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THE INTERNATIONAL PROPAGATION OF THE BANKING CRISIS OF 1931

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ABSTRACT

A banking crisis began in Austria in May 1931 and intensified in July, when runs struck banks throughout Germany. In September, the crisis compelled Britain to quit the gold standard. Newly discovered data shows that failure rates rose for banks in New York City, at the center of the United States money market, in July and August 1931, before Britain abandoned the gold standard and before financial outflows compelled the Federal Reserve to raise interest rates. Banks in New York City had large exposures to foreign deposits and German debt. This paper tests to see whether the foreign exposure of money center banks linked the financial crises on the two sides of the Atlantic.

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1. Introduction

In May 1931, the largest financial institution in Austria, the Creditanstalt, collapsed, marking what is generally held to be the beginning of an international banking crisis. During the next month, financial difficulties spread throughout central Europe, as troubles beset banks in Hungary, Czechoslovakia, Romania, Poland, and Germany. On July 13, the failure of a large German bank, the Darmstadter- und Nationalbank, triggered runs throughout that nation and compelled the German government to close all depository institutions. Banks reopened for limited operations after two days and resumed normal operations after one month. Later that summer, the crisis spread to Britain. In September, sales of sterling and withdrawals from British banks accelerated. In order to halt financial outflows, Britain abandoned the gold standard (Barry Eichengreen, 1992; Peter Temin, 1989 and 1993; Charles Kindleberger, 1986).

According to the conventional academic wisdom, Britain's departure from gold transmitted the financial crisis from Europe to the United States (Milton Friedman and Anna Schwartz, 1963; Eichengreen, 1981 and 1992; Temin, 1989 and 1993). Anticipating a similar action on the part of American monetary authorities, central banks and private holders in Europe converted dollar assets in the New York money market into gold. The unloading of bills swiftly assumed panic proportions. Gold outflows rose rapidly, draining funds from the U.S. financial system. To stop the international drain, the Federal Reserve System raised the discount rate from 1½ to 3½ percent between October 9 and October 16. This was the

sharpest rise within so brief a period in the whole history of the system, before or since ... the move intensified internal financial difficulties and was accompanied by a spectacular increase in bank failures and runs on banks ... in the six months from August 1931 through January 1932, 1,860 banks with deposits of \$1,449 million suspended operations, and the deposits of those banks that managed to keep afloat fell by a much larger sum. Total deposits fell over the six-month period by nearly five times the deposits in suspended banks or by no less than 17

percent of the initial level of deposits in operating banks (Friedman and Schwartz, 1963, p. 317).

Golden fetters, in other words, compelled the Federal Reserve to raise the discount rate and restrict the supply of credit, contributing to (or in many accounts, causing) the largest surge in bank suspensions in United States history.

Recent research, however, reveals additional links that may have existed between the banking systems in the United States and Europe. Documents from the archives of “the Bank of England show that an intricate system of cross-deposits was set up by the Austrian Central Bank covertly to direct funds to the Creditanstalt via American and British banks – to compensate it for taking over the bankrupt Bodencreditanstalt (Iago Gil Aguado 2001, p. 199).” All of the American institutions involved in this shell game operated in New York City, the central money market of the United States. The cross-deposit involved tens of millions of dollars, a substantial multiple of the capital of the banks involved. In addition, bank balance sheets and clearing-house association reports show that New York banks’ foreign branches held deposits totaling over \$600 million dollars. Foreigners also held large sums in New York City. Thus, banks in the United States’ central money market had large, direct exposure to European deposits.

Records resulting from the *Senate Hearings on the Sale of Foreign Bonds or Securities in the United States*, which took place from December 18, 1931 to February 10, 1932, illuminate another link between banks in New York and Europe.¹ New York banks organized over \$1.4 billion in loans to German corporations, utilities, and governments (including local, state, and national) from 1924 through 1930. Nearly \$1 billion of those loans floated in the United States were outstanding in June 1931 (Robert Kuczynski, 1932). Econometric analysis of the links between the German and United State’s economies during the 1930s suggests that German debt

¹ 72nd Congress, 1st Session, Sale of Foreign Bonds or Securities in the United States, Hearings on Senate resolution 19 before the Committee on Finance, Parts 1-4.

played a role, perhaps substantial, in transmitting financial shocks across the Atlantic ([Albrecht Ritschl and Samad Sarferaz, 2006](#)). Analysis of equity returns also suggests a link through this channel (Hanan Morsy, 2002).

An initial inspection of recently discovered data on bank failures in the United States reinforces the appearance of a direct link between the German and American banking crisis. Previously available evidence aggregated information on bank suspensions for Federal Reserve Districts at the quarterly level and for states at the annual level. This aggregation prevented scholars from determining whether bank failures in the central money market of the United States occurred in July and August, contemporaneous with the German crisis, or in September and October, when golden fetters bound. The disaggregated data show that almost all of the failures of banks in the central money market coincided with the crisis in Germany and preceded Britain's departure from gold. Bank distress in New York City, in other words, rose when bank distress rose in Germany. Bank distress peaked in the weeks following the German panic. The banking crisis struck the central money market of the United States more than a month before financial pressures forced Britain off gold.

This correlation raises questions about the channels that transmitted banking crises across the Atlantic. Temin (1993, pp. 93-4) describes three potential channels for the international transmission of banking crises. The first is a contagion of fear which jumps across national boundaries, when domestic depositors panic as foreigners withdraw funds. The second is the impact on portfolios when values of foreign assets fall and patterns of financial flows change. 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. Temin indicates

that

... it would be nice to choose between the alternative models, [but] this does not seem possible at the current state of our knowledge. ... Economists do not yet know enough about international transmission of financial crises to have a single model, or even to choose which transmission channel was most important (Temin 1993 p. 93-4).

Our data-collection endeavors enable us to answer question such as: which channel transmitted the banking crisis from Europe to the United States in the third quarter of 1931? Did direct links exist between the banking crises in Germany and the United States? Did deposits, debt, correspondent relationships, or some other financial factor link the fate of money-center banks in New York to the fate of banks in Germany?

This remainder of this essay answers those questions. Section 2 describes the quantitative, qualitative, and narrative sources of evidence. Section 3 examines patterns in the aggregate evidence which suggest a direct link between the crisis in Europe and the United States. Section 4 describes our statistical tests and econometric results. Section 5 examines contemporary evidence of the causes of bank distress in the central money market during the summer of 1931. Section 6 examines contemporary accounts of the regulatory regime changes that raised rates of bank distress in the central money market of the United States during the summer of 1931. Section 7 discusses the implications of our analysis.

While the aggregate evidence suggests that a direct link existed between the financial crisis in Europe and the surge in bank failures in the central money market of the United States during the summer of 1931, the microeconomic evidence proves otherwise. Banks in New York City with substantial exposure to foreign financial flows survived the crisis of 1931 and the

contraction as a whole. Many of them remained profitable and paid dividends throughout the 1930s.

The correlation between the financial crisis on the continent and bank distress in New York City was coincidental, not causal. Bank distress in the central money market of the United States peaked during the summer of 1931 for reasons unrelated to financial incidents across the Atlantic. Political pressure and regulatory reform determined the timing of events in New York City. The impetus for these reforms arose from the failure of The Bank of United States in December, 1930, and the criticism directed at the Superintendent of Banks for the State of New York for his role in that institution's collapse.

2. Data

Several sources provide the quantitative, qualitative, and narrative information needed to investigate the issues at hand. Quantitative sources contain data useful for econometrically analyzing the performance of New York City banks. Qualitative sources report contemporary conclusions concerning the causes of bank distress. Narrative sources describe events in the central money market during the financial crisis in the summer and fall of 1931 and the change in the regulatory regime that occurred at that time.

Several sources provide quantitative information on banks' characteristics. *Rand McNally Bankers' Directory* provides data balance sheet figures, correspondents networks, Federal Reserve membership, and the services provided to depositors. *Rand McNally* also indicates for most sizeable New York banks whether the institution provided its customers with international transaction services and whether the institution possessed foreign branches. *Rand McNally* published biennially. Observations drawn from the July issue provide a panel of annual observations on state and national banks at their spring calls.

The *Annual Report of the Superintendent of Banks of the State of New York* provides more detailed financial data for state-chartered banks and trust companies. The information comes quarterly. It includes details of bank balance sheets, including the composition of investments (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, and borrowings from banks). The *New York Times* provides information on bank balance sheets in a weekly column entitled “New York Weekly Bank Statements.” The information includes demand, time, and foreign-branch deposits for all members of the clearing house and for many additional institutions. 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 call reports collected by the Comptroller of the Currency and the Federal Reserve Board provide more detailed information for banks belonging to the Federal Reserve System. For state-chartered member banks, balance sheets and income statements survive for the December and June calls for the first five years of the depression (i.e. December 1929 through December 1933). For national banks, balance sheets survive from the December 1929 and December 1931 calls. Income statements survive from the December 1929, June 1931, and December 1931 calls. The balance sheets provide detailed data about bank’s 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.²

Information on changes in banks' status – such as suspensions, liquidations, mergers of solvent institutions, and consolidations forced by financial difficulties – comes from the archives of the Federal Reserve Board of Governors' Division of Bank Operations. From 1929 through 1933, the Board recorded information about changes in bank status on the St. 6386 series of forms. The forms included information identifying each bank, financial information on the date of the change in status, and additional information about the transaction, such as the identities of the institutions with which it merged and whether a bank reorganized before it reopened. Form St. 6386a reported bank consolidations. A consolidation was the corporate union of two or more banks into one bank which continued operations as a single business entity and under a single charter. Some consolidations involved banks in financial difficulties. These consolidations often occurred at the behest of regulators, who sought to combine solvent but illiquid banks with healthier institutions. The Federal Reserve classified these events as consolidations due to financial difficulties.³

Form St. 6386b reported bank suspensions. A suspension occurred when a bank closed its doors to depositors and ceased conducting normal banking business for at least one business day. Some, but not all, suspended banks reopened for business. A liquidation was a permanent

² The reports are available on microfilm from the Federal Reserve Board of Governors. See Joseph Mason, 1998 for a description of the available data.

³ The complete series of St. 6386 may be found in the National Archives, Record Group 82, Federal Reserve Central Subject File, file number 434.-1, "Bank Changes 1921-1954 Districts 1929-1954 - Consolidations, Suspensions and Organizations-St. 6386 a,b,c, (By States) 1930-1933." The forms are filed alphabetically by state, name of town or city, and name of bank. Multiple entries for individual banks appear in chronological order. To avoid repeated, lengthy citations in the body of the essay, after quotations from the archival data, the information required to locate the form (i.e. name of state, town, bank) is indicated in brackets. For additional information about this source, see Gary Richardson, 2006a, 2006b, 2006c, 2006d, and Gary Richardson and William Troost, 2006.

suspension. A liquidating bank closed its doors to the public, surrendered its charter, and repaid depositors, usually under the auspices of a court appointed officer known as a receiver.

Form St. 6386b included a section indicating the cause of a bank's suspension (for descriptions of the process that Federal Reserve agents used to determine the cause and tests of the quality of their conclusions, see Gary Richardson, 2006b and 2006d). Federal Reserve attributed most suspensions to one (or more) of five common causes. The first was *slow, doubtful, or worthless paper*. The term *worthless paper* indicated an asset with little or no value. The term *doubtful paper* meant an asset unlikely to yield book value. The term *slow paper* meant an asset likely to yield full value in time, but whose repayment lagged or which could not be converted to full cash value at short notice. The second common cause of suspension was *heavy withdrawals*, the typical example being a bank run. The third was *failure a banking correspondent*. Correspondents were banks with ongoing relationships facilitated by deposits of funds. A typical example is a county bank (the client or respondent) which kept its reserve deposits within and cleared its checks through a national bank in a reserve city (the correspondent). The fourth common cause was *mismanagement*. The fifth was *defalcation*, a monetary deficiency in the accounts of a bank due to fraud or breach of trust.

Form St. 6386c reported all other changes in bank status, including reopenings of suspended banks and voluntary liquidations. The latter was a category of closure in which banks ceased operations and rapidly arranged to repay depositors the full value of their deposits. Voluntary liquidations did not require the services of receivers and were not classified as suspensions. The categories of bank distress were typically construed to be temporary suspensions, terminal suspensions (i.e. liquidations), voluntary liquidations, and consolidations due to financial difficulties.

Combining the St. 6386 forms and the bank-balance sheet data described above yields a cross-sectional database of banks on the eve of the financial crisis at the beginning of July in 1931. These sources also yield a panel database of banks in July of each year from 1929 through 1932. These databases contain information about banks' characteristics, financial health, and fates of greater detail than in any other extant source.

Data on economic conditions comes from several sources. *Bradstreet's Weekly*, *Dun's Review*, *The Commercial and Financial Chronicle*, the *Federal Reserve Bulletin*, and the *Annual Reports* of the Federal Reserve Board and the Federal Reserve Bank of New York provide data on building permits, business failures, commodity prices, market interest rates, Federal Reserve discount rates, prices, and industrial production. The same sources also data on international flows of gold, goods, and funds.

Several of the sources described above provide qualitative information on the causes of bank distress. The St. 6386 database indicates the Federal Reserve Division of Bank Operation's conclusions concerning the cause of each bank suspension. The database also describes the financial difficulties that forced banks to seek consolidations, typically with the encouragement and assistance of regulators. The *Annual Report of the Superintendent of Banks of the state of New York* and press releases from the office of the bank superintendent (published in the *New York Times* and *Wall Street Journal*) indicate the conclusions of New York's regulatory authorities concerning the cause of each bank closure. The *Annual Report* also indicates recoveries from banks in liquidation and payments to depositors, which reveals the extent of insolvency at institutions in receivership. The microfilmed call reports for national and Federal Reserve member banks contain examiners reports on the financial health of each institution. These assessments indicate 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.

Several sources provide a narrative history of events influencing the central money market in New York City during the summer and fall of 1931. The *Annual Report of the Superintendent of Banks* discusses events perceived to be important, changes in the regulatory regime, and the closure and consolidation of institutions. The report also indicates the number, salaries, experience, and assignments of bank examiners as well as the reason for changes in the size of the examination staff. Newspapers and periodicals – including the *New York Times*, *Wall Street Journal*, *Bradstreet's Weekly*, *Dun's Review*, *Commercial and Financial Chronicle*, and *Bankers' Magazine* – regularly discussed events influencing banks in New York City. All of these outlets, for example, published articles about the demise of The Bank of United States, the investigation into the causes of its collapse, the public and legislative outcry over regulators' role in these events, and the regulatory agencies reactions to this adverse publicity.

3: Aggregate Patterns – Apparent Link Between Germany and New York

An initial inspection of the evidence suggests the existence of a direct connection between the banking crisis in Germany and bank distress in New York. The chronological correlation is striking.

[Figure 1](#) illuminates the relationship. The figure plots weekly hazard rates for liquidation and consolidation due to financial difficulties for banks in New York City from July 1930 through March 1933. The hazard function is a non-parametric estimate constructed by smoothing raw hazard rates (i.e. the number of bank liquidations divided by the number of banks at risk each week and the number of consolidations due to financial difficulties divided by the number of banks at risk in each week). The kernel is Epanechnikov. The bandwidth is two weeks, which

is wide enough to reveal trends without obscuring short-term shifts in the probability of failure.

Figure 1 shows that the probability of failure rose rapidly at the beginning of July, as the European banking panic spread through central Europe. The increase accelerated as bank runs swept Germany, and the German government shut down their nation's banking system. The probability of failure peaked in August, immediately after the reopening of banks in Germany but preceding Britain's departure from gold.

Table 1 provides additional details about the banks that failed in New York City during the Great Contraction. The table lists all of the banks forced to change status due to financial difficulties from January 1, 1929 through December 31, 1933. The fourth column indicates the type of change forced on the bank. Two types of changes predominated. The letter *L* indicates that the bank entered receivership and experienced liquidation. In all cases but one, the liquidation began at the behest of the superintendent of banks of the state of New York, after bank examiners determined that the institution faced financial difficulties so severe that it had to be closed to protect the interests of depositors and usually after determining that no other bank wished to consolidate with the afflicted institution. The exception was the Queensboro National Bank, whose directors decided to turn the institution over to receivers. The letter *C* indicates that financial difficulties compelled the bank to consolidate with another institution. Most of these consolidations occurred at the behest of regulators after examinations revealed looming financial problems. Typical situations involved banks lacking liquidity or banks whose capital had been consumed by investment losses. Regulators threatened to close such institution unless their directors resolved the problems by injecting additional funds or merging with another institution. Many institutions that liquidated (i.e. *L*) had also sought consolidation, but failed to reach an agreement with another organization in time to forestall receivership.

Table 1's first column indicates the date at which the bank closed its doors to depositors or consummated a consolidation with another institution. More than 60% of these transactions (16 out of 26) occurred during the two month period bounded by the failure of the Darmstadter- und Nationalbank on July 13, 1931 and Britain's departure from gold on September 21, 1931. Only two banks failed in the wake of Britain's departure from gold. One additional institution temporarily suspended payments during that period. For the sake of comparison, only two banks failed in December 1930, a period that Friedman and Schwartz referred to as the First Banking Crisis. Only one bank failed during the winter of 1933, when the drain of gold threatened to shut down the Federal Reserve Bank of New York and forced the President to declare a national banking holiday.

The pattern of events appears clear. Bank distress in the central money market of the United States peaked during the European banking crisis in the summer of 1931. The correlation suggests that a direct connection existed between financial events in New York and on the continent, particularly Germany. Several channels could have linked banks on both sides of the Atlantic including foreign deposits, foreign debts, and correspondent relationships.

4. Econometric Methods and Results

The existence of detailed microdata on the potential channels of transmission allows us to test for a direct link between bank distress in Europe and New York. Our econometric methods resemble those of Isabel Schnabel (2004), Martin Petri (1998), and Richardson and Troost (2006). We regress indications of banks' performance on (i) variables gathered from banks' balance sheets, (ii) variables indicating banks' financial health, (iii) variables indicating banks' exposure to international debts, deposits, and financial flows, and (iv) variables indicating

fundamental forces affecting the aggregate economy. We examine a wide array of specifications commonly used in the literature, and test the statistical robustness of our results.

Table 2 raises issues important for analyzing the evidence. The table reveals raw correlations between distressed departures from the banking business (i.e. liquidations, consolidations due to financial difficulties, and voluntary liquidations) and characteristics of banks. The correlations come from data on national and state member banks because for them detailed data on foreign exposure exists. The data comes from Comptroller of Currency call reports described in the preceding section. Similar data does not exist for state banks that did not belong to the Federal Reserve System. For those institutions, data on foreign holdings is limited. For non-member banks, the New York State Bank Superintendent's Office did not publish information on the topic, in large part, because non-members lacked substantial foreign operations. *Rand McNally Bankers' Directory* published limited information on the topic, consisting of the names of foreign correspondents institutions, and in some case, and in a few cases, foreign branches and foreign holdings. The extant information indicates non-member banks had little (and usually no) foreign operations and had limited foreign exposure. Excluding them from our econometric analysis does not distort our findings.

In Table 2 column (3) reports results for the 51 national banks that operated in New York City during the summer of 1931. For national banks, the only call reports that survive from the five years preceding the time under investigation come from December 1929. This specification, therefore, utilizes data from that source. Column (2) reports results for the 29 state-member banks that operated in New York City during the summer of 1931. For state-member banks, call reports survive for each of the June and December calls during the late 1920s and early 1930s. The high frequency of the extant evidence enables us to draw data from the June 1931 call,

which indicates their financial status on June 30, 1931, a few weeks prior to the events under investigation. This specification employs that source. Expanding the data to the entire available panel yields similar results.

Column (1) reports results for the national and state-member banks pooled together, a total of 80 institutions. For the variables in group (A), the correlation coefficients indicate the relationship between basic indicators of financial health and distressed departures from the banking business. The correlations are consistent with those commonly found in the literature. Banks with higher net worth failed less often than banks with lower net worth. Banks with more reserves failed less often than banks with fewer reserves. Banks with more liquid resources as a percentage of assets failed less often than banks with less liquid resources. The correlation coefficients in group (B) indicate the relationship between foreign exposure and distressed departures from the banking business. All six of the correlation coefficients are negative, indicating that the more foreign exposure possessed by banks, the lower the likelihood of their failure. The correlation coefficients in group (C) indicate the relationship between bank distress and foreign exposure as a share of total resources. The majority of these correlation coefficients are negative, indicating once again, that banks with greater foreign exposure failed at lower rates. The inverse correlation between foreign exposure and failure found in the microdata suggests that foreign exposure may not have been the reason that banks failed in New York City during the summer of 1931.

[Table 3](#) reinforces this result. The table reports cross tabulations between the incidence of bank distress and several measures of foreign exposure. The cross tabulation shows that none of the banks that departed from the banking business in the summer of 1931 possessed foreign branches, while two of the banks that survived the summer possessed such branches. The second

cross tabulation shows that none of the banks that departed from the banking business in the summer of 1931 possessed time deposits from financial institutions in foreign countries, while eight of the banks that survived the summer possessed such deposits. The third cross tabulation shows that none of the banks that departed from the banking business in the summer of 1931 belonged to syndicates that extended loans to Germany during the 1920s, while four of the banks that survived the summer lead such syndicates.

The final cross tabulation indicates the number of state and national banks forced to depart from the banking business by the different forms of bank distress. For example, regulators compelled two state-chartered banks belonging to the Federal Reserve System and seven nationally-chartered banks to consolidate with other institutions. Regulators liquidated four state member banks and one national bank. This cross tabulation highlights a feature of the data that shapes our econometric strategy.

Discrete choice methods are a natural way to analyze the data at our disposal. For example, logistic models yield optimal estimates for binomial choices (such close doors to depositors or remain in operation) under a wide range of conditions. Multinomial logistic models yield optimal estimates for multinomial choices (such as remain in operation, consolidate, enter receivership, or voluntary liquidate) under a wide range of conditions. [Table 3](#) reveals that for our data, those conditions do not exist. Perfect classifiers are the principle problem. Many measures of foreign exposure are perfect classifiers. Banks with foreign branches, for example, never experienced distress. Many characteristics of banks are also perfect classifiers. State banks, for example, never voluntarily liquidated. Perfect classifiers bedevil discrete choice methods, because discrete choice estimators cannot be calculated in the cases of perfect classification. Near perfect classifiers also impede accurate inference via discrete choice methods.

One way to circumvent this problem is to drop the perfect classifiers from the regression. But in our case, that strategy appears unpromising. The perfect classifiers include three key measures of foreign exposure: branches, deposits, and loans. In each case, banks that possessed this type of foreign exposure survived the crisis of the summer of 1931 (and the remainder of the contraction). This information is important and should not be discarded from the analysis for computational convenience. The other measures of foreign exposure turn out to be near perfect classifiers. For example, almost all banks with foreign exposure of any type survived the crisis in the summer of 1931 (and the entire depression). In such circumstances, discrete choice estimators do not possess optimal properties.

A solution to this problem is the linear probability model. This model incorporates perfect classifiers without difficulty although coefficients estimated from it may be inefficient and, in certain circumstances, biased. These properties could be cause for concern, but our examination of the residuals from our regressions suggests that neither problem afflicts our estimates to a substantial degree.

[Table 4](#) presents estimates based upon this model. The unit of observation is an individual bank. The data for each bank is drawn from the call report for the date closest to June 30, 1931. The dependent variable equals one if the bank consolidated due to financial difficulties, entered receivership at the behest of regulators, or liquidated voluntarily between July 1, 1931 and December 31, 1931. The dependent variable equals zero otherwise. This indicator for bank distress is regressed on a vector of explanatory variables, including various measures of exposure to foreign financial forces and a vector of bank characteristics. The balance sheet characteristics includes standard measures of financial health such as net worth as a share of total resources, government securities as a share of total resources, other securities as a

share of total resources, reserves as a share of total resources, total deposits, and demand deposits as a fraction of total deposits. Other bank characteristics include the number of correspondents, the jurisdiction of its charter, and the age of the organization. All of these coefficients possess signs and magnitudes consistent with previously published studies, and therefore, are not reported in the table. The coefficients of interest are those on the variables indicating exposure to potential channels for the transmission of the foreign financial crisis.

Column (1) reports these coefficients for a regression pooling data on all of the national and state member banks operating in the central money market on July 1, 1931. The signs of many coefficients are negative, indicating that increasing foreign exposure along that dimension reduced the likelihood of failure. For example, the coefficient on *Foreign Government Bonds Owned*, -0.034, suggests that increasing a bank's holdings of foreign government bonds by \$1,000,000 reduced the likelihood of the bank's failure by 3.4%. The magnitudes of the positive coefficients are small, suggesting that if increasing foreign exposure along that dimension increased the probability of failure, the increase was minimal. The standard errors of the coefficients are large relative to the magnitudes. T-tests indicate that for each coefficient, the hypothesis that the coefficient equals zero cannot be rejected. An F-test indicates that the hypothesis that the all of the coefficients jointly equal zero cannot be rejected.

Column (2) indicates the results when the sample is limited to the 29 state-member banks that operated in New York City during the summer of 1931. The results are similar. The signs of most of the coefficients are negative. The magnitudes of the positive coefficients are small. T-tests indicate that for each coefficient, the hypothesis that the coefficient equals zero cannot be rejected. An F-test indicates that the hypothesis that the all of the coefficients jointly equal zero cannot be rejected.

Column (3) indicates the results when the sample is limited to the 51 national banks that operated in New York City during the summer of 1931. The results resemble those for the first two regressions. The signs on several of the coefficients are negative. An F-test indicates that the hypothesis that the all of the coefficients jointly equal zero cannot be rejected. T-tests on individual coefficients reject the hypothesis of equality with zero in four cases at the five percent level and in another case at the ten percent level. Their statistical significance entails an examination of the magnitude of these effects.

Table 5 undertakes this task by comparing for each bank their foreign financial exposure with the probability of failure predicted by the regression (1) in Table 4. The seven dimensions of foreign financial exposure for which we have data are closely correlated. From the seven vectors of these variables, we can create an index of foreign financial exposure by deriving the principal components. The first principal component is a linear transformation of the vectors that explains the greatest possible variance in the data. This first principal component serves as our index. 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.

For quintiles organized according to the extent of foreign exposure, Table 5 reports the average probability of distress predicted by regression (1) in Table 4 and the standard deviation of that average. The probability of failure appears constant across quintiles. Two-tailed tests cannot reject the null hypotheses of equality among the averages of the quintiles at standard significance levels. Only the banks with the largest foreign financial exposure appear to have a significantly lower probability of distress. For the eight banks with the highest foreign exposure, the predicted probability of distress is approximately 2%. For the two banks possessing networks of foreign branches, the predicted probability of distress is less than 1%.

Figure 2 summarizes these results. The vertical axis indicates the predicted probability of distress. The horizontal axis indicates our index of foreign financial exposure. The observations plot the predictions for each of the 80 banks in our sample. The pattern appears clear. For banks possessing low levels of foreign financial exposure, the probability of distress was independent of the extent of exposure. For banks possessing the highest levels of foreign financial exposure, however, the probability of distress was low and inversely correlated with the extent of exposure. In other words, banks with substantial foreign exposure failed much lower rates than other institutions, and as the extent of foreign exposure increased, the probability of failure fell. This econometric result seems reasonable, since all of the banks in New York City with substantial foreign financial exposure survived the depression.

5. Contemporary Conclusions about the Causes of Bank Distress

Econometric evidence has advantages and disadvantages. Econometrics employs the power of statistics to illuminate relationships between variables after controlling for the influence of others. But, statistical inference remains vulnerable to the dangers of misspecification and misinterpretation. Statistical studies are also limited by paucity of data which, for financial institutions operating during the Great Depression, consists of infrequent observations of a subset of the relevant variables.

The conclusions of contemporary observers complement such statistical evidence. Observers such as Federal Reserve agents, bank examiners, accountants, economists, and journalists had access to an array of information unavailable to modern scholars, including detailed, daily data about the financial status of and events affecting commercial banks. Contemporary observers also had the ability to talk with the man on the spot and possessed in-depth knowledge about the institutions and issues at hand.

Detailed records survive from several sets of contemporary observers. The first (and arguably the most important) is the St. 6386 database constructed by the Federal Reserve Board's Division of Bank Operations. [Table 6](#) summarizes the results of the Division's analysis of bank suspensions. In 11 of 14 cases, the primary cause of suspension was the depreciation in the value of the bank's assets. In two cases, heavy withdrawals were the primary cause of suspension. In another case, a bank failed after losing a substantial share of its capital to embezzlement. Comments written on the St. 6386 forms discuss reasons for the depreciation in the value of the bank's portfolio, principally the declining value of stocks, corporate bonds, and real estate. In all cases, the comments refer to declines of domestic assets. In no instance do the comments refer to foreign investments or German debt.

The Division of Bank Operations also tracked consolidations due to financial difficulties. [Table 7](#) summarizes the results of this endeavor. All but one of the banks forced to consolidate in 1931 suffered from frozen assets or impaired capital. The examiners who discovered these afflictions reached conclusions like Midwood Trust Company's condition was "such as to necessitate its being taken over by some other institution."⁴ Long Island National Bank's health was "such as to necessitate an immediate absorption." "The condition of the International Trust Company was such as to make desirable their being taken over by a stronger institution." In almost all of these cases, the absorbing bank took all of the assets of the troubled bank in exchange for assuming the deposits and some, but not all, of the other liabilities of the troubled institution. The Division of Bank Operations attributed the financial difficulties to domestic factors. In no instance does the Division discuss international events, deposits, or debts.

Like the Division of Bank Operations, the New York State Bank Superintendent's office investigated the cause of suspension for each state-chartered bank, trust company, and private

⁴ Footnote number 3 explains how to locate the archival documents quoted in this paragraph.

bank. These amounted to 13 of the 14 institutions that closed their doors to depositors during the summer of 1931. The superintendent released initial statements about the cause of each closure on the date that the institution closed its doors and in the weekly bulletin of the Department of Banking. Final conclusions appeared in the Department of Banking's *Annual Report*. So did information about the rate of recovery from institutions undergoing liquidation. These sources described the cause of Chelsea Bank's and Trust Companies demise to be "rumors" that circulated "which have caused abnormal withdrawals of deposits," prompting the examiners to close the bank to conserve its assets. In all other instances, the sources contained statements such as 'because of a non-liquid condition and depreciation of its assets, it is unsafe and inexpedient to permit the institution to continue in business.' The Department of Banking attributed the financial difficulties of all of these institutions to domestic factors, particularly the declining values of securities, bonds, and real estate, which reduced the value and liquidity of banks' portfolios. In no instance does the Department of Banking discuss international factors, such as foreign deposits or German debt.

The conclusions of contemporary observers seem clear. During the summer of 1931, the banks that ceased operations did so for reasons unrelated to the financial crisis in Europe. The source of distress was the declining value of domestic assets – principally real estate, stocks, and bonds – and withdrawals from banks which appeared to be headed for financial trouble. The banks that closed their doors or consolidated with other institutions did not do so because foreign depositors withdrew funds or because German debt declined in value.

Might there be something that contemporary observers missed? Perhaps the banking crisis in Germany altered patterns of mergers among American banks. For years, depository institutions had been combining operations, as growing banks absorbed smaller competitors and

turned them into branches. Perhaps patterns of these mergers changed, forcing banks that would have merged voluntarily into the hands of regulators who ordered them either to consolidate on less advantageous terms or to depart from the banking business.

Figure 3 addresses this issue. It compares a non-parametric estimate of the hazard rate for consolidations due to distress to a non-parametric estimate of the hazard rate for voluntary mergers. The estimate for the former is identical to that in Figure 1. The estimate for the latter is constructed by kernel-smoothing raw hazard rates for mergers of healthy banks (i.e. mergers per week divided by number of banks at risk). The kernel is Epanechnikov. The bandwidth is five weeks. The rate of mergers follows no discernible trend. It varies from month to month but the distribution remains roughly constant over time. The rate of consolidations due to distress follows a dramatically different pattern. Almost all the banks that consolidate this way do so during 1931. The largest cluster occurs during July and August, the months when the banking panic peaked on the continent.

Consider another possibility. Perhaps widespread withdrawals from foreign accounts occurred, putting pressure on the central money market as a whole, which forced the weakest banks in New York City out of business. Our econometric analysis might have missed an event such as this, because the annual, quarterly, and cross-sectional databases which we analyze lack high-frequency deposit data which could detect such shifts. But, other data sets contain weekly data on deposits in New York City banks. These data sets include the column “New York Weekly Bank Statements” published each week in the *New York Times* and the compilation of member bank balance sheets released weekly by the Federal Reserve Bank of New York, published in many periodicals (e.g. *Bradstreet’s Weekly*, *Dun’s Review*, *The Commercial and Financial Chronicle*, and in the *New York Times* entitled “New York City Reporting Member

Banks”), and recapitulated in the records of the New York Fed and Board of Governors. Both data sets show that deposits at New York City banks in August 1931 were comparable to deposits at New York City banks in August 1930. The small fall in deposits during the summer of 1931 (approximately 4%) resembled typical seasonal variation.

6. Contemporary Accounts Reveal the Cause of the Correlation

This essay began with an observation about the financial crises – the period of acute bank distress in the central money market of the United States followed closely on the banking crisis in Germany and preceded Britain’s abandonment of the gold standard – and then this essay produced a puzzle. No financial link appears to have existed between the banking crisis on the continent and in New York City. The banks that failed in New York lacked exposure to foreign deposits, German debt, and other factors that might have transmitted the financial crisis across the Atlantic. Numerous banks in New York had substantial exposure to such sources of contagion. This exposure included hundreds of millions of dollars in foreign deposits, over one billion dollars in German debt, and large holdings of foreign assets. But, the institutions engaged in the international banking business survived the contraction. These internationally-oriented institutions were an island of strength in a sea of turmoil. Their prosperity seems surprising, relative to the performance of other American banks, which failed in droves during the downturn.

What can resolve the riddle? Why was bank distress in the central money market chronologically correlated with the banking crisis on the continent despite the fact that banks with financial links to Europe weathered the storm? Our research reveals an important piece of the puzzle. The behavior of the New York’s Banking Department changed during the summer of 1931. Eight months before, in December 1930, The Bank of United States failed. It was the

fourth largest depository institution in New York and the eighth largest in the nation. From December 1930 through June 1931, “practically the entire examination force in the metropolitan district was engaged in the liquidation of the Bank of United States (Superintendent of Banks 1931, p. 19).” The concentration of examination resources on this case compelled the superintendent’s office to expand the size of its staff. The rigidity of civil service regulations, however, slowed the process and impeded the hiring of experienced individuals. Eventually, “it was necessary to obtain executive permission to employ temporary examiners not taken from Civil Service lists and to reinstate former examiners whose wide experience was desperately needed (Superintendent of Banks 1931, p. 19).” The Civil Service Commission insisted that for each examiner appointed who was not a civil servant, an appointment had to be made from the civil service list, which at the time, included few individuals with the training, talent, or aptitude for bank-examination work. These restrictions slowed the department’s effort to respond to the emergency.

The department managed to increase the examination staff to 192 members at the end of 1931, up from 131 in December 1930. In addition, for a period of seven months, the department “obtained the assistance of twenty-eight men whose services were donated by various banks as well as the aid of fifteen Federal Reserve examiners who were temporarily lent to the department (Superintendent of Banks 1931, p. 17).” Bureaucratic delays and the time to train the new examiners meant that the size of the effective examination staff increased substantially during the summer of 1931. At the same time that these new resources came on line, the permanent examination staff for the metropolitan district, which had focused on The Bank of United States from January through June, finished that investigation and returned to regular duties. Thus, in the summer of 1931, the effective number of examiners in New York City increased substantially.

The number of bank examinations, which had been conducted infrequently for many months, increased commensurately.

The examinations also increased in intensity. The banking department adopted “new regulations for the purpose of obtaining more complete information on loans and security portfolios (Superintendent of Banks 1931, p. 17).” These changes included new reporting forms designed to “instantly reflect trends and policies of each state bank and trust company” and new methods for “arriving at fair values of securities (Superintendent of Banks 1931, p. 17).” These innovations stemmed from a reorganization of the banking department begun in the spring of 1929 and completed in the wake of the failure of The Bank of United States.

The post-examination powers of the banking department also increased. In the spring, the state legislature passed several reform bills introduced at the request of the state bank superintendent. The first bill permitted the hiring of additional examiners in an emergency. The second reduced from 30 to 20 days the time allowed for filing claims against a bank by the superintendent after notice had been sent to creditors. The third allowed the superintendent to act on the findings of Clearing House examinations as if they were examinations conducted by the state banking department. Two other bills failed to progress past the banking committee. One would have permitted the superintendent to consolidate banks overnight in emergencies. The other would have authorized the superintendent to remove officers of a bank upon evidence showing them responsible for improper conditions (Wall Street Journal, March 13, 1931, p. 8 “State Banking Bills”). The superintendent argued that the rejected reforms would have provided him with the ability to forestall the failure of The Bank of United States. Critics of the Superintendent, including many legislators on the banking committee, asserted that the

superintendent possessed more than enough authority to have prevented the crisis had he acted when irregularities at The Bank of United States were first brought to his attention in 1929.

Criticism of the superintendent, Joseph Broderick, peaked in June, when the case against the directors of the Bank of United States reached trial. A New York Times headline blared “STATE CALLED LAX IN BANK FAILURES (New York Times, June 14, 1931, p. 1 – emphasis in original).” Another headlined reported that the superintendent had been accused of “Gross Negligence” for his performance on The Bank of United States (New York Times, June 27, 1931, p. 2). A former state attorney general circulated a letter calling for a general investigation of the banking department and drawing parallels between its performance in the current case and problems in the past. The chairman of the Republican State Committee sent a letter to Governor Roosevelt requesting an inquiry and demanding the removal of Superintendent Broderick (New York Times, June 26, 1931, p. 7). The state legislature discussed the creation of a special committee to investigate the banking department and considered a bill authorizing suits against state bank employees who performed their jobs negligently.

The chorus of criticism focused on the banking department’s slow response after discovering the financial problems faced by The Bank of United States. In statement and testimony in hearings concerning The Bank of United States, the superintendent revealed that the irregularities which lead to the bank’s demise were first brought to his attention in the summer of 1929. Then, he believed that “he would have been ‘gravely remiss in his sworn duty if he did not exhaust every possible resource to save the situation before deciding that the doors must be closed’ (Wall Street Journal, March 6, 1931, p. 2).” He allowed The Bank of United States to continue operations for more than a year, and during that time, to continue conducting certain

transactions, “which he admits were dishonest even if inside the letter of the law,” and to continue to accumulate losses, in hopes that some remedy for the situation would be found.

Now, in the summer of 1931, the superintendent planned to deal with such situations expeditiously, and requested an expansion of his powers to enable him to take control of banks whenever he deemed it in the public interest. He planned to encourage the consolidation of banks “in cases where it appeared the result would be generally beneficial. This tendency toward consolidation, resulting as it does in the disappearance of many independent units, effects a concentration of banking resources and improved management which should lend itself to the development of sound policies and the elimination of unwarranted competition (Superintendent of Banks, 1931, p. 7).”

The impact of the superintendent’s new policies and increased authority can be seen in the wave of examinations that swept New York City in the summer of 1931. New stringent procedures highlighted investment losses and potential problems at numerous institutions. The superintendent’s office moved swiftly to rectify such shortfalls. The department demanded that the bank’s shareholders, directors, and management come up with capital to cover the losses, or consolidate with other institutions, which typically required them to realize large losses (in many cases, their entire investment), or face seizure by the superintendent’s office. A dramatic climax of the campaign came on August 5, when the Superintendent Broderick seized three banks (American Union, International Madison, and Times Square Trust), on the same morning. The seizures upset the plans of the joint legislative committee on banking to hold a hearing at the Bar Association Building that afternoon to discuss the recommendations of Mr. Broderick and the performance of the banking department. The announcement cancelling the hearings noted that “the taking over of the three banks made it impossible for Mr. Broderick or the bankers to appear

before the committee (New York Times, August 6, 1931, p. 32).” During the next three weeks, Superintendent Broderick oversaw the liquidation of those three depositories, compelled the consolidation of an additional five New York City banks, and supervised the examination and sanctioning of number other institutions. His office remained so busy that the public hearings on his performance appear to have been postponed indefinitely.

While it is impossible to know for sure why bank supervision became more aggressive during the summer of 1931, it seems likely that the change stemmed from pressure on the bank superintendent, changes in the incentives and attitudes of the superintendent and his staff, the growth of resources available to the banking department, and the expansion of *de jure* and *de facto* regulatory authority. It seems clear that the aggressive behavior of the banking department produced the spike in suspensions in the central money market that appears to be closely correlated with the financial crisis in Europe. The timing of the suspensions in New York appears to have been a delayed reaction to the failure of The Bank of United States. The reaction took place eight months after the trigger because it took time to deploy additional regulatory resources and because it took time for political pressures (and perhaps learning by doing) to alter the mindset of the regulators. It is possible that concern about the banking crisis on the continent could have played a role in altering the behavior of banking authorities, but our extensive searches have uncovered no evidence to support this hypothesis.

7. Discussion

A chronological correlation exists between the banking crisis in Germany following the collapse of the Creditanstalt and the banking crisis in New York City during the summer of 1931. Banks in New York City sponsored billions of dollars in German debt and held hundreds

of millions of dollars in European deposits. Those debts and deposits provided potential channels for the transmission of the banking panic across the Atlantic.

A wide range of evidence indicates, however, that American banks with substantial foreign exposure survived the contraction. Most continued to pay dividends throughout the depression. In other words, the debt and deposit links between the banking systems in Europe and America did not convey the banking crisis across the Atlantic. The chronological correlation of the banking crises in Germany and New York was coincidental, not causal.

This realization raises several issues regarding the study of bank distress during the Great Depression. The first pertains to the uniqueness of the United States central money market. Scholars have long recognized that the pattern of bank distress in New York City differed from the pattern of distress for the national as a whole. In New York City, few banks closed their doors to depositors; while in the rest of the nation, nearly half of all banks went out of business. Our study suggests that the behavior of the New York state banking department had much to do with the stability of banks in the central money market. The superintendent's office actively merged weak banks with stronger institutions. The law required banks in New York City to hold larger reserves and greater capital than depository institutions elsewhere in the nation. These legal requirements left a large cushion between the onset of difficulties and the point of no return. The superintendent used this cushion as a window of opportunity to resolve bank distress short of receivership. The superintendent's vigilance meant that few institutions failed in New York City and those that did go out of business returned substantial sums to depositors.

A second issue is the political economy of bank regulation. Regulators determined the fate of many banks. What influenced the decisions made by bank regulators, such as the New York Superintendent of Banks and his subordinates? Ideology, experience, politics, legislation,

and self interest all played a part. The superintendent's treatment of troubled banks changed over time. Changing economic conditions may have been one reason. The optimal method of resolving financial difficulties depends on the short-term prospects for sustaining cash flow and the long-term prospects for earning profits. Both factors fluctuated during the 1930s. Changing legislation was another reason. Politicians provided the banking department with additional tools for dealing with bedeviled banks. Political decisions also changed the incentives of the superintendent, who had been appointed as a reformer in the spring of 1929 and was criticized as incompetent two years later. The failure of The Bank of United States was the principal cause of criticism. Its demise led to political pressures which pushed the superintendent of banks to take a prophylactic approach towards imperiled banks.

A third issue concerns correlations between events in financial centers in the United States and Europe. Causal links may have created some of these correlations. But, this essay shows that coincidences created others. This realization suggests that there is a danger of drawing false inferences from correlations between events in different countries during the Great Depression. With so many things going wrong in so many countries in such a short span of time, numerous chronological correlations would have been generated by random chance.

A final issue concerns the international transmission of the banking crisis in the summer and fall of 1931. Numerous channels could have transmitted the financial crisis across the Atlantic. Direct links between banks in Europe and the United States appear to have been plausible candidates, but this essay demonstrates that those direct links did not, in fact, spread of the affliction. Thus, golden fetters remain the principal explanation for the trans-Atlantic transmission of the financial panic in the fall of 1931.

While our conclusion conflicts with the claims of several recent scholars, it concurs with the consensus of seminal scholars who have studied the issue, including Eichengreen, Friedman, Schwartz, and Temin (Friedman and Schwartz, 1963; Eichengreen, 1981 and 1992; Temin, 1989 and 1993). Temin expresses this consensus clearly when he writes:

In one of the most memorable acts of misguided monetary policy in history, the Federal Reserve raised interest rates sharply in October 1931 to protect the dollar – in the midst of the greatest Depression the modern economy has ever known (Temin 1993 p. 96).

Our essay supports this statement, by demonstrating that the Federal Reserve's actions were the principal mechanism transmitting the banking panic of 1931 from Europe to the United States. Banks operating in New York City held more foreign deposits and had greater foreign exposure than banks operating elsewhere. Since high levels of foreign exposure did not force banks out of business in New York City, it is unlikely that low levels of foreign exposure forced banks out of business in other places. The policy predispositions engendered by the gold standard and the Federal Reserve's monetary missteps were the ultimate cause of the banking crisis that struck the United States in the fall of 1931.

Table 1
Bank Distress in New York City, 1929 to 1933

Date	Bank	Type	Distress	Capital	Loans and Investment
December 11, 1930	Bank of United States	SM	L	25,250,000	213,403,000
December 23, 1930	Chelsea Bank and Trust Company	S	L	2,500,000	19,673,000
March 20, 1931	World Exchange Bank	S	L	500,000	1,879,000
March 31, 1931	Bay Parkway National Bank	N	C	200,000	1,358,000
July 15, 1931	Lebanon National Bank	N	C	500,000	894,000
July 28, 1931	Prisco State Bank	S	L	250,000	1,810,000
August 4, 1931	Midtown Bank	S	C	769,000	2,741,000
August 5, 1931	American Union Bank	SM	L	1,000,000	7,765,000
August 5, 1931	International-Madison Bank and Trust Company	SM	L	1,750,000	9,255,000
August 5, 1931	Times Square Trust Company	SM	L	1,000,000	3,323,000
August 10, 1931	Midwood Trust Company	SM	C	1,000,000	8,484,000
August 22, 1931	Long Island National Bank of New York	N	C	250,000	2,668,000
August 22, 1931	Globe Bank and Trust Company	SM	L	1,525,000	7,175,000
August 24, 1931	Queensboro National Bank of the City of New York	N	L	200,000	1,781,000
August 25, 1931	Bryant Park Bank	P	C	500,000	1,719,000
August 25, 1931	Brooklyn National Bank	N	C	500,000	1,719,000
August 28, 1931	Bank of Europe Trust Company	SM	L	1,000,000	13,636,000
August 29, 1931	National Bank of Ridgewood	N	C	200,000	1,286,000
September 15, 1931	International Trust Company	SM	C	3,200,000	12,440,000
September 15, 1931	Straus National Bank and Trust Company	N	C	2,000,000	9,006,000
October 30, 1931	Federation Bank and Trust Company	SM	TS	750,000	14,936,000
October 31, 1931	M. Bernandi State Bank	S	L	350,000	2,235,000
December 4, 1931	Sakser State Bank	S	L	100,000	1,236,000
March 30, 1932	Washington National Bank	N	VL	500,000	997,000
April 8, 1932	Liberty National Bank and Trust Company	N	C	2,250,000	8,816,000
February 14, 1933	D.J. Faour and Bros.	P	L	100,000	711,000

Notes: *N* indicates national bank. *S* indicates state bank. *SM* indicates a state bank that is a member of the Federal Reserve System. *P* indicates private bank. *L* indicates liquidation. *C* indicates a consolidation due to financial difficulties. *TS* indicates temporary suspension. *VL* indicates a voluntary liquidation. Source: St. 6386 Database, see Richardson (2006) for details.

Table 2
Correlation Coefficients Between Distressed Departure and Balance Sheet Characteristics
For National and State Member Banks

	All	State	National
	(1)	(3)	(2)
<u>(A) Basic Balance Sheet Characteristics</u>			
Net Worth as a Percentage of Liabilities	-0.019	0.077	-0.046
U.S. Government Debt as a Percentage of Assets	-0.087	-0.163	-0.007
Stocks, Bonds, and other Securities as a Percentage of Assets	-0.038	0.045	-0.070
Reserves as a Percentage of Assets (Cash, due from Banks, Fed deposits)	-0.119	-0.289	-0.179
Demand Deposits as a Percentage of Liabilities	-0.118	0.110	-0.030
<u>(B) Foreign Exposure in Dollar Values</u>			
Balances Payable in Dollars Due from Foreign Branches of American Banks	-0.069	-0.105	-0.080
Due from Banks in Foreign Countries	-0.152	-0.201	-0.123
Due to Banks in Foreign Countries	-0.141	-0.180	-0.115
Time Deposits of other Banks and Trust Companies in Foreign Countries	-0.125	-0.185	-0.084
Foreign Government Bonds Owned	-0.157	-0.214	-0.151
Other Foreign Securities Owned, Including bonds of municipalities	-0.167	-0.214	-0.135
<u>(C) Foreign Exposure as a Share of Total Resources</u>			
Balances Payable in Dollars Due from Foreign Branches of American Banks	-0.081	-0.105	-0.080
Due from Banks in Foreign Countries	-0.087	-0.090	-0.117
Due to Banks in Foreign Countries	-0.206	-0.250	-0.180
Time Deposits of other Banks and Trust Companies in Foreign Countries	-0.140	-0.187	-0.108
Foreign Government Bonds Owned	0.048	-0.215	-0.014
Other Foreign Securities Owned, Including bonds of municipalities	0.041	-0.052	0.038

Sources: See text.

Table 3
 Foreign Exposure and Bank Distress
 Selected Cross-Tabulations for National and State-Member Banks, 1931

	Foreign Branches	
	No	Yes
No Distress	62	2
Distress	16	0

	Foreign Deposits	
	No	Yes
No Distress	56	8
Distress	16	0

	German Loans	
	No	Yes
No Distress	60	4
Distress	16	0

	State	National
	No Distress	22
Consolidation Due to Distress	2	7
Liquidation	4	1
Temporary Suspension	1	0
Voluntary Liquidation	0	1

Sources: See text.

Table 4
 Foreign Exposure, Balance Sheet Characteristics, and Bank Distress
 Linear Probability Model Regression Results

Dependent Variable: Distressed Departures from the Banking Business

	All Fed Members	State Members	National Banks
	(1)	(2)	(3)
Balances Payable in Dollars Due from Foreign Branches of American Banks	-0.030 0.073	-0.001 0.002	17.250 7.039
Due from Banks in Foreign Countries	-0.020 0.034	-0.411 0.689	-1.221 0.490
Due to Banks in Foreign Countries	0.000 0.010	0.116 0.169	0.045 0.047
Time Deposits of other Banks and Trust Companies in Foreign Countries	0.016 0.041	-0.098 0.168	-0.968 0.583
Foreign Government Bonds Owned	-0.034 0.028	-0.086 0.148	-1.458 0.685
Other Foreign Securities Owned, Including bonds of municipalities	-0.002 0.044	0.013 0.473	<i>1.175</i> 0.5992
Number of Foreign Branches	-0.003 0.007		-0.411 0.191
Bank Balance Sheet Characteristics Vector	Yes	Yes	Yes
Observations	80	29	51
F-statistic	1.55	0.91	0.77
R-squared	0.06	0.2	0.18
Predictions < 0	4	4	6

Notes: All monetary variables measured in units of millions of dollars, except for Balances Payable in Dollars Due from Foreign Branches of American Banks, which is measured in thousands of dollars. Robust standard errors appear below coefficient estimates. *Italic* font indicates significant at 10% level. **Boldfaced** font indicates significant at 5% level.

Sources: See text.

Table 5
 Predicted Probability of Failure and the Extent of Foreign Exposure

Extent of Foreign Exposure	Predicted Probability of Failure		Observations
	Average	Standard Deviation	
Bottom Quintile	0.171	0.071	16
Below Average Quintile	0.226	0.065	16
Middle Quintile	0.242	0.070	16
Above Average Quintile	0.257	0.053	16
Top Quintile	0.120	0.117	16
Top Eight Banks	0.021	0.027	8
Banks with Foreign Branches	0.008	0.011	2

Notes: The extent of foreign exposure is measured as the first principal component derived from the variables measuring exposure to foreign financial factors in the regression in Table 6.

Source: See text.

Table 6
Causes of Suspensions in New York City, 1929 through 1933

Date of Suspension	Name of Bank	Deposits	Deposit Losses	Days Lost	Borrowings	Causes of Suspension	
						Primary	Contributing
December 11, 1930	Bank of United States	202,965,000	41,965,000	78		Assets	Withdrawals
December 23, 1930	Chelsea Bank and Trust Company	18,801,000				Withdrawals	Assets
March 20, 1931	World Exchange Bank	1,910,000			200,000	Assets	
July 28, 1931	Prisco State Bank	1,902,000				Defalcation	
August 5, 1931	American Union Bank	7,939,000	845,000	36	628,000	Assets	Withdrawals
August 5, 1931	International-Madison Bank	7,778,000	967,000	36	1,004,000	Assets	Withdrawals
August 5, 1931	Times Square Trust Company	2,882,000	1,444,000	36	300,000	Assets	Withdrawals
August 22, 1931	Globe Bank and Trust Company	7,426,000	2,060,000	53	973,000	Assets	Withdrawals
August 24, 1931	Queensboro National Bank	2,492,000				Withdrawals	
August 28, 1931	Bank of Europe Trust Company	12,807,000	3,307,000	59	200,000	Assets	
October 30, 1931	Federation Bank and Trust Company	13,390,000	1,220,000	31	858,000	Assets	Withdrawals
October 31, 1931	M. Bernandi State Bank	1,253,000	153,000	31	750,000	Assets	
December 4, 1931	Sakser State Bank	1,074,000	134,000	65	400,000	Assets	
February 14, 1933	D.J. Faour and Bros.	527,000			78,000	Assets	

Notes: *Deposits* indicates the deposits held by the bank on the last call date before suspension. *Deposit losses* indicates the decline in deposits between the last call date and the date of suspension. The information needed to calculate this figure exists only in the listed cases. *Days lost* indicates the number of days between the last call date and the date of suspension, or in other words, the number of days over which the decline in deposits was calculated. *Borrowings* indicates loans outstanding from the Federal Reserve and other banks on the date of suspension. See Section 2 for definitions of the primary and contributing causes of suspensions. *Asset* indicates that slow, doubtful, or worthless investments were a source of bank distress. *Withdrawal* indicates that withdrawals of deposits were a source of bank distress. *Defalcation* indicates that embezzlement was a source of bank distress.

Source: St. 6386 Database, see Richardson 2006 for details.

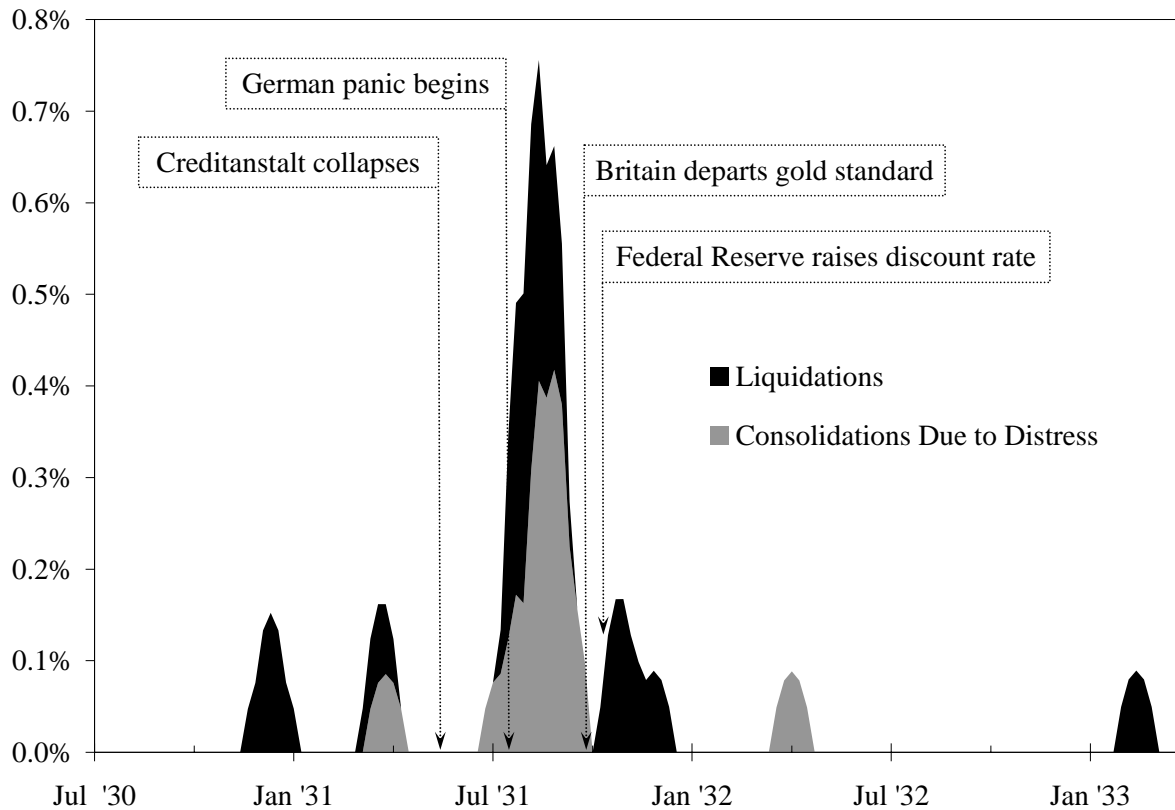
Table 7
 Consolidations Due to Financial Difficulties in New York City, 1929 through 1933

Date	Consolidating Bank	Absorbing Bank	Description of consolidation	Disposition
March 31, 1931	Bay Parkway National Bank	Lafayette National Bank		
July 15, 1931	Lebanon National Bank	Manufacturers Trust	All except capital	Branch
August 4, 1931	Midtown Bank	Manufacturers Trust	All except capital	Discontinued
August 10, 1931	Midwood Trust	Manufacturers Trust	All except capital	Branch
August 22, 1931	Long Island National Bank	National City Bank	Liquidation basis	Branch
August 25, 1931	Bryant Park Bank	Manufacturers Trust	Assets and deposits	Discontinued
August 25, 1931	Brooklyn National Bank	Manufacturers Trust	Assets and deposits	Discontinued
August 29, 1931	National Bank of Ridgewood	The Richmond National Bank	All except capital	Branch
September 15, 1931	International Trust	Continental Bank and Trust		Branch
September 15, 1931	Straus National Bank and Trust	Continental Bank and Trust		Branch
April 8, 1932	Liberty National Bank and Trust	Harriman National Bank and Trust		Branch

Notes: The consolidating bank was the institution suffering financial difficulties. The absorbing bank was a healthy institution which took over the affairs of its weaker compatriot. *Description of consolidation* describes the financial details of the transaction. “All except capital” indicates that the absorbing bank assumed all liabilities except the capital liability of the consolidating institution and acquired all of its assets. “Assets and deposits” indicates that the absorbing bank assumed only the deposit liabilities of the consolidating institution while acquiring all of its assets. “Liquidation basis” indicates that the absorbing bank acquired all assets and liabilities of the consolidating bank, and if the assets proved more valuable than the obligations of the consolidating institution, returned a portion of the surplus to the shareholders. Disposition indicates what became of the offices of the consolidating bank. “Branch” indicates that the offices of the consolidating bank became a branch of the absorbing institution. “Discontinued” indicates that the offices of the consolidating bank ceased operations.

Source: St. 6386 Database, see Richardson 2006 for details.

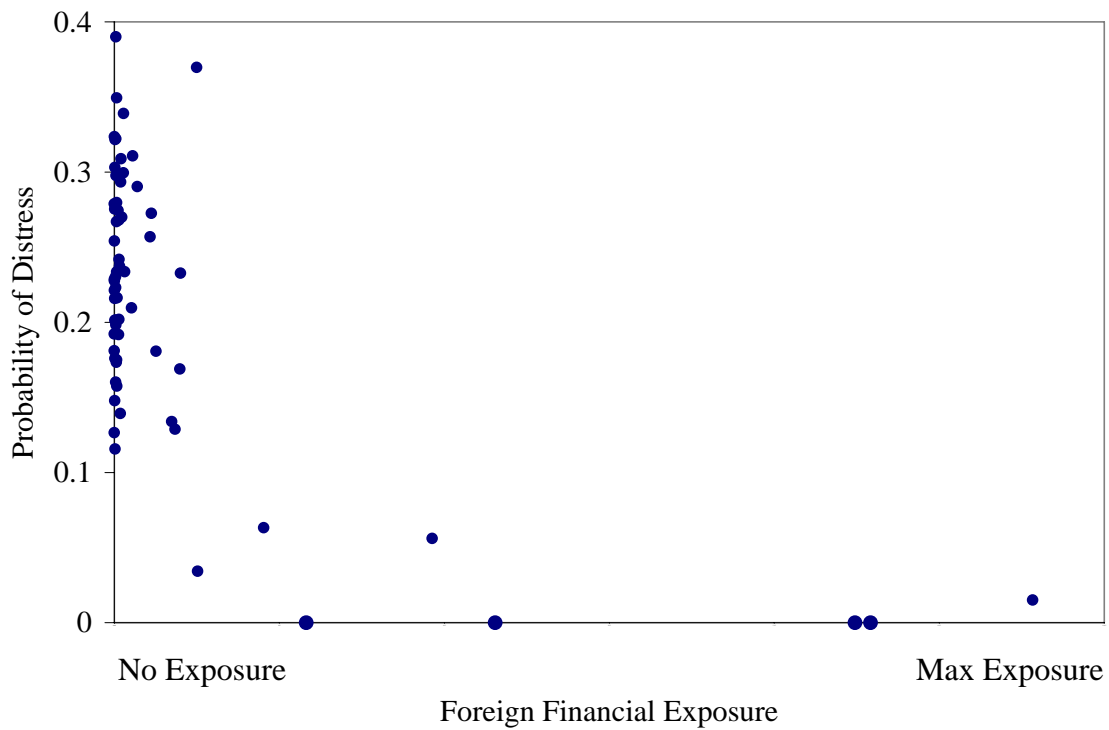
Figure 1
 Weekly Hazard for Liquidation and Consolidation Due to Distress
 New York City, July 1930 through March 1933



Notes: The hazard function is a non-parametric estimate constructed by smoothing raw hazard rates (i.e. the number of bank liquidations divided by the number of banks at risk each week and the number of consolidations due to financial difficulties divided by the number of banks at risk in each week). The kernel is Epanechnikov. The bandwidth is two weeks, which is wide enough to reveal trends without obscuring short-term shifts in the probability of failure.

Source: See text.

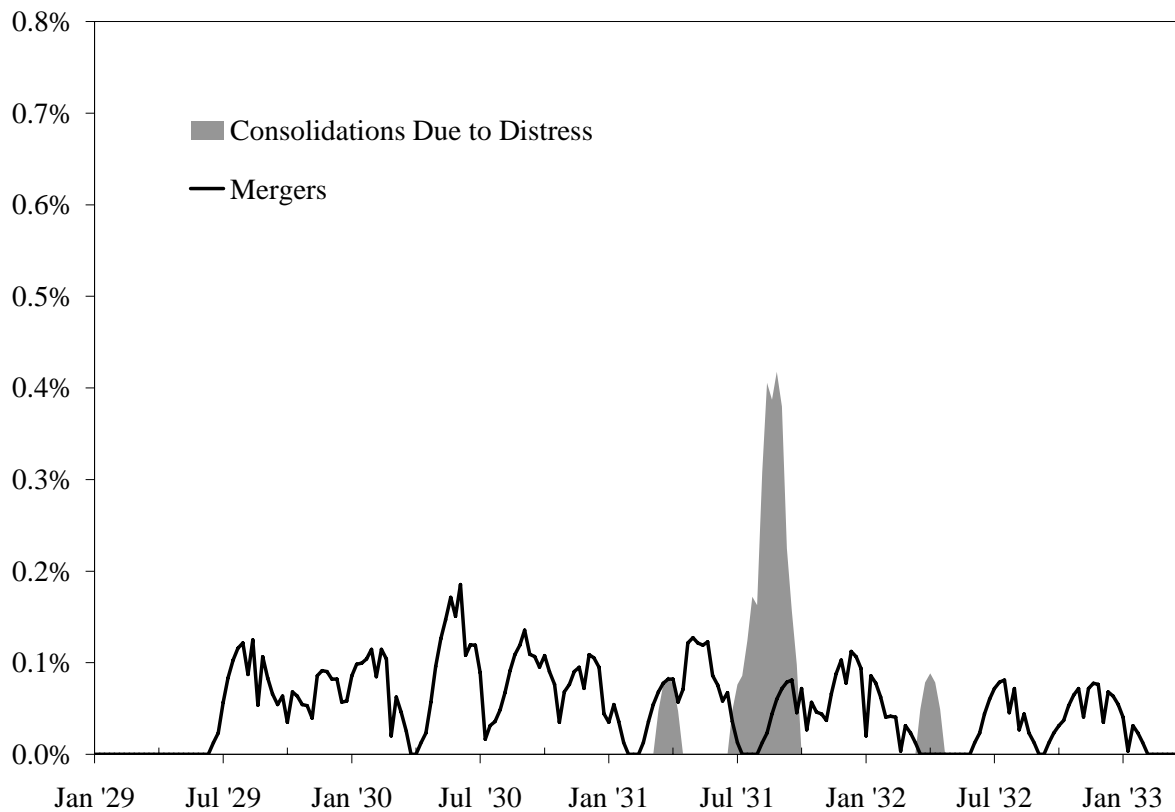
Figure 2
The Relationship Between Bank Distress and Foreign Exposure



Notes: The vertical axis indicates the probability of experiencing distress predicted by regression (1) in Table 4. The horizontal axis indicates the first principal component of the seven measures of foreign financial exposure listed as independent variables in Table 4.

Sources: See text.

Figure 3
 Weekly Hazard for Voluntary Mergers and Consolidation Due to Distress
 New York City, January 1929 through March 1933



Notes: The series for consolidations is identical to that in Figure 1. The hazard rate for mergers is a non-parametric estimate constructed by kernel-smoothing raw hazard rates (i.e. mergers per week divided by number of banks at risk). The kernel is Epanechnikov. The bandwidth is five weeks.

Source: St. 6386 Database, see Richardson 2006 for details.

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