

Banking and Financial Crises in United States History:  
What Guidance Can History Offer Policymakers?

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## **Banking and Financial Crises in United States History: What Guidance Can History Offer Policymakers?**

### **ABSTRACT**

This paper assesses the validity of comparisons between the recent financial crisis and past crises in the United States. Aspects of two National Banking Era crises (the Panic of 1873 and the Panic of 1907) appear relevant for comparison with the Panic of 2008. In 1873, overinvestment in railroad debt and the default of railroad companies on that debt led to the failure of numerous brokerage houses, precursor to the modern investment bank. During the Panic of 1907, panic-related deposit withdrawals centered on the less regulated trust companies, which had only indirect access the existing lender of last resort, similar to investment banks in 2008. This paper argues that references to the banking crises of the Great Depression are less relevant comparisons to the recent crisis.

The previous banking crises in US history reflected widespread depositor withdrawals whereas the recent panic arose from counterparty solvency fears and extensive counterparty exposures among large complex financial intermediaries. In historical incidents, monitoring counterparty exposures was standard banking practice and the exposures were smaller. From this perspective, the lessons from the past appear less directly relevant for the current crisis.

## **I INTRODUCTION**

The financial and monetary systems of the United States have experienced three quarters of a century without an obvious and economically dangerous banking crisis; such a record provides evidence of successful maintenance of banking stability. The financial market faced some challenges in the past thirty years, especially the Latin American debt crisis in the early 1980s, the Savings and Loan crisis (1989-1993), and Long Term Capital Management (LTCM) in 1998. However, those problems now seem like small potatoes in comparison with what just happened.<sup>1</sup>

In stark contrast to the seventy five years of relative banking stability was the sixty years of banking instability between 1873 and 1933: three major banking crises in 1873, 1893, and 1907, three more banking panics in 1930 and 1931, and then the complete collapse of the banking system in March 1933, which prompted extensive government intervention. What, indeed, is anomalous is that the U.S. established a central bank, the Federal Reserve System, in 1913 in part to prevent a recurrence of the National Banking Era crises and yet the worst banking crises occurred in 1930 and 1931. The Banking Acts of 1933 and of 1935 and the Securities and Exchange Act of 1934 were designed to prevent a recurrence of the banking panics of the Great Depression. The legislation had been successful in preventing banking panics like those that occurred during the Great Depression. But the recent crisis bears little resemblance to the banking disturbances of the Great Depression.

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<sup>1</sup> The Latin American debt 1981 crisis could have been much worse without government intervention on a large scale. The LTCM crisis could be viewed, to some extent, as foreshadowing the recent crisis, emphasizing the interconnectedness of financial intermediaries and counterparty risk. LTCM's weak financial condition was viewed as idiosyncratic, rather than an indicator of the general condition of financial intermediaries.

The United States has just experienced its first full-fledged financial crisis since the Great Depression, and financial markets have garnered much attention since 2008 as a result. Something changed to make enduring banking stability unsustainable. We believe that those changes arise from the evolution of banking markets, the size of participant institutions and their interconnections, the complexity of new financial products traded and the globalization of the financial markets. The cumulative effect of these changes did not become evident until the termination of a prolonged and then, towards its end, an intense housing bubble, reflecting an overextension of credit toward the housing market in the United States. In retrospect, we can view the collapse from a conventional perspective – the assets were excessively concentrated in one sector, credit growth allocated toward that sector growing rapidly, the financial system was heavily leveraged, and that sector faced precipitous and unprecedented asset value declines.

The difference between the periods of stability and instability, we suspect, arises from a distinction among the sources of the crises and an isolation of how shocks with financial ramifications were transmitted throughout the financial system (systemic risk). Historical instances of crises display systemic risk arising from depositor withdrawals amidst financial panic; fear of insolvency of the banking institution may play a role in the decision to run. However, fear of insolvency also may be excessive, meaning that bank runs can be irrational and generate contagion in the form of a banking panic. In response to banking crises arising from depositor fears, the Federal Deposit Insurance Company guarantee of deposits alleviates the risk of an unjustified panic on the banking system.<sup>2</sup> In the recent crisis, bank depositors were not engaging in widespread liquidation of

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<sup>2</sup> Deposit insurance has negative effects on monitoring bank activity by depositors, but those issues are secondary to the themes in this paper. Reported runs on IndyMac were justified and still did not spark a

deposits for cash. In the initial stage of the crisis, the financial institutions that failed were few, mainly large, complex financial institutions (LCFIs) and their non-bank forms (LCNFIs).<sup>3</sup> The source of the contraction in liquidity was the uninsured “depositors” of banks and other financial institutions – lenders of cash for overnight funding of banking activities – who effectively withdrew their funding from an entire form of intermediation, the repurchase agreement market (see Gorton 2008, 2009a,b).<sup>4</sup> The crisis in the credit market was reflected in the complete collapse of the commercial paper and repo markets.<sup>5</sup>

The recent crisis, as inferred by the actions of key policymakers, contains aspects of systemic risk that extend beyond what has been observed in historical episodes of crises. After the failure of Lehman Brothers, the Treasury and the Federal Reserve leadership chose to prevent the failure of financial institutions, explicitly enacting “too big to fail.” It was perceived that the failure of AIG and Citibank, for example, would create so much financial distress that it would be better to use public money to prevent their failure. We do not know what the ramifications of those failures would have been because they were not allowed to fail. Also, we do not know the model that the policymakers had in mind when they made the decision to provide aid to those institutions. From the times of Bagehot, with only a few exceptions (perhaps the Bank of England in the Barings failure would qualify – see Kuttner 2010), no bank was regarded as too big to fail or to have the right to an explicit bailout. The belief that the suspension (or failure) of a financial institution will expose the financial system to an excessive risk

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panic.

<sup>3</sup> Examples are Lehman Brothers and Countrywide Financial. One could conclude that AIG was destined to fail without aid from the Fed, Treasury and the Troubled Asset Relief Program, and BearStearns would have failed without aid from the Fed to support its purchase by JPMorganChase.

<sup>4</sup> Gorton (2009) sees enough similarities to describe the recent crisis as a banking panic. We focus on key differences between how financial intermediaries monitored each other in the past and the apparent lack of that kind of monitoring in the recent banking crisis.

of systemic failure suggests that we are dealing with the predominance of a different component of systemic risk.

The description in this article will focus attention upon historical antecedents to the current crisis, both in terms of the market and economic conditions that sparked a financial crisis and the responses by market participants and public authorities to the events. Our analysis suggests that the recent crisis is likely a harbinger of the form of future crises in which LCFIs and LCNFIs, as counterparties, are the key triggers for generating financial distress. As a result, rigorous analysis of the bank data measures – both those on balance sheet and especially those off-balance sheet items – that policymakers used to make the determination to aid insolvent institutions will be crucial inputs for improving the design of robust financial regulatory structures.

## **II Defining Systemic Risk in the Presence of “Too Big to Fail” Institutions**

The key to understanding the origin of financial crises resides in the concept “systemic risk.” We describe systemic risk as the risk of widespread transmission of a shock that has financial ramifications. Systemic risk implies that an initial shock is persistent as it is transmitted throughout the financial system.<sup>6</sup> Various explanations of systemic risk attempt to make the concept empirically relevant and measurable. We first define systemic risk with the goal of making the concept relevant for accurate historical descriptions of the phenomenon of banking panic as observed in the Great Depression

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<sup>5</sup> See Brunnermeier 2008.

<sup>6</sup> Persistence may imply “correlation” and “connectedness” of financial institutions in ways that spread the financial shock throughout the system. See Lo 2008. Kaufman and Scott (2003) describe three main definitions of systemic risk, none of which allows for unexplained “contagion.”

and during the National Banking Era.<sup>7</sup> We then emphasize characterizations of systemic risk that are more relevant for the recent financial crisis in the United States.

Loss of depositor confidence in the **banking system** is one example of a mechanism to generate systemic risk. The loss of depositor confidence in banks has been portrayed as an irrational response to an information deficit about individual bank solvency. The word “panic” as defined in the dictionary refers to “a sudden, unreasoning hysterical fear often spreading rapidly.” Contagion, however, need not be confined to an irrational response. A bank run is a response by depositors to an information gap concerning either liquidity or solvency (or both) of an individual bank. Suppose a long line of depositors awaiting their chance to liquidate their deposits forms at a bank; the existence of the line may generate fear and uncertainty about the financial status of *that bank* among the depositors of other banks. If that observation leads to bank runs on other banks for just that reason – that a depositor thinks “other banks are suffering runs, so maybe I should remove my deposits from my bank” – then the subsequent banking crisis would be an observation of contagion-based systemic risk. The demandable liabilities held by depositors create the danger that banks may have insufficient liquid assets to satisfy depositor demands. Widespread liquidation risk is the source of banking panics that arose during the National Banking Era of the United States and the Great Depression. The depositor withdrawals can be motivated by rational or irrational reasons, and historical descriptions of banking panics indicate numerous instances in

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<sup>7</sup> Historical descriptions of banking panics differ from modeling assumptions for a model of banking panics. Descriptions of banking panics as examples of irrational contagion may be accurate, but are not helpful for building an economic model that explains the observation. Rational agents faced with imperfect and asymmetric information can, in an economic model, generate events that look like the banking panics that we describe.

which irrational contagion predominates.<sup>8</sup> But it is widely appreciated that the provision of deposit insurance essentially has quelled systemic risk arising from depositors in the United States.

A variety of the mechanisms can generate systemic risk; Rochet and Tirole (1996b) describe a number of them and differentiate among important sources. One mechanism to generate systemic risk is a notion that accords with an information-based contagious bank panic, and that can be empirically consistent with what is described above.<sup>9</sup> Another mechanism to generate systemic risk is the propagation of failures via interbank lending (or other interbank exposures). This mechanism is relevant when a specific bank's (bank A) balance sheet activities (and off balance sheet activities) are transmitted and projected upon other financial firms (directly affecting the solvency of other firms) when the shock hits, creates losses for that bank, and forces that bank (bank A) into insolvency. A separate mechanism is macroeconomic risk in which a real economic event affects the asset values of a large number of financial intermediaries.<sup>10</sup> Of the mechanisms to generate systemic risk, the latter two seem particularly important for the recent crisis.<sup>11</sup>

The concept of counterparty risk is particularly important for analysis of the recent crisis. Counterparty risk is the risk of default or failure of a counterparty to which

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<sup>8</sup> See Wicker (1996, 2000).

<sup>9</sup> A banking panic could be rational given imperfect information about the solvency of a bank or the banking system. But it could be problematic in cases in which the rational action for the entire banking system is for depositors to leave deposits alone. That strategy may lead to a sub-optimal equilibrium given that the optimal strategy of individuals – to liquidate deposits and reduce their loss probability to zero – raises the probability of system failure. The optimal solution requires coordination that is unachievable.

<sup>10</sup> Gorton and Calomiris (1991) discuss macroeconomic risk and the inability of depositors to determine unambiguously solvent from insolvent banks. Notably, Rochet and Tirole (1996b) mention explicitly the fall of real estate prices as an explicit macroeconomic risk.

<sup>11</sup> We see no role for irrational contagion as an explanation for the recent crisis. The distinction is important for separating accurate descriptions of history from modeling assumptions that generate



a bank or financial institution has financial exposure. An increase in counterparty risk may arise from new information about the macroeconomic risks, a negative aggregate shock to balance sheets, along with the widespread interconnection between financial institutions. In addition, counterparty risk comes about because these exposures are not insured. In the recent financial crisis, increased counterparty risk reflected the loss of confidence of banks (or of financial intermediaries in general) in the solvency of other intermediaries with which they had financial interactions and exposure

Counterparty risks have been within the financial system throughout US history. In the past, however, risk exposures from other intermediaries were both less extensive and more closely monitored by the banks, even if on occasion the monitoring was not so successful. Counterparty monitoring among financial institutions may have decreased over time for various reasons. One major reason for diminished bank monitoring of each other is the perception that some large, complex, financial institutions are perceived as “too big to fail.”

Recent history lends substance to the existence of “too big to fail” policies. The failure of Continental Illinois in 1984 and the regulatory responses to its failure led to the perception that the largest banks in the United States were viewed as essentially ‘too big to fail.’ Rochet and Tirole (1996a,b) emphasize the fact that 66 banks had uninsured deposits at Continental Illinois that exposed them to potential failure. The deposit exposures were in excess of the capital at those 66 banks and if Continental Illinois failed and uninsured depositors took a large loss, there was some likelihood for a “propagation of failure through interbank lending.” If some banks are “too big to fail,” it implies that policy makers fear that allowing an insolvent institution to fail will impose negative

external effects on other intermediaries and risk magnifying the financial contraction.

Policymaker actions to prevent a bank failure reveal the perceived systemic risk; but that risk arises from counterparty exposures and counterparty actions as opposed to depositor actions.

We have just experienced a banking crisis in which financial intermediaries lost confidence in the solvency of other financial intermediaries. In such a setting, the failure of a large bank may pose a threat to other banks when the failing bank is heavily indebted to other banking intermediaries. If that indebtedness is in short-term credit instruments as in overnight funding, the creditors may not roll over their funding. This risk is described as funding liquidity risk by Brunnermeier (2009), and when that problem becomes widespread across institutions, it produces market liquidity risk – when it is difficult to raise money by selling an asset or when to sell an asset has a measurable (and depressing) effect on the price of those assets.

The origins of the recent financial crisis arise from standard problems in banking observed throughout history – over-leverage and a shock to an important asset class that supported a large amount of the levered debt. The difference between the current financial crisis and those that preceded it is the increasing importance attached to the mechanisms generating systemic risk – namely, the loss of confidence in counterparty solvency, the interconnectedness of financial intermediaries, and the widespread exposure of financial intermediary solvency to real estate values. These mechanisms existed during banking crises in U.S. history, however, regulatory restrictions and the actions of

market participants to limit and monitor their exposures to other intermediaries reduced the systemic implications.<sup>12</sup>

### **III A LOOK AT HISTORY FOR GUIDANCE TODAY**

The defining characteristic of banking panics in the National Banking Era was the suspension of cash payment to depositors by New York City banks followed by selected suspensions in the interior, usually bringing an end to further bank closures arising from panic related withdrawals. The suspension of convertibility of bank deposits into cash was an attempt to forestall the rapid liquidation of bank deposits, and limit the hoarding of cash outside the banking system.

The decision to suspend cash payment was made separately by local clearing house bank associations; it could be either partial or complete. If partial, then individual banks might pay up to a specific amount in cash (usually \$50 or \$100). Also, New York City banks might restrict payment to individual depositors while still making discretionary payments to the interior. Initiative for the country as a whole originated with the New York Clearing House.

Sprague (1910) identified four proximate effects of the suspension of cash payment: 1) payroll difficulties, 2) dislocation of domestic exchanges (the value of cash and deposits in different locations could differ measurably), 3) the increase in hoarding of cash, and 4) the emergence of a currency premium (during the gold standard). The immediate impact of the suspension of cash payment was partial disruption of the payments mechanism, which increased real transactions costs. Wages were paid in

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<sup>12</sup> For example, the National Banking Acts prohibited national banks from lending on real estate collateral. The New York Clearing House members had an incentive to monitor the other members because they were

currency; and if business firms experienced difficulty in obtaining currency there might have been temporary closings, layoffs and the creation of innovative currency substitutes (scrip). The domestic exchanges were also disrupted because bankers were reluctant to make out of town remittances. The existence of a currency premium was an added incentive not to deposit currency in banks.

Neither bank runs nor bank failure was the way most people experienced a banking crisis.<sup>13</sup> The number of bank suspensions was relatively small both in New York City and in the interior, except in 1893. Table 1 shows the estimated total number of bank suspensions in New York and the interior in each of the three major panics of the National Banking Era.

Another measure of bank panic severity is the percentage of bank suspensions relative to the total number of banks. The percentages are also set out in Table 1.1 for each of the banking panics except 1873.<sup>14</sup> It is quite clear that the panics of the national banking era had less serious failure outcomes than the Great Depression, the single exception being 1893. The bank suspension ratio was below 1 percent in 1884, 1890, and 1907. For the Panic of 1893, the ratio was 4.3 percent, the same as the second panic of the Great Depression.

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exposed to the risk that a member would fail.

<sup>13</sup> During the National Banking Era, most of the population were unaffected by any banking distress, and experienced neither a constraint on their banking activities nor an exposure to bank failure.

<sup>14</sup> We have no estimate of the number of unincorporated banks for that year.

<b>Table 1.1</b> Bank Suspensions in New York City and the interior during Banking Panics: 1873-1907 and Percent of Total Banks in Suspension Source: Wicker (2000)				
	New York City	Interior	Total	Percent of total bank suspensions to total banks
1873*	37	64	101	N.A.
September				
1884	15	27	42	0.006
May				
1890	10	8	18	0.0015
November				
1893	3	500	503	0.042
(May-August)				
1907	13	60	73	0.0026
(October-December)				
1930				0.034
1931(I)				0.0295
1931(II)				0.0427
*The proportion of state and national bank suspensions of total number of state and national banks was 0.0165 in 1873; Wicker (2000) had not uncovered estimates of total number of unincorporated banks in 1873.				

The suspension of cash payment – referred more specifically as restrictions on the convertibility of deposits into cash – was also a signal of banking panic severity. In 1873 and 1893, issues of clearing house loan certificates preceded the suspension of cash payment – four days in 1873 and six weeks in 1893.<sup>15</sup> These initiatives were announced

<sup>15</sup> Clearing house loan certificates were a mechanism to increase temporarily the stock of media that could

simultaneously in 1907. Clearing House Loan Certificates enabled the member banks to conserve much needed cash by providing an instrument for discharging debt at the Clearing House.

### ***The 1873 Banking Panic***

We have to go back more than 130 years to identify a speculative boom that resulted in a banking crisis. The 1873 banking panic was caused by the reckless expansion of railroad mileage in what was then the western territory. As railroad construction outpaced the freight and passenger demands, railroad defaults struck first the investment and brokerage houses that facilitated the credit allocation to the railroads, and left numerous European investors with substantial losses. The initial losses in 1873 forced the closure of the well-known brokerage of Jay Cooke and Company, along with other lesser known but still important brokerage houses.

Although not the first to fail, Jay Cooke's demise on September 18 drew national and international attention. According to Henrietta Larson, Cooke's biographer (1964, 64) the firm was overloaded with weak investments and advances made to specific railroads including Northern Pacific. She described the failures as resulting from, "the speculative promotion of railroads beyond a reasonable expectation of returns under the drive of postwar conditions." The closing of Cooke's affiliates in Washington, D.C. and Philadelphia brought pandemonium to New York City, where stock prices collapsed by nearly 10 percent in September as measured by the Cowles stock price index. More than

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be used for final payment; the New York Clearing House made these temporary issues credit to member banks that requested them up to 75 percent of the market value of the collateral provided to support the loan. Clearing house loan certificates could then be used to pay debts among clearing house members, effectively expanding the stock of high-powered money. These issues were an imperfect substitute for the

40 brokerage houses and private banks failed in September in New York City, Philadelphia, and Washington, D.C.; the closed brokerage houses, the predecessor of the investment bank, were the institutions that suffered most directly from the railroad losses. Over time, the losses filtered down into the banking system because many banks lent directly to railroads, and the railroad losses had knock-on effects on peripheral businesses, many of which borrowed from banks. For the country as a whole, failures among brokerage houses account for about 60 percent of total suspensions. Only one national bank and two trust companies failed in New York City. The loss of depositor confidence was confined to the savings banks, all of which suffered runs. Loss of depositor confidence in the interior was greatest in Chicago. But banking unrest extended to Memphis and all along the Atlantic coast from Petersburg, Virginia to Savannah, Georgia.

The New York Clearing House responded to the banking crisis of 1873 by pooling bank reserves and the issue of clearing house loan certificates. Unlike the response to crises in 1860 and 1861, reserve pooling did not deter the New York Clearing House from suspending cash payment. Although cash reserves had fallen to an extremely low level, it is still debatable whether suspension was necessary. We have no direct measures of cash hoarding for 1873, but we have the specie and legal tender totals for New York City national banks. In the first week of September 1873, legal tender reserve was over \$33 million; by the week of October 20, those reserves dwindled to less than \$6 million (Wicker 2000, page 32). The threat of falling to zero was non-trivial.

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powers of a central bank to issue additional high-powered money.

Contemporaries described the post panic years as “of gloom and depression.”<sup>16</sup> The qualitative evidence is insufficient to verify that claim, and quantitative measures are lacking. Unemployment estimates do not begin before 1890. We only have annual GNP estimates for 1873. We know that annual estimates smooth the quarterly figures. Romer (1988) provides estimates of real GNP indicating that real GNP was increasing between 1873 and 1875. Annual estimates of industrial production by Joseph Davis (2004) suggest that the contraction in 1873 was less severe than previously estimated. Balke and Gordon (1999) reveal only a one percent decline in 1873-74, offering little justification for labeling the episode a depression.

*Assessment: Common Characteristics of Panics in 1873 and in 2007-2009*

The crisis of 1873 displays several similarities to the Financial Crisis of 2007-2009. Most notably, the excessive issuance of credit allocated toward railroad finance led to the financial crisis in 1873, which resembles the over-issuance of credit allocated toward home mortgage finance from 2001 to 2007. Less obvious, but perhaps nearly as important, the source of much of the investment capital in 1873 aimed toward railroad expansion came from overseas investors. Similarly, overseas capital financed a large portion of the recent home mortgage credit expansion. In the recent financial crisis, investment capital was transformed into complex and opaque financial claims using elaborate extensions of financial contract design. However, at its basis, the recent financial crisis arose from the same basic elements of past crises – excessive lending, increasing leverage, and faulty underwriting of loans.

***The Panic of 1893***

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<sup>16</sup> Tax Commissioner’s Report, New York Times, July 28, 1874, page 8.



The 1893 panic stands apart from all other banking panics of the National Banking Era. Summing up the number of bank suspensions in 1873, 1893 and 1907, we find that three fourths of all those bank suspensions occurred in 1893. The bank suspensions were widely diffused geographically and the contraction in quarterly GNP was almost as severe as the contraction in the first year of the Great Depression. The runs on urban banks were by fear ridden depositors who were testing bank solvency. The suspended banks reopened shortly thereafter and were probably solvent at the time of closure. For the country as a whole, one in four suspended banks reopened and resumed normal operations; the reopened banks had liabilities equal to the same proportion, one fourth the liabilities of the total suspended.<sup>17</sup> The proportion of reopened banks to total suspended differed by region. One third of suspended banks resumed in the Pacific region and slightly more than 36 percent in the Southern region. In Denver, Louisville, and Kansas City the proportion was even higher.

The 1893 banking crisis was accompanied by a stock market collapse. The stock market plunged on May 3 and a large industrial firm (National Cordage) failed the next day. The immediate impact was felt in the closing of the brokerage houses, a signature of the 1893 panic (and similar to what was observed in 1873); those brokerage houses apparently had been speculating in National Cordage stock. Repercussions were transmitted to the rest of the country. The collapse in depositor confidence was reflected in increased hoarding of cash. Like 1873, we do not have monthly estimates of currency in circulation but we have what was effectively the level of bank reserves available to national banks in New York City. In the week of May 15, the New York City national

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<sup>17</sup> We have no information regarding the need for capital injections prior to reopening the suspended banks.

banks held \$134 million in specie and legal tender; that total fell to a nadir of \$76.5 million by the week of August 7, 1893.

The Balke-Gordon quarterly GNP estimates reveal a decline in real GNP of 14.7 percent from the fourth quarter of 1892 to the fourth quarter of 1893. This compares with a 19 percent decline from the third quarter of 1929 to the fourth quarter of 1930. **Chart 1** displays the Balke-Gordon real GNP estimates as a proportion of peak real GNP prior to the recession/depression. The contraction of 1893 is the line with the circular observation indicators, whereas the Great Depression is the line with the diamond squares. The contraction following 1893 was sharper than the Great Depression for the first three quarters following the peak. There was, however, no severe depression during the next four years observable in the real GNP figures, and real GNP had regained the peak level of real GNP after nine quarters. While 1896 was a year of the doldrums when real GNP declined by 2.9 percent, thereafter, the economy began to recover.

The crisis in banking during the Panic of 1893 took hold mainly in the interior of the country. Although 500 banks failed during this financial crisis, only three of those banks were New York banks. Whereas the New York City banks supplied currency to the interior during the 1873 crisis, those banks were not supplying sufficient currency to the interior in 1893. Perhaps related, there was little indication of a banking or a financial crisis in Wall Street; the mild upward spikes in the call loan interest rate (see Chart 2) were modest even in comparison to some non-panic periods.

*Assessment: The Panic of 1893 and the Current financial Crisis*

The crisis of 1893 displays few similarities to the Financial Crisis of 2007-2009. The financial shock was transmitted through the investment brokerage houses, similar to

1873 and the investment banking industry in 2008-09. The key difference is that the 2008-09 financial crisis mainly affected institutions surrounding the New York City money center, whereas the Panic of 1893 affected mostly the interior banking institutions. The similarities may arise from the later ramifications – that real estate credit markets contracted and magnified the nation-wide real estate declines in value.

### ***The 1907 Banking Panic***

The 1907 banking panic had its origins in New York City with relatively little effect on the interior of the country with respect to financial distress. The source of the disturbance was trust companies, which were state chartered institutions that were allowed to invest in a wider assortment of assets than national banks. The trusts grew rapidly in the ten years prior to the panic largely because of their looser regulatory requirements. Trust companies held fewer reserves than national banks because trust accounts had much lower turnover; trust depositors were not using their trust accounts to write many checks. As a result, trusts were not central to the payments system.

New York City national banks were central to the payments system, especially the largest ones, and it was that functional difference that set up the tension between the trust companies and the commercial banks. Because the trust companies were not important players in the payments system, the trust companies in New York City as a group chose not to become members of the New York Clearing House, even though membership was offered. The restrictions necessary to join the association – one crucial element, a 10 percent cash reserve balance -- were deemed more costly than the benefits of membership, even though these requirements were less than half the cash reserve of

national banks. As a result, the trust companies fell outside the effective regulatory framework of the New York Clearing House, and when the Panic of 1907 struck, the trust companies had no direct access to the clearing house and its potential store of liquidity.

The National Bank of Commerce announced that it would no longer clear checks for the Knickerbocker Trust during the Panic of 1907, an example of a form of “counterparty risk” that would not occur between clearing house member banks. Prior to its closure on October 22, 1907, the Knickerbocker Trust Company requested support from the New York Clearing House, which was rejected. The main justification for the rejection was that fact that the Knickerbocker Trust was not a member of the New York Clearing House. J.P. Morgan also refused to intervene. While JP Morgan is rightfully given credit for organizing the support to bail out the trust companies later in the crisis, it is ironic that he was also partly responsible for allowing Knickerbocker Trust to fail.

Trust companies and New York City national banks both issued a large proportion of loans to the call loan market on the New York Stock Exchange. It could have been this shared credit exposure that finally convinced the New York Clearing House and J.P. Morgan to support the Trust Company of America after Knickerbocker Trust failed. Loans on call held by New York national banks actually increased during the panic, likely reflecting a transfer of those loans from trust companies to national banks.<sup>18</sup> The shared exposure to call loan investments was an important source of interconnectedness between these two different intermediary types.

In retrospect, the decision to allow Knickerbocker Trust to fail appears to have been a mistake; by 1907, the New York City trust companies in aggregate had loan and

deposit aggregates that rivaled those of New York City national banks.<sup>19</sup> Further, the historical data analysis of the 1907 panic highlights the relative lack of national bank failures along with relatively stable national bank loan and deposit figures for New York City banks. These statistics hide the substantial contraction in trust company deposits and loans in New York City (over 30 percent), which suggests that net credit to the economy contracted along with the contraction in real output. The misleading measures of financial distress – the national bank deposit and loan aggregates from 1907 – bears resemblance to the recent crisis. Gorton (2009) emphasizes the role of the repo market as a credit source and emphasizes the important role of the shadow banking system to the growth of credit in the past two decades. Measures of credit that do not include repo credit will underestimate its importance in the recent financial distress.

Real GNP declined 12 percent between the 2<sup>nd</sup> quarter of 1907 and the first quarter of 1908. Chart 1 demonstrates that the depth of the contraction in real GNP in the 1907 business cycle matches the sharp pace of decline in the 1893 contraction. Further, both these contractions appear to decline more sharply than the initial output contraction in the Great Depression. Call money interest rates (Chart 2) spiked to 20 percent in October and stayed above 10 percent for the remainder of the year, when normal ranges were from 3 to 6 percent. Cash hoarding, as reflected in the currency<sup>20</sup> to deposits ratio, increased notably during the panic. Chart 3 displays the currency to deposits ratio taken relative to the level of that ratio at the beginning of the crisis. The chart shows that the ratio increased by over 10 percent throughout the panic.

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<sup>18</sup> See Moen and Tallman 1992.

<sup>19</sup> Knickerbocker Trust reopened in March 1908 after an infusion of \$2.4 million in additional capital.

<sup>20</sup> Currency at the time was comprised of national bank notes, United States Notes (greenbacks), gold certificates, and silver certificates. Specie was gold coin and silver coin.

The New York Clearing House addressed the crisis by restricting the convertibility of payments into currency and issued over \$80 million Clearing House Loan Certificates. Similar actions taken by clearing houses across the country essentially increased the available currency supply for those depositors who demanded currency.

*Assessment: The Panic of 1907 and the Current financial Crisis*

The Panic of 1907 has a number of similarities to the Financial Crisis of 2007-2009.

- 1) The 1907 financial crisis centered among the trust companies that engaged in financial services more akin to an investment bank than to a commercial bank, but trusts still funded their activities with demand deposits. Trusts were struck with panic related withdrawals by depositors who were concerned about the safety of their deposits. In the recent financial crisis, investment banks suffered a funding crisis mainly because lenders would not renew their loans to fund the investment bank's activities, a more informed set of "depositors."
- 2) Neither trust companies in 1907 nor investment banks in 2007-09 had direct access to the relevant lender of last resort – the New York Clearing House for the trust companies in 1907 and the Federal Reserve System for investment banks in 2007-09.
- 3) Both financial crises highlight the undesirable outcomes arising from uneven regulation on competing financial intermediaries. Neither trusts nor modern investment banks were important parts of the payments system. However, they both had important interconnections to banks that were central to the payments system. The crises focused on trusts in 1907, and on investment banks in 2007-2009; the financial distress of these intermediaries affected key credit markets that were common to all banks. Thus, the focus of the crises on specific intermediary types – even if they were outside the payment system -- still put the payment system and its key institutions at risk nevertheless.

***Banking Panics of the Great Depression***

We will refer specifically to the three waves of bank suspensions during the Great Depression: November 1930- January 1931, April-August 1931, and September-October 1931. The banking panics of the Great Depression bear little or no resemblance to what happened in 1873, 1893, and 1907. Nor do they resemble what has happened in the

current financial crisis. The crises of the Great Depression differed in origin and severity, and also differed by the actions of private market participants and by the public sector institutions in response. There were multiple crises, or rather a sequence of crises, in 1930 and 1931. National Banking Era panics were single episode events in contrast.

The significance of multiple banking panics resides in the fact that there was a progressive and continual deterioration of depositor confidence as revealed by Federal Reserve notes in circulation, seasonally adjusted.<sup>21</sup> During the 1930 and 1931 banking crises, hoarding accelerated during the panic, leveled off at a higher plateau and then accelerated again at the onset of a new crisis. Depositor confidence was never restored. Chart 3 displays the currency to deposit ratios taken relative to the ratios at the beginning of the financial crises: October 1907 and November of 1930. Although hoarding increased more sharply in 1907, the peak in 1907 is dwarfed by the hoarding observed in the Great Depression. Note how the currency to deposits ratio increased after the first banking crisis in November 1930, but accelerated dramatically after September 1931, more than doubling by February 1932.

The 9000 bank failures during the Great Depression exaggerates the number of failures that resulted from banking panics because the predominant number of failures were registered as a result of the banking holiday in March 1933; still, the panic related suspensions during the Great Depression greatly outnumbered those in 1873, 1893, and 1907.<sup>22</sup>

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<sup>21</sup> There were no instances of organized “suspensions of convertibility” during the Great Depression panics, and despite the implied costs of suspension, there is a view that the imposition of such suspensions may have limited the continuous liquidation of deposits and drain of currency from banks. See Friedman and Schwartz 1963 page 311.

<sup>22</sup> See Wicker (1996) page 111, and Wicker (2000) page 143.

Lender of last resort responsibilities of the Fed applied explicitly to panic related distress (e.g., solvent banks in a liquidity crisis) and to member banks of the Federal Reserve System. Prior to October 1931, the United States banking system had no institution with unambiguous legislative authority for assisting distressed banks if that distress was unrelated to a panic or banking crisis. The continued increase in panic and non panic related bank suspensions led President Hoover in 1931 to propose the establishment of a National Credit Corporation, an agency whose purpose would be to lend to solvent and illiquid member banks with an inadequate supply of eligible collateral to discount at the Fed. In early 1932, the agency was transformed into the Reconstruction Finance Corporation (RFC) and was empowered to lend to all banks in need, both solvent and insolvent. The Chairman of the Fed also served as Chairman of the RFC, thereby blurring the lender of last resort responsibilities of the Fed. Contributing to bank stability in panic free 1932 were numerous loans made by the RFC. By July, the RFC had made \$643 million in loans to 3,600 banks. There was no further erosion of depositor confidence in 1932. However, the deterioration of banking conditions continued.<sup>23</sup>

The role of the RFC expanded after the banking collapse of March 1933. The Reconstruction Finance Corporation provided capital injections to banks from 1932 through 1935.<sup>24</sup> The RFC purchased the (new issues of) preferred stock in the needy banks. By the end of June 1934 the RFC owned 23.6 percent of the capital stock, notes and debentures of all insured banks. Ultimately, the agency was responsible for acquiring over 25 percent of the capital of insured banks.<sup>25</sup> It was successful in restoring depositor

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<sup>23</sup> See Bordo and Wheelock (2010) for an extensive discussion of Federal Reserve System performance as lender of last resort during the Great Depression. See also Wicker (1966).

<sup>24</sup> This support for the banking system was not related to banking panics.

<sup>25</sup> See Studentski and Krooss 1963, page 384, Banking and Monetary Statistics, 1914-1941, page 75.



confidence and forestalling future bank failures. But the restructuring of the banking system in 1933 did not increase lending at either Federal Reserve member or FDIC insured banks. Between October 1933 and November 1935, total loans of member banks declined by 9.3 percent. For all insured banks, the decline was 4.4 percent between June 1934 and June 1935. The massive injection of bank capital by the government apparently failed to expand bank lending.<sup>26</sup> We may well ask was the injection too small or were there other factors at work?<sup>27</sup>

Another distinguishing feature of the banking disturbances of the Great Depression was their origin. National banking era panics (at least 1873 and 1907) had their origin in the central money market from which they spread to the interior of the country. During the Great Depression, their origin was the interior, a characteristic shared with 1893. When the panic originated in New York City, it was regarded as of national significance. When banking disturbances originated in the interior, it was far from obvious that they were of national importance and the financial press did not refer to such events as a banking panic. The accelerated rate of bank suspensions in the final two months of 1930 (the first banking panic) was not described in the press as a panic. Friedman and Schwartz (1963) were the first to characterize these suspensions as a banking panic.<sup>28</sup> They assigned a causal role to these suspensions to explain why the money stock fell and the depression deepened, thereby giving dramatic emphasis to the banking crises. We did not learn of the origin of the first banking crisis (November 1930)

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<sup>26</sup> See Mason (2000).

<sup>27</sup> Calomiris and Wilson (2004) suggest that banks in New York City were capital constrained. Further investigation of this important issue seems warranted.

<sup>28</sup> There remains active debate as to whether the failure of the Bank of United States in New York City sparked a nation-wide banking panic. It is interesting that New York City banks apparently suffered fewer system-wide constraints than the banks in the interior.

until the 1980s when John McFerrin's 1939 book on the southern investment bank of Caldwell and Company was rediscovered. The case for regarding the November and December 1930 bank suspensions as purely regional is persuasive. Recent work by Richardson (2007) reinforces this conclusion, and further provides evidence that the causes of bank distress during the Great Depression resulted from both insolvency and illiquidity of banks.

*Assessment: Great Depression Panics and the Current financial Crisis*

The severity of the financial crisis of the Great Depression is revealed by the number of bank suspensions, the increase in hoarding, and a 33 percent decline in the money stock, for which there is no equivalent in the current 2007-09 financial crisis. Commercial bank suspensions in the current crisis were minimal in the immediate aftermath.<sup>29</sup> There has been no general loss of depositor confidence. The monetary base more than doubled and the M2 money stock has increased substantially resulting from Fed actions. There are several crucial differences between the present financial situation and the multiple crises of the Great Depression.

1) The current financial crisis bears little resemblance to the first two banking panics in 1930 and 1931. These events were similar to the banking panics during the National Banking Era because the banks lacked sufficient liquid funds to meet depositor withdrawals. Widespread deposit withdrawals from banks resulted from a contagious run on the banks. Many of these banks were not insolvent in the absence of banking panic-related bank runs; the panic could have been managed with standard central banking principles as suggested by Bagehot's rule – lend freely and at a high penalty rate.<sup>30</sup> The Federal Reserve policy makers left the rule to be applied at the discretion of individual reserve banks and the consequence was an inordinate number of bank suspensions.<sup>31</sup>

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<sup>29</sup> Suspensions of banks have increased as the ramifications of the housing price collapse and the severe recession have percolated through the economy.

<sup>30</sup> Recent evidence in Richardson (2007) confirms that many banks that closed as a result of these runs were only in suspension temporarily.

<sup>31</sup> The policies were thereby idiosyncratic – there was an obvious difference for example between the St. Louis District (eighth) and the Atlanta District (sixth) towards supplying liquidity to banks in their jurisdiction. The Atlanta Bank promoted liquidity provision to the banks that it serviced. Banks in that

2) By the latter part of the 1929-33 financial crises, bank insolvency finally played an important role in accounting for bank suspensions from banking panics. By that time, the deepening depression began to take its toll – credit contraction, loan defaults, and security (asset) depreciation combined to threaten the solvency of many banks.

3) Wall Street is clearly the locus of the current crisis, as it was in 1873 and 1907. In contrast, the banking panics of the Great Depression had their origin in the interior of the country and were region specific. Between 1929 and 1933, there was no major banking disturbance or banking panic in the central money market (Wall Street, New York City). Those markets remained relatively stable even after the collapse of one of the largest banks in the country – The Bank of United States – in December 1930.

4) The Fed presided over a massive, 33 percent contraction in the money stock. Their operative policy concentrated erroneously on the nominal interest rate, not the real interest rate – along with the level of discount window borrowings. They did not assume responsibility to prevent the closure of non-member banks. Also, the discount window was constrained to require “eligible paper” for extending credit. In this crisis, Fed policymakers have responded in vigorous and imaginative ways. They have asserted their leadership in the crisis by finding creative ways to issue more liquid assets for illiquid assets. But as the crisis turned into a concern about the solvency of the banking system, Fed policies were unable to stem those losses.

*Common characteristics of the Current Crisis with the Great Depression*

Of the similarities between the current crisis and the Great Depression, government intervention in the banking system has particular relevance. At the time of Roosevelt's inauguration on March 4, 1933 the banking system of the U.S. had virtually collapsed. Banks had closed their doors in 33 states; deposit restrictions were in effect in 10, and optional closing in 5. Roosevelt merely recognized the existing situation by declaring a nationwide bank holiday on March 6.<sup>32</sup> The Emergency Banking Act granted the government the necessary power to reopen the banks at the sole discretion of the Secretary of the Treasury. The government had agreed to guarantee the soundness of each

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portion of Mississippi serviced by the Atlanta Bank experienced a notably lower failure rate than the failure rate among those banks in Mississippi that were served by the St. Louis District Federal Reserve Bank. See Richardson and Troost (2009).

<sup>32</sup> A bank holiday was a legal artifice for closing the banks without compromising their solvency. It was not

of the reopened banks. Only one-half of the nation's banks were permitted to reopen in March. Licenses to reopen were completed by April 12 at which time 13,000 banks had reopened with deposits of \$31 billion and 4,215 permanently closed with deposits of \$4 billion.

#### **IV SOME FEATURES COMMON AMONG THE PANICS**

Intervention by private or public entities has been an element of every banking crisis since the Civil War. On no occasion during the National Banking Era has a banking panic run its course without remedial action. In the absence of a central banking authority, the intervention took place through the voluntary associations of banks known as clearing houses. The clearing house was the main mechanism for leadership initiatives executed by prominent New York City bankers, often with direct support through the US Treasury. Prior to the creation of the Fed, the Treasury and the private New York Clearing House intervened, not to “save” insolvent institutions, but to provide liquidity to what were perceived as illiquid institutions. The big banks were, in 1907, the liquidity providers in financial crises when their balance sheets were perceived as strong. Insolvent institutions were closed, and when insolvent institutions received aid, it was because they were perceived to be solvent when they were aided. Bagehot (1873) recommended rules for central bank responses to banking crises: lend freely at a high rate only to solvent banks. No bank was regarded as too big to fail.

In 1907, the Treasury shifted large pools of funds to three large New York City national banks; taxpayer money was involved, and the banks were solvent. Further, the actions of the New York Clearing House with the influence of JP Morgan, James

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a new device; it had been used in 5 states during the panic of 1907.

Stillman, and George Baker, organized the effective “bail outs” of trust companies that were threatened with collapse from panic induced withdrawals.

During the Great Depression, the United States experienced bank panics with less effective timely intervention despite the establishment of the Federal Reserve System in 1913. The inconsistent policies of the Federal Reserve System failed to stem panic withdrawals from the banking system. The solution to the banking crisis required massive US Treasury intervention to strengthen the capital structure of those banks allowed to reopen following the Banking Holiday in March 1933. The Reconstruction Finance Corporation bought new issues of preferred stock of those banks deemed capable of carrying on a durable banking business.

In the current crisis, the Fed and the Treasury took novel initiatives to mitigate the repercussions of the Lehman failure and the crisis more generally. Not only did the Fed inject nearly a trillion dollars of reserves, it also intervened directly through purchases of commercial paper and the subsequent \$1.25 trillion of direct purchases of mortgage backed securities. The Treasury guaranteed money market funds at par value, and provided direct assistance to financial institutions allegedly threatened with insolvency. The Bagehot rule of aiding only solvent institutions was jettisoned.

## **V THE CURRENT CRISIS -- DIFFERENCES FROM THE PAST**

The recent crisis did not originate with widespread retail depositor runs on banks and numerous bank suspensions, but with large, complex, financial intermediaries (LCFIs) and large complex nonfinancial intermediaries (LCNFIs) – megabanks and nonbank financial institutions—which were allegedly too big to fail. It was

believed/argued that the collapse of any of these large institutions would pose excessive systemic risk of financial meltdown -- credit markets would cease to function and other megabanks and their counterparties would face insolvency as a result. In these cases, additional liquidity would not solve the problem as in previous crises. The financial system had undergone significant institutional changes that increased the system's susceptibility to systemic risk. But the mechanism generating systemic risk was not depositor bank runs; these institutions ran from each other.

Additional issues distinguish the 2008-09 financial crisis and economic downturn from those of either the National Banking Era or the Great Depression. The origins of the recent crisis were in financial institutions that had grown disproportionately in size and that controlled a substantial share of total banking resources. As a group, these institutions – mostly investment banks but including some large commercial banks and savings and loans – were heavily exposed to the risk in mortgage-backed securities, and residential mortgages in general. A combination of factors contributed to this growth:

1. Relaxation of the regulatory authority
2. Banking sector consolidation through mergers and acquisitions
3. Repeal of Glass-Steagall Act of 1933, blurring the distinction between commercial and investment banking

There was a spurt of financial innovation and the introduction of new financial products: securitization, asset-backed commercial paper, derivative assets, collateralized debt obligations (CDO), credit default swaps, and repurchase agreements (repos) made on collateral comprised of CDO assets.<sup>33</sup> With the inclusion of off balance sheet items, the leverage ratio of investment banks like Lehman Brothers and Bear Stearns were as high

as 30 to 1 (see Greenlaw, Hatzius, Kashyap, and Shin 2008). The combination of increased size and product innovation resulted in a virtual revolution in the funding market, leading to increased leverage, heightened exposure to the predominant collateral (real estate backed assets), and sensitivity to the perceptions of the liquidity of repo collateral (and to the perceptions of the inherent value of the repo collateral).

In 1907, the large banks of the New York Clearing House and the private bank of J. P. Morgan were not highly leveraged. Even the trust companies, for the most part, were not highly leveraged (although more leveraged than national banks). The trust companies, though, operated with extremely low cash reserves (5 percent as opposed to the 25 percent mandated for New York City national banks). Although Morgan and the New York Clearing House banks did not at first want to provide liquidity to the trust companies, after the failure of Knickerbocker Trust, the other trusts received aid from the New York Clearing House banks. In contrast to 1907, the recent crisis featured all LCFIs in highly leveraged condition. These institutions suffered a contraction of available credit as collateral values fell and what was perceived at the start as a need for liquidity developed into a need for capital infusion.

The first casualties in the current crisis were the investment banks, many of which were the largest producers of the mortgage-backed securities that suffered severe declines in value. The (former) investment banks did not hold deposits so they could not be “run” by depositors. However, we can consider their overnight lenders as “informed” depositors; the counterparties that fund their activities are uninsured, so they can choose to withdraw their overnight funding at short notice.<sup>34</sup> The investment banks had

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<sup>33</sup> These financial products magnified the ambiguity of asset values on bank balance sheets.

<sup>34</sup> Among the numerous informative articles on the crisis of 2007-2009, Brunnermeier (2009) and Gorton

interconnections with commercial banks and the large savings and loans also through their mutual exposure to the risks of the real estate market. Counterparty contracting risk in the repo market and aggregate portfolio risk arising from common investments in real estate combined to magnify the interconnections among financial institutions in this recent crisis. As time passes, we are observing the extensive exposure of all banking institutions – large and small – to mortgage lending, both commercial and residential, as well as to real estate developers. Not only was the subprime mortgage market extended excessive credit, but it looks as if real estate lending was excessive at several levels.<sup>35</sup>

Interbank connections have been an element of bank disturbances throughout US history. Some banks have been linked through the holding of correspondent bank balances and when the lead bank fails its correspondents are vulnerable as well.<sup>36</sup> In earlier periods, the interconnections between banks were confined to correspondent relationships, holding company affiliates and chain banking networks. But the network of correspondent balances never bore responsibility for generating a panic, even if it contributed to its severity.<sup>37</sup>

What is new about the current crisis is the recent growth in bank size, the willingness to fund assets off-balance sheet, and the increasing sophistication of new financial products. These new financial products allow LCFIs to create private contracts through which the contracting parties can generate exposures to loss from a small group of counterparties that may ultimately justify “too big to fail” actions of policymakers.<sup>38</sup>

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(2009) highlight the risk of funding activities from overnight liquidity facilities (repo market).

<sup>35</sup> See Brunnermeier (2009), Gorton (2008, 2009), Lowenstein (2008), and White (2008). For a longer term perspective, see Schularik and Taylor (2009).

<sup>36</sup> The effects of the correspondent banking system during panics suggest that it may have been more of a mechanism for transmitting disturbances as opposed to an ultimate source of crisis.

<sup>37</sup> See Wicker (1980, 1996).

<sup>38</sup> Rochet and Tirole (1996a) offer a rationale for policymakers to favor “too big to fail” decisions such



We will need to wait for data and evidence of bank balance sheets to uncover the answer. But we can venture a conjecture – in this crisis, the largest financial institutions were heavily leveraged, dependent upon short-term liquidity (verified in Gorton 2008), and held large portions of their portfolios in similar risky assets.

The complexity of the contracts – residential mortgage-backed securities, collateralized debt obligations, credit default swaps, etc. – contributed to valuation difficulties. The ambiguity of valuation contributed to how problems among subprime mortgage assets – rising defaults and foreclosure rates -- would affect the value of the structured investment vehicles and collateralized debt obligations (asset-backed securities) that were rated as AAA. But that complexity itself did not introduce anything new to the underlying source of the crisis. The underlying problem was the excessive credit extended to housing finance and the collapse in the collateral value of the nearly \$12 trillion in mortgage related assets. Contract complexity made investment values more opaque, and exacerbated the asymmetry of information between borrower and lender (the value of the asset as investment and the underlying probability that the borrowers will repay the loan [see Gorton 2009]).

Bank examinations by regulators that take place today are less clear cut because of the extensive use of derivative contracts and off-balance-sheet entities. The balance sheets of LCFIs fail to describe their financial condition as a result of financial innovations, like structured investment vehicles (SIVs). Derivative financial products, if not managed closely by financial institutions, offer lower level bank employees opportunities that can put the bank's solvency at risk because risk exposures can change

rapidly through these contracts.<sup>39</sup> If a bank is then less aware of its **own** financial position, why is it not surprising that there was an increase in counter-party risk in markets that operate using daily financing through overnight lending facilities?

Gorton (2008, 2009) argues that the overnight repurchase agreement market, often associated with the “shadow banking” sector, experienced a panic in a way similar to the panics of the National Banking System. He explains that the overnight repo market often used structured financial products, like, for example, CDOs of mortgage asset backed securities, as collateral. That collateral suffered from opacity of the underlying investment portfolio. When subprime mortgages started to default, it was not clear how those defaults would affect each CDO, so in a sense it was rational to “run” away from all CDO collateral that could include mortgage backed assets. Gorton refers to that response as a banking panic with respect to the overnight repurchase agreement market and the shadow banking system (see Gorton 2009).<sup>40</sup> This perspective on the financial crisis offers numerous potential paths of inquiry to determine methods to improve the operation of the repo market. For example, the participants in the repo market focused attention on the value of collateral in a repurchase agreement. The collateral value focus reduced the requirement for counterparty monitoring, until the collateral value was questioned (or questionable).

Gorton’s analogy to National Banking Era panics gains additional support from an

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<sup>39</sup> In some cases, bank management demonstrated only limited control on employee actions. See discussions of Nick Leeson of Barings and of Jerome Kerviel of Societe Generale, (<http://www.nytimes.com/1996/03/31/books/upper-class-twits-made-me-do-it.html> <http://www.nytimes.com/2008/02/19/business/worldbusiness/19iht-socgen.5.10203247.html>);).

<sup>40</sup> The haircut (or discounted valuation) on collateral (mainly, asset backed securities) for repos increased from virtually none, to 3 percent, to 6 percent, to 20 percent, and to 40 percent over a span of months. These actions curtailed the amount of liquidity that the assets to free up by the amount of the haircuts; the idea may sound inconsequential, but the overnight repo market was estimated at \$12 trillion, so a 40 percent haircut implies nearly \$5 trillion less in liquidity available to the market.

analogous market in which there was a primary focus on collateral value rather than borrower solvency. The call loan market during the National Banking Era also focused on collateral values, those of the stock equity collateral upon which the loans were taken. Any concerns about stock market liquidity had serious ramifications for the large, New York City banks that were heavily exposed to the call loan market.

## **VI BANKING CRISIS: POLICYMAKERS MAKING THE CASE**

“Bailout” is the metaphor often used to describe the actions of the public authorities. Another metaphor was used to explain why the bailout took place – “financial meltdown” would have occurred if these financial institutions were allowed to fail. It seemed like a good metaphor to scare the daylights out of a doubting public, but it failed to convince them. Public outrage has been directed at the US Treasury and the Federal Reserve bailouts. Neither public entity made a successful rigorous effort to describe fully the consequences of not acting: explaining in detail what repugnant outcomes were expected to take place in a financial meltdown. As a result, the public had scant information with which to compare the costs to the taxpayer of a bailout with the costs to the public of policymakers taking no action. Bailing out allegedly insolvent institutions with taxpayer money was a worse offense than letting the financial system collapse! Economists argued that creating moral hazard was more harmful than the potential financial meltdown.

Testimony of Treasury and Federal Reserve officials in the AIG bailout argue strongly that counterparty condition was not the main motivation for paying off at par

value (full value) the credit default swaps held by counterparties.<sup>41</sup> These statements strike us as inaccurate, if not patently false. Policymakers, we believe, face a thankless choice in a crisis. When an LCFI faces insolvency or the threat of insolvency, a network of interbank connections may endanger the solvency of other banks with whom it is connected.<sup>42</sup> Simply put, the failure of one LCFI may impose losses on counterparties such that those counterparties face a significant risk of failure as a result. Given such risks, if policymakers decide that AIG presents undesirable systemic risks, then counterparty condition **should** have been a primary motivation for fulfilling the AIG contract on the credit default swaps. If nothing else, the full story needs to be told in more detail than in the report by the Special Inspector General for the Troubled Asset Relief Program (SIGTARP) and with analysis of data from all counterparties.

Swagel (2009, page 32) describes how the Treasury and Fed feared that the bankruptcy of American International Group (AIG) would have disastrous systemic effects that would be more far reaching and detrimental than were the effects of the Lehman Brothers' failure. In his analysis, Swagel directly mentions how AIG's failure would force banks to raise capital, and how AIG was larger and more interconnected than Lehman. Without complete information, these statements are merely consistent with our conjecture that the model of risk in the analysis by the policymakers must have incorporated anticipated "knock-on" losses to AIG counterparties that would threaten their solvency.

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<sup>41</sup> The list includes: Société Générale (France), Goldman Sachs, Merrill Lynch International, Deutsche Bank (Germany), Crédit Agricole (France), UBS (Switzerland), Barclays (England), Royal Bank of Scotland and others.

<sup>42</sup> Flannery 2009 describes how governments apparently had no choice but to support potentially insolvent financial institutions during the 2007-2009 crisis.

Policymakers need to offset public criticism with an alternative and detailed scenario analysis of what the counterfactual outcome would have been had the decision been made to let AIG follow Lehman Brothers into bankruptcy. In this scenario, the policymaker would describe the anticipated spillover losses from AIG's failure to its counterparties, the expected losses to these intermediaries, and the probability of insolvency among them. Then, the policymaker could make an assessment of the probable effects from the loss of AIG insurance coverage for businesses and consumers, the losses to money market participants, the calculated losses to pension funds and 401K plans, and the possible, conventional risk of contagion.<sup>43</sup>

Further, the policymakers should also expose the evidence that convinced them of the likelihood of a doomsday scenario. To make this scenario analysis believable, the informed public will need to see relevant information on the values that policy makers estimated for key financial measures on the institutions that were aided and why they were aided. These included the effective bank capital, net exposures to key counterparties, and expected potential losses posed by failure of key counterparties to these banks. At a basic level, the information could highlight bank counterparty exposure along with the expected losses from the liquidation value of collateral in a fire sale as a result of counterparty default. The case should not be hard to defend, nevertheless the case should be made explicitly, even if after the fact.

## **SUMMARY AND CONCLUSION**

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<sup>43</sup> The run from money market mutual funds toward government securities only money market mutual funds was an example of a classic banking panic on a specific type of intermediary.

With eight major banking crises in 137 years, four took place in the National Banking Era, three during the Great Depression, and one took place in 2007-2009. The banking instability that characterized the first 60 years contrasts strikingly with the relative calm of the past 75 years, with the notable exception of the recent crisis. The contrast is stark, and there are lists of usual culprits suggested as the main contributors to the recent change of fortune.

The banking panics of the National Banking Era and the Great Depression resulted from depositor withdrawal and liquidity based suspensions, the conventional form of systemic risk arising from the loss of depositor confidence in banks or the banking system. During the National Banking Era, the suspension of convertibility of bank deposits into cash was usually capable of attenuating bank runs. Further, the source of connection between banks was through correspondent bank balances, interbank loans, or shared exposure to assets that trades in an external market. Balance sheet data could measure those exposures and active monitoring of counterparty conditions by banks was the main method of limiting the impact of counterparty distress.

What we have learned from comparing the recent financial crisis to historical banking panics is that there are important differences. The conventional treatments for financial crises in historical episodes do not alleviate the ills of the recent crisis. Central bank liquidity initiatives were mildly palliative, but the solution to the recent crisis required government capital infusions, an increase of bank reserves to an unprecedented level, and the Federal Reserve purchase of a large amount of mortgage backed securities. These initiatives show how restoring confidence in the banking system today requires

restoring bank solvency, which is a markedly different solution than restoring liquidity in banks.

Major changes to the US banking structure may have increased its susceptibility to banking crises. First, LFCIs have become highly leveraged relative to historical norms, leaving little financial cushion for losses. Secondly, the extensive use of derivative assets and the creation of new and highly complex bank assets may obfuscate a bank's financial exposure implied by the contracts to counterparties. Finally, the interconnectedness of LCFIs has increased and counterparty exposures may have grown to threaten a domino-like transmission of insolvency across LCFIs.<sup>44</sup> It will take time to determine how many of these reasons are relevant for explaining the recent financial crisis.

The predominant mechanism giving rise to systemic risk in the recent crisis arose from loss of confidence among banks and other financial intermediaries, that is, heightened counterparty risk.<sup>45</sup> Interdependence among institutions threatened to transmit shocks throughout a network of banks, reflecting the risk that counterparties could fail, default on payment, and transmit further losses to other banks. The threat of numerous insolvencies resulting from an initial failure is the manifestation of systemic risk, and it provides a justification to aid an insolvent LCFI to prevent worse spillover failures as a result. In the recent crisis, policymakers appealed to the existence of a network of interconnections among financial institutions as the mechanism to transmit

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<sup>44</sup> Other candidates include the consolidation of mega-banks through bank mergers, the repeal of Glass-Steagall reducing the distinction between investment and commercial banks, and the globalization of the financial markets.

<sup>45</sup> In historical episodes of financial crisis, private entity monitoring (e.g., the New York Clearing House) and regulatory restrictions on bank exposures to sectors and to other banks had limited in the past

losses through the financial system, but there should be a full evaluation of the extenuating circumstances when the evidence on bank solvency becomes fully available.

The bankruptcy of Lehman Brothers signaled the beginning of the most treacherous period in the financial crisis of 2007-2009; in the aftermath, credit markets were disrupted, there were large losses transmitted to other large institutions, and policymakers became reticent to test the “let them fail” waters again with the impending bankruptcy of AIG. The potential transmission of additional losses from AIG across the financial markets to highly leveraged institutions, many in shaky financial condition already, made it difficult to envision a benign outcome arising from inaction.

“Too big to fail” has been exposed as the likely policy response to financial distress as a result of the recent crisis. The motivation for such a policy response is the mechanism generating systemic risk arising from extensive counterparty exposures. From a public policy perspective, it is critical to establish the factual basis for the policy, namely, to illustrate explicitly the counterparty exposures in balance sheet (and off balance sheet) measures. In a perfect model of this mechanism, we would be able to measure and monitor systemic risk and thereby establish a foundation for limiting the negative spillover effects of a large financial failure. No perfect model exists, but a model that attempts to measure the risk arising from this mechanism will help convey a clearer sense of the rationale of the policymaker.



**Data Appendix**

Real GNP data, quarterly, from 1875 to 1940 are taken from Balke and Gordon (1987).

Data for the following series:

- 1) call loan interest rate
- 2) the commercial paper rate
- 3) the currency held by public
- 4) adjusted demand deposits of commercial banks

are taken from the NBER Macro History Database, listed in the references.

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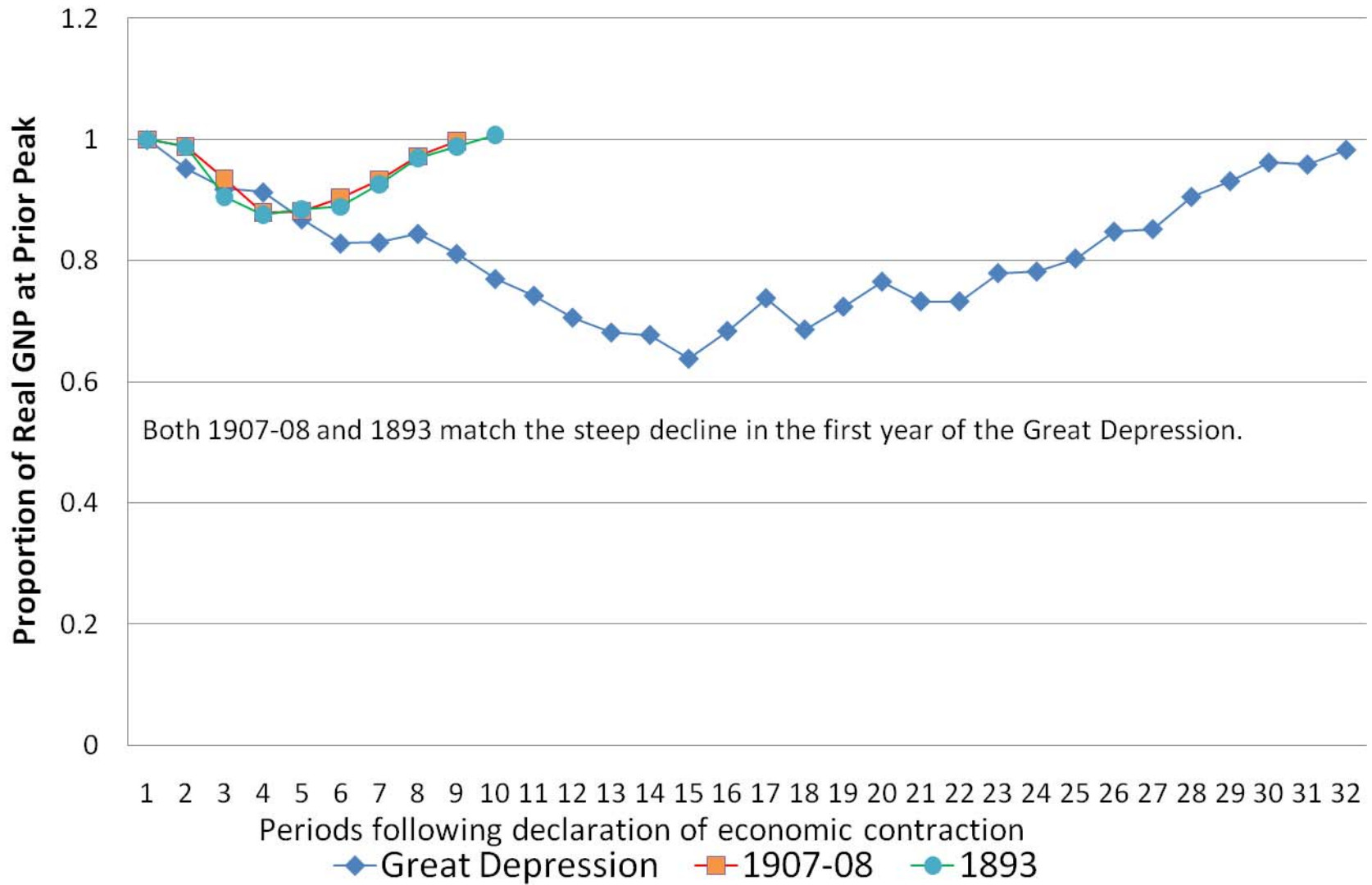
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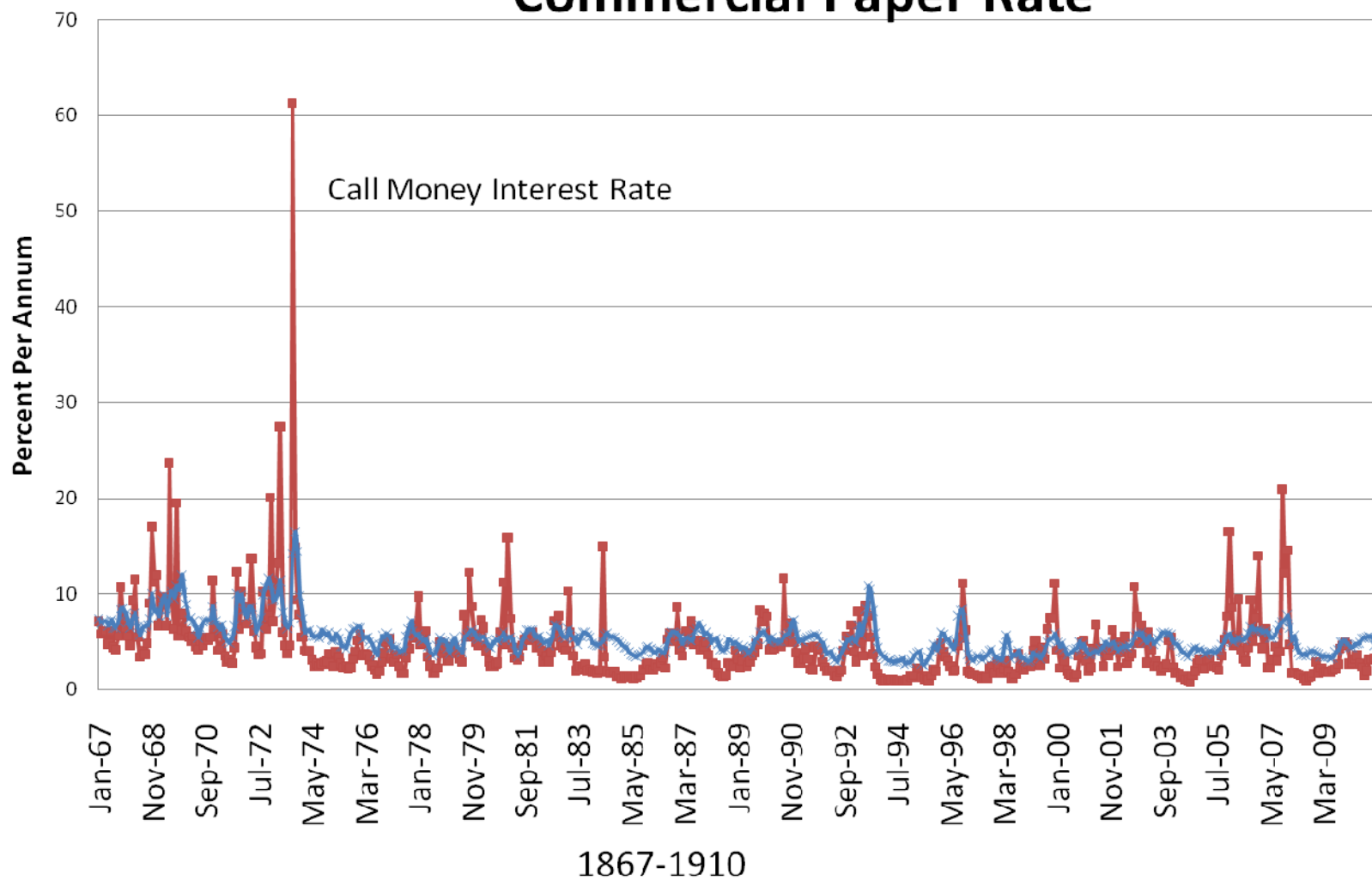
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# Chart 1: Real GNP - Comparing Contractions



## Chart 2: Call Money Interest Rate and Commercial Paper Rate



### Chart 3: Currency to Deposit Ratio Taken Relative to Ratio Observed at Beginning of the crisis

