



Stopping contagion with bailouts: Micro-evidence from Pennsylvania bank networks during the panic of 1884[☆]



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ABSTRACT

Using a newly constructed historical dataset on the Pennsylvania state banking system, detailing the amounts of “due-froms” on a debtor bank-by-debtor bank basis, we investigate the effects of the Panic of 1884 and subsequent private sector-orchestrated bailout of systemically important banks (SIBs) on the broader banking sector. We find evidence that Pennsylvania banks with larger direct interbank exposures to New York City changed the composition of their asset holdings, shifting from loans to more liquid assets and reducing their New York City correspondent deposits in the near-term. Over the long-term though, only the lower correspondent deposits effect persisted. Our findings show that the banking turmoil in New York City impacted more exposed interior banks, but that bailouts of SIBs by the New York Clearing House likely short-circuited a full-scale banking panic.

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1. Introduction

The global financial crisis highlighted the issues of regulatory forbearance and the public bailout of systemically important banks (SIBs). Public interventions around the world were based on the notion that the failure of SIBs, like Citigroup in the U.S. and the Royal Bank of Scotland in the U.K., would precipitate runs and failures elsewhere in the financial sector, freeze the flow of credit and payments to the real economy, and lead to a depression (Laeven et al., 2014). In the wake of the crisis, many of these SIBs have actually grown larger, due to consolidation within the industry, po-

tentially increasing the need for collective support for these institutions in times of stress (Lambert et al., 2014).¹ Yet, despite the expectation of interventions in future crises, there has been little empirical study on how the public bailout of SIBs affects the rest of the financial sector.

An empirical study of the effects of bailouts of SIBs on other banks confronts a number of practical difficulties. First, it is often hard to identify *ex ante* which banks are systemically important. For example, the Financial Stability Board, which monitors global financial stability and proposes international standards, only began constructing lists of global systemically important banks (G-SIBs) in 2011 (FSB, 2011 and 2014). When the U.S. government decided to provide asset guarantees and additional capital to Citigroup in November 2008, its decision was based “as much on gut instinct and fear of the unknown as on objective criteria,” accord-

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¹ At the same time, there have been a number of legal and regulatory changes passed around the world to limit the contingent taxpayer liability for such bailouts. For example, the European Union now requires “bail-in” of a minimum of 8% of other liabilities (that is, conversion of debt or debt-like instruments to equity) before a public bailout of a bank may be undertaken (see the Bank Recovery and Resolution Directive, adopted April 2014).

ing to a government investigation (SIGTARP, 2011). While size is the most well-known indicator of systemic importance, other factors, such as interconnectedness, the lack of readily available substitutes or infrastructure for their services, their global activity, and their complexity, may also make institutions systemically important (FSB, 2013).

Second, it is tough to disentangle losses and disruptions due to counterparty exposure from those due to other factors. The highly complex modern financial environment, characterized by myriad instruments held by a number of parties, makes the determination of counterparty exposures across financial institutions difficult and complicates the identification of risk channels. Furthermore, exposures may be direct or indirect, such that a bank may not recognize that they have strong second or third order connections to a particular SIB.

In this paper, we exploit banking disturbances and the subsequent bailouts of key banks by the membership of the New York Clearing House during the Panic of 1884 to assess the effects of the bailout of SIBs on other banks.² Using new data on the correspondent network of state-chartered banks in Pennsylvania at the time, we calculate the degree of counterparty exposure of each Pennsylvania bank to New York City banks and see how differential degrees of interbank exposure to New York City affected the dynamics of deposit and lending growth before and after the Panic of 1884. If efforts by the New York Clearing House to rescue troubled banks failed and distress had propagated, cash payments and deposit access would have been interrupted more for banks with higher exposures to New York City, negatively impacting their balance sheets and depressing their ability to engage in lending. Focusing on this differential effect allows us to be more confident that it is the Panic of 1884 underlying any estimated effect rather than some other common macroeconomic driver.

Our analytical results show that more exposed interior banks in Pennsylvania changed their behavior during the panic even though the clearinghouse's bank bailouts appear to have succeeded in preventing a large-scale bank panic outside New York City. After controlling for bank fundamentals, we find that Pennsylvania state banks with higher level of exposures to New York City had statistically significant falls in equity capital growth and rises in nonperforming assets' (captured by a Texas ratio analogue) in the quarters after the panic. There is also some evidence of a shift towards more liquid assets and a greater dependence on deposits as a financing source on impact. Over the longer term though (at the annual frequency), these differences vanish; the only robust differences are declines in the use of correspondent deposits, particularly in New York City, by more highly exposed banks.

While earlier findings of bankers, economists, and policymakers (among others, Sprague, 1910; Wicker, 2006; Gorton, 2012) argue that the Panic of 1884 was an 'incipient' panic that was contained in New York City and did not spill over to other regions, our results indicate that more exposed banks elsewhere did respond to the events in New York. However, these balance sheet responses were largely short-lived. Apart from a decline in correspondent deposits, there is no strong evidence that they lasted beyond a year.

Our paper makes three key contributions. Firstly, to the best of our knowledge, this paper provides the first microeconomic evidence on the effects of the bailouts of New York City banks on interior banks during the Panic of 1884. Existing studies have analyzed the effects of the panic and the subsequent bailouts of New York banks on New York banks rather than interior banks using aggregated measures of bank balance sheets and clearinghouse loan certificates (Sprague, 1910; Gorton, 2012; Gorton and

Tallman, 2015). Wicker (2006) studied the effect of the panic on both New York and interior banks, but also only used aggregate measures and qualitative information.

Secondly, we show how financial shocks may be transmitted through networks, a key area of theoretical research (Allen and Gale, 2000; Leitner, 2005; Gai et al., 2011; Elliot et al., 2014; Acemoglu et al., 2015). While there is a growing interest in how financial networks play a role in financial contagion, empirical work on this topic has been sparse due to the difficulties in acquiring data that identifies linkages across financial institutions. Recently, some papers have focused on the National Banking Era, constructing interbank networks and examining the effect of network structure on contagion. Paddrik et al., (2015) construct bank networks before and after the National Banking Acts of 1863–1864 and study how the newly established reserve requirements changed the structure of bank networks and affected the stability of the banking system. Relatedly, Calomiris and Carlson (forthcoming) construct bank networks for national banks and study their effect on interior banks during the panic of 1893. Others have looked at the transmission of financial shocks through networks today. For instance, Puri et al., (2011) construct a dataset on the German banking system and examine the broader effects of the US financial crisis on global lending to retail customers. Along the same lines, Iyer and Peydro (2011) use a dataset on the Indian banking sector and show how a failure of a bank transmits to the rest of the financial system. Using a similar empirical strategy, we show that the bailout of systemically important banks likely helped to prevent a shock to the rest of the financial system.

Thirdly, we show empirically that collective or common support mechanisms can stabilize the financial sector during a financial crisis. Several theoretical models show that public interventions create financial fragility by inducing moral hazard and risk taking behavior (Acharya and Yorulmazer, 2007; Diamond and Rajan, 2012; Farhi and Tirole, 2012; Keister, 2015), but contribute to financial stability by preventing contagion (Freixas et al., 2000; Allen and Gale, 2000; Diamond and Rajan, 2005; Dell' et al., 2013). Empirically, many papers provide evidence that public or collective assistance encourages bank risk taking (Gropp, et al., 2014; Duchin and Sosyura, 2014), but no paper as far as we know has examined whether public or collective interventions have prevented contagion during financial crises.

Pennsylvania in the 1880s presents an ideal laboratory for several reasons. First, the structure of the U.S. banking industry during the National Banking Era makes it easy for us to identify systemically important banks. During this period, New York City banks functioned as the ultimate depository institutions where interior banks sent their interbank deposits to satisfy their reserve requirements. Due to the high degree of concentration of bank reserves in New York City, disturbances in New York City banks created disruptions for interior banks. Second, the new dataset on state-chartered Pennsylvania banks that lists the amount of "due-froms" on a debtor bank-by-debtor bank basis enables us to determine the location of the bank's correspondent and the degree of exposure to that correspondent. Lastly, due to the geographical proximity to New York City, Pennsylvania banks generally made deposits directly in correspondent banks in New York City instead of relying on correspondent banks in reserve cities. This alleviates a potential identification problem arising from indirect exposures to New York City via correspondent banks in reserve cities that made deposits in New York City. By aggregating the amount of interbank deposits by the city or town level, we calculate the level of each Pennsylvania state bank's exposures to New York City banks.

The paper proceeds as follows: Section 2 presents some historical background on the Panic of 1884; Section 3 provides data and summary statistics on the sample of Pennsylvania state banks;

² Of the various government support programs introduced during the recent financial crisis, the actions of the NYCH in 1884 are most analogous to the FDIC's Debt Guarantee Program (Black, Hoelscher, and Stock, 2014).

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