

When the Music Stopped: Transatlantic Contagion During the Financial Crisis of 1931

Abstract

In 1931, a financial crisis began in Austria, struck numerous European nations, forced Britain to abandon the gold standard, and spread across the Atlantic. This article describes how banks in New York City, the central money market of the United States, reacted to events in Europe. An array of data sources – including memos detailing private conversations between leading bankers and the governors of the Federal Reserve Bank of New York, articles written by prominent commentators, and financial data drawn from the balance sheets of commercial banks – tell a consistent tale. Banks in New York anticipated events in Europe, prepared for them by accumulating substantial reserves, and during the crisis, continued business as usual. Leading New York City bankers deliberately and collectively decided on the business-as-usual policy in order to minimize the impact of the panic in the United States and Europe.

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“For it is, so to speak, a game of ... musical chairs — a pastime in which he is victor who ... secures a chair for himself when the music stops. These games can be played with zest and enjoyment, though all the players know that ... when the music stops some of the players will find themselves unseated.” (John Maynard Keynes, 2006, pp. 139-140)

1. Introduction

During the 1920s, a circular flow of funds linked financial institutions in Europe and the United States. The flows originated in New York City, whose banks loaned funds to Germans, who used the funds to pay war reparations to the British and French, who in turn used the funds to repay war debts, which returned the funds to the United States. This flow of funds stopped during the financial crisis of 1931, when difficulties beset banks throughout Europe, forced Germany to shut down its banking system in July, and forced Britain to abandon the gold standard in September. How did the cessation of the circular flow effect banks in New York City, the central money market of the United States? Did stopping the game of musical chairs, as Keynes described the circular flow, transmit the financial crisis from Europe to the United States?

Our answer to this question is no, not directly. Banks in New York with substantial exposure to the European financial crisis did not change their behavior during or in reaction to the collapse of the financial system in Europe in the summer of 1931. Before we elaborate on our answer, we need to provide background that sets the question in context.

Our question relates to an academic debate about when and how the financial crisis of 1931 crossed the Atlantic. According to the conventional academic wisdom (called golden fetters, another Keynes' coinage), the crisis on the continent forced Britain to abandon the gold standard. Britain's departure from gold induced investors to withdraw funds from the United States. To stem this outflow, the Federal Reserve raised interest rates, which depressed

consumption and investment, forced hundreds of banks out of business, and deepened the depression (Milton Friedman and Anna Schwartz, 1963; Barry Eichengreen, 1981 and 1992; Peter Temin, 1989 and 1993).

According to a recent alternative hypothesis, the financial crisis in Europe – particularly the crisis in Germany – directly affected the United States. A direct connection seems plausible for several reasons. First, foreign deposits in New York banks exceeded seven hundred million dollars. Acceptances in New York banks on the account of German banks and firms totaled over three hundred million dollars. Ninety-day loans to German municipalities amounted totaled over one hundred million dollars. Long-term German debt originated by New York banks totaled over one billion dollars (Robert Kuczynski, 1932). This debt exceeded the capital of all banks in New York City by an order of magnitude. Second, an intricate system of cross-deposits set up by the Austrian Central Bank covertly directed funds via banks in New York City to the Creditanstalt to compensate it for taking over the bankrupt Bodencreditanstalt (Iago Gil Aguado 2001, p. 199). Losses on these cross-deposits threatened the solvency of institutions involved in the scheme. Third, German and American macroeconomic aggregates appear correlated, and negative shocks in German time series precede declines in economic activity in the United States (Hanan Morsy, 2002; Albrecht Ritschl and Samad Sarferaz, 2006). Fourth, bank failures in New York City, the financial center of the United States, peaked during the crisis in Germany and before Britain abandoned the gold standard (Gary Richardson and Patrick Van Horn, 2009).

While an obvious explanation for the simultaneous surge in bank failures in Germany and New York appears to be financial links between German borrowers and New York lenders, in a previous paper, we find that no banks in New York failed because of links to Germany or due to foreign loan losses of any type (Gary Richardson and Patrick Van Horn, 2009). All banks in New

York with financial exposure to Germany and other European nations survived the crisis, and most paid dividends throughout the 1930s. The simultaneity of bank failures in Germany and New York was coincidental, not causal. The surge in New York occurred because politicians pressured the Superintendent of Banks for reasons unrelated to events overseas, and the Superintendent responded by increasing the frequency and rigor of bank inspections and closing an inordinate number of banks. The Superintendent's ceased closing banks when the political pressure subsided (Richardson and Van Horn, 2009).

That finding raises additional questions. How did banks in New York react to the financial crisis in Europe? Did they restrict lending? Did they raise credit standards? Did they lose depositors? Did hide large loan losses and become zombie banks? To all of these questions, the answer appears to be, banks in New York reacted little, if at all, to the financial crisis in continental Europe. Banks in New York predicted the crisis, prepared for the crisis, and when it occurred, continued business as usual. New York's leading bankers deliberately and collectively decided on the business-as-usual policy in order to minimize the impact of the European financial crisis on the United States.

The rest of this essay corroborates our answers. Section 2 establishes the foundation for our answers by describing the extant evidence. Section 3 examines qualitative evidence about the policies pursued by money-center banks and the logic underlying those policies. Section 4 demonstrates that aggregate evidence appears consistent with policies that money-center banks said they were pursuing. Section 5 demonstrates that data drawn from the balance sheets of individual banks appears consistent with the policies that money-center banks said they were pursuing. Section 6 discusses the implications of our analysis.

2. Data

The perfect data for addressing the issues at hand would describe the strategies pursued by money-center banks in New York City and the rationales underlying those strategies. It would also indicate at every point in time the financial condition of every financial institution in New York City and financial flows within those institutions, among banks in New York, and between banks in New York and institutions outside the city. This perfect data set does not exist. Instead, we have periodic snapshots of financial institutions gathered by various authorities, at varying frequencies, at different points in time, and filtered via various methods. Each of these snapshots provides a glimpse of the underlying reality. Analyzing all of the snapshots yields the clearest possible picture of events occurring at the time.

A source of information about the strategies and logic of New York City's money-center banks survives in the archives of the Federal Reserve Bank of New York. During the 1920s and 1930s, leaders of the New York Federal Reserve frequently spoke to and corresponded with directors of money-center banks in New York City. These conversations often included the Governor of the New York Fed, George Harrison. Harrison wrote detailed memos concerning his conversations and kept copious amounts of correspondence, both incoming and outgoing. When he retired, he left his office records with the Federal Reserve Bank of New York.

We examined Harrison's notes and correspondence concerning the financial situation in the spring, summer, and fall of 1931. His correspondence dwelled at length on the financial crisis

in Germany and Austria, its potential effects on banks in New York City, and the steps that money-center banks had taken and were taking to prepare for likely contingencies.

Harrison's information was likely to be accurate, since he had years of experience working in the financial sector, a dense network of business contacts, and frequent interactions with financiers (professionally and socially) that enabled him to cross-check and verify the veracity of the information that he received. Harrison also endeavored to ensure that information he received from financiers remained private. Harrison designated much of this notes and correspondence as 'confidential' and retained the records in his own office to ensure control of the flow of information from his office. We believe that we are the first scholars to have access to Harrison's records. Harrison's materials illuminate strategies pursued by banks in New York City and the rationales behind those policies.

Another source substantiates information gleaned from Harrison's records. During the 1920s and 1930s, the principal financial periodicals – including the *New York Times*, *Wall Street Journal*, *Bradstreet's Weekly*, *Dun's Review*, *Commercial and Financial Chronicle*, and *Bankers' Magazine* – periodically published articles describing policies pursued by money-center banks and the logic underlying those strategies. The reporters who wrote these articles attributed their information to discussions with leaders of large banks, although the seldom disclosed their sources, preventing us from directly verifying their accounts. The congruence of information published by competing periodicals adds credence to common claims, as does their agreement with information gathered from Governor Harrison's memoranda.

During the 1920s and 1930s, several quantitative sources provide aggregate depictions of events occurring in New York City. The first contains information aggregated from call reports of Federal Reserve member banks operating in New York City. The data begins in 1919. The

number of variables expands in 1928. Calls occurred periodically. Early in the 1920s, the calls occurred three times per year. The time between call dates varied considerably. One of the calls almost always occurred at the end of the calendar year. The others occurred at intervals of one to ten months. Later in the 1920s and throughout the 1930s, the calls occurred four times each year on regular schedule, with the time between calls varying from two to four months.

The second snapshot contains data aggregated from weekly reporting banks in New York City. The Federal Reserve did not disclose the identity of weekly reporting banks, but did indicate that this set of sixteen banks contained more than 75% of the deposits of all member banks in New York City (Federal Reserve 1947 pp. 145-8). All of these banks also contributed to data set number one.

The third snapshot contains information aggregated from the call reports of all nationally chartered banks operating in New York City. These calls occurred from three to six times each year. After 1923, the schedule became standardized with one call in between late February and mid April (typically mid March), one call on the last business day of June, one call between mid September and mid October, and one call on the last business day of December. The extant series extends back to the 1869.

The fourth snapshot contains information aggregated from the balance sheets of banks chartered by the state of New York. These calls occurred four times each year, on a regular schedule, similar to that of the Office of the Comptroller of the Currency (OCC). The extant series extends back to the 1890s.

Each of these aggregate snapshots has strengths and weaknesses. The first and second cover roughly the same set of Federal Reserve member banks, but the information has been processed via different filters. The first filter provides more detail on a larger set of banks over a

longer time period but fewer times per year with varying lengths of time between observations. The second filter provides high frequency and regularly spaced observations but with less detail on a smaller set of banks over a shorter period of time. The third snapshot provides the longest data series with the broadest set of balance sheet information, typically 18 categories on the asset side of the balance sheet and 24 variables on the liability side of the balance sheet, but the information exists only for nationally chartered banks. The fourth data set covers a different set of banks (state chartered) over a long period. Some overlap exists between the first and third snapshots (national banks) and the first and fourth snapshots (state chartered banks that joined the Federal Reserve System). All four aggregate data sets cover a longer period at a higher frequency than the microdata available from individual banks.

Data on the balance sheets of individual banks comes from several sources. The Superintendent of Banks of the State of New York published the balance sheets of state chartered banks and trust companies at four dates during the year (described above). Details include the composition of assets (e.g. loans by type of collateral, stocks, bonds, discounts, cash, and deposits in other banks) and the composition of liabilities (e.g. time deposits, demand deposits, borrowings from banks, capital, surplus, and undivided profits).

The OCC published balance sheets for banks with national charters. The balance sheets reported five categories of assets and seven categories of liabilities. The balance sheets appeared once each year, for the fall call through 1927 and for the December call thereafter. The OCC did not publish the remaining call reports, and they have not been found in the OCC's archives.

The Federal Reserve did not publish call reports from individual banks. The Fed retained microfilm copies of some of its original records. For state-chartered member banks, balance sheets and income statements survive for the December and June calls for 1929 through 1933.

For national banks, balance sheets survive from the December 1929, 1931, and 1933 calls. Income statements survive from the December 1929, June 1931, and December 1931, and December 1933 calls. The balance sheets provide detailed data about banks' foreign exposure. Schedule G indicates holdings of foreign government bonds and other foreign securities. Schedule I indicates balances due in dollars and foreign currencies from foreign banks and foreign branches of U.S. banks. Schedule J indicates balances due to banks in foreign countries. Schedule L indicates time deposits of foreign banks and trust companies. Schedule D indicates the number of branches in foreign countries. A balance sheet also exists for each foreign branch, which provides additional information about overseas operations. The microfilmed call reports also contained examiners comments on the financial health of each institution. These assessments indicated the extent of each bank's losses on investments (both past and predicted) and recommendations as to whether the bank should remain in operations, increase its reserves, consolidate with another institution, or cease operations.

The Senate Hearings on the Sale of Foreign Bonds or Securities in the United States report loans to Germany arranged by banks in New York and outstanding when the banking crisis ignited on the continent. The hearings also describe the exposure of these banks to other forms of foreign financial risk.

Rand McNally Bankers' Directory provided information about balance sheets; foreign branches; correspondent networks; and services provided to depositors, such as trust accounts, brokerage accounts, and assistance with international transactions. Rand McNally published data biennially from the June and December call dates. Rand McNally covered both national and state chartered banks. Rand McNally standardized balance sheet information, aggregating assets into four categories and liabilities into four categories.

Polk's Bankers' Encyclopedia provided information similar to that in Rand McNally. The principal difference was the publication date, in March and September (rather than July and January), and the date of the data, which was gathered from spring and fall call reports (rather than end of June and end of December). The dates of the fall and spring call reports varied from jurisdiction to jurisdiction and year to year, complicating efforts to attribute Polk's data to specific days (or even months).

Newspapers also published financial information about individual banks. The *New York Times* and *Wall Street Journal* published balance-sheet data for banks operating in New York City. Banks supplied copies of their call reports to the newspapers. The newspapers published information from the largest banks at most call dates, but information for mid-range banks less frequently, and information for smaller banks about once per year. Banks also purchased advertisements which listed data from their latest call reports. Some of the larger banks advertised their financial condition more frequently.

These microdata sources enable us construct a panel indicating the financial condition of all banks in New York City during 1931. The panel contains information for state-chartered institutions at all call dates, and for nationally-chartered banks at least twice each year, and more frequently, when the data is available.

An additional source provides high-frequency information about the financial condition of individual banks. The report originated at the New York City Clearing House. It indicated demand, time, and foreign-branch deposits for all clearing house members. It contained a few other balance sheet items for each bank. The *New York Times* published the report in a column entitled "New York Weekly Bank Statements." The column included similar information about sizeable banks that did not belong to the clearing house.

3. Qualitative Evidence of Policies of Money-Center Banks.

New York's bankers worried about the financial fallout from the German crisis. Documents from the archives of the Federal Reserve Bank of New York illuminate their concerns. The nature of these records – summaries of private discussions among financiers and policy makers – makes them particularly informative. The documents come from the “Office Correspondence” files of Governor Harrison. The Governor constantly communicated with the leaders of commercial banks, who communicated with each other, and with subordinates overseas. The Governor also hosted meetings between bank presidents and leaders of the Federal Reserve.

The records reveal that after troubles beset banks in Austria, New York bankers expected the crisis to spread to Germany. A confidential cable sent in May, from F.F. Beer, an agent in Germany, to George Davison, President of Central Hanover Bank and Trust Company, indicated that Austrian problems would have dire consequences for German banks. One week after the Credinstalt failed, Beer wrote that

when I was in Vienna, I was able to get a clear picture of the extent of these losses and of the impossibility to open the bank again. It was immediately then that I cabled you that I expect again a very serious crisis for Germany and recommended to withhold from doing any new business (Harrison Collection, Office Memoranda, 1928-1931).

The remainder of the cable described the culmination of the Austrian crisis, ties between Austrian and German banks, and how links between Germany and the United States could transmit the crisis across the Atlantic.

In June 1931, as tensions grew in Germany, New York bankers discussed how to handle their German accounts. On July 3, ten commercial bank presidents told Governor Harrison that

they would not restrict withdrawals of German clients. All German accounts would remain open for business. Credit lines would be maintained at least in “their present position and in some cases ... unused lines” would be reopened.¹ George Davison’s name was on that list, even though Central Hanover’s agents had warned him of the depth of German problems and advised him not to conduct new business with German clients.

On July 15, when the German crisis crescendoed, eleven presidents of New York commercial banks met with Governor Harrison to discuss the situation. The bankers agreed to honor all checks and cable orders to the extent of available credit limits. They also agreed to maintain acceptance lines and accept new bills within existing lines. Finally, they agreed to maintain all deposits in, advances to, and loans for German banks.

On this same day, a front-page story in the *New York Times* described the New York Fed’s extension of its credit line to the Reichsbank. The credit line of \$100 million, originally established on June 25, was extended because “depleted resources” made it “impossible for Germany to repay a huge central bank credit within a short space of time.”² Articles on this topic – the German crisis and links between the German and United States financial systems – frequently appeared in newspapers. The articles indicate that the public knew of New York’s exposure to the German crisis. The public could have reacted to that information by withdrawing deposits from endangered institutions. The public, however, did not do that.

On July 22, the same committee of eleven bank presidents met again and formally requested that the New York Federal Reserve handle all German acceptance credits, deposits, and etcetera. Governor Harrison “indicated that this was impossible.”³ The next day, Governor Harrison briefed the Hoover Administration on New York banks’ agreement to repay German

¹ Harrison Collection, Office Memoranda, 1928-1931.

² “American Loan Renewed” *New York Times*, July 15, 1931, p. 1.

³ Harrison Collection, Office Memoranda, 1928-1931.

deposits and maintain credit lines. The Administration concluded that there was no need for it to take action. This indicates that banks in New York City bore the brunt of the crisis in Germany. The Federal Reserve System and the Hoover Administration did not step in to save the financial system.

On July 30, a group of German bankers submitted a proposal concerning German acceptance credits in New York. An expanded committee of seventeen New York bank presidents approved the terms of the proposal. The proposal indicated that

present acceptance credits may be renewed as they fall due. The German firms or merchants for whom the original credits were established will be required to meet their obligations as they come due by paying marks to the Reichsbank; but the proceeds will not be required to be remitted to this side but may be utilized for further credits here for import purposes (*Wall Street Journal*, August 6, 1931).

The New York banks communicated their plan to leading banks throughout the United States and received confirmation that they would conform to its conditions.

Overall, the narrative record reveals that events in Germany worried bankers in New York, who responded to the crisis by organizing aid for German counterparties and coordinating actions with the Federal Reserve. While some New York banks lost deposits during the German crisis, contemporaries attributed the bulk of this loss to domestic events, rather than to events overseas. This conclusion appears clearly in the records of a meeting at the New York Federal Reserve on 11 September 1931. A committee of eleven presidents of the largest banks in the city discussed recent events with the New York Fed's governors.⁴ New York banks lost a total of \$200 million in deposits in the previous year, most during the month of August 1931. The presidents attributed the withdrawals to loss of confidence following the failure of nine banks.

⁴ This included officials from Chase National Bank, National City Bank, Guaranty National Bank, Central Hanover Bank and Trust Company, Bankers Trust Company, Irving Trust Company, Bank of Manhattan Trust Company, First National Bank, Chemical Bank and Trust Company, New York Trust Company, Manufacturers Trust Company, and Chatham Phenix Bank and Trust Company.

The Superintendent of Banks seized these institutions after raising regulatory standards in the wake of the failure of the Bank of United States, which led to accusations of laxness by the superintendent. The minutes of the meeting report a consensus “that recent bank failures have had their effect upon the psychology of small depositors in banks.”⁵ The withdrawals in August stemmed from fear among domestic depositors who were reacting to the superintendent’s sudden seizure of banks previously perceived to be safe. The minutes mention neither the German crisis nor foreign deposits when discussing the decline in deposits during August.

4. Aggregate Data

This section explores the aggregate evidence for New York City. Figures 1 through 4 examine Federal Reserve member bank call reports. Figures 5 through 7 examine Federal Reserve weekly reporting member banks. The two types of data yield the same conclusion. Neither trends nor levels in the aggregate data changed notably during the financial crisis in Germany, although patterns changed substantially after other events. The financial crisis in Germany appears to have had little influence on the behavior of banks in New York.

The figures highlight five events discussed at length by contemporary observers and retrospective researchers. The first event is the stock market crash on 24 October 1929, which contemporaries saw as a harbinger of the contraction and which researchers believe contributed to the contraction. The second event is the banking panic that began with the collapse of Caldwell and Company on 7 November 1930. Caldwell’s collapse triggered a wave of bank failures that peaked with the closure of the Bank of United States in December 1930. The Bank of United States was located in New York City and was one of the largest banks to fail during the Depression. Friedman and Schwartz named this wave of failures the ‘First Banking Panic.’

⁵ Harrison Collection, Office Memoranda, 1928-1931.

The third event is the closure of the largest bank in Austria, the Creditanstalt, on 11 May 1931. The Creditanstalt's collapse triggered the crisis that spread throughout Europe. The fourth event is the German Banking Holiday on 14 July 1931, which marked the peak of the panic in that nation. The fifth event is Britain's abandonment of the gold standard on 19 September 1931.

The timing of call reports helps to distinguish the impact of these events on banks in New York City. Calls occurred near and between the dates of all the events of interest. A call occurred on 4 October 1929, three weeks before the stock market crash; on 25 March 1931, 6 weeks before the Creditanstalt collapsed; on 30 June 1931, two weeks before the German bank holiday; and 29 September 1931, less than two weeks after Britain abandoned gold.

Figure 1 plots total assets at each call date. During the recession in 1920 and 1921, total assets fell. During the boom that followed, total assets rose, nearly doubling between the trough in 1922 and the peak in 1930. Growth ceased between the stock market crash and collapse of Caldwell. After the post-Caldwell panic, assets declined gradually. The descent accelerated after Britain abandoned the gold standard in September 1931. Between September 1931 and December, assets fell by nearly 10%, from \$8.25 billion to \$7.46 billion. Between December 1931 and June 1932, assets fell another 10%, to a nadir of \$6.72 billion. An ocular examination indicates that trends changed little (if at all) after banking crises in Austria and Germany.

Figure 2 comes to a similar conclusion. The figure depicts portfolio allocations from 1919 to 1935.⁶ From 1919 to 1929, the composition appeared stable. Banks invested half of their assets in loans and about a tenth of their assets in government securities, corporate securities, reserves with the Federal Reserve, and cash (and near-cash items such as bankers' balances). The

⁶ Note that the figure depicts the share of assets invested in US government securities, other securities, and reserves with the Fed as solid line, because these allocations changed little within a year. The figure depicts loans and cash items in the process of clearing with diamonds and dots respectively, because these allocations exhibited strong seasonal fluctuations. Solid lines, labeled 'average loans' and 'average cash items', indicate moving averages of the raw data that smooth-out seasonal fluctuations and illuminate long-run trends.

pattern changed when financial panics began in the United States. Banks began investing less in loans and more in government securities. Lending declined for several years. By the summer of 1934, bank portfolios contained more government securities than commercial loans. Together, government securities and reserves with the Fed comprised half of bank investments. The banking crises in Austria and Germany appear to have had little influence on these trends. The pattern of investments did not change noticeably after either event.

Figure 3 reinforces this point. It illustrates the composition of lending from 1928 through 1935.⁷ After the stock market crash, commercial lending declined. The decline continued until the summer of 1931, when commercial lending rose briefly. The decline resumed after Britain abandoned the gold standard. Commercial lending remained low throughout the 1930s. Lending on securities followed a similar pattern, although the decline started in the summer of 1930. Patterns of both types of lending appear unrelated to events in German and Austria.

Figure 4 reinforces this point. It illustrates investments in securities from 1928 through 1935. Following financial turmoil in the United States, banks increased holdings of United States government debt. The increase continued throughout the 1930s. Banks also increased holdings of state and municipal debt. Holdings of corporate securities remained steady, as did holdings of foreign securities (both corporate and governmental) until Britain abandoned the gold standard. Afterwards, holdings of foreign securities declined. The decline does not appear dramatic, because limited quantities of foreign debt appeared on the balance sheets of New York banks, with the exception of a limited number of large institutions.

Overall, Figures 1 through 4 demonstrate that aggregate trends changed little, if at all, during the financial crises in Austria and Germany, although aggregate trends change

⁷ Note the data for Figures 3 and 4 begin in 1928.

substantially (and sometimes dramatically) after other events. Figures 5 through 7 yield the same conclusion, even though they view events through a different filter.

Figure 5 examines weekly reporting banks in New York City. Time deposits changed gradually. Time deposits increased until panics beset the U.S. banking system in the fall of 1930, and declined thereafter. Demand deposits exhibited higher frequency fluctuations. In late 1929, the stock market crash appeared prominent, as investors pulled funds from equities and rushed them to convenient depositories. In 1933, the nationwide banking panic appeared prominent. In the month before the banking holiday, demand deposits plunged precipitously, as depositors withdrew funds from banks, and interbank deposits declined dramatically, as country banks pulled funds from New York correspondents to meet demands in local communities. Demand deposits also exhibited long-run trends. Demand deposits trended upward until banking panics beset the U.S. banking system, and declined thereafter. The decline accelerated after Britain abandoned the gold standard. The decline ended in early 1932, possibly in response to the United States efforts to stem gold outflows by raising domestic interest rates.

Figure 6 examines loans and investments of weekly reporting banks. The pattern mirrors previous figures. Changes in trends and levels appear unrelated to events in Austria and Germany. Events on the continent appear (at most) to have been correlated with minor fluctuations on banks' balance sheets. Big changes occurred after other events.

Figure 7 reinforces this observation. The figure depicts asset allocations of weekly reporting banks. After financial panics begin in the United States, commercial lending contracted. Holdings of government securities rose. These changes appear unrelated to events in Europe, with the possible exception of minor fluctuations near the date of events.

A quick summary of Figures 1 through 7 may be useful. During the 1930s, the balance sheets of banks in New York City changed. Those changes reflected changes in the behavior of depositors and bankers. Those changes appear to have coincided with financial crises in the United States, and to a lesser extent, with Britain's abandonment of the gold standard. Events in Austria and Germany appear to have had correlation with changes in the balance sheets of New York's banks.

5. Micro Data

The aggregate data suggests that the German crisis had little effect on banks in New York City. But, aggregate figures can obscure individual movements. Perhaps banks that invested in Germany suffered, while banks without foreign exposure prospered. On aggregate and average, therefore, little changed, while in actuality, links to Germany dramatically influenced banks' behavior and fates.

How do we measure banks' exposure to foreign financial risks? Sources provide data on seven measures of foreign financial exposure: (i) balances payable in dollars due from foreign branches of American banks, (ii) due from banks in foreign countries, (iii) due to banks in foreign countries, (iv) time deposits of other banks and trust companies in foreign countries, (v) foreign government bonds owned, (vi) other foreign securities owned, including bonds of foreign municipalities, and (vii) number of foreign branches. These seven dimensions of foreign financial exposure are closely correlated, raising concerns about multicollinearity. To address this issue, we can create an index of foreign exposure from the first principal component of the seven measures of foreign financial exposure. The first component is the linear transformation of the variables that explains the greatest possible variance in these vectors. Banks for which the value of the index is lowest have the least foreign financial exposure. Banks for which the value

of the index is highest have the most foreign financial exposure. We measure foreign financial exposure in early 1931, before the collapse of the Creditanstalt.

Figures 8 through 10 compare our index of foreign exposure to changes in bank balance sheets during the crisis on the continent. In each figure, the horizontal axis indicates the level of foreign financial exposure.⁸ The vertical axis indicates the change in a balance sheet variable between the call date in March 1931 and the call date in September 1931. The March figures come a month and a half before the failure of the Creditanstalt on May 4. The September figures come a month and a half after the German crisis peaked and a month before the Federal Reserve raised discount rates to defend the gold standard.

Figure 8 examines the percentage change in deposits. The largest losses in deposits occurred in banks with the lowest levels of foreign exposure. Banks with substantial foreign exposure lost deposits at a below average rate. Banks with less foreign exposure, on average, lost a larger percentage of deposits than banks with more foreign exposure, although outcomes varied so much for banks lacking foreign exposure that the null hypothesis of no relationship between exposure and deposits is difficult to reject.

Figure 9 examines the percentage change in highly liquid assets, cash and due from banks. The change appears unrelated to foreign exposure. Banks with substantial foreign exposure finished the crisis with a quantity of liquid assets similar to that which they possessed at the beginning. Some banks with little foreign exposure stockpiled liquid assets. Other banks with little foreign exposure lost liquid assets. The null hypothesis of no relationship between exposure and cash (or near cash) assets cannot be rejected.

⁸ The only large bank not included in the current scatter plots is Chase National Bank. We are unable to locate the call report for the bank, which precludes us from assessing its level of foreign exposure.

Figure 10 examines the percentage change in surplus and profit. These two categories constitute banks' retained earnings. An increase in surplus occurred when a board of directors decided to reinvest earnings in the business. An increase in undivided profits occurred when the bank earned profits and prior to paying dividends. A decrease in either category indicated that expenses exceeded revenues, which typically occurred when banks wrote off investment losses. The data indicate a positive relationship between exposure and retained earnings. Surplus and profits changed little in banks with high levels of foreign exposure. Surplus and profits fell precipitously in several banks with little (or no) foreign exposure. Overall, the experience of low-exposure banks varied considerably, and the null hypothesis of no relationship between exposure and profitability cannot be rejected.

Together, Figures 8 through 10 tell a consistent tale. Foreign exposure had little (or no) relationship to changes bank balance sheets between March and September 1931. This pattern (or lack thereof) suggests the financial crisis on the continent had little (or no) direct impact on banks in New York City. The crisis in Germany does not appear to have harmed banks with substantial exposure to foreign financial risks. If anything, banks with foreign financial exposure performed better than other institutions during the global financial crisis of 1931. This pattern is the opposite of what one would expect if linkages between firms conveyed financial shocks across the Atlantic.

7. Discussion

This essay examined how banks in New York City reacted to the financial crisis in Europe during the summer of 1931. Given New York City bank's substantial exposure to European, and particularly German, financial markets, one might have expected the crisis in

Europe to have had a substantial impact on the performance and behavior of banks in the money center of the United States. Recent research seems to support that supposition. Papers by Morsy (2002) and Ritschl and Sarferaz (2006) reveal correlations between German and American macroeconomic aggregates. Negative shocks in German time series appear to precede declines in economic activity in the United States. The effect is particularly pronounced for German banking data.

When we began our research, we thought that we would confirm the hypotheses derived from the correlations uncovered by Ritschl, Sarferaz, and Morsy. We knew of New York bank's substantial exposure to European (and particularly German) financial markets. We knew that Keynes and other economists at the time warned about the risks inherent in these international financial flows. We knew that bank failures in New York City peaked during and immediately after the financial crisis in Germany. We expected that combining these facts with financial data from the balance sheets of banks in New York City would illuminate channels of contagion from Germany to the United States.

The results of our research overturned our expectations. In our initial essay, we showed that no banks in New York City with financial exposure to Germany (or Europe or anywhere overseas) failed during the contraction from 1929 to 1933. The cluster of failures in New York City during the summer of 1931 occurred because political pressure induced New York's bank superintendent to raise regulatory standards. The cluster's origins were orthogonal to events overseas. The correlation between failures in New York and Germany was coincidental, not causal.

This essay extends our earlier work and reaches an even more surprising conclusion. The behavior of New York's biggest banks did not change during (or in response to) the financial

crisis in Germany. Lack of response appears clearly in aggregated high-frequency balance-sheet data and disaggregated lower-frequency call-report data. These same sources show sizeable responses to other events, leaving us with a puzzle: why did New York banks respond to some events but not others?

Documents from the archives of the Federal Reserve Bank of New York help us answer that question. New York's leading banks did not react to the crisis in Germany at the time of the crisis because they had expected the crisis to occur and had prepared for it for several years. They had accumulated reserves to absorb the losses that they anticipated on German assets and had accumulated liquidity in case they experienced outflows of European deposits. The banks accumulated these buffers beginning in 1927 and throughout the financial market boom at the end of the 1920s. Those reserves helped New York banks survive the downturn of the 1930s. The accumulation of reserves during good times was a symptom of the conservative financial philosophies that dominated commercial banking during the first half of the twentieth century but that financiers may no longer follow today. We plan to investigate these differences in future research.

Our findings shed light on the debate about transatlantic contagion that initially inspired our research. New York bankers' behavior suggests several reasons that scholars could misinterpret the correlations uncovered by time-series studies such as Morsy (2002) and Ritschl and Sarferaz (2006). First, vector-autoregression analysis uncovers correlations in the timing of time series. Uncovering these patterns requires scholars to specify the temporal channels between the variables. These channels usually indicate how the lags of one series relate to other series. In our case, Morsy (2002) and Ritschl and Sarferaz (2006) specify a lag structure, but we find that leads of the data (i.e. expectations of future movements) have important influences on

the behavior of bankers. It is possible that altering the temporal structure of Morsy (2002) and Ritschl and Sarferaz (2006) could change their results (or at least the interpretation of their results). Second, vector-autoregression analysis illuminates how innovations (i.e. unexpected and unpredicted) movements in one time series correlate with changes in the other series in the system. Our research reveals that New York's leading banks predicted the German banking crisis. New York's leading bankers seemed surprised neither by the timing nor the magnitude of German's financial implosion. Vector-autoregression analysis says little about the impact of anticipated and endogenous events of this type. Third, the results of vector-autoregression analysis (like all statistical analysis) may be misinterpreted when substantive explanatory variables are excluded from the analysis. In this case, the excluded variables include information related to U.S. monetary policy – particularly the quantity of loans discounted by the Federal Reserve System and its close substitute, the Reconstruction Finance Corporation. In the late 1920s and early 1930s, the Federal Reserve rationed credit primarily by controlling the quantity of discount loans, rather than the price.

Together, these three potential objections suggest one way in which the correlations discovered by Morsy (2002) and Ritschl and Sarferaz (2006) could be reconciled with traditional stories about the international transmission of financial shocks during the late 1920s and early 1930s. A traditional story – told both in Friedman and Schwartz (1965) and Temin (1991) – begins with a Federal Reserve monetary contraction in 1928 and the banking panics in the U.S. in 1930. The gold-standard transmits this impulse quickly to financial institutions in Europe, particularly Germany, who have limited reserves of gold and cash, and must react swiftly to the policy change, quickly resulting in economic contraction and/or financial crisis. Institutions in the United States possess larger reserves of gold and cash and react to these policy changes with

a long lag. Differences in reaction times generate the timing – German banking and real contractions sooner and U.S. banking and real contractions later – uncovered by Ritschl et al. Because their methods exclude key explanatory variables and traditional timing channels, they interpret their result as indicating a causal connection running from Germany to the United States, which according to the traditional story, ran in the opposite direction.

Now, it is worth discussing the traditional story of trans-Atlantic financial contagion in more depth. Peter Temin (1993) describes three channels by which the financial crises of the early 1930s could have been transmitted among nations. The first is a contagion of fear across national boundaries. Domestic depositors panic as foreigners (in this case German depositors) withdraw funds, spreading weakness in the banking sector to another country, forcing its banks to curtail lending or go out of business, increasing the costs of credit information, and in some instances, driving large numbers of banks out of business. The second channel is the impact on bank portfolios when values of foreign assets fall and patterns of financial flows change, which forces banks to scramble for reserves (and sometimes also for liquidity) and to curtail lending. The third is the impact of capital flows on national economies and central bank policies, particularly in nations on the gold standard, which raise interest rates to defend gold reserves.

Our research eliminates and rules out the first two channels during the financial crisis in the summer and fall of 1931. Financial institutions did not succumb to a contagion of fear or alter their behavior in response to the financial crisis in Germany. New York banks did not, in other words, find themselves without a chair when the music stopped during the summer of 1931 and the trans-Atlantic game of musical chairs described by Keynes ended. Thus, Temin's third hypothesis, commonly called "Golden Fetters," remains the leading explanation as to what transmitted the financial crisis from Europe to the United States in the summer of 1931.

Figure 1: Assets of New York City Fed Member Banks at Call Dates, 1919-1935

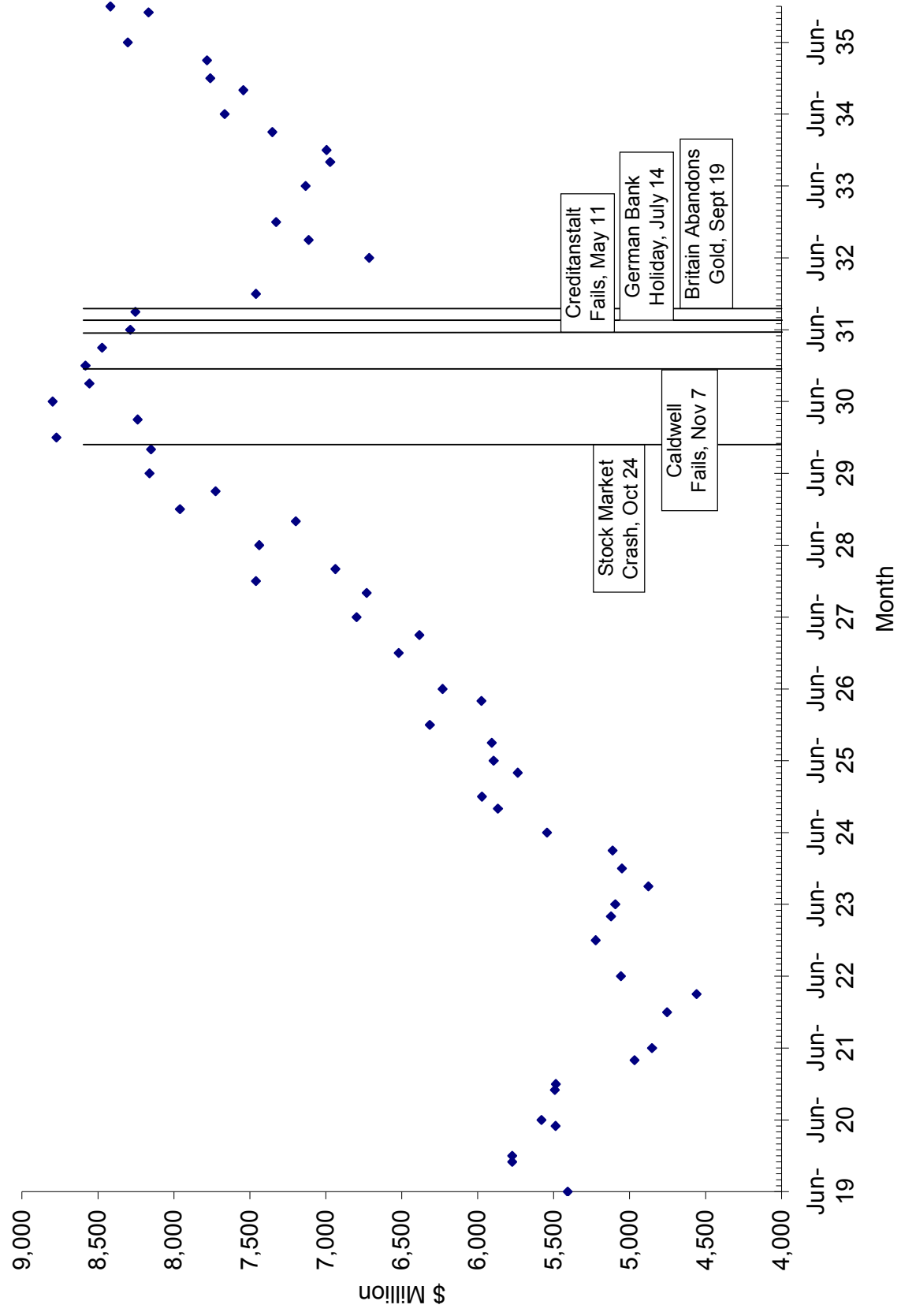


Figure 2: Composition of Assets, New York City Fed Member Banks at Call Dates, 1919-1935

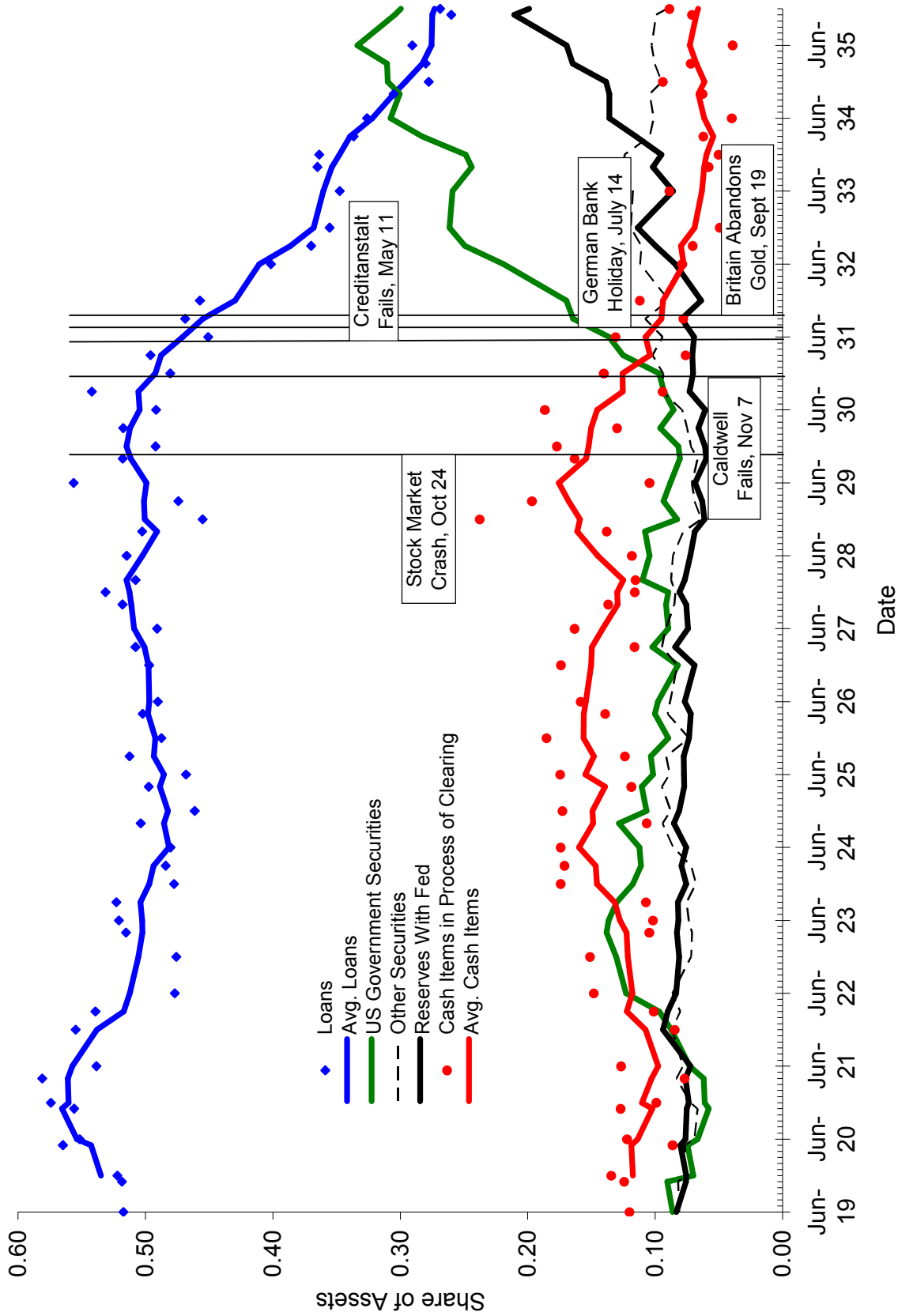


Figure 3: Lending by New York City Fed Member Banks at Call Dates, 1928-1935

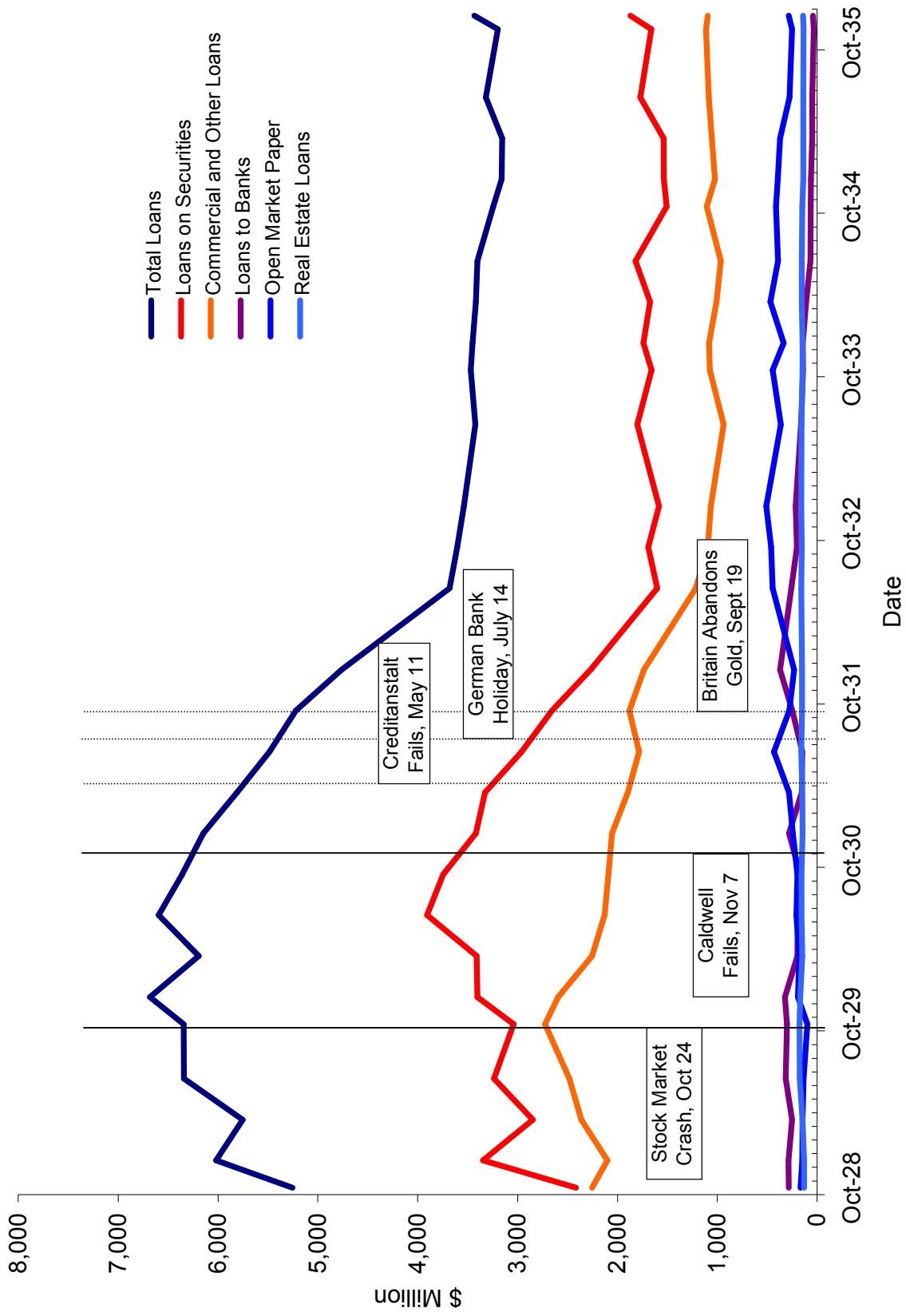


Figure 4: Securities of New York City Fed Member Banks at Call Dates, 1928-1935

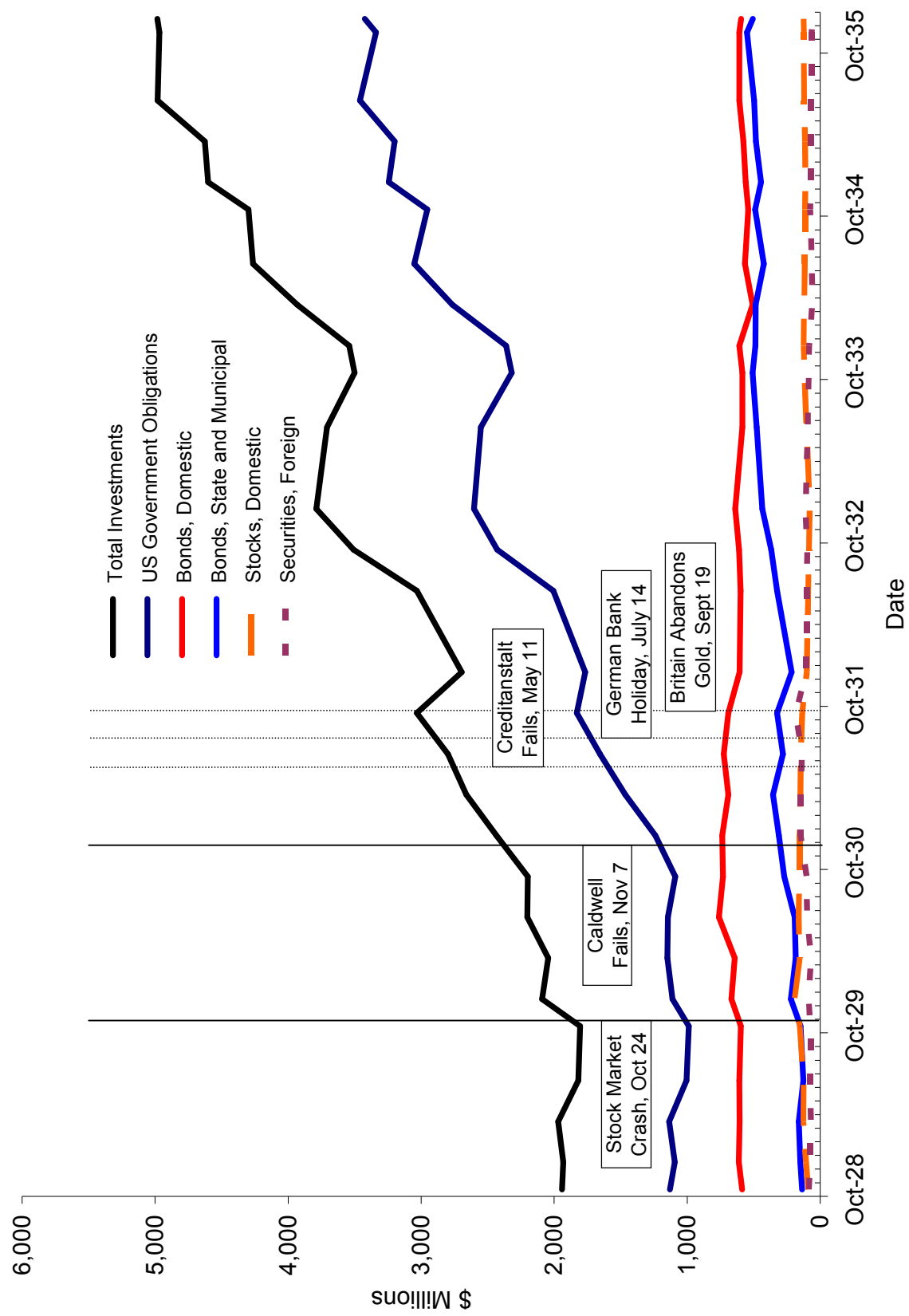


Figure 5: Deposits of Weekly Reporting Banks in New York City, 1929-1934

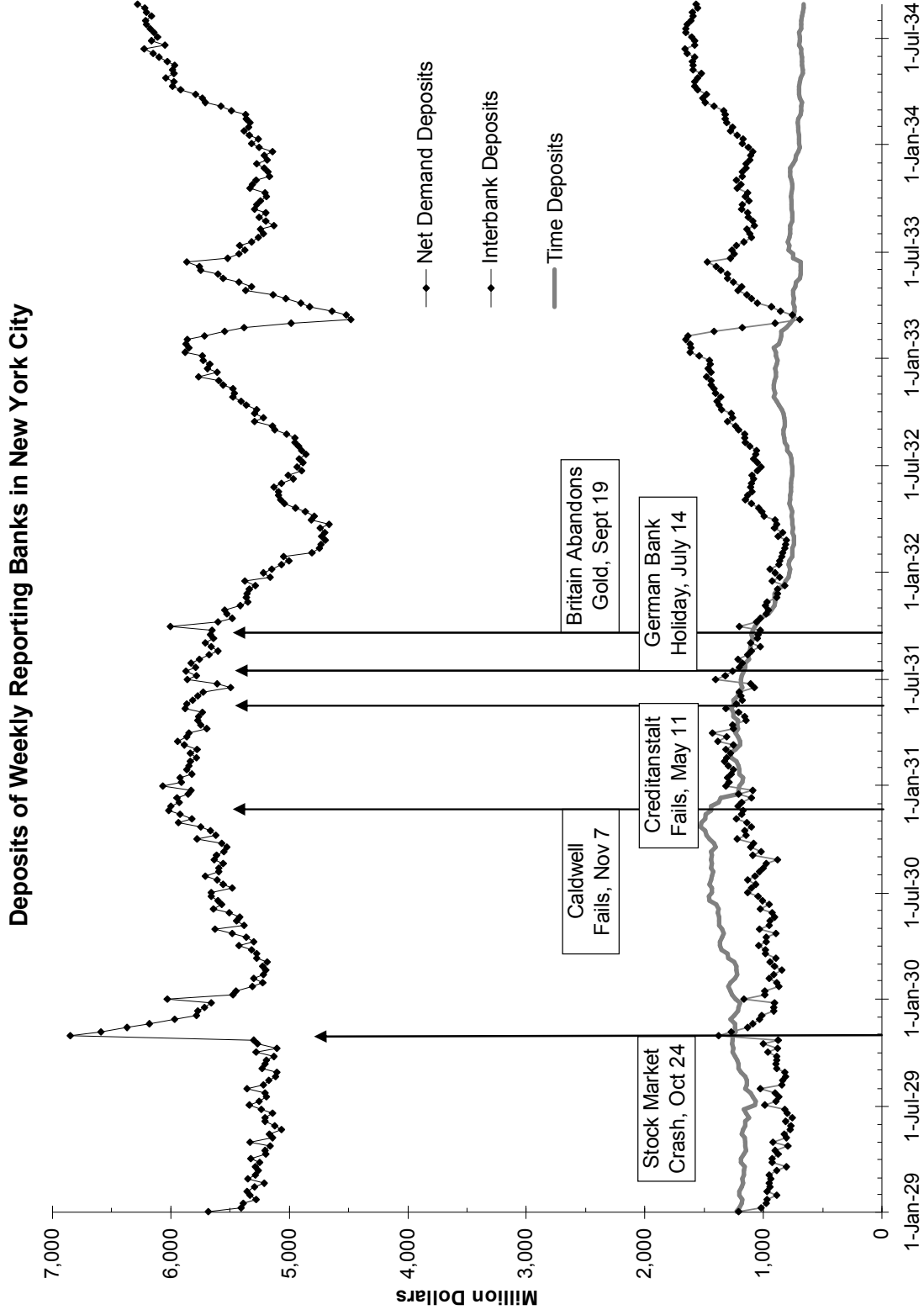


Figure 6: Loans and Investments of Weekly Reporting Banks in New York City

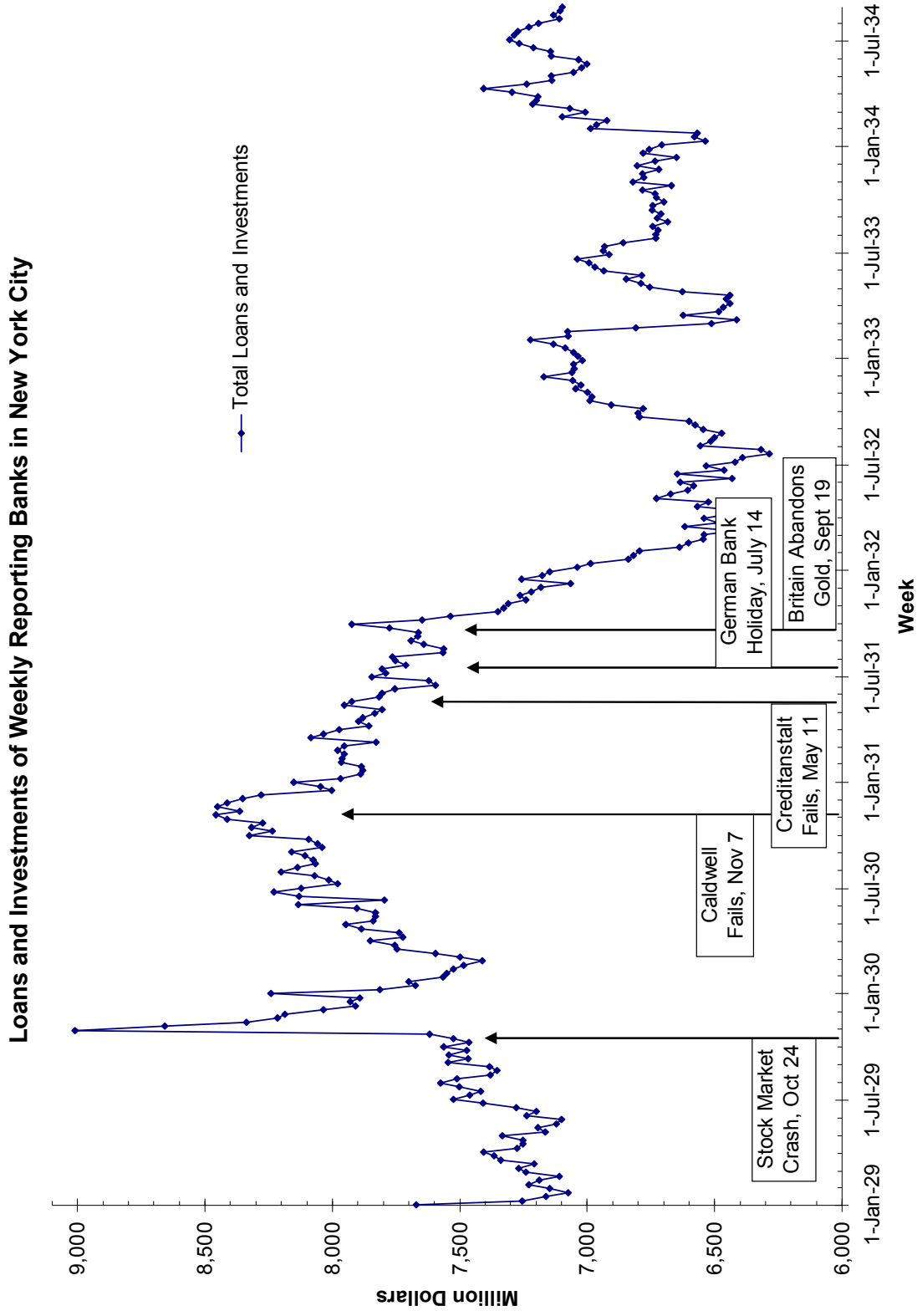


Figure 7: Portfolio Composition of Weekly Reporting Banks in New York City

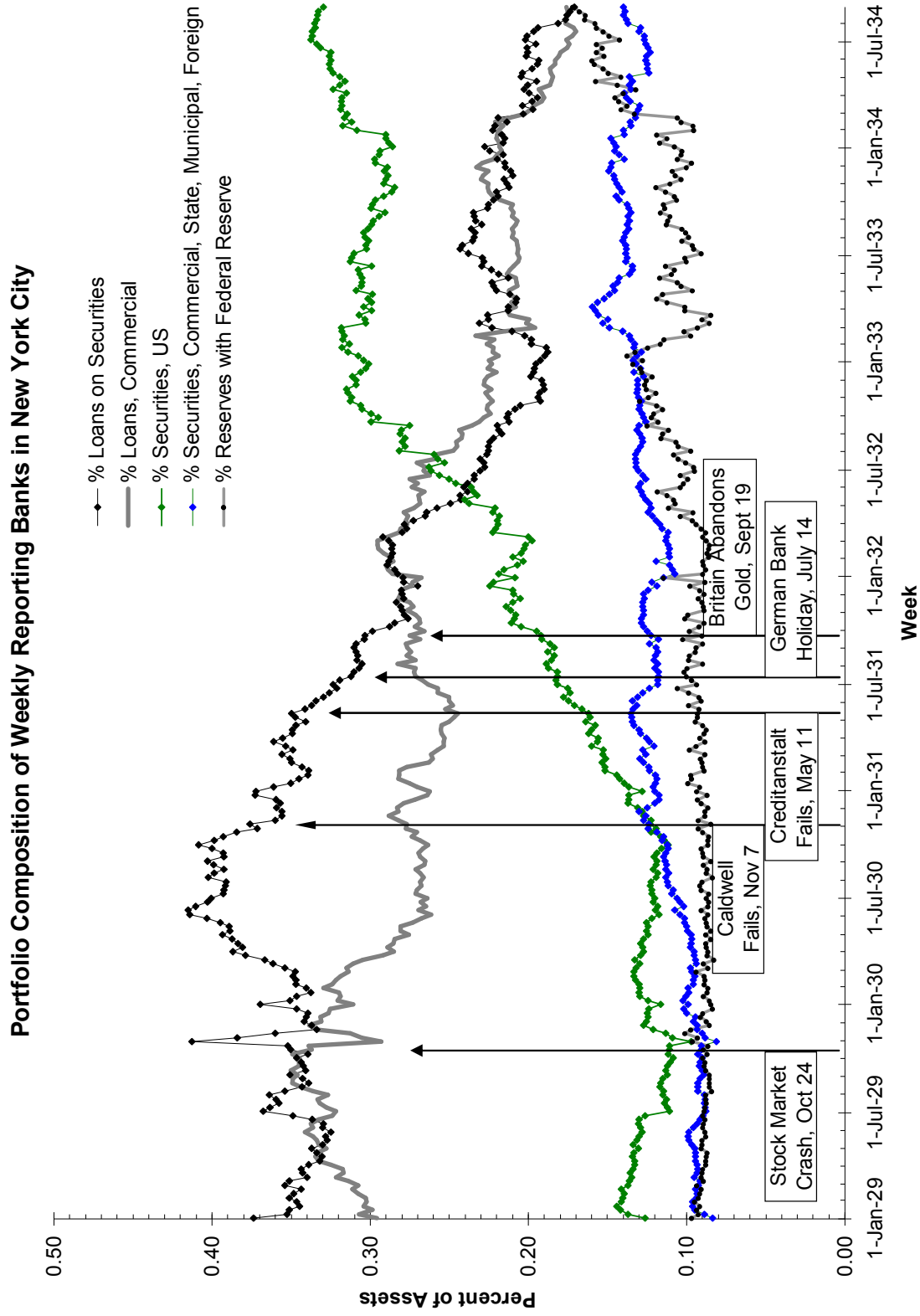


Figure 8: Percent Change in Total Deposits, March 31, 1931 to September 27, 1931

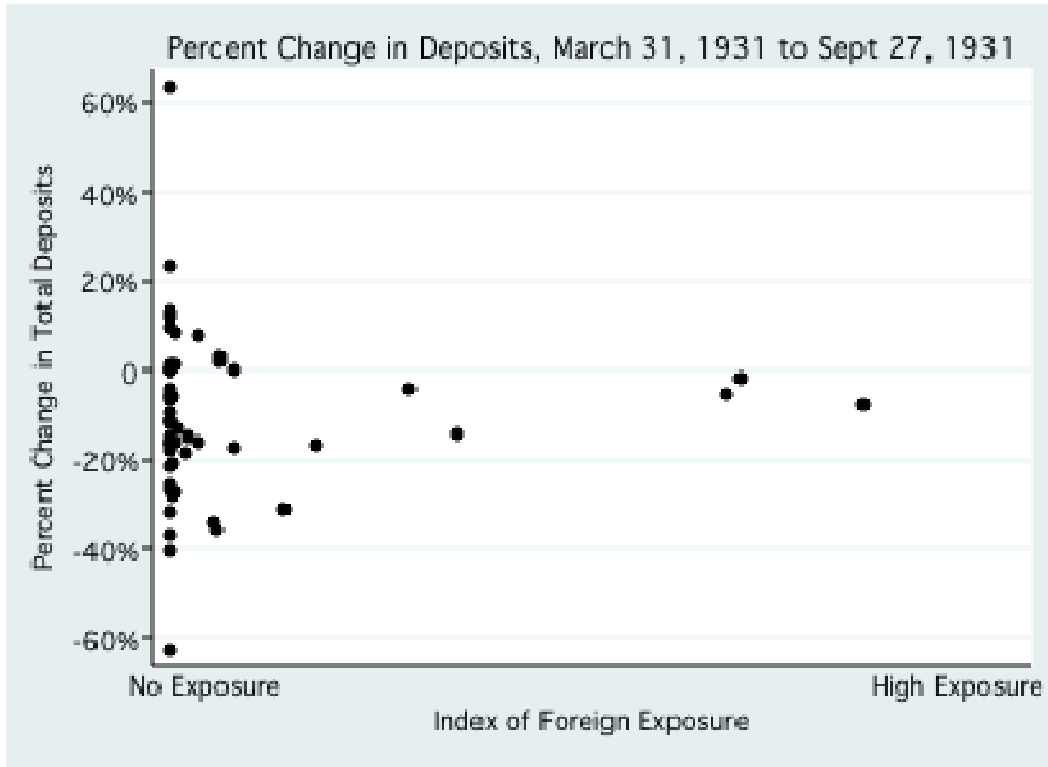


Figure 9: Percent Change in Cash and Due from Banks, March 31, 1931 to September 27, 1931

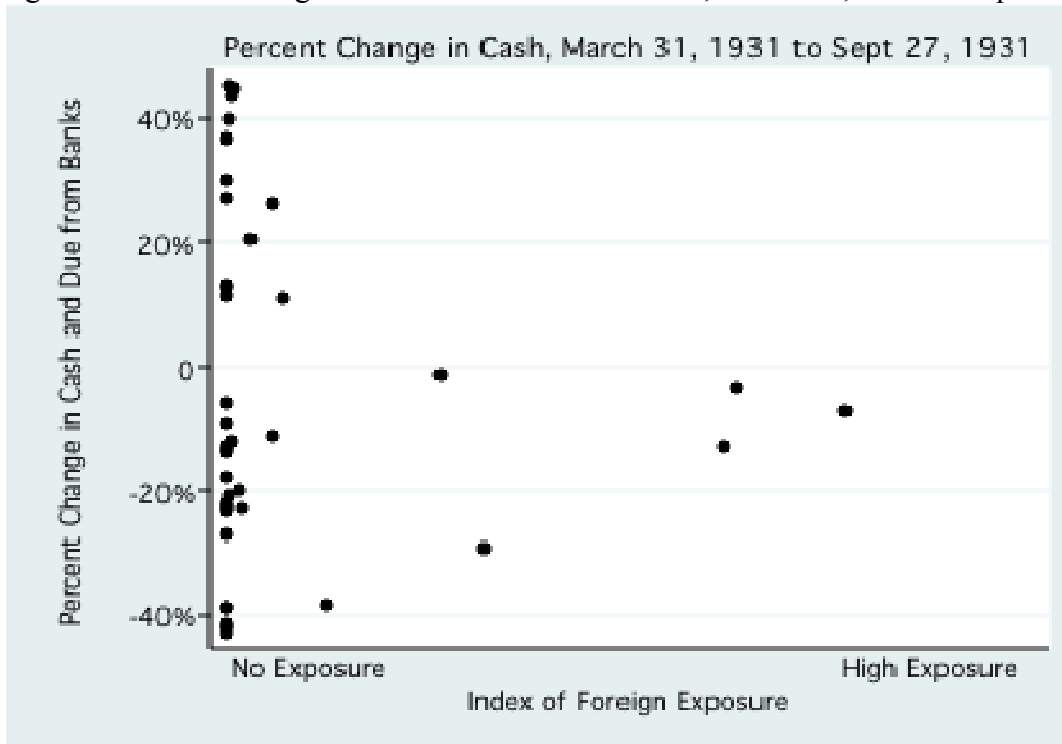
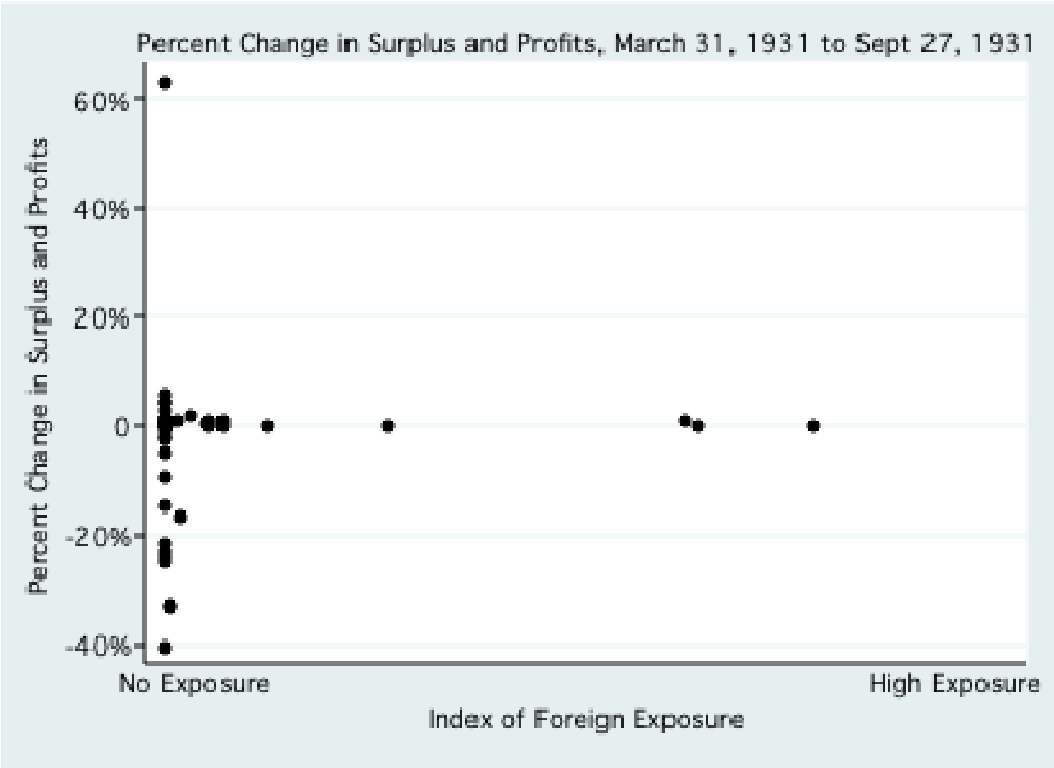


Figure 10 Percent Change in Surplus and Profits, March 31, 1931 to September 27, 1931



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