“Lending money to people across the water”: The British Joint Stock Banking Acts of 1826 and 1833, and the Panic of 1837

PRELIMINARY AND INCOMPLETE*

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This Draft: August 10, 2016

Abstract

I argue that the Panic of 1837 was in large part driven by bank liberalization in the United Kingdom which triggered an expansion in credit supply and cotton purchases from the American South. The Bank of England, slowly developing its use of bank rate, allowed bullion levels to fall too low and accidentally facilitated the now well-established rapid accumulation of specie in the United States from 1830 to 1836. The United States, in particular Louisiana and the “Cotton South,” experienced a radical expansion in bank lending and price inflation. By the 1840s the Bank had adjusted its policies to prevent this particular problem. This builds on the arguments of Jenks, Macesich, Temin and Rockoff regarding the inflation of the 1830s, providing a specific cause for the specie accumulation in the United States.

*The archival work was made possible through the generous assistance of two Transylvania University Jones Grants. Feedback from Michael Bordo, Georgia Bush, John Landon-Lane, Will Gerken, Cormac O’Grada, and John Joseph Wallis, as well as session attendees at EBHS 2014 was very helpful. I would additionally like to thank Phil Walker of Transylvania University Library for his extraordinary help in getting access to a range of primary and secondary sources, as well as archivists at Barclays, HSBC, Lloyds, RBS, Manchester City, University of Manchester Rylands, and Bank of England archives, and the Hitch and Frank families for assistance during my research. The usual disclaimers apply. Transylvania University; 300 N Broadway; Lexington KY 40508; Email: gwilliams@transy.edu; Phone: +1 917 670 8652
1 Introduction

The principle of lending money to people across the water in such lumps is dangerous

James Lister, manager of the Liverpool Union Bank, 22nd October 1836

[Let any one realize this single fact - that manufacturing establishments have been deliberately created and carried on with borrowed money to such an extent as to involve the loss - the absolute dissipation - of 1,500,000 l. within 10 years, in a single district, and then ask himself what must have been the consequence of such a state of things?

Manchester Chronicle, October 1842

The Panic of 1837 was a seminal event in American history, and the history of the Atlantic World. Contemporaries expended considerable energy dissecting its causes and consequences (Palmer (1837), Ricardo (1837), Tooke et al. (1928)). A range of eminent economic historians have explored the issues in detail, including Temin (1969), Matthews (2011), Jenks (1927), Hammond (1991) and Macesich (1960). Continuing work by economic historians includes Wallis (2001), Wallis (2002) and Rousseau (2002). In the wake of the financial crisis of 2008, historians have begun to look at the Panic and the resulting depression for insights into the contemporary era (see Roberts (2012) and Lepler (2013), in particular).

Beginning with Temin (1969), with significant emendations by Engerman (1970), Rockoff (1971), Rousseau (2002), and Wallis (2001), a basic consensus has developed about the background and the causes of the Panic (Sylla, 2001). There is general acceptance of Peter Temin’s argument that the increase in bank lending in the 1830s was not directly caused by the Bank War, but instead by a buildup of specie, particularly from 1833 to 1837. In this view the accumulation of specie was driven by an increase in trade credit from British merchants to American merchants engaged in the China trade and by long-term capital flows coming from the United Kingdom. The precipitation of the Panic was in substantial part driven by federal policies that required a series of interbank transfers in late 1836 and early 1837, which hit New York banks very hard. The Bank of England is also considered to have played a role, by increasing bank rate and refusing to discount American trading houses in the 1836.

In this article I follow the existing consensus, as outlined above, but hope to offer new insights into the causes of the specie buildup in the United States, as well as the triggers of the panic
itself. In particular, I argue that the British joint stock banking acts of 1826 and 1833, with
the well-established launch of a large number of joint stock banks, triggered a large expansion in
short-term trade credit flows from the United Kingdom to the United States, which effectively
underwrote the accumulation of specie. I also argue that the expansion of transatlantic credit in
the mid-1830s was inherently unstable and any one of a range of precipitants could have triggered
the Panic of 1837. In effect, by the summer of 1836 the crisis was overdetermined.

Critical to this argument is the important trade link of cotton exports coming from the United
States, particularly Louisiana, Alabama and Mississippi, to the Lancashire region of the United
Kingdom. In 1836, a local maximum in US trade, these exports of cotton to the United Kingdom
represented $44 million\(^1\); 76% of U.S. exports to the United Kingdom, 36% of U.S. exports to
the world, and 15% of all U.S. trade flows. Cotton production in the United States was heavily
dependent on credit originating in the United Kingdom (Woodman, 1999)\(^2\). Because of the
network of short-term credit that linked Industrial Revolution Lancashire cotton manufacturers
with Cotton South planters, a substantial loosening of credit in Lancashire was all but guaranteed
to rapidly propagate to the Cotton South.

Over the course of this paper I trace out the path that leads from the Lancashire banks to
the Southern plantations, largely in the critical years of 1833-1836. I show that following the
expansion in joint stock banks in the United Kingdom, the supply of British bills of exchange
shifts out by about \(£10\) million or \$50 million. Over 1833-1836 there is a surge in expenditure
on raw cotton summing to \(£10\) million or \$50 million, coinciding with the peak transitions in
the capital accounts of the United Kingdom and United States. The quantity of specie in the
United States increases by \$57 million in this period, and I show that the greatest surge is in
the middle of the Cotton South.

This expansion of short-term credit, while critical, is not the only development in the financial
flows between the United Kingdom and United States. As is well-known, long-term investment
flows from the United Kingdom, and issuance and sale of securities from the United States are
also important. More generally, the regulatory interventions of the Jacksonian years as outlined

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\(^1\)Computed using Table 3.6 in Temin (1969).

\(^2\)This credit dependence, and its links with slavery, was frequently commented on. One of the most famous summaries
of a cotton planter’s goal in life was “\[t\]o sell cotton in order to buy negroes – to make more cotton to buy more negroes,
‘ad infinitum’” (page 135, ibid.).
by Rousseau and other seem almost designed to cause problems with the banking system. But
the timing of the growth in short-term credit, the geographic links from Lancashire to the Cotton
South, the increasing fear and concern of British creditors in the leadup to the Panic, and the
collapse in British banking and fluctuations in American prices all suggest that this surge in
short-term credit flows was an essential and underappreciated cause of the Panic of 1837.

Combining the established facts and novel data presented here, the overall picture that results
is

1. The joint stock banking acts of 1826 and 1833 result in a large expansion in the number of
banks in the United Kingdom, particularly in Lancashire

2. Concurrent with the peak period of expansion we see a rapid expansion in trade credit in
the UK, particularly in Lancashire, as well as a jump in purchases of raw cotton apparently
disconnected from demand for cotton yarn and finished piece work.

3. The US and UK current accounts show a rapid expansion in capital flows from the UK and
to the US at this instant.

4. The area of the US most directly linked to Lancashire and most dependent on short-term
trade credit, the Cotton South, shows the greatest increase in specie and banking activity.

5. Banking activity in the United States in 1833-1836 is unusually high by any measure, by
some measures the highest in United States history.

6. Price inflation within the United States shows a propagation from New Orleans to the rest
of the United States.

7. Contemporary accounts in 1836-1837 show a very serious concern with unsustainable and
potentially unrecoverable levels of trade credit from the United Kingdom to the United
States.

8. Over the 1836-1850 period, a number of banks in Lancashire collapse or show serious
problems, many reporting problematic loans directly to the United States or merchants
actively trading with the United States. Known losses to Lancashire banks between 1836
and 1842 are over £2 million, or $10 million.

9. After the Panic of 1837, the Bank of England developed a clearly much more aggressive
approach to bank rate over the 1840s, a policy that would have kept its reserves about £10 million or $50 million higher in the mid-1830s.

The paper proceeds as follows. In Section 2 I review the key points of the general consensus on the Panic of 1837. In Section 3 I look at overall trade flows between the United States and the three major partners who have been associated with the specie accumulation of the 1830s. In Section 4 I review the development of British joint stock banking from 1826 to 1850. In Section 5 I show the shift outwards in the supply of bills of exchange and the increase in purchases of raw cotton linking the Lancashire banks and merchants to the Louisiana banks and cotton factors. In Section 6 I focus on the American financial system, money supply and price developments. In Section 7 I review the increasing anxiety of British bankers and merchants in 1836 regarding the large trade credits granted to Americans, and the development of Bank of England’s approach to bank rate before, during and after the crisis, concluding with brief comments in Section 8.

2 Background on the Panic of 1837

There are a number of aspects of the United States economy of 1830s, particularly with regard to banking and finance, that stand out. One is the overall pattern of expanded lending, price inflation and asset price inflation that held before 1837, including a rapid increase in land sales to 1837. Another is the rapid and apparently catastrophic tightening of credit, beginning with the Panic of 1837 itself, and continuing with the Panic of 1839.

For the first 130 years after the Panic, historians generally believed the cause to be the policies of the Democratic administrations of the time, particularly Andrew Jackson’s success in winning the Bank War against Nicholas Biddle and the Second Bank of the United States. Historians sympathetic to Jackson and Van Buren viewed the financial instability of the 1830s as an unfortunate but necessary consequence of the Democrats’ battle to prevent the BUS from gaining an undemocratic power over the United States’ financial system. Others followed the Whig critique that when the BUS lost its charter the United States lost a key part of its financial infrastructure, a major mistake which was compounded by the Specie Circular.

This view was substantially revised by Temin (1969), which I will use as a baseline in my discussion of the period. There have of course been significant emendations, which I will review
as well.\footnote{This section borrows substantially from Temin (1969) and Sylla (2001).}

2.1 Expansion of United States Banking Activity to 1837

Temin (1969) showed clearly that United States banks maintained stable reserve ratios over the 1830-1837 period; the rapid expansion in lending was largely driven by a rapid accumulation of specie in the United States, $57 million between 1831 and 1837. He argues that this accumulation was caused by (a) a fall in silver exports to China related to the increased use of opium rather than bullion by British and American merchants; and (b) capital imports driven by (i) the success of the Erie Canal and (ii) “the changable investing habits of the British”.

This has remained the unchallenged explanation for the pre-1837 increase in lending in the United States; in his review article Sylla (2001)\footnote{Sylla (2001)’s summary provides no criticism of Temin’s arguments regarding the flow of specie, but does cite Engerman (1970)’s argument that the Bank War did contribute to a breakdown of trust in American banks, with longterm consequences.} provides an brief and elegant outline of the mechanism Temin proposed. The combination of increased opium sales to China and increased cotton purchases from the American South, both led by British merchants, allowed American merchants to stop shipping Mexican silver to China, leading to an increasing buildup in the United States. (Rockoff (1971) supports the general argument but also suggests specie flows from Mexico may have been important.)

Temin is clear that this buildup, on its own, would not have triggered the level of specie accumulation we actually see. A chain reaction of increased specie levels, followed by increased lending, followed by inflation, would have reduced the attractiveness of American goods and quickly led to an outflow of specie as American exports fell and imports increased. This is where capital imports become important in Temin’s explanation: British investors were attracted by the potential returns from the United States and began to purchase securities.

Putting all these pieces together, focusing on the United States, the lead up to the crisis looks like a “capital flow bonanza” (Reinhart and Rogoff, 2009: page 157), and indeed it will be seen that the annual capital imports from 1833-1837 represent about 2-4% of contemporaneous U.S. GDP.
2.2 The Panic of 1837

There are two general schools of thought as to the trigger of the Panic of 1837.

The first focuses on two Jacksonian policies, specifically (a) the Specie Circular of August 1836 which required that purchases from the U.S. Land Office be made with specie, and (b) the transfer of deposits between reserve banks in late 1836 to early 1837 as part of the distribution of the surplus. Rousseau (2002) convincingly shows that these two phenomena, in particular transfers from New York banks, were substantial and occurred exactly at the onset of the Panic.

The second school of thought, which Temin (1969: pages 136-147) supports, focuses on the Bank of England’s increase in bank rate and tightening of its lending policies in late 1836.

It is obvious that the two views are have some compatibility. For instance, in his discussion Temin (1969: Chapter 4) places some blame on the U.S. government policies and says the “histories of the two events are connected (page 147).” Wallis (2001: pages 6-9) finds both arguments compelling and concludes that both the Bank of England’s actions and the U.S. government policies played a role. This view strikes me as correct, and this paper is agnostic as to the relative strength of the two. I hope simply to add some more perspective on how the overflowing Anglo-American trade and credit flows of 1833-1836 created some justification for the Bank of England’s actions, as well as making the U.S. financial system vulnerable to a range of crisis precipitants.

3 Overview of the buildup of specie to 1837

Wallis (2001) persuasively describes Temin’s analysis of the development of U.S. specie and banking reserves in the 1830s as “one of the neatest exercises in Cliometrics.” Temin’s discussion showed that the increase of specie from $30-32 million around 1830 to $88 million in 1837 allowed banks in the United States to greatly expand their lending; the total money supply nearly doubled in the five years leading up to the panic.

In reviewing the specie accumulation, we should start by looking at the extreme nature of the expansion of the banking system in the United States from 1833 to 1837. As shown in Figure 1, the ratio of banking activity to economic activity increased by 50% within 3 years, to levels that would not be reached again until decades later or, arguably, ever.
Relatively, the speed of specie accumulation is quite rapid in the mid-1830s. This places some practical limitations on potential causes. In Table 1 I look at United States specie levels and specie influx from 1829 to 1837, in comparison with trade data from relevant trade partners. The influx of specie, while small relative to overall trade levels, is quite large relative to trade with the two suggested candidate sources, China and Mexico. During the critical years of 1833-1837, the specie influx is greater than the sum of all trade flows (that is, both exports and imports) with each party. Since any specie accumulation is much more likely to be a result of the difference between imports and exports, not the sum, it is nearly impossible to see how only one of the two regions could be the major source, and difficult to see how both together could play that role.

In contrast, the United Kingdom is a strong candidate as a source of the specie influx. Throughout this period it represented nearly 50% of annual trade with the United States (and of this, of course, roughly one third is cotton exports to Lancashire). The absolute magnitudes of trade dwarf the specie influx. Drilling down into the trade and capital account data in Table 2 we can see that the changes in the two countries’ capital accounts are more than sufficient to allow for specie transfers: over 1832-1837 the British capital account increases by $130 million at the same time that the American capital account diminishes by the amount. In fact, since estimates of United States nominal GDP for this period are around $1.5 billion, the flows appears to meet the criteria for a “capital flow bonanza” (Reinhart and Rogoff, 2009: page 157).

The breakdown of United States indebtedness into short and long-term debt is murky. In North (1960: Table C-1) we see estimates of short-term credit obligations for the 1836-1837 period are in the $60-100 million range, while estimates for securities (both private and public) are at $200 million. All observers agree that the majority of American debt obligations are to British parties (in fact the short-term credit estimates are just for British merchant houses). The purchase of American securities by the British appears to have been a consistent and stable development over the century (Sylla et al., 2006; Sylla, 1998), but the short-term credits are striking, as they are roughly the same size as the sum of all trade flows between the UK and US.

\[\text{Footnote: There is no doubt that around 1831 American firms began to pay for goods in Canton with bills on London (Rockoff, 1971: Table 3). However, while the flow of specie from the US to Canton changes significantly, the major change is precipitated by the granting of trade credit by British merchants: the American merchants had been importing opium from Turkey to China on a systematic basis from at least 1812 (Downs, 1968). They were not switching from paying with specie to paying with opium, they were switching from paying with a mixture of specie and opium to paying with credits from UK merchants.}\]

\[\text{Footnote: Since trade was usually financed with bills of exchange with maturities of 3 to 6 months, it would make more sense}\]
It is important to emphasize that the capital flows from the United Kingdom to the United States are well-known, and the general pattern is in fact a keystone of the accepted narrative about the Panic of 1837 (Sylla, 2001). Where this paper differs from the standard view is in revisiting the proportion of capital flows comprised of short-term credit, and rethinking the source and nature of these short-term credits. While the standard narrative points to the role of British credits to American merchants in China, I focus on the major trade artery linking cotton production in the American South with Lancashire industry as a case of interdependence (Neal and Weidenmier, 2003). More importantly, I point to the expansion in British joint stock banking as the cause of the short-term credit flow.

### 4 Joint Stock Banking in the United Kingdom

In the United Kingdom, the major institutional developments in the financial system in the late 1820s and early 1830s were the passing of the Joint Stock Banking acts of 1826 and 1833 (technically, the Banking Copartnerships Act of 1826 (7 Geo. IV, c. 46) and the Bank Charter Act of 1833 (3 & 4, Will. IV, c.98)). Part of the reason for these acts was a belief among many (but not all) in the British commercial and political worlds that large joint stock corporations were the wave of the future and would allow businesses to operate at larger scale. The acts were also a response to the crisis of 1825, when the small private banks with 6 or fewer partners went under in large numbers. It was argued that joint stock banks, by accessing the capital of many anonymous shareholders, would have more resources and thus be more stable.

The Bank of England viewed the passage of the acts with some concern. The acts explicitly eliminated its monopoly on note issue: In 1826 this monopoly was eliminated for areas more than sixty-five miles from London and in 1833 it was eliminated across the country. Even worse, the acts portended the growth of much larger banks that would threaten its role in the British economy.

The development of joint stock banks in the 1820s and 1830s was dramatic and complex (Thomas, 1934; Matthews, 2011; Taylor, 2013; Turner, 2014), but some key details can be summarized here. There was an immediate response to the 1826 act, which accelerated into the for short-term credit to be approximately 25-50% of trade.  

\footnote{A fascinating discussion of the controversies around joint stock corporations can be found in Taylor (2006).}
1830s. Figures 2 and 3 (sources Thomas (1934) and Matthews (2011)) show the overall records of joint stock banks founded in the 1826-1845 period; Figure 2 for all of England and Wales, and Figure 3 for just Lancashire (including Liverpool and Manchester). The metaphorical “ramp-up” in numbers from 1826 to 1836, followed by the jump in 1836, is very clear in both. By the end of 1836 there were 113 joint stock banks in England and Wales, with 27 serving Lancashire directly.

The net change in number of banks was less, due to the mergers and acquisitions of private banks but as can be seen in Figure 2 there were 64 more banks in England and Wales by 1836 than there were 10 years earlier. Liberalization is very clear.

By the mid 1840s a number of these banks had either failed or been rolled into other banks; both figures show the overall decline in extant joint stock banks.

As a check on the numbers from Thomas (1934), and also to see what the number of branches “on the ground” in Lancashire looked like, in Table 3 I show bank branches listed in directories from 1821-22, 1838 and 1850. As can be seen, the story of the figures is supported. Total branches expand from 36 in 1821 (28 if we exclude the 8 savings banks) to 73 in 1838, then dropping to 54 in 1850. Although country banks are present in 1821 and there appears to be a solid industry, in the wake of liberalization there is a very significant expansion.

5 Bills of exchange and cotton markets in the United Kingdom

Looking at data on bills in Figures 4 and 5, we can see all bills expanded by 50% in 6 years, but Lancashire bills, and bills linked to foreign and wholesale trade (the “large bills” in Newmarch)

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8 The figures for England and Wales use Matthews (2011: table 30, page 193) numbers on foundings and the decrease in private banks but also make adjustments from Thomas (1934) for failures of joint stock banks, thus the total increase line should represent the total net change in the number of banks in England and Wales.

9 Appendix 36 of the 1857 COMMITTEE REPORT ON BANKING found that the money paid in England for bankers’ licences went from £20,640 in 1833 to £36,900 in 1837, then did not go above £22,000 again between 1838 and 1856.

10 Aside from the limitations on note-issuing banks close to London in the acts of 1826 and 1833, there were no regulatory limitations I am aware of on branching in this period. Private banks might have branches in a few cities, but this was practically limited by the fact that they could not have more than 6 partners. Joint stock banks appear to have had complete flexibility and some opened numerous branches within a few years.
expanded by 100%\textsuperscript{11}. There is thus clear evidence of a significant expansion in credit, particularly in Lancashire and in those businesses focused on wholesale and foreign trade. The expansion in total bills from 1830 to 1836 was roughly £25 million or $125 million.

Can we tie this expansion to the increasing number of banks? If the joint stock banking acts had increased the supply of credit, we would expect the amount of bills at any particular interest rate to substantially increase. In contrast, if this was due to an increase in demand, we would expect to see interest rates move up with the expansion in bills. In Figure 6 I plot the relationship between market interest rates and the quantity of large bills outstanding for three periods - 1830-1832, 1833-mid-1836, and mid-1836 to 1842. As can be clearly seen there is a very substantial shift outwards that appears to occur during the 1833-1836 period. At any particular interest rate, roughly £10 million more large bills are drawn by early 1840s than would be available in the early 1830s. As a check I run regressions on the same periods, with the output in Table 4 supporting the shift outwards. The expansion in the number of joint stock banks thus clearly seems to have significantly expanded the supply of credit; over the long term this would redound to the benefit of Britain and the world, but in the short-term it seems to have led to rough seas.

What was the effect of the expansion of credit on the primary trade flow between the United Kingdom and the United States? There was an immediate and quite strong increase in the price of cotton. Moreover, comparing the price of cotton twist and finished cotton piece work, the evidence is strong that the increase in the price of raw cotton was unrelated to downstream demand of twist and finished piece work. In Figure 7 I plot the prices of raw cotton and finished piece work, as well as the quantity of Lancashire large bills outstanding. There is a clear pattern from 1830 to the late 1830s where expansion in Lancashire bills coincides with a “decoupling” of the development of prices for raw cotton and cotton pieces (a similar plot can be drawn with cotton twist prices, which develop very similarly to the cotton piece work). When we look at a rough estimate of expenditure on raw cotton versus expenditure on cotton twist in Figures 8 and 9 we can see that there is a surge in expenditure in raw cotton. This increase is several years in

\textsuperscript{11}Sources are Silberling (1923)’s quarterly data, from Newmarch’s figures for England and Wales, all bills and large bills, and Newmarch (1851) for Lancashire only. For documentation on Newmarch’s approach, its strengths and limitations, and comparisons with other efforts, see Nishimura (1971), in particular Chapter 2. For a discussion of how the quantity of bills of exchange fluctuated generally and in relation to interest rate changes, see Hughes (1960) Chapter 10, in particular Section 4 and Matthews (2011) Chapter 11 Section 5.
advance of a similar increase in expenditure on cotton twist. While the overall development of the cotton industry at the time, in particular the intense competition of manufacturers, may have helped create an urge to stockpile, the increase is large and expensive; the excess expenditure on raw cotton in 1833-1836 sums to roughly £10 million, or $50 million. It is hard to see how and why merchants and manufacturers would have spontaneously increased their precautionary purchasing by so much without the expansion in the supply of credit.

6 Specie accumulation, loan expansion and price developments in the United States

Having reviewed the development of banking and credit in the United Kingdom, and shifts in the cotton market around 1833-1836, we now turn to the development of specie accumulation, loan expansion, and price level developments in the United States.

Using data from Van Fenstermaker (1965) and census data, we can see the change in banking on a per capita basis across US states and territories from 1830 to 1836 in Figures 10, 11, and 12 (overall patterns are summarized in Tables 5 and 6). While effectively every region shows significant growth in specie and lending levels, the “Cotton South”, particularly Louisiana, shows by far the greatest. The development from 1833 to 1836 is particularly striking, where Louisiana, already one of the three states showing the highest level of banking activity, rockets far beyond any other region. It should be noticed that by 1836 Alabama and Mississippi are showing levels of banking competitive with states such as Rhode Island and Massachusetts, centers of Atlantic shipping and commerce.

The rapid increase in banking activity in the Cotton South in the lead up to the Panic of 1837 is congruent with the overall story of the 1830s and the panic itself. Cotton farming was highly dependent on credit that originated in the United Kingdom and was delivered via cotton factors (Woodman, 1999). Contemporaries believed there was an unstable expansion in credit in this region around 1836 (Baldwin, 1854: especially the piece “HOW THE TIMES SERVED THE VIRGINIANS Virginians in a NEW Country - The Rise, Decline, and Fall of the Rag Empire”). Were the fluctuations in bank assets and activity in this area enough to play a significant role in the United States economy?
To test this, I look at price developments across some of the major United States cities during this period, using price data from New York, Philadelphia, Charleston, New Orleans and Cincinnati (Cole, 1938: Tables 45, 51, 62, 93, 103). In order to test the relative impact of money supply changes in these five cities, I run vector autoregressions (VARs) over six year windows from 1829 to 1843. I then run Granger causality tests on the role each city played on prices across the group. The figure shows the value for each city in a series of time windows, beginning with 1829-1835 and then shifting out, one month at a time, to 1837-1843. Higher values for a particular city make it more probable that price developments occurred in that city before they propagated to the others. Thus, the fact that New Orleans has values substantially above the critical thresholds for most of the 1830s and early 1840s is strong evidence that changes in American money and banking occurred first in this city.

7 The Panic of 1837 as viewed from the United Kingdom

In comparison with the wide range of explanations and perspectives on the Panic of 1837 in the United States, the view among British merchants and bankers is refreshingly simple. Much of the discussion in the business press, the minute books, and the private letter books in London and Lancashire comes down to three things: American debtors (frequently viewed as unreliable and unscrupulous), British joint stock bank managers (frequently viewed as overconfident and inexperienced) and staggering amounts of transatlantic debt that the writers fervently hope will be repaid.

It seems that by the summer of 1836, British bankers and merchants were experiencing a Wile E. Coyote moment (Krugman (2007) and Blinder (2013: page 39)). Beginning with that summer, and increasingly over the fall, British financial institutions were getting very nervous about the credit that was being extended to the United States.

The data shows a remarkable increase in advances and discounting of American bills, largely in Liverpool, but also in London. The Bank of England’s Liverpool branch discounted £1,678,000 and provided £617,000 in advances, compared to the previous year (already much higher than any earlier) discounts of £1,019,000 and advances of £143,000 Collins (1972: Table 1). Writing
in 1837, an anonymous author in the *Edinburgh Review* claimed that seven British trading houses had acceptances of over £15 million ($75 million) in the 1835-1836 period (*Enquiry into the Circumstances that have occasioned the present Embarrassments in the Trade between Great Britain and United States of America*, 1837: page 231). On July 16, 1836 George Carr Glyn, a banker in London, wrote Joseph Langton, the manager of the Bank of Liverpool: “It has occurred to me that the amount of American bills is very large....Barings, Wilsons and Wildes are not in these operations - these operations and the course of the exchange generally have made the Bank of England very fidgetty” (Langton Papers).

In late August 1836, the problem had become more extreme, in that the Bank of England was now concerned about credit being given to the large American houses (Barings, Wilsons, Wildes and others) and on August 27th directed its Liverpool branch to wait for the major American houses to reduce their accounts with the branch before “receiving any more of the large bills which have recently appeared” (BoEA C 129/73). Two days later there is a clarificatory letter saying that “[a] certain discretion will moreover be conceded to you in discriminating between bills on these houses originating in bona fide orders for goods, and those which appear to be drawn against [b]anking operations. The latter species of bills that which the Governors are desirous to exclude.” On the third of September, a London office letter to the Liverpool agent states that a bill presented by a merchant is more likely to be used for export of goods and so accepted, while a bill presented by a banker is not, and should probably be rejected.

By October 1836, private bankers in the U.K. were generally very concerned about credit with American houses. On October 13, James Lister, manager of the Liverpool Union Bank, wrote a colleague “Browns here have sent for 400,000 £ from America. The great American houses who have been hammered so unmercifully will sell their securities in the states and I am persuaded that neither Jackson nor his crew can keep the gold, because it has not gone out from a natural exchange but by bill drawing and kite flying”. On October 22, 1836, Lister wrote a colleague (possibly the local Bank of England representative) that “money is in such a state that Barings acceptances are mere waste paper as far as convertibility is concerned.” LA A/35/b/17

In the private minute book (BoEA M5/472) of the court of directors of the Bank of England for December 8, 1836 the governor made a point of the fact that the seven major American houses had debts to the Bank of nearly £3.5 million, or about £500,000 per house. Letters were sent to
the management of each bank requesting a plan to pay down the advances, and the responses are entered into the minute book as they are received. The private minute book is probably the best evidence we have of the most serious concerns of the top managers and directors of the bank. There are exactly two issues that take up more than a paragraph in the minute book from 1830 to 1840: (a) the discussion with the Exchequer regarding the joint stock banking law of 1833 and (b) the issue of the advances to the American houses. To say the Bank viewed the advances as a potentially existential threat does not seem exaggerated.

In December 1836 the Northern and Central Bank, a joint stock bank founded only a few years before, solicited an emergency loan from the Bank of England, initially £500,000 but soon expanded to £1.37 million. Bank of England representatives who were sent to Manchester to assist bank management gave troubling reports of very serious failures of internal controls. Among other things, the representatives were struck by remarkably careless lending to American banks (Thomas, 1934: Chapter 7).\(^\text{12}\)

Given the large debts owed by American houses to British counterparties, and the evidence that at least some joint stock banks were seriously threatened by this, the Bank of England’s efforts to raise the bank rate and to restrict acceptances to American houses in the summer and fall of 1836 seems like a reasonable, arguably necessary, response to circumstances.

The failures of several banks and trading houses in 1837 - most famously the “Three W’s” - slightly reduced the level of overall credit built up in the previous years - most likely by at least $5-10 million (i.e., three trading houses with about £500,000 each owed the Bank of England, plus other debts to British trading houses and merchants).

The evidence suggests that in Lancashire the fall, after 1836, was hard: Thomas data gives 11 banks as failed or disappeared in Lancashire, while the directories suggest 19 branches closed in the same period. A number of Lancashire banks failed or endured spectacular losses between 1836 and 1847, and the Lancashire region’s banking system became somewhat infamous. A summary of the major failures and losses can be seen in Table 7.

At a meeting of shareholders for the Bank of Manchester on 15 October 1842 (then collapsing due to losses of 800,000) a shareholder name Grieg stood up and said:

\(^{12}\)It should be noted that the unlimited liability structure of joint stock banks significantly controlled moral hazard issues in the bailout; the Bank of England was fully repaid within a few years.
Now, I say there never was a greater abuse of any word in the English language, than the word “bank.” We have had in this town the “Northern and Central” squander. We have had the “Imperial” squander. We have had the “Commercial” squander. We have had the “Manchester and Liverpool” squander and as if the town had not been sufficiently disgraced, we are called together this day to testify to the “Manchester” squander, which, though last, is, I am sorry to say, not the least.

On 18 October 1842, the Times reprinted an editorial from the Manchester Chronicle about the Bank of Manchester which commented:

[L]et any one realize this single fact - that manufacturing establishments have been deliberately created and carried on with borrowed money to such an extent as to involve the loss - the absolute dissipation - of 1,500,000 l. within 10 years, in a single district, and then ask himself what must have been the consequence of such a state of things?

7.1 Bank of England and Bank Rate

The Panic of 1837 appears to have been an important transition point as the Bank of England developed as a central bank. The Bank had only adjusted bank rate four times before 1836, but increased it twice in 1836 alone, and four more times before 1840. After 1844, the Bank showed an increasingly aggressive style, increasing bank rate eight times in 1847, going as high as 8% in late October. It has been established that there was a strong link between market rate and the bank’s bullion reserves in the 1830s and 1840s, a kind of policy function (Matthews, 2011: Chart 14a, page 175). This period in the Bank’s history is viewed as very important in the development of central banking theory and practice (Cramp, 1962; Wood, 2005). Given the increasing frequency that the Bank adjusted rate, it seems probable that they were developing this policy function over time.

Running Chow break point tests on the link between market rate and Bank of England bullion reserves, I find two major shifts in the implicit policy function in the 1824-1850 period. The first is early in the summer of 1836, and the second is at the end of 1844 (see Appendix A for further details). Looking at Figure 14 we can see the increasingly aggressive posture of the bank. In particular, it is clear that after 1844 the Bank was extremely protective of its bullion reserves. As the market rate fluctuated around 4% in the early 1830s the implicit policy rate allowed bullion reserves to fall below £5 million. After the summer of 1836, the Bank appears to have wanted reserves to stay above £7-8 million at a 4% interest rate. By the mid-1840s, the Bank
pushed for reserves in the £12-13 million range at a 4% interest rate. The Bank of England of the 1840s seems to have believed that too much specie had flowed overseas in the 1830s, roughly £10 million or $50 million too much.

After the bankruptcies of the Panic of 1837, there still were substantial numbers of banks, and still substantial credit in the United Kingdom in excess of 1830-1832 levels. While some asset prices were inflated in the United Kingdom, excess trade credit to American houses, an important factor in the Panic, faded as an issue. The British financial system appears to have become more wary of short-term credits and much more interested in long-term investment in the United States, in particular in public bond issues by states.

After the panic the default of American and British debtors appears to have been a substantial part of how the credit structure readjusted downwards. In the lead up to the panic there was some voluntary and controlled deleveraging, but the failure of American merchant houses (the “Three W’s”) and some British merchants in 1837 led to perhaps a $10-20 million reduction in the credit structure. Collapses of British joint stock banks, particularly in Lancashire, led to about $5-10 million of default on credits. Finally the default of American states in the 1840s and private bankruptcies across Britain led to a collapse of another chunk of transatlantic credit. Combined with price and asset deflation, this allowed the financial system regain balance over the 1840s. The overall process was lengthy and painful, going from the crisis of 1837 to the 1846-1847 crisis.

8 Conclusion

The liberalization of the British banking system under the Joint Stock Banking Act of 1826 was quite radical. While in the long run it contributed to the development of a powerful and impressive financial system, in the short run we might easily expect to see some problems. Having reviewed the chain of causality, from the joint stock banking acts of 1826 and 1833, to the British short-term credit market, to the American cotton-producing states and the American monetary system as a whole, it is worth taking a moment for perspective.

The British financial system seems to have done reasonably well. Given the radical changes in the British banking system, the credit expansion was fairly muted and controlled. It seems
that many, probably most British bankers and merchants were able to stay steady in the face of a revolution in the banking sector, no doubt thanks to long years of experience and in particular the recent memory of the 1825 crisis Neal (1998). Additionally, those sections of the Anglo-American economy that were most affected, Lancashire and the Cotton South, were able to recover quite rapidly.

Also impressive is the education of the Bank of England. Over the 1820s and 1830s it began to adjust bank rate strategically, but carefully. After the Panic of 1837 the Bank became much more aggressive both in changing bank rate, and in working to keep its reserves high. It is noteworthy that the change in reserves from the 1830s to the 1840s would have led to £10 million greater bullion reserve in the mid-1830s.

In contrast, the American financial system seems to have been more vulnerable. The analyses of Engerman (1970) and Rousseau (2002) suggests that the federal government’s actions badly exacerbated the underlying issues. The heavy credit dependency of the Cotton South remained after the Panic. And perhaps most disheartening, there is less evidence of steadiness and increasing experience among the actors than can be seen in the United Kingdom.

Overall, I believe that looking at the experiences and views of participants as seen in the archives, combined with the judicious use of novel econometric techniques (Neal, 2016), offers some new perspective to the existing view of the Panic of 1837 and the international financial system of the time.
9 Archival Sources

9.1 Bank of England Archives (BoEA)
- C 129/73 Liverpool branch private letter book
- M5/472 Private minute book, Secretary’s Department
- C 136/148-149 Manchester branch private letter book

9.2 Barclays Archives (BA)
- Langton Papers

9.3 Lancashire Records Office (LRO)
- Pigot’s Lancashire Directory, 1821-1822

9.4 Lloyds Archives (LA)
- A/35/b/17 Private letter book of James Lister, Manager, Liverpool Union Bank

9.5 Royal Bank of Scotland Archives (RBSA)
- List of Country Banks, 1838
- Almanac of Banks, 1850
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Enquiry into the Circumstances that have occasioned the present Embarrassments in the Trade Enquiry into the Circumstances that have occasioned the present Embarrassments in the Trade Enquiry into the Circumstances that have occasioned the present Embarrassments in the Trade Enquiry into the Circumstances that have occasioned the present Embarrassments in the Trade between Great Britain and United States of America between Great Britain and United States of America between Great Britain and United States of America between Great Britain and United States of America, *Edinburgh Review*, 1837, 65, 221–238.


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Table 1

The level of specie, the quantity of influx, and trade data for select United States trade partners for 1830-1837. Note that China and India trade in the critical years of 1833-37 is smaller than the influx of specie. In contrast, trade with the United Kingdom (one third of which is cotton exports to Lancashire) is substantially greater. Sources: US specie levels from Temin (1969: Table 3.3 page 71), US exports from Carter et al. (2006: Ee533-550), US imports from Carter et al. (2006: Ee551-568). All trade values in $ millions.
### Table 2

Side-by-side presentation of trade and current account balance for the United Kingdom and the United States from 1828 to 1842. Note that from 1833 to 1837 the United Kingdom extends roughly $130 million of credit, and in the same period the United States increases its net indebtedness by roughly $130 million. That is to say, from 1833 to 1837, the value of (B) × (D) in any year is roughly the opposite of the value of column (F) the next year, and (G) moves roughly in opposition to the move of column (C) × (D) in the previous year. Columns A-C from Imlah (1969: Table 4, pages 70-71). Column D from Officer (1983: Table 5, page 592), Columns E-G from North (1960: Table B-5, page 621).
### Banks in Lancashire: 1821-22, 1838 and 1850

<table>
<thead>
<tr>
<th>Location</th>
<th>1821-22</th>
<th>1838</th>
<th>1850</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashton-Under-Lyne</td>
<td>Buckley, Roberts and Co</td>
<td>Ashton, Stalybridge, Hyde, and Glossop</td>
<td>Saddleworth Banking Company</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cunliffe, Brook, Manchester and Liverpool District</td>
<td>Old Bank, Cunliffe, Brook</td>
</tr>
<tr>
<td>Bolton</td>
<td>Hardcastle, Cross &amp; Co</td>
<td>Hardcastle &amp; Co</td>
<td>Hardcastle &amp; Co</td>
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<tr>
<td></td>
<td>Savings Bank</td>
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<td>Bank of Bolton</td>
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<td>Bank of Manchester</td>
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<tr>
<td>Burnley</td>
<td>Birkecks, Alcocks &amp; Co</td>
<td>Birkecks</td>
<td>Alcocks, Birkecks &amp; Co</td>
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<tr>
<td></td>
<td>Commercial Bank of England</td>
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<tr>
<td>Clitheroe</td>
<td>Birkecks</td>
<td></td>
<td>A. Heywood, Sons</td>
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<td>Heywood, Bank of England</td>
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<td></td>
<td></td>
<td>Bank of Liverpool</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Liverpool Borough Bank</td>
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<td>Liverpool Union Bank</td>
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<td>Manchester and Liverpool District</td>
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<td>Leyland and Bullin</td>
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<td>J. Barned</td>
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<td>Bank of England</td>
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<td></td>
<td>Lowry, Roscoe &amp; Wardle</td>
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<td></td>
<td></td>
<td>Moss</td>
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<td>North and South Wales Bank</td>
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<td>Isle of Man Liverpool</td>
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<td></td>
<td>Liverpool Central Bank</td>
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<td>Liverpool Tradesmen’s Bank</td>
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<td>Liverpool Phoenix Bank</td>
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<td>Scholes</td>
<td>Cunliffe, Brooks</td>
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<td>Jones, Lloyds</td>
<td>Loyd, Entwisle, Bury &amp; Jervis</td>
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<td>Cunliffe, Brooks</td>
<td>James Sewell</td>
</tr>
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<td>Bank of Manchester</td>
<td>Manch. &amp; Salford Bkg. Comp.</td>
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<td></td>
<td></td>
<td>South Lancashire Bank</td>
<td>Union Bank of Manchester</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Northern and Central Bank of England</td>
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<td></td>
<td></td>
<td>Commercial Bank of England</td>
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<td></td>
<td></td>
<td>Manchester and Salford Bank</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>National Provinical Bank of England</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Saddleworth</td>
<td>Saddleworth Banking Company</td>
</tr>
<tr>
<td>Preston</td>
<td>Clayton</td>
<td>Pedder, Fleetwood, &amp; Pedder</td>
<td>Lawe and Stigheaven</td>
</tr>
<tr>
<td></td>
<td>Lowes, Roskell, Arrowsmith</td>
<td>Clayton</td>
<td>Pedder, Fleetwood &amp; Pedder</td>
</tr>
<tr>
<td></td>
<td>Pedder and Fleetwood</td>
<td>Lowes, Hudson, and Lowe</td>
<td>Roskell, Arrowsmith</td>
</tr>
<tr>
<td></td>
<td>Savings’ Bank</td>
<td>Roskell, Arrowsmith</td>
<td>Lancaster</td>
</tr>
<tr>
<td></td>
<td>Scholes, etc.</td>
<td>Commercial Bank of England</td>
<td>Lancaster</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Rochdale</td>
<td>Fentons and Roby</td>
<td>Clement Royds</td>
<td>Clement Royds</td>
</tr>
<tr>
<td></td>
<td>Foyds, Smith</td>
<td>Commercial Bank of England</td>
<td>Foyds &amp; Roby</td>
</tr>
<tr>
<td>St. Helen’s</td>
<td>Liverpool Phoenix Bank</td>
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</tr>
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<td>Stalybridge</td>
<td>Manchester and Liverpool District</td>
<td></td>
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<tr>
<td>Todmorton</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ulverstone</td>
<td>Fell, Robt. &amp; Pearson</td>
<td>Fell</td>
<td>Lancaster Banking Company</td>
</tr>
<tr>
<td></td>
<td>Petty &amp; Postlethwaite</td>
<td>Petty and Postlethwaite</td>
<td>Petty &amp; Postlethwaite</td>
</tr>
<tr>
<td></td>
<td>Parr, Lyon, &amp; Greenall</td>
<td>Bank of Westmoreland</td>
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</tr>
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<td></td>
<td>Lancaster</td>
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</tr>
<tr>
<td>Warrington</td>
<td>Parr, Lyon, &amp; Greenall</td>
<td>Parr, Lyons, and Greenwells</td>
<td>Manchester &amp; Liverpool Dist. Bank</td>
</tr>
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<td></td>
<td>Manchester and Liverpool District</td>
<td>Parr, Lyon, &amp; Greenall</td>
</tr>
<tr>
<td>Wigan</td>
<td>Thickness &amp; Woodcock</td>
<td>Thomas Woodcock and Son</td>
<td>Thomas Woodcock &amp; Sons</td>
</tr>
</tbody>
</table>

| Total number of branches | 36 | 73 | 73 | 54 |

Table 3

A summary of branches in Lancashire, probably the most intense region of credit expansion in the United Kingdom in the 1830s, from 1821 to 1850. Sources: LRO and RBSA bank and business directories.
Market Rate of Interest as a Function of Quantity of Large Bills  
Dependent Variable: Market Rate of Interest  

<table>
<thead>
<tr>
<th></th>
<th>1830-1832</th>
<th>1833-1836q2</th>
<th>1836q3-1842</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qty Large Bills</td>
<td>0.0018</td>
<td>0.0010***</td>
<td>0.0014***</td>
</tr>
<tr>
<td></td>
<td>(0.0010)</td>
<td>(0.0003)</td>
<td>(0.0003)</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.0085</td>
<td>0.0073</td>
<td>-0.0114</td>
</tr>
<tr>
<td></td>
<td>(0.0227)</td>
<td>(0.0069)</td>
<td>(0.0126)</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.168</td>
<td>0.505</td>
<td>0.423</td>
</tr>
<tr>
<td>N</td>
<td>12</td>
<td>14</td>
<td>26</td>
</tr>
<tr>
<td>D.f. Wald Test</td>
<td>( 2, 12)</td>
<td>( 2, 24)</td>
<td></td>
</tr>
<tr>
<td>Wald test statistic</td>
<td>43.49</td>
<td>57.41</td>
<td></td>
</tr>
<tr>
<td>P-value Wald test</td>
<td>0.0000</td>
<td>0.0000</td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.05, **p < 0.01, ***p < 0.001

Table 4
Regressions of market rate of interest on quantity of large bills in the United Kingdom for the three period 1830-1832, 1833-1836q2, 1836q3-1842. Of particular importance are the Wald test results for the last two periods, checking whether the regression line has moved significantly outwards. As can be seen, the null hypothesis of no movement is soundly rejected. This supports the visual evidence of Figure 6.
### Specie Accumulation Across the United States, 1830/31 to 1835 and 1836

<table>
<thead>
<tr>
<th>Region</th>
<th>Average 1830/1831</th>
<th>To 1835</th>
<th>% Increase</th>
<th>$ Increase</th>
<th>% Increase</th>
<th>$ Increase</th>
<th>% Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Former Southern Colonies:</td>
<td>$2,723,937</td>
<td>$3,500,792</td>
<td>129%</td>
<td>$5,934,324</td>
<td>218%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GA, MD, NC, SC, VA</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Cotton South&quot;:</td>
<td>$978,801</td>
<td>$3,271,149</td>
<td>334%</td>
<td>$5,071,318</td>
<td>518%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AL, MS, LA</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Former New England Colonies:</td>
<td>$1,880,098</td>
<td>$460,724</td>
<td>25%</td>
<td>$354,574</td>
<td>19%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA, NH, CT, RI</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Former Middle Colonies, less NYC:</td>
<td>$2,832,370</td>
<td>$1,244,619</td>
<td>44%</td>
<td>$4,086,624</td>
<td>144%</td>
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<tr>
<td>NJ, DE, PA</td>
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</tr>
<tr>
<td>NY</td>
<td>$1,139,685</td>
<td>$5,084,962</td>
<td>446%</td>
<td>$5,417,336</td>
<td>475%</td>
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<tr>
<td>Near Trans-Appalachian:</td>
<td>$74,748</td>
<td>$4,119,163</td>
<td>5511%</td>
<td>$4,734,824</td>
<td>6334%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OH, TN, KY</td>
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<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Frontier:</td>
<td>$298,605</td>
<td>$2,539,887</td>
<td>851%</td>
<td>$3,114,614</td>
<td>1043%</td>
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<td></td>
</tr>
<tr>
<td>ME, VT, FL, MO, AK, IL, IN, MI, WI</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Middle Colonies w/NY</td>
<td>$3,972,054</td>
<td>$6,329,580</td>
<td>159%</td>
<td>$9,503,959</td>
<td>239%</td>
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</tr>
<tr>
<td>All US</td>
<td>$9,928,243</td>
<td>$20,221,295</td>
<td>204%</td>
<td>$28,713,613</td>
<td>289%</td>
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<td></td>
</tr>
</tbody>
</table>

Table 5

Summary table of specie accumulation expansion in the United States, grouping by region, from 1830/31 to 1835 and 1836. It should be noted that while all areas show specie accumulation, of the older regions of settlement only New York State shows accumulation greater than the US average, and that much of this may be a change in relative importance thanks to the Erie Canal. When we combine absolute and relative measures, by far the greatest specie accumulation rate appears to be the cotton producing states and those directly upriver that were supplying them - Lousiana, Alabama, Mississippi, Ohio, Tennessee and Kentucky. Data from Van Fenstermaker (1965). In 1830, no records for DE, NJ, OH, TN, FL, MO, AK, IL, IN, MI, WI. In 1831, no records for DE, MD, CT, OH, TN, FL, MO, AK, IL, IN, WI. In 1835 and 1836, no records for AK or WI.
### Loan Growth Across the United States, 1830/31 to 1836

<table>
<thead>
<tr>
<th>Region</th>
<th>Average 1830/1831</th>
<th>To 1835</th>
<th>% Increase</th>
<th>$ Increase</th>
<th>% Increase</th>
<th>$ Increase</th>
<th>% Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Former Southern Colonies:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GA, MD, NC, SC, VA</td>
<td>$24,342,199</td>
<td>$18,715,327</td>
<td>77%</td>
<td>$46,030,904</td>
<td>189%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Cotton South&quot;:</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AL, MS, LA</td>
<td>$8,622,671</td>
<td>$48,005,488</td>
<td>557%</td>
<td>$92,971,272</td>
<td>1078%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Former New England Colonies:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA, NH, CT, RI</td>
<td>$44,555,689</td>
<td>$27,576,913</td>
<td>62%</td>
<td>$41,468,876</td>
<td>93%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Former Middle Colonies, less NY:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NJ, DE, PA</td>
<td>$21,717,555</td>
<td>$16,170,269</td>
<td>74%</td>
<td>$86,142,152</td>
<td>397%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$24,243,882</td>
<td>$48,456,062</td>
<td>200%</td>
<td>$55,304,009</td>
<td>228%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Near Trans-Appalachian:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OH, TN, KY</td>
<td>$1,386,419</td>
<td>$29,768,253</td>
<td>2147%</td>
<td>$37,201,090</td>
<td>2683%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frontier:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME, VT, FL, MO, AK, IL, IN, WI</td>
<td>$3,595,407</td>
<td>$12,538,524</td>
<td>349%</td>
<td>$19,643,719</td>
<td>546%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle Colonies w/NY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$45,961,437</td>
<td>$64,626,331</td>
<td>141%</td>
<td>$141,446,161</td>
<td>308%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All US</td>
<td>$128,463,822</td>
<td>$201,230,836</td>
<td>157%</td>
<td>$378,762,022</td>
<td>295%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6  
Summary table of loan growth in the United States, grouping by region, from 1830/31 to 1835 and 1836. It should be noted that while all areas show loan growth, of the older regions of settlement only New York State and Pennsylvania (1836) show growth greater than the US average. For New York, much of this may be a change in relative importance thanks to the Erie Canal, while for Pennsylvania the relocation of the Second Bank of the United States as a PA state bank seems important. When we combine absolute and relative measures, by far the greatest loan growth appears to be the cotton producing states and the states that were directly upriver and supplying them - Lousiana, Alabama, Mississippi, Ohio, Tennessee and Kentucky. Data from Van Fenstermaker (1965). In 1830, no records for DE, NJ, OH, TN, FL, MO, AK, IL, IN, MI, WI. In 1831, no records for DE, MD, CT, OH, TN, FL, MO, AK, IL, IN, WI. In 1835 and 1836, no records for AK or WI.
<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>Main Office</th>
<th>Losses ('000s £)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1836</td>
<td>Northern and Central Bank</td>
<td>Manchester</td>
<td>443</td>
</tr>
<tr>
<td>1839</td>
<td><em>Manchester and Liverpool</em></td>
<td>Manchester</td>
<td>375</td>
</tr>
<tr>
<td></td>
<td>Imperial</td>
<td>Manchester</td>
<td>Not clear</td>
</tr>
<tr>
<td>1840</td>
<td>Commercial Bank of England</td>
<td>Manchester</td>
<td>~ 500</td>
</tr>
<tr>
<td>1842</td>
<td>Bank of Manchester</td>
<td>Manchester</td>
<td>~ 800</td>
</tr>
<tr>
<td>1847</td>
<td>Royal Liverpool Joint Stock Bank</td>
<td>Liverpool</td>
<td>~ 400</td>
</tr>
</tbody>
</table>

Table 7
A list of major losses and failures, associated with significant mismanagement and/or fraud, among joint stock banks in Lancashire, 1836 to 1847, assembled by the author.
The ratio of bank assets and or bank loans to economic activity in the United States, 1834 to 1914 (following Gorton (2012: Figure 11.7 on page 163)). As can be seen, loans and banking assets hit a peak in 1837, relative to economic activity, that was not regained again until much later, if at all. Bank assets and loans are series Cj252, Cj253 from Carter et al. (2006), Davis index is from Davis (2004), GDP data is from Johnston and Williamson (2015).
Figure 2.
The growth of joint stock banking in England and Wales after 1826. From Thomas (1934) and Matthews (2011) (for private bank mergers)
Figure 3.
The growth of joint stock banking in Lancashire after 1826. From Thomas (1934)
From Newmarch (1851). The increase in bills in England and Wales over 1833-1836 represents a roughly £25-30 million or $125-150 million increase.
Figure 5.
Adapted from Newmarch (1851). Note the rapid increase in all bills, large bills (largely used for foreign or wholesale transactions) and Lancashire region bills.
Figure 6.
The relationship between market interest rate and large bills for the three periods of 1830 to end of 1832, beginning 1833 to second quarter 1836, and third quarter 1836 to 1842. Notice that there is a significant shift outwards in the supply of bills available at any interest rate, strong evidence of an expansion in supply. Overall expansion in supply is roughly £10 million. Regression data supporting the visual evidence can be seen in Table 4. Source: Large bills data from Newmarch (1851: Table XV on page 179). Market interest rate is the Overend and Gurney series for best bills, monthly, averaged by quarter, from Part IV, Section IV, Table 180, page 1437 Gayer et al. (1975: Microfilm supplement)
The expansion of Lancashire bills and cotton market prices. Note that cotton yarn and raw cotton prices move together until roughly 1830, as Lancashire trade credit begins to increase. Sources: Lancashire large bill data from Newmarch (1851: Table XV, page 179). Cotton prices from Gayer et al. (1975: Microfilm supplement, Part IV, Section III, Tables 128 and 129, pages 1270 and 1273).
Figure 8.
Estimated expenditure on raw cotton and cotton twist and yarn in the UK. Note that there is a rapid increase in both expenditures in the 1830 as Lancashire trade credit begins to increase.
Sources: Gayer et al. (1975: Microfilm supplement). Prices from Part IV, Section III, Tables 128 and 129, pages 1270 and 1273, quantities from Part IV, Section I, Tables 4 and 7, pages 883 and 889.
Figure 9.
Estimated expenditure on raw cotton and cotton twist and yarn in the UK, indexed to 1830. Note that at about 1833, raw cotton expenditure jumps much more rapidly than cotton yarn. The burst of expenditure on raw cotton from 1833 to 1836 (i.e., the degree to which that index is above the index for cotton yarn and twist) represents roughly £10 million of spending over 4 years. Sources: Gayer et al. (1975: Microfilm supplement). Prices from Part IV, Section III, Tables 128 and 129, pages 1270 and 1273, quantities from Part IV, Section I, Tables 4 and 7, pages 883 and 889.
Figure 10.
Figure 11.

Per capita bank loans and bank specie for states in 1833. Sources: Bank data from Van Fenstermaker (1965). Population numbers are a straightline interpolation of 1830 and 1840 census data.
Figure 12.
Per capita bank loans and bank specie for states in 1836. There has been significant expansion in specie and lending, with Louisiana in the upper right corner representing the most extreme situation. Sources: Bank data from Van Fenstermaker (1965). Population numbers are a straightline interpolation of 1830 and 1840 census data.
Chi-square values for Granger causality tests on the role of price developments across the cities of New York, Philadelphia, Charleston, New Orleans and Cincinnati. Each line represents the likelihood of a causal role for each city during each period. Thus, the fact that the values for New Orleans are above the 1% critical value for most periods from 1832 to 1843 shows that changes in price levels were extremely likely to originate in that city and then spread to other regions during that period. This reinforces the evidence on bank loans and specie accumulation, suggesting that money and banking developments in New Orleans and the Cotton South were the dominant influence on money and prices in the United States in the 1830s and early 1840s. Source: Cole (1938: Tables 45, 51, 62, 93, 103)
The link between market interest rates and Bank of England reserves from 1824 to 1849, following Matthews (2011: Chart 14a, page 175). There is a much more aggressive response to bullion flows after 1836, and the entire line shifts outwards in 1844. Overall the Bank of England in the late 1840s would likely have kept £10 million more in reserves. Interest rate is the Overend and Gurney series for best bills, monthly, averaged over by quarter, from Table 180, while bullion levels are from Table 153 (From Gayer et al. (1975: Microfilm supplement)).
A Testing For Structural Breaks in the Relationship Between Market Interest and Bullion

For the 1824-1849 period I run multiple tests for structural breaks, using nominal interest. This is done for a regression of market interest on Bank of England bullion in levels,

\[ i_t = \beta_0 + \beta_1 b_t \]

where \( i_t \) is the market interest rate of interest, and \( b_t \) is Bank of England bullion reserves (in '000s of £). I follow the standard approach to testing for an unknown break in time series data (see Stock and Watson (2011: Section 14.7)), looking for a change in constant and slope. The QLR test values are plotted in Figure 15.
F-test values from a Chow tests searching for breaks in a regression of market rate of interest on Bank of England bullion levels. The 5% and 1% QLR statistics for a regression with two restrictions (constant and slope changes) of 5.86 (dashed) and 7.78 (solid) are shown by the horizontal line. The nominal rate peaks at 1836q2 and 1844q4.
Table 8
The link between interest rates and Bank of England reserves 1824-1849. The subperiods (1824-1836, 1836-1844, 1841-1849) are chosen from the Chow break point tests. There is no doubt that in the late 1840s the Bank of England was being much more cautious about bullion reserves. Nominal interest rate is the Overend and Gurney series, while bullion levels are from Table 153 (From Gayer et al. (1975: Microfilm supplement)).
B  Indian Land Cession and Land Sales

Figure 16.
Data on acreage ceded to the United States by Indian tribes combined with data on Land Office sales for 1820 to 1840. As can be seen, the sales are not closely timed with cessions across the US. Source: Lebergott (1985).
Figure 17.
Data, for just the West South Central states (i.e., where the cotton boom was most serious) on acreage ceded to the United States by Indian tribes combined with data on Land Office sales for 1820 to 1840. As can be seen, the sales are not closely timed with cessions in the region. Source: Lebergott (1985).