

# DISCUSSION PAPER SERIES

DP11651

**INTERNATIONAL BANKING AND  
TRANSMISSION OF THE 1931 FINANCIAL  
CRISIS**

Olivier Accominotti

***ECONOMIC HISTORY and  
INTERNATIONAL MACROECONOMICS  
AND FINANCE***



# INTERNATIONAL BANKING AND TRANSMISSION OF THE 1931 FINANCIAL CRISIS

*Olivier Accominotti*

Discussion Paper DP11651  
Published 21 November 2016  
Submitted 21 November 2016

Centre for Economic Policy Research  
33 Great Sutton Street, London EC1V 0DX, UK  
Tel: +44 (0)20 7183 8801  
[www.cepr.org](http://www.cepr.org)

This Discussion Paper is issued under the auspices of the Centre's research programme in **ECONOMIC HISTORY and INTERNATIONAL MACROECONOMICS AND FINANCE**. Any opinions expressed here are those of the author(s) and not those of the Centre for Economic Policy Research. Research disseminated by CEPR may include views on policy, but the Centre itself takes no institutional policy positions.

The Centre for Economic Policy Research was established in 1983 as an educational charity, to promote independent analysis and public discussion of open economies and the relations among them. It is pluralist and non-partisan, bringing economic research to bear on the analysis of medium- and long-run policy questions.

These Discussion Papers often represent preliminary or incomplete work, circulated to encourage discussion and comment. Citation and use of such a paper should take account of its provisional character.

Copyright: Olivier Accominotti

# INTERNATIONAL BANKING AND TRANSMISSION OF THE 1931 FINANCIAL CRISIS

## Abstract

In May-July 1931, a series of financial panics shook Central Europe before spreading to the rest of the world. This paper explores how the 1931 Central European crisis propagated to the London and New York financial centers; it also examines the role of cross-border banking linkages in international crisis transmission. Using archival bank-level data, I document US and British banks' asset-side exposure to the crisis region. The Continental crisis disturbed few US banks but endangered several British financial institutions and triggered severe stress in the London money market. Central European credits were mostly held by large and diversified commercial banks in the United States and by small and geographically specialized financial institutions in Britain. Differences in the market structure of the trade finance industry explain why the 1931 Central European crisis infected London banks but not New York banks.

JEL Classification: F34, G21, N22, N24

Keywords: International Contagion; Cross-Border Banking; Trade Finance; 1931 Crisis

Olivier Accominotti - o.accominotti@lse.ac.uk

*London School of Economics and Political Science and CEPR*

## Acknowledgements

I am grateful to Vincent Bignon, David Chambers, Per Hansen, Eric Monnet, Daniel Paravisini, Veronica Rappoport, Alfred Reckendrees, Albrecht Ritschl, John Turner, and Stefano Ugolini as well as to participants at the 2016 ASSA Meetings in San Francisco, the 2016 workshop on "Networks and Finance in the Long-Term" at Toulouse Business School, the 2015 CEPR-Norges Bank Economic History Symposium in Oslo, the 2015 Interwar Economic History Workshop at LSE, the 2015 European Historical Economics Society Conference in Pisa, the 2014 Economic History Society Conference in Warwick, and seminars at Oxford University, Copenhagen Business School, the Bank of France, Queen's University Belfast, the University of Mannheim, and the University of Bonn. I gratefully acknowledge the assistance of Alain Naef and Pierre Pénét in gaining access to various archival documents in New York City. The research leading to these results received funding from the Niehaus Center for Globalization and Governance at Princeton University, from LSE STICERD, and from the People Programme (Marie Curie Actions) of the European Union's Seventh Framework Programme FP7/2007-2013/ under REA grant agreement no. 608129. I am grateful to the Bank of France's Monetary Policy Research Division for its hospitality. I also thank Arvid Aagaard and Giorgio Vintani for excellent research assistance. All errors are mine.

# 1. Introduction

In 1931, the world economy experienced one of its most severe financial crises ever. From May to July, a series of financial panics shook Central Europe and brought down the currencies and banking systems of Austria, Hungary, and Germany. In order to thwart capital outflows, Central European governments suspended foreign exchange payments; that action led to the freeze of all short-term credits granted by foreign creditors to customers in the region (Harris, 1935; Ellis, 1941; Ritschl, 2002). The second half of 1931 was then marked by global financial instability. Troubles in the European periphery soon spread to the center of the international financial system. A speculative attack on the pound sterling pushed the United Kingdom off the gold standard in September, and the United States witnessed a severe banking panic that summer.

Due to its repercussions upon the global financial system, the 1931 Central European crisis offers a fascinating case study of how financial shocks spread internationally. Following the 2007-2009 global financial crisis, renewed attention has been paid in the literature to the channels of international crisis transmission. In particular, researchers have stressed the role of cross-border banking linkages in propagating troubles in the US subprime market to other countries during the 2007-2009 crisis.<sup>1</sup> This paper explores these issues in the context of a major historical precedent and shows how cross-border banking mattered for transmission of the 1931 Central European crisis to the United Kingdom but not the United States.

How did the 1931 financial crisis propagate internationally? According to several authors, the German crisis acted as a wake-up call for investors, raising doubts about countries' commitment to the gold standard and triggering a wave of speculative currency attacks and bank runs (Kindleberger, 1973; Capie et al., 1986; Eichengreen, 1992; Temin, 1993).<sup>2</sup> However, other scholars have argued that direct cross-border banking linkages also facilitated transmission of the

---

<sup>1</sup> See, for example, Cetorelli and Goldberg (2011, 2012), Puri et al. (2011), Kalemli-Ozcan et al. (2013), Buch and Goldberg (2015) and Hale et al. (2016).

<sup>2</sup> See Banerjee (1992), Calvo and Mendoza (2000), and Ahnert and Bertsch (2015) for theoretical models of herd behavior and wake-up call contagion.

crisis (James, 2001, 2009; Borio et al., 2014; Ritschl and Sarferaz, 2014; Straumann et al., 2015).<sup>3</sup> On this account, US and British banks' asset-side exposure to Central Europe contributed to propagate the debtor countries' troubles to the creditor countries and to the London and New York financial centers.

Recent research has yielded mixed results on the latter hypothesis. On the one hand, although Britain did not experience a banking crisis in the 1930s and there were no banking failures during those years,<sup>4</sup> Accominotti (2012) argues that the Central European crisis of May–July 1931 nevertheless triggered severe stress in the London money market—since the British merchant banks' heavy exposure to the region threatened the entire banking system. A full-blown banking crisis was averted only because the Bank of England extended rediscounting facilities to frozen credits, but the situation partly contributed to the sterling crisis in September of that year.<sup>5</sup> On the other hand, Richardson and Van Horn (2009, 2011) argue that financial troubles in Europe did not directly affect US banks in 1931. The numerous US bank failures in the 1930s (and the New York City banks' difficulties) resulted instead from intensified regulation and from the Federal Reserve's decision to raise interest rates in the face of increased exchange rate pressure.

Accounts of the episode by contemporary observers corroborate these findings. While in the wake of the Central European events, several British bankers and analysts mentioned the possibility of “chaos in the London discount market”, “the risk of incalculable reactions upon the entire banking system”,<sup>6</sup> or “a dangerous situation which might have led to a tragedy”,<sup>7</sup> US bankers did not seem much alarmed by the German crisis. For instance, Thomas Lamont of JP

---

<sup>3</sup> See Allen and Gale (2000) for a theoretical model of contagion through cross-border bank lending.

<sup>4</sup> See Billings and Capie (2011) and Turner (2014).

<sup>5</sup> Accominotti (2012) describes how the German crisis triggered a rise in London money market rates and a run on the Bank of England's gold reserves.

<sup>6</sup> Metz (1934, p. 198).

<sup>7</sup> Truutil (1936, p. 314). Truutil (1936, p. 290) also remarked that “the heavy liabilities assumed by the [London] City in Central Europe [...] increased considerably the risks of bank failures.” In a letter addressed to the Bank of England Governor Montagu Norman on 30 November 1931, the chairmen of the British Bankers Association (J. B. Beaumont Pease) and Accepting Houses Committee (W. H. N. Goschen) noted that the German crisis had “threatened for the first and only time, except at the outbreak of War in 1914, to cause serious difficulties in the London Money Market” (Archives, Royal Bank of Scotland, WES 1174/185).

Morgan noted in late 1931 that “short-term German credits [did] not constitute, in their volume, a danger to the American banking situation today.”<sup>8</sup>

Why did the Central European crisis threaten banking stability in Britain but not in the United States? The purpose of this paper is to answer that question. I rely on new bank-level data and describe, for the first time, the nature and extent of US and British banks’ exposure to Germany, Austria, and Hungary in 1931. Using original data culled from various archival records and published sources, I quantify the Central European exposure of (i) 26 British banks (accounting for 89 per cent of the British banking system’s aggregate exposure to Germany) and (ii) 19 American banks (accounting for 73 per cent of the US banking system’s aggregate exposure to Germany) in 1931. Considering the scarcity of bank-level data on cross-border loan exposure in the modern period, this data set constitutes a unique source of information to explore the role of the global banking system in transmitting the financial crisis of the 1930s. I also complement this information with a newly collected data set documenting the geographical location of New York and London banks’ foreign correspondents at the beginning of the 1930s. *Correspondents* are financial institutions that served as agents of the creditor banks in foreign countries, were in direct contact with the ultimate borrowers and often guaranteed their debts. Reconstructing the US and British banks’ networks of foreign correspondents allows me to describe the geographical scope of their international activities in detail and thereby assess their exposure to the crisis region.

The largest portion of Central European credits granted by US and British banks consisted of short-term trade finance credits, and I argue that the severe repercussions of the Continental

---

<sup>8</sup> Hearings Before the Committee of Finance, United States Senate, 72nd Congress, First Session, S. Res. 19, 18 December 1931, p. 33. Just three weeks after Germany introduced foreign exchange restrictions, the Berlin representative of the Central Hanover Bank and Trust of New York also downplayed the potential repercussions of this decision on US financial stability: “When the actual crisis was eminent, [US banks] felt that their German commitments were still very considerable, but probably with very few exceptions so large that they could endanger the position of the credit givers” (Archives, Federal Reserve Bank of New York, Harrison papers, file no. 2550.4, 4 August 1931). Similarly, when informing President Herbert Hoover in May 1931 about American banks’ involvement in Germany, Federal Reserve Board Chairman Eugene Meyer reassured him that “our system could handle the shock” (Public Papers of the Presidents of the United States, Herbert Hoover, Containing the Public Messages, Speeches and Statements of the President, January 1 to December 31, 1931, p. 660, 20–22 May 1931). I thank Tobias Straumann for directing me to this reference.

crisis on the London money market arose from the specific *market structure* of the UK trade finance industry. In London, a strong distinction prevailed between banks that engaged in domestic lending and those that engaged in foreign lending/trade finance. Trade finance was mainly the activity of small specialized institutions—especially the London merchant banks and acceptance houses, which specialized in lending to customers from particular countries. As a result, most of the Central European credits granted by British creditors in 1931 were held by small and poorly diversified banks, whose exposure to the region was high relative to their capital, liquid, and total assets. The freeze of Central European assets directly affected these banks' liquidity and solvency; several were on the brink of failure in the summer of 1931, a situation that threatened overall banking stability.

In the United States, by contrast, trade finance was mainly the activity of the largest commercial banks: the big national banks and trust companies of New York City and other central reserve cities. Most of the Central European credits granted by US banking creditors were therefore held by the country's largest banks, whose exposure to the region remained relatively low relative to their capital, liquid, and total assets. Because of their large size and higher diversification, these banks were better able to cushion a default from Central European borrowers; hence the crisis on the Continent did not directly threaten their liquidity or solvency.

In order to explain how the two creditor countries differed vis-à-vis their organization of international trade finance, I rely on theoretical models of banking with the concept of *learning by lending* (Dell'Ariccia et al., 1999; Boot and Thakor, 2000; Winton, 1999; Dell'Ariccia, 2001; Marquez, 2002; Pavanini and Schivardi, 2013; Paravisini et al., 2015). These models show how informational asymmetries among lenders affect the market structure of the banking industry and the extent of the banks' lending specialization.

Creditor banks could not engage in trade finance and foreign lending unless they had good information about the borrowers and enough capital to cushion possible defaults. In London, merchant banks and acceptance houses had been involved in external lending and trade finance

since the mid-nineteenth century, and they had accumulated strong expertise in lending to certain countries where they had built long-time relationships with correspondents and customers. Hence the merchant banks enjoyed a comparative informational advantage over the large British commercial banks (the joint-stock clearing banks) in these markets, which explains why they specialized in lending to these countries.<sup>9</sup> Asymmetric information among banks created barriers to entry in these markets. Despite their lower size and capital, the “incumbent” merchant banks could maintain their market share relative to the “entrant” commercial banks in foreign countries during the interwar period because the former were better informed and could screen and monitor borrowers more efficiently.<sup>10</sup> The expertise and information accumulated by the merchant banks likely rendered the British banking system very efficient in quiet times.<sup>11</sup> However, the system was also more vulnerable to a large systemic shock, such as the Central European crisis, because foreign credits were concentrated among small and poorly diversified institutions which were highly connected to the other banks.

In contrast, New York had only recently emerged as an international financial center in the early 1930s and so foreign lending was still a new field of activity for American banks (Eichengreen and Flandreau, 2012). In the 1920s, when New York City emerged as a center for international trade finance, only a few US banks already enjoyed an informational advantage in foreign markets. Moreover, the Federal Reserve Act of 1913 made the member banks’ granting of foreign commercial credits conditional on their absolute level of capital and reserves. As a result, the biggest banks (in terms of capital) were advantaged relative to the smaller ones; thus the former captured the largest market shares in foreign trade finance. That explains why, in the

---

<sup>9</sup> Winton (1999) describes how a bank’s loan diversification away from its sector of expertise can result in less effective monitoring. Boot and Thaker (2000) build a theoretical model in which banks’ efficiency in relationship lending depends on their degree of sector specialization. Paravisini et al. (2015) also develop a partial equilibrium model showing that banks devote a larger share of their loan portfolio to sectors where they have an initial comparative informational advantage.

<sup>10</sup> Dell’Ariccia et al. (1999), Dell’Ariccia (2001) and Marquez (2002) develop theoretical models in which information asymmetries among lenders result in adverse selection and barriers to entry in banking.

<sup>11</sup> Merchant banks could grant foreign credits on a narrow capital base. Comparing the efficiency of the British and US banks in foreign lending would however require data on their profits and losses abroad. Unfortunately, I have been unable to locate systematic archival information on the default rates encountered by British and US banks in foreign countries or on the actual profits derived from their foreign lending activities.

United States, the Central European frozen credits were concentrated among large and diversified banks in 1931.

This argument is supported by new data on the geographical distribution of New York and London banks' foreign correspondents (a proxy for their market shares in the different countries) on the eve of the global financial crisis. First, I find that creditor banks strongly specialized in lending to countries where they had a historical comparative advantage (usually the countries of origin of the banks' founders). This is consistent with theoretical models predicting banks' specialization along the lines of their informational advantages (Winton, 1999; Boot and Thaker, 2000; Paravisini et al., 2015). I also find that the London merchant banks and acceptance houses with long-time connections to Germany and Central Europe were the market leaders in these countries (in terms of the number of their correspondents) and had a wider presence than did the large British commercial banks. This indicates that the informational asymmetries between the merchant banks and the commercial banks in these markets were very persistent and resulted in barriers to entry for the latter as predicted by several theoretical models (Dell'Ariccia et al., 1999; Dell'Ariccia, 2001; Marquez, 2002; Pavanini and Schivardi, 2013). Yet that situation was reversed in the United States, where the largest commercial banks were also the market leaders in Central European lending.

By presenting new detailed evidence on US and British banks' cross-border loan exposure during the Great Depression, this paper contributes to identifying the precise channels of transmission of the global financial crisis of the 1930s. The paper also provides historical perspectives on the recent literature on cross-border banking and the propagation of the 2007-2009 financial crisis and it illustrates how certain banking structures are more likely than others to transmit foreign financial shocks. Finally, while several theoretical models have emphasized the importance of informational advantages in lending in explaining both the structure of the banking sector and banks' specialization, this paper provides empirical evidence on these issues

and shows how strong and highly persistent informational asymmetries among creditor banks shaped the market structure of historical trade finance markets.

The rest of this paper is organized as follows. Section 2 offers a brief narrative of the Central European financial crisis of 1931, and Section 3 describes the archival sources and data used in the paper. Section 4 details the exposure of individual US and British banks to Central European credits in 1931 and also the distribution of German exposure across banks. Section 5 describes and analyzes differences—between Britain and the United States—in the market structure of the trade finance industry. Section 6 concludes.

## **2. The Central European Crisis**

### **2.1. The freeze of Central European credits**

During the second half of the 1920s, Germany, Austria, and Hungary imported large amounts of capital from abroad (Ritschl, 2002, 2012; Accominotti and Eichengreen, 2016). Foreign borrowing consisted mostly of long-term bonds—floated by governments, municipalities, and corporations in the main international financial centers—and short-term commercial debts, especially bankers' acceptances granted by leading financial houses in the same centers. Net private capital inflows to Austria, Germany, and Hungary increased dramatically following the stabilization of their respective currencies during 1923–1924; they peaked in 1927, reaching nearly 5 per cent of their collective gross domestic product (Accominotti and Eichengreen, 2016). Starting in 1929, however, the influx of foreign capital to Central Europe slowed down significantly before actually reversing in 1931. In that year, Central European countries experienced a net outflow of private capital as foreign investors repatriated their funds at unprecedented levels. This capital flow reversal was associated with a wave of banking and currency crises in the region (James, 1986, 2001; Schubert, 1991; Ferguson and Temin, 2003; Schnabel, 2004, 2009; James, 2009).

In an attempt to prevent capital outflows, Central European governments introduced capital controls that aimed to suspend foreign exchange payments (Ellis, 1941). These exchange controls prevented currency depreciation and halted deposit withdrawals from banks—but only by passing the buck to foreign creditors. Central European debtors needed foreign exchange to service their short-term foreign currency debts. Since purchases of foreign currencies were now severely restricted, they were forced either to default on their external debts or to make some arrangement with their creditors for settlement.

To prevent an outright default, foreign creditors agreed—at the London Conference of 20–23 July 1931—to reschedule all short-term credits to German customers and to maintain existing credit lines. That decision resulted in the freeze of creditors’ short-term assets for an indefinite period. The rescheduling of German debts was then formalized through a series of so-called standstill agreements initiated in September 1931. Existing credits were prolonged for a six-month period while interest continued to be paid. Similar agreements were then reached with Austrian and Hungarian debtors in the following months. These agreements were renewed repeatedly until the outbreak of the Second World War (WW2); those renewals had the effect of transforming all short-term Central European credits into long-term ones.

The German standstill agreements foresaw a progressive reduction in the total credit lines available to German customers; as early as 1933, foreign creditors could liquidate only part of their frozen credits and only at a haircut.<sup>12</sup> Yet from 1931 until the start of WW2, substantial uncertainty persisted over periodic renewal of the standstill agreements and substantial doubts remained about whether the “frozen credits” would ever be repaid. In its March 1933 Report on the Continental Illinois National Bank and Trust of Chicago, for example, the Office of the

---

<sup>12</sup> See Harris (1935, pp. 30–31). Foreign creditors could convert their standstill credits into “registered” marks (a.k.a. “blocked” marks), which were held with the Reichsbank and could be used only for the purpose of investing in Germany—although they could be sold to foreigners to cover their travel and tourism expenses in Germany. Hence registered marks traded (on the London and Zurich markets) against other foreign currencies at a substantial discount relative to the official parity. This setup allowed the creditor banks that were willing to take a haircut on their standstill assets to liquidate them (albeit at a loss) and so progressively reduce their exposure.

Comptroller of the Currency's examiner noted that it was "almost impossible to ascertain the ultimate loss or recovery [on German credits] if any."<sup>13</sup>

The standstill agreements were suspended during WW2, and a comprehensive settlement of the remaining German private external debt was not reached until the London Debt Agreement of 1953 (Diaper, 1986; Guinnane, 2004). On 22 June 1961, the *New York Times* finally noted that "the last capital repayments were made to American, British and Swiss creditor banks", in effect terminating the German standstill agreement and closing "a thirty year chapter of financial history."<sup>14</sup> Thus three decades passed before foreign creditors could eventually obtain full reimbursement of their German "short-term" credits outstanding in the summer of 1931.

## **2.2. Lending to Central Europe by US and British banks**

British and US banks were among those providing the most foreign capital to Central Europe in the second half of the 1920s, which has led several authors to advance the hypothesis that these banks' exposure to Central European frozen credits helped transmit financial instability from Germany to London and New York in 1931 (James, 2001; Accominotti, 2012; Ritschl and Sarferaz, 2014). In particular, British and American banks had extended large amounts of trade finance credits to their Central European customers in the late 1920s. These credits took the form of direct short-term loans made to Central European customers or, more commonly, bankers' acceptances granted to banks and firms in the region (Harris, 1935, p. 19; Accominotti, 2012).

A *bankers' acceptance* is a trade finance instrument through which a financial institution in the United States (resp. Britain) guaranteed, in exchange for a fee, a foreign firm's short-term debt so

---

<sup>13</sup> Archives of the Office of the Comptroller of the Currency, *Examiner's Report of the Condition of Continental Illinois National Bank and Trust Co., Chicago*, March 1933. Metz (1934, p. 201) also remarked that "It is becoming increasingly evident that repayment in foreign exchange of Germany's short-term indebtedness cannot be anticipated in any measurable future. (...) Whether in these circumstances it is safe to count even on the maintenance of the service of these short-term debts is open to doubt."

<sup>14</sup> *New York Times*, "Old German Debt Paid in Full. US Creditors Close Books on '31 Standstill Accord", 22 June 1961.

that the latter could borrow in dollars (resp., sterling) on the New York (resp. London) money market. By “accepting” a bill of exchange/acceptance, the American or British bank committed to repay its holder at maturity in the expectation that it would receive payment from the borrower before the payment came due.<sup>15</sup> Bankers’ acceptances were therefore credit guarantees conceded by the banks. When foreign exchange restrictions were introduced in the summer of 1931, Central European debtors could no longer repay the dollar and sterling bills they had drawn on US and British banks. In order to honor their guarantees toward the bills’ holders, it was necessary for the accepting banks either to draw on their own cash resources or to renew, systematically, the Central European bills as they matured.<sup>16</sup> However, bills so renewed (i.e., standstill bills) were backed by debts of extremely dubious quality and so held little interest for investors. Therefore, the liquidity of these bills depended crucially on whether monetary authorities would rediscount them.<sup>17</sup>

In addition to trade finance credits, US and British banks had also granted short-term loans to Austrian, German, and Hungarian public authorities.<sup>18</sup> During 1924–1931, German public authorities and corporations also issued large amounts of long-term bonds in New York and London that were underwritten by the main British and American banks. Interest service on these bonds was not suspended until July 1933, but their price collapsed on the secondary market following the German crisis. However, most of the long-term German bonds floated in New

---

<sup>15</sup> Accominotti (2012, pp. 6–8) describes the working of bankers’ acceptances. Acceptance credits constituted the largest part of the US and British banks’ exposure to Germany in 1931 (Harris, 1935, p. 19).

<sup>16</sup> Under the standstill agreements, accepting banks had the option of either transforming their acceptance claims on German debtors into “frozen” cash advances carried on the asset side of their balance sheet or of renewing their guarantee at maturity. In the latter case, “as each old bill reach[ed] maturity, a new bill [was] drawn against the same credit and discounted again [...], the funds rendered available by the discount of the new bill [being] applied to the payment of the old bill” (*The Economist*, “The New German Standstill”, 23 February 1935). See also Metz (1934) and Harris (1935).

<sup>17</sup> See Sayers (1976, p. 509) on how the Bank of England safeguarded the marketability of standstill bills during the 1930s. Truhtil (1936, p. 314) noted that the Bank of England’s decision to grant “the necessary rediscount facilities so that moratoria bills could continue to be financed” was crucial in preventing failures among the British acceptance houses.

<sup>18</sup> These loans consisted of credits to municipalities and also to central governments, such as the \$125 million (US) syndicate credit granted to the German government in October 1930 by a group of foreign banks headed by the private American house Lee Higginson & Co. See Bennett (1962, pp. 17–20).

York and London had been sold to the public and so were held by individuals, not banks (Schuker, 1988; Guinnane, 2004).<sup>19</sup>

How high was the overall exposure of US and British banks to Central Europe? Although there are no estimates of the total Austrian and Hungarian credits held by foreign banking creditors, contemporary sources indicate that American and British banks held (respectively) \$654 million and \$316 million (£65 million) of German short-term credits in 1931 (see Appendix A).<sup>20</sup> At the aggregate level, German credits represented 21.32 per cent and 33.21 per cent of the New York and London banks' 1930 capital and reserves, and they amounted to 3.41 per cent and 2.67 per cent of their respective 1930 total assets.<sup>21</sup> Although not negligible, aggregate exposure was therefore relatively small compared to the size of both banking systems.

However, accurately assessing the impact of the Central European shock on overall financial stability in the creditor countries requires more than estimates of the US and British banking systems' total exposure to the region; in particular, it requires understanding *how exposure was distributed across banks*. An analogy with the recent financial crisis illustrates this issue. In 2008, the total amount of US banks' mortgage losses was modest relative to the size of the US banking system. Even so, the burst of the housing bubble triggered a severe liquidity crisis because a few

---

<sup>19</sup> According to the figures reported in a note found in the German federal archives on the country's foreign indebtedness, US and British banks held (respectively) only 6.2 and 5.7 per cent of the total German long-term debt owed to US and British creditors in September 1932, and long-term credits accounted for (respectively) only 12.1 and 6.1 per cent of the American and British banks' total exposure to Germany (Bundesarchiv, Koblenz, record N1138/27). In this note, long-term debt is defined as debt with a maturity longer than one year. See also the figures for November 1931 included in a note to the Foreign Creditors Committee (Archives, Federal Reserve Bank of New York, 261.12, 5 April 1932). As US Senator Tom Connally remarked to the chairman of the National City Bank during the hearings of the US Senate's Committee on Finance in December 1931: "With reference to foreign bonds, you are like the saloon keeper who never drank. His whiskey was made to sell, not to drink" (Hearings Before the Committee of Finance, United States Senate, 72nd Congress, First Session, S. Res. 19, 18 December 1931, p. 81).

<sup>20</sup> Whereas London banks accounted for nearly all of the German credits extended by the British banking system, about one third of the US banks' German credits were held outside New York (see Hearings Before the Committee of Finance, United States Senate, 72nd Congress, First Session, S. Res. 19, 4 January 1932, p. 411).

<sup>21</sup> Total assets, aggregate capital, and reserves of New York central reserve member banks in December 1930 are from Board of Governors of the Federal Reserve System (1943, sec. 2, pp. 80–81: "Total Assets" and "Capital Account, Total"). The corresponding values for London banks are constructed as the sum of the total assets, capital, and reserves of the ten London clearing banks (as reported in *The Economist*) and of the London merchant banks (as estimated by Truption, 1936, p. 162).

institutions, which were highly connected to other banks, became illiquid or insolvent (Brunnermeier, 2009; Gorton, 2009; Gorton and Ordonez, 2014).<sup>22</sup>

Billings and Capie (2011) and Accominotti (2012) examine how the Central European crisis of 1931 affected the British banking system using data on individual banks' exposure to Germany, Austria, and Hungary. Yet US banks' Central European exposure has never been documented systematically at the bank level.<sup>23</sup> A key contribution of the present paper is documenting the direct exposure of several important US banks to Central European credits in 1931.

### 3. Data

I rely on two separate data sets. The first of these documents individual British and US financial institutions' exposure to Central European frozen credits; the second is a data set of London and New York banks' foreign correspondents.

The leading creditor banks in Britain and the United States did not publish the geographical breakdown of their assets, so one must dig into archival records to assess the extent of their German and Central European commitments. Data on British banks are from previous work by Billings and Capie (2011) and Accominotti (2012) as well as additional archival sources. Thus we know the amount of German and Central European frozen credits held by 26 British

---

<sup>22</sup> It is noteworthy that recent research in international finance has stressed the importance of bank-level data for explaining how financial shocks propagate internationally (Peek and Rosengren, 2000; Cetorelli and Goldberg, 2011, 2012, Buch and Goldberg, 2015).

<sup>23</sup> Ritschl and Sarferaz (2014) explore the channels of financial crisis transmission between Germany and the United States in the 1920s and 1930s using a factor-augmented vector autoregressive model based on monthly macroeconomic series for both countries. These authors find evidence of crisis transmission from Germany to the United States after 1931, but only with a substantial lag. Richardson and Van Horn (2009, 2011) also study how transatlantic contagion affected New York banks in 1931; they use aggregate balance sheet data for the main commercial banks and a bank-level index of overall foreign exposure combining information on New York City banks' foreign bonds, deposits abroad and foreign liabilities but no specific data on their Central European exposure — especially through acceptances.

financial houses; these include the five biggest British commercial banks (known as the “Big Five”), one smaller commercial bank,<sup>24</sup> and 20 London merchant banks or acceptance houses.<sup>25</sup>

Data on individual US banks’ exposure to Germany, Austria, and Hungary in 1931 were hand-collected from various archival records and published sources: the US National Archives in College Park, Maryland; the German Bundesarchiv in Berlin; the New York Historical Society Library; and published bank reports and monographs (see appendix B). Combining these sources enabled me to reconstruct the amount of Central European frozen credits of 19 US financial institutions as of 1931. The sample includes ten New York City national banks or trust companies,<sup>26</sup> six national banks of other central reserve cities,<sup>27</sup> two acceptance corporations that specialized in trade finance and acceptance lending,<sup>28</sup> and one private bank.<sup>29</sup> These data cover all types of short-term credits that were frozen in 1931 when Central European governments introduced foreign exchange restrictions.<sup>30</sup>

The two samples of banks on which this part of the analysis is based reflect the availability of data and are not representative of each creditor country’s banking system; however, they do cover the bulk of the Central European credits held by British and American financial institutions. The 26 British banks for which Central European exposure is known account for 90 per cent of the banking system’s total assets in 1930 and for 89 per cent of the aggregate amount

---

<sup>24</sup> The Big Five clearing banks are Barclays, Lloyds, Midland, National Provincial, and Westminster. The other clearing bank in the sample is William Deacon’s.

<sup>25</sup> The 20 acceptance houses include Anglo French Banking Corporation, Anglo-International Bank Ltd., Baring Bros. & Co. Ltd., Guinness Mahon & Co., Hambros Bank Ltd., S. Japhet & Co. Ltd., Lazards Brothers & Co. Ltd., London Merchant Bank Ltd., Morgan Grenfell & Co. Ltd., Kleinworts Sons & Co., A. Ruffers & Sons Ltd, M. Samuel & Co. Ltd, J. Henry Schröder & Co. as well as seven institutions (identified as banks A to G) whose balance sheets were communicated by the archivists on the condition that their anonymity be preserved.

<sup>26</sup> Bankers Trust, Chase National Bank, Chatham Phenix National Bank and Trust, Commercial National Bank and Trust, Grace National Bank, Guaranty Trust, Irving Trust, Manufacturers Trust, National City Bank, and Public National Bank and Trust.

<sup>27</sup> Bank of America National Trust of San Francisco, Continental Illinois of Chicago, First National Bank of Boston, First National Bank of Chicago, National Shawmut Bank of Boston, and Philadelphia National Bank. Continental Illinois was nationally chartered in 1933.

<sup>28</sup> International Acceptance Bank, Inc., and J. Henry Schroder Banking Corporation (or Schrobanco).

<sup>29</sup> Brown Brothers Harriman & Co.

<sup>30</sup> They include acceptance credits on account of Central European customers; other direct short-term credits to banks and firms located in Germany, Austria, and Hungary; and short-term loans to Central European governments and municipalities, such as the Lee Higginson syndicate loan to the German government.

of German short-term debts owed to all British financial institutions.<sup>31</sup> The sample of 19 US banks for which relevant data are available accounts for only 21 per cent of the US banking system's total assets in 1930 but includes the country's largest banks, which (as argued here) were responsible for most of the US short-term foreign lending. As a result, these 19 institutions account for 73 per cent of the aggregate German short-term credits held by all US banking creditors in 1931.<sup>32</sup> The distribution of German credits across the British and American banking systems is analyzed in Section 4.2.

I complement this direct balance sheet information with a new data set of London and New York banks' foreign correspondents. When granting short-term credits to foreign customers, British and US banks usually relied on correspondents in the debtors' countries. Correspondents were "furnishing information on local credit conditions, handling documents and making collections" on the creditor banks' behalf (Phelbs, 1927, p. 23) and, most often, they guaranteed the ultimate borrowers' debts. The network of US and British banks' foreign correspondents provides invaluable insights into the markets where they operated. I therefore reconstructed the set of all important London and New York banks' foreign correspondents (from here on referred to as "portfolio of correspondents") using the *Bankers' Almanac*, a British directory providing practical information to London bankers about the main foreign financial institutions. The 1930/31 issue of the *Almanac* lists 3,352 foreign banks located in 86 countries and gives the list of each bank's correspondents in New York and London, which I used to infer each creditor bank's portfolio of foreign correspondents.<sup>33</sup> There are, of course, some limitations to these data on foreign correspondents. In particular, correspondents are not weighted by size, and the *Almanac's* listings may reflect selection biases. That being said, the cross-sectional correlation between the amount of Central European credits held in 1931 and the number of

---

<sup>31</sup> See Appendix A for the aggregate amount of German debts owed to British banks in 1931.

<sup>32</sup> The figure for total assets of all US banks in 1930 is from Carter et al. (2006), series Cj252. See Appendix A regarding the sources for aggregate German short-term credits held by US banks.

<sup>33</sup> The *Almanac* also contains such information as the banks' mailing and telegraphic addresses, names of partners, and (sometimes) balance sheet items. Excluded from the analysis are London and New York branches of foreign banks whose only correspondent abroad was their parent company.

Central European correspondents is (respectively) 0.86 and 0.73 for the 13 New York banks and 26 London banks on which information is available. It therefore seems that the number of a bank's correspondents in a given country provides a strong indication of its presence in that country.

[[ INSERT Figure 1 about Here ]]

[[ INSERT Table 1 about Here ]]

Figure 1 and Table 1 display the geographical distribution of all London and New York banks' foreign correspondents. The vast majority of correspondents were located in European countries. Germany was the country hosting the largest number of correspondents, followed by the Nordic Countries, France, and the Netherlands. London financial institutions also had many correspondents in the United States, and banks from both financial centers were present in Latin America as well.

## **4. Exposure to Central European Credits**

### **4.1. Exposure of individual banks**

I first document the direct exposure of individual creditor banks to German and Central European credits in 1931. For each bank in the sample, Table 2 (British banks) and Table 3 (US banks) report the amount of its 1931 Central European frozen credits outstanding (in million pounds and dollars respectively) and the ratio of its frozen credits to: its end-1930 paid-up capital and reserves;<sup>34</sup> its end-1930 and end-1931 liquid assets (including cash and all negotiable securities);<sup>35</sup> and its end-1930 and end-1931 total assets. The tables also display the banks' capital

---

<sup>34</sup> For British banks, capital and reserves are defined as the sum of paid-up capital and all reserve accounts; for US banks, they are defined as the sum of capital stock paid in, surplus, undivided profits, and reserves for dividends and contingencies.

<sup>35</sup> For British banks, liquid assets are defined as the sum of cash held at the Bank of England, call money, bills, and investments (i.e., securities); for US banks, they are defined as the sum of cash and amounts due from banks, reserve with the Federal Reserve Bank, US government securities, and other securities.

ratios (ratio of paid-up capital and reserves to total assets) at the end of 1930 and the percentage change in their deposits between the end of 1930 and the end of 1931.

[[ INSERT Table 2 about Here ]]

[[ INSERT Table 3 about Here ]]

I distinguish between financial institutions whose primary activity was trade finance or acceptance lending (“acceptance houses”, panel A) and banks, which engaged in a wider range of activities that included lending to the domestic industry, mortgage lending, and foreign banking (“commercial banks”, panel B).<sup>36</sup> The former category includes 20 merchant banks or Anglo-foreign banks in the case of Britain and, in the United States, two acceptance corporations founded in the 1920s (International Acceptance Bank, Inc., and J. Henry Schroder Banking Corporation or Schrobanco) as well as one private bank (Brown Brothers Harriman & Co.). The latter category encompasses the largest British and American commercial banks (in terms of total assets and capital), which include the Big Five London clearing banks as well as the large US national banks and trust companies of New York and other central reserve cities. Whereas commercial banks dominate the US sample, they are but a minority of the British sample. These different sample compositions arise primarily from differences between the two creditor countries’ banking structures and from the relatively fewer US than British financial institutions that specialized in foreign lending and trade finance.

These tables indicate that many of the London and New York financial institutions specializing in international trade finance (acceptance houses) were severely affected by the Central European crisis. Of the 20 London acceptance houses in the sample, 12 (as well as the

---

<sup>36</sup> Truhtil (1936, p. 261) distinguishes between “Merchant Bankers”, “Anglo-Foreign Banks”, “African and Indian Banks” (all regrouped under “acceptance houses” here) and “Joint-Stock Banks” (included here under “commercial banks”) in his classification of British banks. The American Acceptance Council distinguished between “Acceptance Corporations”, “Private Bankers” (classified as “acceptance houses” here), and “National Banks & Trust Companies” (classified under “commercial banks”) in its classification of US banks that engaged in trade finance (Vigreux, 1932, p. 65). Phelbs (1927, p. 174) also identified some American banks that were “purely acceptance houses”. The distinction between acceptance houses and commercial banks need not reflect differences in the banks’ ownership structure or charter; it is based solely on the nature of these banks’ activities. Acceptance houses specialized in granting short-term commercial credits. Banks commonly known as acceptance houses in England were either partnerships or private or public limited liability companies, while the Big Five London clearing banks were all public limited liability companies.

American acceptance corporations International Acceptance Bank and Schrobanco) had frozen credits on their books that exceeded the 1930 value of their capital and reserves when the German crisis broke out (column II in Tables 2 and 3). These banks might have become insolvent in the summer of 1931, when Central European debtors found themselves unable to pay those debts owing to the sudden enactment of foreign exchange restrictions. Moreover, the debt rescheduling agreed upon at the London Conference—and in subsequent standstill agreements—had the effect of converting all short-term Central European credits into long-term ones; of course, that conversion seriously endangered the liquidity of acceptance houses. The frozen credits carried by these institutions constituted a large proportion of their 1930 liquid assets (column III).

In addition, the banks most exposed to Central European credits lost huge amounts of deposits in 1931 as the crisis raised serious depositor fears about their solvency (column VIII). London financial institutions with frozen credits in excess of their capital resources endured an average 67 per cent decline in deposits, and the two most heavily exposed banks in the US sample (International Acceptance Bank and Schrobanco) each lost more than half of their deposits between December 1930 and December 1931. Hence these banks were forced to use their cash and sell off their liquid assets in order to meet deposit withdrawals and honor their acceptance liabilities/credit guarantees, and their balance sheets contracted. As a result, nine London acceptance houses—as well as the New York-based International Acceptance Bank and J. Henry Schroder Banking Corporation—were left with frozen credits in excess of their remaining liquid assets at the end of 1931 (column IV). Because these banks had insufficient liquidity to meet deposit withdrawals and also honor their guarantees on Central European trade finance credits, many would certainly have failed in 1931 had the Bank of England and Federal Reserve Bank not extended emergency facilities by agreeing to rediscount Central European standstill bills.

In comparison with the acceptance houses, British and American commercial banks were only mildly affected by the Central European crisis. Frozen credits amounted to 12 and 28 per cent of the capital and reserves of (respectively) the British clearing banks and US commercial banks in the sample, which indicates that the potential losses faced by these institutions in Central Europe did not directly threaten their solvency.<sup>37</sup> Neither did liquidity problems arise for commercial banks in response to the freeze of Central European assets, since the amount of their frozen credits was small relative to their overall liquid assets (column III).<sup>38</sup> Although several American commercial banks experienced substantial deposit withdrawals in 1931, their frozen credits remained small even when compared to their end-1931 liquid assets (column IV). For commercial banks on both sides of the Atlantic, the Central European crisis was therefore a relatively minor shock to their balance sheets.

The difficulties encountered by acceptance houses were due less to their low level of capitalization than to their high degree of specialization. In fact, London acceptance houses had, on average, *higher* capital ratios than the British commercial banks, and the three US financial houses that specialized in foreign lending had a level of capitalization similar to the other American commercial banks in the sample (column VII in Tables 2 and 3). What matters however is that frozen credits represented a substantial share of the acceptance houses' total assets (columns V and VI). In particular, the frozen credits of the twelve most exposed London acceptance houses amounted to 22 per cent of their 1930 total assets, on average, as opposed to only 1 per cent for the sample's British commercial banks.<sup>39</sup> Frozen assets similarly represented 28 and 16 per cent of (respectively) International Acceptance Bank's and Schrobanco's 1930 total

---

<sup>37</sup> As measured by total assets, the five largest British banks (Barclays, Lloyds, Midland, National Provincial, and Westminster) and the five largest US banks (Chase National Bank, National City Bank, Guaranty Trust, Continental Illinois, and Bank of America San Francisco) each had enough capital to cover potential losses in Germany.

<sup>38</sup> Frozen credits represented 2 and 10 per cent of the 1930 liquid assets of (respectively) the sample's British and US commercial banks.

<sup>39</sup> These total assets include the trade credit guarantees granted through bankers' acceptances. Such acceptance credits were considered as contingent liabilities by the banks and were therefore reported on both sides of their balance sheet. When subtracting acceptances from the figure for total assets, frozen credits amounted to 39 per cent of 1930 total assets on average for these twelve banks.

assets—as opposed to 4 per cent, on average, for the sample’s US commercial banks. In short, the Central European crisis mainly affected banks that were highly specialized in lending to this region.

#### 4.2. Distribution of frozen credits across banks

How significant were small, specialized banks (acceptance houses) as opposed to large, diversified ones (commercial banks) in the total volume of German lending in each creditor country? Combining the bank-level data collected from various sources with information on the *aggregate* amount of German debts owed to British and US banking creditors in 1931 allows for describing how frozen credits were distributed across banks in both Britain and the United States. Figure 2 illustrates the distribution of US and British banks’ German short-term credits by bank size as proxied by their capital and reserves in panel A and by their total assets in panel B.<sup>40</sup> For each creditor country, the graph reports the share of the total German short-term debt owed to banks with different levels of equity and total assets. The share of German debt owed to banks that are *not* in the sample is reported in the “Not in Sample” category.

[[ INSERT Figure 2 about Here ]]

The distribution of frozen credits across the banking system was markedly different in the two creditor countries: the share of small banks in German lending was much higher in Britain than in the United States. In Britain, most German credits were concentrated on small, specialized banks’ balance sheets. Financial institutions in the sample with less than £5 million of capital and reserves accounted for 50 per cent of the British banking system’s overall exposure to Germany. In contrast, commercial banks whose capital and reserves amounted to more than £20

---

<sup>40</sup> In this Section 4.2, the focus is on German credits because there is no available information on the aggregate amounts of Austrian and Hungarian debts owed to the US and British banking creditors. However, it is worth noting that Austrian and Hungarian credits constituted only a very small share of the US and British banks’ overall Central European credits. For nine British acceptance houses in the sample (Anglo French Banking Corporation, Anglo International Bank Ltd., Hambros Bank Ltd., Lazards Brothers & Co. Ltd., Morgan Grenfell & Co. Ltd., A Ruffers & Sons Ltd., Bank A, Bank D and Bank E), German credits are proxied by overall Central European credits because no separate information is available on debts owed by German customers.

million held only 17 per cent of the British banking system's aggregate German frozen credits. This finding reflects the distinctive structure of the British banking system and also the still preponderant role played—in foreign lending and trade finance during the interwar period—by small and highly specialized London acceptance houses.

The distribution of German exposure was quite different in the United States, where the largest banks accounted for the lion's share of short-term lending to Germany. More than half of the US banks' aggregate German short-term credits were held by just seven institutions, each with more than £20 million in capital.<sup>41</sup> At the same time, the smaller financial institutions in the sample (with less than £5 million in capital) held only 11 per cent of the total German credits owed to US banks in 1931.

The US sample accounts for “only” 73 per cent of the total German exposure of American banks. However, it is unlikely that much of the remaining 27 per cent were held either by small private banks and acceptance corporations or by small commercial banks spread across the country. First, although the sample excludes several private banks (e.g., Lee Higginson & Co., Ladenburg Thalmann & Co., Hallgarten & Co.) with connections to Germany, it also omits large commercial banks (e.g., New York Trust, Central Hanover Bank and Trust) that certainly carried substantial amounts of German short-term credits on their balance sheets.<sup>42</sup> Second, qualitative evidence from the Hearings of the United States Senate's Committee on Finance (held from December 1931 to February 1932) on American banks' foreign lending activities suggests that

---

<sup>41</sup> Chase National Bank, Guaranty Trust, National City Bank, Irving Trust, Continental Illinois, Bankers Trust, and Bank of America San Francisco.

<sup>42</sup> Responding to the questions of the Senate Finance Committee in January 1932, George Murnane (representing Lee Higginson & Co.) noted that his bank held \$19.4 million of German short-term credits, amounting to around 3 per cent of the total short-term credits held by US banks. This amount included \$7 million in commercial credits, a \$150,000 loan to the City of Hamburg, and participation in the syndicate loan to the German government (arranged under Lee Higginson's auspices in October 1930) to the tune of \$12.25 million. See Hearings Before the Committee of Finance, United States Senate, 72nd Congress, First Session, S. Res. 19, 8 January 1932, pp. 1558–59. The house eventually went bankrupt in 1932 owing to its involvement in Sweden's “match” scandal (Partnoy, 2009); it is not included in the sample of US banks because I was unable to find information on its capital and total assets. Central Hanover Bank was definitely involved in German short-term credits because it hired a German representative in Berlin, and New York Trust also participated in the Lee Higginson loan to the German government (Hearings Before the Committee of Finance, United States Senate, 72nd Congress, First Session, S. Res. 19, 8 January 1932, p. 1559).

most German short-term credits were held by about 100 US financial institutions.<sup>43</sup> Thus hardly any of the innumerable “unit banks” spread across the United States were at all engaged in German lending. Finally, the subsequent analysis of data on foreign correspondents confirms that (a) the largest American commercial banks were also the market leaders in Central European lending and (b) few acceptance houses and private banks, other than the three listed in Table 3, had substantial market shares in the region.

Overall, this analysis of the bank-level data reveals important differences in market structures between the two creditor countries. German credits were predominantly held by large, diversified commercial banks in the United States and by small, specialized institutions in Britain.

#### **4.3. Implications for spreading of the Central European crisis**

The concentration of German frozen credits among small and poorly diversified banks had important implications for the transmission of the Central European crisis to the London money market. Even as the suspension of foreign exchange payments in Central European countries left the large British commercial banks’ balance sheets practically unaffected, it raised doubts about the solvency and liquidity of London’s acceptance houses, leading to a run on their deposits.<sup>44</sup> The Central European crisis put the merchant banks on the brink of failure because they had little capital to absorb potential losses in the region and not enough liquid assets to both honor their credit guarantees and pay out deposit withdrawals. Although the exposed banks’ role in financing the British economy remained marginal, these institutions were highly connected with the rest of the British banking system. Because the merchant banks’ acceptances constituted the bulk of the bills circulating on the London money market in which other banks invested, the failure of a few of these houses would immediately have transmitted the problem to other

---

<sup>43</sup> Hearings Before the Committee of Finance, United States Senate, 72nd Congress, First Session, S. Res. 19, 4 January 1932, p. 410.

<sup>44</sup> Billings and Capie (2011) and Accominotti (2012) describe how the German crisis affected the situation of, respectively the Big Five clearing banks and the acceptance houses.

financial institutions and shaken the whole banking system.<sup>45</sup> That possibility explains the dramatic tone adopted by British bankers and analysts following the Central European events. In the end, merchant bank failures were avoided thanks to the Bank of England's accommodating attitude. The Bank sponsored the standstill agreements concluded between banking creditors and their German debtors, and following those agreements it declared standstill bills (which were, in effect, constantly renewed bills) to be eligible for rediscount at the Bank. This policy safeguarded the marketability of these bills despite their being backed by doubtful and frozen assets, ensuring that the most exposed acceptance houses would remain liquid and thereby avoiding their failure—and what would be dire consequences for the entire banking system. Nonetheless, Accominotti (2012) argues that *uncertainty* regarding the situation of merchant banks and the Bank of England's relaxed standards did contribute to the sterling crisis and devaluation of September 1931.<sup>46</sup>

In the United States, however, frozen credits were concentrated among big and diversified banks with much more capital available to cushion potential losses in Central Europe. Hence the freezing of their Central European assets did not directly threaten the solvency or liquidity of American commercial banks. Whereas the German crisis had imperiled a whole segment of the London money market, only a handful of US financial institutions were seriously affected in the summer of 1931.<sup>47</sup> Troubles could be contained, for the most part, which explains the belief of

---

<sup>45</sup> Metz (1934, p. 199-200) was adamant that the merchant banks' failure would have had severe repercussions upon British banking stability: "What the reaction of the banking system would have been at that time had any of these Houses been forced to the wall through the drying up of discount facilities for their bills (...) can only be surmised. (...) Any serious hitch, therefore, in the functioning of the discount market, might conceivably have unleashed a run on the banks that would have undermined for many a year (sic) to come, the confidence traditionally placed in the London market."

<sup>46</sup> The Bank of England evidently rediscounted many German standstill bills in the early 1930s even though these bills represented frozen assets and carried the signature of potentially insolvent institutions. According to Sayers (1976), almost half of the bills rediscounted by the Bank in 1932 were German standstill bills.

<sup>47</sup> The two most highly exposed banks in Table 3 managed to weather the storm. Although heavily invested in Central European credits, International Acceptance Bank was backed by its large holding company (the Manhattan Company), which also held a large New York commercial bank (the Bank of Manhattan Trust). This acceptance house also received immediate support from a group of five large commercial banks. A few years later, the International Acceptance Bank was absorbed by the Bank of Manhattan Trust. Likewise, J. Henry Schroder Banking Corporation borrowed from Chase National Bank and National City Bank, which agreed to repurchase its acceptances in the summer of 1931 so that the firm could obtain enough cash to meet its deposit withdrawals (Roberts, 1992, p. 241).

JP Morgan's Thomas Lamont that "short-term German credits [did] not constitute [...] a danger to the American banking situation."

## 5. Adverse Selection and Specialization in Trade Finance Markets

### 5.1. Role of capital and information in trade finance: Theory

I next attempt to account for the differences between US and British market structures. More precisely, I propose to explain why small, specialized banks maintained large market shares in Central European lending in Britain yet remained marginal players in the United States. I argue that a bank's size and its information about borrowers were critical variables accounting for the extent of its involvement in foreign markets, including Central Europe.

Most of the British and American banks' Central European exposure in 1931 arose from the financing of international trade through the London and New York financial centers. That exposure consisted of direct credits and/or credit guarantees granted via bankers' acceptances. Granting such credits to foreign borrowers first required that creditor banks have enough capital to cushion potential defaults. Foreign lending was risky because creditors had few legal means of recovering claims from borrowers abroad that defaulted. Although granting credit guarantees did not technically require banks to immobilize resources,<sup>48</sup> financial institutions with little capital were in no position to absorb any losses arising from individual debtors' defaults; such banks were therefore not regarded as credible acceptors (guarantors), so a bill carrying one's signature would not have circulated easily on the discount market.<sup>49</sup> *Ceteris paribus*, large banks with high levels of equity enjoyed an advantage over small banks in granting and guaranteeing credits to foreign customers.

---

<sup>48</sup> Acceptance liabilities consisted only of contingent liabilities for the accepting banks.

<sup>49</sup> As stated in 1930 by Robert Kindersley, then chairman of the London merchant bank Lazards: "if you are going to do [...] an acceptance business then the world must know that you have considerable means at your back, and as you increase your business you must have the capital." Committee on Finance and Industry (1931), *Minutes of evidence*, vol. 1, p. 72, par. 1163. In 1959, the Radcliffe Committee on the Working of the Monetary System similarly emphasized that banks undertaking an acceptance activity must have "adequate capital and adequate liquidity" in order to maintain their reputation (cited in Ellis, 1960, p. 54).

However, a bank's ability to engage in foreign lending depended not only on its size and capital but also on the information it held on markets abroad and on its expertise in processing it. A well-informed bank could select "better" borrowers, thus minimizing its losses. The information required to assess a foreign borrowing firm's quality could not always be summarized by "hard" indicators (e.g., balance sheet ratios), since tacit knowledge about the borrower and market was also needed. Such "soft" information was not easily transferable across creditors and could only be acquired through time and repeated transactions, a phenomenon known as *learning by lending*. Therefore, creditor banks that had been present in foreign markets for a long time had an obvious advantage there as credit intermediators because they had accumulated extensive information about the borrowers. Such banks could, for example, rely on a wider network of correspondents that allowed them to remain informed about the borrowers' situation. It was costly for a bank to move into a new market, since doing so required that the bank acquire new knowledge and expertise while establishing new correspondent relationships. These fixed costs of entry into foreign markets gave lenders an incentive to specialize in countries where they had an initial comparative advantage.<sup>50</sup> Given the informational asymmetries among creditor banks, institutions entering a new foreign market—in which several banks were already established—faced adverse selection in their borrowers.<sup>51</sup> The resulting barriers to entry in this market gave incumbent banks a comparative advantage over new entrants.

## **5.2. Market structure of the British trade finance industry**

The organization of foreign banking in Britain was a legacy of its past. The City had been a large center for international trade finance since the mid-nineteenth century, and by the 1920s there

---

<sup>50</sup> Winton (1999), Boot and Thakor (2000), and Paravisini et al. (2015) present formal theoretical models showing how learning by lending leads to bank specialization.

<sup>51</sup> This phenomenon has been described in several formal models; see, for example, Dell'Ariccia et al. (1999), Dell'Ariccia (2001), Marquez (2002) and Pavanini and Schivardi (2013).

were several British banks with a long record of lending to foreign customers. In particular, the small London merchant banks had been the first to engage in the financing of international trade through acceptances. Many of these institutions had originally been founded by immigrants to Britain, who exploited connections with the home country in order to extend their activities and give their foreign customers access to the London discount market. Over time, these banks accumulated extensive information on foreign markets where they specialized and established long-time relationships with correspondents, on which the banks could rely to screen borrowers.<sup>52</sup>

Starting in the late nineteenth century, a process of amalgamation in English banking led to the emergence of five large commercial banks: the so-called Big Five clearing banks.<sup>53</sup> Until the First World War (WWI), these banks specialized in lending to the domestic industry. In response to increased demand for credit from Continental European firms during the interwar period, the Big Five extended their foreign lending activities (Jones, 1982, 1993, pp. 138–57). Encouraged by public authorities to open branches in Europe, these banks developed their overseas business considerably (Jones, 1982, p. 188). Their large size gave members of the Big Five an advantage over the smaller acceptance houses in foreign lending, and they could engage in a wider range of activities. Yet they also faced adverse selection in foreign markets where merchant banks were already established, especially in Central Europe. The merchant banks' informational advantage in these markets allowed them to compete with the commercial banks in spite of the latter's greater size (and capital).<sup>54</sup>

---

<sup>52</sup> As stressed by an editor of the *Investor's Chronicle*, David Sachs (1949), merchant banks “ma[de] it [their] business to know all about the standing of [their] customer[s]”. Truhtil (1936, p. 132) noted that, although acceptance houses seldom limited their activities to a single country, each one “had its own special realm, both from the geographical point of view and for (sic.) that of the merchandise dealt with.”

<sup>53</sup> See Capie and Rodrik-Bali (1982).

<sup>54</sup> Merchant banks also faced competition from small British multinational banks and Anglo-foreign banks that likewise specialized in financing foreign trade, usually for specific countries. Most of these competitors focused on regions in the British Empire and South America, although such institutions as the Anglo-French Banking Corporation (France) and Anglo-International Bank (Central Europe) also concentrated their activities in specific Continental European countries. See Jones (1993) on the British multinational banks' activities. Already by 1914, many Continental European banks had opened branches in London in order to export their informational advantage and serve as a gateway for their customers seeking access to the London discount market. However, German banks'

[[ INSERT Figure 3 about Here ]]

Figure 3 illustrates the pattern of foreign lending specialization across different banks established in London. This figure's maps use data collected in the *Bankers' Almanac* to plot locations of the European correspondents of two merchant banks (Hambros and Schroders) and two of the Big Five banks (Barclays and Midland). Hambros was well known in London for its close connections with Scandinavia. The bank was founded in 1839 by Carl Joachim Hambro, the son of a Copenhagen merchant and banker (Hambros Bank, 1939, p. 4).<sup>55</sup> Schroders was founded by Johann Heinrich Schröder, member of a German merchant family who emigrated to London from Hamburg during the Napoleonic Wars (Roberts, 1992, p. 3).<sup>56</sup> Figure 3 shows clearly that the two merchant banks remained highly specialized in the markets where they had a historical informational advantage. In the early 1930s (one century after these banks' foundation), most European correspondents of Hambros were still concentrated in Scandinavian countries whereas nearly all of the Schroders correspondents were located in Central Europe. In contrast, both Barclays' and Midland's correspondents were distributed much more evenly across Europe—reflecting the greater geographical diversification of their activities. These banks had a large capital base but no previous connections with certain foreign countries in particular and therefore no incentives to specialize geographically.

In order to measure the geographical concentration of the banks' foreign correspondents, I follow Paravisini et al. (2015) and construct a *relative concentration index* (RCI) for each London bank cited in the *Almanac* as a correspondent of foreign banks.<sup>57</sup>

Let  $i = 1, \dots, I$  be the London creditor bank and let  $c = 1, \dots, C$  be the correspondent's country. Then the share  $S$  of country  $c$  in bank  $i$ 's portfolio of correspondents is given by

London branches were put in liquidation at the outbreak of WWI (Truption, 1936, p. 177). That development allowed merchant banks with strong German connections to reinforce their market share in the region.

<sup>55</sup> According to Truption (1936, p. 140), "C. J. Hambro represented Scandinavian interests in London".

<sup>56</sup> According to Truption (1936, p. 147), its chairman "preserved his German nationality until 1914".

<sup>57</sup> Palan (2010) describes the RCI's general properties. The index was originally designed by Krugman (1991) to assess the degree of an industry's agglomeration.

$$S_{ic} = \frac{N_{ic}}{\sum_{c=1}^C N_{ic}} \quad (1)$$

The relative concentration index compares bank  $i$ 's portfolio of correspondents with the average portfolio (across all London banks); it is defined formally as

$$RCI_i = \sum_{c=1}^C |S_{ic} - \bar{S}_{ic}| \quad (2)$$

Table 4 reports this statistic for all London banks that had at least 20 correspondents abroad. The index takes the value 0 when the shares of the different countries in the bank's portfolio of correspondents exactly equal the shares in the average portfolio (across all London banks). A bank is considered to be more specialized to the extent that its portfolio deviates from the average portfolio and, as a result, has a higher value of this index—up to its maximum value of  $2(C - 1)/C$ .<sup>58</sup>

[[ INSERT Table 4 about Here ]]

The advantage of using the RCI is that it offers a *relative* measure of concentration, measuring the extent to which each bank's portfolio departs from the average portfolio (across the whole banking system).<sup>59</sup> However, I also report an *absolute* measure of portfolio concentration—the classic Herfindahl-Hirshman index defined as<sup>60</sup>

$$HHI_i = \sum_{c=1}^C S_{ic}^2 \quad (3)$$

Finally, table 4's last column identifies the countries in which each bank specialized. A bank is said to be “specialized” in a particular country if the share of its correspondents in that

---

<sup>58</sup> See Palan (2010) and Paravisini et al. (2015). I used an adapted version of the Correlates of War Project (2011) state classification in order to harmonize country names. According to this classification, London and New York banks had correspondents in (respectively) 85 and 86 different countries.

<sup>59</sup> Therefore, index values are not affected by any selection biases in the *Bankers' Almanac* that result in some countries being under- or over-represented in the average portfolio.

<sup>60</sup> The HHI ranges from  $1/C$  to 1.

country is no less than 20 per cent.<sup>61</sup> The shares of correspondents located in each bank's "countries of specialization" are reported in parentheses. The table distinguishes between different types of banks: the London acceptance houses, including the merchant banks and Anglo-foreign banks (panel A); the London branches of foreign banks (panel B); the Big Five joint-stock clearing banks (panel C); and other British commercial banks (panel D).

Table 4 shows that the acceptance houses and foreign banks established in London had much less diversified portfolios of correspondents than did the British commercial banks. The RCI averaged 1.12 and 1.09 for (respectively) the acceptance houses and foreign banks, almost double the 0.57 value for the Big Five. This indicates that acceptance houses and foreign banks were much more geographically specialized than were the large commercial banks.

The London acceptance houses' and foreign banks' correspondents were concentrated in countries where they had a historical informational advantage. For example, Brown Shipley was the partner of the US private bank Brown Brothers and had been established in 1810 by the fourth son of the US house's founder (Ellis, 1960). Hence it is not surprising that nearly three fourths of its correspondents were located in the United States. More than a quarter of Ruffers' correspondents were located in France, where the firm originated (Truutil, 1936, p. 155). Hambros, as mentioned previously, was heavily involved in Scandinavia; 44 per cent of this firm's correspondents were located in either Norway or Denmark. Foreign banks that were also established in London naturally exhibited strong country specialization and their portfolios of correspondents were highly skewed toward their home country.<sup>62</sup>

---

<sup>61</sup> Paravisini et al. (2015) also identify whether banks' loan portfolios are skewed toward certain countries relative to those of other banks. A given bank is said to be "specialized" in a given country if the country share in the bank's loan portfolio is an outlier in the distribution of that country's share across all banks in the sample. In the data set used for this paper, any bank's country share  $S_{ic}$  of at least 20 per cent also indicates that the bank's portfolio of correspondents is highly skewed (relative to other banks) toward country  $i$ . Indeed, the 75th percentile of the distribution of the variable  $S_{ic}$  across all banks is lower than 20 per cent in each country.

<sup>62</sup> This is the case of Credito Italiano and Banca Commerciale Italiana (Italy), Société Générale (France), Banque Belge Pour l'Etranger (Belgium), National City, Guaranty Trust, and Bankers Trust (United States), and the Swiss Banking Corporation (Switzerland).

Finally, Table 4 identifies the many British banks with close connections to Germany. The acceptance houses Schrodgers, Japhets, London Merchant Bank, and Kleinworts—all of which had German origins dating back to the nineteenth century—each specialized in German lending.<sup>63</sup> These banks all had between 33 and 60 per cent of their foreign correspondents in Germany. Several foreign banks also exhibited a German bias in their portfolios of correspondents. In particular, geographical proximity allowed the Swiss Banking Corporation to maintain privileged relationships with German customers, which could obtain access to sterling trade finance credits through its London branch.

The acceptance houses' informational advantage made it possible for them to compete with the Big Five clearing banks in the market for German and Central European loans as the latter faced adverse selection in this market. Figure 4 plots the total number of Central European correspondents (in Germany, Austria, Hungary) listed for the different London banks—a reliable indicator of their market share in the region—while again distinguishing between commercial and other types of banks.

[[ INSERT Figure 4 about Here ]]

According to this indicator (i.e., number of correspondents), the market leaders in Central Europe were not the Big Five commercial banks but rather the London branch of the Swiss Banking Corporation and two small acceptance houses (Japhets and Schrodgers) that had strong historical connections with Germany. Many other acceptance houses and non-commercial banks with strong German links also ranked high on the list.<sup>64</sup> These institutions' connections and first-mover advantage in Central Europe allowed them to maintain their market shares in the region

---

<sup>63</sup> Kleinworts was founded in London in 1858 by a German immigrant, exploiting its strong links with Germany to expand its activities in the second half of the nineteenth century (Diaper, 1986, p. 56). The house of Japhets was established in 1896 by the Frankfurt banker Seamy Japhet. It initially acted as an agent in London for the German Deutsche Bank and later obtained capital from both the Berlin banker R. Warschauer & Co. and the Darmstaedter Bank (Chapman, 1984, p. 168). London Merchant Bank was previously named the Hanseatic Bank and was known for its close business relationship with the German Commerz und Privatbank (Truutil, 1936, pp. 133, 155).

<sup>64</sup> For example, Kleinworts, Seligman, Huth, London Merchant Bank, Higginson and Erlangers all had a significant number of correspondents in Central Europe despite their small size. Truutil (1936, pp. 137–56) describes the origins of several acceptance houses. Seligman was founded by “a family of German origin”; Huth was established by a “Hanoverian citizen”; and the origins of Erlangers “can be traced back to [...] firm of von Erlanger & Söhne in Frankfurt.”

by substituting informational capital for financial capital. This explains why small institutions accounted for such a large share of the British banks' overall exposure to Germany in 1931.

### **5.3. Market structure of the US trade finance industry**

London had been a large market for international trade finance since the nineteenth century, but New York did not emerge as an international financial center until the 1920s. One reason is that, under the National Bank Act of 1864, national banks were not allowed to engage in trade finance through acceptances or to establish foreign branches (Phelbs, 1927; Vigreux, 1932, p. 38). As a result, American merchants and firms before WWI usually financed their commercial activities through London.<sup>65</sup> In the late 1910s and early 1920s, however, officials at the Federal Reserve Board undertook substantial efforts to develop a market for acceptances in New York in an attempt to increase use of the US dollar as an international currency (Ferderer, 2003; Eichengreen and Flandreau, 2012). The Federal Reserve Act of 1913 finally allowed member banks to accept bills of exchange, and the demand for dollar credits increased during the war and postwar years. The New York acceptance market developed in the 1920s and soon was in competition with London for the financing of international trade (Eichengreen and Flandreau, 2012).

Yet most US banks in the interwar period were new to foreign lending. When New York finally emerged as a large international financial center, two forces contributed to give an advantage to the largest banks in trade finance. First, whereas small London merchant banks and acceptance houses enjoyed a first-mover advantage in foreign markets where they had specialized since the nineteenth century, no US financial institutions had established strong lending relationships with foreign customers before 1914. So in comparison to the Big Five in Britain, the largest American banks faced less severe adverse selection from other US banks as well as

---

<sup>65</sup> Vigreux (1932, pp. 37–38) notes that “the methods used for financing American commerce were quite archaic” before 1914 and that “London served as an intermediary”.

weaker barriers to entry in foreign countries, especially Germany. Second, banking regulation limited the ability of the small Federal Reserve member banks to extend commercial credits. Under the Federal Reserve Act of 1913, member banks were required to keep the ratio of their outstanding acceptances (trade credit guarantees) to paid-up capital and reserves at less than 1 (Vigreux, 1932, pp. 39–40). Mandating such a link (between granting acceptances and a bank’s absolute level of capital) clearly advantaged the largest member banks in the business of trade finance.<sup>66</sup>

[[ INSERT Table 5 about Here ]]

Table 5 reproduces the analysis of foreign lending specialization for New York banks based on their number of foreign bank correspondents. The data reveal that several US private banks, acceptance corporations, and foreign banks also exhibited strong country specialization in accordance with their respective origins and particular informational advantages. For example, Iselin & Co.—a private bank established by the Swiss-born New York banker Adrian G. Iselin—had almost 70 per cent of its correspondents in Switzerland. The private house Lazard Brothers was founded by three French brothers in the mid-nineteenth century and maintained strong connections with France, where almost half of its correspondents were located. This was also the case of the French American Banking Corporation, an institution organized in 1919 by two American banks in association with a Paris-based commercial bank in order to “engage in the acceptance business and [...] assist in financing trade between the United States and France.”<sup>67</sup> Not surprisingly, the correspondents of the New York branches of Banque Belge Pour l’Etranger and Banca Commerciale Italiana were highly concentrated in Belgium and Italy, respectively.

---

<sup>66</sup> Eichengreen and Flandreau (2012) present regression results showing a strong link between the volume of bankers’ acceptances granted by US commercial banks and their level of capital/total assets. Although neither private nor non-member banks were subject to Federal Reserve regulation, few of them enjoyed any competitive advantage abroad.

<sup>67</sup> *New York Times*, “Big French and U.S. Banks in Alliance”, 30 April 1919. Shares of the French-American Banking Corporation were held by the National Bank of Commerce in New York (25 per cent), the First National Bank of Boston (25 per cent), and the Comptoir National d’Escompte (50 per cent).

Several US private banks and acceptance corporations also had German connections, which are apparent in the correspondents data. Hallgarten and Ladenburg Thalmann (both founded by bankers of German-Jewish background) and Lee Higginson & Co. (a Boston firm that was heavily involved in financing the German government through Ivar Kreuger's consortium) had more than a third of their correspondents in Germany.<sup>68</sup> Two other acceptance corporations already mentioned are also remarkable for the high share of their German correspondents: International Acceptance Bank and J. Henry Schroder Banking Corporation. The former was an association of American and foreign banks formed in 1921 by the German-born banker Paul Warburg, once a member of the Federal Reserve Board of Governors.<sup>69</sup> Warburg used his European connections in order to extend short-term credits through acceptances to German merchants and firms, thereby creating a firm similar in its activities to several London acceptance houses. J. Henry Schroder Banking Corporation was formed in 1923 and was affiliated with the London merchant bank Schrodgers, which specialized in German lending.<sup>70</sup> When the US acceptance market developed in the 1920s, the London house decided to establish a partner entity in the United States so that its informational advantage and expertise could be exported and loans could be made to German customers through New York.<sup>71</sup>

[[ INSERT Figure 5 about Here ]]

Despite their German origins and specialization however, few US private banks and acceptance houses are prominent among Central European banks' New York correspondents. Figure 5 displays the total number of Central European correspondents listed for the different New York banks and shows that the market leaders in Austria, Germany, and Hungary were the three largest US banks of the time (in terms of total assets and capital): Chase National Bank, National City Bank, and Guaranty Trust. The only acceptance houses that seem to have

---

<sup>68</sup> See Supple (1957) on the German-Jewish origins of Hallgarten and Ladenburg Thalmann; see Partnoy (2009) on Lee Higginson's involvement in Ivar Kreuger's German-related activities.

<sup>69</sup> *New York Times*, "Acceptance Bank Will Open Today", 18 April 1921.

<sup>70</sup> See *New York Times*, "Banking House Organized", 26 October 1923.

<sup>71</sup> See Roberts (1992, pp. 280–312) on the activities of J. Henry Schroder Corporation during the interwar period.

competed seriously with the biggest commercial banks—with regard to number of Central European correspondents—were International Acceptance Bank and J. Henry Schroder Banking Corporation, two US institutions which, as mentioned previously, were established in the 1920s in order to exploit their founders' German connections. Whereas the three largest British banks (Midland, Lloyds, and Barclays) accounted for only 18 per cent of the total number of Central European correspondents of all London banks, the three biggest US banks accounted for some 42 per cent of the New York banks' Central European correspondents. In the United States, then, trade finance and Central European lending remained mostly the preserve of the largest commercial banks.

## **6. Conclusion**

This paper has presented new evidence regarding the channels through which the 1931 global financial crisis was transmitted. I used new bank-level data and archival material in arguing that the July 1931 freeze of Central European assets gravely imperiled the London money market but affected the US banking system much less severely. That difference in transmission of the Central European crisis to these creditor countries was related to the market structure of the trade finance industry, which was clearly different in the two countries. Those differences explain why, in the summer of 1931, London and New York bankers had entirely different perceptions of the German crisis.

The role of global banking linkages in propagating financial shocks has been highlighted by many researchers in the context of the 2007-2009 financial crisis. The 1931 episode illustrates the banking structure's importance for a country's ability to absorb shocks imported from abroad. When confronted with a shock such as the German crisis, the British acceptance houses' high degree of specialization (low diversification) could have revealed a serious problem for the whole British banking system. Although the British and US banks' aggregate Central European

exposure remained limited relative to the size of the financial system, the distribution of frozen credits across banks mattered crucially for how the crisis spread from the debtor to the creditor countries.

The market structure of the British banking industry in the interwar period also illustrates how bank specialization and adverse selection/barriers to entry in banking can arise when informational asymmetries among lenders are substantial as is the case in the trade finance market. While several theoretical models have highlighted how banks' specialization and competitive position in certain sectors/countries arise from their informational advantages, few studies have provided empirical evidence. The evidence reported above shows that banks' comparative advantages can be very persistent – almost one hundred years after their foundation, several London merchant banks of German origin still had a lead over the large British commercial banks in Central European markets and specialized there.

This specialized structure of the British banking system attracted much praise from its contemporaries. According to the Macmillan Report of 1931, for example, the City of London was “the most highly organized international market for money in the world. [...] Its Accepting Houses and Discount Houses provide unequalled facilities for the financing of national and international commerce.”<sup>72</sup> In quiet times, the extensive information held by the London merchant banks on debtors abroad—when combined with their expertise in foreign lending—likely made them efficient intermediators of foreign credit. The US National Monetary Commission itself admired the efficient organization of the City of London, and US monetary authorities viewed it with envy as they sought to develop, in the 1920s, a large acceptance market so as to strengthen New York's status as an international financial center. However, the risks of the London money market's highly specialized structure were exposed first at the outbreak of WW1, and then in the summer of 1931 when Central European borrowers found themselves unable to reimburse their foreign debts. A full-blown British banking crisis was avoided thanks to

---

<sup>72</sup> Quoted in Gillett Brothers (1953, p. 8).

the Bank of England's rediscounting facilities for frozen credits (and the sterling pound's depreciation). The United States, in contrast, endured a severe banking crisis during 1931–1933 when thousands of banks failed across the country. As severe as those troubles proved to be, they were not directly related to Central Europe's financial panic in the summer of 1931.

## Appendix A

### Estimates of British and US Banks' Aggregate Exposure to Germany, 1931

Several published and archival sources give estimates of the aggregate amount of German short-term credits owed to British and American banks in July 1931. The Wiggin Committee of Experts set up in the summer 1931 to inquire about Germany's borrowing needs, provided an estimate of the total amount of German foreign short-term debts outstanding on 28 July 1931 and of its distribution by a. creditor countries; b. types of lenders (banks, industry and commerce, other); and c. types of borrowers (banks, industry and commerce, public bodies, Reichsbank and Golddiscontbank, other). A revised version of this estimate was published in *The Economist* on 23 January 1932 (*The Economist*, "Reparations and War Debts Supplement"). Harris (1935, p. 20) however notes that this estimate is "only approximately correct". German authorities also estimated the amount of Germany's foreign short-term and long-term debts broken down by creditor countries and types of lender (banking versus non-banking creditors). Such estimates can be found at the Bundesarchiv in Berlin and Koblenz for 29 February 1932 (Reichsfinanzministerium, R2/13653), 30 September 1932 (Ludwig Kastl papers, N1138/27) and 28 February 1933 (Reichsfinanzministerium, R2/13672), and at the Archives of the Federal Reserve Bank of New York for November 1931 (File 261.12, "Note to the Foreign Creditors Committees and Signatories of the German Credit Agreement of 1932", 5 April 1932). Finally, documents from the Bank of England Archive and the Minutes of the Hearings of the US Senate's Committee of Finance held from December 1931 to February 1932 give the aggregate amounts of German short-term (frozen) credits held by, respectively, British and US banks. Discrepancies between these various estimates are due to differences in classification of the credits as short- versus long-term and to the coverage of creditor banks included in the surveys on which these various estimates are based. Below are additional details on how I estimated the total German short-term credits of British and US banks in 1931.

#### I. BRITISH BANKS

The estimate of the aggregate amount of British banks' 1931 German Standstill credits used in the present paper are based on returns made twice a year by all London clearing banks and acceptance houses to the Joint-Committee of British short-term creditors. Such estimates can be found at the Bank of England Archive. A summary table was prepared by Richard Sayers for his monograph on the Bank of England's history and is kept in a separate file (Bank of England Archive, ADM33/21). The table includes the amounts of the British banks' outstanding German Standstill credits from 31 July 1931 to 28 February 1939. The estimate covers all British clearing banks and acceptance houses but excludes the German credits held by Scottish banks and by the London branches of foreign banks. The estimate of £65 million for 31 July 1931 is 25 per cent below that reported by the Wiggin Committee but the figure for 30 September 1932 is close to the estimate made by the German administration at the same date (Bundesarchiv, Koblenz, N1138/27). I chose to rely on the Bank of England's rather than the Wiggin Committee's estimate because the former is based on direct returns made by British creditor banks.

## II. US BANKS

The Minutes of the Hearings of the US Senate's Committee of Finance held from December 1931 to February 1932 give invaluable information on the US banks' aggregate German short-term credits. When questioned by Committee members about the amount of outstanding German short-term debts owed to American banks, the Chairman of National City Bank Charles E. Mitchell noted that this amount was situated between \$600 million and \$700 million (p. 83).

Winthrop W. Aldrich, President of Chase National Bank, estimated "the [German] short-term commitments to American banks" to be "somewhere in the vicinity of \$650,000,000" and noted that this amount was held by 100 US financial institutions (pp. 409-411). Aldrich also gives the following details about the American banks' frozen German credits:

- German short-term trade finance credits held by American banks amounted to \$520 million in July 1931;
- The German Golddiscountbank owed a \$50 million debt to a group of American banks;
- American banks held a participation of "somewhat over 60 per cent" (ie. \$75 million) in the \$125 million loan to the German Government granted in October 1930 by a consortium of financial institutions headed by Lee Higginson & Co.;
- American banks had also granted short-term credits to German provincial states and municipalities. Aldrich only gives an estimate of the short-term debt owed to all foreign creditors by German states and municipalities. However, a document found at the Bundesarchiv in Koblenz (Ludwig Kastl papers, N1138/30) gives the amount of short-term debts owed by German states and municipalities to American banks on 31 July 1931 (the equivalent of \$9 million).

By adding these various amounts, I arrived at an estimate of 654 Mio USD for the total German short-term debts owed to American banks in 1931. This estimate is 13 per cent higher than the estimate for July 1931 published in *The Economist*. However, the figure given by *The Economist* underestimates the amount of short-term credits granted by American banks to German public bodies because the Lee Higginson loan appears to be classified as a long-term credit. The data on individual US banks' exposure to Central Europe used in the present paper include the banks' participation in the Lee Higginson loan as part of their frozen German credits.

## Appendix B

### Sources for Bank-Level Data

### Balance Sheets and Central European Frozen Credits

#### I. BRITISH BANKS

##### Acceptance Houses

Data on the London merchant banks' and acceptance houses' balance sheets and exposures to Central European frozen credits in 1931 are from Accominotti (2012) and originally come from various archival records (Bank of England Archive, Guildhall Library Manuscripts etc.) as well as published sources (Diaper, 1986, Orbell, 1985, Roberts, 1992). See Accominotti (2012) for details on the sources used for each particular bank in the sample. Two Anglo-foreign banks were added to the sample of acceptance houses (Anglo French Banking Corporation and Anglo-International Bank Ltd.). Data on the Anglo-French Banking Corporation are from *The Economist* ("Anglo French banking Corporation", 23 January 1932, pp. 168-169) and the *Manchester Guardian* (18 January 1932, p. 13). Data on the Anglo-International Bank Ltd. are from the bank's *Reports of the Directors*.

##### Joint-Stock Clearing Banks

End-1930 and end-1931 balance sheet data for the London clearing banks are from the "Monthly Statements of London Clearing Banks" published in *The Economist*, various issues.

The following sources give the amounts of Central European frozen credits held by each of the six London clearing banks in the sample (including the Big Five) in 1931:

- *Barclays, Lloyds, National Provincial, William Deacon's:*

Billings and Capie (2011, p. 10)

- *Midland:*

Germany: HSBC Archives, file # 0030/192; "Midland's Commitment as Creditor of German Banks (31 July 1931)". This document gives the list of all Midland's credits to German banks on 31 July 1931.

Austria and Hungary: Billings and Capie (2011, p. 10).

- *Westminster Bank*

Germany: Archives Royal Bank of Scotland, WES/1174/185, "Actual German commitments outstanding at date of 31/7/1931".

Austria and Hungary: Billings and Capie (2011, p. 10).

Capital and reserves are defined as the sum of paid-up capital and all reserve accounts. Liquid assets are defined as the sum of cash held at the Bank of England, call money, bills, and investments (i.e., securities).

#### II. US BANKS

##### Balance Sheets

US banks' end-1930 and end-1931 balance sheet data are from various published sources. Detailed balance sheet data for New York state member banks in the sample (Bankers Trust, Guaranty Trust, Irving Trust, Manufacturers Trust) are from the Board of Governors of the Federal Reserve System's *Reports of Condition* (or *Call Reports*). The December 1930 *Call Reports* were unfortunately not preserved for national banks. However, the Office of the Comptroller of the Currency published these banks' main balance sheet items in its *Individual Statement of Conditions of National Banks*. I relied

on this source for all national banks in the sample (Bank of America San Francisco, Chase National Bank, Chatham Phenix National Bank and Trust, Commercial National Bank and Trust, First National Bank of Boston, First National Bank of Chicago, Grace National Bank, National City Bank, National Shawmut Bank, Philadelphia National Bank, Public National Bank and Trust). Continental Illinois was only nationally chartered in 1933 (and subsequently named Continental Illinois National Bank). I therefore relied on Postel-Vinay (2016)'s dataset (originally constructed from the Illinois Auditor of Public Accounts' *Statements of State Banks of Illinois*) to obtain this bank's end-1930 and end-1931 balance sheet (the data were kindly communicated by Natacha Postel-Vinay). The *Statements of the Manhattan Company and Constituent Units* provide International Acceptance Bank's end-of-year balance sheet for 1930 and 1931 and J. Henry Schroder Banking Corporation's main balance sheet items are given by Tyng (1931) for December 1930 and by *The New York Times* for December 1931 ("Bank Statements of Year-End Issued", 6 January 1932). Finally, Brown Brothers Harriman & Co.'s "Statements of Condition" located at the New York Historical Society Library (Records of Brown Brothers Harriman, MS78, box 87, folder 3) give this house's balance sheet. The Statement is however only available as of December 1933.

Capital and Reserves are defined as the sum of each bank's paid-up capital, surplus, undivided profits and reserves for dividends and contingencies. Liquid assets are defined as the sum of each bank's cash resources (including money "due from banks" and reserve with the Federal Reserve), US government securities, and other bonds and stocks. Deposits comprise demand deposits, time deposits, US deposits and money "due to banks".

### **Central European Credits**

The amounts of Central European frozen credits held by the sample's nineteen US banks in 1931 are from various archival and published sources. These amounts are those reported at the closest date available to the imposition of exchange controls in Germany, although the exact month varies across the sample. Following are details on the sources used for each particular bank:

#### *Bankers Trust Company (New York)*

Source: Bundesarchiv, Berlin, Berliner Büro des Bankers Trust Company, New York, R111/242, "Form of return of aggregate amounts of acceptances and other forms of indebtedness given to bank debtors in Germany or guaranteed by bank debtors in Germany included in the above agreement. To be rendered to the Deutsche Golddiscountbank in respect of claims to be taken over. Rendered by Bankers Trust Company." 18 December 1931.

This form gives the amount of Bankers Trust's claims on German banks in December 1931 and distinguishes between "acceptances" and "other forms of indebtedness". Bankers Trust also participated in the Lee Higginson syndicate loan to the German government but I could not find the amount of its involvement in this credit.

#### *Bank of America National Trust and Savings Association (San Francisco)*

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 6 December 1932 (International Banking Department).

The report gives a list of Bank of America's German and Austrian credits classified under "slow" or "doubtful" assets. German credits include the bank's participation in the Lee Higginson syndicate loan to the German Government. I estimated Bank of America's amount of frozen credits outstanding in July 1931 assuming the same percentage decline in German credits as for Chase National Bank between July 1931 and December 1932 (ie. 25 per cent).

#### *Brown Brothers Harriman & Co. (New York)*

Source: New York Historical Society Library, Records of Brown Brothers Harriman, MS78, Box 21, Folder 23, Consolidated Statement of Losses on Stillhalte Agreement.

This folder contains a table with Brown Brothers Harriman & Co.'s total credit lines to German, Austrian and Hungarian customers as of July 1931.

*Chase National Bank (New York)*

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 23 October 1931.

The report gives the total amount of Chase National Bank's German commitments (including those of the London branch) and its reduction since 31 July 1931. German commitments include the bank's participation in the Lee Higginson syndicate loan to the German Government and in the syndicate credit to the Deutsche Golddiscontbank. The Report's section on Chase's Foreign Department also gives the amounts of credit lines to Austria and Hungary as of October 1931 (under "slow and doubtful debts").

*Chatham Phenix National Bank and Trust (New York)*

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 13 November 1931.

The report's section on Chatham Phenix's Foreign Department gives the amounts of all credit lines to Germany, Austria and Hungary (under "slow and doubtful debts"). German credits include the bank's participation in the Lee Higginson syndicate loan to the German government.

*Commercial National Bank and Trust (New York)*

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 27 November 1931.

The report's section on Commercial National Bank and Trust's Foreign Department contains a summary table that gives the amount of the bank's outstanding credit lines to Germany, Austria and Hungary. The table distinguishes between "Loans secured", "Loans unsecured", "Overdrafts" and "Acceptances". German credits include Commercial National Bank and Trust's participation in the syndicate credit to the German Golddiscontbank.

*Continental Illinois National Bank and Trust (Chicago)*

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 31 March 1933.

The Report's section on Continental Illinois' Foreign Department gives the total amount of the bank's German commitments as of 31 July 1931. German credits include the bank's participation in the Lee Higginson syndicate loan to the German Government. The amounts of the bank's Austrian and Hungarian credits are not reported.

*First National Bank of Boston (Boston)*

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 11 December 1931.

The Report's section on the First National Bank of Boston's Foreign Department gives the total amount of the bank's acceptances, overdrafts and loans to Germany, Austria and Hungary as of 11 December 1931. A note states that a 10 per cent reduction in German Standstill claims "applied to the amount outstanding at the time the original agreement was made". The German loans also include the bank's participation in the Lee Higginson syndicate loan to the German government as well as in the syndicate loan to the German Golddiscontbank. Hungarian credits include the bank's participation in a short-term loan to the Kingdom of Hungary.

*First National Bank of Chicago (Chicago)*

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 31 July 1931.

The Report gives the aggregate amount of the First National Bank of Chicago's and Foreman State National Bank's German credits (including bankers' acceptances, special deposits and investments). Foreman State National Bank was liquidated and its assets were sold to the First National Bank of Chicago in 1931. German credits include the bank's participation in the Lee Higginson syndicate loan to the German government. The amounts of the bank's Austrian and Hungarian credits are not reported.

*Grace National Bank (New York)*

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 21 November 1931.

Comments at the end of the Report give the total amount of used and unused credit facilities granted by Grace National Bank to customers in Germany, Austria and Hungary as of 21 November 1931 and the decrease in these amounts since the previous examination in May. I reported used facilities only. German loans include the bank's participation in the syndicate loan to the German Golddiscontbank as well as in a loan to the Kingdom of Hungary. The report also includes a summary table with the amounts of the bank's loans, overdrafts and acceptances to Germany, Austria, Hungary and other foreign countries. The amounts in this table slightly differ from those reported in the general comments.

*Guaranty Trust Company (New York)*

Source: Guaranty Trust Company of New York, *Annual Report*, 1933.

In the 1933 Annual Report, the President of the Guaranty Trust Company William C. Potter gives the amount of Guaranty Trust's "notes and acceptances of German banks and concerns" as of the end of 1932 and 1933. This amount does not appear to include loans to the German government and municipalities. However, Guaranty Trust did not participate in the Lee Higginson syndicate loan to the German government in 1930 (see *New York Times*, "\$125,000,000 Credit Ready for Germany", 13 October 1930) and does not appear to have granted any short-term credits to German provinces and municipalities (see Bundesarchiv, Koblenz, N1138/30). The amounts of the bank's Austrian and Hungarian credits are not reported. I estimated Guaranty Trust's amount of frozen credits outstanding in July 1931 assuming the same percentage decline in German credits as for Chase National Bank between July 1931 and December 1932 (ie. 25 per cent).

*International Acceptance Bank Inc. (New York)*

Source: US National Archives, Records of the Federal Reserve System, File #421.2-15, Report of the Federal Reserve Board on International Acceptance Bank Inc, 12 September 1931.

The report contains a summary table with the geographical breakdown of all credits granted by International Acceptance Bank as of September 1931. German loans include the bank's participation in the Lee Higginson syndicate loan to the German government (which is valued at half its nominal value in the books) as well as in the syndicate loan to the German Golddiscontbank. The International Acceptance Bank was supervised by the Federal Reserve Board.

*Irving Trust Company (New York)*

Source: Irving Trust Company of New York, *Report to Stockholders of Irving Trust Company*, 1933.

The report gives the book value of the bank's loans to Germany as of 1931 (unspecified month) and December 31, 1933. It states that these credits are "due almost entirely from leading German banks based on their customers' obligations" but also include amounts due by the German Golddiscontbank and German government.

*Manufacturers Trust Company (New York)*

Source: Manufacturers Trust Company, *Statement of Condition*, 8 January 1936, pp. 12-13.

The Statement of Condition gives the total amount of Manufacturers Trust's German Standstill credits as of December 1935 and the amount by which German credits were reduced since July 1931. In addition, it gives the amount of the bank's participation in a short-term loan to the German government (ie. the Lee Higginson syndicate loan) and corresponding reduction since 1931. There is no information on the bank's Austrian and Hungarian credits.

*National City Bank (New York)*

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 22 April 1932.

The report gives the total amount of National City Bank's German, Austrian and Hungarian commitments on 22 April 1932. German loans include the bank's participation in the Lee Higginson syndicate loan to the German government as well as in the syndicate loan to the German Golddiscountbank. I estimated National City Bank's amount of frozen credits outstanding in July 1931 assuming a 10 per cent decline in German credits between July 1931 and April 1932.

*National Shawmut Bank (Boston)*

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 25 September 1931.

The report gives the list of National Shawmut Bank's acceptances, overdrafts and other loans to German, Austrian and Hungarian customers as of September 1931. The German loans include the bank's participation in the syndicate loan to the German Golddiscountbank. National Shawmut Bank did not participate in the Lee Higginson syndicate loan to the German government.

*Philadelphia National Bank (Philadelphia)*

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 24 September 1931.

The report gives the amounts of Philadelphia National Bank's credits to Germany, Austria and Hungary as of September 1931.

*Public National Bank and Trust (New York)*

Source: US National Archives, Records of the Office of the Comptroller of the Currency, Examiner's Report, 12 November 1931.

The report gives details on Public National Bank and Trust's credits to Germany on 17 April 1931, 31 July 1931 and 12 November 1931. There is no information on the bank's Austrian and Hungarian credits.

*J. Henry Schroder Banking Corporation (New York)*

Source: Roberts (1992, p. 241).

Roberts (1992) gives the total amount of Schrobanco's frozen German acceptances and advances as of July 1931. There is no information on the bank's Austrian and Hungarian credits.

## References

### - Archives

Archives of the Federal Reserve Bank of New York, New York, United States.

Bank of England Archive, London, United Kingdom.

Bundesarchiv, Reichsfinanzministerium, Berlin, Germany.

Bundesarchiv, Berliner Büro des Bankers Trust Company New York, Berlin, Germany.

Bundesarchiv, Ludwig Kastl Papers, Koblenz, Germany.

HSBC Archives, London, United Kingdom.

New York Historical Society Library, Records of Brown Brothers Harriman & Co., New York, United States.

Royal Bank of Scotland Archives, Edinburgh, United Kingdom.

US National Archives, Records of the Office of the Comptroller of the Currency, College Park (Maryland), United States.

US National Archives, Records of the Federal Reserve System, College Park (Maryland), United States.

### - Published sources

Accominotti, Olivier (2012), “London Merchant Banks, the Central European Panic and the Sterling Crisis of 1931”, *The Journal of Economic History*, vol. 72, pp. 1-43.

Accominotti, Olivier, and Barry Eichengreen (2016), “The Mother of All Sudden Stops: Capital Flows and Reversals in Europe, 1919-1932”, *The Economic History Review*, vol. 69, pp. 469-492.

Ahnert, Toni, and Christoph Bertsch (2015), “A Wake-Up Call Theory of Contagion”, Bank of Canada Working Paper No 2015-14.

Allen, Franklin, and Douglas Gale (2000), “Financial Contagion”, *The Journal of Political Economy*, vol. 108, pp. 1-33.

Anglo-International Bank Ltd., *Report of the Directors*, various issues.

Banerjee, Abhijit (1992), “A Simple Model of Herd Behavior”, *Quarterly Journal of Economics*, vol. 107, pp. 797-817.

*Bankers Almanac and Year-Book*, 1930/1931.

Benett, Edward W. (1962), *Germany and the Diplomacy of the Financial Crisis, 1931*, Cambridge: Harvard University Press.

Billings, Mark, and Forrest H. Capie (2011), “Financial crisis, contagion, and the British banking system between the world wars”, *Business History*, vol. 53, pp. 193-215.

- Board of Governors of the Federal Reserve System (1943), *Banking and Monetary Statistics, 1914-1941*, Washington DC: Federal Reserve System.
- Boot, Arnoud W. A., and Ajan V. Thakor (2000), “Can Relationship Banking Survive Competition?”, *The Journal of Finance*, vol. 55, pp. 679-713.
- Borio, Claudio, Harold James, and Hyun-Song Shin (2014), “The international monetary and financial system: a capital account historical perspective”, BIS Working Paper, No 457 (August 2014).
- Brunnermeier, Markus (2009), “Deciphering the 2007-2008 Liquidity Crisis and Credit Crunch”, *Journal of Economic Perspectives*, vol. 23, pp. 77-100.
- Buch, Claudia M., and Linda S. Goldberg (2015), “International Banking and Liquidity Risk Transmission: Lessons from Across Countries”, *IMF Economic Review*, vol. 63, pp. 377-410.
- Calvo, Guillermo, and Enrique Mendoza (2000), “Rational Contagion and the Globalization of Securities Market”, *Journal of International Economics*, vol. 51, pp. 79-113.
- Capie, Forrest H., Terence Mills, and Geoffrey E. Wood (1986), “What Happened in 1931?”, in Forrest H. Capie and Geoffrey E. Wood (eds.), *Financial Crises and the World Banking System*, London: Macmillan, pp. 120-148.
- Capie, Forrest H., and Ghila Rodrik-Bali (1982), “Concentration in British Banking, 1870-1920”, *Business History*, vol. 24, pp. 280-292.
- Carter, Susan B., Scott Sigmund Gartner, Michael R. Haines, Alan L. Olmstead, Richard Sutch, and Gavin Wright (2006), *Historical Statistics of the United States: Millennial Edition*, Cambridge: Cambridge University Press.
- Cetorelli, Nicola, and Linda S Goldberg (2011), “Global Banks and International Shock Transmission: Evidence from the Crisis”, *IMF Economic Review*, vol. 59, pp. 41-76.
- Cetorelli, Nicola, and Linda S. Goldberg (2012), “Follow the Money: Quantifying Domestic Effects of Foreign Bank Shocks in the Great Recession”, *American Economic Review*, vol. 102, pp. 213-18.
- Chapman, Stanley D. (1984), *The Rise of Merchant Banking*, London: Allen & Unwin.
- Committee on Finance and Industry (1931), *Minutes of evidence: taken before the Committee on Finance and Industry*, London: H.M. Stationery Office.
- Correlates of War Project (2011), “State System Membership List, v2011”, available at <http://correlatesofwar.org>.
- Dell’Ariccia, Giovanni (2001), “Asymmetric Information and the Structure of the Banking Industry”, *European Economic Review*, vol. 45, pp. 1957-1980.
- Dell’Ariccia, Giovanni, Ezra Friedman, and Robert Marquez (1999), “Adverse Selection as a Barrier to Entry in the Banking Industry”, *RAND Journal of Economics*, vol. 30, pp. 515-534.

- Diaper, Stefanie (1986), “Merchant Banking in the Inter-War Period: The Case of Kleinwort, Sons & Co.”, *Business History*, vol. 28, pp. 55-76.
- Eichengreen, Barry (1992), *Golden Fetters: The Gold Standard and the Great Depression, 1919-1939*, Oxford: Oxford University Press.
- Eichengreen, Barry, and Marc Flandreau (2012), “The Federal Reserve, the Bank of England, and the Rise of the Dollar as an International Currency, 1914–1939”, *Open Economies Review*, vol. 23, pp. 57-87.
- Ellis, Aytoun (1960), *Heir of adventure: the story of Brown Shipley & Co., merchant bankers, 1810-1960*, London: Brown Shipley & Co.
- Ellis, Howard (1941), *Exchange Control in Central Europe*, Cambridge: Harvard University Press.
- Ferderer, J. Peter (2003), “Institutional Innovation and the Creation of Liquid Financial Markets: The Case of Bankers’ Acceptances, 1914-1934”, *The Journal of Economic History*, vol. 63, pp. 666-694.
- Ferguson, Thomas, and Peter Temin (2003), “Made in Germany: The German Currency Crisis of July 1931”, *Research in Economic History*, vol. 21, pp. 1-53.
- Gillett Brothers Discount Co. Ltd (1953), *The Bill on London*, London: Chapman & Hall.
- Gorton, Gary B. (2009), *Slapped by the Invisible Hand: The Panic of 2007*, Oxford: Oxford University Press.
- Gorton, Gary B., and Guillermo Ordonez (2014), “Collateral Crises”, *American Economic Review*, vol. 104, pp. 343-378.
- Guaranty Trust Company of New York, *Annual Report*, various issues.
- Guinnane, Timothy (2004), “Financial Vergangenheitsbewältigung: The 1953 London Debt Agreement”, mimeo, Yale University
- Hale, Galina, Tümer Kapan, and Camelia Minoiu (2016), “Crisis Transmission in the Global Banking Network”, IMF Working Paper No. 16/91, April 2016.
- Hambros Bank (1939), *Hambros Bank Ltd. London, 1839-1939*, London: The Bank.
- Harris, Charles R. S. (1935), *Germany’s Foreign Indebtedness*, Oxford: Oxford University Press.
- Illinois Auditor of Public Accounts, *Statement Showing Total Resources and Liabilities of Illinois State Banks*, Springfield: Journal Printing Company n. d.
- Irving Trust Company of New York, *Report to Stockholders of Irving Trust Company*, various issues.
- James, Harold (1986), *The German slump: politics and economics, 1924-1936*, Oxford: Clarendon Press.
- James, Harold (2001), *The End of Globalization: Lessons from the Great Depression*, Cambridge: Harvard University Press.
- James, Harold (2009), *The Creation and Destruction of Value: the Globalization Cycle*, Cambridge: Harvard University Press.

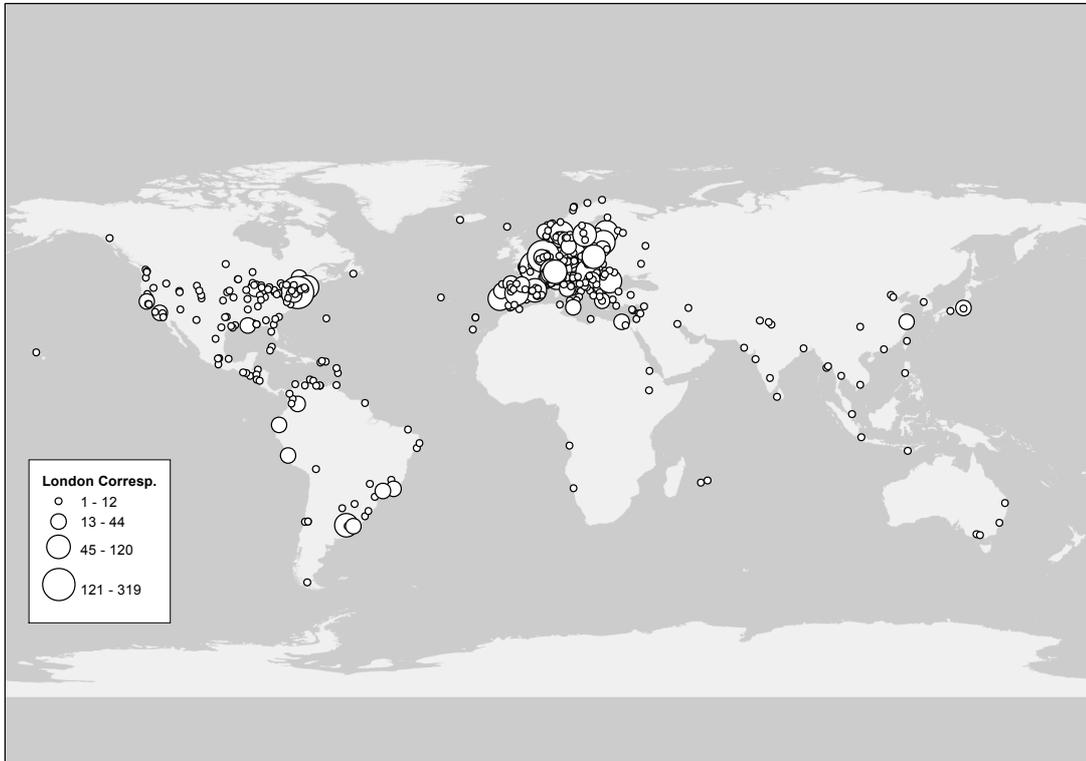
- Jones, Geoffrey (1982), “Lombard Street on the Riviera: The British Clearing Banks and Europe, 1900-1960”, *Business History*, vol. 24, pp. 186-210.
- Jones, Geoffrey (1993), *British Multinational Banking, 1830-1990*, Oxford: Clarendon Press.
- Kalemli-Ozcan, Sebnem, Elias Papaioannou, and Fabrizio Perri (2013), “Global banks and crisis transmission”, *Journal of International Economics*, vol. 89, pp. 495-510.
- Kindleberger, Charles P. (1973), *The World in Depression, 1919-1939*, Berkeley: University of California Press.
- Krugman, Paul (1991), *Geography and Trade*, Cambridge: MIT Press.
- Manchester Guardian*, various issues.
- Manhattan Company, *Statements of the Manhattan Company and Constituent Units*, various issues.
- Manufacturers Trust Company, *Statement of Condition*, various issues.
- Marquez, Robert (2002), “Competition, Adverse Selection, and Information Dispersion in the Banking Industry”, *Review of Financial Studies*, vol. 15, pp. 901-926.
- Metz, S. S. (1934), “Standstill Bills on the Discount Market”, *The Banker*, vol. 32, pp. 197-210.
- New York Times*, various issues.
- Office of the Comptroller of the Currency, *Individual Statements of Conditions of National Banks*, various issues.
- Orbell, John (1985), *Baring Brothers & Co., Limited. A History to 1939*, London: Baring Brothers & Co., Limited.
- Palan, Nicole (2010), “Measurement of Specialization – The Choice of Indices”, FIW Working Paper No 62 (December 2010).
- Paravisini, Daniel, Veronica Rappoport, and Philipp Schnabl (2015), “Specialization in Bank Lending: Evidence from Exporting Firms”, NBER Working Paper No 21800 (December 2015).
- Partnoy, Frank (2009), *The Match King: Ivar Kreuger, the Financial Genius Behind a Century of Wall Street Scandals*, New York: Public Affairs.
- Pavanini, Nicola, and Fabiano Schivardi (2013), “Dynamic Entry and Exit with Learning By Lending”, mimeo, University of Warwick.
- Peek, Joe, and Eric S. Rosengren (2000), “Collateral Damage: Effects of the Japanese Bank Crisis on Real Activity in the United States”, *The American Economic Review*, vol. 90, pp. 30-45.
- Phelbs, Clyde W. (1927), *The Foreign Expansion of American Banks – American Branch Banking Abroad*, New York: Ronald Press.
- Postel-Vinay, Natacha (2016), “What Caused Chicago Bank Failures in the Great Depression? A Look at the 1920s”, *The Journal of Economic History*, vol. 76, pp. 478-519.

- Public Papers of the Presidents of the United States, Herbert Hoover, Containing the Public Messages, Speeches and Statements of the President, January 1 to December 31, 1931*, Washington: US Government Printing Office, 1976.
- Puri, Manju, Jörg Rocholl, and Sascha Steffen, “Global retail lending in the aftermath of the US financial crisis: Distinguishing between supply and demand effects”, *Journal of Financial Economics*, vol. 100, pp. 556-578.
- Richardson, Gary, and Patrick Van Horn (2009), “Intensified Regulatory Scrutiny and Bank Distress in New York During the Great Depression”, *The Journal of Economic History*, vol. 69, pp. 446-465.
- Richardson, Gary, and Patrick Van Horn (2011), “When the Music Stopped: Transatlantic Contagion During the Financial Crisis of 1931, NBER Working Paper No 17437 (September 2011).
- Ritschl, Albrecht (2002), *Deutschlands Krise und Konjunktur. Binnenkonjunktur, Auslandsverschuldung und Reparationsproblem zwischen Dawes-Plan und Transfersperre 1924-1934*, Berlin: Akademie-Verlag.
- Ritschl, Albrecht (2012), “The German Transfer Problem, 1920-1933: A Sovereign Debt Perspective”, Centre for Economic Performance Discussion Paper No.1155 (July 2012).
- Ritschl, Albrecht, and Samad Sarferaz (2014), “Currency versus Banking in the Financial Crisis of 1931”, *International Economic Review*, vol. 55, pp. 349-373.
- Roberts, Richard (1992), *Schröders: Merchants and Bankers*, London: Macmillan.
- Sachs, David (1949), “Survey of the financial institutions of the City of London”, in International Banking Summer School (ed.), *Current Financial Problems and the City of London*, pp. 79-92.
- Sayers, Richard S. (1976), *The Bank of England, 1891-1944*, Cambridge: Cambridge University Press.
- Schnabel, Isabel (2004), “The German Twin Crisis of 1931”, *The Journal of Economic History*, vol. 64, pp. 822-871.
- Schnabel, Isabel (2009), “The Role of Liquidity and Implicit Guarantees in the German Twin Crisis of 1931”, *Journal of International Money and Finance*, vol. 28, pp. 1-25.
- Schubert, Aurel (1991), *The Credit-Anstalt Crisis of 1931*, Cambridge: Cambridge University Press.
- Schuker, Stephen A. (1988), *American Reparations to Germany, 1919-1933: Implications for the Third World Debt Crisis*, Princeton: Princeton Studies in International Finance.
- Straumann, Tobias, Peter Kugler, and Florian Weber (2016), “How the German crisis of 1931 swept across Europe: a comparative view from Stockholm”, *The Economic History Review*, forthcoming.
- Supple, Barry (1957), “A Business Elite: German-Jewish Financiers in Nineteenth-Century New York”, *The Business History Review*, vol. 31, pp. 143-178.
- Temin, Peter (1993), “Transmission of the Great Depression”, *Journal of Economic Perspectives*, vol. 7, pp. 87-102.
- The Economist*, various issues.

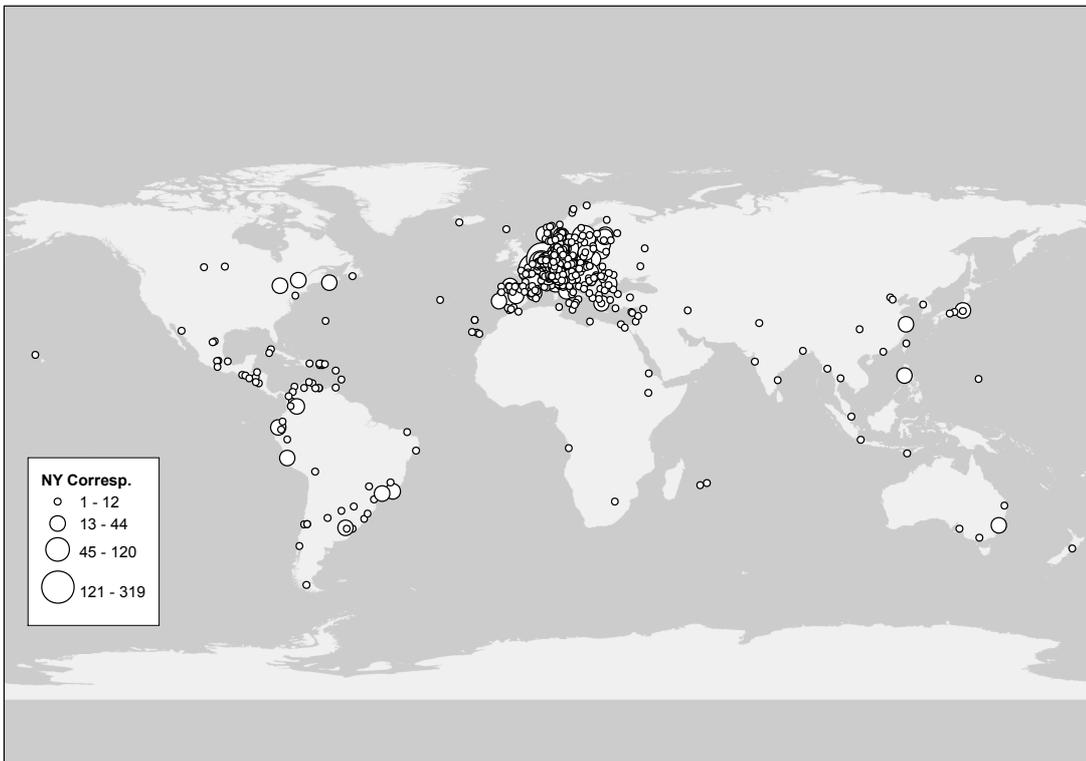
- Truhtil, Roger J. (1936), *British Banks and the London Money Market*, London: Jonathan Cape Ltd.
- Turner, John (2014), *Banking in Crisis: The Rise and Fall of British Banking Stability, 1800 to the Present*, Cambridge: Cambridge University Press.
- United States Senate (1931-32), *Hearings Before the Committee on Finance United States Senate, Seventy-Second Congress, Sale of Foreign Bonds and Securities in the United States, December 1931-February 1932*, Washington D.C.: US Government Printing Office.
- Vigreux, Pierre-Benjamin (1932), *Le Credit par acceptation. Paris centre financier*, Paris: Marcel Rivière.
- Winton, Andrew (1999), "Don't Put All Your Eggs in One Basket? Diversification and Specialization in Lending", mimeo, University of Minnesota.

Figure 1. London and New York City Banks' Foreign Correspondents, 1930

A. London Banks



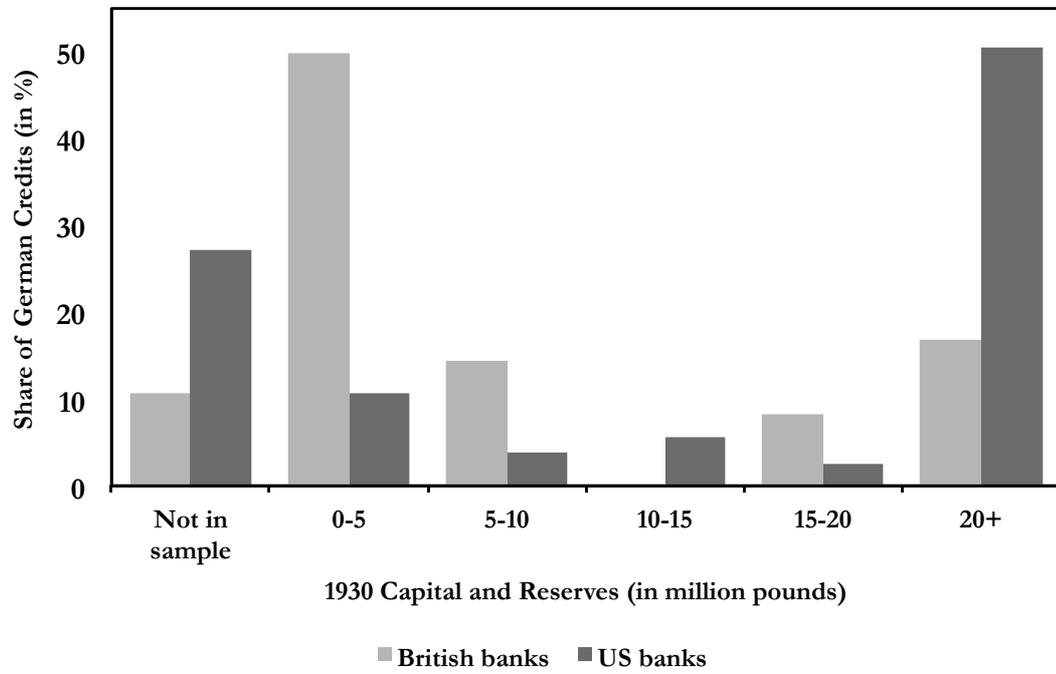
B. New York City Banks



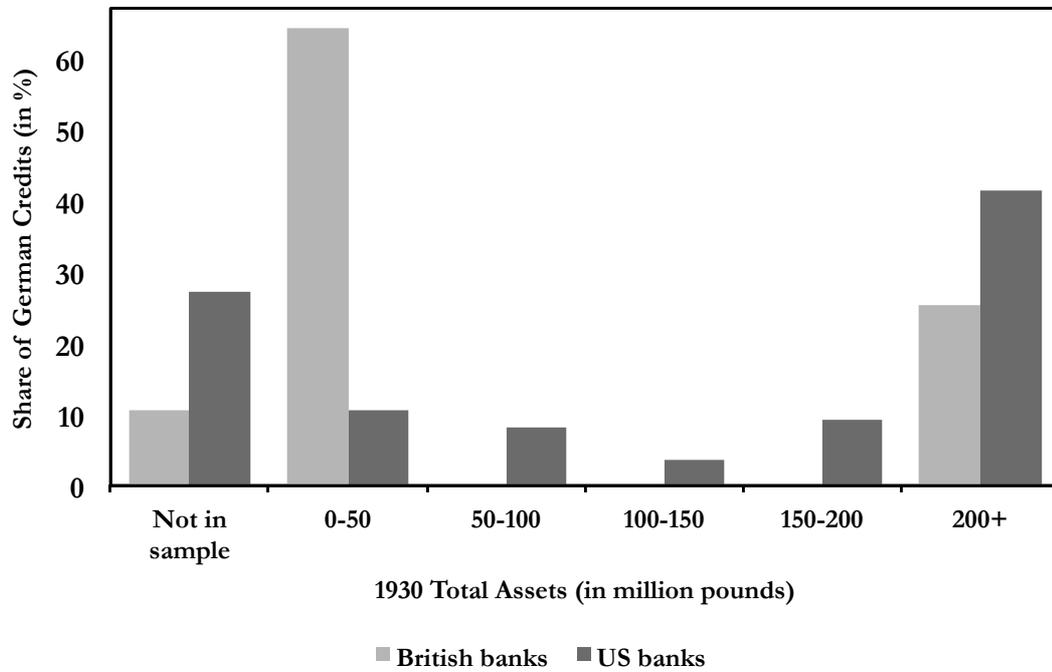
Source: Author's computations based on the *Bankers' Almanac* (see text).

Figure 2. Distribution of German Credits Across Banks  
British vs. US Banks

A. By Capital and Reserves



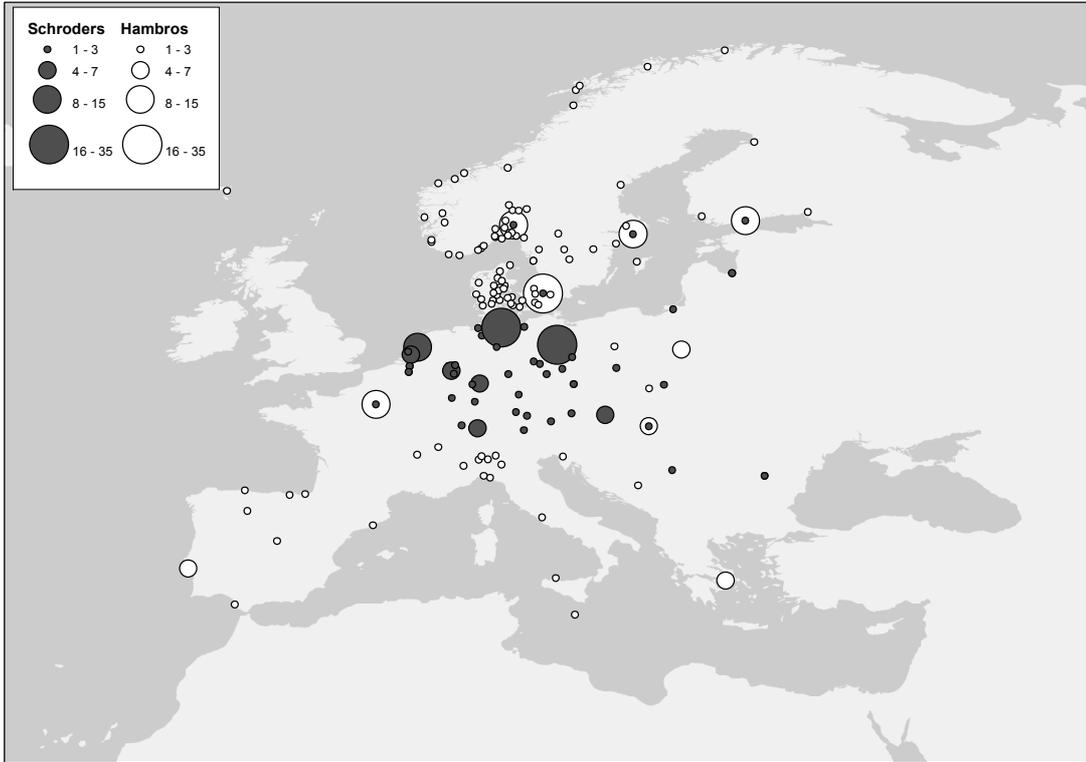
B. By Total Assets



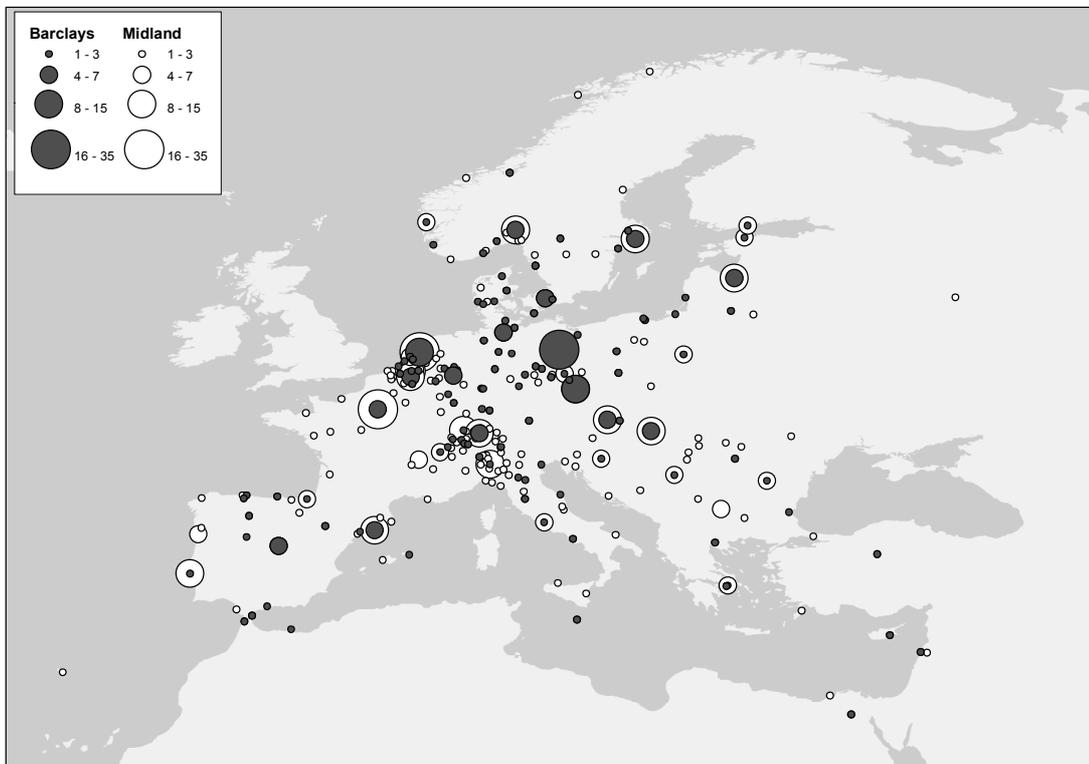
Source: Author's computations (see text and appendices A and B).

Figure 3. London Banks' European Correspondents

A. Acceptance Houses: Schrodgers and Hambros

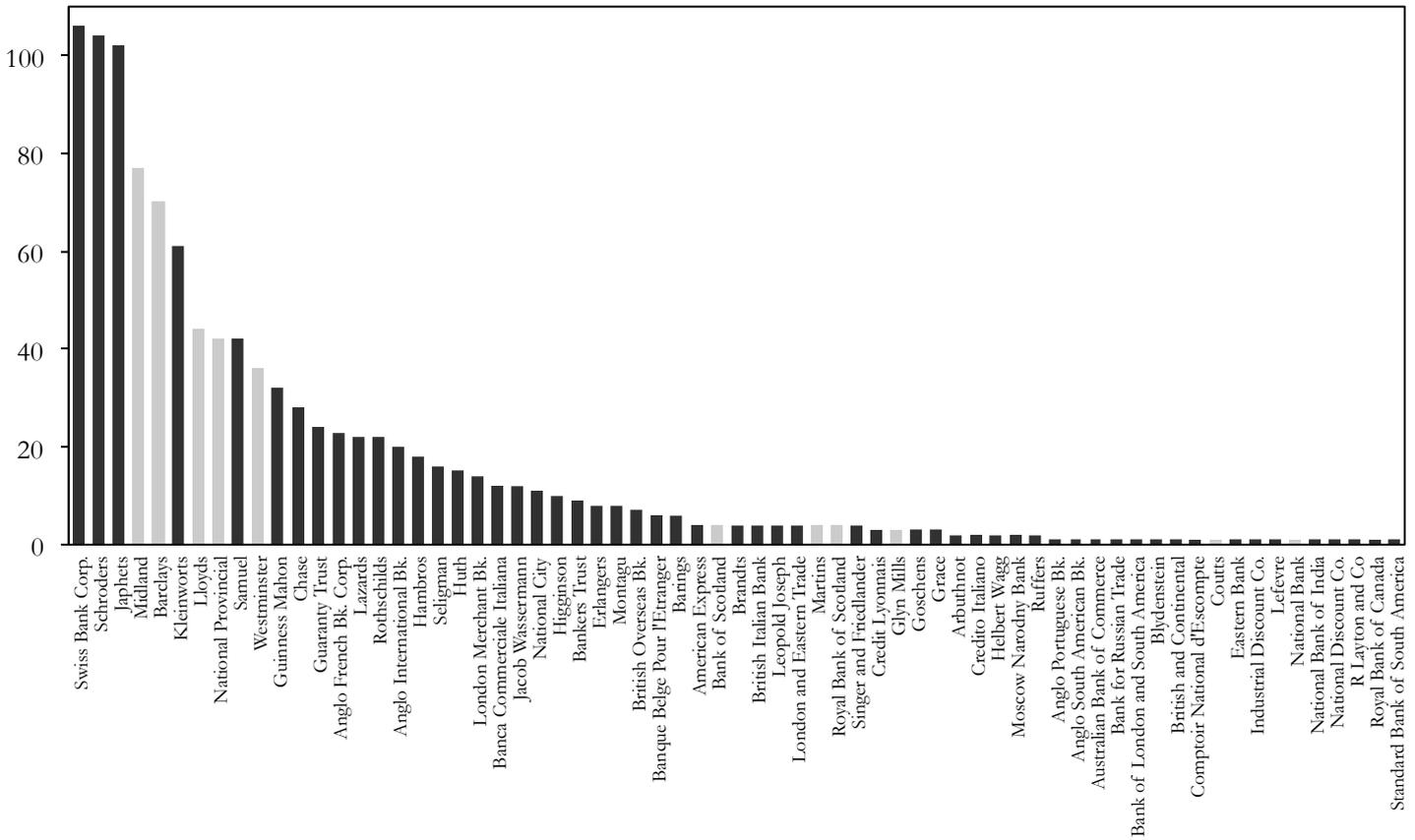


B. Big Five: Barclays and Midland



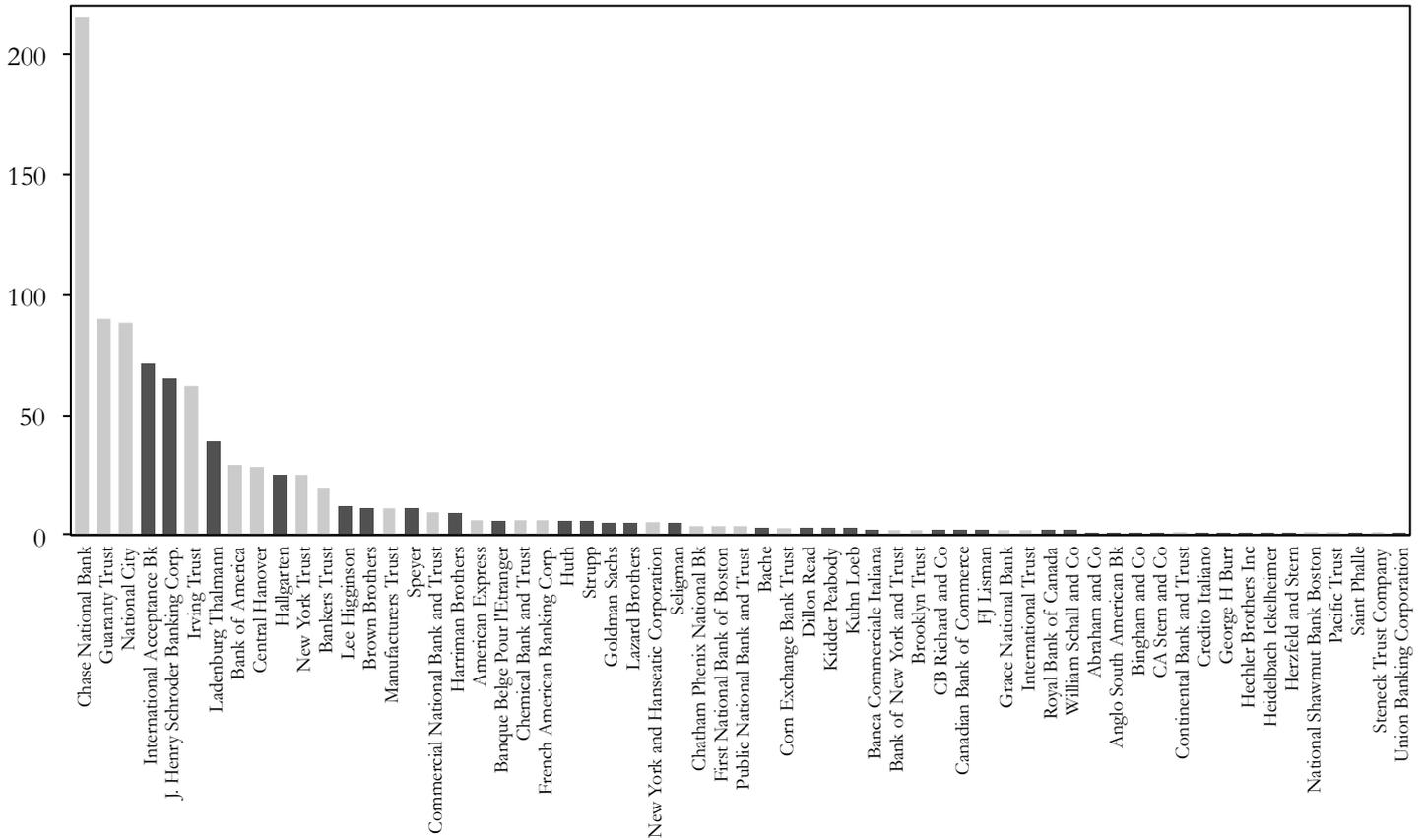
Source: Author's computations based on the *Bankers' Almanac*, 1930/1931 (see text).

**Figure 4. London Banks' Central European Correspondents  
(Austria, Germany and Hungary, 1930)**



Source: Author's computations based on the *Bankers' Almanac* (see text). The figure displays the total number of correspondents that each London bank had in Austria, Germany and Hungary in 1930/1931. Light-gray bars correspond to commercial banks (joint-stock clearing banks). Dark-gray bars correspond to acceptance houses (merchant banks and Anglo-foreign banks) and foreign banks.

Figure 5. New York City Banks' Central European Correspondents  
(Austria, Germany and Hungary, 1930)



Source: Author's computations based on the *Bankers' Almanac* (see text). The figure displays the total number of correspondents that each New York City bank had in Austria, Germany and Hungary in 1930/1931. Light-gray bars correspond to commercial banks (national banks and trust companies). Dark-gray bars correspond to private banks, acceptance corporations, and foreign banks.

**Table 1. New York City and London Banks' Foreign Correspondents, 1930**

	NYC Banks		London Banks	
	Nb	Share	Nb	Share
<b>Europe</b>	<b>3089</b>	<b>83.9%</b>	<b>4105</b>	<b>78.6%</b>
- Austria/Hungary	193	5.2%	235	4.5%
- Belgium/Luxemburg	200	5.4%	261	5.0%
- Eastern Europe	244	6.6%	335	6.4%
- France	319	8.7%	380	7.3%
- Germany	744	20.2%	848	16.2%
- Italy	187	5.1%	240	4.6%
- Netherlands	264	7.2%	353	6.8%
- Nordic Countries	357	9.7%	507	9.7%
- Other Europe	19	0.5%	53	1.0%
- Southeastern Europe	155	4.2%	217	4.2%
- Spain/Portugal	167	4.5%	297	5.7%
- Switzerland	240	6.5%	379	7.3%
<b>America</b>	<b>399</b>	<b>10.8%</b>	<b>933</b>	<b>17.9%</b>
- Canada	54	1.5%	23	0.4%
- Latin America	345	9.4%	306	5.9%
- United States	--	--	604	11.6%
<b>Asia</b>	<b>137</b>	<b>3.7%</b>	<b>130</b>	<b>2.5%</b>
<b>Oceania</b>	<b>33</b>	<b>0.9%</b>	<b>11</b>	<b>0.2%</b>
<b>Africa</b>	<b>22</b>	<b>0.6%</b>	<b>43</b>	<b>0.8%</b>
<b>Total</b>	<b>3680</b>	<b>100.0%</b>	<b>5222</b>	<b>100.0%</b>

Note: The table shows the geographical repartition of London and New York City banks' foreign correspondents. It reports the number of existing correspondent relationships between the country/region's banks and London or New York banks (Nb) and the country/region's share in the total number of correspondents of London or New York banks (Share). Source: *Bankers' Almanac*, 1930/31.

**Table 2. British Banks' Central European Exposure, 1931**

	Central European Frozen Credits						1930 Capital Ratio	Change in Deposits, 1931 (in %)
	In Mio £	to 1930	to 1930	to 1931	to 1930 Total	to 1931 Total		
	I	Capital & Res. II	Liquid Assets III	Liquid Assets IV	Assets V	Assets VI		
<b>Panel A: Acceptance Houses</b>								
S. Japhet & Co. Ltd.	4.59	<b>2.30</b>	0.90	<b>2.77</b>	0.32	0.54	0.14	-63.43
Bank A	1.40	<b>1.93</b>	0.34	0.82	0.21	0.37	0.11	-81.30
M. Samuel & Co. Ltd.	2.54	<b>1.82</b>	0.31	<b>1.28</b>	0.16	0.27	0.09	-73.26
Kleinworts, Sons & Co.	9.30	<b>1.70</b>	<b>1.49</b>	<b>1.95</b>	0.26	0.34	0.15	-69.13
Anglo French Banking Corporation	1.92	<b>1.50</b>	0.58	<b>3.30</b>	0.21	0.58	0.14	-93.23
Guinness Mahon & Co.	1.17	<b>1.45</b>	0.51	0.87	0.23	0.34	0.16	-56.77
Bank G	0.76	<b>1.42</b>	<b>1.30</b>	<b>1.22</b>	0.25	0.28	0.18	NA
London Merchant Bank Ltd.	1.22	<b>1.40</b>	0.96	<b>2.73</b>	0.25	0.49	0.18	-76.84
Hambros Bank Ltd.	3.70	<b>1.39</b>	0.24	0.41	0.12	0.16	0.08	-42.03
J. Henry Schröder & Co.	4.90	<b>1.32</b>	0.88	<b>2.05</b>	0.21	0.36	0.16	-49.81
Anglo International Bank Ltd.	2.73	<b>1.30</b>	0.89	<b>2.08</b>	0.28	0.49	0.22	-73.56
Lazards Brothers & Co. Ltd.	4.19	<b>1.20</b>	0.33	<b>1.15</b>	0.14	0.26	0.12	-56.20
Bank B	1.37	0.71	0.30	0.63	0.14	0.24	0.19	-70.28
Bank C	0.59	0.56	0.37	0.48	0.10	0.22	0.18	NA
Bank E	0.55	0.49	0.54	0.67	0.25	0.29	0.50	-16.68
Baring Bros. & Co. Ltd.	1.23	0.40	0.07	0.08	0.05	0.05	0.12	0.48
Bank D	0.75	0.38	0.26	0.33	0.07	0.11	0.20	-26.87
Morgan Grenfell & Co. Ltd.	0.55	0.23	0.07	0.09	0.04	0.04	0.19	-19.18
A. Ruffers & Sons Ltd.	0.18	0.20	0.16	0.19	0.06	0.08	0.29	-0.51
Bank F	0.15	0.19	0.06	0.09	0.02	0.03	0.11	-42.64
<b>Panel B: Commercial Banks</b>								
Westminster Bank Ltd.	4.48	0.24	0.03	0.03	0.01	0.01	0.06	-6.18
Barclays Bank Ltd.	4.93	0.19	0.03	0.03	0.01	0.01	0.07	-3.70
Midland Bank Ltd.	4.41	0.15	0.02	0.03	0.01	0.01	0.06	-9.36
Lloyds Bank Ltd.	1.99	0.08	0.01	0.01	0.00	0.01	0.06	-7.27
National Provincial Bank Ltd.	1.28	0.07	0.01	0.01	0.00	0.00	0.06	-10.58
William Deacon's Bank Ltd.	0.06	0.02	0.00	0.00	0.00	0.00	0.08	-10.54

Note: For each bank, the table reports the amount of its 1931 Central European frozen credits (in million £, column I) and the ratio of its 1931 frozen credits to: - its paid-up capital and reserves at the end of 1930 (column II); - its liquid assets (cash, and all negotiable securities) at the end of 1930 (column III) and 1931 (column IV); and - its total assets at the end of 1930 (column V) and 1931 (column VI). Column VII reports the banks' ratios of paid-up capital and reserves to total assets at the end of 1930. Column VIII reports the percentage change in each bank's deposits between the end of 1930 and the end of 1931. Banks in each panel are ranked by their ratio of frozen credits to capital and reserves. Figures in bold indicate values of Central European credits in excess of the banks' capital and reserves or liquid assets. Central European credits are for the closest date available to the burst of the German crisis. The dates are June 1931 for Bank E; July 1931 for Baring Bros. & Co., Kleinworts, Sons & Co., Midland Bank Ltd., J. Henry Schroder & Co., and Westminster Bank Ltd.; September 1931 for Morgan Grenfell & Co. Ltd., and Hambros Bank Ltd.; December 1931 for Anglo French Banking Corporation, Anglo-International Bank Ltd., S. Japhet & Co. Ltd., Lazards Brothers & Co. Ltd., London Merchant Bank Ltd., A. Ruffers & Sons Ltd., Bank B, Bank C, Bank D, and Bank F, 1931 (unspecified month) for Barclays Bank Ltd., Lloyds Bank Ltd., National Provincial Bank Ltd., and William Deacon's Bank Ltd.; March 1932 for M. Samuel & Co. Ltd.; April 1932 for Guinness Mahon & Co.; December 1932 for Bank A; and December 1936 for Bank G. Central European frozen credits consist of all short-term credits to Germany, Austria and Hungary except for Kleinworts, Sons & Co., J. Henry Schroder & Co., Bank F, Lloyds Bank Ltd. and National Provincial Bank Ltd. where they are for Germany only. Seven London acceptance houses in the table are identified as banks A–G because their balance sheets were communicated by the archivist on the condition that their anonymity be preserved. Sources: see text and appendix B.

**Table 3. US Banks' Central European Exposure, 1931**

	Central European Frozen Credits						1930 Capital Ratio	Change in Deposits, 1931 (in %)
	In Mio \$	to 1930 Capital & Res.	to 1930 Liquid Assets	to 1931 Liquid Assets	to 1930 Total Assets	to 1931 Total Assets		
	I	II	III	IV	V	VI		
<b>Panel A: Acceptance Houses</b>								
International Acceptance Bank, NY	44.89	<b>2.39</b>	<b>1.12</b>	<b>1.97</b>	0.28	0.53	0.12	-55.96
J. Henry Schroder Banking Corporation, NY	12.40	<b>1.10</b>	0.84	<b>1.11</b>	0.16	0.31	0.15	-51.70
Brown Brothers Harriman & Co., NY	10.27	0.64	NA	NA	NA	NA	NA	NA
<b>Panel B: Commercial Banks</b>								
Grace National Bank, NY	2.40	0.63	0.14	0.15	0.08	0.09	0.12	-14.89
Manufacturers Trust, NY	25.46	0.42	0.28	0.17	0.08	0.07	0.19	25.37
National Shawmut Bank, Boston	13.61	0.41	0.15	0.17	0.05	0.07	0.13	-20.62
Commercial National Bank and Trust, NY	6.87	0.40	0.09	0.17	0.04	0.08	0.10	-45.88
National City Bank, NY	87.32	0.37	0.15	0.14	0.06	0.05	0.15	1.96
Chatham Phenix National Bk and Trust, NY	13.37	0.36	0.11	0.19	0.04	0.06	0.11	-42.67
Irving Trust, NY	38.65	0.28	0.10	0.14	0.04	0.06	0.16	-28.57
Continental Illinois, Chicago	43.00	0.25	0.09	0.11	0.03	0.04	0.14	-20.00
Chase National Bank, NY	90.37	0.25	0.10	0.14	0.03	0.05	0.14	-26.92
First National Bank, Boston	18.27	0.21	0.08	0.08	0.03	0.03	0.13	-18.15
Bankers Trust, NY	20.95	0.18	0.08	0.06	0.03	0.03	0.15	-8.85
Public National Bank and Trust, NY	3.67	0.16	0.04	0.05	0.02	0.03	0.12	-33.05
Guaranty Trust, NY	46.46	0.16	0.07	0.08	0.03	0.03	0.16	-16.29
First National Bank, Chicago	7.41	0.13	0.04	0.03	0.01	0.01	0.11	12.94
Bank of America National Trust, SF	13.46	0.12	0.03	0.05	0.01	0.01	0.09	-24.89
Philadelphia National Bank	4.55	0.09	0.03	0.03	0.01	0.14	0.14	-14.65

Note: see table 2. Central European frozen credits are for the closest date available to the burst of the German crisis. The dates are July 1931 for Brown Brothers Harriman & Co., Chase National Bank, Continental Illinois, First National Bank of Chicago, Manufacturers Trust, Public National Bank and Trust, and J. Henry Schroder Banking Corporation; September 1931 for International Acceptance Bank, National Shawmut Bank and Philadelphia National Bank; November 1931 for Chatham Phenix National Bank and Trust, Commercial National Bank and Trust, and Grace National Bank; December 1931 for Bankers Trust and First National Bank of Boston; and 1931 (unspecified month) for Irving Trust. Frozen credits are only available as of April 1932 for National City Bank and as of December 1932 for Guaranty Trust Company and Bank of America National Trust (San Francisco). I estimated these three banks' amounts of frozen credits outstanding in July 1931 assuming the same percentage decline in German credits as for Chase National Bank during the corresponding periods. Central European frozen credits consist of all short-term credits to Germany, Austria and Hungary except for Bankers Trust, Continental Illinois, First National Bank of Chicago, Guaranty Trust, Irving Trust, Manufacturers Trust, Public National Bank and Trust and J. Henry Schroder Banking Corporation where they are for Germany only. Brown Brothers Harriman & Co.'s balance sheet is only available as of December 1933. Sources: see text and appendix B.

**Table 4. London Banks' Foreign Lending Specialization**

	Nb	RCI	HHI	Specialization
<b>Panel A: Acceptance Houses</b>				
London and Eastern Trade Bank	45	1.55	0.13	Italy (0.24)
Brown Shipley & Co.	39	1.44	0.53	USA (0.72)
Anglo International Bank Ltd.	39	1.32	0.13	Germany (0.23)
A. Ruffer & Sons Ltd.	34	1.28	0.20	Switzerland (0.29); France (0.26)
N. M. Rothschild & Sons	44	1.26	0.17	Germany (0.32); Netherlands (0.20)
J. Henry Schröder & Co.	154	1.23	0.38	Germany (0.60)
Hambros Bank Ltd.	245	1.21	0.12	Norway (0.24); Denmark (0.20)
Anglo South American Bank Ltd.	26	1.20	0.08	
S. Japhet & Co. Ltd.	158	1.20	0.35	Germany (0.58)
British Overseas Bank Ltd.	69	1.19	0.11	Belgium (0.29)
London Merchant Bank Ltd.	32	1.17	0.19	Germany (0.41)
Guinness Mahon & Co.	58	1.10	0.21	Germany (0.41)
Baring Bros. & Co. Ltd.	53	1.09	0.18	Switzerland (0.38)
Higginson & Co.	23	1.05	0.18	Germany (0.35)
Anglo French Banking Corporation	64	1.02	0.11	
Kleinworts, Sons & Co.	160	0.98	0.14	Germany (0.34)
Frederick Huth & Co.	57	0.97	0.09	
Seligman Brothers Ltd.	50	0.89	0.11	Germany (0.20); Netherlands (0.20)
Lazard Brothers & Co. Ltd.	88	0.81	0.08	
M. Samuel & Co. Ltd.	125	0.81	0.08	
Samuel Montagu & Co.	45	0.72	0.09	
<b>Average</b>	<b>77</b>	<b>1.12</b>	<b>0.17</b>	
<b>Panel B: Foreign Banks</b>				
Credito Italiano (Italy)	39	1.48	0.29	Italy (0.51)
Societe Generale (France)	22	1.42	0.29	France (0.50)
Credit Lyonnais (France)	66	1.31	0.10	
Banque Belge Pour L'Etranger (Belgium)	102	1.16	0.17	Belgium (0.38)
Comptoir National d'Escompte (France)	76	1.03	0.06	
Bankers Trust (USA)	32	0.98	0.14	USA (0.22)
Banca Commerciale Italiana (Italy)	94	0.98	0.12	Italy (0.31)
Guaranty Trust (USA)	90	0.96	0.18	USA (0.33); Germany (0.23)
National City Bank (USA)	59	0.93	0.17	USA (0.37)
Swiss Bank Corporation (Switzerland)	379	0.88	0.16	Switzerland (0.29); Germany (0.24)
Chase National Bank (USA)	94	0.86	0.12	Germany (0.27)
<b>Average</b>	<b>96</b>	<b>1.09</b>	<b>0.16</b>	
<b>Panel C: Big Five Clearing Banks</b>				
Barclays Bank Ltd.	376	0.66	0.11	USA (0.27)
National Provincial Bank Ltd.	214	0.66	0.08	
Lloyds Bank Ltd.	227	0.57	0.09	USA (0.23)
Midland Bank Ltd.	714	0.52	0.05	
Westminster Bank Ltd.	349	0.47	0.07	
<b>Average</b>	<b>376</b>	<b>0.57</b>	<b>0.08</b>	
<b>Panel D: Other Commercial Banks</b>				
Glyn Mills and Co.	25	1.09	0.18	USA (0.36)
Royal Bank of Scotland	48	0.88	0.08	France (0.21)
Bank of Scotland	56	0.80	0.08	
Martins Bank Ltd.	57	0.72	0.12	
<b>Average</b>	<b>47</b>	<b>0.88</b>	<b>0.11</b>	

Source: Author's computations from *Bankers' Almanac*, 1930/31 (see text). For each bank, the table reports the total number of foreign correspondents (Nb), the Relative Concentration Index (RCI), the Herfindahl-Hirschman index (HHI) and the countries of specialization (Specialization). A bank is said to be "specialized" in a particular country if the share of its correspondents in that country is no less than 20 per cent. The share of the banks' foreign correspondents located in each of their "countries of specialization" are reported in parentheses. Banks are ranked by their RCI index value.

**Table 5. New York City Banks' Foreign Lending Specialization**

	Nb	RCI	HHI	Specialization
<b>Panel A: Private Banks and Acceptance Corporations</b>				
Iselin & Co.	85	1.53	0.53	Switzerland (0.69); France (0.21)
Lazard Frères & Co.	23	1.26	0.29	France (0.48); Germany (0.22)
Lee Higginson & Co.	27	1.26	0.21	Germany (0.33); Netherlands (0.22)
French American Banking Corporation	60	1.23	0.30	France (0.53)
Hallgarten & Co.	58	1.09	0.20	Germany (0.36); Netherlands (0.21)
J. Henry Schroder Banking Corporation	100	1.09	0.35	Germany (0.57)
Harriman Brothers & Co.	21	1.07	0.17	Germany (0.29); France (0.24)
Huth & Co.	25	1.07	0.09	
J. P. Morgan & Co.	21	1.03	0.11	France (0.24)
Ladenburg Thalmann & Co.	66	1.00	0.34	Germany (0.56)
Brown Brothers & Co.	94	0.99	0.09	Belgium (0.20)
International Acceptance Bank	144	0.92	0.20	Germany (0.43)
<b>Average</b>	<b>60</b>	<b>1.13</b>	<b>0.24</b>	
<b>Panel B: Foreign Banks</b>				
Banque Belge Pour l'Etranger (Belgium)	75	1.52	0.23	Belgium (0.44)
Banca Commerciale Italiana (Italy)	69	1.34	0.26	Italy (0.49)
Royal Bank of Canada (Canada)	21	1.20	0.12	Spain (0.24)
<b>Average</b>	<b>55</b>	<b>1.35</b>	<b>0.21</b>	
<b>Panel C: Five Largest National Banks and Trusts</b>				
Chase National Bank	532	0.75	0.15	Germany (0.37)
National City Bank	494	0.72	0.06	
Irving Trust	353	0.64	0.05	
Bankers Trust	95	0.63	0.06	
Guaranty Trust	399	0.58	0.06	
<b>Average</b>	<b>375</b>	<b>0.66</b>	<b>0.08</b>	
<b>Panel D: Other National Banks and Trusts</b>				
New York Trust	89	1.11	0.12	Norway (0.25)
Commercial National Bank and Trust	25	1.05	0.15	France (0.28); Germany (0.20)
Chatham Phenix National Bank and Trust	21	1.03	0.07	
American Express	61	1.02	0.06	
Manufacturers Trust	39	1.00	0.08	
Chemical Bank and Trust	43	0.94	0.05	
Bank of America	98	0.90	0.11	Germany (0.23)
Central Hanover Bank and Trust	105	0.77	0.09	Germany (0.21)
<b>Average</b>	<b>60</b>	<b>0.98</b>	<b>0.09</b>	

Source: Author's computations based on the *Bankers' Almanac*, 1930/1931 (see text). Note: see table 4.