

THE PAST MIRROR: NOTES, SURVEYS, DEBATES

Banking crises and the international monetary system in the Great Depression and now¹

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We identify similarities and differences in the scale and nature of the banking crises in 2008–9 and the Great Depression, and analyse differences in the policy response to the two crises in light of the prevailing international monetary systems. We find that the scale of the banking crisis, as measured by falls in international short-term indebtedness and total bank deposits, was smaller in 2008–9 than in 1931. However, central bank liquidity provision was larger in the flexible exchange rate environment of 2008–9 than in 1931, when it had been constrained in many countries by the gold standard.

Keywords: banking crisis, international monetary system, Great Depression, central bank liquidity

JEL classification: E58, F33, N1

I

The global financial crisis of 2008–9 was a rare event; there had been no financial crisis of global scope since 1931. The 1931 crisis led to disaster, in the intensification and globalisation of the Great Depression, and all its associated evils. Our purpose in this article is to compare the crises of 1931 and 2008–9, in order to identify similarities and differences, both in the scale and nature of the crises and in the central banks' policy response.

We concentrate on the banking crises, and ignore 'real economy' data.² It is now widely agreed that the contraction of liquidity caused by bank failures was largely

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² See Almunia *et al.* (2010) on the latter.

responsible for the propagation and intensification of the Great Depression.³ On that view, understanding the banking crises and how they were managed is important in itself. Our understanding is, however, constrained by the availability of data, especially as regards the 1931 crisis.

Bordo and James (2010) discuss the analogy between the recent recession and the Great Depression. They conclude that the most important lesson from the Great Depression concerns ‘the avoidance of the monetary policy error of not intervening in the face of banking crises’, which is ‘a lesson that has been in the main learnt’, and note that in the early 1930s, the gold standard inhibited the kind of monetary policy intervention that the economic situation required.

We compare the scale of the two crises in Section II. We discuss official reactions to the crises in Section III, and factors behind the differences in official reactions in Section IV. Section V concludes.

II

There is no satisfactory single measure of a financial crisis. For example, a crisis which might have had massively adverse effects if inadequately managed may nevertheless have only small effects if it is well managed. In other words, there is an inescapable inverse relationship between the observed scale of a crisis and the skill with which it is handled. All we can do is to compare observable measurements of the two crises, recognising that we cannot separately identify the effects of the original shocks and of the efforts made to contain them. Indeed, we could not confidently specify exactly what the original shock was in each case.

We look at two observable indicators: short-term international credit and total bank deposits, both domestic and external. The choice is partly dictated by the limitations on the availability of data.

The scale of the withdrawal of short-term international credit during the Great Depression is shown in Table 1. Short-term international indebtedness decreased by 36 per cent from CHF 70 billion to CHF 45 billion during 1931.

Conolly (1936) accounts for the fall of CHF 25 billion in short-term international debts during 1931. He attributes CHF 3.5 billion to depreciation of currencies; CHF 6.5 billion to liquidation of central bank reserves of gold and foreign exchange; CHF 5 billion to relief credits granted by central banks and others; and the remaining CHF 10 billion to other factors. Excluding the amount due to depreciation of currencies,

³ Friedman and Schwartz (1963) presented a monetary interpretation of the Great Depression. Bernanke and James (2000) presented empirical evidence from the Great Depression that industrial production was much weaker in countries which had experienced banking panics than in those which had not, indicating the importance of banking panics in propagating the depression. In a similar vein, Ritschl (2009) asserts that the Great Depression analogue of the collapse of Lehman Brothers in September 2008 was the collapse of Creditanstalt in Vienna in the summer of 1931, not the stock market crash of 1929.

Table 1. *Gross amount of short-term international indebtedness (gross liabilities) of the United States and European countries,^a in billions of Swiss francs*

End of	Total ^b	External liabilities of the UK ^c	External liabilities reported by banks in the United States ^d
1930	70	18	12
1931	45	7	7
1932	39	8	4
1933	32	9	1

^aThe table reports liabilities of the United States and European countries, but Conolly (1936) comments that ‘although this estimate applies only to Europe and the USA, it may be taken to represent very little short of the world total’. Conolly probably compiled the data himself.

^b4th BIS Annual Report 1933/4. ^cWilliams (1963), and United Kingdom (1951). The UK data include banks’ net external liabilities, and British government securities held by UK banks for overseas account. ^dBoard of Governors of the Federal Reserve System (1976) table 161, ‘Short-term foreign assets and liabilities reported by banks in the United States’. The reported external liabilities of the UK and the USA have been valued in Swiss francs using exchange rates derived from League of Nations Statistical Yearbook 1936/7. The data in column (1) are not consistent with the data in columns (2) and (3), which are of later vintages and from different sources.

short-term international indebtedness of the United States and European countries decreased by CHF 21.5 billion, or 30.7 per cent, during 1931.

As Table 1 shows, the fall in short-term international indebtedness continued after 1931. Deleveraging in international short-term credit markets went on into 1933, and by the end of 1933 the amount outstanding had fallen by 54 per cent in Swiss franc value from the end of 1930. Switzerland remained on the gold standard until 1936; international indebtedness measured in dollars, for example, fell by 29 per cent in 1931–3.

In one important respect these figures understate the fall in short-term international indebtedness during the 1930s. In many cases, the resolution of the financial problems of commercial banks included so-called ‘standstill agreements’ with creditors, under which creditors agreed not to demand immediate repayment. Thus many short-term debts became, in substance if not in form, longer-term debts and were no longer liquid.

For the 2008–9 crisis, BIS data on international banking and securities markets can be used to estimate the fall in international short-term indebtedness, which is taken to mean the total of international bank deposits and international debt securities outstanding with maturity up to one year. The relevant data are shown in Table 2.

The fall in total international short-term indebtedness from the peak (at the end of 2008Q1) to the end of 2009Q4 was \$4,792 billion, or about 14 per cent of the peak

Table 2. *International short-term indebtedness, 2008–9 (in \$ billions)*^a

	At end quarter	Change during quarter (partly adjusted for exchange rate changes)
2007Q4	30,876	
2008Q1	33,570	+1,567
2008Q2	32,481	-1,008
2008Q3	30,991	-147
2008Q4	28,294	-1,845
2009Q1	26,810	-957
2009Q2	27,405	-276
2009Q3	27,726	-62
2009Q4	27,075	-497
2010Q1	26,738	+316
2010Q2	25,877	-98

^aIncluding international bank deposits and international debt securities with maturity up to one year.

Sources: BIS locational international banking statistics table 3A, BIS international securities statistics tables 14A and 17B. See Moessner and Allen (2010) for further details on the data in this and other tables.

level of indebtedness.⁴ On this measure, the contraction was much smaller than in 1931. Moreover, there are no significant standstill agreements in operation.

The two crises are compared in Figure 1, which shows the fall in international short-term indebtedness from the peak level.

While data on international short-term indebtedness measure the international aspects of the two banking crises, international banking is only part of the totality of banking. Total commercial bank deposits provide another measure of the two crises.

Total commercial bank deposits fell in every country included in Table 3 in 1931, and they fell by very large percentages in Germany, Hungary and (over 1931 and 1932) Austria, where there were very serious problems of bank solvency in 1931. The widespread falls recorded in 1931 were only the beginning, and they were followed in most countries by further falls in 1932 and 1933.

As regards the recent crisis, Table 4 shows percentage changes in the domestic-currency value of deposits with commercial banks by country of location in the years

⁴ International debt securities with maturity up to one year include both money market instruments and longer-term debt securities with a residual maturity of less than a year (e.g. Eurobonds).

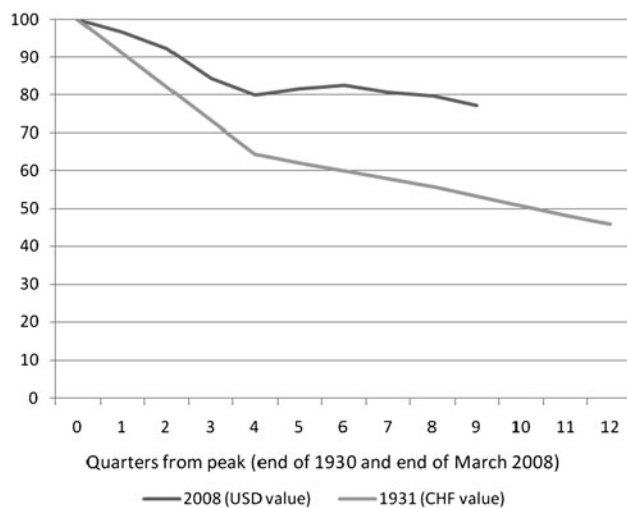


Figure 1. *International short-term indebtedness: the crises compared*

Table 3. *Commercial bank deposits 1930–3*

	Stock of deposits at end of 1930 (USD million)	Percentage changes in:		
		1931	1932	1933
USA	44,679	-8.4	-22.8	-11.8
Canada	2,487	-4.7	-5.2	-0.1
UK	11,236	-7.5	+12.8	-1.5
Austria	452		-47.3 ^a	-14.3
France	1,942	-3.1	-2.4	-11.8
Germany	3,746	-25.6	-11.5	-5.5
Hungary	335	-16.1	-7.5	+1.1
Italy	2,430	-12.1	-8.3	-2.5
Poland	159	-30.3	-7.7	-6.4
Spain	1,442	-18.0	+5.2	+2.9
Switzerland	2,865	-3.3	-9.4	+2.0
Japan	4,316	-5.6	-0.5	+7.3
India	775	-7.1	+10.3	+1.6
Argentina	3,817	-11.1	+0.2	-1.6

^aChange in 1931 and 1932. Data for end 1931 are not available.

Source: League of Nations, Statistical Yearbook 1933–4, table 106 (exchange rates at the end of 1929); Statistical Yearbook 1936–7, table 129 (commercial bank deposits in national currencies).

Table 4. *Changes in bank deposits in and around the 2008-9 financial crisis (percentage changes measured in national currencies)*

Country	Total deposits at end 2007 (US\$ billion)	Percentage change in bank deposits		
		Sep 2007 – Aug 2008	Sep 2008 – Aug 2009	Sep 2009 – Aug 2010
USA	6,714	+7.8 ^a	+9.3 ^b	+4.6 ^c
Canada	1,604	+9.5	+0.2 ^d	N/A
Euro area	13,209	+10.1	+4.7	+3.1
UK	11,063	+3.2	-6.5	0.0
Switzerland	1,155	-9.7	-1.1	-2.5
Denmark	221	+6.9	-0.2	+1.3
Iceland	47	+30.8	N/A	N/A
Russia	428	+32.9	+14.5	+21.2
China	5,251	+15.8	+29.0	+19.4
Hong Kong	752	+6.8	+10.8	+3.3
Japan	4,956	+2.0	+1.6	+1.8
Korea	680	+14.7 ^e	+14.0 ^e	+8.4 ^e
Singapore	931 ^f	+10.3	-6.4	+5.4
India	760 ^g	+22.0 ^h	+20.5 ⁱ	+15.0 ^j
Australia	1,381	+18.4	+6.6	+4.7
Brazil ^k	430	+33.9	+17.4	+7.3
Mexico	201	+12.0	+12.1	+11.5

^a29 August 2007 – 27 August 2008. ^b27 August 2008 – 26 August 2009. ^c26 August 2009 – 1 September 2010. ^dSeptember-December 2008 only. Comparable data are not available beyond the end of 2008. ^eYear beginning end September. ^fNon-bank deposits with DBUs and ACUs, and non-resident interbank deposits with ACUs. ^gAs at 4 January 2008. ^h³¹31 August 2007 – 29 August 2008. ⁱ29 August 2008 – 28 August 2009. ^j28 August 2009 – 27 August 2010. ^kThe data relate to 'deposit money banks'.

Sources: National data.

September 2007 – August 2008, September 2008 – August 2009 and September 2009 – August 2010 (i.e. in the years just before and after Lehman Brothers failed).

The change in the domestic currency value of total deposits between two dates reflects not only the flow of deposits, but also the change in value of foreign currency deposits as at the start date that is accounted for by changes in exchange rates. In countries where foreign currency deposits are significant, these valuation effects can be important. Where possible, we have adjusted the data so as to exclude them. In cases where it has not been possible, owing to absence of data, but where we think that the effects of exchange rate changes are likely to be significant, we have italicised the data in Table 4.

Table 5. *Significant falls in bank deposits in 2008-9 (percentage changes measured in national currencies)*

Country	Date of peak deposits (end month)	Date of maximum outflow (end month)	Cumulative outflow as % of peak deposit level
UK	Mar 2008	Jul 2010	- 11.5
Switzerland	May 2007	Sep 2010	-15.7 ^{a,b}
Russia	Aug 2008	Nov 2008	-5.4
Hong Kong	Oct 2007	Aug 2008	-7.8
Singapore	Jul 2008	Feb 2009	-11.8 ^c

^aLiabilities to customers. ^bThe cumulative outflow had already reached -15.3% at the end of December 2009. ^cNon-bank deposits and interbank funds raised by Asian Currency Units from outside Singapore.

In contrast to 1931, in 2008-9 there was no generalised fall in bank deposits. There were significant falls, defined as a fall which either persists for at least three consecutive months or whose cumulative magnitude exceeds 5 per cent, only in the UK, Russia, Switzerland, Hong Kong and Singapore⁵ among the major economies. These falls are listed in Table 5, which shows changes in bank deposits from the pre-crisis local peak to the date of maximum outflow; some of these falls do not show up in the yearly changes recorded in Table 4.

Although the five outflow countries included four large international banking centres, the falls in deposits that occurred in 2008-9 were not nearly as widespread, or as large, as they were in 1931. This is likely to have been largely owing to the existence of deposit insurance schemes, which were strengthened in a number of countries in the recent crisis to help prevent bank runs (see Section IV).

The country whose banks fared worst was Iceland, where foreign deposits were immobilised in October 2008. However, total deposits in Icelandic banks were relatively small. In some countries, such as the United States, deposit growth was stronger in the year after the Lehman failure than in the year before.

An important difference between 1931 and 2008 was the practice of liability management, developed in the 1970s, in which commercial banks determined the size of their balance sheets by reference to their desired asset levels, making good any shortfall in funding by borrowing in wholesale deposit markets, generally from other banks (Battilossi 2010). Wholesale deposits, especially interbank deposits, are likely to be volatile in a generalised liquidity crisis, and in this respect the financial markets of 2008 were perhaps less stable than those of 1931, when interbank deposits were few.

On our second metric, total bank deposits, the recent crisis also appears to have been less severe than that of 1931. However we should add that there are other

⁵ The data for Singapore do not distinguish between deposits and other bank liabilities, so it is not possible to be sure that there was an outflow of deposits there.

possible ways of measuring a liquidity crisis, such as the extent of drawings on pre-committed loan facilities; some countries were affected by the recent crisis even though bank deposits continued to rise.

III

This section presents measures of the injection of liquidity by central banks in a wide range of countries in 1931, which are directly comparable to measures of liquidity provision in the crisis of 2008–9 that are also presented in this section.

During the nineteenth century, there were periodic banking crises in gold standard countries, apparently caused by over-exuberant credit expansion. However, rather than leaving the price-specie flow mechanism to do its corrective work undisturbed, the local central banks came to act as ‘lenders of last resort’ by providing emergency liquidity assistance as required, in order to offset the outflow of gold and thereby contain the economic consequences of the banking crisis.

By providing liquidity in this way, the central banks risked violating their legal obligation to maintain gold backing for their liabilities. They typically contained the risk by increasing their discount rates, consistent with the ‘rules of the game’. However, the residual risk, when significant, was reduced by international borrowing to supplement the central bank’s gold reserves and thereby decrease the likelihood of a conflict, or by an assurance from the government that the central bank would be temporarily relieved of its gold standard obligation by law if necessary. In both cases the resolution was temporary only. The effectiveness of these devices depended on the belief that the crisis was temporary.

The devices did not work in 1931. If a central bank’s gold holdings were close to the legally prescribed minimum, then it could not lend to commercial banks with liquidity problems (or indeed to anyone else) without breaking the rules. In the prevailing circumstances, with large commercial banks failing in several countries where gold reserves were only modest, a suspension of the rules could not have been credibly represented as temporary. This made it impossible for many central banks to provide liquidity to domestic commercial banks while remaining on the gold standard. As Eichengreen (1995, p. 393) remarks, ‘Even the provision of liquidity to a banking system in distress might cast doubt over the official commitment to gold, prompting the transfer of bank deposits out of the country and aggravating the problem of domestic financial instability.’

Official international liquidity provision was subject to the same gold constraint as the provision of liquidity to domestic banking systems, and it was further hampered by political obstacles. Austria was the first country to experience a banking crisis in 1931, with the collapse of Creditanstalt, which was the country’s largest commercial bank.⁶

⁶ For an impression of the importance of Creditanstalt to the Austrian economy, see Mosser and Teichova (1991). Gil Aguado (2001) provides evidence that the Austrian National Bank had known of Creditanstalt’s difficulties for a long time and had been providing covert financial support since 1929.

After some delay, an international loan was extended to Austria to finance liquidity support to the banking system, but it was insufficient. A second loan might have prevented further contagion, but, as Toniolo (2005) reports, the negotiations were contentious, and the second loan was not made; political differences between France and Austria were a major obstacle. France was gold-rich and its participation in the loan was very important. And the United States, which had \$4.2 billion of gold reserves at the end of 1930, or 38 per cent of the world total, provided only \$356 million in official international loans during 1931.⁷

According to BIS estimates, emergency help granted during 1931 to debtor countries by central banks, the BIS, principal capital centres and by Treasuries amounted to around CHF 5 billion⁸ (BIS 1932), which was roughly 7 per cent of the total amount of international short-term indebtedness of the United States and European countries at the end of 1930 (see Table 1).

It had been recognised since the end of World War I that gold supplies would be less ample relative to demand than they had been before the war, mainly because the price level had risen during the war. Measures had therefore been taken to economise on gold. Gold coins had been withdrawn from general circulation and gold was concentrated on central bank reserves. And increasingly official international reserves were held in foreign currencies as well as gold. This latter expedient did not survive for long, however. By the end of 1932, foreign exchange holdings of central banks had fallen to 25 per cent of the amount before the outbreak of the crisis in spring 1931 (BIS 1933). The reduction in net foreign exchange holdings of central banks was accomplished in two ways, according to the BIS. First, countries which had short-term international debts used foreign exchange reserves to meet foreign payments; the BIS estimates this to have amounted to around CHF 2.5 billion. Second, central banks converted foreign exchange into gold for around CHF 5 billion, according to the BIS estimates (BIS 1933). In addition, the value in gold and gold-linked currencies (including the Swiss franc) of foreign exchange reserves held in sterling and other currencies that left the gold standard during the period will have fallen.

The build-up of foreign exchange reserves in the 1920s added to the supply of credit in those countries in whose currencies the foreign exchange reserves were denominated. Conversely, the 1931–2 conversions of foreign exchange reserves into gold, and their use to make payments in place of gold, will have reduced the supply of credit in the countries in whose liabilities the reserves had been held, and aggravated the effects of the banking crisis. Central bank reserve management thus acted pro-cyclically, strengthening the boom and intensifying the downturn.

⁷ Authors' calculation, based on Toniolo (2005) table 4.1 (loans organised through or with the participation of the BIS) and Sayers (1976) appendix 22 (loans to the UK).

⁸ We do not know how the BIS calculated this amount.

We measure the liquidity that central banks supplied to their domestic economies in 1931, whether by purchases of gold, purchases of other assets, or lending. The available data are stocks of gold,⁹ and, separately, of foreign exchange, held by central banks at the end of each year, and the total of discounts, loans and advances, and holdings of government securities ('domestic paper assets') held at the end of 1930 and of 1931.¹⁰ We assume that the liquidity supplied by each central bank was equal to the change in gold and foreign exchange holdings, less any revaluation effects, plus the change in the total of domestic paper assets. The liquidity supplied by each central bank is measured in its domestic currency. We use three different methods to compare and aggregate the amounts supplied by various central banks, as shown in Table 6.

In some countries, such as Austria, Germany and Hungary, banking crises made it imperative for the central bank to commit large amounts of funds to bank rescues. In each case, there were substantial outflows of gold and foreign exchange from the central bank and the country imposed exchange controls to limit the outflow. Other countries, such as the UK, abandoned the gold standard to escape the risk of a banking crisis, according to James's (2001, ch. 2) plausible interpretation, as well as to avoid raising interest rates and thereby worsening the depression. Even so, bank deposits fell in the UK in 1931, and the central bank's assets did not grow. For countries that remained on the gold standard, the restrictions it imposed obstructed the pursuit of financial stability in a period of turmoil. Other countries (e.g. France, the Netherlands and Switzerland) gained gold reserves during 1931, though in each case the gain was partly offset by a fall in foreign exchange reserves. As Table 6 shows, their domestic paper assets changed little during the year. They did not sterilise the gold inflow, but they did not significantly expand their domestic assets, though their discount rates were maintained at levels well below those of the countries which were losing gold.

The result was that the expansion of central bank assets was only moderate during 1931. As Table 6 shows, liquidity provision amounted on average to 3.8 per cent of the stock of identified central bank assets as at the end of 1930, or to 1.0 per cent of the stock of commercial bank deposits as at the end of 1930.

During the recent crisis liquidity was provided on a large scale. Central bank balance sheets expanded enormously, reflecting the supply of both domestic and international liquidity. The range of assets that central banks were willing to accept as collateral for loans was in some cases greatly widened (BIS 2009, ch. VI, graph VI.5). And the range of financial institutions that received support was also widened in some countries, notably the United States. Issues related to expanded liquidity support by central banks during the recent financial crisis are discussed in Turner (2010).

⁹ The Bank of Spain also held silver reserves. We have added them to foreign exchange.

¹⁰ The data were published in the League of Nations Statistical Yearbook, various issues.

Table 6. *Changes in central bank assets in 1931^a*

Country	As % of central bank gold, foreign exchange and domestic paper assets at end 1930			Total change in gold, foreign exchange and domestic paper assets as % of			Status
	Gold	Foreign exchange	Domestic paper assets	Gold, foreign exchange and domestic paper assets of central bank at end 1930	Commercial bank deposits at end 1930	GDP in 1931	
Canada	-2.9	0	-1.1	-4.0	-3.4	-1.8	Off gold 19/10/1931
USA	-3.1	0	+8.1	+4.9	+0.6	+0.4	
Japan	-22.1	0	+15.7	-6.4	-1.4	-0.9	Off gold 13/12/1931
Germany	-21.5	-15.5	+32.3	-4.8	-3.0	-0.5	Exchange control 15/07/1931
Austria	-2.0	-52.3	+61.7	+7.4	+2.9		Exchange control 09/10/1931
France	+15.1	-4.7	+1.5	+11.9	+23.9	+3.2	
Hungary	-10.5	-7.4	+22.8	+4.9	+1.5		Exchange control 17/07/1931
Italy	+2.6	-12.1	+5.3	-4.1	-1.8	-0.6	
UK	-7.2	0	+3.0	-4.2	-1.0	-0.5	Off gold 21/09/1931
Brazil	-8.4	-4.4	+17.7	+4.9	+1.8		Devalued in 1929; exchange control 18/05/1931
Chile	+6.9	-31.3	+17.7	-6.8	-3.1		Exchange control 30/07/1931
India	+8.0	-12.4	-4.1	-8.5	-6.7		Off gold 21/09/1931
Denmark	-8.7	-19.5	+12.8	-15.5	-3.2		Exchange control 18/09/1931; off gold 29/09/1931

Continued

Table 6. *Continued*

Country	As % of central bank gold, foreign exchange and domestic paper assets at end 1930			Total change in gold, foreign exchange and domestic paper assets as % of			Status
	Gold	Foreign exchange	Domestic paper assets	Gold, foreign exchange and domestic paper assets of central bank at end 1930	Commercial bank deposits at end 1930	GDP in 1931	
Spain	-4.7	+0.1	+14.4	+9.9	+12.5		Devalued in 1920; exchange control 18/05/1931
Netherlands	+55.6	-19.3	-0.5	+35.8	+20.3	+5.2	
Poland	+2.0	-11.1	+3.5	-5.6	-7.2		
Switzerland	+120.4	-25.0	-2.7	+92.7	+8.4		
Weighted average ^b				+3.8	+1.0		

^aFor each country, the table shows, in the first and second columns, the change in the domestic-currency value of the central bank's gold and foreign exchange reserves, respectively, and in the third column, the change in its discounts, loans and advances, and holdings of government securities (domestic paper assets). In each case, the changes are shown as a percentage of total gold, foreign exchange and domestic paper assets as at end 1930. In countries whose currencies depreciated in 1931, the change in gold holdings has been adjusted so as to exclude the increase in the domestic currency value of the stock of gold held at the end of 1930. ^bWeighted by the dollar value of each central bank's gold and paper assets, or each country's commercial bank deposits, respectively, at end 1930.

Sources: Exchange rates and gold and foreign exchange holdings: League of Nations Statistical Yearbook 1936/37, tables 119, 122 and 123. Domestic paper assets: League of Nations Statistical Yearbook 1931/32, table 125.

Central bank assets increased particularly fast after the failure of Lehman Brothers on 15 September 2008 and the subsequent freezing-up of financial markets (see Table 7). Some salient features are: (i) the amounts of liquidity provided were much larger than in 1931; (ii) countries which are relatively large financial centres tended to provide larger amounts of liquidity (e.g. the USA, the UK, Switzerland, Hong Kong); and (iii) of the countries in the table, only Iceland was driven to impose exchange controls to protect its banks from unfinanceable deposit withdrawals.

Central bank reserve management policies appear to have been pro-cyclical in recent years, as they were in the 1920s and early 1930s, and to have added to foreign-currency liquidity shortages in 2008–9. Pihlmann and van der Hoorn (2010) estimate that, after a period in which they had been willing to take increasing amounts of risk in pursuit of additional returns, reserve managers pulled out at least the equivalent of US\$500 billion of deposits and other investments from the banking sector after August 2007, mainly in an effort to protect their investments from default risk. On plausible assumptions, the unsecured deposits withdrawn from commercial banks by central bank reserve managers will have largely been replaced

Table 7. *Changes in central bank assets in 2008–9*

Country	Change in central bank assets in year beginning end August 2008		
	As % of central bank assets as at end August 2008	As % of commercial bank deposits at end 2007	As % of GDP in 2008
Canada	37.8	1.3	1.3
USA	125.1	17.5	8.1
China	9.7	5.0	6.1
Japan	6.6	1.3	1.4
Korea	22.3	11.1	6.9
India	0.8	0.4	0.2
Singapore	5.2	0.8	4.9
Australia	2.8	0.2	0.2
Russia	4.8	6.9	1.8
Euro area	25.7	4.1	4.1
UK	136.2	2.0	8.8
Switzerland	67.8	6.0	16.5
Denmark	23.0	9.1	5.9
Iceland	58.1	14.7	31.0
Brazil	22.7	22.0	5.7
Mexico	34.9	19.2	3.5
Hong Kong	36.7	8.8	30.8
Weighted average	28.5	5.5	5.4

Source: National data.

by secured loans provided by the home central banks of the commercial banks concerned.

The central banks' response to the widespread shortages of foreign-currency liquidity was to set up swap facilities so that the home central bank of the currencies in short supply could provide those currencies to the commercial banks outside the home country that needed them. Alternatively or additionally, some central banks (e.g. in Brazil and Korea) used some of their own foreign exchange reserves to provide foreign-currency liquidity, converting them into the required currency if necessary by means of market transactions (see Allen and Moessner 2010). The most heavily used swap network was established by the Federal Reserve. At its peak, on 4 December 2008, the Federal Reserve swap network provided \$586.1 billion in US dollars to other central banks. Swap lines could be set up quickly without the need for extensive negotiation, and could draw on experience with the use of swap lines in the past (see Toniolo 2005).

In addition to the additional liquidity provided by central banks, which may have amounted in total to around \$2.7 trillion,¹¹ governments in many countries facilitated banks' acquisition of liquid assets by providing (in exchange for a fee) guarantees of bonds issued by banks. The total of such bond issues between October 2008 and May 2009 was about EUR 700 billion, or roughly \$1 trillion (Panetta *et al.* 2009, p. 49 and graph 3.1).

IV

This section analyses the differences between the experiences of 1931 and 2008, and considers why the monetary policy responses to the two crises differed. As Section III shows, liquidity creation by central banks was much less inhibited in 2008 than it had been in 1931, and, at the time of writing, it seems to have been much more effective.

In 1931, adherence to the gold standard proved to be incompatible with the pursuit of reasonable domestic economic objectives. Economic historians have debated extensively why this was so. Some cite a global supply of gold which was insufficient to support economic activity after the inflation of World War I. Eichengreen (2008, p. 62) points out that 'the ratio of central bank gold reserves to notes and sight (or demand) deposits dropped from 48 percent in 1913 to 40 percent in 1927'.

Some economic historians also blame the distribution of gold among central banks and the behaviour of the gold-rich countries (Bordo and Eichengreen 2001); France had 19 per cent of world gold reserves at the end of 1930, and the United States had 38 per cent.¹² They point out in particular that the Banque de France did not recycle the very large amount of gold that it had acquired after France had returned to the gold

¹¹ This is calculated as 28.5% (see Table 7) of the total dollar value of the assets of the central banks of the countries listed in Table 7 as at the end of August 2008, which was \$9.7 trillion.

¹² Authors' calculations from League of Nations Statistical Yearbook 1936/37, table 123.

standard in 1926 at a depreciated parity, either by substantial expansion of its domestic assets or by international lending. Bernanke and James (2000) and Eichengreen (1995) say that the Banque de France lacked the legal power to engage in expansionary open-market operations, as a result of a law adopted in 1928, but Mouré (1991, p. 143) has his doubts about this point.

The United States, too, has been widely criticised for pursuing too restrictive a monetary policy (Bordo, Choudri and Schwartz 2002). Warburton (1952) makes a different point, namely that the Fed aggravated the depression by its choice of assets, specifically by rejecting risky assets. Kindleberger (1987) claims that the gold standard malfunctioned because no country was both willing and able to play a leadership role in the crisis.

Whatever the merits of the criticisms that France and the United States hoarded gold during the later 1920s and 1930, international flows of funds in the year 1931 in particular were highly volatile, and the risk that they would be reversed in short order was high. It would surely have been imprudent for any central bank receiving 'hot money' inflows to place the funds in anything but highly liquid assets, if it was committed to the gold standard. Irwin (2010) is particularly critical of the Banque de France's actions in 1931 and 1932, but in view of the volatility of capital flows in those years, this aspect of his criticism seems overstated. It is clear that the reactions of central banks to the banking crisis were modest, and, in the light of the results, manifestly inadequate. In many cases, the constraints of the gold standard inhibited adequate easing of monetary policy. As a result, 'the gold standard – working through an international financial panic – transmitted and intensified the Great Depression' (Temin 1993).

By contrast, in 2008 the international monetary system did not inhibit countries from pursuing policies directed at achieving their domestic economic objectives. In particular, in nearly every country, there was no obstacle to large-scale liquidity provision by central banks.

Economic fundamentals. We have not discussed the fundamental causes of the two banking crises. Quite possibly, the fundamental disequilibria present in 1931 were so great that no amount of liquidity provision by central banks could on its own have prevented a crisis. At that time, the international financial scene was still dominated by unsettled issues related to war reparations. Moreover, the successor states of the Austro-Hungarian Empire, notably Austria itself, had not fully adjusted to their new situations (Brown 1940, pp. 923–6). Nevertheless, there has for many years been a consensus that the Great Depression was avoidable, and that more expansionary macro-economic policies, whether fiscal or monetary, could have prevented it, or at least contained it and turned it into a much less serious recession. More generous liquidity provision by central banks would certainly have been an essential part of such a policy programme.

At the time of writing in early 2011, it is too soon to say whether the policy measures that have been taken during the recent crisis will enable the world

economy to return to sustainable growth rates comparable with those that prevailed before the crisis. Nevertheless, large-scale liquidity provision by central banks has been a necessary component of the policy programmes pursued to support economic activity after the recent financial crisis.

The scale of the liquidity problem. Our measurements show clearly that the contraction of international lending and of bank deposits was considerably smaller in 2008–9 than in 1931. This does not, however, necessarily imply that the initial disturbance was smaller. It is possible that the initial disturbance was as large or even larger, but that the policy reaction was more effective by a sufficient margin that the financial contraction was smaller, and that the real-economy effects of the initial disturbance were better contained.

Existence of deposit insurance and guarantees. The falls in deposits in 2008–9 were not nearly as widespread, or as large, as in 1931. This is likely to have been largely owing to deposit insurance, which did not exist in 1931,¹³ and which was strengthened in several countries in the recent crisis to help prevent bank runs (Reserve Bank of Australia 2009, pp. 43–6). In addition, bonds issued by banks were effectively protected in many countries during the recent crisis. However, there is a danger that deposit guarantees issued by governments could lose credibility if their countries' fiscal positions were to deteriorate strongly. If that were to happen, deposit flight could be triggered despite the existence of deposit guarantees.

No binding constraint on central bank liquidity provision. In 1931, central bank liquidity provision was constrained by the gold standard. The countries in which domestic imperatives compelled large amounts of liquidity provision were relatively short of gold, and standstill agreements and exchange controls had to be imposed to contain the resulting outflow of gold. Other countries left the gold standard to avoid the conflicts it created with their domestic objectives.

The gold standard constrained international liquidity provision just as it did liquidity provision to domestic borrowers. International initiatives to provide assistance to the countries worst affected by the crisis were unsuccessful. For example, international lending to Austria in 1931 was wholly inadequate in timeliness and scale (Toniolo 2005, pp. 90–6). One of the main difficulties was that the prospective lenders, such as the United Kingdom, were concerned that lending to Austria would weaken their own defences against the financial crisis.

By contrast, in the recent crisis, there was no comparable constraint on liquidity creation by central banks. This was evident in both the speed and the scale of liquidity provision. In most countries, the required funds were provided quickly, so that they

¹³ The first federal deposit insurance scheme was introduced in the United States in 1933. See Calomiris (2010).

contained the crisis in its early stages and provided reassurance that the authorities had no doubts about providing liquidity.

The amounts of liquidity provided in the two crises, measured according to the three methods described in Section III, can be measured by comparing Tables 6 and 7. These data include provision of liquidity to both domestic and external borrowers. The amount provided in 2008–9 was $5\frac{1}{2}$ to $7\frac{1}{2}$ times as much as in 1931, depending on the choice of scale. In the recent crisis, it was clear that more would have been provided if more had been needed. In the international field, nothing illustrates the difference between 1931 and 2008 more clearly than the fact that the swap lines extended by the Fed to the ECB, the Bank of England, the Swiss National Bank and the Bank of Japan were unlimited as to amount after 13–14 October 2008.

Size and distribution of reserves. Total gold and foreign exchange reserves at the end of 1930 were \$13.4 billion, or roughly 100 per cent of total short-term international indebtedness, according to the BIS estimate. At the end of 2007 they were \$7,483 billion, or about 24 per cent of total short-term international indebtedness, as estimated in Table 2. Therefore reserve stocks in 1931 were much larger in relation to international indebtedness than in 2008.

Even if reserve stocks in 1931 appeared substantial according to this criterion, they were in the wrong places. The countries that most needed reserves, such as Austria, Germany and the UK, did not have enough; while those that had plenty, such as France, the Netherlands, Switzerland and the USA, had more than they needed.

In 2008, as in 1931, reserves were concentrated in the places where they were least needed. For example, China accounted for over a quarter of the world's official reserves, but was little affected by the crisis. And some of the international banking centres which, in the event, needed international liquidity most, had only small reserves of their own. For example, the UK's reserves were only \$41.7 billion at the end of August 2008.

The provision of swap facilities, by the Federal Reserve in particular, rendered reserve adequacy wholly irrelevant for countries receiving swap lines. Countries which had swap lines were able to provide the necessary foreign currency liquidity to their banks by drawing on them and in most cases left their own reserves entirely untouched.

Reserve management. One common feature of the two banking crises is that, in each case, central bank reserve management appears to have acted pro-cyclically (as discussed in Section III), adding to the supply of credit during the boom and subtracting from it during the downturn. In this respect, central banks contributed to the liquidity problems in a similar way to commercial market participants.

Politics and international leadership. The European political scene in 1931 was overshadowed by post-war tensions. Those tensions set back the chances of official

international co-operation containing the effects of the banking crisis (see, for example, the Austrian loan issue described in Section III). Moreover, as Kindleberger (1987) pointed out, isolationist attitudes prevented the United States from providing the leadership that might have resolved the crisis.

By contrast, there were no political obstructions to the provision of necessary swap lines in 2008. Moreover, the United States perceived that it was in its own interest to provide liquidity freely to other countries, accepting that there were some financial and other risks and despite some opposition within Congress.¹⁴ It seems likely that had the Fed not acted as it did, global financial instability would have been much more serious, and the recession would consequently have been deeper. Had the political climate been less benign, or had the United States adopted an isolationist attitude, the global crisis would surely have been a great deal worse than it actually was.

V

The gold standard limited the amount of credit that central banks could create; that was its purpose. In the nineteenth century, central banks developed techniques which enabled them to protect their economies from the harshest aspects of its automatic workings. Those techniques failed to work in 1931. The constraints imposed by the gold standard on liquidity creation made it impossible for central banks to provide liquidity sufficient to contain the global crisis. At the same time, in the countries where large banks got into distress, domestic imperatives dictated that liquidity be provided to support them and try to contain the fall in economic activity. Official international lending was obstructed by political obstacles, and more generally by the fact that no country was both willing and able to provide liquidity to others on a scale commensurate with the problem. The result was that the gold standard, the international monetary system of the time, was destroyed. Some countries imposed exchange controls to prevent gold outflows, while others allowed their exchange rates to float. Exchange controls, the standstill agreements imposed on some international short-term debts, and the spread of protectionism all caused output and employment to become further depressed as the 1930s wore on.

By 2008, lessons had been learned from the experience of the Great Depression. Deposit insurance protected commercial banks in most countries from outflows of deposits. In some countries, governments strengthened deposit guarantee schemes during the crisis. In addition, managed currencies and flexible exchange rates enabled central banks to create new liquidity freely, and thereby limit the spread of the crisis. Perhaps most importantly, there was a widespread understanding that the main priority of central banks in a banking crisis was to provide liquidity freely.

Moreover, political conditions were fortuitously not such as to inhibit international lending, and, despite some Congressional resistance, the Federal Reserve, in the enlightened pursuit of the United States' interests, provided large amounts of

¹⁴ For a comprehensive discussion, see Allen and Moessner (2010, section 9).

dollars to support the global banking system through swap lines. The result seems, at the time of writing, to be a much happier outcome than might have been feared.

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