

Andrew Jackson's Bank War and the Panic of 1837

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Abstract: The role of Andrew Jackson's Bank War in the Panic of 1837 has been the source of politically charged debate over most of the 180 years since the crisis occurred. We study the Panic of 1837 using comprehensive bank-level data, focusing on the role of the pet banks—the network of state banks chosen by Jackson's administration to replace the Second Bank of the United States as fiscal agents of the federal government. These banks were closely tied to the Democratic Party, were lent tens of millions of Dollars in public money, and were granted a privileged position within the banking system. This produced a moral hazard problem, and the pet bank managers responded by taking on excessive levels of risk. Although many different factors contributed to the financial crisis of 1837, an important component of the commercial banking panic was the collapse of the pet bank system. Panel data regressions reveal that the pet banks saw their net liabilities fall and their banknote discounts rise at nearly twice the rate of other commercial banks in the years following the panic, relative to the pre-panic period. Counterfactual estimates of the national money supply indicate that the differentially severe contraction among the pet banks accounted for around 30 percent of the overall contraction in bank liabilities in 1837.

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1. Introduction

The role of Andrew Jackson's Bank War in the Panic of 1837 has been the source of politically charged debate over most of the 180 years since the crisis occurred. Jackson's critics argued that his veto of the bill to re-charter the Second Bank of the United States removed a source of discipline on the banking system and led to unrestrained growth in bank lending, financed by large emissions of banknotes. The growing availability of bank credit fueled speculative purchases of public land until 1836 when Jackson's Specie Circular prohibited payment for federal land with banknotes, eventually causing a collapse. This account of its causes dominated popular and academic analyses of the panic until Peter Temin (1969) refuted it conclusively.¹ Temin showed that the reserve ratio of the commercial banking system did not fall in the years leading up to the panic, as it should have if the traditional account were correct. Instead, Temin pointed toward international forces that led to large specie inflows into the United States as the ultimate cause of the growth of money and credit in the 1830s, and a reversal of those forces as the cause of the crisis. Temin's analysis generally exonerated Jackson's policies, and he concluded that "the economy was not the victim of Jacksonian politics; Jackson's policies were the victim of economic fluctuations" (p. 17).

Yet even if Jackson's Bank War did not have the effects alleged by the traditional account, other elements of his policies toward the banking system may have contributed to the crisis. After the veto, the federal government's funds in the Second Bank were moved to a select group of state banks designated as federal depositaries, and most subsequent federal revenues flowed into those institutions. Derided as Jackson's "pets," the chosen banks were often managed by individuals closely tied the Democratic Party, were granted privileged status in the banking system, and were lent substantial amounts of public funds. Unlike other bank liabilities, the federal deposits created a stable source of funding that was quite unlikely to be withdrawn in response to excessive risk taking. This created a moral hazard problem, and indeed, Jackson's critics charged that some of the pet banks engaged in "illegitimate and wild banking operations."² The banking panic in fact broke out in New York City following revelations of fraud within two of that city's pets, which provoked runs on those institutions. The pressure on the pet banks during the crisis may also have been fueled by the perception that their privileged status had become politically untenable, and that the federal deposits would be withdrawn.

We study the role of Jackson's pet banking system in the Panic of 1837. Some contemporary accounts of the panic, as well as subsequent academic works, have suggested that the deposit banks

¹ Works that present their own versions of the traditional account presented above include Bourne (1857), Russell (1875), Trufant (1918), McGrane (1924), Schlesinger (1945), Hammond (1957) and Meerman (1963).

² *Banker's Magazine*, November 1857, "Financial Revulsions of 1837 and 1857," p. 397. The quote specifically refers to the consequences of the large federal deposits that accumulated in the West.

contributed significantly to the growth of lending in the 1830s, but the impact of the pet banks on the crisis has never been quantified. In part, this reflects the fact that most analyses of the panic have focused on national or regional data, and have therefore been unable to distinguish the pet banks from other commercial banks. We use comprehensive bank-level data and a differences-in-differences design to investigate whether the pet banks' notes and deposits grew at differential rates in the years leading up to the panic, and whether their liabilities declined differentially during and after the panic. We also look for evidence of differential risk taking among the deposit banks by analyzing their banknote discounts and failure rates. Finally, we aggregate bank-level data to construct a new estimate of the national money supply, and use it to construct counterfactual values of its growth and contraction around the panic under the assumption that the pet banks' net liabilities had grown at the same rates of other commercial banks. This enables us to assess the impact of the pet banks on the magnitude of the crisis.

Our results indicate that in the two years following the panic, the pet banks' outstanding liabilities (excluding the federal deposits) declined by more than 20 percentage points relative to other banks. This differential impact was quite large, and equivalent to 89 percent of the overall mean decline in bank liabilities. Similarly, the note discounts of the pet banks, a market-based assessment of their risk of default, rose by 0.4 percentage points in the post-panic years relative to other banks, which was equivalent to 82 percent of the average increase in note discounts in those years. And although bank failures were relatively uncommon in the wake of the panic, the pet banks' failure rates were about 4 percentage points higher than those of other banks, whose failure rate was about 1.5 percent. Our counterfactual estimates of the money supply indicate that the impact of these effects was quite large. Had the liabilities of the pet banks grown at the same rate as those of other commercial banks after 1833, our calculations indicate that the money stock would have been about 16 percent lower in 1836, and would have declined by 30.3 percent less in 1837. Although forces unrelated to Jackson's policies contributed to the lending boom of the mid-1830s and its collapse, the pet banks were an important factor in the financial crisis, and magnified its impacts.³

Stock price data from the New York Stock Exchange provide further insight into the value of status as a pet bank. Legislation passed in mid-1836 resulted in several publicly traded banks being designated as federal deposit banks. We find that the cumulative returns paid by those banks' stocks rose by around seven percentage points in the following weeks, relative to the shares of other banks that were traded on the NYSE. This difference began to collapse prior to the panic and eventually became deeply negative around the time of the runs on New York's banks, indicating that the Panic was perceived as differentially harmful to those pet banks.

³ On the macroeconomic vulnerabilities behind the crisis, see Temin (1969), Weber (2000), Wallis (2002), Knodell (2006) and Williams (2016).

Jackson's Treasury sought to use the pet banks to replace the Second Bank's stabilizing influence in money markets. We also present data on domestic exchange markets that indicate that the pet bank system was unable prevent a "derangement" in those rates as they came under financial pressure.

Whereas the Second Bank had used its branch network to administer domestic exchange rates, ensuring that they remained low and stable (Knodell, 1998), the pet banks failed to exert a stabilizing influence on those rates as markets came under strain in early 1836. Western and southern debtors complained at that time that New York funds were available only at a significant premium, and by 1837, it had become "utterly impossible to make remittances to the North in the usual way."⁴ This likely contributed to the incipient financial crisis, as it imposed significant costs on debtors.

This paper advances the literature on the Panic of 1837 in several ways. Most importantly, it argues that Jackson's replacement of the Second Bank with a network of pet banks created an important source of instability in the banking system that modern scholarship on the panic has neglected.⁵ The analysis builds on recent insights into the political significance of early nineteenth century banks and their potential as a source of corruption (Bodenhorn, 2004, 2017; Wallis, 2004), and argues that the political ties between Jackson's Treasury and the pet banks distorted their lending decisions. Second, whereas much of the literature has focused on the inflation of the 1830s and the international forces that propelled the expansion and contraction of that decade, this paper analyzes the banking panic itself. Finally, whereas prior work has focused on national or regional data this paper analyzes comprehensive bank-level data to obtain direct evidence of the role of the pet banks in the crisis. The variation across banks in the extent to which demand for their liabilities, and the price of their liabilities, fell following the crisis is offers new insights into the causes and consequences of the panic.

Some scholarship on the panic has dismissed the pet banks as a source of instability.⁶ Most importantly, Temin (1969) ruled out the pet banks' lending as a cause of the crisis, although the arguments he analyzed were not the same as those made here. Some contemporary observers argued that the government deposits were treated by the pet banks as reserves, fueling growth in their lending—which, as Temin observed, would imply that the reserve ratio of the banks should have fallen, whereas it

⁴ *Augusta Sentinel*, quoted in *Philadelphia Inquirer*, 3 May 1837.

⁵ In contrast, early observers ascribed enormous importance to the pet banking network, although the specific reasoning they offered varied. See, for example, "The Deposit Banks" (*Niles Register*, 26 March 1836); King (1837: 10); *An Examiner* (1837); and Bourne (1857).

⁶ Timberlake states that "the 'pet' thesis has no utility in an analysis of the economic institutions of this period. All the banks were fractional reserve, and this feature is the one that made the bank panic possible" (1993: 428 n.1). Howe (2007: 503) claims that "the pet banks were generally responsibly managed," citing works that analyze the banking system as a whole, rather than the pet banks specifically. Willenz (2005: 394, 445) characterizes the pet banking system as a sincere effort to shift financial resources away from the enemies of democracy and toward "competent and reliable state bankers," which was ultimately "thwarted" by Congressional efforts to undermine the system.

actually remained stable (p. 70-71). The focus on reserve ratios is characteristic of early accounts of the crisis, whose interpretations were often informed by the “hard money” view that the use of banknotes rather than precious metals as money was the fundamental source of economic instability.⁷ Yet it is not necessary for the pet banks to have treated the federal deposits as reserves for those institutions to have behaved in a way that contributed to the crisis. If deposits were instead treated as an extremely stable source of funding, or if the special status of pet banks led them to believe the Treasury would come to their aid if they became insolvent, moral hazard problems would have resulted. The argument of this paper is that the pet banks magnified the vulnerabilities of the banking system by misallocating credit to risky borrowers, rather than by increasing the quantity of credit relative to reserves.

In a contribution related to ours, Peter Rousseau (2002) has argued that the Deposit Act of 1836, which led to significant transfers of resources out of New York’s pet banks, made that city’s banking system more vulnerable, and contributed to the crisis. His analysis therefore emphasizes the role of the New York pet banks, but mainly because they lost reserves. In addition, Jane Knodell (2006) has challenged Temin’s argument that the Bank War was unimportant in the crisis, and argued that the closure of Second Bank branches led to substantial entry by new state banks, whose aggressive managers helped fuel the expansion in bank credit. We test for the bank-level implications of both of these theories, and find some support for them.⁸ Yet our estimates of the effect of the pet banks remain unchanged when we control for variables related to these theories.

The insights of this paper shed new light on the interpretation Jackson’s Bank War, which has been the subject of a deep body of scholarship. Some historians, most notably Arthur Schlesinger (1945), Charles Sellers (1991), and Sean Willenz (2005), have described it sympathetically as a struggle for the rights of ordinary people against an entrenched elite. Yet other scholars, such as Richard Hofstadter (1948), Bray Hammond (1957), and Daniel Walker Howe (2007) have characterized it in more cynical terms, with Hofstadter and Hammond in particular viewing it as an effort by a new generation of capitalists to displace an older one. Our analysis suggests that the anti-monopoly rationale for ending the Second Bank was completely undermined by the system Jackson created to replace it.⁹ The Treasury deposited tens of millions of dollars of public funds into a politically favored group of state-chartered commercial banks, conferring special status on a set of institutions that already enjoyed exclusive legal

⁷ The intellectual foundations of such views are articulated in Gouge (1833). See also Hammond (1957).

⁸ It should be noted that not all of the arguments of Rousseau and Knodell have implications that are testable at the bank level; we incorporate their hypotheses into our estimation mainly to rule out that they are responsible for our results.

⁹ The third paragraph of Jackson’s veto message states: “The present corporate body...enjoys an exclusive privilege of banking under the authority of the General Government, a monopoly of its favor and support, and, as a necessary consequence, almost a monopoly of the foreign and domestic exchange. The powers privileges, and favors bestowed upon it in the original charter, by increasing the value of the stock far above its par value, operated as a gratuity of many millions to the stockholders.”

privileges.¹⁰ The pet bank system created what John Wallis has called systematic corruption, potentially endangering democracy, as well as financial stability.¹¹

2. Historical Background: The Bank War and the Deposit Banks

In the early 1830s, the commercial banking system of the United States consisted of hundreds of state-chartered banks, and the federally chartered Second Bank which operated a nationwide network of branches. With \$35 million in capital, the Second Bank acted as the fiscal agent of the U.S. government, was a major source of credit, provided a variety of payments services and helped stabilize domestic exchange rates. It also had the capacity to impose discipline on state banks. The scale of its interactions with those institutions enabled it to restrain their note issuance; by redeeming the large quantities of banknotes it accumulated for specie, it could force the banks to maintain adequate specie reserves.¹² Although state bankers were jealous of its market share and resented its regulatory role, they also appreciated that the Second Bank promoted financial stability and integration.¹³

The state bankers most hostile toward the Second Bank were those of New York. At the beginning of the nineteenth century, New York City overtook Philadelphia to become the nation's financial center; Wall Street resented that the Second Bank was headquartered on Chestnut Street. Most of New York's banks were regulated by the state's Safety Fund law of 1829, a coinsurance system that was touted as an alternative to the Second Bank as a means to ensure the stability of the commercial banking system. Designed partly by then-governor Martin Van Buren, Democrats in the New York legislature "took up the scheme and pressed for its adoption in the Assembly, on the ground of opposition to the United States Bank, and in order to take the place of that institution."¹⁴ Much more than their

¹⁰ At the time, commercial banks were required to obtain corporate charters; these were granted only through special acts of state legislatures. On the political significance of early state bank charters, see Hilt (2017), Bodenhorn (2006; 2017), and Lu and Wallis (2015).

¹¹ Wallis (2006) defines systematic corruption as the manipulation of the economy to generate rents that could be used to secure control of the government. This is precisely what alarmed many of Jackson's opponents. Bourne (1885: 13-14) states that "The extraordinary privileges which the 'pet banks' enjoyed were eagerly sought for, and frequently granted as rewards for political services. There is no question that this tempting bait was used to strengthen the hold of the administration on the Government."

¹² Hammond (1957) emphasizes the regulatory role of the Second Bank and state bankers' hostility towards it. However, Temin (1969) and Knodell (2017) argue that the regulatory function of the Second Bank was more limited.

¹³ McFaul (1972) documents that state banks in many regions of the country did not support Jackson's Bank War, as does Wilburn (1967). This contrasts with Hammond's (1957) account.

¹⁴ *The Herald* [NY], 3 May 1837.

counterparts in other states, New York's Safety Fund banks, particularly the largest ones, saw themselves as rivals of the Second Bank.¹⁵

New York's banks were also closely tied to the state's Democratic Party. The "Albany Regency" rationed bank charters in order to generate monopoly rents that it could allocate to its political allies, and thereby perpetuate its control of the legislature.¹⁶ Not all of the state's banks were controlled by Democrats, but they all benefitted from the restriction on entry produced by the Regency's rationing of bank charters.¹⁷ Limiting entry produced a relatively robust (if oligopolistic) banking system; the patently undemocratic character of the Regency's chartering regime was justified by arguments that it fostered financial stability. But the Regency owed much of its influence over state politics to its alliance with incumbent banks, and the interests of the banks generally aligned with the Regency's.

President Jackson's 1832 veto of the bill to grant a new charter to the Second Bank was strongly supported by New York's Democrats and their allies within the state's banking system.¹⁸ Yet it was also supported by the hard-money faction within Democratic Party, who were the political enemies of New York's banks, and advocated for reforms of the financial system that would lead to the wider use (or even the exclusive use) of specie, rather than banknotes, as money. The veto initiated a series of changes in federal banking policy under Jackson, some of which benefitted state banks, whereas others appealed to the hard money faction.

Jackson feared that advocates for the Second Bank might make additional attempts to override his veto and bribe members of Congress with the Second Bank's funds. To immediately divorce the federal government from the Second Bank, and to remove the power it wielded through holding the government's deposits, Jackson issued an executive order in September 1833 to remove the federal deposits from that institution. This ignited a political firestorm, as it gave control over the federal government's funds to the Treasury itself, rather than an institution chartered and overseen by Congress to perform that function, and represented a significant expansion of executive power and discretion over financial policy (Remini,

¹⁵ As the *Banker's Magazine* put it in its November 1857 issue, "there was ... no sympathy on the part of New York in behalf of the then Bank of the United States, as ... Wall-street was desirous of having within itself the great regulator of the currency of the Union" ("Financial Revulsions of 1837 and 1857," p.394). For this reason, Jackson's opponents viewed the Bank War as a conspiracy among New York bankers to replace the Second Bank with a new national bank located there (Remini, 1967: 162-63). Some New York banking interests did indeed formulate a plan for a new national bank based in New York (McFaul, 1972).

¹⁶ See Bodenhorn (2006, 2017). Bodenhorn (2006) notes that between 1830 to 1837, only 53 out of the 535 petitions for bank charters in New York were granted.

¹⁷ As in many other states, New York enacted a "restraining law" that prohibited entry into commercial banking without a corporate charter, which could only be obtained by a special act of the legislature.

¹⁸ Hammond's (1957:329) statement that "the Jacksonians' destruction of the Bank of the United States was in no sense a blow at ...the 'money power' ... It was a blow at an older set of capitalists by a newer, more numerous set" is quite apt.

1967). The Senate responded by taking the unprecedented step of voting to censure the president.¹⁹ The decision to remove the federal deposits from the Second Bank was controversial even within Jackson's own cabinet; he had to replace the secretary of the Treasury twice before finding someone willing to carry it out. Ultimately Jackson appointed his loyalist attorney general, Roger Taney, as Treasury secretary, and Taney promptly began to implement Jackson's order.²⁰ The repeated battles over Jackson's removal order fundamentally reshaped American politics; his opponents formed the Whig Party, which took its name from the British Whigs, who were identified with opposition to absolute monarchy (Remini, 1967; McCormick, 1966).

Selection of the Deposit Banks

Well before Jackson's executive order went into effect, politically connected bankers began discussing with Treasury officials the possibility that their institutions could serve as depositories of the federal government.²¹ The size of the federal government's deposits in the Second Bank—around \$10.1 million in February 1833—and the scale of the transactions performed by the bank on behalf of the government led one would-be pet banker to write to another that “the benefits that would be derived from becoming the agents of government in the collection and distribution of the public revenue would be great.”²²

When Taney finally began to implement Jackson's executive order, he and his aide Amos Kendall initially selected seven large commercial banks, all located in major cities on the eastern seaboard, to become depositories. Political favoritism and personal connections were an important part of the selection process, which was evident in the choice of the Union Bank of Baltimore, where Taney was

¹⁹ The Senate's March 1834 censure resolution stated that by withdrawing the government's funds, the president “has assumed upon himself authority and power not conferred by the Constitution and laws, but in derogation of both.” Jackson responded in April by sending a lengthy rebuttal to the Senate, arguing that the constitution did not authorize the Senate to censure the president. The Senate, in turn, approved resolutions holding that the president had no constitutional right to object to the Senate's resolution, and refused to enter Jackson's protest into its *Journal*. Jackson's allies repeatedly sought to have the Senate's censure vote expunged from its records; ultimately in January of 1837, they won a vote to reverse that body's earlier censure, which provoked acrimonious protests in the Senate galleries. See Currie (2005).

²⁰ However, the Senate refused to confirm Taney to that office—another unprecedented development. In June of 1834 Levi Woodbury was confirmed as Secretary of the Treasury, and remained in that office throughout the duration of Jackson's presidency.

²¹ For example, on 12 February 1833, Washington banker William A. Bradley wrote to George Newbold of the Bank of America in New York that “the deposits of the U.S. will be withdrawn from the Bank U. States at an early date – I know that sundry applications and propositions have been made to the Treasury” (George Newbold papers, New-York Historical Society.)

²² Thomas Ellicott, president of the Union Bank of Maryland, to George Newbold, 5 August 1833 (George Newbold papers, New-York Historical Society.)

a stockholder and whose president was Taney's close friend.²³ The other banks included The Manhattan Company and The Mechanics Bank, the two largest Democratic banks in New York City; the Commonwealth Bank of Boston, whose president was John K. Simpson, a close friend of Amos Kendall and a Democratic state politician; and the Girard Bank of Philadelphia, another Democratic bank. The one bank not prominently associated with the Democrats that was named was the Bank of America, the largest commercial bank in New York.²⁴ Despite the selection of the latter, the deposits were "in the hands of the politically friendly," as Taney wrote to a Democratic colleague.²⁵ Eventually, the deposit banks would become pejoratively known by their critics as Jackson's "pet banks."

In the early stages of the pet banking system, the designation of state-chartered banks as depositories was presented as a temporary measure. But in response to suddenly receiving drafts for amounts of up to \$500,000 at a time from the new deposit banks, Nicholas Biddle, the president of the Second Bank, reacted by severely restricting that institution's lending, resulting in a recession known as Biddle's contraction in early 1834.²⁶ The resulting financial pressure on the business community that had been deliberately created by the 'monster bank' galvanized support for the deposit banks in Congress, and the pet banking experiment became a more permanent part of the Jackson's agenda. Attributing economic prosperity to the success of the pet banking system soon became an important part of Jacksonian rhetoric. Following the recovery from Biddle's contraction, Congressman James K. Polk stated that the country "has been prosperous but she is indebted for that prosperity...to the new impulses springing out of the employment of State banks as fiscal agents of the Government."²⁷

From January 1834 to June 1836 the deposit banking system grew from seven banks to thirty five.²⁸ The importance of politics in the selection of the additional deposit banks has been the subject of some debate.²⁹ Yet even if political affiliations and personal connections were not the only criteria in selecting deposit banks, Taney and his successor Levi Woodbury clearly incorporated political concerns into their choices. And as the system expanded, political favoritism and personal connections began to play a larger role. Many of the banks chosen in the North in particular confirmed critics' perceptions that

²³ One the choice of the pet banks, see Schreiber (1963: 197), Hammond (1957: 412), McFaul (1972: 60), and Gatell (1964:36).

²⁴ The Bank of America was then one of the largest state banks in the United States, and a major rival of the Second Bank and its New York branch. Its president, George Newbold, was a close associate of bankers close to the Treasury, and sought in early 1833 to receive federal deposits and shape the creation and development of the pet banking system (George Newbold papers, 1833, New-York Historical Society.)

²⁵ Gatell (1964: 36).

²⁶ At the time, it was Treasury policy to give advance notice to the Second Bank prior to making large withdrawals (Meerman, 1963). But Taney had secretly given the new deposit banks drafts on the Second Bank of as much as \$500,000, so that if Biddle attacked them by suddenly redeeming large quantities of their notes, they could retaliate by presenting the Second Bank with large drafts made payable to themselves.

²⁷ Quoted in McFaul (1972: 70-1).

²⁸ U.S. Treasury Reports in 1833 to 1837. See also Schreiber (1963 : 197).

²⁹ See Hammond (1957), Scheiber (1963), Gatell (1964), Taus (1943), and Redlich (1951).

the selections prioritized political favoritism over financial security.³⁰ The selections in New England were especially likely to have been the product of “pure politics, nepotism, or personal connections.”³¹ For example, Woodbury’s father-in-law ran the Bank of Portland, in Maine, which was chosen as a deposit bank.

Politics figured less prominently in the choice of deposit banks in the South and West, however. The Treasury offered deposits to banks in South Carolina and Mississippi whose officers were outspokenly anti-Jackson.³² Yet is not particularly surprising that these banks were chosen despite their political persuasions, since the Southern and Western states had relied much more heavily on the branches of the Second Bank for banking, and had established fewer commercial banks by the time of the selection.³³ Michigan, Mississippi, Kentucky, Alabama, North Carolina, South Carolina and Virginia all had less than ten banks in January 1836, whereas the New England and Mid-Atlantic states had between twenty and one hundred banks per state. Selecting a depository in a state like Kentucky, where there were only three banks, almost inevitably meant choosing one in the hands of the political opposition. In some cases, banks in the South even declined to receive public deposits, but as Taney wrote in an executive summary detailing the selections, most of them eventually “surrendered.”³⁴

Status and Regulation of Pet Banks

A crucially important role of the Second Bank, and one that has not received much attention in the scholarship on Jackson’s Bank War, was to stabilize domestic exchange rates. Apart from the major cities of the eastern seaboard, most of the United States had not attained a high degree of monetary integration by the 1830s. Debtors in the south or west wishing to pay creditors in New York could not use local funds; they would need to purchase New York funds at prevailing exchange rates. The Second Bank used its vast branch network to make a market in domestic exchange in many cities, and generally

³⁰ Gatell (1964: 58) cites the Moyamensing Bank of Philadelphia, the Clinton Bank of Columbus, the Farmers and Mechanics Bank of Detroit and Mechanics and Farmers Bank of Albany as examples of pet banks that had strong Democratic ties, but were poorly capitalized.

³¹ Gatell (1964: 60).

³² In addition, Schreiber (1936:197) notes that The State Bank of North Carolina, the Bank of Louisville and the Bank of Michigan at Detroit all had boards that were controlled by Whigs. Gatell (1964: 55) also identifies the Bank of the State of North Carolina as an opposition bank.

³³ Knodell (2006:550) measures the differences in banking services by region and finds that the Northwest and Southeast were more severely under banked, and were more adversely affected by the closing of the Second Bank branches.

³⁴ 25th Congress 3rd session, *Senate Document 302*, 1833 to 1834. The banks that declined included The Bank of South Carolina, the Agricultural Bank of Mississippi, the Cape Fear (Wilmington NC) State Bank, the Planters and Mechanics Bank of Charleston, and the Union Bank of South Carolina.

lowered and stabilized the cost of exchange.³⁵ An important objective of the Treasury in its relationship with the pet banks was to ensure that domestic exchange rates remained low as the Second Bank's branch network was closed down; it directed the pet banks to maintain extensive operations in exchange. The pet banks in major cities were not the only major participants in those markets, but they did play an important role, and apparently offered rates that were comparable to those of the Second Bank in 1834 and 1835.³⁶ Jackson's annual message in 1836 extolled the deposit banks' capacity to "negotiate the domestic exchanges of the country."³⁷

A second objective of the Treasury's policy toward the pet banks, which at times came into conflict with the first, was to establish a sound and "specie-based" paper money supply (McFaul, 1972). The pursuit of this objective was ideologically important, and helped justify the establishment of the pet bank system to the hard-money faction within the Democratic Party. The deposit banks were ordered to hold high levels of reserves, and in 1835, were ordered to refuse to accept any banknotes of denominations of less than five dollars for payments to the government. Denominations of less than ten dollars were to be refused after March of 1836. These measures were intended to reduce the amount of small bills in circulation, and increase the use of coins for small transactions. The Treasury also sought to make the pet banks' notes more like the notes of the Second Bank, initially by guaranteeing them, and later by attempting to make all pet banks' notes redeemable in the deposit banks located in the financial centers of the Mid-Atlantic region. The Treasury even began to conduct a limited version of central banking operations through some of the pets.³⁸ New York City's largest pet banks became creditors of other banks by holding large balances with them, which could then be adjusted to effect a desired change in banking conditions.³⁹

But the close relationship between the Treasury and the New York deposit banks led to accusations that the administration was the servant of Wall Street interests. Critics of the system argued that the Democratic Party used its influence over the pets to direct credit toward favored borrowers.⁴⁰ And

³⁵ The Second Bank's branches purchased bills of exchange drawn on merchants in other cities, and sold drafts on other branches. Knodell (1998) argues that the Second Bank's operations in domestic exchange markets were so extensive that domestic exchange rates became administered prices.

³⁶ The Treasury reported that the rates for exchange charged by the pets in Boston and New York in late 1834 were similar to the rates that were charged by the Second Bank (23rd Congress 2nd Session, *Doc. No. 71*: "Domestic Exchange and Rates of Collection...").

³⁷ Jackson's message stated that "It was alleged by advocates of the Bank of the United States that the State banks, whatever might be the regulations of the Treasury Department ... could not negotiate the domestic exchanges of the country..." Yet "the rates at which the exchanges have been negotiated previously to the passage of the deposit act [by the deposit banks] were below those charged by the Bank of the United States."

³⁸ Redlich (1951: 170-77) describes Amos Kendall's designs for an elaborate, hierarchal system of pet banks that would have resembled a central bank which were considered but never implemented.

³⁹ McFaul (1972).

⁴⁰ For example, the *National Gazette* [Philadelphia PA] stated on 26 September 1837 that "we have seen the Treasury dictating to those institutions [Moyamensing Bank and Girard Bank, both pets] that accommodations

supporters of state banking interests objected that too much of the deposits were held in New York, rather than in banks in other regions. Although every region of the country had at least one deposit bank, the largest deposits by far were in the three New York City pets, which held about \$9 million of the \$25 million total federal deposits in late 1835. Making matters more complicated politically was the large federal surplus that accumulated in the deposit banks in 1835 and 1836. A land sales boom produced a surge in federal revenues; rapid growth in imports led to a substantial increase in customs duties as well. By the second half of 1836, the federal government's deposits within the pet bank system had grown to more than \$50 million.

Ultimately Congress responded with the Deposit Act of 1836. The Act provided for the distribution of the federal surplus to the states in proportion to their population. In total, thirty-seven million dollars was planned to be distributed in four equal installments as an interest-free loan starting in January 1837. The Deposit Act also required that the Treasury select at least one depository in each state "located at, adjacent to, or convenient to the points or places at which the revenue may be collected or disbursed." It restricted the deposit banks from issuing notes of less than five dollars and stipulated that any bank that suspended specie payments would be discontinued as a depository. The Act also mandated that the amount of federal funds at any deposit bank could not exceed three fourths of its paid-in capital. As a result of these provisions, the number of pet banks grew from 36 to 81 over the course of six months. The terms of the Act removed some discretion of the Treasury over the pet banks, but it also undermined the Treasury's efforts to use the large pet banks to effect changes in monetary conditions and regulate the banking system.⁴¹ Yet it made the pet banking system more politically palatable, so Jackson ultimately signed it.

Because most of the surplus was concentrated in the deposit banks located in financial centers, Woodbury asked Congress if he could prepare for the distribution by reallocating some funds in a more equitable manner. Congress responded by amending the Act to give the Secretary of the Treasury the power to transfer funds in order to "produce a due equality, and just proportion, according to the provisions of said act."⁴² Over the course of the six months between the enactment of the Deposit Act of 1836 and the first installment of the official distribution in 1837, Woodbury ordered around thirty-eight million dollars in supplemental transfers. Twenty-six million of these transfers were completed by the end of 1836, and the rest in the early months of 1837. These transfers were thirty-five percent larger than

should be granted to the merchants." McFaul (1972: 60) also documents that privileged information was passed to Bank of America in exchange for favored access to loans to family members of a Democratic member of Congress.

⁴¹ Remini (1967) argues that the Deposit Act also asserted Congressional authority over the pet banks in order to restrain the power of the president.

⁴² U.S. Congress, Senate Doc No. 29, 24th Congress, 2d Session. See Rousseau (2002: 464).

those planned in the official distribution. Seventy percent of the transfers were ordered between banks in different states.

Shortly after the Deposit Act President Jackson issued an executive order known as the Specie Circular, which was intended to curb the growth of federal land sales, which he attributed to unrestrained growth of bank credit funded by paper money issuance. The circular went into effect on the 1st of August 1836 and required federal land agencies to accept only specie in payment for public lands under 320 acres; by the 1st of December, it applied to all federal land.⁴³ Although the effectiveness of Jackson's policy in curbing land speculation has been the subject of some debate, receipts from public land sales initially remained very high, and the accumulation of specie in the Western deposit banks further complicated Woodbury's efforts to equitably distribute the deposits.

Just as twenty-six million dollars in supplemental transfers was completed at the end of 1836, nine million dollars of the first installment of the official distribution of the surplus was ordered in January 1837. Despite mounting pressures in the money market, Woodbury continued with the second installment on the April 1st. Compared to the transfers in 1836, only 32 percent of eighteen million dollars were in interstate transfers; the rest were intrastate.⁴⁴ In May, before the third installment could take place, the panic occurred and banks suspended payments; all but five of the ninety-one deposit banks were stripped of their status under the regulations of the Deposit Act.⁴⁵ The suspension essentially marked the end of the pet banking system. In August, Woodbury still carried out the third installment by placing drafts on the former deposit banks; however, these payments were in depreciated currency. The fourth installment was eventually abandoned in the face of mounting federal debt; ultimately only 28 million dollars of the original 37 million planned in the official distribution of the surplus was realized (Schreiber, 1963: 210).

The Onset of the Panic

In August of 1836 the Bank of England raised its discount rate and changed its lending policy, rejecting bills of exchange from institutions involved in the financing of the American trade in cotton, out of concern regarding their creditworthiness.⁴⁶ This shock gradually cascaded through the financial system, depressing cotton prices and producing defaults among American cotton merchants. In early

⁴³ See Hammond (1957: 445), McGrane (1924: 79), and Rousseau (2002: 459).

⁴⁴ House Executive Document No. 30, 25th Congress 1st session, pp 72-81, Sept 1837,

⁴⁵ 25th Congress, 3rd Session S.Doc. 30

⁴⁶ See Temin (1969). Williams (2016) argues that that liberalizations in British banking laws helped fuel the growth of trade credit from the United Kingdom to the cotton-producing regions of the United States.

March 1837, J.L. & S. Joseph & Co., a well-regarded bill brokerage firm in New York, failed suddenly.⁴⁷ As the pressure continued the number of firm failures increased. On April 8 the *Journal of Commerce* reported 93 failures in New York. A week later and the *New York Courier and Enquirer* reported that ten to twelve first-rate houses, and forty to fifty second-rate houses in New Orleans had failed.

The crisis within New York's commercial banking system began on May 2nd, following the publication in the *New York Herald* of the results of an investigation by the New York Bank Commissioners, which had uncovered a scandal at the Mechanics Bank, a major Wall Street pet bank. The bank's president, John Fleming, had entered into a check kiting scheme with the Dry Dock Bank, another deposit bank, and the Wall Street brokerage firm Bullock, Lyman & Co.⁴⁸ Fleming had agreed to let the brokerage firm draw checks against him and place them between the Dry Dock Bank and the Mechanics bank. Through their operation, Bullock, Lyman & Co. was able to procure a loan of \$254,000. In April, when the price of the Dry Dock Bank stock lost half of its value, Fleming stopped extending credit to the firm. Following their failure in early April, the brokerage firm owed the Dry Dock Bank up to \$141,000. After the revelation of the scandal, Fleming, the cashier John Leonard and the vice president resigned under pressure from the board of directors.⁴⁹ Although the Mechanics Bank emphasized that the change of officers was not due to financial difficulties and ensured that Mr. Fleming would remain on the board of directors, his untimely death set off panic amongst note holders and depositors, and a run began that day.

Following the run on the Mechanics bank, attention shifted to the Dry Dock Company. Rumors spread that New York City banks were refusing to accept Dry Dock bills. Predictably, this ignited a run on the bank. Despite bank officers' assurances that all Dry Dock notes would be redeemable at any bank, the drain of the Dry Dock's specie reserves was unrelenting.⁵⁰ The Panic quickly spread to note holders of other banks, triggering a "general run" on all of the banks in New York City. *The Commercial Advertiser* estimated that six hundred thousand dollars of specie were withdrawn on the 8th and seven hundred thousand on the 9th. After a private meeting on the 10th of May, New York's commercial banks collectively decided to suspend specie payments.⁵¹ The next day, banks in Mobile, Philadelphia, Hartford, Baltimore, Providence and upstate New York suspended. As the news traveled, the suspensions continued: Boston, Maine, and Washington D.C. on the 12th, New Orleans on the 13th, Cincinnati on the

⁴⁷ Joseph & Co. was a major creditor of the New Orleans cotton factors Herman Briggs & Co., who failed about a week earlier. Rockoff (2014: 17), Temin (1969) and Lepler (2013) consider the failure of those firms as the beginning of the Panic.

⁴⁸ Check kiting is a type of fraud that involves taking advantage of the duplicate money in the banking system during delays in processing a check. The scheme often requires the use of accounts at several different banks so money can be moved between them.

⁴⁹ *New York Herald* 2 May 1837.

⁵⁰ *Commercial Advertiser* 8 May 1837.

⁵¹ *The Commercial Advertiser* 10 May 1837.

17th, and Charleston, North Carolina, and Indiana on the 18th. Within a little over a week, nearly all of the banks in the United States had suspended payments.

The Domestic Exchanges

An indication of the economic consequences of the chaos in Jacksonian banking policy is presented in Figure 1, which plots domestic exchange rates for New Orleans funds, and funds in other cities in the Southeast and Northeast, in New York.⁵² The numbers plotted are discounts in New York funds; a 4 percent discount on exchange in New Orleans would mean that \$100 in that city's money could be had for \$96 in New York. The significance of these rates is reflected in the fact that a debtor residing in one of the cities presented in the figure who wanted to repay a creditor in New York would need to pay a premium that was similar in magnitude to the quoted discounts to obtain New York funds.

In May of 1836, discounts on domestic exchange rose substantially. The discounts on funds in other cities (or premium on New York funds) indicates that there was a substantial relative shift in demand for New York funds that the institutions participating in exchange markets were unable to accommodate. Commentators attributed these developments to a contraction in the operations of the pet banks, undertaken in anticipation of the enactment of a measure that would force them to transfer large amounts of the federal deposits elsewhere.⁵³ The ultimate passage of the Deposit Act and specie circular, which actually did drain resources from the pet banks in New York, likely reinforced these changes.⁵⁴ As the dislocations spread throughout the financial system, pressures in money markets continued to build. The premium on New York funds rose dramatically again in April of 1837, following the failure of J.L. & S. Joseph & Co. and many other firms in New York and New Orleans. The premium increased further beginning in June, following the suspension by the commercial banking system. Contemporary observers

⁵² These data were collected from semi-weekly issues of the *New-York Price Current*, which reported the discount on sight bills on Boston, Philadelphia and Baltimore (averaged as Eastern Seaboard in the figure); Richmond, N. Carolina, Charleston and Savannah (Southeast); and New Orleans. The discount on exchange on each city was usually reported as a range (e.g., "1 a 1 ½"), from which the midpoint was taken.

⁵³ It is important to interpret these claims cautiously. Critics hostile to the pet banks alleged a conspiracy by the Treasury to disrupt financial markets in retaliation for the decision of the State of Pennsylvania to offer a charter to the Bank of the United States in March ([NY] *Herald*, 22 March 1836). More sober observers noted that the pet banks anticipated that Congress might soon order them to transfer a substantial quantity of the public deposits, and that the Treasury had urged the pets to increase their reserve ratios in early 1836 (*Bicknell's*, 26 April 1836; see also McFaul, 1972:161-65). But whatever the mechanism, it is significant that observers attributed the change in exchange rates to actions by the pet banks.

⁵⁴ Secretary Woodbury urged the New York pets to increase their holdings of specie in early 1836, which likely contracted their purchases of bills of exchange (McFaul, 1972); growing demand for New York funds among Western borrowers likely also contributed to this increase (see Kilbourne, 2006). Contemporary observers noted the connection between the Deposit Act and specie circular, and the increase in the price of exchange in the West (eg, King, 1837).

argued that these fluctuations in domestic exchange rates “deranged and disorganized” business to a significant extent (King, 1837:9).

3. The Pet Banks and the Panic

The main hypothesis of this paper is that the pet banks engaged in excessive risk-taking, and faced a collapse of public confidence as the panic broke out in May of 1837. Their status as federal depositaries gave them access to significant amounts of public funds; on average the federal deposits held by pet banks in late 1836 were equivalent in value to more than 77 percent of their capital.⁵⁵ Figure 2 presents the capital and public deposits held by the 50 largest pet banks in late 1836. For many of these institutions, the federal deposits exceeded their capital.⁵⁶ This vast increase in the resources of some of the banks may have led them to exhaust the best lending options available to them, and turn to riskier ones. In contrast to other bank liabilities, the federal deposits were unlikely to be withdrawn in response to perceptions of an increased risk of default, removing a source of discipline on the banks while expanding their capacity to take on risk.

In addition to the tens of millions of dollars they were lent, the pet banks were given special status. The system was the replacement for the Second Bank, and the stability of those institutions was critical to the Jacksonian reform agenda. This may have created the perception that the Treasury would find it necessary to come to the aid of any failing pet banks, something that was done at least once.⁵⁷ The Treasury also guaranteed the notes of the pet banks, and although that decision was later reversed, the Treasury worked closely with the deposit banks to regulate other banks, and at times passed privileged information to them. That some figures in the Democratic Party directed the deposit banks to make loans for political purposes may have further cemented the special status of those institutions within the Democracy.

One clear measure of the significance of the status as a federal depositary can be found in banks’ valuations. As stock prices embody expectations of future profits, the change in the share price of a newly chosen deposit bank should provide a market-based measure of the value of pet bank status. Relatively few of the deposit banks’ shares were actually traded on securities exchanges, but price quotations for several of them can be found on the New York Stock Exchange. The Deposit Act of 1836

⁵⁵ *Annual Report of the Secretary of the Treasury*, 1836.

⁵⁶ Another 30 smaller pet banks, not shown in the figure in order to keep it to a readable size, also held federal deposits. The average ratio of public deposits to capital among those institutions was 86 percent.

⁵⁷ When the controlling insiders of the first pet banks, the Union Bank of Baltimore, revealed to the Treasury that risky investments (undertaken prior to their selection as a deposit bank) had endangered the survival of their institution, the Treasury effectively bailed them out by giving them larger drafts on the Second Bank (Gatell, 1965).

resulted in the creation of a number of new deposit banks in both cities, all of which were publicly traded before the designation. We therefore use the Deposit Act to analyze the value of pet bank status, using weekly NYSE share prices from Sylla, Wilson and Wright (2005).

Figure 3 presents the graphical evidence. Panel (a) of the figure shows the equal-weighted average difference in cumulative returns between eleven banks that were ever designated as deposit banks, compared to thirteen other banks that were never designated as deposit banks, from 1835-39. For comparison purposes, Panel (b) of the figure presents cumulative returns for an equal-weighted index of the 59 most liquid stocks on the NYSE.⁵⁸ The blue vertical line denotes the date when the Deposit Act passed, which resulted in the designation of new deposit banks. Prior to the Deposit Act, three of the eleven banks in the ‘treated’ group were deposit banks; following the Deposit Act, the remaining eight banks became deposit banks.⁵⁹ Changes in the difference between the two groups following the Deposit Act therefore reflect the effect of designation as pet banks. As the line in the figure clearly shows, the banks designated as deposit banks saw a rapid and substantial increase in their valuations. This is a clear indication that market participants believed that status as a deposit bank was quite valuable; the difference in cumulative returns increases by about seven percentage points.

The magnitude of this increase can be understood by comparison to some of the overall market movements in panel (b). The period between the failure of Josephs & Co. and the suspension witnessed a sharp decline among all stocks of around 30 percentage points. This implies that the increase in returns following designation as pet banks was equivalent in absolute magnitude to just over 20 percent of the size of the market decline prior to the suspension. This is clear evidence that deposit bank status was regarded as quite valuable. However, it should be noted that the deposit banks that were chosen in 1836 in New York tended to be smaller and less well established than the original 1833 deposit banks there, so the designation as depositaries may have been unusually valuable for the 1836 banks analyzed in the figure.

In the figure, the values of the pet banks begin to collapse relative to the other banks around the time of the Josephs & Co. failure, which marked the beginnings of panic conditions in New York’s financial markets. One interpretation of this pattern is that status as a pet bank was only perceived to be valuable in good times, when federal revenues were abundant and the risks of losses on bad loans were relatively slight. This might imply that market participants knew that the pet banks were making high-risk loans on dubious collateral—and were perhaps best able among all banks to take advantage of the

⁵⁸ In the years 1836 and 1837, quotations for many more securities can be observed on the NYSE, but many of them trade relatively infrequently.

⁵⁹ We do not know the exact dates when each pet bank was named as a depositary. However, the Treasury’s summary of the transfer drafts to the new depositaries indicates that many were made within a month of the Deposit Act.

booming markets of the mid-1830s—but when a downturn came, they would suffer differentially as a result. This pattern would be consistent with some commentary from the period.⁶⁰

The pet bank system was an obvious contradiction for an administration that made heavy use of antimonopoly rhetoric and represented a coalition of interests that included a hard-money faction opposed to banks of issue. The Democrats were accused of “electioneering through treasury banks,” utilizing the resources of the pets to get Martin Van Buren elected to succeed Andrew Jackson as president.⁶¹ One critic of the deposit banks claimed in December 1837 that

If the present system of deposit banks continued, every state in the Union would soon be under the control of the great central power at Washington. The public money in the deposit banks was used for the purpose of plunder, and enriching bank and government favorites; and those who permitted it, partook of the profits, no doubt.⁶²

The Democrats could rationalize their creation of the pet bank system by claiming that it prevented another monster federal bank from emerging, and by attempting to use the pet bank system to create a more reliable and specie-based money supply, and stable domestic exchange rates. But an incipient crisis revealed that the promised stability had not, in fact, been achieved. Before the bank runs actually broke out, representatives of New York’s banking community traveled to Washington to meet with President Van Buren to ask for assistance.⁶³ Of course Van Buren, so closely tied to New York’s Safety Fund and pet banks, and yet needing to appeal to the hard-money wing of his party, found it politically impossible to publicly support the banks, and refused their requests.⁶⁴

Astute observers may have been able to anticipate that a banking crisis could have led to the end of the pet banking system, and they would have been correct. The 1836 Specie Circular had signaled a shift in federal policy more consistent with the hard-money faction’s agenda, and Van Buren eventually proposed replacing the pet banking system with a so-called independent treasury system, in which the Treasury itself would operate branches (“sub-treasuries”) in various cities on behalf of the federal

⁶⁰ For example, Baker (1857: 175) concluded that “Some of the ‘pet banks’ were ruined by the possession of government funds, which, in the frenzy of a partisan triumph, they either mistook for their own, or else lost all discretion in the management of their trust; and the banks among whom the ‘surplus revenue’ was distributed can trace many a bad debt to the possession of these unexpected deposits, and which some of the more prudent banks had the caution and sagacity to decline.”

⁶¹ Mackenzie (1846: 124).

⁶² *Proceedings and Debates of the Convention of the Commonwealth of Pennsylvania to Propose Amendments to the Constitution*, vol. VI; 6 December 1837, p. 225. Whig Senator Thomas Ewing expressed a similar view: “I could not be but struck, and forcibly, with the perfect control which the executive has, if he sees fit to exercise it, over all these banks, and with them, also over the whole long list of directors, stockholders and debtors. ..They are fettered, bound by a golden chain, the ring of which is in the hands of the secretary of the treasury” (*Niles’ Register*, 16 April 1836, p. 119).

⁶³ The assistance that was sought was an end to the Specie Circular, which New York’s bankers felt had contributed to the stringency, and a special session of Congress for additional legislation to aid the banking system.

⁶⁴ This episode is chronicled in the *Enquirer* (various issues.) Willenz (2005) chronicles Van Buren’s focus on austerity.

government (McFaul, 1972). Establishment of that system would help foreclose the possibility that a future government could create a new Bank of the United States. But more importantly, it also represented a way to separate the federal government from the commercial banking system and help eliminate the corrupting influence generated by the special privileges created by its former policies.

It is also significant that the bank runs began in response to a scandal among two New York pet banks, and one of them, the Dry Dock, was among the very first to suspend.⁶⁵ The revelation that some of the pet banks had engaged in fraud may have shaken the confidence of the noteholders and depositors of all deposit banks, and caused those institutions to suffer greater declines in their liabilities in the crisis, as noteholders ran on them and deposit holders liquidated or transferred their accounts to the extent they could. In Panel (a) of Figure 3, the runs correspond to the beginning of a period when the cumulative difference in returns between pet banks and other banks becomes quite negative, although they would later recover.

In what follows, we test our hypothesis by analyzing changes in individual banks' liabilities and note discounts over time. If the pet banks engaged in excessive risk-taking prior to the crisis, and faced a collapse of public confidence as the Panic broke out, we should expect that their liabilities should have fallen, and their note discounts should have risen, to a greater extent than those of other banks, in the period following the panic.

Some significant recent contributions to the analysis of the Panic of 1837 have proposed hypotheses related to ours, which we will incorporate into our empirical analysis. For example, Rousseau (2002) argued that the supplemental transfers from the deposit banks in 1836—in particular, those that were directed across state lines, which Rousseau argues were more likely to be made in specie—contributed to the panic, particularly in combination with the Specie Circular, which further drained specie from New York's banks. Rousseau's analysis builds on earlier contributions from Timberlake (1960) and Schreiber (1963), which argued that the transfers ordered by the Treasury created a liquidity problem for New York's banks, although they emphasized different elements of the transfers.⁶⁶

Some elements of Rousseau's theory, such as the importance of the Specie Circular, which affected all banks, are not amenable to testing at the bank level. However, his hypothesis regarding the importance of the transfers can be tested, since if the transfers created liquidity problems for pet banks, then the pet banks that were directed to pay out greater amounts relative to their size should have been

⁶⁵ Critics of the pet banks also noted that the other early suspension was that of the deposit bank in Natchez, Mississippi, on the same day as the Dry Dock. (*Proceedings and Debates of the Convention of the Commonwealth of Pennsylvania to Propose Amendments to the Constitution*, vol. VI; 2 December 1837, p. 118.)

⁶⁶ Timberlake (1960) points to the official distribution of the surplus in 1837, which he argues was largely conducted in specie. Schreiber (1963: 936) suggests that both the interstate and intrastate transfers in 1836 and 1837 were in specie but that the transfers in 1836 were larger and had a greater impact than those in 1837.

more adversely affected. In a sense, Rousseau's theory offers an alternative to ours; his is a story of the pet banks being differentially affected, but only due to the transfer payments. We will therefore test whether the deposit banks fared worse following the crisis even if one controls for transfer payments.

In another recent contribution related to ours, Knodell (2006) explores potential mechanisms through which the Bank War may have contributed to the crisis. She focuses on three interrelated forces: greater entry among state banks to replace the role of the Second Bank; more liberal credit policy among the state banks; and the retention of reserves among the federal depositaries on the frontier, whose lending fueled the boom in land sales. Knodell's analysis is focused on the boom, not the bust, and its clearest implications are for regional data, rather than bank-level data. However, we can incorporate the implications of Knodell's reasoning into our analysis by testing whether new banks in locations where a Second Bank branch had operated fared worse in the crisis.

4. Data and Empirical Framework

This paper utilizes two main datasets. The first was collected by Warren Weber and includes essentially all published balance sheet data for American commercial banks from 1794 to 1863 (Weber, 2008). These data were used to calculate reserve ratios and net liabilities outstanding for each bank. The second, collected by Gary Gorton and Warren Weber, contains the monthly note discount quoted in Philadelphia for banks located throughout the United States from 1830 to 1858 (Gorton and Weber, nd).⁶⁷ The bank names in these datasets were matched to lists presented in different volumes of the *Annual Report of the Secretary of the Treasury* to identify the deposit banks in 1833, 1835 and 1836. Additional information on the banks was obtained from Weber (2005). Finally, data on the transfer drafts drawn as part of the supplemental transfers in 1836 was collected from a report from Treasury Secretary Woodbury published by the U.S. Senate in 1836.⁶⁸ And data on the official distribution of the surplus ordered by the Deposit Act was obtained from a House Document from 1837.⁶⁹

⁶⁷ The original data comes from the *Bicknell's Reporter, Counterfeit Detector, and General Prices Current*.

⁶⁸ U.S. Congress *Senate Document* no. 29 24th Congress 2nd session (20, December 1836) page 8-20. Complying with requests from the Senate on the 23rd of June, Secretary Treasury Woodbury submitted a report in December 1836 showing date and amount of transfers between individual banks starting from the 23rd of June 1836. There were 449 separate transfers ordered between July 6, 1837 and December 15, 1836, with payment dates ranging from July 31, 1836 to April 15, 1837. The average payment amount was around \$84,700, but drafts ranged from \$10,000 to \$500,000.

⁶⁹ U.S. Congress, *House Executive Document* No. 30, 25th Congress 1st session (Sept 1837) page 72-81, and 101-45. On September 25, 1837, Woodbury submitted a report on the amounts drawn in compliance with the Deposit Act of 1836. The statement contains the date of the order, the number of the installment, the amount, which bank the draft was drawn on and to which state the draft was payable to. There were 338 separate transfers ordered between January 1837 and June 1837 with an average amount of around \$81,964 but exhibiting high variability.

Table 1 presents summary statistics for the variables utilized in most of the analysis of the paper. The analysis will focus on the period 1835-1839, in order to exclude the effects of the Panic of 1839, which was related to but distinct from the Panic of 1837 (Wallis, 2001). The first row presents the average values of the banknote discounts observed for this period. As these data included some extreme outliers, the top 1 percent of values were trimmed from the dataset. This produced a final sample of 28,958 observations from 551 banks, with a mean value of 1.597 percent over the 1835-39 period.

Total outstanding banknotes and deposits are presented in the second row. For the deposit banks, we include only individual deposits and exclude the amounts of federal funds held at the bank. The frequency with which different states' banks were required to submit financial reports varied substantially; in several states, no bank data was reported either for the crucial periods of January 1836 to May 1837 when the Panic broke out, or between the outbreak of the Panic and the end of 1838. These banks cannot be observed during the peak of the credit expansion or the downturn caused by the Panic, and are therefore excluded from the analysis.⁷⁰ This results in a sample of 4,235 observations of log circulation and deposits from 495 different banks, with a mean value of 12.177. Information on these banks' locations, ages, and capital are presented in the rows that follow.

In the third row, we present bank failure data. This data is available for nearly all banks in existence during our sample period, including those for which balance sheet data is missing during crucial periods. For the 637 banks for which this data is available, the failure rate is about 1.9 percent.⁷¹

Finally, the lower rows of the table present information on our variables for the transfers made by the deposit banks in the sample. As the larger banks tended to pay out greater amounts, the amounts paid were scaled by the banks' paid-in capital from 1836.⁷² As different authors have distinguished between the 1836 and 1837 transfers, and within each of those, between intra-state and inter-state transfers, we construct separate measures of each. And as the transfer payments are regarded as a source of liquidity problems for the deposit banks, we focus only on the payments made, rather than any transfer payments received. The resulting four variables are available for 64 deposit banks, and their average values range

⁷⁰ One might imagine that the inclusion of time fixed effects in the empirical analysis should address this problem. However, we face the problem that many individual banks reported information at widely varying dates. Our time fixed effects therefore group observations over ranges of dates. See below.

⁷¹ In the Weber dataset, failures are distinct from closures, which occurred when a bank was simply shut down. For some of the 637 banks for which failure data is available, there is no bank note discount data—evidently, discounts on their notes were never reported in *Bicknell's*. This is why we have fewer banks in our banknote discount data.

⁷² We use capital rather than assets because total assets fluctuated significantly in the volatile pre-panic years. In addition, although observations on the September 11th 1836 are available for each of the deposit banks in the Secretary of the Treasury's report, part of the transfers had already taken place by that time, which would skew the relative size of the transfer for some of the banks. Capital, on the other hand, was not directly affected by the transfers and was much more stability over time. Therefore, both the transfers in 1837 and 1836 have been expressed as a percentage of capital observed on September 11th 1836, which also makes them more easily comparable. Expressing them as a percentage of capital would have also been similar to the way Woodbury perceived the transfers, given the 3/4ths rule in Deposit Act of 1836.

from the equivalent of 3.2 percent of paid-in capital for the interstate transfers of 1837 to 64.2 percent for the interstate transfers of 1836.

Table 2 presents comparisons of the characteristics of the banks chosen as pets in 1833, and in 1836, with the other existing commercial banks in those years. In both sets of comparisons, the pet banks appear to have been positively selected, at least on the observable characteristics in the table. They were more likely to be located in major cities, and partly as a consequence, were older, larger, and had higher reserve ratios and lower note discounts. They were also more likely to have been chartered by state legislatures with slightly higher shares of Democrats. The data in the table also reveal a change in the selection mechanism in 1836, relative to 1833. The deposit banks selected later were still positively selected, but much less so.

Interpretation of the Outcome Variables

We study three bank outcomes. The first is log circulation and deposits—the total outstanding liabilities of each bank. The amount outstanding reflects the level of demand for bank liabilities, and therefore the level of confidence in the safety of banks; they are runnable, and decline rapidly during a panic. During the Panic of 1837 circulation and deposits fell for the banking system as a whole, but the amount by which particular banks' outstanding liabilities fell varied considerably. We interpret changes in the amount outstanding for each bank as a reflection of changes in the level of depositor and noteholder confidence in that institution.⁷³ For example, in the case of New York, contemporary accounts of the bank runs in May of 1837 suggest that their intensity varied across banks, and were particularly severe with the Dry Dock and Mechanics Banks, which were tainted by scandal. Our hypothesis is that deposit banks as a whole faced greater declines in demand for their liabilities than other banks.

It is important to note that this outcome is conditional on survival; it can only be observed if a bank continues to exist and report its balance sheet. Although failure rates for the banks in the dataset during the sample period are generally quite low (1.9 percent failed prior to June 1838), the failure rate for deposit banks was actually higher than for other banks. In addition, at least one deposit bank, the Dry Dock, closed its doors and ceased publication of its accounts, and yet was somehow not shut down by bank regulators, and recommenced operations and reports in 1842.⁷⁴ Comparisons between the two groups may therefore understate the difference in the extent to which they were affected by the Panic.

⁷³ Wallis (2001: 31) uses aggregate balance sheet items in his analysis of the role state debt played in of the Panic of 1839. He interprets the level of deposits as a measure of confidence in banks.

⁷⁴ An investigation by the New York Bank Commissioner into the Dry Dock concluded that “frauds were practiced upon the bank,” but that the officers were not aware of it (New York *Assembly Documents* 1838 Volume 6 p. 296-367).

The suspension of convertibility of bank liabilities into specie complicates the interpretation of these data somewhat. Suspension halted the runs, and enabled banks to issue new liabilities that did not need to be convertible into specie.⁷⁵ However, even under suspension, the amount the bank was able to issue would still have been constrained by the level of demand, and also the expectation that the suspension would end. Another possible source of concern regarding this outcome is that the management of a bank could exercise discretion of the amount of their liabilities outstanding, and potentially reduce them in order to strengthen the bank's balance sheet. That is, some component of an observed decline in bank liabilities might reflect managerial conservatism, rather than a decline in confidence in the bank by noteholders and depositors. It is difficult to rule out this possibility, but it should be noted that even if declines in liabilities were undertaken for this reason, their effect on local monetary conditions would be similar.

Fortunately, the second outcome we study, the level of banknote discounts, is not subject to these concerns. Banknotes were non-interest-bearing debt claims that could be redeemed on demand for specie at the issuing bank. In general, the discount represented the cost of bringing the note back to the issuing bank for redemption, but an extensive literature has shown that it also revealed information about bank-specific risks.⁷⁶ Changes in the level of note discounts for a particular bank over time therefore reflect changes in expected default probabilities, and therefore provide a market-based measure of changes in banks' risks.⁷⁷ The average level of these note discounts over the 1835-39 period is presented in Figure 4. As one might expect, the time series exhibits a substantial spike following the May 1837 Panic and suspension, and then falls rapidly following the resumption of convertibility of bank liabilities into specie in May of 1838.

Our third outcome is bank failures. This was a rare occurrence, which suggests that it is a coarse measure of bank risk. We define an indicator variable for bank failures equal to 1 if the bank failed in 1838 or before, so as to eliminate the effects of the Panic of 1839, which was at least partly distinct from the Panic of 1837. Although bank failures were unlikely to have played much of a role in the panic's impact, they may be a source of evidence to corroborate our claims regarding differential risk-taking among the deposit banks.

⁷⁵ On the operations of suspended banks during this era, see Hammond (1957: 478).

⁷⁶ See Gorton (1996, 1999), Ales et al (2008) and Jaremski (2011).

⁷⁷ It should be noted that banknote discounts likely behaved somewhat differently from the quantity of liabilities outstanding, so we should not expect their determinants to be exactly the same. Banknote discounts changes reflected only changes in the probability of default, which would not have had a one to one correspondence with changes in the quantity of outstanding liabilities.

Empirical Framework

To investigate whether a collapse of confidence in the pet banks contributed to the severity of the Panic, we employ a differences-in-differences design, using panel data for our two outcomes. The baseline model is as follows:

$$y_{it} = \alpha_i + \gamma_t + \delta \text{petbank}_i \times \text{postpanic}_t + \beta \mathbf{X}_{it} + \epsilon_{it} \quad (1)$$

where y_{it} represents either the level of log circulation plus deposits or the level of the banknote discount; α_i and γ_t represent individual bank and time fixed effects, \mathbf{X} is a vector additional controls, such as pre-panic levels of bank characteristics interacted with a post-panic indicator and/or regions interacted with a post-panic indicator. The post-panic indicator is equal to one for May 10 1837 and all subsequent dates. Standard errors will be clustered at the bank level. The banknote discounts are reported at uniform times for all banks, so our time fixed effects are for each month for which we have data.

However, the balance sheet data is reported at irregular intervals which vary substantially across banks. Figure 5 depicts the dates when individual bank statements are observed, by state. Each dot represents a bank statement; the red vertical line represents May 10 1837. In some states, there is regular reporting, with information provided once per year—or even more than once per year—for all banks. In other states, the dates are completely irregular. We address this issue by grouping all of the dates into quarters, and include fixed effects for each quarter in our dataset.

The main parameter of interest is δ , which reflects the difference-in-differences in each outcome for deposit banks, relative to the other banks. If the deposit banks faced differential pressure during the Panic, then this should be negative for bank liabilities, and positive for banknote discounts (which are positive amounts reflecting the difference between the market price of the notes and their face values). However, our framework can accommodate other possible determinants of changes in bank outcomes, including those predicted by Knodell (2006) and Rousseau (2002). For example, Knodell's analysis would predict that new banks, and banks in the cities in the South and West that formerly had branches of the Second Bank should have been more likely to expand their operations excessively. And this should have been particularly true of any banks created after the Bank War in those frontier cities where Second Bank branches had been located. To test whether these factors contributed to the severity of the Panic, we can estimate the following variation of (1):

$$y_{it} = \alpha_i + \gamma_t + \delta \text{petbank}_i \times \text{postpanic}_t + \theta_1 \text{newbank}_i \times \text{postpanic}_t + \theta_2 \text{westbranch}_i \times \text{postpanic}_t + \theta_3 \text{westbranch}_i \times \text{newbank}_i \times \text{postpanic}_t + \beta \mathbf{X}_{it} + \epsilon_{it} \quad (1a)$$

where newbank_i is an indicator for banks created after the Bank War and westbranch_i is an indicator for banks operating in a city in the West or Southwest that had held a branch of the Second Bank.

Knodell's reasoning would imply that we should expect all three of the theta parameters to be negative.

Rousseau (2002) presents more of a competing hypothesis. In his analysis, the pet banks should have been affected mainly through the interstate transfer payments they made in 1836. If we therefore estimate:

$$y_{it} = \alpha_i + \gamma_t + \delta \text{petbank}_i \times \text{postpanic}_t + \sum \lambda_j \text{transfers}_i \times \text{postpanic}_t + \beta X_{it} + \epsilon_{it} \quad (1b)$$

the inclusion of the transfer variables should produce substantial negative estimates for the λ coefficients, and reduce the estimated value of δ from (1). Rousseau emphasizes the 1836 interstate transfers, but we also include the intrastate transfers from 1836 and the 1837 transfers so that we can test the claims of Timberlake (1960; 1993) and Schreiber (1963) as well.

Finally, we analyze bank failure outcome in a purely cross-sectional framework. We therefore estimate specifications that are the cross-sectional analogues of (1), (1a) and (1b) with that outcome.

5. Results: Panel Data Estimation

Before proceeding with the estimation of equation (1) and its variants, which will focus on measuring the difference in average change in bank outcomes for the post-Panic period as a whole, it is helpful to examine the differences between the pet banks and the other banks over time. Figure 6 plots the time-varying differences between deposit banks and the other banks, as estimated from regressions with time and bank fixed effects.⁷⁸ As shown in Panel (a) of the figure, the pet banks' liabilities were growing more rapidly than those of other banks up to the time of the Panic, at which point the differences begin to decline. This suggests that the pet banks were expanding their operations even more than other banks, until the Panic struck, and the pattern was reversed. Panel (b) shows that the differences in banknote discounts were initially stable and negative (meaning that pet banks were perceived as safer than other banks) for most of the pre-Panic period, although the difference began to rise in late 1836 and early 1837. Then in May of 1837, the difference increased substantially and became positive, and rose as high as 1.5 percent in April 1838. Figure 4 shows that the average banknote discount overall in that month was about 2.5 percent, so the additional discount on the deposit banks' notes was equal to 60 percent of the overall mean. This is clear evidence that the Panic affected the pet banks differentially. It should also be noted that there are no apparent long-run trends evident in the figure; any estimated average differences for the post-Panic period are therefore unlikely to be the outcome of violations of the parallel trends assumption.

Table 3 presents results of regressions of equations (1), (1a) and (1b) for the log value of circulation plus deposits. Column (1) presents estimates from a specification with only bank and quarter

⁷⁸ That is, the figure plots values of δ_t from regressions of the form: $y_{it} = \alpha_i + \gamma_t + \sum \delta_t \text{petbank}_i \times \text{time}_t + \epsilon_{it}$.

fixed effects; column (2) adds interactions between log capital, location in a major city, and the 1836 reserve ratio with a post-Panic indicator. Both specifications produce a substantial, negative estimate for the pet banks, relative to other banks. The estimate reported in column (2) indicates that the outstanding liabilities of the deposit banks fell by an additional 18.5 percent in the post-Panic period.⁷⁹ Considering that the average change in outstanding liabilities for all banks in the post-Panic period was -20.1 percent, this is a substantial effect.⁸⁰

Column (3) presents the results for equation (1a)—the Second Bank variables. The new bank indicator has the hypothesized sign, but is imprecisely estimated. Consistent with Knodell's hypothesis, the estimated effect of a location in a city that had a Second Bank branch is very large and negative. However, it should be noted that the Second Bank branches were located in some major cotton ports and cities near considerable federal land sales, so these are cities where one may have expected the banking sector to face a significant contraction without any change in the Second Bank's role.⁸¹

The stronger test of the Knodell hypothesis is the interaction between western cities that had Second Bank branches, and the indicator for new banks. Interestingly, the estimated effect is actually positive, indicating that new banks in those cities did better than other banks. This implies that it was not the new entrants but the existing banks in those cities that suffered differentially following the Panic. This is inconsistent with Knodell's analysis.

Column (4) presents estimates of equation (1b), with the transfer draft variables included. Rousseau (2002) emphasizes the importance of the 1836 interstate transfers, but other authors have emphasized the importance of the 1837 transfers, so those, along with the intra-state transfers, are included as well.⁸² Consistent with Rousseau's analysis, the 1836 interstate transfers do have a significant negative effect, whereas the other transfer variables do not. A one-standard-deviation increase in this variable produces an effect about two-thirds the size of status as deposit bank itself.⁸³ But again, the deposit bank variable remains essentially unchanged. This suggests that the 1836 transfers aggravated the problem for the pet banks, but they were not the whole problem. It is worth noting that most of the other transfer draft variables show a positive impact, indicating less of a decline in outstanding liabilities. This may be consistent with a selection effect: if the Treasury tended to draw more heavily on stronger banks, their choices of the banks to draw on, rather than the drafts themselves, may be responsible for the

⁷⁹ $-18.53\% = 100 \times (e^{-0.205} - 1)$.

⁸⁰ The average difference is calculated from a regression with bank fixed effects.

⁸¹ Ideally, one would want to investigate this further by comparing similar cities—centers of cotton production and/or federal land sales—with and without Second Bank branches.

⁸² The results of equations with only the 1836 interstate transfers included are substantially the same.

⁸³ The effect of a one-SD change is $-12.36\% = 100 \times (e^{-0.243 \times 0.543} - 1)$, which is about 67 percent of the effect of status as a deposit bank (-18.5%).

estimated effects. The same logic would suggest that the estimated effects of the 1836 interstate transfers may understate the true negative effects, if the Treasury tended to draw more heavily on stronger banks.

Column (5) presents the results of a specification including all of the different covariates. Most of the estimates remain generally the same, with the exception that the 1836 interstate transfer coefficient becomes somewhat smaller.

Table 4 presents the results for regressions with the banknote discount as the dependent variable. Columns (1) and (2) present estimates for different versions of equation (1), and these imply a strong effect for the deposit banks. The estimate in column (2) implies that the deposit banks' note discounts rose by 0.414 percent relative to those of other banks, an indication of differentially elevated perceptions of risk. The average level of the banknote discount prior to the Panic was 1.38 percent, so this differential increase was equivalent to 30 percent of the initial level.

In the remaining columns, where versions of equation (1a) and (1b) are presented, the estimated effect for the deposit banks remains consistently large. However, many of the other parameter estimates are somewhat different from those reported in Table 3. Banknote discounts reflect default probabilities, which should be reflected in changes in the amount of outstanding liabilities of banks, but the correlation between these two outcomes may not have been that strong. Accordingly, one might imagine that the determinants of changes in banknote discounts may have been somewhat different from the determinants of changes in the amount of bank liabilities outstanding, and this is clearly reflected in the data. For example, whereas the estimates reported in Table 2 indicated that being a new bank and being located in a major city had little effect on changes in banks' outstanding liabilities, those variables had very large and significant effects on changes in banknote discounts. The estimates in column (3) imply that new banks banks located in major cities saw their note discounts rise by 50.3 percent less. The latter effect was likely produced by the efficiency of banknote markets in major cities, which likely had a disciplining effect on note issuance both before and after the Panic.⁸⁴

Column (3) presents results for equation (1a), with the Second Bank variables included. These results are quite different from those of Table 2. New banks saw their note discounts rise an additional 27 percent (an effect 68 percent as large as that of being a deposit bank). And whereas Table 2 reported a very large effect of locations in western cities that had been the locations of Second Bank branches on bank liabilities, here, the estimated effect of those locations is actually negative, indicating a smaller increase in banknote discounts. The sign of the western branch interaction with the new bank indicator is positive, consistent with Knodell's analysis. But both parameters are imprecisely estimated, which suggests that we should not ascribe too much importance to the magnitudes of the estimates.

⁸⁴ See, for example, the model in Gorton (1996).

Column (4) presents estimates for equation (1b), with the transfer draft variables included. Here, the point estimate for the 1836 interstate transfers is positive, indicating elevated risk of default. This is consistent with Rousseau's (2002) analysis. However, the parameter is quite imprecisely estimated, so there The point estimates for the other transfer variables are all negative, indicating a smaller increase in banknote discounts. These negative estimates may again be consistent with a selection effect, if the Treasury drew more heavily on the strongest banks.

Finally, Table 5 presents the results of regressions analyzing the determinants of bank failure. This occurred quite rarely, and many of the estimated effects, although large, are imprecisely estimated. But the results suggest a striking difference between the pet banks and other commercial banks. Conditional on their level of capital, their location, and other characteristics, the failure rates of deposit banks was more than 4 percentage points higher than those of other commercial banks. This is more than twice the average failure rate. The differential failure rate was unlikely to have had important system-wide effects, since it was so low, but it does provide at least suggestive evidence of differential risk-taking, consistent with the moral hazard argument presented above.

6. Macroeconomic Impacts of the Deposit Banks: Counterfactual Analysis

The preceding analysis has presented evidence that the deposit banks were affected differentially by the Panic: their outstanding liabilities declined, and their banknote discounts rose, to a substantially greater extent than those of other banks. A limitation of those results, however, is that they cannot address the overall importance of the contraction among the pet banks. Even if they suffered differentially, they were relatively few in number (83 out of about 603 commercial banks), so it is not clear whether they could have accounted for a substantial portion of the overall contraction in bank credit.

In order to address this question, we aggregate Weber's (2008) bank-level data to construct new national and regional estimates of total net liabilities of the commercial banking system.⁸⁵ Our new series improves upon that of Temin (1969), who utilizes less-detailed Treasury reports.⁸⁶ We then use the new

⁸⁵ Net liabilities are defined as Notes + Deposits + ("due to other banks" – ("due from other banks" + "notes of other banks")). This is consistent with Temin's definition.

⁸⁶ The process of aggregating the data from individual banks up to the national level was made complex by two interrelated problems: first, banks in different states reported balance sheet information at irregular times, sometimes more than once per year; and second, some banks did not report any information at all in particular years. To address the former, the bank data was grouped into year bins, and the latest report for each year was taken (including reports that were made up to two weeks in the following January.) Given that the year 1836 saw a significant contraction late in the year, for that year only, the maximum value was taken if there were multiple observations, so that the "peak" could be observed. And for 1837, only data observed after May was utilized, so that the effect of the Panic could be seen. To address the problem that data was missing for a large number of banks for particular years, a spline was fitted to the data for banks with missing data between other observations.

series to construct counterfactual estimates of the money supply, to analyze the specific contribution of the deposit banks to the growth of the money supply in the 1830s and the contraction in 1837.

Ideally, one would want to compare the observed level of the money supply to the one that would have prevailed if, contrary to fact, the Second Bank had been re-chartered and the pet bank system never created.⁸⁷ But to do so requires strong and potentially contradictory assumptions. Instead, we will construct a counterfactual estimate of the growth of the money supply under the assumption that the deposit banks' net liabilities grew at exactly the same rates as those of the other banks. Effectively, we accept that the Bank War occurred, and compare the world we observe with the pet banks to a counterfactual alternative in which no banks are designated as depositaries or given special status. This enables us to measure the effect of the differential growth and contraction of the deposit banks on the national money supply, and therefore, the effect of the deposit banks' particular status and behavior on the Panic and its aftermath. If the behavior of commercial banks not designated as depositaries can be taken as a reasonable indication of what the pet banks' behavior in a world in which there were no pet banks would have been, then our counterfactual estimates are valid.

Figure 7 first presents our new estimates of the money supply, both nationally and by region. In each panel of the figure, the black line presents the value for all commercial banks, and the blue line presents the value with the deposit banks excluded. We assess whether or not these data are reasonable by comparing them to Temin's in Figure 8, which also compares the reserve ratio constructed using the same methods with Temin's. The data are generally quite similar, although there are some notable differences. In particular, our estimates of the reserve ratio are smoother and generally show a gradual increase over time; this is even more consistent with Temin's central point that the reserve ratio did not fall than Temin's own data.⁸⁸

In Figure 7, the changing distance between the two lines illustrates the contribution of the deposit banks to the growth (and subsequent contraction) of the money supply around the Panic. As the figure makes clear, the deposit banks played an important role in the growth in bank liabilities in 1834-36, and in their contraction beginning in 1837, for the United States as a whole. In the upper left panel of the figure, the two lines grow more distant in the years leading up to the Panic, and then move closer together. The relative importance of the pet banks in different regions, however, varied somewhat—they were much more important in the Mid-Atlantic, Southeast and Southwest than they were in New England or the old Northwest.

⁸⁷ Using regional data, Knodell (2006) performs calculations closely related to this.

⁸⁸ Another important difference, however, is that our data do not show a large increase in 1834, corresponding to the effects of Biddle's contraction. Temin (1969: 59-68) presents a careful analysis of the causes and consequences of the contraction and increase in reserves. This is likely due to the fact that our data tend to reflect year-end values, whereas the effects of Biddle's contraction were felt earlier in 1834.

These comparisons are suggestive, but they do not constitute clear evidence that the pet banks contributed disproportionately to the crisis through excessive risk-taking. The pet banks included many large commercial banks, so their contribution to the money supply was necessarily substantial. The question is: how much did the pet banks' special status, reflected in behavior that was different from those of other banks, actually contribute to the expansion and contraction in the money supply? In order to address this question, we construct counterfactual measures of net liabilities, where we start in 1833, and assume that total net liabilities of the pet banks grows in each year at exactly the same rate as those of other banks.⁸⁹

Our counterfactual data (in blue) are compared to our estimates of the money supply (in black) in Figure 9. In general the counterfactual values show less growth between 1833 and 1836 and less of a decline in 1837. Comparing the two national series gives a sense of the quantitative significance of the pet banks' behavior. Our estimated value for total net liabilities for all commercial banks declines by \$85.45 million between 1836 and 1837. Our counterfactual value declines by only \$59.55 million. This implies that the differential behavior of the pet banks was responsible for \$25.9 million, or 30.3 percent, of the overall decline. Given the vulnerabilities of the financial system related to cotton markets and public land sales, it seems quite likely that a significant economic downturn would have happened in the absence of the pet banking system; it would, however, have been significantly less severe.⁹⁰

Finally, one other outcome of the counterfactual calculation is worth noting. For the nation as a whole, and particularly for the Mid-Atlantic region, the counterfactual values of the money supply decline to a greater extent in 1839-40 than the actual money supply. This reflects the far-reaching impact of the suspension of the Bank of the United States of Pennsylvania, the state-chartered successor to the Second Bank.

7. Conclusion

Andrew Jackson's Bank War was politically momentous, contributing to the development of American political parties and strengthening the relative power of the presidency among the institutions of American government (McCormick, 1966; Remini, 1967). It was also a significant institutional reform, closing down the national bank in response to concerns regarding its exclusive legal privileges

⁸⁹ Let m_{pt} represent net liabilities of the pet banks in year t , and let m_{nt} represent net liabilities of the non-pet banks, so that the true value of total net liabilities is $M_t = m_{pt} + m_{nt}$. To construct the counterfactual for year $t+1$, we apply the growth rate of m_{nt} to it m_{pt} : $\hat{m}_{pt+1} = m_{pt} \times \left(\frac{m_{nt+1}}{m_{nt}}\right)$. The counterfactual value of the money supply is then $\hat{M}_{t+1} = \hat{m}_{pt+1} + m_{nt+1}$.

⁹⁰ It should be noted that this counterfactual does not account for any role that a re-chartered Second Bank may have played in curtailing bank credit growth. Knodell (2006) presents an analysis of this issue.

and potential to corrupt American democracy. But the lack of available alternatives led to the creation of a new system that rivaled the Second Bank in its potential for corruption: the pet banks. The contradiction between Jacksonian antimonopoly rhetoric and pet banking practice likely contributed to the inconsistent nature of the Treasury's stance toward those institutions, and ultimately to their problems during the crisis.

This paper has used comprehensive bank-level data to analyze the role of the pet banks in the Panic of 1837. The results indicate that in the two years following the Panic, the pet banks' outstanding liabilities (excluding the federal deposits) declined nearly twice as much as other banks', and that their banknote discounts rose nearly twice as much. Our counterfactual estimates of the money supply indicate that if the pet banks had behaved in the same way as other commercial banks, the money stock would have been about 16 percent lower in 1836, and would have declined by 30.3 percent less in 1837.

These results imply that Temin's (1969) exoneration of Jackson's policies was too broad. Temin correctly pointed to failures of economic reasoning among Jackson's critics, and conclusively refuted their claim that the Bank War led to significant increases in the issuance of banknotes relative to the amount of reserves held in the banking system. Yet even if the bank war did not have that effect, it may have intensified the boom-and-bust cycle of the panic in other ways. The network of politically allied pet banks created by the Treasury to replace the Second Bank likely engaged in excessive risk taking in response to the exclusive status and abundant resources conferred upon them. Financial crises often follow periods of rapid credit growth—they tend to be “credit booms gone wrong” (Schularik and Taylor, 2012). The 1830s were no different, with the pet banks helping fuel the credit boom and taking on particularly risky collateral. As a period of stringency emerged, due in part to changes in the lending policy of the Bank of England, the confidence of depositors, noteholders, and stockholders in the deposit banks was shaken. Although it had many causes, the impact of the Panic of 1837 was magnified significantly by the collapse the pet banking system.

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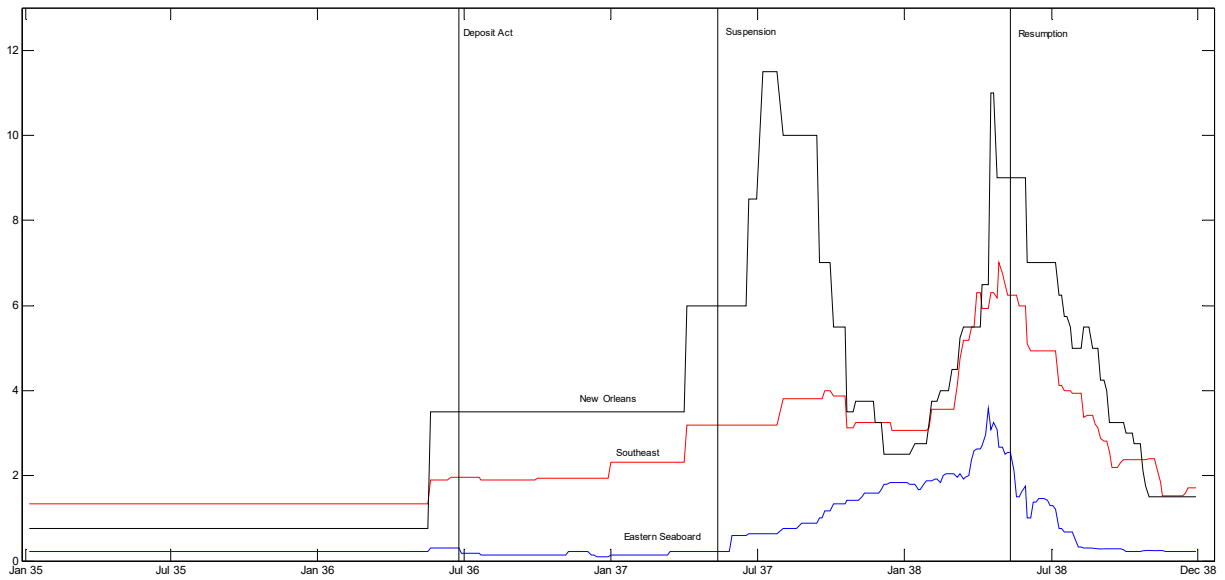


Figure 1: Domestic Exchange Rates, 1835-38

This figure presents quoted discounts in New York for funds in New Orleans (in black), cities of the Southeast (in red), and major cities of the Eastern Seaboard (in blue). These data were collected from semi-weekly issues of the *New-York Price Current*. The numbers plotted are discounts in New York funds; a 4 percent discount on exchange in New Orleans would mean that \$100 in that city's money could be had for \$96 in New York.

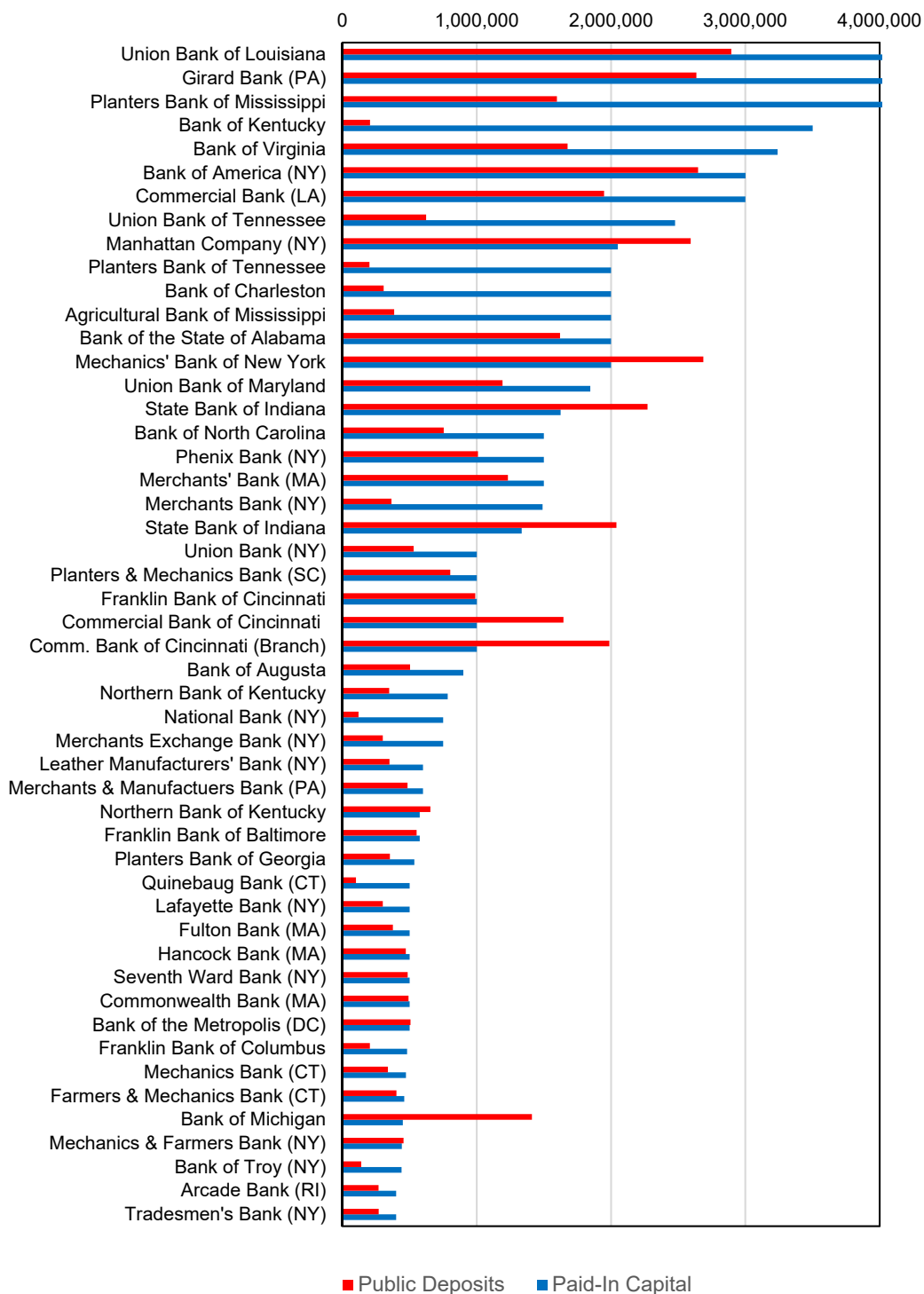


Figure 2: Pet Bank Capital and Federal Deposit Holdings, 1836

This figure presents the paid-in capital and public deposits of the 50 largest deposit banks in November 1836. Another 30 deposit banks held funds of the federal government, and are not shown here simply to keep the figure legible.

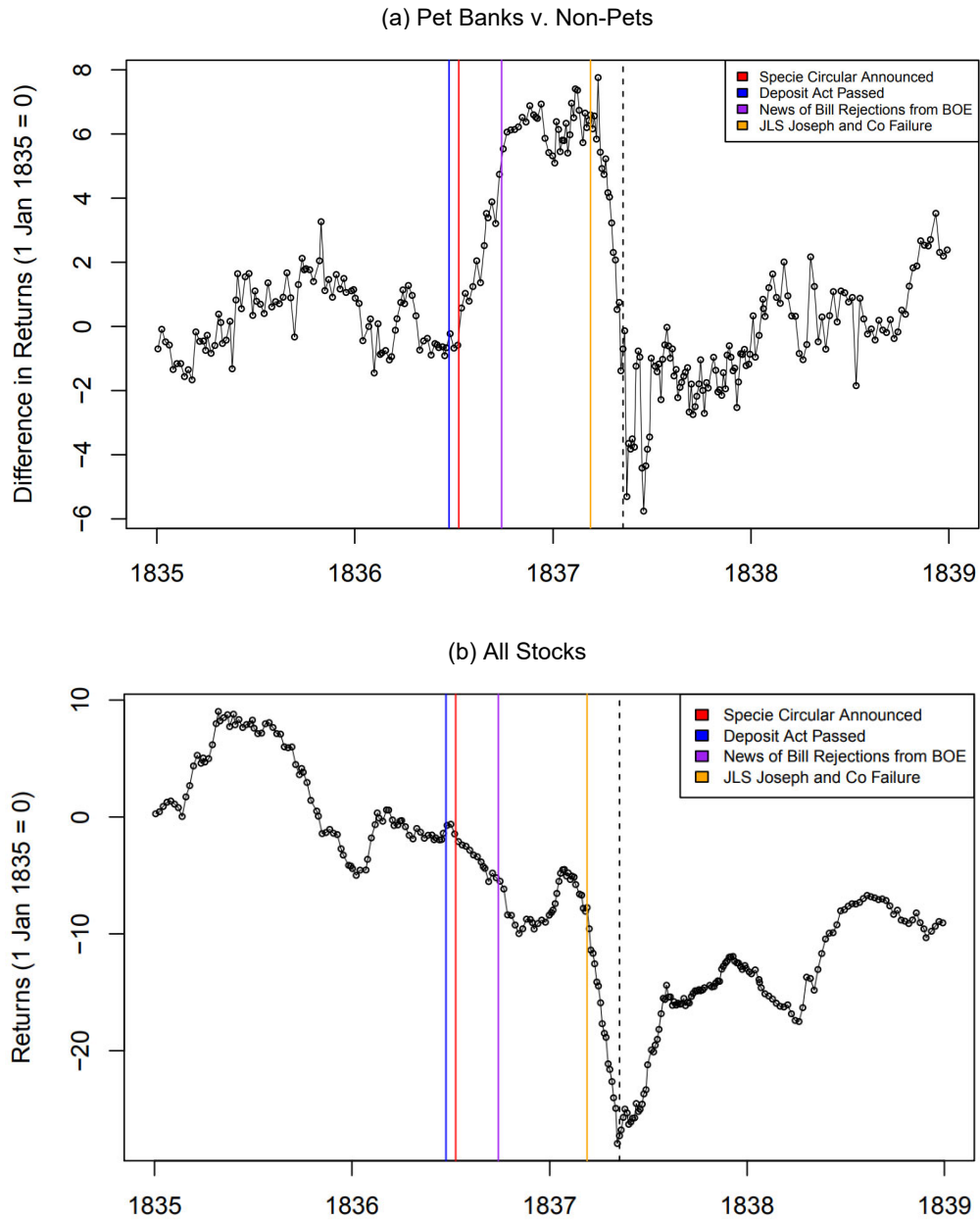


Figure 3: Cumulative Returns, 1835-39, Deposit vs. Non-Deposit Banks, and Overall
 Panel (a) in the figure presents the equal-weighted average difference in returns for 11 banks that were ever designated as pet banks vs. 13 other banks, from 1835-39. The blue vertical line denotes the date when the Deposit Act passed, which resulted in the designation of new deposit banks. Prior to the Act, 3 of the 11 banks in the 'treated' group were deposit banks; following the Deposit Act, all 11 banks became deposit banks. Changes in the difference between the two groups following the Deposit Act therefore reflect changes in the status of the treated banks. Panel (b) presents equal-weighted cumulative returns for the 59 most liquid stocks on the NYSE.



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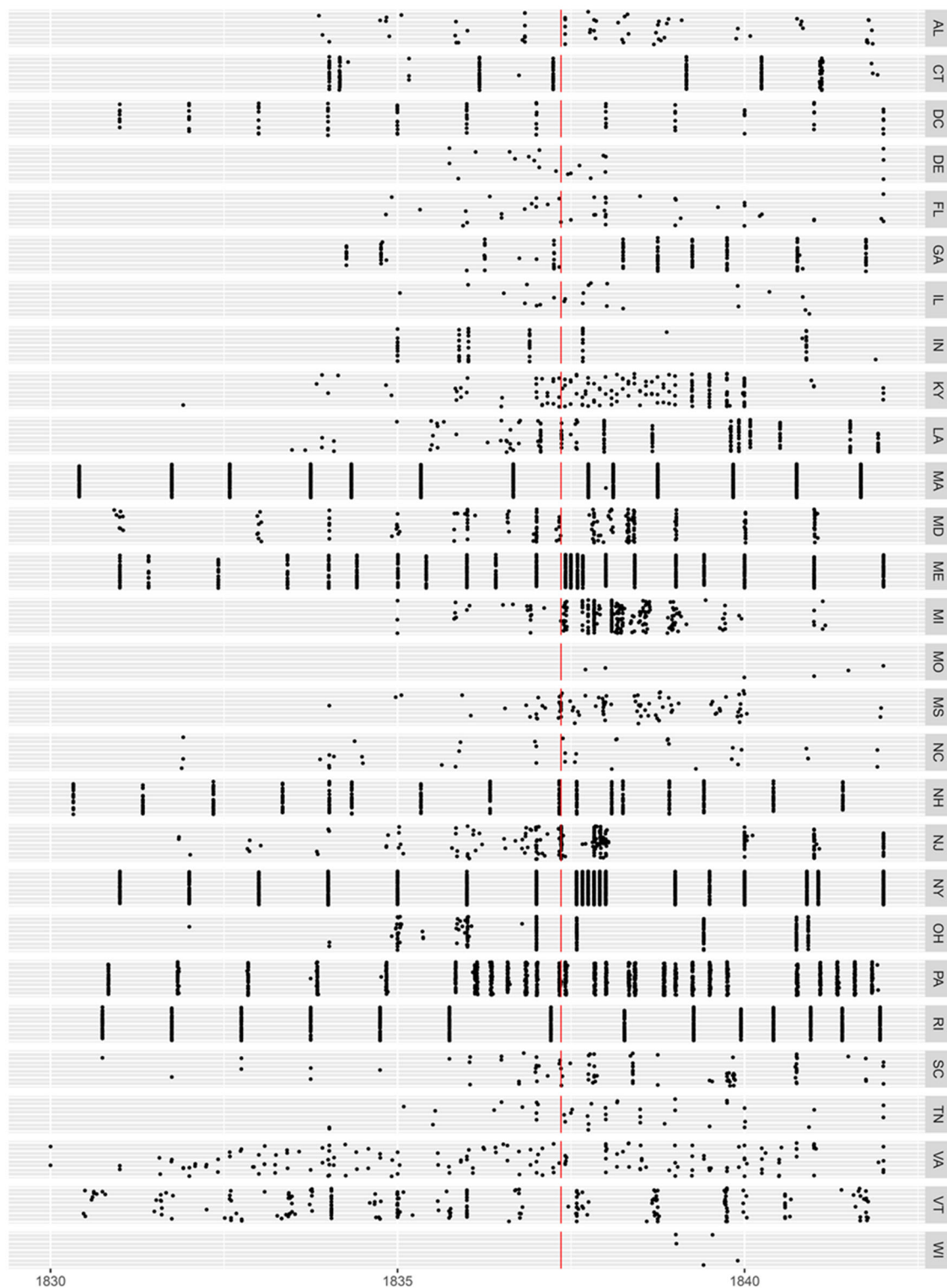


Figure 5: Timing of Reports of Individual Banks, by State

Row headings in the figure indicate states. Each dot represents the report of a bank. Dates are labeled at the bottom of the figure; the red vertical line denotes May 10 1837. This figure illustrates the variation across and within states in the timing and frequency of individual bank reports.

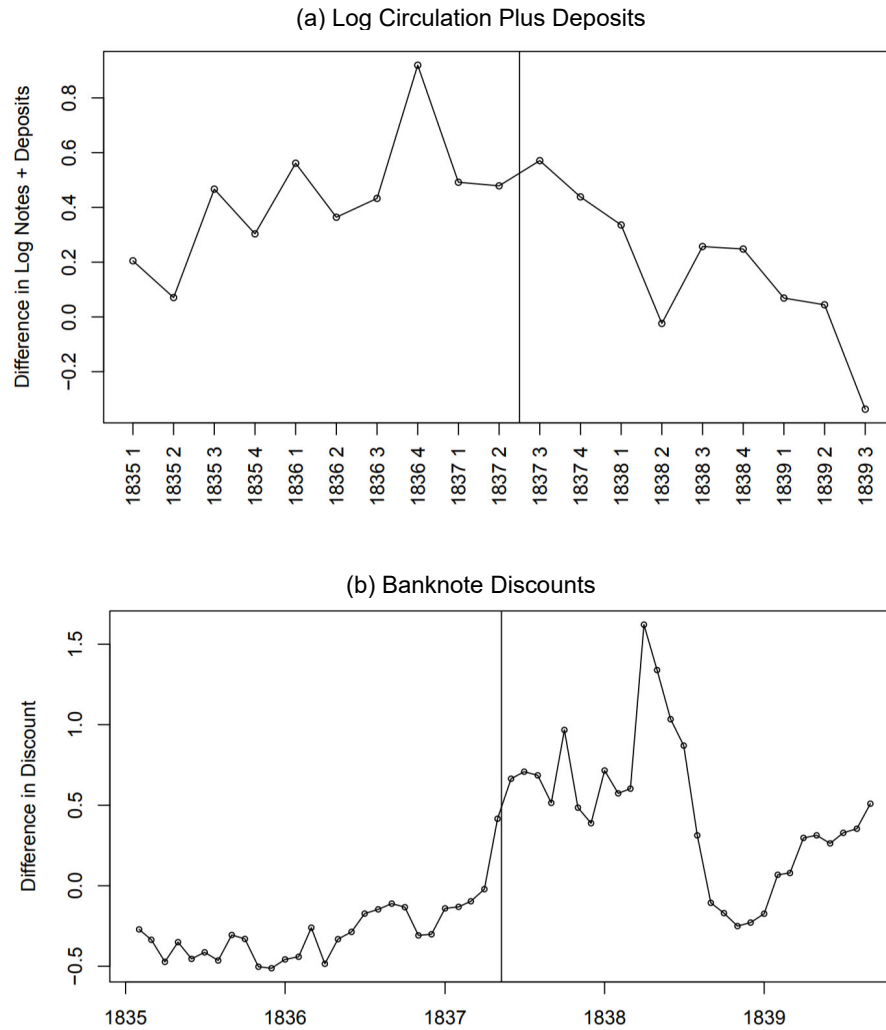


Figure 6: Estimated Differences, Pet Banks v. Other Banks, 1835-1839

The figure presents differences between the pet banks and other banks over time, as estimated from regressions with bank fixed effects and time fixed effects. Panel (a) presents quarterly differences in the average values of $\log(\text{circulation} + \text{deposits})$, and Panel (b) presents monthly differences in the average values of banknote discounts. The vertical line indicates the beginning of the Panic, and corresponds to the quarter or month closest to May 10 1837.

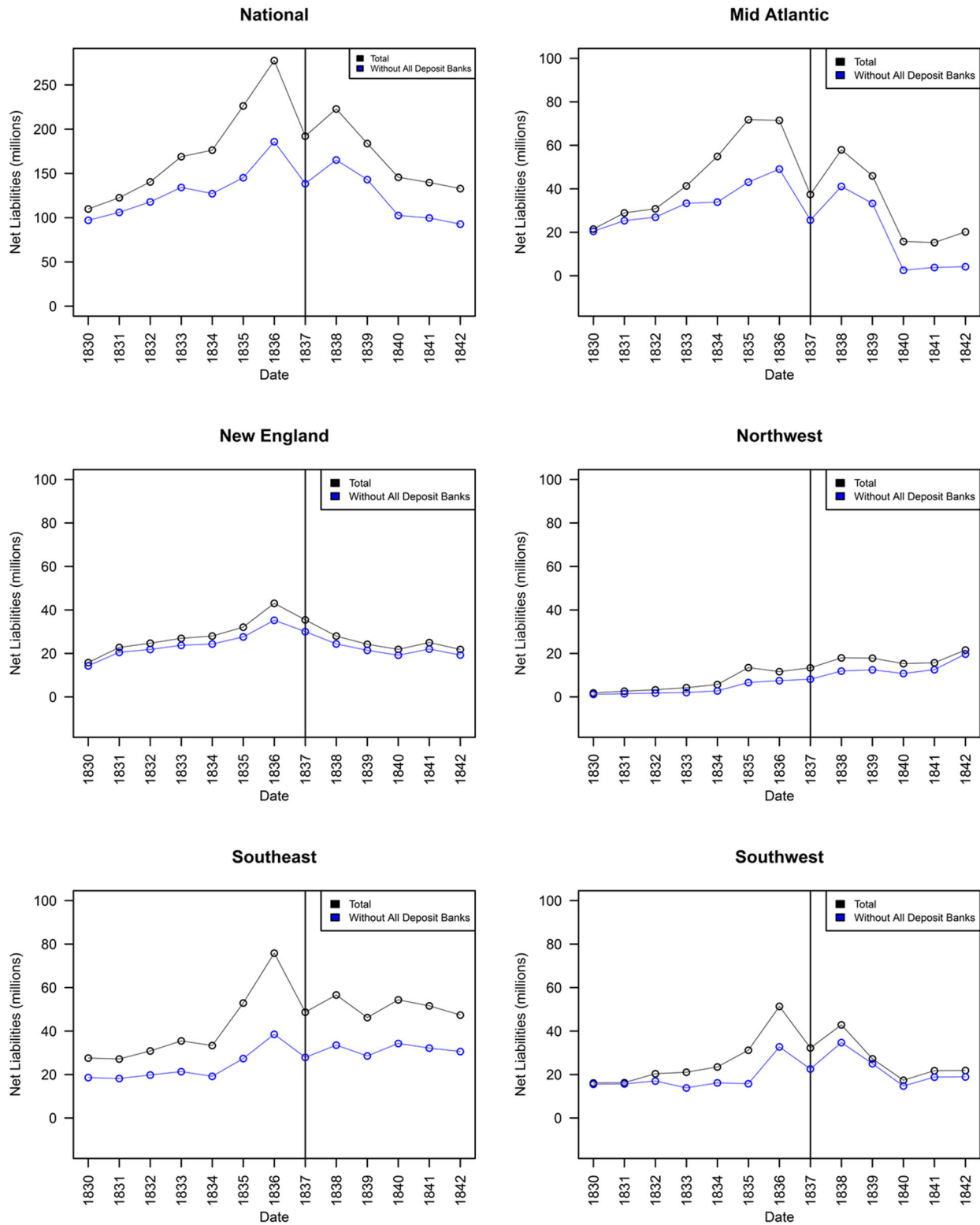


Figure 7: Total Net Liabilities, All U.S. and by Region, 1830-42

The black lines represent total net liabilities; the blue lines are for all banks except the deposit banks. Source: Authors' calculations from Weber's (2008) dataset of commercial banks.

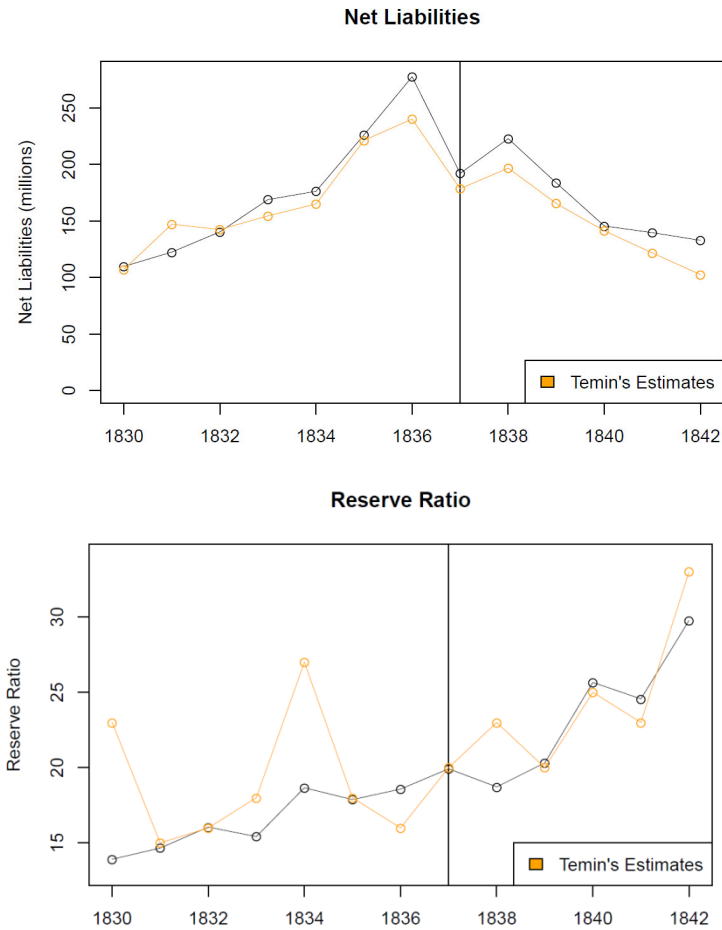


Figure 8: Net Liabilities and Reserve Ratio, all U.S., Comparisons with Temin (1969)
 The black lines present our estimates of net liabilities and the reserve ratio for all commercial banks. The yellow lines present Temin's estimates.

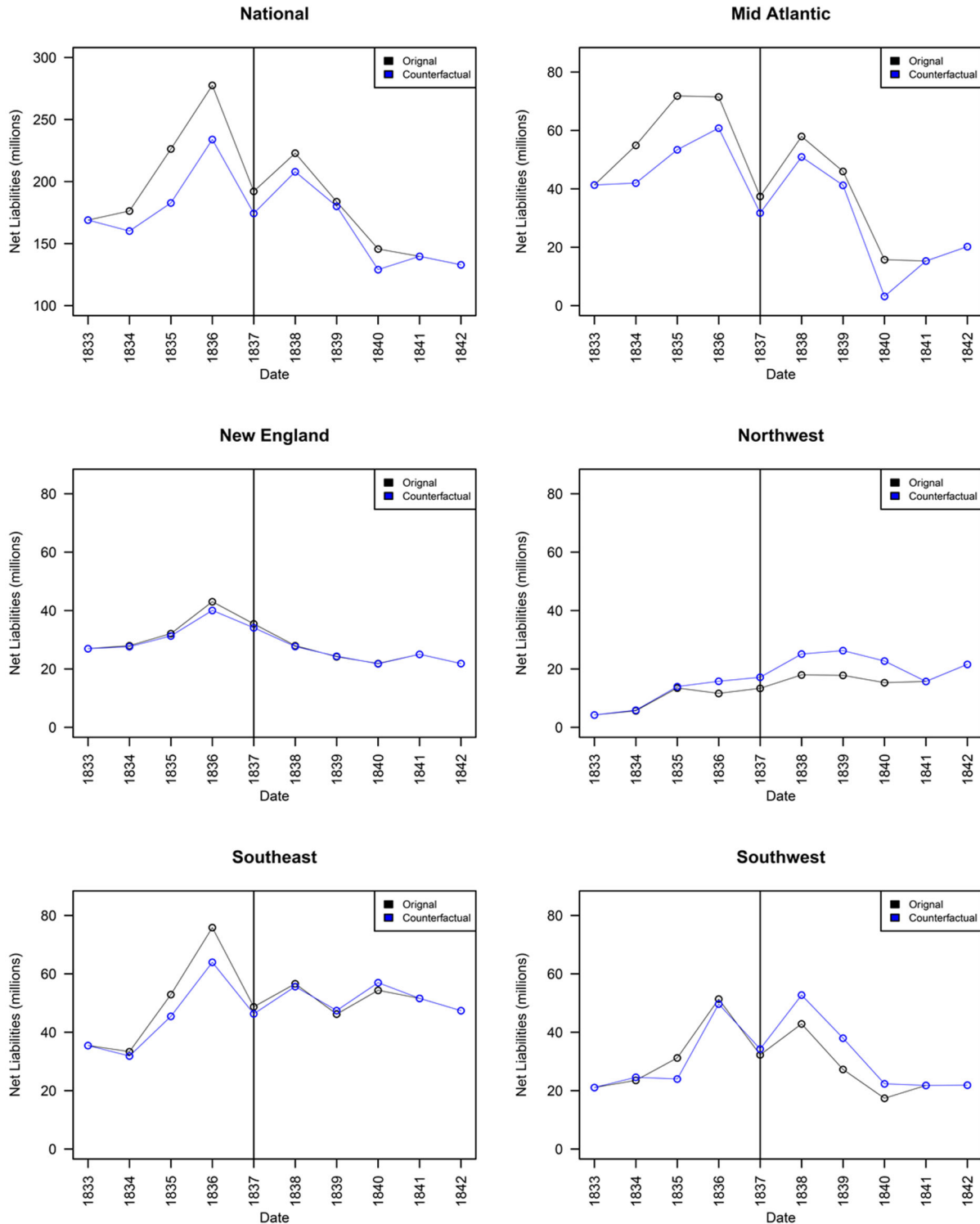


Figure 9: Total Net Liabilities, Actual vs. Counterfactual

The black lines represent total net liabilities; the blue lines present counterfactual estimates produced by assuming the pet banks grew at the same rate as all other banks.

**Table 1:
Summary Statistics**

	Obs	Banks	Mean	SD	Min	Max
Banknote discount (%)	28,958	551	1.597	2.448	0	30
Log (Circulation + Deposits)	4,235	495	12.177	1.181	7.342	15.803
Bank failed	637	637	0.019	0.136	0	1
<i>Bank Characteristics</i>						
Age	4,235	495	12.025	10.999	0.521	55.156
Deposit Bank	4,235	495	0.149	--	0	1
Location in major city	4,235	495	0.274	--	0	1
Loc in western city w/ Second Bank branch	4,235	495	0.061	--	0	1
New bank (created after 1832)	4,235	495	0.394	--	0	1
Region: Mid-Atlantic	4,235	495	0.339	--	0	1
Region: New England	4,235	495	0.416	--	0	1
Region: Old Northwest	4,235	495	0.086	--	0	1
Region: Southeast	4,235	495	0.113	--	0	1
Region: Old Southwest	4,235	495	0.045	--	0	1
Log(Capital)	4,235	495	12.397	1.082	10.228	15.8024
<i>Deposit Act Variables</i>						
Interstate transfers, 1836 (% of capital)	4,235	64	0.642	0.543	0	1.826
Intrastate transfers, 1836 (% of capital)	4,235	64	0.389	0.489	0	1.606
Interstate transfers, 1837 (% of capital)	4,235	64	0.032	0.057	0	0.178
Intrastate transfers, 1837 (% of capital)	4,235	64	0.269	0.16	0	0.647

Table 2:
Characteristics of Deposit Banks vs. Banks Not Chosen

	Deposit Banks Chosen in 1833 (1833 Characteristics)			Deposit Banks Chosen in 1836 (1836 Characteristics)		
	Dep. Banks (1)	Others (2)	Diff. (3)	Dep. Banks (4)	Others (5)	Diff. (6)
Age	16.690 (13.289)	10.554 (10.857)	6.136 (4.713)	13.265 (12.722)	11.765 (10.748)	1.760 (2.071)
Located in Major City	1.000 (0)	0.287 (0.453)	0.713** (0.027)	0.463 (0.505)	0.229 (0.421)	0.245** (0.082)
Log(Total Assets)	14.800 (0.430)	12.889 (0.987)	1.912** (0.173)	13.837 (1.183)	13.030 (0.983)	0.820** (0.204)
Log(Circulation + Deposits)	13.449 (0.405)	11.940 (0.946)	1.509** (0.162)	12.825 (1.209)	12.156 (0.925)	0.721** (0.193)
Reserve Ratio	0.320 (0.344)	0.161 (0.202)	0.159 (0.121)	0.150 (0.087)	0.124 (0.133)	0.026+ (0.015)
Banknote Discount	0.286 (0.488)	1.182 (1.490)	-0.897** (0.187)	1.033 (0.839)	1.230 (2.115)	-0.197 (0.200)
Dem. Share of Charting Legislature	0.632 (0.314)	0.574 (0.264)	0.058 (0.127)	0.610 (0.248)	0.583 (0.274)	0.027 (0.046)

This table presents comparisons of mean characteristics between the banks chosen as deposit banks and those that were not, in 1833 and in 1836. Standard errors in parentheses. The standard errors in columns (3) and (6) are estimated from regressions with robust standard errors. In columns (1) and (2), the characteristics are taken from 1833 financial statements of banks, and the banknote discount is from December 1, 1832. In columns (4) and (5) the characteristics are taken from 1836 financial statements, and the banknote discount is from December 1, 1835. The bottom row presents the seats held by the Democratic Party or by its predecessors (such as the Democratic-Republican Party) as a fraction of the total seats held by that party and parties known to oppose it, such as the Whigs, National Republicans, or Federalists, where available, as reported in Dubin (2007).

Table 3:
Regressions: Log(Circulation + Deposits)

	(1)	(2)	(3)	(4)	(5)
Post May 1837 x					
Deposit bank	-0.174+ (0.091)	-0.205* (0.090)	-0.189* (0.094)	-0.266** (0.086)	-0.267** (0.094)
<i>Bank characteristics</i>					
Located in major city		0.058 (0.081)	0.071 (0.078)	0.058 (0.081)	0.071 (0.077)
Log(1836 capital)		0.022 (0.024)	0.022 (0.024)	0.025 (0.024)	0.024 (0.025)
Reserve ratio, 1836		0.020* (0.008)	0.021* (0.008)	0.021** (0.007)	0.022** (0.007)
<i>Second Bank variables</i>					
Western city that had Second Bank branch			-0.809** (0.156)		-0.824** (0.162)
New bank			0.616** (0.204)		0.610** (0.206)
Western Second Bank branch x new bank			-0.082 (0.071)		-0.088 (0.071)
<i>Deposit Act variables</i>					
Net transfers, 1836 (% of capital)				-0.134* (0.063)	-0.144* (0.069)
Transfers, 1837 (% of capital)				0.011 (0.208)	0.058 (0.231)
Constant	12.420** (0.249)	12.394** (0.244)	12.407** (0.241)	12.391** (0.239)	12.404** (0.236)
Observations	4,235	4,235	4,235	4,235	4,235
R-squared	0.907	0.907	0.909	0.908	0.909
Bank FE	YES	YES	YES	YES	YES
Quarter FE	YES	YES	YES	YES	YES
Region x Post-1837 FE	YES	YES	YES	YES	YES

This table presents estimates of equations (1), (1a) and (1b), for the period 1835-39. Bank fixed effects and quarter fixed effects (that is, one for each of the quarters in the sample) are included in each specification. Standard errors clustered by firm are presented in parentheses. **, * and + denote significance at 1 percent, 5 percent and 10 percent, respectively.

Table 4:
Regressions: Banknote Discounts

	(1)	(2)	(3)	(4)	(5)
Post May 1837 x					
Deposit bank	0.347*	0.414*	0.397*	0.805*	0.777*
	(0.158)	(0.167)	(0.166)	(0.319)	(0.317)
<i>Bank characteristics</i>					
Located in major city		-0.507**	-0.470**	-0.484**	-0.448**
		(0.156)	(0.167)	(0.151)	(0.162)
Log(1836 capital)		0.129	0.151+	0.106	0.128
		(0.090)	(0.092)	(0.090)	(0.091)
Reserve ratio, 1836		0.005	0.002	0.006	0.002
		(0.004)	(0.005)	(0.005)	(0.005)
<i>Second Bank variables</i>					
Western city that had Second Bank branch			-0.723		-0.708
			(0.676)		(0.654)
New bank			0.269+		0.268+
			(0.143)		(0.141)
Western Second Bank branch x new bank			0.464		0.462
			(0.734)		(0.710)
<i>Deposit Act variables</i>					
Net transfers, 1836 (% of capital)				0.361+	0.362+
				(0.202)	(0.207)
Transfers, 1837 (% of capital)				-0.802	-0.767
				(0.654)	(0.657)
Constant	5.912**	4.253**	4.214**	4.401**	4.356**
	(0.283)	(1.186)	(1.382)	(1.193)	(1.389)
Observations	28,958	27,936	27,936	27,936	27,936
R-squared	0.693	0.688	0.689	0.689	0.690
Bank FE	YES	YES	YES	YES	YES
Month FE	YES	YES	YES	YES	YES
Region x Post May 1837 FE	YES	YES	YES	YES	YES

This table presents estimates of equations (1), (1a) and (1b), for the period 1835-39. Bank fixed effects and quarter fixed effects (that is, one for each of the quarters in the sample) are included in each specification. Standard errors clustered by firm are presented in parentheses. **, * and + denote significance at 1 percent, 5 percent and 10 percent, respectively.

Table 5:
Regressions: Bank Failures

	(1)	(2)	(3)	(4)	(5)
Deposit bank	0.033 (0.027)	0.047+ (0.025)	0.047+ (0.025)	0.043 (0.029)	0.043 (0.029)
<i>Bank characteristics</i>					
Located in major city		0.024 (0.015)	0.025+ (0.015)	0.026+ (0.015)	0.027+ (0.016)
Log(1836 capital)		-0.019* (0.010)	-0.017+ (0.010)	-0.021* (0.010)	-0.020* (0.010)
Reserve ratio, 1836		-0.059+ (0.035)	-0.062+ (0.036)	-0.067+ (0.037)	-0.070+ (0.038)
Capital/Asset ratio, 1836		0.015 (0.064)	0.010 (0.066)	0.022 (0.062)	0.017 (0.064)
<i>Second Bank variables</i>					
Western city that had Second Bank branch			-0.005 (0.016)		-0.006 (0.018)
New bank			0.014 (0.013)		0.015 (0.013)
Western Second Bank branch x new bank			-0.025 (0.016)		-0.021 (0.019)
<i>Deposit Act variables</i>					
Net transfers, 1836 (% of capital)				0.034 (0.030)	0.035 (0.031)
Transfers, 1837 (% of capital)				0.061 (0.067)	0.061 (0.069)
Constant	0.015** (0.005)	0.241* (0.109)	0.217* (0.109)	0.267* (0.113)	0.243* (0.114)
Observations	637	637	637	637	637
R-squared	0.010	0.022	0.025	0.032	0.035
Region FE	YES	YES	YES	YES	YES