Signals and Stigmas from Banking Interventions: Lessons from the Bank Holiday of 1933*

Matthew Jaremski
Utah State University and NBER

Gary Richardson
University of California, Irvine, Tsinghua University, and NBER

Angela Vossmeyer
Claremont McKenna College and NBER

October 2023

Abstract

A nationwide panic forced President Franklin Roosevelt to declare a banking holiday in March 1933. The government reopened banks sequentially using a process that sent noisy signals about banks' health. New microdata reveals the public responded to these signals. Deposits at rapidly reopened banks grew quicker than deposits at comparable or stronger banks that reopened even a few days or weeks later. The stigma of late reopening lasted for a decade. This stigma shifted funds from stigmatized to lauded banks and among communities that they served, but the shift in funds across institutions and communities had no measurable impact on the rate at which localities recovered from the Great Depression.

Keyword: Great Depression; Regulation; Bank Stability, Stigma, Economic Growth

JEL Codes: E50; G21; N22

***** The authors may be reached at matthew.jaremski@usu.edu, garyr@uci.edu, and angela.vossmeyer@cmc.edu. We thank Someswar Amujala, Jayaditya Maliye, and Aryaman Jaiswal of the Financial Economics Institute and numerous undergraduates at UC Irvine, particularly Sean Dowsing and Joel Madero, for excellent research assistance.

> "A question you will ask is this—why are all the banks not to be reopened at the same time? The answer is simple. Your government does not intend that the history of the past few years shall be repeated….We do not want and will not have another epidemic of bank failures.… Let me make it clear to you that if your bank does not open the first day you are by no means justified in believing that it will not open. A bank that opens on one of the subsequent days is in exactly the same status as the bank that opens tomorrow."
>
> Fireside Chat "On the Banking Crisis", March 12, 1933

1. Introduction

During systemic banking panics, policymakers seeking to stem the stampede must convince investors that their funds are safe (Gorton and Tallman 2018). This task often involves across-the-board, treat-all-depositors-and-firms equally interventions. Following the failure of Lehman Brothers in 2008, the government rushed to guarantee liabilities at all financial firms in afflicted sectors, even those which had hitherto been ineligible for assistance. Following the failures of Silicon Valley and Signature Banks in March 2023, the government quickly reassured depositors that the FDIC would repay funds in full regardless of whether they were insured or not. Critics – including Chang and Velasco (2000), Lacker (2008), Farhi and Tirole (2012), Chari and Kehoe (2016), and Keister (2016) – assert that unconditional assistance can be pernicious because expectations of bailouts, particularly those not conditioned on pre-panic behaviors, incentivize risk-taking and engender instability.[1] Policymakers, however, argue that panic-ending interventions have to be unconditional to prevent the stigma of assistance from slowing the recovery of institutions revealed to be weaker and impeding economic recovery. Leaders of the Federal Reserve, for example, raised the specter of this bank stigma to justify their actions during the Global Financial Crisis (Financial Crisis Inquiry Commission 2011; Geithner 2014).[2]

[1] Acharya et al. (2014) also noted that systemic bailouts may increase risk of government defaults on sovereign debt which could engender financial instability.

[2] In response to a lawsuit brought by Bloomberg over the identities of banks receiving emergency liquidity, the Board of Governors of the Federal Reserve System argued that revealing the identifies of institutions receiving

Regulators' fears of "bank stigma," where banks receiving government assistance lose the confidence of market participants, is distinct from the more widely researched concept of "facility stigma," where financial institutions become reluctant to seek assistance from government programs that might publicize their need for assistance. The concept of bank stigma justifies policymakers' sweeping programs to counteract panics, although little empirical evidence underlies their beliefs that signals sent by triaging applicants for aid and targeting assistance to institutions in need through no fault of their own produces substantial, pernicious stigmas. Evidence is limited because potentially stigma inducing interventions during systemic banking crises have not been observed in OECD economies for nearly a century. Systemic crises seldom occur, and policymakers fear stigma to such an extent that rescue packages have been designed to prevent it from arising. Policymakers' suppositions about stigma, in other words, lead them to implement policies that prevent researchers from testing those suppositions.

To shed light on this debate, we analyze the largest and most recent federal intervention during a systemic banking crisis that could have sent signals about the health of banks, the Bank Holiday of March 1933. At the nadir of the Great Depression, the United States government ordered all depositories in the nation to cease operations and then over time authorized individual banks to reopen. Officials worried that their plan of action – which sequenced reopenings based upon imperfect information about banks' health as well as characteristics of the communities in which they operated – might stigmatize banks because their reopening dates were readily observed and known to be predicated on their health. Our essay ascertains whether sequential

assistance would stigmatize those banks, leading to a loss of public confidence in them, and a withdrawal of market liquidity (Bloomberg L.P. v. Bd. of Governors of Fed. Reserve Sys., 649 F. Supp. 2d 262, 266, S.D.N.Y. 2009). In discussing why regulators made all large banks participate in the Troubled Asset Relief Program (TARP), then Secretary of the Treasury, Timothy Geithner stated that "smaller institutions would then feel free to apply for TARP without stigma" (2014, p. 236).

reopening signaled banks' health, the accuracy of those signals, and the impact of bank stigma on the broader economic recovery.

Characteristics of the Bank Holiday facilitate identification of links between regulatory intervention, bank stigma, and economic activity. First, the Holiday was mandatory and the signal sent by regulators – the date of reopening – was salient to depositors and observed by all market participants. All banks closed on the same date and reopened when regulators told them to reopen, eliminating any selection into treatment or observation of treatment. Second, before the initial waves of reopenings, regulators did not provide financial aid to banks or introduce novel financing facilities. Banks had the same balance sheets as the day they were closed and had access to the same federal lending programs that they had access to before the Holiday began. Depositors, likewise, had the same deposits, and borrowers had the same loans. Third, regulators' decisions about when to reopen banks were based on public and private information about the health of banks as well as other political, social, and economic goals set by federal and state authorities. For this reason, a bank's reopening date could reveal private information about its health that depositors could not previously observe, but might be misleading because other factors (like political concerns) could also have induced regulators to accelerate or postpone its reopening. Fourth, almost all banks operated within a single county, which allows us to compare stigma's impact on individual banks to outcomes in the communities in which they operated.

Our argument proceeds in four steps. Sections 2 and 3 set the stage. Section 2 elaborates on the characteristics of the Holiday and the structure of the banking system that facilitate inference in our analysis. These characteristics coincide with the prerequisites of information revelation in the game-theoretic literature on signaling and stigma.[3] Section 3 describes the novel

[3] In signaling models for optimal interventions in financial markets (e.g., Philippon and Skreta 2012; Ennis and Weinberg 2013; Ennis 2019), financial institutions decide whether to seek assistance and then regulators decide

nationwide micro-database that we collect, collate, and digitize to enable our analysis and discusses patterns apparent in the data.

The second step of the argument, which appears in Section 4, demonstrates that regulators' decisions during the Holiday were equivalent to standard game-theoretic models of signals and stigmas, where an informed party (regulators) makes an observable choice (reopening date) based upon private information (bank health). We regress reopening dates on information from bank balance sheets as well as an array of regulatory, demographic, geographic, and political variables. This exercise confirms the essential assumption of the models: the correlation between information held by and the action chosen by the signalers (regulators). We show reopening dates were correlated with bank health. Banks with more resources, larger liquidity reserves, and bigger capital buffers on average reopened sooner than banks with fewer resources, less liquidity, and less capital. This result demonstrates that rapid reopening signaled banks' health to market participants. These regressions, however, also reveal the imperfection of the signal. Many weak banks reopened early, while many strong banks reopened late.

The third step of our argument, which appears in Section 5, explores how stigma influenced depositors' decisions. This exercise confirms two key predictions of signaling models, that less informed agents (depositors) respond to the information that they receive and that stronger signals generate stronger responses. We identify stigma's impact by comparing flows of deposits between the summers of 1932 and 1933 in banks with similar health that reopened at different dates. Banks that reopened earlier clearly received more deposits than

whether to provide aid. These choices reveal private information held by financiers and regulators respectively. Because participation in the Holiday was mandatory, the strategic situation that we study differs slightly from these models, since only regulators make choices and reveal private information.

banks that reopened later. This is true even when comparing banks that were reopened several business days apart. Early reopening was a strong signal that overrode other information about banks' strength. In essence, depositors treated all banks that reopened rapidly as if they were healthy banks, regardless of information available about their balance sheets. Banks that reopened later received fewer deposits, but depositors responded more strongly to information about their solvency and liquidity. The impact of these signals lasted for nearly a decade, as the differences between early and late reopeners remain through 1940. Building on the bank-level results, we show that deposits increased in counties whose banks on average opened early, while deposits diminished in neighboring counties with similar characteristics whose banks on average reopened later. This analysis confirms a principal fear of policymakers today and in the past: interventions during panics that differentiate banks based on pre-panic behavior and characteristics – particularly those that clearly distinguish between stronger and weaker banks – can redistribute funds through the financial system.

Since policymakers today worry that deposit shifts could inhibit economic recovery, the fourth step of our argument, which appears in Section 6, examines whether stigma-induced shifts in deposits across counties inhibited or accelerated economic recovery at the county level. A wide range of empirical and theoretical studies (e.g., King and Levine 1993; Jayaratne and Strahan 1996; Cetorelli and Gambera 2001; Beck and Levine 2004; Beck et al. 2010; Chodorow-Reich 2014; Gilje et al. 2016; Mian et al. 2020; Baron et al. 2021; Cohen et al. 2021) indicate that reducing funds available through financial institutions can reduce economic growth. We find, perhaps surprisingly, no relationship between counties where banks reopened early (and whose deposits grew as a result of that early reopening) and the pace of economic recovery.

Commerce and industry recovered on average no quicker in counties whose banks reopened earlier than in comparable counties whose banks reopened later or remained closed.

Our statistical analysis, therefore, yields novel conclusions about the Bank Holiday of 1933 and rescues of banking systems in general. During the Bank Holiday, depositors responded to policymakers' actions that signaled banks' health. The stigma of late reopening substantially shifted financial resources across banks and communities. It had, however, much less of an effect on the rest of the economy. The historical record, in other words, provides little support for policymakers' justifications for across-the-board interventions during recent financial crises. While targeted treatments of banks in distress did stigmatize institutions revealed to be weaker, these shifts – which have the benefit of limiting moral hazard in the long run – do not appear to have come at a cost of reduced commercial or industrial activity.

Our paper sheds light on the literature focused on how financial panics can be ended. Studies have examined tools available for stopping runs (e.g., Calomiris et al. 2004; Cecchetti et al. 2009; Boissay et al. 2020), but as highlighted by Gorton and Tallman (2018), these tools are often not suited for quickly changing the opinions of depositors, especially when a crisis is already in action. For instance, these actions did not stop runs from occurring during the GFC or the recent 2023 crisis. Further, such government intervention has been shown to introduce moral hazard (e.g., Acharya and Yorulmazer 2007; Diamond and Rajan 2012). Similar to currency depots in the 1920s (e.g., Carlson et al. 2011), the Banking Holiday was targeted at the confidence of depositors rather than propping up the losses of banks. By cutting through the asymmetric information problem, the Holiday put the nation on solid financial footing allowing funds to flow back to banks without the typical drawbacks of government intervention.

Along the same lines, our study of the Bank Holiday relates to policy discussions about stress tests during the GFC. Timothy Geithner credits stress tests as improving capital, reassuring the public, and helping the crisis subside. Subsequent research (e.g., Petrella and Resti 2013) confirms that they restored public confidence in financial institutions, and that some public release of information could be optimal (e.g., Leitner and Williams 2023). Similar to the Bank Holiday, Geithner (2014, p. 286) states that the stress tests "aimed to impose transparency on opaque financial institutions and their opaque assets in order to reduce the uncertainty that was driving the panic. It would help markets distinguish between viable banks that were temporarily illiquid and weak banks that were essentially insolvent." Thus, our analysis of the Holiday sheds light on full system exams, as opposed to just the largest institutions, as well as micro-level information on how depositors respond.

The transparency of the Bank Holiday's reopening decisions provides a new perspective on the stigma literature. Given the explicit avoidance of bank stigma by policymakers, the modern literature has generally focused on facility stigma. For instance, it has been discussed with regard to the discount window (Peristani 1998; Furfine 2001; Afonso et al. 2011; Armantier et al. 2015; Ennis 2019) and the Primary Dealer Credit Facility (Copeland et al. 2014; Krishnamurthy et al. 2014). The smaller bank stigma literature has studied emergency liquidity programs and the public's perception of particular banks needing emergency assistance (Anbil 2018; Vossmeyer 2019; Anbil and Vossmeyer 2021). Despite Roosevelt's assurances, the public perceived the duration of closure as a signal of bank health. Our results illustrate the market scrutiny that banks faced for longer closures, much like the market scrutiny banks faced for receiving emergency assistance. The Holiday presents an important difference, however, because

the closures were mandatory, removing any selection complications due to a bank's participation decision and allowing us to examine stigma purely from regulators' signals.

Finally, the paper helps us better understand the path of the Great Depression. Authors have pointed to the role that deposit insurance (e.g., Freidman and Schwartz 1963), changing inflation expectations (e.g., Hausman et al. 2019), and gold restrictions (e.g., Romer 1992) had on the economic rebound, but this study shows that the Banking Holiday helped to put the nation back on a firm financial footing before these events occurred. The reopening of banks was met with public confidence and a surge of deposits back into the system. Similar to Pedemonte (*forthcoming*) who shows that Roosevelt's 1935 fireside chat impacted consumer confidence, Roosevelt's rollout was likely a necessary feature in restoring depositor confidence. Additional actions by Roosevelt, Congress, and the Fed thus might have been more effective at accelerating the country out of the Great Depression because the Banking Holiday had stabilized the financial system. We provide evidence for the assertions of Park (1991), Silber (2008), and Conti-Brown and Vanatta (2021) and context to studies that emphasize later channels for influencing depositors' confidence (e.g., Sargent 1983, Temin and Wigmore 1990, and Eggertsson 2008).

2. Historical Background

This section sets out the historical information underlying our analysis. First, it describes the panic of 1933 and the government's response. Second, it discusses the institutional setting and why stigma could have arisen during that crisis. Third, it explores basic patterns in the data.

The banking panic in February and March 1933 was the most severe in U.S. history. The nationwide run drained over twenty percent of deposits from banks around the nation. The crisis forced banks, savings institutions, investment firms, stock markets, and other financial firms to

curtail operations, and it compelled local, state, and the federal government to take aggressive actions, including state-specific banking holidays. The crisis culminated on Friday, March 3, 1933, when the Federal Reserve Bank of New York's reserves fell to their legal limit, and the New York Fed indicated that it could not open for business the next morning. To forestall the Fed's suspension, Roosevelt declared a nationwide bank holiday beginning Monday, March 6.

The government acted rapidly to reopen the financial system. On March 9, Congress passed the Emergency Banking Act, which empowered the Secretary of the Treasury to issue licenses that allowed banks to reopen and strengthened federal regulation of banks. The first banks were then allowed to begin reopening on March 13. Reopening decisions were decentralized based on the regulator in charge of the bank along with help from the Treasury and the Reconstruction Finance Corporation (RFC). The Office of the Comptroller of the Currency (OCC) and Federal Reserve were responsible for national banks and state Fed member banks. Each state's banking authority was responsible for their state non-member banks. Regulators received general guidance about how to choose banks to reopen, but no specific instructions. Officials reopened banks that they deemed to be (i) solvent and (ii) likely to be able to satisfy withdrawal requests either because they had sufficient liquidity or sufficient assets eligible to be used as collateral at the Fed's discount window. They chose based upon their knowledge of each bank's financial status, standards of practice then in use to identify unhealthy banks, and rules of thumb rapidly devised to help them sort through the thousands of decisions that they needed to make to get the financial system up and running in a few days. The initial decisions were based upon existing information from banks' recent examinations and opinions of the examiners rather than new examinations.

The most detailed description of the reopening process comes from Francis Awalt (1969) who was acting Comptroller of the Currency between September 1932 and May 1933. He oversaw the national banking system, witnessed the panic, and was a key director of the government's response. Awalt indicates that work to identify which banks should reopen began on March 8. Authorities understood that speed was important, and decisions would be imperfect. Some weak banks would reopen swiftly, and some strong banks would remain closed for a prolonged period. Jesse Jones, head of the Reconstruction Finance Corporation, noted that banks slipped through the cracks: "In those feverish days and nights, it was difficult to decide whether a bank was truly sound…Mistakes were inevitable. A great many unsound banks were allowed to resume business" (Jones and Angly 1951, p. 21).

Some of these "mistakes" were the result of conflicting goals. For instance, Awalt indicated that regulators were concerned about the geographic coverage of reopened banks. The nation needed banks to facilitate payments and prevent business disruptions. "It was necessary that, as far as possible, banks be opened to afford every community with some banking service" (Awalt 1969, p. 363). One of Awalt's early steps was to plot on a map all the banks that the OCC thought could be reopened without additional liquidity. The initial distribution was too sparse in some areas, which led Awalt to recommend looser criteria in certain regions.

Policymakers understood that their actions might signal the health of commercial banks to the public and worried about the consequences of such inferences. On March 12, in his first Fireside Chat, Roosevelt communicated the reopening plan directly to the public and addressed the issue of stigma head on. He explained that most banks would be solvent if the public once again trusted them with their funds. In his view, Americans had been "stampeded by rumors or guesses" and a prolonged reopening process was necessary to "enable the Government to make

common sense checkups." He promised that only sound banks would reopen, and they would be supported by the government. While some banks would open before others, the President emphasized that a "bank that opens on one of the subsequent days is in exactly the same status as the bank that opens tomorrow." Roosevelt's fireside comments and memoirs of principals such as Awalt (1969) and Jones (Jones and Angly, 1951) make it clear that regulators were concerned over potential stigma. Outside of these assurances, little was communicated to the public about how regulators decided which banks to reopen.

Policymakers at the time had a professional understanding of stigma that social scientists have since formalized using game theory models. The theoretical conditions underlying signaling games clearly existed in the 1930s. Some individuals (regulators) had more information about bank health than others (depositors and the public). Regulators examined banks periodically and had access to their internal data, audit reports, and senior personnel as well as a vast array of information collected by government agencies and private companies. Regulators also had specialized training and on-the-job experience in how to interpret this information. Alternatively, the public had access to much less information. Data services (such as *Rand McNally*) and government bureaus (such as the OCC and state banking departments) published bank-balance sheet data at low frequency.

Regulators (the informed parties) took an action based on their private information. This action – reopening a bank on a certain date – was readily observable, and its link to private information was public knowledge. So, depositors and the public (the less informed parties) could infer the information that regulators possessed but they did not. These signals and stigmas could have a lasting effect because the public received little information about banks and had limited ability to update their beliefs. Information revelation, however in this case, could be

imperfect since regulators' actions were not a one-to-one transformation of their private information about bank health. The heads of the OCC and RFC both indicated that some banks opened earlier than warranted by their health to satisfy policy concerns other than financial stability and that "mistakes" were made. Some weak banks opened early. Some strong banks opened late. In this case, some signals about bank health could be incorrect.

In this environment, the government's efforts to reboot the banking system progressed rapidly. Table 1 shows that 81% of Fed member banks and 64% of state non-member banks were allowed to reopen on an unrestricted basis by the end of March. Another 1,500 additional banks were fully licensed to reopen by the end of June. Most late reopeners were state non-member banks. The table also makes clear that there was a middle ground for state banks not mentioned by Roosevelt: restricted reopening. While national banks that had not reopened by March 16 were placed in the hands of conservators, many states passed laws that allowed their state-chartered banks to reopen subject to restrictions on the withdrawal of existing deposits and provision of loans. In most cases, restricted banks could still receive new deposits that were not subject to withdrawal limits. Several states used the approach extensively, while others did not utilize it at all. Table 1 shows that almost 2,200 state banks were allowed to reopen under restriction during March, but only about half of all states permitted reopenings with restrictions. When the dust settled, around 4,000 banks either closed permanently or had to be substantially recapitalized before reopening.

Reopenings that did occur were met with a strong positive public response. Deposits swiftly flowed back into the banking system. Between March 13 and 15, $370 million in gold coin and gold certificates were deposited, which was more than all that had been withdrawn during 1933. In the second half of March, another $260 million was returned (Federal Reserve

Board 1934, p. 15). The stock market also soared. The Dow Jones Industrial Average increased 15.3 percent between March 3 (the close of the last trading day before the Bank Holiday) and March 15 (the close on the first day the New York Stock Exchange resumed trading), and nearly doubled by the end of June.

Banks that survived the winnowing during the Holiday changed their behavior. The Federal Reserve Board (1933, p. 209) reported that member banks reduced borrowing the discount window by $1 billion between March 4 and April 5. Bankers acted as if they expected depositors to refrain from running on banks and business prospects to improve.

This rebound in deposits was unlikely to have been the result of the creation of federal deposit insurance. The rebound began nine months before federal deposit insurance coverage came into force (on January 1, 1934), three months before the Federal Deposit Insurance Corporation (FDIC) was created by the Banking Act of 1933 (commonly called the Glass-Steagall Act of June 16, 1933), and two months before the proposal to create the FDIC seemed likely to overcome the opposition of large banks, many senators and representatives, and Roosevelt himself. At a press conference on March 8, 1933, when asked about guaranteeing bank deposits, Roosevelt stated "Any form of general guarantee means a definite loss to the Government…We do not wish to make the United States Government liable for the mistakes and errors of individual banks and put a premium on unsound banking in the future." Roosevelt did not express willingness to compromise on the issue until the end of May, and even then, he insisted on limiting coverage to levels that would primarily cover households and small businesses, not large firms or wealthy investors.

3. Data

The questions asked in this essay – why did regulators reopen some banks rather than others, did regulators actions send signals and engender stigmas, and how did depositors and economic growth respond to these choices, signals, and stigmas? – require detailed information on all the commercial banks in operation, the dates and condition of each banks' reopening, and information about shocks impacting banks during the contraction of the early 1930s. We collected, compiled, and digitized this information for our project.

The information comes from a range of sources. The identities, characteristics, and balance sheets for all U.S. commercial banks at the June call in 1932 and 1933 come from *Rand McNally's Bankers Directory* published in July of each year. This directory was the most widely used compendium of bank balance sheets available to the public during the 1930s.[4] We drop out branches, private banks, cash depositories, and mutual savings banks using information in *Rand McNally*. We determine which state banks were Fed members at the end of 1932 and their Federal Reserve District using the *Annual Report of the Federal Reserve Board* for 1932.

We extend the *Rand McNally* balance sheet data forward in two different ways. First, we collect annual national bank balance sheet data for 1928 through 1940 from the OCC to provide a longer-run lens to examine these issues. Second, we obtain county-level deposit aggregates that were published in county databooks from 1941 through 1964 and collected by Paul Rhode. The data allow us to show how long the deposit differences across locations persisted.

To determine which banks were in operation at the start of the Bank Holiday, we extract all banks that ceased operations or merged with other institutions before March 5, 1933 using the

[4] Contemporary writers such as Awalt highlighted that decisions were made with information from previous call reports and examinations. Moreover, in late-1932 and early-1933, many states did not publish individual balance sheets for their banks, leaving the July *Rand McNally* as the only comprehensive source of information for the period and the latest information available to the public prior to the Bank Holiday.

Federal Reserve's Division of Bank Operations St. 6386 forms. The forms list changes in status of each commercial bank between January 1929 and March 1933 (Richardson 2007). We cross match this information on changes in bank status reported in *Rand McNally* in July 1933.

We determine the fate of each bank between the onset of the Holiday, March 6 and June 1933 using internal Federal Reserve documents that list all banks that were fully reopened or reopened with restrictions in each district by week. Comprehensive weekly reports exist up until March 29. After that point, Fed districts reported information less consistently.

Our efforts indicate that 16,790 commercial banks were in business on March 6. At the end of March, 11,793 banks were reported as being fully reopened. Another 1,685 banks were reopened under restrictions. Figure 1 shows the distribution of reopenings by county. In many states, reopening rates in the weeks immediately after the Holiday varied substantially across adjacent jurisdictions. In some counties, a high fraction (even 100%) of banks reopened immediately; while in neighboring counties, a much lower fraction (often below 60%) reopened.

We supplement the bank data with a wide range of supporting variables. Demographic and economic information on the county in which the bank was located comes from the census of 1929 from Haines (2008) and Haines et al. (2018). County-level electoral data come from Clubb et al. (2006). We also collect information on county-level economic activity over the period, including the value of retail sales from Fishback et al. (2005)[5], the number of individuals filing tax returns from Fishback et al. (2011), the value of wholesale sales from Bureau of the Census (1937a), and the value added by manufacturing from Bureau of the Census (1937b).

[5] These data have been made available at: http://www.u.arizona.edu/~fishback/Published_Research_Datasets.html.

4. Statistical Evidence of Signals

The initial step of our analysis examines key predictions of signaling models. We ask why regulators reopened some banks rapidly and not others. This step is necessary to determine what information the public might have gleaned from the rate of reopening. We will show that the reopening strongly correlated with balance sheet measures about banks' health in the hands of regulators but the signals also contained noise, since regulators reopened some unhealthy banks rapidly while some healthy banks remained closed. The noise arose because regulators had limited time and information to determine which banks should reopen and may have been influenced by political factors and policy objectives other than bank health.

To uncover common patterns underlying regulators' decisions, we employ an iterative statistical approach. Initially, we examine individual factors related to the bank itself. These include measures of potential risk based on balance sheet position: the logarithm of total assets, loans to assets, paid-in capital, surplus, and undivided profits to assets (i.e., capital to assets), and cash, exchanges, and due from banks to total deposits (i.e., cash to deposits). These measures are similar to those found to be correlated with the probability of bank failure in academic papers examining similar eras such as the 1920s agricultural depression (Jaremski and Wheelock 2020), and Great Depression (White 1984, Richardson and Troost 2009). They are also similar to measures which regulators use to determine the health of bank balance sheets during modern stress tests. We include the logarithm of the bank's age as well as indicators for whether the bank was a national bank or a state Fed member bank (with state non-member banks as the excluded group) and whether it operated any branches outside of the city of its headquarters.

Second, we include basic demographic control variables on the county itself. These variables include: the logarithm of population in 1929, fraction of the county living in an urban

location of 2,500 or more people in 1929, the fraction of the adult population that is illiterate in 1929, the fraction of the population that is non-white in 1929, the fraction of owner-operator farms that had mortgage debt in 1929, indicators for whether the bank was located in a city that was designed a Central Reserve City, Reserve City or had an active clearinghouse in place in 1932, and the logarithm of the number of banks in the county in 1932. The variables account for regional variation that could influence bank operations but are unlikely to influence regulators directly. We, therefore, include them in the models but do not report their statistics to save space. We also include information on economic and political factors of each county. These include: the logarithm of the number of farms per capita, the logarithm of the number of manufacturing establishments per capita, and the fractions of votes for the Democrat candidates in the House of Representatives elections of 1930 and the Presidential election of 1932.

Third, we add information on the rest of the banking community within the bank's town. As highlighted by Awalt, geographic proximity was important to keep the payments system afloat. A bank's relative position rather than the exact value of its position thus might have been important when there were few options available. In addition to a dummy variable for whether the bank was the only one in the town, we control for the fraction of those other banks that were national banks, the fraction of those other banks that were state member banks, the logarithm of average assets in other banks, the average ratios of loans to assets, capital to assets, and cash to deposits in other banks in the town. For brevity, we suppress several of these variables from our output tables but are available upon request.

Fourth, we control for the state in which the bank was located. The narrative evidence indicated that various regulators had different risk preferences in mind and Mitchener (2005, 2007) demonstrates the importance of different regulatory regimes in each state. Figure 1 has

also shown that certain geographic areas had a much lower proportion of reopened banks. We include state-fixed effects to strip out any differences across states and focus only on variation across banks within the same state.[6]

We estimate the probability of fully reopening anytime during March using a logit model:

$$ReopenedMarch_i = 1\{\alpha + BalSheet_i'\beta_{BS} + County_i'\beta_C + EcPol_i'\beta_{EP} + OtherBanks_i'\beta_{OB} + State_i'\beta_S + \epsilon_i > 0\} \quad (1)$$

where $ReopenedMarch_i$ is an indicator for whether bank i was fully reopened before March 29, 1933, $BalSheet_i$ is a vector of balance sheet measures of bank i in June 1932, $County_i$ is a vector of county demographic and locational controls for bank i, $EcPol_i$ is a vector of county economic and political variables for bank i, $OtherBanks_i$ is a vector of information on other banks in the same town as bank i, $State_i$ is a vector of state fixed effects, and ϵ_i is the error term which is clustered by county.

The marginal effects of the estimated coefficients for equation (1) are presented in Table 2. We see that reopenings in March are positively associated with the size of the bank's assets, the amount of capital to assets, and the amount of cash to deposits, whereas they are negatively associated with loans to assets. Moreover, the estimates suggest that those banks that were subject to higher requirements and supervision (i.e., national banks and state Fed member banks) were more likely to be reopened in March than state non-member banks. The bank-level results remain even when county-level controls and state-fixed effects are added.

[6] Using state-fixed effects avoids omitted variable bias but prevents us from understanding whether higher/lower reopening rates were driven by unknown state-level factors rather than some personal risk preference of the regulators. In the Appendix, we introduce a number of state-level variables that control for the state's regulatory environment and financial concerns to show the state-fixed effects are not being driven by regulatory differences.

In column (2), we add the county, economic, and political controls to the model. Several of the variables played a statistically significant role in reopening decisions. First, banks in counties with more farms had a higher probability of being reopened. This matches with the period as farmers in most of the county relied on state bank credit to finance the crop and purchase land (see, for instance, Jaremski and Fishback 2018). Second, banks in areas that seemed to swing against their 1930 pattern and vote for Roosevelt in 1932 had fewer reopenings than other locations. It is possible that this was an attempt to win the future political votes of those places that were not already solidly in Roosevelt's corner. [7] The inclusion of state-fixed effects in column (4) reduces the statistical significance of manufacturing establishments, farm mortgages, and Democrat voting in 1930 but does not eliminate the effect of the other variables.

In column (3), we add the town-level bank comparison values. Here, the only variable that is consistently significant is fraction of banks in the town that are national banks. The positive coefficient suggests that there might be some positive spillover effects of good banking areas, rather than a relative competition amongst banks in a location.

Even though the balance sheet risk factors and other variables are relevant predictors of reopening decisions, it is important to point out that even the fully specified model with state-fixed effects only correctly classifies 77.4% of reopening decisions (in-sample classification). To assess out-of-sample accuracy and to explore important features in model specification, we consider several binary classification machine learning methods, including random forest, support vector machines, k-nearest neighbor, neural networks, and logistic regression. For each approach, we use 20% of our sample for training and 80% for testing, and include all variables except for the state indicators. Further, we run each model 20 times, randomizing the training

[7] Studies (e.g., Wright 1974; Wallis 1991) have shown that variation in New Deal spending can be at least partially explained by political factors as well as economic ones.

sample, to ensure each bank receives a prediction. The most important features from the random forest specification – the most accurate model by a slight margin – for the probability of reopening are: Cash to Deposits, Capital to Assets, Ln(Total Assets), and Loans to Assets. Of the 29 variables in the random forest model, these four variables carry 32% of the weight, 12.6%, 6.6%, 6.4%, and 6.4%, respectively.[8] Combining the predictions across the 100 estimations and using a 0.50 predictive probability cutoff for the 0 and 1 predictions, the overall accuracy is about 76% (the unconditional probability of reopening is 69%). Thus, the information from the combined model predictions is useful, but noise remains, indicating the signal was imperfect.

In Figure 2, we provide histograms of the predicted probabilities of reopening from the logistic models in Table 2 separated by whether the predictions were accurate or not. The figures show hundreds of banks with predicted probabilities of reopening greater than 90% that did not reopen and hundreds of banks with predicted probabilities less than 40% that reopened. Despite balance sheet factors playing an important role in our models, it is clear that the signal of reopening revealed more information than just bank health. Some misclassification is from unobservables, such as management quality. For instance, the models predict that Harriman National Bank and Trust Co in New York City should have reopened early, as it was large and liquid in the 1932 call reports. However, the bank was not reopened early in the Holiday, and in 1934, the bank's president was convicted of fraud. Other misclassification is likely due to regulators guessing asset values. Jones stated, "The plunge in values, particularly market ones, made one man's guess as good, or bad, as another's in assessing the probably worth of many a bank's portfolio" (Jones and Angly 1951, p. 21).

[8] As described in the Appendix, "Best Subset" regressions also pick these variables as the most important covariates.

Our Appendix on Robustness addresses several threats to inference including regulators' incentives and limited information available to depositors. If regulators' decisions were driven by the desire to open enough banks to allow the payments system to function in every corner of the United States, then their choices may have differed in locations with fewer banks relative to those with many. If limited information available to depositors on characteristics like management quality determined the fate of banks, this information's exclusion from our regressions might bias our estimates. To address these issues, we re-estimate the model with samples separated by the number of banks in a city and compare coefficients across regressions. If regulators' decisions in towns with fewer banks differed from those in towns with more banks, then these coefficients should be different. Similarly, since depositors' knowledge of the characteristics of each bank in their town diminished as the number of banks in their town grew, if this information differential influenced outcomes under examination, then the coefficients should differ across regressions. We find no significant differences indicating that regulators' goal of payment ubiquity and limits on depositors' knowledge did not distort our results.

The Appendix also includes an additional series of robustness checks on the reopening regressions. We re-estimate the regressions controlling for the changes in county-level economic conditions during the Great Depression using the logarithm change in retail sales per capita 1929 to 1933. We re-estimate the regressions when dropping out any county with a city of 25,000 or more people as large cities had many more banks competing and more diverse business interests. We also re-estimate the regressions only for those state non-member banks that either reopened fully or had a restricted reopening in March, as well as break up the sample by bank type: national banks, state Fed member banks, and state non-member bank to capture the different

regulatory agencies. In all cases, the predictive power of the balance sheet factors is similar to Table 2, which alleviates concerns about the potential confounders.

5. Signals, Stigmas, and Depositors' Reactions

The previous section shows that reopening dates should have sent noisy signals about banks' health, since reopening dates were imperfectly correlated with bank health. On average, healthier banks opened earlier, but many weak banks were also opened early, while many healthy banks were opened late. This section tests whether the public responded to these noisy signals at the individual bank and county-level.

5.1 Reopening Dates and Deposit Growth at Individual Banks

We begin by analyzing deposits for all banks from *Rand McNally* for 1932 and 1933. Because banks that remained closed in July 1933 did not publish balance sheet information in *Rand McNally*, we have a balanced sample of surviving banks that were fully reopened by July 1933. Identification is from deposit growth rates at banks reopened on different dates while controlling for bank health. We identify the consequences of late-reopening stigma, in other words, by comparing the rate of deposit growth at banks that reopened earlier with banks of the same health that reopened later. The linear model estimated by OLS is:

$$\Delta Deposits_i = a + ReopenedMarch_i'\beta_R + BalSheet_i'\beta_{BS} + County_i'\beta_C + EcPol_i'\beta_{EP} + State_i'\beta_S + \epsilon_i \quad (2)$$

where $\Delta Deposits_i$ is the change in the logarithm of deposits for bank *i* between the June call dates in 1932 and 1933, and the rest of the variables retain their previous definitions. Because the

sample is now restricted to surviving banks, the results for $ReopenedMarch_i$ are for banks that reopened earlier, relative to banks that reopened later.

The inclusion of a bank's initial balance sheet is important for separating depositors' responses to the signal of reopening relative to typical monitoring behavior. As shown in other papers (e.g., Gorton and Pennacchi 1990; Calomiris and Wilson 2004; Calomiris and Jaremski 2019; Anderson et al. 2023), informed depositors are sensitive to observable bank risk and respond positively to the same factors (e.g., reserves and leverage) that caused regulators to quickly reopen banks. While we have shown that many banks with shaky fundamentals were reopened, regulators reopened many banks based on their health. By controlling for each bank's balance sheet, we can illustrate the relative power of the signal sent by regulators compared to traditional bank fundamentals.

The first two columns of Table 3 present coefficients estimated for equation (2) for all banks with and without the other balance sheet factors. The data show that rapidly reopened banks saw significantly more deposit growth, relative to banks that fully reopened between April and July 1933. Even after controlling for a bank's fundamentals in 1932, a bank that fully reopened in March rather than later had 18.2% more deposits in July 1933. This pattern is a standard symptom of bank stigma, which suggests individuals put fewer deposits in these banks because they believed they were weaker than their initial fundamentals would suggest or were in some other way worse than banks reopened earlier.

The coefficients on the bank fundamentals confirm that there was depositor monitoring. Similar to what has been shown in other contexts, banks with more cash and capital buffers or fewer loans experienced more deposit growth even conditioning on their reopening date. The effects of fundamentals on deposit growth, however, are small compared to the signal of early

reopening. Figure 3 depicts this information using bin scatter plots of log deposit growth from July 1932 to July 1933 relative to each banks' characteristics in July 1932, separately for banks that reopened early and banks that reopened later.[9] Panel A examines the capital/assets ratio (i.e., 1/leverage ratio), and Panel B examines the cash/deposits ratio (i.e., reserves).

In the figures, for any capital or reserve ratio, banks that reopened early had a significantly lower drop in deposits between 1932 and 1933 than banks that reopened later. The signal of early reopening, in other words, was sufficient to convince depositors to place their funds in those banks regardless of their initial fundamentals. The difference caused by the early reopening signal was large enough that even the most observably safe banks that reopened later had lower deposit growth than the most observably risky banks. Moreover, while banks with higher capital and reserves saw lower drops in deposits, bank fundamentals had less of an effect on deposit growth for early reopened banks than for later. This slope difference is particularly large for the capital ratio. Higher capital ratios had little influence on deposit growth of banks that reopened early but had a substantial effect on deposit growth in banks later reopened banks.

The deposit inflow was likely money returning to the system. If a depositor's original bank remained closed, they would have been unable to withdraw the deposits in order to place them with another bank. So, the initial balance sheet growth observed is more likely due to "mattress" money returning to banks, as opposed to resources shifting away from a bank that had not reopened yet. Indeed, the Federal Reserve Board (1934) argues that the return of money after the Holiday was from hoarders rather than active circulation, as most of the returned paper was in denominations not used in day-to-day transactions. Moreover, the growth is not due to costs of moving deposits back to the original bank after it reopened. Because they could not withdraw

[9] Deposits in July 1933 were lower than they had been before the nationwide panic which brought on the Holiday, although they were substantially higher than in March 1933, at the nadir of the panic and trough of the Depression.

money from their original account, depositors would have had to keep their original deposit account at the non-reopened bank which would have eliminated costs to moving money back to their originally preferred bank once it reopened. As we will show later, quickly reopened banks maintained their extra deposits for over a decade, suggesting choices made during the Bank Holiday shifted depositor preferences in the long-term.

To show that depositors even differentiated between banks reopened just a few days apart, columns (3) and (4) reestimate equation (2), but instead of an indicator for reopening in March, we include indicators for reopenings each week in March. Relative to reopening after March, those reopened in March received more deposits. However, the sizes of the deposit flows were different. Specifically, those banks that reopened by March 16 had a 19.5% increase in deposits, those that reopened between March 17 and 22 had a 17.4% increase, and those that reopened between March 23 and 29 had a 11.8% increase. This gradient is statistically significant and demonstrates that the reopening signal was so strong that even a few business days made a difference in deposit inflows. These week-by-week results also demonstrate that the deposit inflows were not just mechanical (i.e., deposits grew at certain banks because they were opened longer). Groups of these banks are only opened days apart and yet deposit growth differs substantially over long periods.

Comparing banks that reopened with and without restrictions reinforces this point. To do this, columns (5) and (6) of Table 3 restrict the sample to only state non-member banks and examine the difference between (i) banks that fully reopened in March, (ii) banks that had restricted reopenings in March but fully reopened by July, and (iii) banks that did not reopen in March but reopened fully between April and July. State non-member banks that immediately and unconditionally reopened had larger deposit growth (by 16.5%) when compared to other state

banks. Banks that reopened under restrictions in March 1933 saw higher deposit growth (by 5%) than those who were not opened in any capacity in March 1933, but instead reopened in April, May or June. These results show the inflow of funds to fully reopened banks was not solely due to them being the only banks accepting funds. If that was the case, then there would be no difference between restricted and unrestricted banks. The inflow of funds to fully reopened banks was also not due to their offering services to the new or redeposited funds or accounts than in restricted banks, because the services offered were the same, or to the disruption of relationships, because the relationships remain unchanged. These facts indicate that the large difference in deposit flows between restricted and unrestricted banks (as well as the large difference in deposit flows between banks reopening a few days apart) was the signal sent by early reopening.

The evidence from the *Rand McNally* data is consistent with the hypothesis that depositors favored banks that reopened early and discriminated against banks that reopened later. However, the limited number of time periods prevents us from testing whether this differential behavior continued further in time. To carry out a longer-run analysis, we examine the data provided by the OCC for all national banks from 1928 to 1940. The OCC data are observed at the end of each year, providing balance sheet observations closer to the start of Bank Holiday.

We estimate a bank fixed-effect panel data model with an interaction between the reopening variable and the time-fixed effects. The time interactions before the Holiday provide some measure on how banks that would be reopened in March 1933 were trending during the Great Depression downturn, while the interactions after 1932 show how those banks changed after the Bank Holiday. For bank *i* in year *t*, the model is:

$$LnDeposits_{it} = \alpha_i + \eta_t + (ReopenedMarch_i * Year_t)'\beta_1 + \sum_{d=2}^{12}(FedDist_{id} * Year_t)'\beta_{2d} + (LnPop_i * Year_t)'\beta_3 + \epsilon_{it} \quad (3)$$

where $LnDeposits_{it}$ is logarithm of deposits at bank i in year t, α_i represents bank-fixed effect parameters that would capture the bank's fundamentals, η_t represents the year-fixed effect parameters, $(ReopenedMarch_i * Year_t)$ is an interaction between the March reopening indicator and a vector of year indicators, $(FedDist_{id} * Year_t)$ is an interaction between a Federal Reserve district indicator and a vector of year indicators, and $(LnPop_i * Year_t)$ is an interaction between the 1930 population of the county in which the bank was located and a vector of year indicators. The interaction between Fed District and time controls for the various monetary and discount rate policies taken by individual Fed districts during the early portion of the Great Depression as well as differential regional growth, while the interaction between population and time helps control for any differential changes across time due to urbanization.

Due to the large number of coefficients, we graph the results of equation (3) for the balanced panel of banks present from 1928 through 1940 in Figure 4. The Appendix provides the table of coefficients for the balanced sample as well as for subsamples consisting of (a) banks in counties without a city of 25,000 or more and (b) banks in counties that had at least one national bank reopened in March and at least one national bank that was reopened later in the year. These subsamples yield similar results for the closer comparison group of banks.

Panel A of Figure 4 indicates that national banks reopened in March 1933 were similar to those who were reopened after March 1933 at the beginning of the Great Depression. However, during the 1929 to 1933 downturn, those banks that would be reopened in March 1933 performed better relative to banks reopened later. By 1932, national banks that would be reopened in March 1933 had more deposits than national banks opened later in the year. This relative increase should reduce the effect of growth after 1932 for quickly reopened banks. However, despite this, there is an abrupt increase in deposits at quickly reopened banks between

December 1932 and 1933 that matches the cross-sectional results in Table 3 for all banks. The cross-sectional difference in deposits grows from 6.7% in 1932 to 44.7% by 1933. Quickly reopened banks reaped substantial benefits relative to banks that fully reopened later.[10]

Panel B of Figure 4 shows the results for a similar panel data model, but instead of a single indicator for reopening in March, we include indicators for each week of March. Relative to reopening after March, all banks reopened in March saw substantially larger growth in deposits that was sustained through 1940, regardless of whether they reopened in the first few days or the latter two weeks. However, there is a significant difference between the size of that relative deposit growth for the quickest reopening versus others. Specifically, those that were opened within the first few days after the Holiday saw much larger deposit growth than those opened the second week, and those opened the second week saw slightly more deposit growth than those opened the third week. Over time, the deposit differences between banks reopened the second and third week narrow, but the difference for banks reopened the first week remain. Regulators could not feasibly review and reopen all sound banks in the first week. Nevertheless, those first, second, and third week decisions had lasting effects.

Taken as a whole, depositors preferred banks that were reopened quickly even though many other banks opened just a few days or weeks later. To put it another way, depositors seem to have taken the speed of reopening as a cleaner signal of financial stability than traditional observable fundamentals, stigmatizing slowly reopened banks. The persistent effect after banks were reopened lends weight to the hypothesis that the Bank Holiday's release of information from the timing of reopenings was responsible for the public's increased confidence rather than

[10] As shown in the Appendix, we find some convergence of deposit growth between quickly reopened national banks and those reopened later by 1940 for national banks with high capital and reserve ratios in 1932. However, there is still a significant growth difference in 1940 for national banks with lower values of capital and reserves.

Roosevelt's promise to support reopened banks. If the unconditional guarantee of support was responsible for the public response, we would expect a fast convergence of balance sheets.

5.2 County-Level Deposit Differences

Our findings regarding individual banks should be assessed in light of Figure 1, which showed that reopening rates varied substantially across counties. While some of the cross-county variation reflected differences in bank health, much arose from idiosyncratic delays in the reopening process and non-economic factors like politics. This subsection asks whether inter-county variation in reopening rates shifted deposits across counties in the short and long term. Identification is based on differences in the fraction of quickly reopened banks and thus mixes counties whose banks reopened later in 1933 with those who never reopened. The analysis thus captures the overall effect of regulators' decisions on which banks to reopen.

We consider the log change in deposits at the county-level from July 1932 (only considering banks that survived to the Bank Holiday) through July 1933, aggregating *Rand McNally* data to the county level. Further, we employ the county-level deposit aggregates from 1941 through 1964 that were published in county databooks and collected by Paul Rhode to extend the analysis forward in time. The county-level regression model is:

$$\Delta Deposits_c = a + \%ReopenedMarch_c'\beta_R + County_c'\beta_C + EcPol_c'\beta_{EP} + State_c'\beta_S + \epsilon_c \quad (4)$$

where $\Delta Deposits_c$ is the log change in deposits for county *c* between 1932 and the specified year, $\%ReopenedMarch_c$ is the fraction of banks in county *c* that were fully reopened in March 1933, and the rest of the variables retain their previous definitions because they were already

measured at the county level. We also consider a specification where we add the fraction of banks in county *c* that were reopened under restrictions in March 1933.

Table 4 reports the estimated coefficients of equation (4) starting with the initial change between 1932 and 1933 and moving to longer time horizons. The data show that deposit growth is positively associated with the fraction of banks that were reopened early in a county. As would be expected, the effect is largest in June 1933 when many banks were still closed and operating under restrictions, but deposits continued to be larger in counties with a higher proportion of March reopenings through in 1941. Specifically, a 10-percentage point increase in fraction of unrestricted reopenings in March is associated with a predicted increase in deposits of 6.1% in 1933 and 1.8% in 1941. The growth was substantial and lasted through the 1930s, the Second World War and Korean War. The 1950s were a period of substantial increases in branching and consolidation thus suggesting that the new corporate strategies helped fill some of the gaps left behind by the Bank Holiday.[11]

5.3 Other Bank-Level Balance Sheet Differences

The previous regressions have illustrated that depositors preferred quickly reopened banks after the Bank Holiday. However, this begs the question of whether those banks were observably safer going forward as well. If quickly reopened banks maintained the appearance of safety relative to others, then depositors' decisions might have been about future fundamentals rather than past ones. We, therefore, examine how the four balance sheet risk measures included as explanatory variables in our previous bank-level models changed after the Bank Holiday.

[11] In the Appendix, we show that the results are robust to dropping counties that fully reopened it banks in March.

Panel A of Table 5 presents coefficients estimated for equation (2) for each balance-sheet variable. The data show that rapidly reopened banks saw significantly more growth in assets and declines in their capital and cash buffers, relative to banks that fully reopened between April and July 1933. A bank that fully reopened in March rather than April, May, or June had 15% more assets in July 1933, a 2.7 percentage points lower cash to deposits ratio, and a 2.0 percentage points lower capital-to-assets ratio. These results indicate that rapidly reopened banks were able to significantly decrease the cash and capital buffers that had helped them survive the panic and allowed them to be reopened early. Banks that reopened quickly thus grew larger but did not shift to a safer portfolio.[12] Additionally, depositors did not favor these banks due to enhanced loan availability because the lending ratio is not statistically different from later reopened banks. Panel B of Table 5 shows similar results when we restrict the analysis to state non-member banks.

Next we examine the four balance sheet items using the longer national bank panel and equation (3). Again, the Appendix provides the table of coefficients for the balanced sample as well as for other subsamples, Figure 5 indicates that immediate and delayed reopened national banks were relatively similar in 1929 through 1931, but by 1932, national banks that would be reopened in March 1933 were larger, had larger reserve and capital buffers, and had fewer loans to assets than national banks opened later in the year. Between December 1932 and 1933, there is a significant increase in assets at quickly reopened national banks and declines in both cash and capital buffers relative to other national banks reopened later in the year. In fact, the declines in cash and capital are so large that they reverse their previous trends. The cross-sectional difference in loans to assets, on the other hand, continues to slowly decline over the period.

[12] As shown in Appendix Section A2, these results are not being driven by recapitalization. If anything, banks reopened later received more capital injections than those that were reopened in March.

A clear message arises from either database. Banks that reopened by March 29 became larger, and lower reserves of capital and less of their resources as cash in their vaults or interbank deposits than banks reopened later. They expanded investments, although largely through expanding holdings of bonds and securities, rather than local lending, which seems to decline as a fraction of their balance sheets over time. Because later reopened banks appear relatively more capitalized, future fundamentals does not explain the massive shift in financial resources.

Taken as a whole, the balance sheet regressions indicate that depositors took the speed of reopening as a signal of financial stability, stigmatizing slowly reopened banks. To put it another way, depositors preferred those banks that were reopened quickly even though many other banks opened just a few weeks later, and changes in the fundamentals at quickly reopened banks did not deter them to move their funds to other banks. The persistent effect long after banks were reopened lends weight to the hypothesis that the Bank Holiday's release of information from the timing of reopenings was responsible for the public's increased confidence rather than Roosevelt's promise to support reopened banks. If the unconditional guarantee of support was responsible for the public response, we would expect a fast convergence of balance sheets.

6. Consequences of Stigma for Commerce and Industry

The previous section demonstrates that depositors read early reopening as a signal of bank quality, stigmatizing banks that reopened later. This result raises the specter of policymaker's fears, that the signals and stigmas sent by procedures for rebooting the banking system reallocated resources and impacted the economic recovery. Their fears seem plausible given the wealth of empirical studies on the positive effects of banks on economic growth in both historical (e.g., Jaremski 2014; Rajan and Ramcharan, 2015, 2016; Carlson et al. 2020) and

modern periods (e.g., King and Levine 1993; Jayaratne and Strahan 1996; Cetorelli and Gambera 2001; Beck and Levine 2004; Chodorow-Reich 2014; Gilje et al. 2016). Additionally, evidence demonstrates that economic activity contracted more in counties that experienced more bank failures and larger deposit drains during the contraction from 1929 to 1933 (e.g., Bernanke 1983; Richardson and Troost 2009; Ziebarth 2013; Mladjan 2019; Cohen et al. 2021). Theoretical models describe that the availability of banks (and confidence in them) allow money to be drawn out of mattresses and loaned out to the betterment of the local community (Diamond and Dybvig 1983). Without banks or trust in the system, deposits would be held by individuals and loans would be limited. In this section, we examine how the differential treatment of banks during the Holiday impacted the economic recovery of communities in which those banks operated.

We examine the Holiday's effect on a range of county-level economic outcomes. First, retail sales captures 70% of gross domestic output. Second, the number of individuals filing tax returns captures the number of high-income individuals in an area (as relatively few households had to file). Third, wholesale sales captures county-level production and commerce. Finally, the value added by manufacturing captures the increase in gross domestic product in a county due to activities of manufacturing firms. We employ a cross-sectional linear model where the outcomes are the growth rate for each variable from 1933 through 1935 and the growth rate of retails sales and tax returns for 1933 through 1939 (data from 1939 is extant only for those two variables). We thus capture different types of medium and long-run growth that the presence or absence of banking might influence. The models also control for the change in each outcome variable from 1929 to 1933 and the change the number of banks from 1929 to the start of the Bank Holiday to account for the depth of the Depression. The model is:

$$\Delta Y_c = a + \%ReopenedMarch_c'\beta_R + County_c'\beta_C + EcPol_c'\beta_{EP} + State_c'\beta_S + \Delta Y_{c,29-33}\beta_y + \Delta Banks_{c,29-33}\beta_b + \epsilon_c \quad (5)$$

where ΔY_c is the logarithm change in one of the four outcome variables for county *c*, $\Delta Y_{c,29-33}$ is the logarithm change in the outcome variable between 1929 and 1933 for county *c*, $\Delta Banks_{c,29-33}$ is the logarithm change in the number of banks between 1929 and the start of the Bank Holiday for county *c*, and the rest of the variables retain their previous definitions.

Table 6 displays the estimated coefficients for equation (5). Specifically, we focus on the fraction of banks reopened early (which Table 4 showed was highly correlated with deposit growth) to see whether regulator fears were justified. The fraction of banks fully reopened in March 1933 does not significantly predict any of our outcomes for economic activity regardless of the different time horizons. If anything, states' decisions to reopen banks under restrictions might have had a negative effect on retail sales but is not significantly correlated with other growth outcomes. Therefore, while the signals and stigmas sent by the reopening process during the Bank Holiday impacted banks and the allocation of resources available to bankers, they do not seem to have impacted broader economic activity.

Reported in the Appendix, we estimate a variety of robustness checks on these growth regressions. First, we show the results are robust to dropping counties with large cities of over 25,000 people in 1930. Second, we show that the results are not being driven by counties where all or no banks were fully reopened in March. Third, we show that the results are similar when replacing the fraction of banks that were fully reopened with the fraction of assets of reopened banks, the number of reopened banks, an indicator for whether all of a county's banks were fully reopened in March, and an indicator for whether all of a county's banks were fully reopened by July. The growth results are thus robust to a number of specifications and subsamples.

Our results regarding lasting stigmas, deposit redistribution, and economic growth require explanation. A large literature cited above indicates bank failures tend to mitigate growth even during the contraction from 1929 to 1933. These studies, in general, find that declines in banking prevent firms from acquiring working capital and financing production and distribution. Counties in which more banks fail see larger declines in economic output, particularly regions where local banks with specialized knowledge financed local industries.

We find the opposite did not occur during the expansion. Our finding has two likely explanations. First, economic theory indicates that credit frictions should bind more tightly during contractions, when liquidity constraints bind more tightly and threaten financiers' solvency, than during expansions, when liquidity is abundant and inexpensive (Rocheteau and Nosal 2017). Second, the federal government established an expanding set of programs to ensure that firms and entrepreneurs who needed working capital could access those funds. These programs included (a) creating the RFC, initially to funnel funds to commercial banks, but later to directly finance firms in a wide range of industries; (b) amending the Federal Reserve Act to allow the Reserve Banks to loan funds directly to businesses; and (c) establishing a range of additional agencies to loan funds to farms, utilities, and local governments. Firms seeking funds from the RFC or Fed were initially directed to local banks. If the banks were reluctant to extend credit on reasonable terms, the RFC and Fed would then often offer to extend a portion of the loan, with the remainder extended by the local bank. This arrangement reduced the default risk borne by the bank and guaranteed that the loan would be accepted at face value as collateral by the RFC or at the Discount Window, eliminating liquidity risk. Such arrangements enabled most firms to acquire credit at a reasonable cost, and the remainder could apply to other federal agencies for funds (Jones and Angly 1951).

7. Conclusions

Commercial banks periodically encounter problems which can force some institutions out of business. Policymakers worry failures of even a few influential banks could trigger contagion throughout the financial system and hinder the ability of manufacturers and merchants to finance ongoing activities. Policymakers then face a dilemma. They can act during a crisis to rescue troubled banks, but these actions reduce bankers' incentives to prepare for the next crisis, making financial panics and future interventions more likely. In modern times, government typically err on the side of stopping the present banking panic with broad bailouts that treat creditors symmetrically to ensure that the government's actions do not cast stigmas on institutions and exacerbate the situation. Critics assert that everyone is supported today, but question how that support will influence bank risk-taking in the future.

Our research suggests that the intertemporal implications of interventions into banking systems could be better balanced. The Banking Holiday of 1933 was the largest intervention into the financial system during the worst contraction amidst the worst banking crisis in US history. Government leaders worried that treating banks differently based upon their financial status would send signals that advantaged some banks and stigmatized others. We find that these signals did occur, and they influenced depositors' allocations of funds across financial institutions. Depositors had relatively minimal information or financial training in which to judge the quality of their bank and thus seem to have taken regulators signals to heart. Even before Roosevelt lowered his veto threat over deposit insurance, depositors moved their funds into banks that reopened quickly. The impact shifted substantial financial resources across counties and likely had a big impact on banks' bottom lines and bankers' pocketbooks. The impact of this bank stigma on balance sheets lasted for at least a decade. The impact did not, however, carry

over to commerce and industry, probably because the government established an array of lending programs to ensure that all firms had access to credit during the expansion part of the recovery.

The example of the Banking Holiday suggests that policymakers' fears over bank stigma today – that policies which do not treat all banks equally will stigmatize some institutions, slow efforts to restore the financial system to full operation, and hinder the economic recovery – are overwrought. During the GFC, for instance, the Federal Reserve argued both in public and court that protecting the names of banks that borrowed was vital for ending the crisis. However, even substantial bank stigma like that experienced during the Banking Holiday can be overcome by the array of policies established to aid banks and firms during the 1930s, almost all of which remain in place today.

References

Acharya, Viral, Itamar Drechsler, and Philipp Schnabl. "A pyrrhic victory? Bank bailouts and sovereign credit risk." *Journal of Finance* 69 (2014): 2689-2739.

Acharya, Viral V., and Tanju Yorulmazer. "Too many to fail—An analysis of time-inconsistency in bank closure policies." *Journal of Financial Intermediation* 16, no. 1 (2007): 1-31.

Afonso, G., Kovner, A. and Schoar, A. "Stressed, Not Frozen: The Federal Funds Market in the Financial Crisis." *Journal of Finance* 66 (2011), 1109-1139.

Anbil, Sriya. "Managing Stigma During a Financial Crisis." *Journal of Financial Economics* 130 (2018): 166-181.

Anbil, Sriya and Angela Vossmeyer. "Liquidity from Two Lending Facilities." Journal of Financial Intermediation. 48 (2021): 100884.

Anderson, Haelim, Gary Richardson, and Brian Yang. "Deposit Insurance and Depositor Monitoring: Quasi-Experimental Evidence from the Creation of the Federal Deposit Insurance Corporation." *Journal of Money, Credit, and Banking* 55 (2023): 441-464.

Armantier, O., E. Ghysels, A. Sarkar, and J. Shrader. "Discount Window Stigma During the 2007-2008 Financial Crisis." *Journal of Financial Economics* 118 (2015): 317-335.

Awalt, Francis Gloyd. "Recollections of the Banking Crisis in 1933." *Business History Review* 43, no. 3 (1969): 347-371.

Baron, Matthew, Emil Verner, and Wei Xiong. "Banking crises without panics." *Quarterly Journal of Economics* 136, no. 1 (2021): 51-113.

Beck, Thorsten, and Ross Levine. "Stock markets, banks, and growth: Panel evidence." *Journal of Banking & Finance* 28, no. 3 (2004): 423-442.

Beck, Thorsten, Ross Levine, and Alexey Levkov. "Big bad banks? The winners and losers from bank deregulation in the United States." *Journal of Finance* 65 (2010): 1637-1667.

Bernanke, Ben S. "Non-Monetary Effects of the Financial Crisis in the Propagation of the Great Depression." *American Economic Review* 73 (1983): 257-276.

Board of Governors of the Federal Reserve System (U.S.). Committee on Branch, Group, and Chain Banking. *The Dual Banking System in the United States*, Circa 1932.

Boissay, Frederic, Stijn Claessens, and Alan Villegas. "Tools for managing banking distress: historical experience and lessons for today." BIS Working Paper (2020).

Bureau of the Census, United States. *Census of Business, 1935: Wholesale Trade*. Government Printing Office, 1937a.

Bureau of the Census, United States. *Census of Business, 1935: Manufacturers.* Government Printing Office, 1937b.

Calomiris, Charles W., and Matthew Jaremski. "Stealing deposits: Deposit insurance, risk-taking, and the removal of market discipline in early 20th-century banks." *Journal of Finance* 74 (2019): 711-754.

Calomiris, Charles W., Daniela Klingebiel, and Luc Laeven. "A taxonomy of financial crisis resolution mechanisms: Cross-country experience", World Bank working paper. (2004).

Calomiris, Charles W., and Berry Wilson. “Bank Capital and Portfolio Management: The 1930s ‘Capital Crunch’ and Scramble to Shed Risk,” *Journal of Bu*siness 77 (2004): 421-55.

Carlson, Mark A., Sergio Correia, and Stephan Luck. "The effects of banking competition on growth and financial stability: Evidence from the national banking era." Forthcoming *Journal of Political Economy*.

Carlson, Mark, Kris Mitchener, and Gary Richardson. "Arresting banking panics: Federal Reserve liquidity provision and the forgotten panic of 1929." *Journal of Political Economy* 119 (2011): 889-924.

Cecchetti, Stephen G., Marion Kohler, and Christian Upper. “Financial crises and economic activity”. National Bureau of Economic Research No. w15379, 2009.

Cetorelli, N. and Gambera, M.“Banking market structure, financial dependence and growth: International evidence from industry data”. *Journal of Finance* 56 (2001): 617-648.

Chang, Roberto, and Andres Velasco. "Banks, debt maturity and financial crises." *Journal of international Economics* 51, no. 1 (2000): 169-194.

Chari, Varadarajan, and Patrick Kehoe. "Bailouts, time inconsistency, and optimal regulation: A macroeconomic view." *American Economic Review* 106, no. 9 (2016): 2458-93.

Chodorow-Reich, G.. "The employment effects of credit market disruptions: Firm-level evidence from the 2008–9 financial crisis." *Quarterly Journal of Economics* 129 (2014): 1-59.

Clubb, Jerome, William Flanigan, and Nancy Zingale, “Electoral Data for Counties in the United States: Presidential and Congressional Races, 1840-1972,” (2006). ICPSR Study 8611.

Cohen, Jon, Kinda Hachem, and Gary Richardson (2021). “Relationship Lending and the Great Depression.” *Review of Economics and Statistics* 103 (3): 505–520.

Conti-Brown, Peter, and Sean H. Vanatta. "The logic and legitimacy of bank supervision: The Case of the Bank Holiday of 1933." *Business History Review* 95, no. 1 (2021): 87-120.

Copeland, A., Martin, A. and Walker, M. “Repo Runs: Evidence from the Tri-Party Repo Market.” *Journal of Finance* 69 (2014), 2343-2380.

Dighe, Ranjit. "Saving private capitalism: The US bank holiday of 1933." *Essays in Economic & Business History* 29 (2011): 41-58.

Diamond, Douglas W. and Philip H. Dybvig. “Bank Runs, Deposit Insurance, and Liquidity.” *Journal of Political Economy* 91, no. 3 (1983): 401-419.

Diamond, Douglas W., and Raghuram G. Rajan. "Illiquid banks, financial stability, and interest rate policy." *Journal of Political Economy* 120, no. 3 (2012): 552-591.

Eggertsson, Gauti B. 2008. "Great Expectations and the End of the Depression." *American Economic Review* 98 (4): 1476-1516.

Ennis, Huberto. "Interventions in Markets with Adverse Selection: Implications for Discount Window Stigma." *Journal of Money, Credit and Banking* 51, no. 7 (2019): 1737-1764.

Ennis, H., Weinberg, J., 2013. Over-the-counter loans, adverse selection, and stigma in the interbank market. Rev. Econ. Dyn. 16 (4), 601–616.

Farhi, Emmanuel, and Jean Tirole. "Collective moral hazard, maturity mismatch, and systemic bailouts." *American Economic Review* 102, no. 1 (2012): 60-93.

Federal Reserve Board. *Annual Report of the Federal Reserve Board*. Washington: Government Printing Office, 1934.

Federal Reserve Board. *Federal Reserve Bulletin*. Washington: Government Printing Office, 1933.

Fishback, Price, William Horrace, and Shawn Kantor. "The Impact of New Deal Expenditures on Local Economic Activity: An Examination of Retail Sales, 1929-1939." *Journal of Economic History* 65 (2005): 36-71.

Fishback, P., Troesken, W., Kollmann, T., Haines, M., Rhode, P., and Thomasson, M. "Information and the Impact of Climate and Weather on Mortality Rates During the Great Depression." *The Economics of Climate Change: Adaptations Past and Present*. Edited by Gary Libecap and Richard Steckel. Chicago: University of Chicago Press (2011): 131-168.

Friedman, Milton, and Anna Jacobson Schwartz. *A monetary history of the United States, 1867-1960*. Vol. 14. Princeton University Press, 1963.

Furfine, Craig. "The Reluctance of Borrow from the Fed." *Economic Letters* 72 (2001), 209–13.

Geithner, Timothy. *Stress Test: Reflections on Financial Crises*. New York: Crown Publishers (2014).

Gibbons, Robert S. Game theory for applied economists. Princeton University Press, 1992.

Gilje, Erik P., Elena Loutskina, and Philip E. Strahan. "Exporting liquidity: Branch banking and financial integration." *Journal of Finance* 71, no. 3 (2016): 1159-1184.

Gorton, Gary, and George Pennacchi. "Financial intermediaries and liquidity creation." *Journal of Finance* 45 (1990): 49-71.

Gorton, Gary, and Ellis Tallman. *Fighting Financial Crises*. University of Chicago Press, 2018.

Haines, Michael. *Historical, Demographic, Economic, and Social Data: The United States.* Inter-university Consortium for Political and Social Research. Ann Arbor, MI, (2010). ICPSR Study 2896.

Haines, Michael, Fishback, Price, and Rhode, Paul. *United States Agriculture Data, 1840 - 2012*. Inter-university Consortium for Political and Social Research. Ann Arbor, MI, (2018). ICPSR Study 35206.

Hausman, Joshua, Paul Rhode, and Johannes Wieland. "Recovery from the great depression: The farm channel in spring 1933." *American Economic Review* 109, no. 2 (2019): 427-72.

Jaremski, Matthew. "National Banking's role in US industrialization, 1850–1900." *Journal of Economic History* 74, no. 1 (2014): 109-140.

Jaremski, Matthew and Price Fishback. "Did Inequality in Farm Sizes Lead to Suppression of Banking and Credit in the Late Nineteenth Century?" *Journal of Economic History* Vol. 78 (2018), pp. 155-195.

Jaremski, Matthew, and David C. Wheelock. "Banking on the boom, tripped by the bust: Banks and the World War I agricultural price shock." *Journal of Money, Credit and Banking* 52 (2020): 1719-1754.

Jayaratne, Jith, and Philip E. Strahan. "The finance-growth nexus: Evidence from bank branch deregulation." *Quarterly Journal of Economics* 111, no. 3 (1996): 639-670.

Jones, J.H. and with Edward Angly. *Fifty Billion Dollars: My Thirteen Years with the RFC (1932-1945)*. New York: Macmillan Company, 1951.

Keister, Todd. "Bailouts and financial fragility." *Review of Economic Studies* 83(2016): 704-736.

King, Robert G., and Ross Levine. "Finance and growth: Schumpeter might be right." *Quarterly Journal of Economics* 108, no. 3 (1993): 717-737.

Komai, Alejandro and Gary Richardson. "A History of Financial Regulation in the USA from the Beginning Until Today: 1789 to 2011." Chapter 10 in M. Brose, M. Flood, D. Krishna, B. Nichols (Eds.), Handbook, 2014.

Krishnamurthy, A., Nagel, S. and Orlov, D. "Sizing Up Repo." *Journal of Finance* 69 (2014), 2381-2417.

Kreps, David and Joel Sobel. "Signaling." Chapter 25 in *Handbook of Game Theory*, Volume 2, Edited by R.J. Aumann and S. Hart . Elsevier Science B.V., 1994, pp. 850-866.

Lacker, J.M., 2008. *Financial stability and central banks*. In: Distinguished Speakers Seminar. European Economics and Financial Centre, London, England, June 5.

Lawless, J. F., and Kishore Singhal. "Efficient screening of nonnormal regression models." *Biometrics*, 34 (1978): 318-327.

Leitner, Yaron, and Basil Williams. "Model secrecy and stress tests." *Journal of Finance* 78 (2023): 1055-1095.

Mian, Atif, Amir Sufi, and Emil Verner. "How does credit supply expansion affect the real economy? the productive capacity and household demand channels." *Journal of Finance* 75 (2020): 949-994.

Mladjan, Mrdjan. “Accelerating into the Abyss: Financial Dependence and the Great Depression". SSRN Working Paper. 2019.

Mitchener, Kris. “Bank Supervision, Regulation, and Instability During the Great Depression.” *Journal of Economic History* 65 (2005): 152-185.

Mitchener, Kris. “Are Prudential Supervision and Regulation Pillars of Financial Stability? Evidence from the Great Depression.” *Journal of Law and Economics* 50 (2007).

Mitchener, Kris, and Matthew Jaremski. “The Evolution of Bank Supervisory Institutions: Evidence from American States.” *Journal of Economic History* 75 (2015): 819-859.

Mitchener, Kris James, and Gary Richardson. "Network contagion and interbank amplification during the Great Depression." *Journal of Political Economy* 127 (2019): 465-507.

Park, Sangkyun. "Bank failure contagion in historical perspective." *Journal of Monetary Economics* 28 (1991): 271-286.

Pedemonte, Mathieu. “Fireside Chats: Communication and Consumers’ Expectations in the Great Depression.” *Review of Economics and Statistics* (forthcoming).

Peristiani, Stavros. “The Growing Reluctance to Borrow at the Discount Window: An Empirical Investigation.” *Review of Economics and Statistics* 80 (1998), 611–620.

Petrella, Giovanni, and Andrea Resti. "Supervisors as information producers: Do stress tests reduce bank opaqueness?." *Journal of Banking & Finance* 37 (2013): 5406-5420.

Philippon, T., Skreta, V., 2012. Optimal interventions in markets with adverse selection. Am. Econ. Rev. 102 (1), 1–28.

Rajan, Raghuram, and Rodney Ramcharan. "The anatomy of a credit crisis: The boom and bust in farm land prices in the United States in the 1920s." *American Economic Review* 105 (2015): 1439-1477.

Rajan, Raghuram, and Rodney Ramcharan. "Crises and the development of economic institutions: Some microeconomic evidence." *American Economic Review* 106 (2016): 524-27.

Richardson, Gary. “Categories and Causes of Bank Distress during the Great Depression, 1929—1933: The Illiquidity-Insolvency Debate Revisited,” *Explorations in Economic History* 44 (2007): 586-607.

Richardson, Gary, 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* 117, no. 6 (2009): 1031-1073.

Rocheteau, Guillaume, and Ed Nosal. *Money, payments, and liquidity*. Boston: MIT Press, 2017.

Romer, Christina D. "What ended the great depression?." *Journal of Economic History* 52 (1992): 757-784.

Sargent, Thomas J. "The ends of four big inflations." In *Inflation: Causes and effects*, pp. 41-98. University of Chicago Press, 1982.

Silber, W.. "Why did FDR's bank holiday succeed?" *Economic Policy Review* 15 (2009): 19-30.

Sobel, Joel. Signaling Games. Manuscript, 2007. https://econweb.ucsd.edu/~jsobel/Paris_Lectures /20070527_Signal_encyc_Sobel.pdf. 2007.

Temin, Peter, and Barrie A. Wigmore. "The end of one big deflation." *Explorations in Economic History* 27, no. 4 (1990): 483-502.

Vossmeyer, Angela. “Analysis of Stigma and Bank Credit Provision.” *Journal of Money, Credit and Banking* 51, no. 1 (2019): 163-194.

Wallis, J.J.. The political economy of New Deal fiscal federalism. *Economic Inquiry* 24 (1991): 511–525.

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

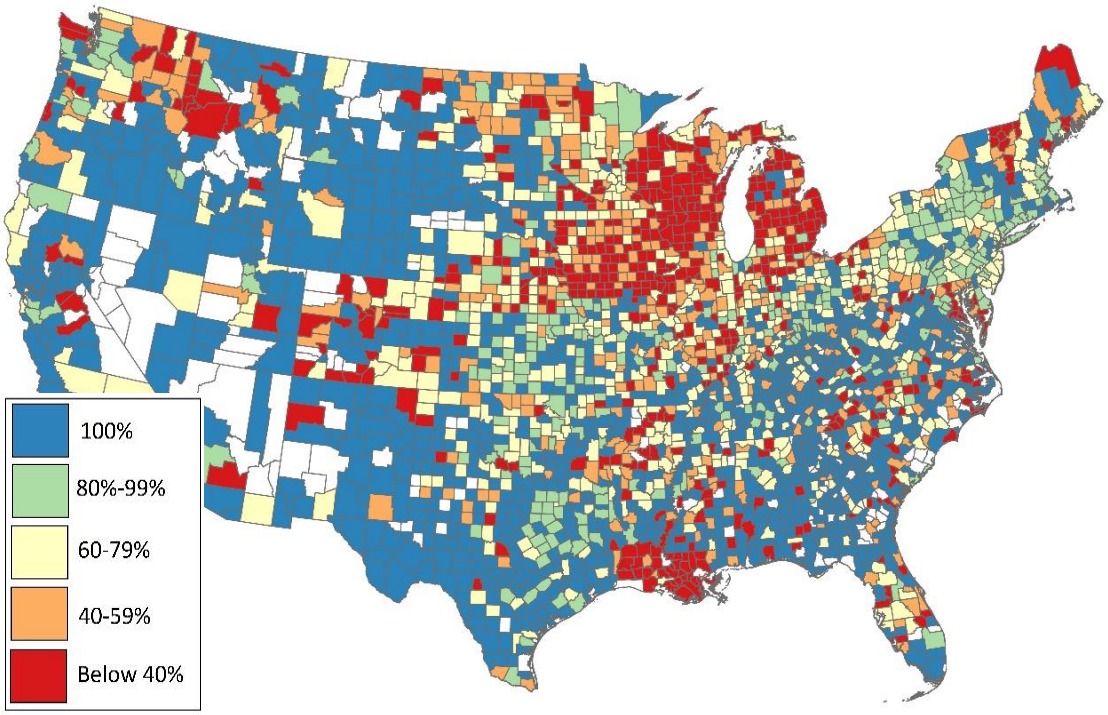
White, Eugene N. “A Reinterpretation of the Banking Crisis of 1930.” *Journal of Economic History* 44 (1984): 119-38.

White, Eugene N. *Protecting Financial Stability in the Aftermath of World War I: The Federal Reserve Bank of Atlanta's Dissenting Policy*. NBER Working Paper No. w21341, 2015.

Wright, G., 1974. “The political economy of New Deal spending: an econometric analysis”. *Review of Economics and Statistics* 56, 30–38.

Ziebarth, Nicolas L. "Identifying the Effects of Bank Failures from a Natural Experiment in Mississippi during the Great Depression," *American Economic Journal: Macroeconomics* 5 (2013): 81-101.

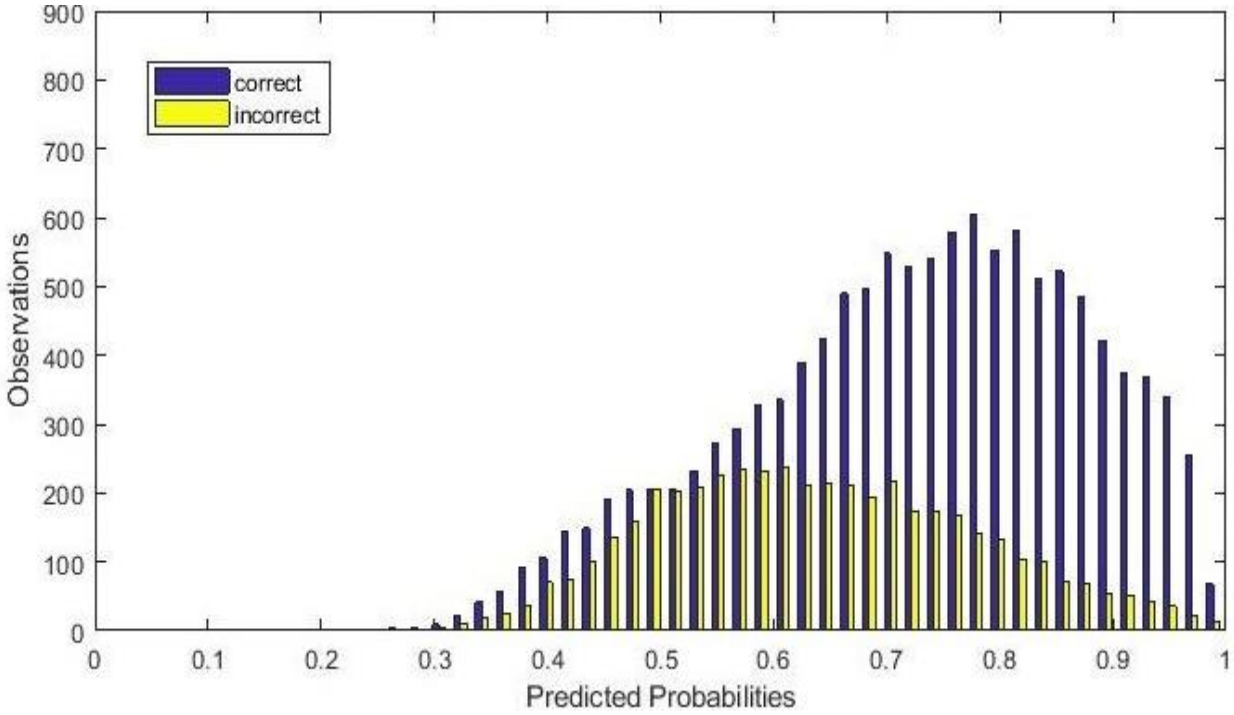
Figure 1: Fraction of Commercial Banks Reopened in March 1933 by County



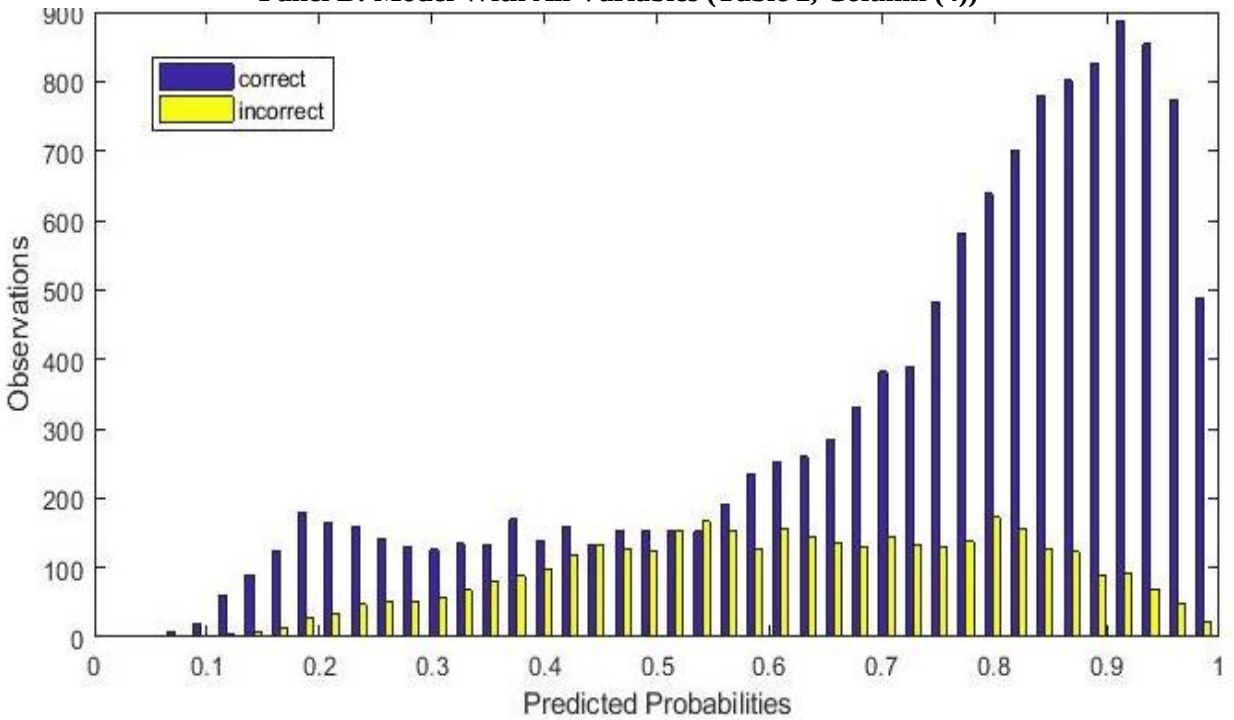
Notes: Maps present the fraction of commercial banks reopened by March 29, 1933 by county. County boundaries were obtained from Minnesota Population Center (2004).

Figure 2 Distribution of Predicted Values By Outcomes

Panel A: Model With Only Bank Factors (Table 2, Column (1))



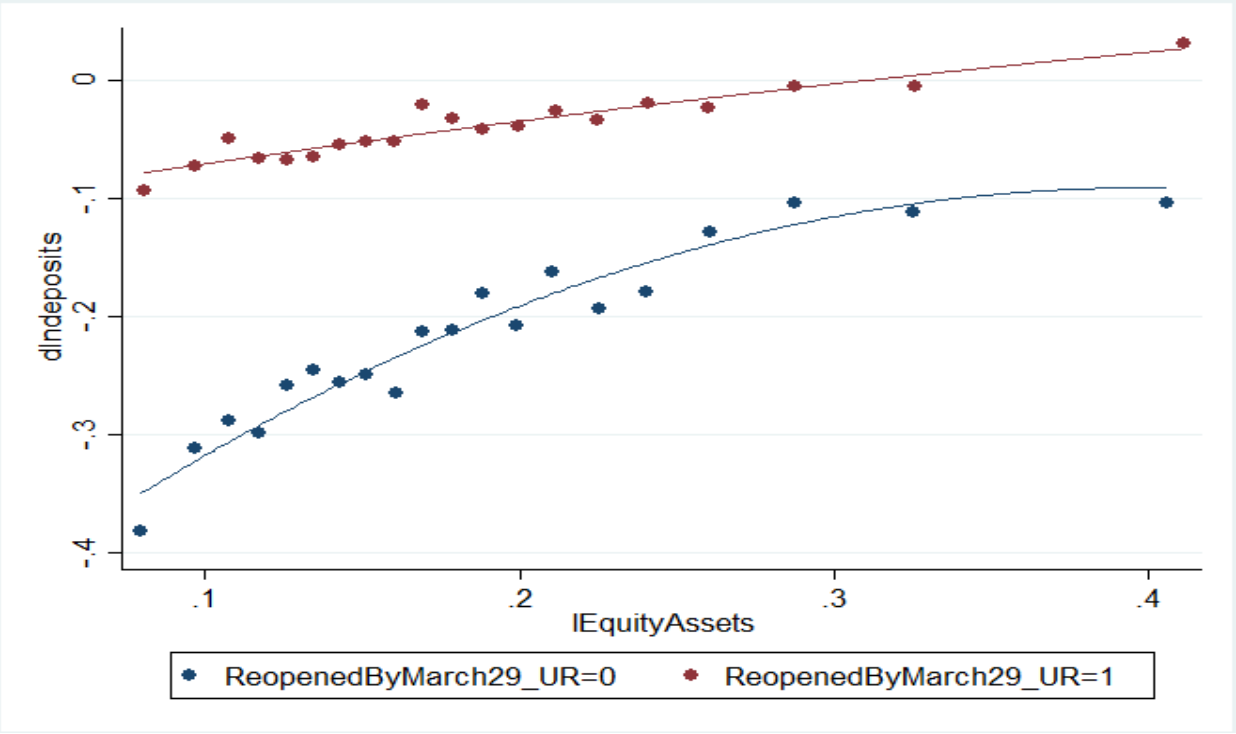
Panel B: Model With All Variables (Table 2, Column (4))



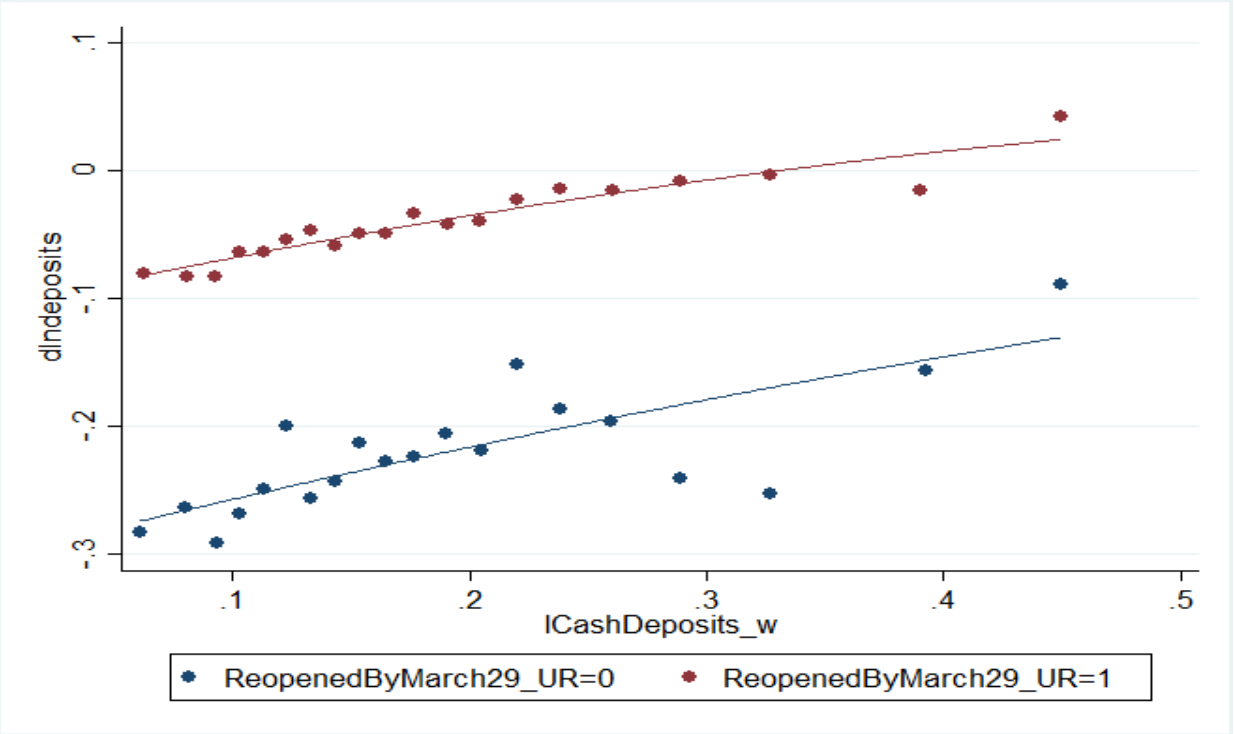
Notes: Panel A and Panel B provide histograms of the predicted probabilities from two logistic regression models (Table 2 Columns (1) and (4), respectively). The purple represents observations that were correctly classified and the yellow represents observations that were misclassified.

Figure 3: Initial Fundamentals and Subsequent Deposit Growth (1932-1933)

Panel A: Capital Ratio in 1932



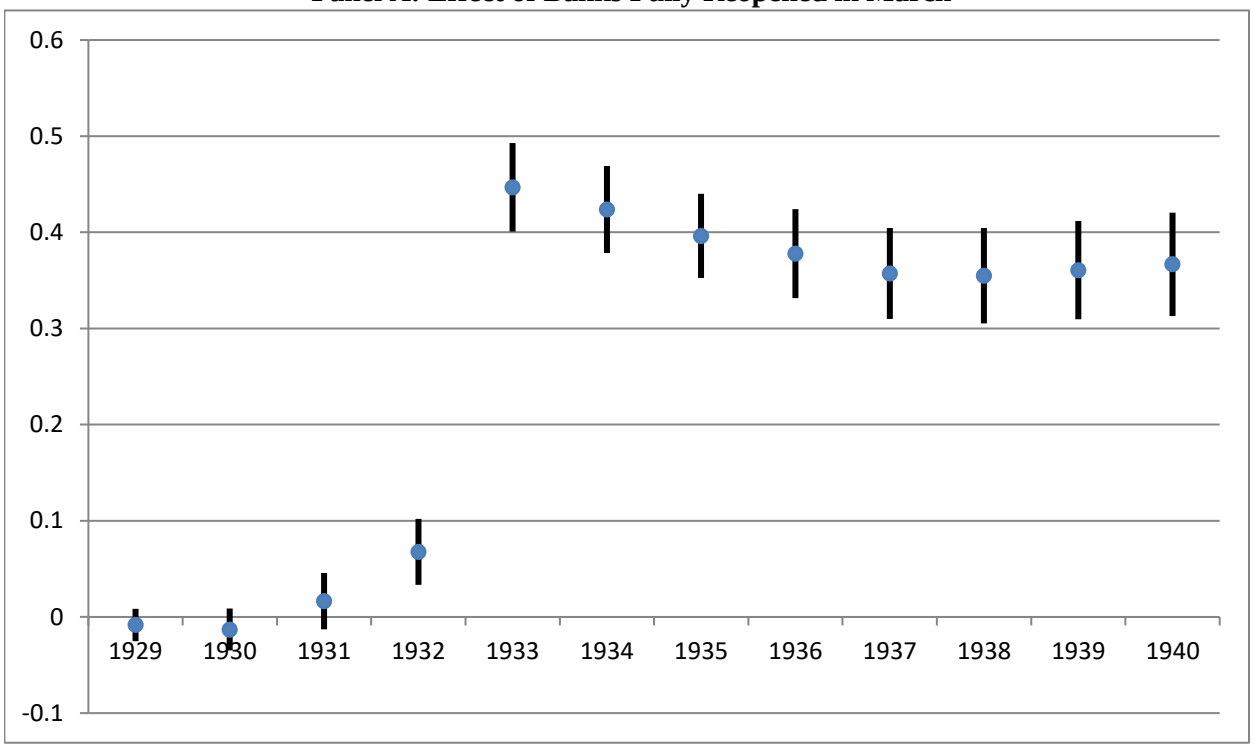
Panel B: Reserves Ratio in 1932



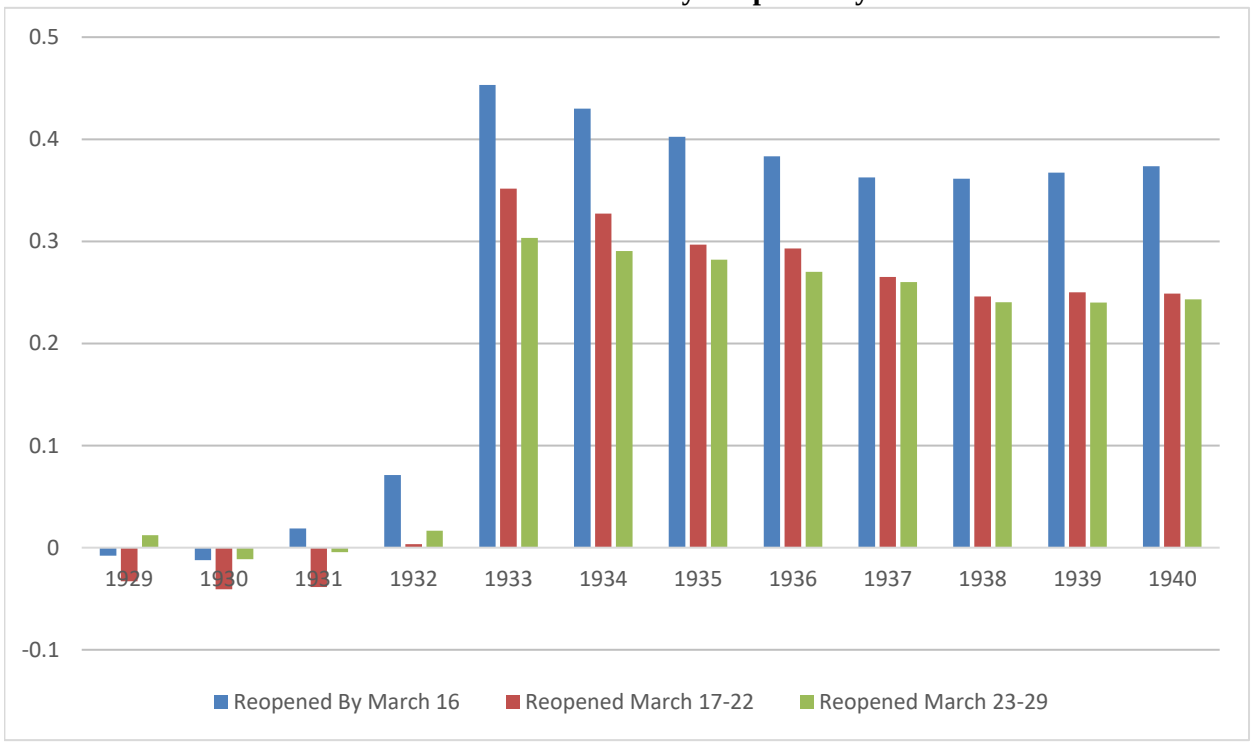
Notes: Figures provide bin scatter plots of deposit growth between July 1932 and July 1933. The sample consists of all commercial banks in July 1932 who were open at the start of the Bank Holiday and fully reopened by July 1933. The panel divides banks based on whether they were fully reopened during March 1933 or whether they reopened by July 1933. The sample drops banks with a value of the ratio in 1932 that was below the 1 percentile or above the 99 percentiles.

Figure 4: Effect of Reopening Timing on National Bank Deposits (1928-1941)

Panel A: Effect of Banks Fully Reopened in March



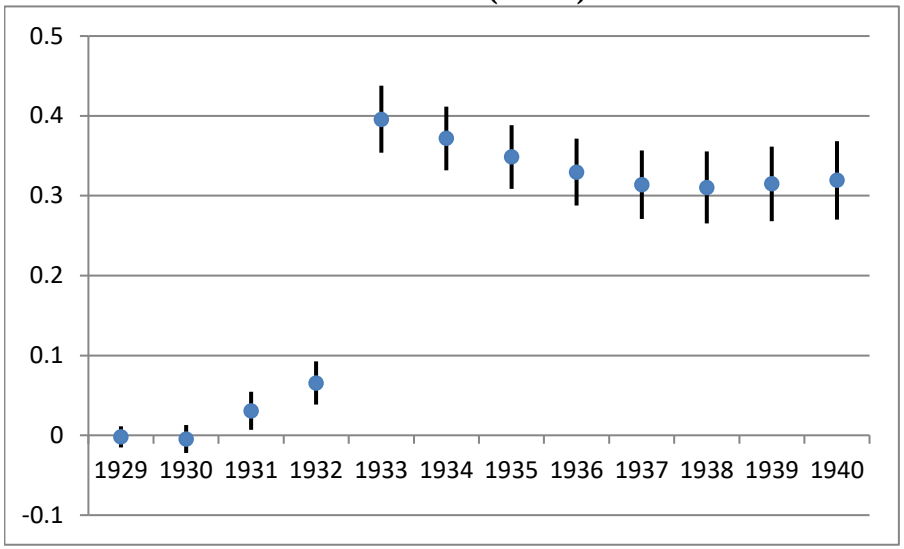
Panel B: Effect of Banks Fully Reopened By Week



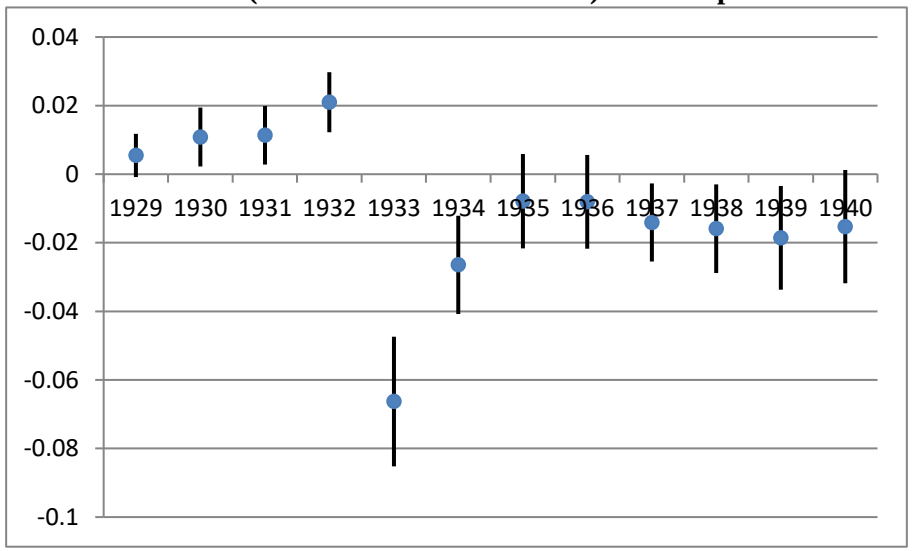
Notes: Figure provides the coefficients on the interaction between year fixed effects and various indicators for the spead of reopening in equation (3). The sample consists of national banks that reported data every year from 1928 through 1940. The top figure display the coefficient and a 2 standard error band, whereas the bottom figure displays the coefficients for the three different indicator variables. All regressions contain interactions for Fed District and year as well as population in 1930 and year. The coefficients and standard errors are provided in the Appendix.

Figure 5: Effect of March Reopening on National Bank Balance Sheets (1928-1941)

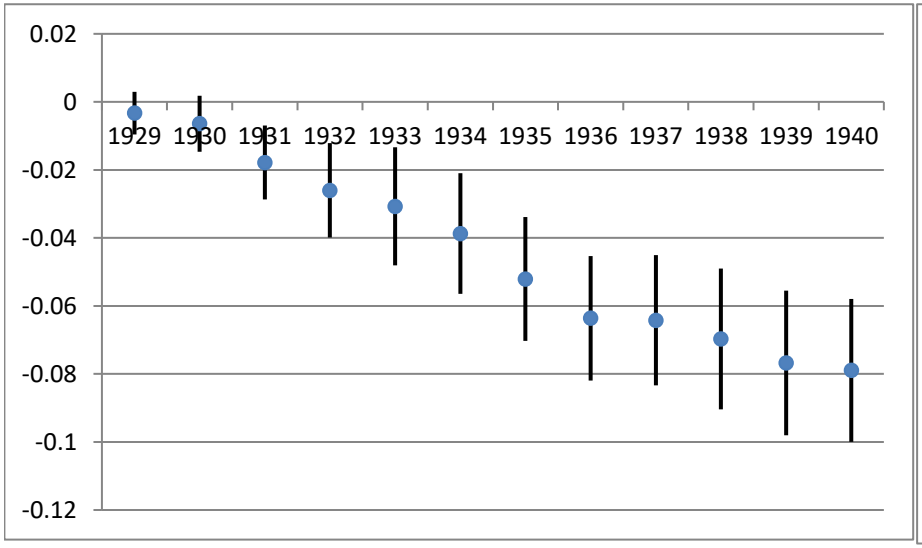
Panel A: Ln(Assets)



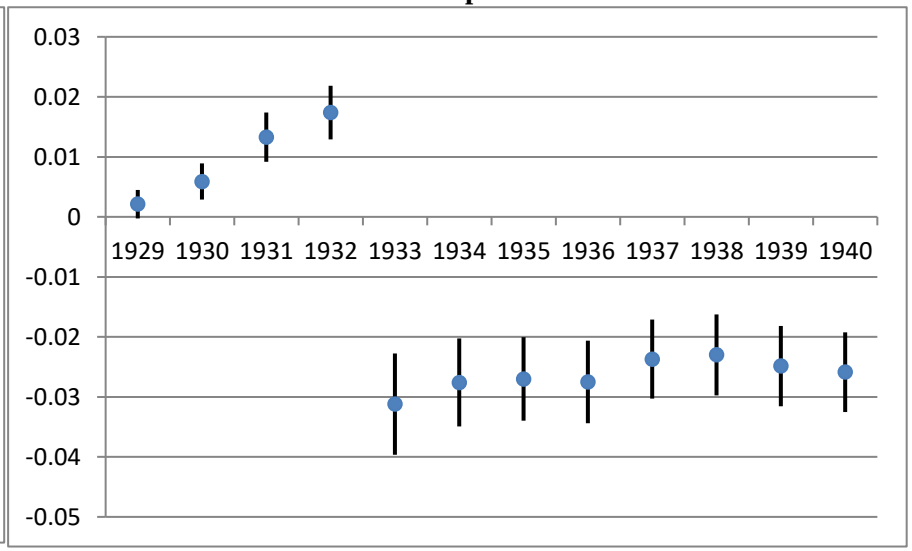
Panel B: (Cash and Due from Banks)/Total Deposits



Panel C: Loans/Assets



Panel D: Capital/Assets



Notes: Table provides the coefficients on the interaction between year fixed effects and a March reopening indicator in equation (3). The sample consists of national banks that reported data every year from 1928 through 1940. The figures display the coefficient and a 2 standard error band. All regressions contain interactions for Fed District and year as well as population in 1930 and year. The coefficients and standard errors are provided in the Appendix.

Table 1: Commercial Bank Reopenings in March 1933 and June 1933 By Fed District

	By March 29, 1933						
	National Banks		State Member Banks		State Non-Member Banks		
	Total	Licensed	Total	Licensed	Total	Licensed	Open Under Restriction
Boston	338	281	29	23	576	218	333
New York	678	533	143	135	538	493	2
Philadelphia	624	531	64	57	336	254	33
Cleveland	562	414	69	57	784	579	6
Richmond	354	252	33	26	799	587	87
Atlanta	277	235	39	31	840	655	35
Chicago	618	370	156	83	2,337	892	895
St Louis	339	267	64	45	1,536	1,018	165
Minneapolis	496	427	37	31	1,112	627	156
Kansas City	745	667	25	25	1,623	1,173	367
Dallas	514	483	54	45	576	521	42
San Francisco	362	306	74	63	517	362	61
Total	5,907	4,766	787	621	11,574	7,379	2,182
	By June 28, 1933						
	National Banks		State Member Banks		State Non-Member Banks		
	Total	Licensed	Total	Licensed	Total	Licensed	Not Licensed
Boston	338	290	29	25	205	155	50
New York	677	566	151	145	324	314	10
Philadelphia	621	530	64	57	277	242	35
Cleveland	562	424	71	62	742	604	138
Richmond	351	279	42	37	737	588	149
Atlanta	278	240	44	42	783	711	72
Chicago	614	398	161	102	2,188	1,367	821
St Louis	341	280	67	57	1,409	1,172	237
Minneapolis	495	433	36	36	1,015	879	136
Kansas City	743	668	28	28	1,532	1,247	285
Dallas	512	487	51	49	546	521	25
San Francisco	354	304	76	63	426	368	58
Total	5,886	4,899	820	703	10,184	8,168	2,016

Notes: Table presents the number of commercial banks in total and reopened by Fed district and bank-type. See Data section for sources.

Table 2: Determinants of Unrestricted Reopening in March 1933

	Reopened By March 29, 1933			
	(1)	**(2)**	**(3)**	**(4)**
Ln(Total Assets)	0.069***	0.078***	0.075***	0.075***
	[0.005]	[0.005]	[0.006]	[0.006]
Loans/Assets	-0.035	-0.077***	-0.078***	-0.107***
	[0.026]	[0.027]	[0.026]	[0.025]
(Cash and Due from Banks)/Deposits	1.126***	1.043***	1.041***	1.020***
	[0.052]	[0.053]	[0.052]	[0.050]
(Capital and Surplus)/Assets	0.689***	0.626***	0.559***	0.431***
	[0.066]	[0.066]	[0.066]	[0.063]
National Bank Indicator	0.099***	0.089***	0.094***	0.047***
	[0.010]	[0.010]	[0.010]	[0.009]
State Bank Fed Member Indicator	0.038*	0.040*	0.040**	0.040**
	[0.021]	[0.021]	[0.020]	[0.019]
Operates State-Wide Branches	-0.040	-0.053*	-0.051*	-0.028
	[0.029]	[0.029]	[0.029]	[0.027]
# of Farms Per Person		0.791***	0.844***	0.376*
		[0.226]	[0.225]	[0.195]
# of Mfg. Establishments Per Person		-0.327***	-0.322***	-0.083
		[0.069]	[0.069]	[0.063]
Fraction Voted for FDR in 1932		-0.246***	-0.241***	-0.172***
		[0.054]	[0.054]	[0.059]
Fraction Voted for Dem. Candidate in 1930		0.105***	0.098***	0.043
		[0.028]	[0.027]	[0.034]
No Other Banks in Town Indicator			0.063	-0.024
			[0.112]	[0.101]
Fraction of Other Banks In Town That Are National Banks			0.188***	0.095***
			[0.029]	[0.027]
Fraction of Other Banks in Town That Are State Fed Member Banks			-0.024	-0.029
			[0.047]	[0.044]
State Fixed-Effects?	No	No	No	Yes
County-Level Controls?	No	Yes	Yes	Yes
Additional Town Bank Controls?	No	No	Yes	Yes
Observations	16803	16555	16555	16555
R-squared	0.096	0.114	0.118	0.207
Classification Rate	72.49%	73.97%	74.12%	77.40%

Notes: Table provides the marginal effects of equation (1) estimated with a logit model. The dependent variable is an indicator for whether the bank was reopened without restrictions by March 29, 1933. The sample consists of all commercial banks in July 1932 who were open at the start of the Bank Holiday. County-Level Controls include the logarithm of population in 1929, fraction of the county living in an urban location of 2,500 or more people in 1929, the fraction of the adult population that is illiterate in 1929, the fraction of the population that is non-white in 1929, indicators for whether the bank was located in a city that was designed a Central Reserve City, Reserve City or had an active clearinghouse in place in 1932 and the logarithm of the number of banks in the county in 1932. Robust standard errors are provided in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table 3: Deposit Growth of Reopened Banks 1932 to 1933

	All Banks Open By July 1933				Only State Non-Member Banks Open By July 1933	
	(1)	(2)	(3)	(4)	(5)	(6)
Unrestricted reopen by March 29	0.192***	0.182***			0.209***	0.201***
	[0.009]	[0.009]			[0.014]	[0.015]
Restricted reopen by March 29					0.068***	0.070***
					[0.018]	[0.018]
Unrestricted reopen by March 16			0.206***	0.195***		
			[0.009]	[0.009]		
Unrestricted reopen March 17-22			0.179***	0.174***		
			[0.011]	[0.011]		
Unrestricted reopen March 23-29			0.122***	0.118***		
			[0.013]	[0.012]		
Ln(Total Assets)		-0.001		-0.003		-0.007
		[0.003]		[0.003]		[0.005]
Loans/Assets		-0.042**		-0.037**		-0.034
		[0.018]		[0.018]		[0.025]
(Cash and Due from Banks)/Deposits		0.117***		0.110***		0.161***
		[0.032]		[0.032]		[0.044]
(Capital and Surplus)/Assets		0.349***		0.341***		0.335***
		[0.055]		[0.055]		[0.074]
Economic and Political Variables?	Yes	Yes	Yes	Yes	Yes	Yes
County-Level Controls?	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed-Effects?	Yes	Yes	Yes	Yes	Yes	Yes
Observations	13268	13268	13268	13268	8114	8114
R-squared	0.146	0.165	0.150	0.168	0.145	0.166

Notes: Table provides the coefficients of equation (2) estimated by ordinary least squares. The dependent variable is the change in deposits between July 1932 and July 1933. The sample consists of all commercial banks in July 1932 who were open at the start of the Bank Holiday, fully reopened by July 1933, and that met the criteria in the column heading. County-Level Controls include the logarithm of population in 1929, fraction of the county living in an urban location of 2,500 or more people in 1929, the fraction of the adult population that is illiterate in 1929, the fraction of the population that is non-white in 1929, indicators for whether the bank was located in a city that was designed a Central Reserve City, Reserve City or had an active clearinghouse in place in 1932 and the logarithm of the number of banks in the county in 1932. Economic and Political Variables include the logarithm of number of farms per capita, the logarithm of number of manufacturing establishments per capita, the fraction of owner-operator farms that had mortgage debt, the fractions of votes for the Democrat candidates in the House of Representatives elections of 1930 and the Presidential election of 1932. Robust standard errors are provided in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table 4: Implications of March Reopenings on County-Level Deposit Growth

	ΔLn(Total Deposits) Pre-Banking Holiday through ….						
	1933	**1941**	**1944**	**1950**	**1954**	**1960**	**1964**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
%Unrestricted reopen by March 29	0.609***	0.178***	0.131***	0.086**	0.060*	0.016	0.009
	[0.052]	[0.035]	[0.031]	[0.034]	[0.034]	[0.036]	[0.038]
County-Level Controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Economic and Political Variables?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other Bank Controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2669	2807	2807	2819	2817	2818	2821
R-squared	0.328	0.653	0.761	0.727	0.709	0.713	0.701

Notes: Table provides the coefficients of equation (4) estimated by ordinary least squares. The dependent variables is the change in the logarithm of total deposits in the county between the start of the Bank Holiday through the year specified. County-Level Controls include the logarithm of population in 1929, fraction of the county living in an urban location of 2,500 or more people in 1929, the fraction of the adult population that is illiterate in 1929, the fraction of the population that is non-white in 1929, indicators for whether the bank was located in a city that was designed a Central Reserve City, Reserve City or had an active clearinghouse in place in 1932 and the logarithm of the number of banks in the county in 1932. Economic and Political Variables include the logarithm of number of farms per capita, the logarithm of number of manufacturing establishments per capita, the fraction of owner-operator farms that had mortgage debt, the fractions of votes for the Democrat candidates in the House of Representatives elections of 1930 and the Presidential election of 1932. Robust standard errors are provided in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table 5: Balance Sheet Changes of Reopened Banks 1932 to 1933

	Panel A: All Banks Open By July 1933			
	ΔLn(Assets)	**ΔLoans/Assets**	**Δ(Cash and Due from Banks)/Deposits**	**Δ(Capital and Surplus)/Assets**
	(1)	(2)	(3)	(4)
Unrestricted reopen by March 29	0.156***	-0.002	-0.027***	-0.020***
	[0.007]	[0.003]	[0.003]	[0.001]
Economic and Political Variables?	Yes	Yes	Yes	Yes
County-Level Controls?	Yes	Yes	Yes	Yes
State Fixed-Effects?	Yes	Yes	Yes	Yes
Observations	13268	13268	13268	13268
R-squared	0.160	0.064	0.103	0.067
	Panel B: Only State Non-Member Banks Open By July 1933			
	ΔLn(Assets)	**ΔLoans/Assets**	**Δ(Cash and Due from Banks)/Deposits**	**Δ(Capital and Surplus)/Assets**
	(5)	(6)	(7)	(8)
Unrestricted reopen by March 29	0.166***	-0.009**	-0.021***	-0.023***
	[0.011]	[0.004]	[0.004]	[0.002]
Restricted reopen by March 29	0.050***	-0.011**	-0.010*	-0.012***
	[0.014]	[0.005]	[0.006]	[0.003]
Economic and Political Variables?	Yes	Yes	Yes	Yes
County-Level Controls?	Yes	Yes	Yes	Yes
State Fixed-Effects?	Yes	Yes	Yes	Yes
Observations	8114	8114	8114	8114
R-squared	0.179	0.071	0.110	0.073

headings are measured as the change between July 1932 and July 1933. The sample consists of all commercial banks in July 1932 who were open at the start of the Bank Holiday, fully reopened by July 1933, and that met the criteria in the column heading. County-Level Controls include the logarithm of population in 1929, fraction of the county living in an urban location of 2,500 or more people in 1929, the fraction of the adult population that is illiterate in 1929, the fraction of the population that is non-white in 1929, indicators for whether the bank was located in a city that was designed a Central Reserve City, Reserve City or had an active clearinghouse in place in 1932 and the logarithm of the number of banks in the county in 1932. Economic and Political Variables include the logarithm of number of farms per capita, the logarithm of number of manufacturing establishments per capita, the fraction of owner-operator farms that had mortgage debt, the fractions of votes for the Democrat candidates in the House of Representatives elections of 1930 and the Presidential election of 1932. Robust standard errors are provided in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table 6: Implications of March Reopenings on Measures of Economic Growth

	ΔLn(Retail Sales)		ΔLn(Wholesale Sales)	ΔLn(# of Tax Returns Filed)		ΔLn(Value Added)
	1933-1935	**1933-1939**	**1933-1935**	**1933-1935**	**1933-1939**	**1933-1935**
	(1)	(2)	(3)	(4)	(5)	(6)
%Unrestricted reopen by March 29	-0.003	0.003	0.050	0.009	0.019	0.027
	[0.012]	[0.013]	[0.051]	[0.019]	[0.023]	[0.074]
County-Level Controls?	Yes	Yes	Yes	Yes	Yes	Yes
Other Bank Controls?	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes
Lagged Growth Variable?	Yes	Yes	Yes	Yes	Yes	Yes
Change in Banks 1929-1933?	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2838	2838	2816	2794	2794	1973
R-squared	0.288	0.372	0.242	0.212	0.285	0.220

	ΔLn(Retail Sales)		ΔLn(Wholesale Sales)	ΔLn(# of Tax Returns Filed)		ΔLn(Value Added)
	1933-1935	**1933-1939**	**1933-1935**	**1933-1935**	**1933-1939**	**1933-1935**
	(7)	(8)	(9)	(10)	(11)	(12)
%Unrestricted reopen by March 29	-0.020	-0.013	0.057	0.005	0.009	0.021
	[0.013]	[0.014]	[0.061]	[0.022]	[0.026]	[0.087]
%Restricted reopen by March 29	-0.059**	-0.057**	0.028	-0.014	-0.039	-0.027
	[0.024]	[0.024]	[0.089]	[0.034]	[0.045]	[0.103]
County-Level Controls?	Yes	Yes	Yes	Yes	Yes	Yes
Other Bank Controls?	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes
Lagged Growth Variable?	Yes	Yes	Yes	Yes	Yes	Yes
Change in Banks 1929-1933?	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2838	2838	2816	2794	2794	1973
R-squared	0.290	0.373	0.242	0.212	0.285	0.220

Notes: Table provides the coefficients of equation (5) estimated by ordinary least squares. The dependent variables is the change in the logarithm of specified variable across the period specified. County-Level Controls include the logarithm of population in 1929, fraction of the county living in an urban location of 2,500 or more people in 1929, the fraction of the adult population that is illiterate in 1929, the fraction of the population that is non-white in 1929, indicators for whether the bank was located in a city that was designed a Central Reserve City, Reserve City or had an active clearinghouse in place in 1932 and the logarithm of the number of banks in the county in 1932. Economic and Political Variables include the logarithm of number of farms per capita, the logarithm of number of manufacturing establishments per capita, the fraction of owner-operator farms that had mortgage debt, the fractions of votes for the Democrat candidates in the House of Representatives elections of 1930 and the Presidential election of 1932. The models also control for the change in each outcome variable 1929 to 1933 and the change the number of banks 1929 to the start of the Bank Holiday. Robust standard errors are provided in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Appendices for Online Distribution

A. Appendix on Robustness Checks

Throughout the paper, we mention various robustness checks or extensions of our models. To save space, we do not describe those regressions in detail but instead briefly highlight their results. In this Appendix, we describe those alternative specifications in more detail for interested readers. Each section details the alternative specifications for the three different types of models (e.g., reopening, balance sheet growth, and economic growth).

A1. Alternative Specifications for Reopening Regressions

Table 2 shows the estimates coefficients for the reopening regressions across all banks. We undertake a series of robustness checks of the results in Table A1 using subsamples of the data. First, we re-estimate the regressions when controlling for changes in county-level economic conditions during the Great Depression using the logarithm change in retail sales per capita 1929 to 1933. As this growth rate stretches through 1933, it could be endogenous to bank reopenings in March 1933. Therefore, we only include it to show that the results are not sensitive to potential omitted variables correlated with the depth of the economic downturn in the bank's area. The inclusion of the variable, however, has no effect on the other previously important variables.

Second, we re-estimate the regressions when dropping out any county with a city of 25,000 or more people. Large cities had many more banks competing and more diverse business

interests. As such, regulators might have examined banks more carefully and taken a different approach than in rural areas. Column (1) provides the results of the full model when these counties are removed, but the results remain relatively similar to those in Table 2.

Third, we re-estimate the regressions only for those state non-member banks that either reopened fully or had a restricted reopening in March. This narrows down the sample to banks that were considered by state regulators to at least be solvent enough to be reopened partially. If bank solvency was of primary concern, then we should still see a difference between these banks. The results in column (2) show similar effects for the balance sheet variables, but weakened effects of the economic and political characteristics which is to be expected given that the sample's banks were in much more similar locations.

Fourth, we break up the model by bank type: national banks, state Fed member banks, and state non-member banks. Grouping banks together treats the model as if all banks were regulated by the same entities when in reality each had different regulatory agencies. Columns (3), (4), and (5) of Table A1 provide the estimates of equation (1) separately by bank type. There are notable similarities and differences amongst the bank types. The data show that the amount of assets, cash to deposits, and capital to assets matter regardless of the bank type, but the effect of loans to assets and bank age only affect state non-member banks. The amount of farming in the county only influences the reopening of state banks, whereas national politics only play a role in the reopening of national banks. This matches the historical record as national banks had restrictions on real estate lending and thus state banks provided more agricultural credit. Further, national politics were probably only meaningful for national-level decisions that could be

influenced by those politics rather than state officials who were more concerned with local politics.

Finally, we re-estimate the model separately by the number of banks in a city. If regulators were focused on making sure there was sufficient banking coverage across the United States to allow the payments system to function, then they could have made differential choices in locations with very few banks relative to those with many. While the previous models have accounted for relative comparisons with other banks in the same city, they do not allow the effects of the main variables to vary by local competition. Table A2, therefore, presents the results when estimating equation (1) separately for banks that were the only bank in their city, banks that had only one other bank in their city, banks that had two other banks in their city, and banks that three to six other banks in their city. The results for the bank stability variables are relatively similar across the specifications with the exception of loans to assets.

A2. Alternative Specifications for Bank-Level Balance Sheet Regressions

Table 4 and Figure 3 shows the estimates coefficients for the change in balance sheet measures across banks. Here, we examine a number of different robustness checks.

First, we show that the bank-level results are not being driven by recapitalization. To do this, we re-estimate equations (2) and (3) for the logarithm of capital. In the full sample of banks (Table A3) as in the national bank sample (Table A4 which also includes the full coefficients of Figure 4), we find that quickly reopened banks had if anything, a relative decline in capital. As

such, it seems like late reopen banks had to take more losses as a result of stigma compared to quickly reopened ones.

Table A5 shows the coefficients for the national bank panel regressions for deposits when decomposing March reopenings by week. These coefficients were displayed in the bottom panel of Figure 3.

Table A6 shows the coefficients for the other balance sheet national bank panel both for the balanced sample of banks shown in Figure 5, but also for two different subsamples. The first subsample drops out counties with large cities to avoid financial centers, whereas the second focuses only on those banks that were counties that had at least one reopened bank in March and one reopened bank between April and December. In both cases, we find that the results are similar to those reported in the paper.

Figure A1 shows the bin scatter plots of deposit growth for only national banks. This is done both for growth between 1932 and 1933 similar to that in Figure 3, but also for growth 1932 through 1940. Similar to the national bank regressions, both sets of scatter plots require a national bank to have been present in from 1928 through 1940. The results for 1932 to 1933 confirm that scatter plots of Figure 3. Despite both groups having a positive correlation between deposit growth and the balance sheet fundamentals, national banks that reopened in March 1933 had substantially higher growth than those who reopened thereafter. Again, the effect of each balance sheet fundamental also has less of an effect on growth for the quickly reopened banks than later ones. The results for 1932 through 1940 show some convergence over time between the two groups. National banks with high capital and reserve requirements in 1932 have similar

growth over the rest of the decade. However, national banks with lower capital and reserve requirements in 1932 but were reopened quickly still see higher growth relative to national banks with lower capital and reserve requirements that were reopened later. We take this as suggestive evidence that the stigma effect declined over time for surviving banks but still remained from some institutions in 1940.

A3. Alternative Specifications for County-Level Deposit Regressions

Table 4 examined the growth of county-level deposits from 1932 to other years in the future. It is possible that these results are driven primarily by those counties that had relatively few banks and thus reopened them all. In Table A7, we, therefore, drop any county that reopened 100% of its banks in March and reestimate equation (4). The results are relatively similar with a positive effect of reopening that is significant through 1950. While 1954 is no longer statistically significant at the 10% level, its coefficient is exactly the same as that in Table 4.

A4. Alternative Specifications for County-Level Growth Regressions

Table 6 shows the estimates coefficients for the economic growth regressions across all counties. However, it is possible that the full sample is being distorted by certain types of counties and areas. We, therefore, estimate several additional specifications using subsamples of the data. First, in Table A8, we re-estimate the growth regressions when dropping out those counties with a very large city (i.e., over 25,000 in 1930). These cities were likely to have been

financial centers and could have had sufficient banking resources to carry on despite a few closures. The results, however, are very similar across all the outcomes.

Second, in Table A9, we re-estimate the growth regressions when dropping those counties that either had all of their banks fully reopened in March or had none of them reopen. These counties were more likely to be smaller counties with very few banks and could skew the results based on their extreme reopening values. Nevertheless, the results are again consistent with those from Table 6. The fraction of banks in the county that fully reopened in March is not significantly correlated with any of the economic outcomes we study.

Third, in Table A10, we replace our main explanatory variable (i.e., fraction of banks in the county the fully reopened) with several different measures of reopening. Specifically, we utilize the fraction of assets of reopened banks, the number of reopened banks, an indicator for whether all of a county's banks were fully reopened in March, and an indicator for whether all of a county's banks were fully reopened by July. These each capture slightly different sources and sizes of variation, but they all yield the same basic result: no measure of reopening at the county-level is correlated with any growth outcome.

B. Appendix on State Differences in Reopening Rates

The paper showed that regulators worked hard to take bank risk into account when choosing which banks to reopen and depositors responded to that effort. However, these observations do not mean that regulators were perfect. As highlighted by Awalt (1969), Ranjit (2011), and others, regulators were tasked with identifying solvent banks in a very short time-span without the benefit of new examinations. Mistakes were inevitable and regulators' preferences were bound to creep into the decisions. This reality does not change that the Bank Holiday marked the end of bank runs and rebound of deposits, but it does bring up the question of what caused the substantial variation in state-level variation in reopenings.

Seen in Figure 1, while the average March unrestricted reopening rate was 69 percent, Wisconsin, Vermont, and Iowa reopened fewer than 35 percent of their banks and Rhode Island and Wyoming reopened more than 95 percent. The reopening models sought to eliminate these differences by controlling for location and regulatory characteristics that differ across states. Regardless, including state-fixed effects still had some effect on the classification rate and masked several other variables. The problem with state-fixed effects is that they are a black box. We know they have explanatory power but do not know what factors are driving it. Here we introduce a number of state-level variables that control for the state's regulatory environment and financial concerns to separate the regulatory environment from other factors important across states. These include an indicator for whether the state suspended payments before March 4th, the minimum capital of state banks in 1929, an indicator for whether the state required double

liability of state bank stockholders in 1929, and the reserve requirement for country state banks on demand deposits in 1929.

In Table A11, we estimate equation (1) using three different sets of variables. The first includes the full set of variables without state-fixed effects and without the state regulatory variables (which was reported in Table 2 column 3). The second includes the full set of variables with state-fixed effects but without the state regulatory variables (which was reported in Table 2 column 4). The third includes the full set of variables with the state regulatory variables but without the state-fixed effects. The table shows that the inclusion of state fixed effects increases the predictive power of the model and reduces the statistical significance of some of the variables, but that the inclusion of the state regulatory variables does not substantially change either the predictive power or effect of other variables in the model. Nevertheless, all four regulatory variables are statistically significant. States that suspended before March 4, had lower minimum capital requirements, single stockholder liability, and higher reserve requirements reopened a larger fraction of banks during March. The difference suggests that the state fixed effects are picking up something in addition to the general regulatory environment.

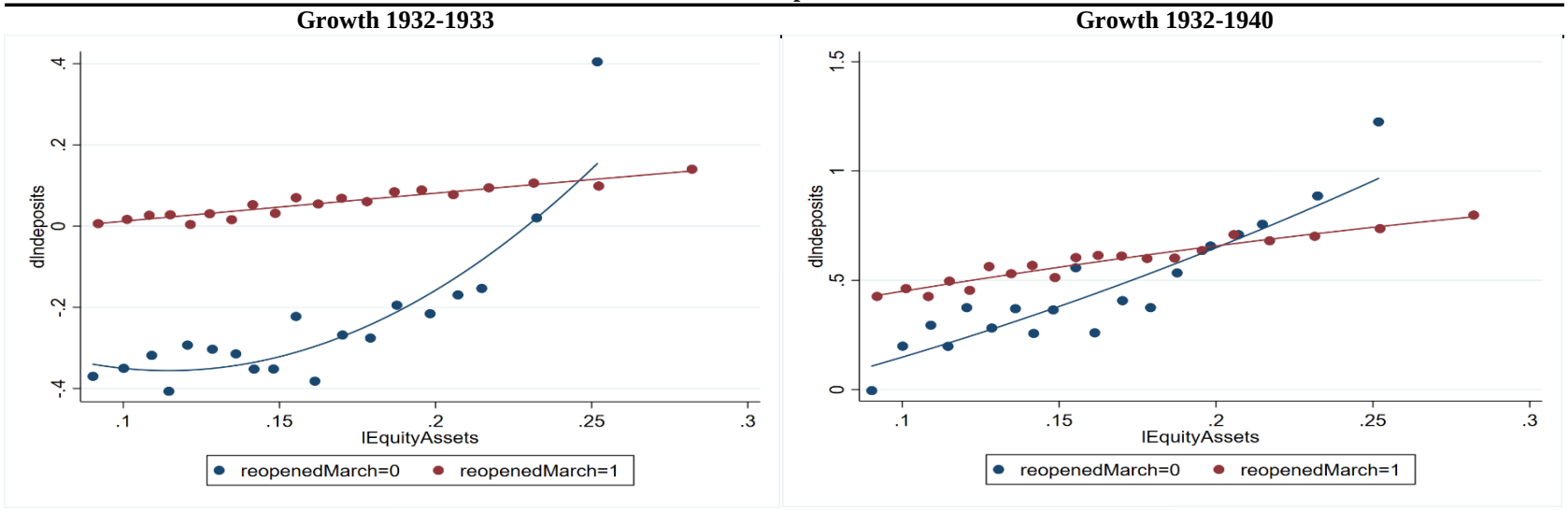
C. Appendix on Best Subsets Regressions

We build on the state-fixed effect model in column (4) of Table 2 with "Best Subsets" regressions (see Lawless and Singhal 1978). The approach estimates all combinations of the variables and selects the *best*-fitting models that contain one variable, two variables, three

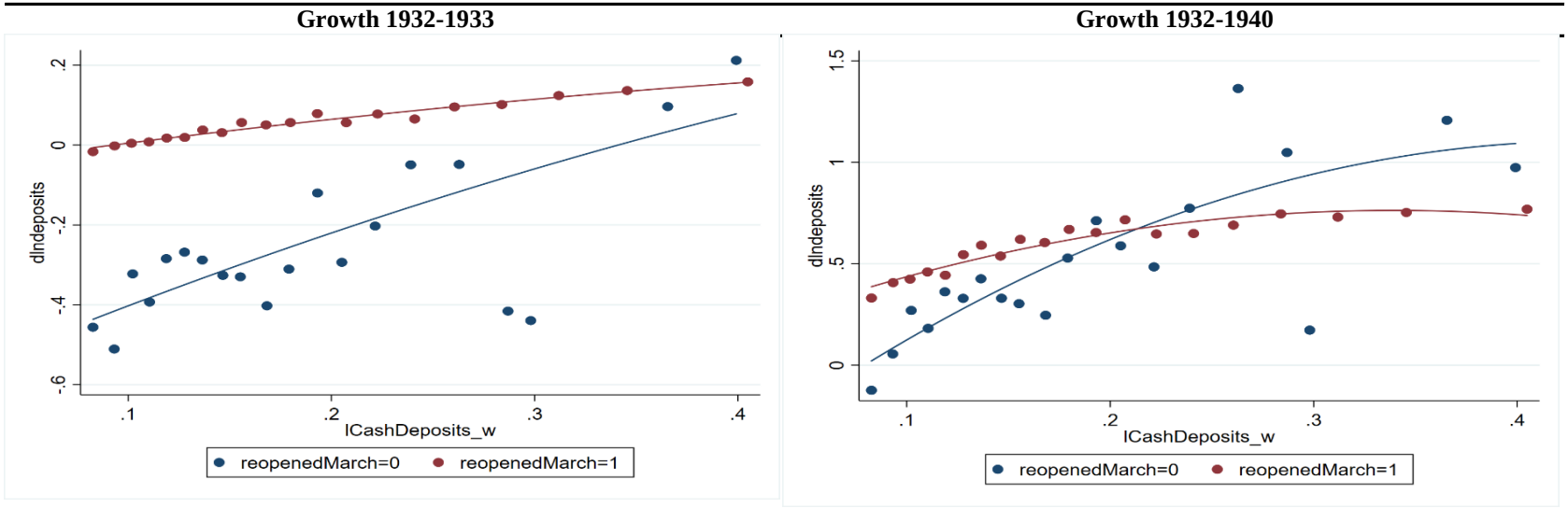
variables, and so on. The approach identifies factors that had the largest statistical connection to the reopening decision and whether the importance of a variable relies on the inclusion of other variables in the model. To make the results tractable, we include the location controls and state fixed effects in all models and select additional subsets beyond them. The variables contained in each of the selected best subsets are presented in Table A12. Cash to deposits is selected as the highest predictor of reopening immediately followed by bank size, capital to assets, and loans to assets. The fraction of a city's banks that were national banks as well as the fraction of the county that voted for Roosevelt in 1932 are also chosen relatively high in the model.

Figure A1: Initial Fundamentals and Subsequent Deposit Growth (1932-1940) - National Banks

Panel A: Capital Ratio



Panel B: Reserves Ratio



Notes: Figures provide bin scatter plots of deposit growth. The sample consists of all national banks in 1932 who were open at the start of the Bank Holiday and fully reopened. The panel divides banks based on whether they were fully open 1928 through 1940. The sample drops banks with a value of the ratio in 1932 that was below the 1 percentile or above the 99 percentiles.

Table A1: Robustness Checks of Determinants of Unrestricted Reopening in March 1933

	Reopened By March 29, 1933					
	Controlling for Change in Retail Sales 1929-1933	**Dropping Counties with 25,000+**	**Fully or Restricted Reopened State Banks in March**	**Only National Banks**	**Only State Fed Members**	**Only State Non-Fed Members**
	(1)	(2)	(3)	(4)	(5)	(6)
Ln(Total Assets)	0.075***	0.090***	0.047***	0.078***	0.061***	0.073***
	[0.006]	[0.007]	[0.008]	[0.009]	[0.019]	[0.007]
Loans/Assets	-0.105***	-0.117***	-0.117***	-0.051	-0.052	-0.143***
	[0.025]	[0.029]	[0.033]	[0.042]	[0.115]	[0.031]
(Cash and Due from Banks)/Deposits	1.020***	1.030***	0.718***	1.243***	1.045***	0.948***
	[0.050]	[0.054]	[0.061]	[0.100]	[0.277]	[0.059]
(Capital and Surplus)/Assets	0.432***	0.457***	0.095	1.232***	0.600**	0.212***
	[0.063]	[0.071]	[0.071]	[0.136]	[0.298]	[0.072]
National Bank Indicator	0.047***	0.050***	-	-	-	-
	[0.009]	[0.011]				
State Bank Fed Member Indicator	0.040**	0.067***	0.133***	-	-	-
	[0.019]	[0.024]	[0.042]			
Operates State-Wide Branches	-0.030	-0.031	-0.053	-0.102	-0.141*	-0.043
	[0.027]	[0.030]	[0.034]	[0.083]	[0.078]	[0.029]
# of Farms Per Person	0.489**	0.558***	-0.009	-0.000	2.184***	0.539**
	[0.201]	[0.208]	[0.252]	[0.318]	[0.801]	[0.232]
# of Mfg. Establishments Per Person	-0.098	-0.108	-0.081	-0.087	-0.184	-0.103
	[0.063]	[0.078]	[0.081]	[0.095]	[0.254]	[0.082]
Fraction Voted for FDR in 1932	-0.155***	-0.156**	-0.028	-0.273***	-0.355	-0.068
	[0.059]	[0.070]	[0.086]	[0.083]	[0.226]	[0.074]
Fraction Voted for Dem. Candidate in 1930	0.039	0.045	-0.022	0.044	-0.145	0.034
	[0.034]	[0.037]	[0.039]	[0.047]	[0.095]	[0.043]
No Other Banks in Town Indicator	-0.021	0.047	0.383**	0.069	-0.007	-0.030
	[0.100]	[0.134]	[0.164]	[0.160]	[0.440]	[0.141]
Fraction of Other Banks In Town That Are	0.094***	0.057*	0.119***	0.049	0.209**	0.115***
National Banks	[0.027]	[0.031]	[0.041]	[0.038]	[0.102]	[0.037]
Fraction of Other Banks in Town That Are	-0.031	0.018	-0.059	-0.019	0.098	0.007
State Fed Member Banks	[0.044]	[0.062]	[0.136]	[0.055]	[0.120]	[0.100]
State Fixed-Effects?	Yes	Yes	Yes	Yes	Yes	Yes
County-Level Controls?	Yes	Yes	Yes	Yes	Yes	Yes
Observations	16555	12538	6472	5630	713	10091
R-squared	0.2082	0.223	0.358	0.185	0.288	0.228
Classification Rate	77.42%	77.37%	83.61%	81.33%	82.05%	75.70%

Notes: Table provides the marginal effects of equation (1) estimated with a logit model. The dependent variable is an indicator for whether the bank was reopened without restrictions by March 29, 1933. The sample consists of all commercial banks in July 1932 who were open at the start of the Bank Holiday that meet the criteria in the column heading. County-Level Controls include the logarithm of population in 1929, fraction of the county living in an urban location of 2,500 or more people in 1929, the fraction of the adult population that is illiterate in 1929, the fraction of the population that is non-white in 1929, indicators for whether the bank was located in a city that was designed a Central Reserve City, Reserve City or had an active clearinghouse in place in 1932 and the logarithm of the number of banks in the county in 1932. Robust standard errors are provided in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table A2: Determinants of Unrestricted Reopening in March 1933 By Number of Banks in Town

	Reopened By March 29, 1933			
	1 Bank in Town	**2 Banks in Town**	**3 Banks in Town**	**4-7 Banks in Town**
	(1)	(2)	(3)	(4)
Ln(Total Assets)	0.099***	0.077***	0.095***	0.032**
	[0.008]	[0.012]	[0.018]	[0.016]
Loans/Assets	-0.126***	-0.057	-0.123	-0.058
	[0.033]	[0.047]	[0.081]	[0.093]
(Cash and Due from Banks)/Deposits	1.021***	1.107***	1.062***	1.097***
	[0.065]	[0.103]	[0.175]	[0.200]
(Capital and Surplus)/Assets	0.553***	0.353**	0.466**	0.246
	[0.079]	[0.139]	[0.201]	[0.230]
National Bank Indicator	0.034***	0.056***	0.037	0.030
	[0.013]	[0.015]	[0.029]	[0.034]
State Bank Fed Member Indicator	0.042	0.050	0.100**	-0.044
	[0.033]	[0.031]	[0.050]	[0.046]
Operates State-Wide Branches	0.016	-0.043	-0.110	-0.009
	[0.043]	[0.047]	[0.089]	[0.060]
# of Farms Per Person	0.315	0.846**	-0.183	0.463
	[0.233]	[0.363]	[0.750]	[0.973]
# of Mfg. Establishments Per Person	-0.007	-0.222*	-0.137	0.224
	[0.089]	[0.133]	[0.213]	[0.249]
Fraction Voted for FDR in 1932	-0.172**	-0.169	-0.065	-0.392*
	[0.076]	[0.105]	[0.167]	[0.214]
Fraction Voted for Dem. Candidate in 1930	0.019	0.065	0.045	0.315***
	[0.042]	[0.063]	[0.088]	[0.121]
No Other Banks in Town Indicator	-	-	-	-
Fraction of Other Banks In Town That Are	-	0.123***	0.031	0.082
National Banks		[0.031]	[0.063]	[0.095]
Fraction of Other Banks in Town That Are	-	0.001	0.222**	-0.294***
State Fed Member Banks		[0.059]	[0.108]	[0.105]
State Fixed-Effects?	Yes	Yes	Yes	Yes
County-Level Controls?	Yes	Yes	Yes	Yes
Observations	8739	4362	1407	1124
R-squared	0.229	0.206	0.234	0.210

Notes: Table provides the marginal effects of equation (1) estimated with a logit model. The dependent variable is an indicator for whether the bank was reopened without restrictions by March 29, 1933. The sample consists of all commercial banks in July 1932 who were open at the start of the Bank Holiday that meet the criteria in the column heading. County-Level Controls include the logarithm of population in 1929, fraction of the county living in an urban location of 2,500 or more people in 1929, the fraction of the adult population that is illiterate in 1929, the fraction of the population that is non-white in 1929, indicators for whether the bank was located in a city that was designed a Central Reserve City, Reserve City or had an active clearinghouse in place in 1932 and the logarithm of the number of banks in the county in 1932. Robust standard errors are provided in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table A3: Balance Sheet Changes of Reopened Banks 1932 to 1933 - Capital

	Panel A: All Banks Open By July 1933
	ΔLn(Capital)
	(1)
Unrestricted reopen by March 29	-0.009
	[0.006]
Economic and Political Variables?	Yes
County-Level Controls?	Yes
State Fixed-Effects?	Yes
Observations	13268
R-squared	0.035
	Panel B: Only State Non-Member Banks Open By July 1933
	ΔLn(Capital)
	(5)
Unrestricted reopen by March 29	0.020***
	[0.006]
Restricted reopen by March 29	0.014*
	[0.008]
Economic and Political Variables?	Yes
County-Level Controls?	Yes
State Fixed-Effects?	Yes
Observations	8114
R-squared	0.020

Notes: Table provides the coefficients of equation (2) estimated by ordinary least squares. The dependent variables provided in the column headings are measured as the change between July 1932 and July 1933. The sample consists of all commercial banks in July 1932 who were open at the start of the Bank Holiday, fully reopened by July 1933, and that met the criteria in the column heading. County-Level Controls include the logarithm of population in 1929, fraction of the county living in an urban location of 2,500 or more people in 1929, the fraction of the adult population that is illiterate in 1929, the fraction of the population that is non-white in 1929, indicators for whether the bank was located in a city that was designed a Central Reserve City, Reserve City or had an active clearinghouse in place in 1932 and the logarithm of the number of banks in the county in 1932. Economic and Political Variables include the logarithm of number of farms per capita, the logarithm of number of manufacturing establishments per capita, the fraction of owner-operator farms that had mortgage debt, the fractions of votes for the Democrat candidates in the House of Representatives elections of 1930 and the Presidential election of 1932. Robust standard errors are provided in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table A4: Balance Sheet Changes of Reopened National Banks (1928-1940) - Deposits and Capital

	Ln(Deposits)			Ln(Capital)		
	Banks Surviving 1928-1940	Dropping Counties With City of 25,000+	Dropping Counties Without Non-March Reopened Banks	Banks Surviving 1928-1940	Dropping Counties With City of 25,000+	Dropping Counties Without Non-March Reopened Banks
	(1)	(2)	(3)	(4)	(5)	(6)
Reopened March*yr==1929	-0.008	-0.010	-0.008	0.008	-0.000	0.006
	[0.008]	[0.011]	[0.011]	[0.008]	[0.009]	[0.011]
Reopened March*yr==1930	-0.013	-0.020	-0.008	0.011	-0.002	0.009
	[0.011]	[0.014]	[0.015]	[0.009]	[0.010]	[0.013]
Reopened March*yr==1931	0.016	0.009	0.024	0.020**	0.004	0.021
	[0.015]	[0.018]	[0.019]	[0.009]	[0.011]	[0.013]
Reopened March*yr==1932	0.068***	0.054***	0.077***	0.018*	-0.002	0.015
	[0.017]	[0.021]	[0.022]	[0.010]	[0.012]	[0.015]
Reopened March*yr==1933	0.447***	0.432***	0.481***	-0.194***	-0.197***	-0.237***
	[0.023]	[0.025]	[0.029]	[0.031]	[0.035]	[0.037]
Reopened March*yr==1934	0.424***	0.406***	0.450***	-0.052*	-0.070*	-0.040
	[0.023]	[0.026]	[0.028]	[0.031]	[0.037]	[0.041]
Reopened March*yr==1935	0.396***	0.378***	0.420***	-0.012	-0.029	-0.002
	[0.022]	[0.025]	[0.028]	[0.032]	[0.037]	[0.042]
Reopened March*yr==1936	0.378***	0.351***	0.418***	-0.006	-0.024	-0.001
	[0.023]	[0.027]	[0.029]	[0.031]	[0.036]	[0.041]
Reopened March*yr==1937	0.357***	0.330***	0.394***	-0.004	-0.018	-0.005
	[0.024]	[0.027]	[0.031]	[0.031]	[0.035]	[0.041]
Reopened March*yr==1938	0.355***	0.323***	0.386***	-0.000	-0.010	0.004
	[0.025]	[0.029]	[0.032]	[0.031]	[0.036]	[0.041]
Reopened March*yr==1939	0.361***	0.324***	0.389***	-0.008	-0.012	-0.008
	[0.026]	[0.030]	[0.033]	[0.030]	[0.035]	[0.041]
Reopened March*yr==1940	0.367***	0.330***	0.389***	0.000	-0.003	-0.003
	[0.027]	[0.031]	[0.035]	[0.030]	[0.034]	[0.041]
Fed Dist. X Yr Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes
1930 Pop. X Yr Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes
Bank Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes
Observations	53170	37947	11882	53170	37947	11882
R-squared	0.491	0.495	0.459	0.212	0.209	0.289

Notes: Table provides the coefficients of equation (3) estimated by ordinary least squares. The sample consists of all national banks present from 1928 through 1940 and that met the criteria in the column heading. Robust standard errors are provided in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table A5: Deposit Changes of Reopened National Banks (1928-1940) - By Reopening Week

	Interaction Variable		
	Unrestricted reopen by March 16	**Unrestricted reopen March 17-22**	**Unrestricted reopen March 23-29**
	(1)	(2)	(3)
Interaction Variable*yr==1929	-0.008	-0.010	-0.008
	[0.008]	[0.011]	[0.011]
Interaction Variable*yr==1930	-0.013	-0.020	-0.008
	[0.011]	[0.014]	[0.015]
Interaction Variable*yr==1931	0.016	0.009	0.024
	[0.015]	[0.018]	[0.019]
Interaction Variable*yr==1932	0.068***	0.054***	0.077***
	[0.017]	[0.021]	[0.022]
Interaction Variable*yr==1933	0.447***	0.432***	0.481***
	[0.023]	[0.025]	[0.029]
Interaction Variable*yr==1934	0.424***	0.406***	0.450***
	[0.023]	[0.026]	[0.028]
Interaction Variable*yr==1935	0.396***	0.378***	0.420***
	[0.022]	[0.025]	[0.028]
Interaction Variable*yr==1936	0.378***	0.351***	0.418***
	[0.023]	[0.027]	[0.029]
Interaction Variable*yr==1937	0.357***	0.330***	0.394***
	[0.024]	[0.027]	[0.031]
Interaction Variable*yr==1938	0.355***	0.323***	0.386***
	[0.025]	[0.029]	[0.032]
Interaction Variable*yr==1939	0.361***	0.324***	0.389***
	[0.026]	[0.030]	[0.033]
Interaction Variable*yr==1940	0.367***	0.330***	0.389***
	[0.027]	[0.031]	[0.035]
Fed Dist. X Yr Fixed Effects?		Yes	
1930 Pop. X Yr Fixed Effects?		Yes	
Bank Fixed Effects?		Yes	
Observations		53170	
R-squared		0.4752	

Notes: Table provides the coefficients of equation (3) estimated by ordinary least squares. Due to the large number of coefficients, the single regression's estimates are split across three columns (which each column providing the coefficients from a single explanatory variable's interaction with the time fixed effects). The sample consists of all national banks present from 1928 through 1940. Robust standard errors are provided in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table A6: Balance Sheet Changes of Reopened National Banks (1928-1940)

	Ln(Assets)			Cash+Due from Banks/Total Deposits			Loans/Assets			Capital+Surplus/Assets		
	Banks Surviving 1928-1940	Dropping Counties With City of 25,000+	Dropping Counties Without Non-March Reopened Banks	Banks Surviving 1928-1940	Dropping Counties With City of 25,000+	Dropping Counties Without Non-March Reopened Banks	Banks Surviving 1928-1940	Dropping Counties With City of 25,000+	Dropping Counties Without Non-March Reopened Banks	Banks Surviving 1928-1940	Dropping Counties With City of 25,000+	Dropping Counties Without Non-March Reopened Banks
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Reopened March*yr==1929	-0.002	-0.001	-0.005	0.005*	0.007*	0.002	-0.003	-0.002	-0.002	0.002*	0.001	0.002
	[0.007]	[0.008]	[0.009]	[0.003]	[0.004]	[0.003]	[0.003]	[0.004]	[0.004]	[0.001]	[0.001]	[0.002]
Reopened March*yr==1930	-0.005	-0.011	-0.005	0.011**	0.016***	0.002	-0.006	-0.006	-0.001	0.006***	0.005***	0.005**
	[0.009]	[0.011]	[0.012]	[0.004]	[0.006]	[0.005]	[0.004]	[0.005]	[0.005]	[0.001]	[0.002]	[0.002]
Reopened March*yr==1931	0.031**	0.024	0.030**	0.011***	0.014**	0.008	-0.018***	-0.014**	-0.012*	0.013***	0.014***	0.011***
	[0.012]	[0.015]	[0.015]	[0.004]	[0.006]	[0.005]	[0.005]	[0.007]	[0.007]	[0.002]	[0.003]	[0.003]
Reopened March*yr==1932	0.066***	0.056***	0.065***	0.021***	0.024***	0.018***	-0.026***	-0.022***	-0.026***	0.017***	0.018***	0.014***
	[0.014]	[0.016]	[0.017]	[0.004]	[0.005]	[0.005]	[0.007]	[0.008]	[0.009]	[0.002]	[0.003]	[0.003]
Reopened March*yr==1933	0.396***	0.383***	0.413***	-0.066***	-0.061***	-0.066***	-0.031***	-0.028***	-0.037***	-0.031***	-0.031***	-0.039***
	[0.021]	[0.023]	[0.026]	[0.009]	[0.012]	[0.010]	[0.009]	[0.011]	[0.010]	[0.004]	[0.005]	[0.006]
Reopened March*yr==1934	0.372***	0.356***	0.386***	-0.026***	-0.022***	-0.028***	-0.039***	-0.035***	-0.037***	-0.028***	-0.028***	-0.032***
	[0.020]	[0.023]	[0.025]	[0.007]	[0.008]	[0.008]	[0.009]	[0.011]	[0.010]	[0.004]	[0.004]	[0.005]
Reopened March*yr==1935	0.349***	0.330***	0.363***	-0.008	-0.002	-0.019**	-0.052***	-0.044***	-0.047***	-0.027***	-0.027***	-0.031***
	[0.020]	[0.022]	[0.026]	[0.007]	[0.008]	[0.008]	[0.009]	[0.011]	[0.010]	[0.003]	[0.004]	[0.005]
Reopened March*yr==1936	0.330***	0.303***	0.359***	-0.008	-0.010	-0.011	-0.064***	-0.056***	-0.066***	-0.028***	-0.026***	-0.033***
	[0.021]	[0.024]	[0.026]	[0.007]	[0.009]	[0.007]	[0.009]	[0.010]	[0.010]	[0.003]	[0.004]	[0.005]
Reopened March*yr==1937	0.314***	0.288***	0.341***	-0.014**	-0.014**	-0.012*	-0.064***	-0.056***	-0.071***	-0.024***	-0.021***	-0.029***
	[0.021]	[0.025]	[0.027]	[0.006]	[0.007]	[0.007]	[0.010]	[0.011]	[0.011]	[0.003]	[0.004]	[0.005]
Reopened March*yr==1938	0.310***	0.281***	0.331***	-0.016**	-0.015*	-0.010	-0.070***	-0.061***	-0.074***	-0.023***	-0.020***	-0.028***
	[0.022]	[0.027]	[0.029]	[0.006]	[0.008]	[0.007]	[0.010]	[0.012]	[0.012]	[0.003]	[0.004]	[0.005]
Reopened March*yr==1939	0.315***	0.282***	0.333***	-0.019**	-0.019**	-0.012	-0.077***	-0.065***	-0.079***	-0.025***	-0.021***	-0.030***
	[0.023]	[0.027]	[0.030]	[0.008]	[0.009]	[0.009]	[0.011]	[0.012]	[0.012]	[0.003]	[0.004]	[0.005]
Reopened March*yr==1940	0.319***	0.285***	0.332***	-0.015*	-0.011	-0.008	-0.079***	-0.068***	-0.080***	-0.026***	-0.023***	-0.030***
	[0.024]	[0.028]	[0.031]	[0.008]	[0.009]	[0.011]	[0.011]	[0.012]	[0.012]	[0.003]	[0.004]	[0.005]
Fed Dist. X Yr Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1930 Pop. X Yr Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	53170	37947	11882	53170	37947	11882	53170	37947	11882	53170	37947	11882
R-squared	0.395	0.387	0.408	0.448	0.436	0.534	0.535	0.520	0.523	0.230	0.246	0.189

Notes: Table provides the coefficients of equation (3) estimated by ordinary least squares. The sample consists of all national banks present from 1928 through 1940 and that met the criteria in the column heading. Robust standard errors are provided in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table A7: Implications of March Reopenings on County-Level Deposit Growth - Dropping Fully Reopened Counties

	ΔLn(Total Deposits) Pre-Banking Holiday through ….						
	1933	**1941**	**1944**	**1950**	**1954**	**1960**	**1964**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
%Unrestricted reopen by March 29	0.816***	0.240***	0.151***	0.101**	0.060	0.022	0.000
	[0.078]	[0.049]	[0.043]	[0.047]	[0.046]	[0.047]	[0.051]
County-Level Controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Economic and Political Variables?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other Bank Controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1544	1649	1650	1655	1654	1654	1655
R-squared	0.338	0.627	0.758	0.724	0.714	0.732	0.714

Notes: Table provides the coefficients of equation (4) estimated by ordinary least squares. The dependent variables is the change in the logarithm of total deposits in the county between the start of the Bank Holiday through the year specified. Counties whose banks were fully reopened in March are dropped from the sample. County-Level Controls include the logarithm of population in 1929, fraction of the county living in an urban location of 2,500 or more people in 1929, the fraction of the adult population that is illiterate in 1929, the fraction of the population that is non-white in 1929, indicators for whether the bank was located in a city that was designed a Central Reserve City, Reserve City or had an active clearinghouse in place in 1932 and the logarithm of the number of banks in the county in 1932. Economic and Political Variables include the logarithm of number of farms per capita, the logarithm of number of manufacturing establishments per capita, the fraction of owner-operator farms that had mortgage debt, the fractions of votes for the Democrat candidates in the House of Representatives elections of 1930 and the Presidential election of 1932. Robust standard errors are provided in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table A8: Implications of March Reopenings on Measures of Economic Growth - Dropping Large Cities

	ΔLn(Retail Sales)		ΔLn(Wholesale Sales)	ΔLn(# of Tax Returns Filed)		ΔLn(Value Added)
	1933-1935	1933-1939	1933-1935	1933-1935	1933-1939	1933-1935
	(1)	(2)	(3)	(4)	(5)	(6)
%Unrestricted reopen by March 29	-0.000	0.006	0.034	-0.000	0.012	-0.027
	[0.013]	[0.013]	[0.059]	[0.020]	[0.025]	[0.089]
County-Level Controls?	Yes	Yes	Yes	Yes	Yes	Yes
Other Bank Controls?	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes
Lagged Growth Variable?	Yes	Yes	Yes	Yes	Yes	Yes
Change in Banks 1929-1933?	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2838	2838	2816	2794	2794	1973
R-squared	0.288	0.372	0.242	0.212	0.285	0.220
	ΔLn(Retail Sales)		ΔLn(Wholesale Sales)	ΔLn(# of Tax Returns Filed)		ΔLn(Value Added)
	1933-1935	1933-1939	1933-1935	1933-1935	1933-1939	1933-1935
	(7)	(8)	(9)	(10)	(11)	(12)
%Unrestricted reopen by March 29	-0.019	-0.010	0.021	-0.003	0.004	-0.043
	[0.014]	[0.015]	[0.073]	[0.023]	[0.028]	[0.108]
%Restricted reopen by March 29	-0.066***	-0.056**	-0.045	-0.010	-0.029	-0.071
	[0.025]	[0.025]	[0.100]	[0.037]	[0.048]	[0.122]
County-Level Controls?	Yes	Yes	Yes	Yes	Yes	Yes
Other Bank Controls?	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes
Lagged Growth Variable?	Yes	Yes	Yes	Yes	Yes	Yes
Change in Banks 1929-1933?	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2838	2838	2816	2794	2794	1973
R-squared	0.290	0.373	0.242	0.212	0.285	0.220

period specified. Counties with a city of 25,000 or more people are dropped from the sample. County-Level Controls include the logarithm of population in 1929, fraction of the county living in an urban location of 2,500 or more people in 1929, the fraction of the adult population that is illiterate in 1929, the fraction of the population that is non-white in 1929, indicators for whether the bank was located in a city that was designed a Central Reserve City, Reserve City or had an active clearinghouse in place in 1932 and the logarithm of the number of banks in the county in 1932. Economic and Political Variables include the logarithm of number of farms per capita, the logarithm of number of manufacturing establishments per capita, the fraction of owner-operator farms that had mortgage debt, the fractions of votes for the Democrat candidates in the House of Representatives elections of 1930 and the Presidential election of 1932. The models also control for the change in each outcome variable 1929 to 1933 and the change the number of banks 1929 to the start of the Bank Holiday. Robust standard errors are provided in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table A9: Implications of March Reopenings on Measures of Economic Growth - Dropping Counties Whose Banks Were Either All Reopened or None Were Reopened

	ΔLn(Retail Sales) 1933-1939		ΔLn(Wholesale Sales) 1933-1935		ΔLn(Value Added) 1933-1935		ΔLn(# of Tax Returns Filed) 1933-1939	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
%Unrestricted reopen by March 29	-0.007	-0.019	0.066	0.099	-0.012	-0.022	-0.050	-0.061
	[0.021]	[0.023]	[0.086]	[0.100]	[0.079]	[0.093]	[0.041]	[0.048]
%Restricted reopen by March 29		-0.041		0.104		-0.032		-0.037
		[0.041]		[0.160]		[0.140]		[0.077]
County-Level Controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other Bank Controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lagged Growth Variable?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Change in Banks 1929-1933 Variable?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1220	1220	1218	1218	1031	1031	1194	1194
R-squared	0.435	0.436	0.068	0.068	0.132	0.132	0.363	0.363

Notes: Table provides the coefficients of equation (5) estimated by ordinary least squares. The dependent variables is the change in the logarithm of specified variable across the period specified. Counties that had 100% or 0% of their banks reopened in March are dropped from the sample. County-Level Controls include the logarithm of population in 1929, fraction of the county living in an urban location of 2,500 or more people in 1929, the fraction of the adult population that is illiterate in 1929, the fraction of the population that is non-white in 1929, indicators for whether the bank was located in a city that was designed a Central Reserve City, Reserve City or had an active clearinghouse in place in 1932 and the logarithm of the number of banks in the county in 1932. Economic and Political Variables include the logarithm of number of farms per capita, the logarithm of number of manufacturing establishments per capita, the fraction of owner-operator farms that had mortgage debt, the fractions of votes for the Democrat candidates in the House of Representatives elections of 1930 and the Presidential election of 1932. The models also control for the change in each outcome variable 1929 to 1933 and the change the number of banks 1929 to the start of the Bank Holiday. Robust standard errors are provided in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table A10: Implications of March Reopenings on Measures of Economic Growth - Additional Measures of Reopening

	ΔLn(Retail Sales) 1933-1939				ΔLn(Wholesale) 1933-1935			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
%Assets Unrestricted reopen	-0.014				0.016			
by March 29	[0.012]				[0.051]			
%Assets Restricted reopen	-0.060***				-0.044			
by March 29	[0.022]				[0.081]			
Number of Unrestricted reopen		-0.001				0.002		
by March 29		[0.001]				[0.003]		
Number of Restricted reopen		-0.002				0.007		
by March 29		[0.002]				[0.010]		
Indicator for Whether all Banks			-0.009				0.024	
Unrestricted Reopened by July			[0.007]				[0.026]	
Indicator for Whether all Banks				-0.002				0.029
Unrestricted Reopened by March 29				[0.007]				[0.028]
County-Level Controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other Bank Controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lagged Growth Variable?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Change in Banks 1929-1933?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2838	2838	2838	2838	2816	2816	2816	2816
R-squared	0.374	0.372	0.372	0.372	0.242	0.242	0.242	0.242
	ΔLn(Value Added) 1933-1935				**ΔLn(Value Added) 1933-1935**			
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
%Assets Unrestricted reopen	0.034				0.006			
by March 29	[0.074]				[0.023]			
%Assets Restricted reopen	-0.033				-0.064			
by March 29	[0.096]				[0.042]			
Number of Unrestricted reopen		0.005				0.001		
by March 29		[0.003]				[0.002]		
Number of Restricted reopen		0.011				-0.003		
by March 29		[0.008]				[0.005]		
Indicator for Whether all Banks			0.036				-0.018	
Unrestricted Reopened by July			[0.037]				[0.012]	
Indicator for Whether all Banks				-0.012				0.008
Unrestricted Reopened by March 29				[0.034]				[0.014]
County-Level Controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other Bank Controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lagged Growth Variable?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Change in Banks 1929-1933?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1973	1973	1973	1973	2794	2794	2794	2794
R-squared	0.221	0.221	0.221	0.220	0.286	0.285	0.285	0.285

Notes: Table provides the coefficients of equation (5) estimated by ordinary least squares. The dependent variables is the change in the logarithm of specified variable across the period specified. County-Level Controls include the logarithm of population in 1929, fraction of the county living in an urban location of 2,500 or more people in 1929, the fraction of the adult population that is illiterate in 1929, the fraction of the population that is non-white in 1929, indicators for whether the bank was located in a city that was designed a Central Reserve City, Reserve City or had an active clearinghouse in place in 1932 and the logarithm of the number of banks in the county in 1932. Economic and Political Variables include the logarithm of number of farms per capita, the logarithm of number of manufacturing establishments per capita, the fraction of owner-operator farms that had mortgage debt, the fractions of votes for the Democrat candidates in the House of Representatives elections of 1930 and the Presidential election of 1932. The models also control for the change in each outcome variable 1929 to 1933 and the change the number of banks 1929 to the start of the Bank Holiday. Robust standard errors are provided in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table A11: Determinants of Unrestricted Reopening in March 1933 - Examining State Regulatory Differences

	Reopened By March 29, 1933		
	(1)	**(2)**	**(3)**
Ln(Total Assets)	0.075***	0.075***	0.072***
	[0.006]	[0.006]	[0.006]
Loans/Assets	-0.078***	-0.107***	-0.093***
	[0.026]	[0.025]	[0.026]
(Cash and Due from Banks)/Deposits	1.041***	1.020***	1.090***
	[0.052]	[0.050]	[0.053]
(Capital and Surplus)/Assets	0.559***	0.431***	0.560***
	[0.066]	[0.063]	[0.066]
National Bank Indicator	0.094***	0.047***	0.088***
	[0.010]	[0.009]	[0.010]
State Bank Fed Member Indicator	0.040**	0.040**	0.046**
	[0.020]	[0.019]	[0.019]
Operates State-Wide Branches	-0.051*	-0.028	-0.063**
	[0.029]	[0.027]	[0.028]
# of Farms Per Person	0.844***	0.376*	0.837***
	[0.225]	[0.195]	[0.216]
# of Mfg. Establishments Per Person	-0.322***	-0.083	-0.430***
	[0.069]	[0.063]	[0.071]
Fraction Voted for FDR in 1932	-0.241***	-0.172***	-0.257***
	[0.054]	[0.059]	[0.054]
Fraction Voted for Dem. Candidate in 1930	0.098***	0.043	0.145***
	[0.027]	[0.034]	[0.027]
No Other Banks in Town Indicator	0.063	-0.024	0.024
	[0.112]	[0.101]	[0.110]
Fraction of Other Banks In Town That Are	0.188***	0.095***	0.177***
National Banks	[0.029]	[0.027]	[0.028]
Fraction of Other Banks in Town That Are	-0.024	-0.029	-0.020
State Fed Member Banks	[0.047]	[0.044]	[0.047]
State Suspension Before March 4			-0.054***
			[0.013]
Minimum Capital in 1929 (in Thousands)			0.001**
			[0.000]
Double Liability in 1929			-0.094***
			[0.013]
Reserve Requirement on Demand Dep. 1929			-0.013***
			[0.002]
State Fixed-Effects?	No	Yes	No
County-Level Controls?	Yes	Yes	Yes
Additional Town Bank Controls?	Yes	Yes	Yes
Observations	16555	16555	16555
R-squared	0.118	0.207	0.132
Classification Rate	74.12%	77.40%	74.45%

Notes: Table provides the marginal effects of equation (1) estimated with a logit model. The dependent variable is an indicator for whether the bank was reopened without restrictions by March 29, 1933. The sample consists of all commercial banks in July 1932 who were open at the start of the Bank Holiday. County-Level Controls include the logarithm of population in 1929, fraction of the county living in an urban location of 2,500 or more people in 1929, the fraction of the adult population that is illiterate in 1929, the fraction of the population that is non-white in 1929, indicators for whether the bank was located in a city that was designed a Central Reserve City, Reserve City or had an active clearinghouse in place in 1932 and the logarithm of the number of banks in the county in 1932. Robust standard errors are provided in parentheses below the coefficients. * denotes significance at 10%; ** at 5% level and *** at 1% levels.

Table A12: Best Subsets Regressions

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 (Cash and Due from Banks)/Deposits	x	x	x	x	x	x	x	x	x	x	x	x	x	x
2 Ln(Total Assets)		x	x	x	x	x	x	x	x	x	x	x	x	x
3 (Capital and Surplus)/Assets			x	x	x	x	x	x	x	x	x	x	x	x
4 National Bank Indicator				x	x	x	x	x	x	x	x	x	x	x
5 Loans/Assets					x	x	x	x	x	x	x	x	x	x
6 Fraction of Other Banks In Town That Are National Banks						x	x	x	x	x	x	x	x	x
7 Fraction Voted for FDR in 1932							x	x	x	x	x	x	x	x
8 # of Farms Per Person								x	x	x	x	x	x	x
9 State Bank Fed Member Indicator									x	x	x	x	x	x
10 Fraction Voted for Dem. Candidate in 1930										x	x	x	x	x
11 # of Mfg. Establishments Per Person											x	x	x	x
12 Operates State-Wide Branches												x	x	x
13 Fraction of Other Banks in Town That Are State Fed Member Banks													x	x
14 No Other Banks in Town Indicator														x

Notes: Table presents the results of Best Subsets Regressions of column (4) of Table 2. The columns indicate whether the variable described in the row heading was included in the best subset with that number of variables. The county-level control variables and state-fixed effects are included in all models and are not counted towards the number of variables in the subset.