeton University Press.
- Sutch, R. and S. Carter (Eds.) (2000). *Historical Statistics of the United States*. Cambridge University Press.
- Temin, P. (1976). *Did monetary forces cause the Great Depression?* W.W. Norton and Company.
- U.S. Bureau of the Census (Various years). Commercial failures: Aggregates, by states. *Statistical Abstract of the United States*.
- Wicker, E. (1996). *The Banking Panics of the Great Depression*. Princeton University Press.
- Ziebarth, N. L. (2013a). The Great Depression through the eyes of the Census of Manufactures. Unpublished, University of Iowa.
- Ziebarth, N. L. (2013b). Identifying the effects of bank failures from a natural experiment in Mississippi during the Great Depression. *AEJ: Macroeconomics* 5, 81–101.