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International and historical dimensions of the financial crisis of 2007 and 2008

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A B S T R A C T

This article provides an interpretative overview of the papers in this special issue of JIMF devoted to international aspects of the 2007–2009 financial crisis. It then goes on to provide additional empirical evidence of two sorts. The first documents the difference between the monetary policies pursued by the European Central Bank, the Bank of Japan, the Bank of England and the Federal Reserve in this episode and the policies pursued by the Federal Reserve in the Great Depression. In the course of this episode, unlike the Great Depression, policies were not contractionary and the recessions were less severe than in the United States in 1929–1933. The second compares the recovery in the United States in the aftermath of the recent crisis and in recoveries following periods of previous banking crises. This recovery is much weaker than average.

1. Introduction

The *Journal of International Money and Finance* together with the Center for Financial Innovation and Stability (CenFIS) of the Federal Reserve bank of Atlanta, the Frank J. Petrilli Center for Research in International Finance at Fordham University and the Centre for Economic and International Studies at

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the University of Rome at Tor Vergata cosponsored a conference in December 2010 at the University of Rome Tor Vergata on international aspects of the financial crisis. This crisis began in 2007 and continued to seriously affect the world economy four years later.

The purpose of the conference was to bring together some of the best research being done on international dimensions of the crisis to get a handle on the answers to a number of important questions. Why were some countries seriously affected by the financial crisis while others, such as Canada, had no financial crisis to speak of?. A related question is whether the United States was the source of the financial crisis not just internally but in other affected countries.

The papers presented at the conference examined these questions in two different ways. One set of papers focused on global aspects of the crisis. A second focused on developments in three countries – Ireland, Spain, and the United Kingdom – that had difficulties in the crisis.

While it might seem desirable to examine countries that did not have difficulties, such as Australia or Canada, the evidence from such case studies inevitably is limited, and what can be learned already has been convincingly demonstrated. In a presentation at a 2009 CenFIS conference, Renée Fry, (2009) shows that Australia avoided having a financial crisis partly because its banking system is very concentrated, highly regulated, and not a very good banking system from the viewpoint of consumers; another part of the explanation is the rapid growth in exports of natural resource–based products from Australia. Bordo, Redish and Rockoff (2011) compare the Canadian and U.S. banking systems. Like Fry they attribute the better performance of Canada relative to the United States in the recent crisis to historic differences in the banking systems of the two countries. Canada, like Australia has a much more concentrated and heavily regulated banking sector than the United States.

2. Global aspects of the financial crisis

Does the worldwide spread of financial derivatives based on U.S. subprime mortgages explain much of the global aspects of the crisis? The paper by Steven Kamin and Laurie DeMarco (2012) attempts to answer this question. They analyze detailed data on non-U.S. financial institutions' holdings of securities backed by U.S. mortgages. While they find evidence that these holdings contributed to the financial difficulties that these institutions faced, they also find that even countries with negligible holdings of U.S. mortgage-backed countries experienced substantial distress. Kamin and DeMarco (2012) conclude that problems with U.S. mortgage-backed securities more plausibly were a wake-up call about banking problems around the world than a direct cause of those problems.

If not U.S. mortgage-backed securities, what does explain cross-country differences in the effects of the financial crisis? Pelin Berkmen, Gaston Gelos, Robert Rennhack, and James P. Walsh (2012) examine exactly this question for two subsets of countries: developing countries and emerging markets. To measure the effects of the crisis, Berkmen et al. (2012) examine the effect of the financial crisis on the difference between actual real GDP growth in 2009 and forecasts for 2009 made prior to the Lehman collapse in September 2008. They use these forecasts as a baseline to allow for country-specific differences in growth, such as the difference in underlying output growth in China and Russia.

The results of their analysis are quite striking. Higher leverage and high ratios of short-term debt to GDP before the crisis are associated with larger decreases in real output relative to forecast in 2009 for both developing countries and emerging markets. For developing countries, higher leverage and faster growth of credit are the principal financial vulnerabilities. For emerging markets, the financial effects proved stronger than trade effects. For the broader set of developing countries, however, trade seems to have mattered too, with more open countries affected more strongly and those exporting food commodities being less hard hit. The exchange rate regime also appears to have mattered, with a pegged exchange rate associated with larger decreases in output relative to forecast, particularly for emerging markets. There also is some evidence that countries with a stronger fiscal position prior to the crisis experienced less severe impacts. Many of the measured effects are quite large. For example, the regressions suggest that a reduction in leverage from the highest 25 percent of observations to the lowest 25 percent of observations would have increased growth by 5 percentage points per year.

3. Developments in individual countries

The experiences of Ireland and Spain are the subjects of papers by Gregory Connor, Thomas Flavin and Brian O'Kelly (2012) and by Santiago Carbó-Valverde, David Marqués Ibañez and Francisco Rodríguez Fernández (2012) respectively. Connor et al. (2012) compare the U.S. crisis and the Irish crisis. They argue that the Irish crisis is primarily the result of large net borrowing by Irish banks from abroad, extraordinarily high property values – much higher than U.S. values – and highly imprudent bank loans to property developers. In a direct sense, developments in the United States had no role in creating the Irish problems other than possibly through general difficulties created in the interbank market for funds. Instead of a common cause, Connor et al. (2012) conclude that both countries' problems have four common features: asset-price bubbles, large capital inflows, regulatory failures, and moral hazard problems. The moral hazard problems are similar in one respect: performance pay was received by many people for deals that were successful for a time but in the end totally unsuccessful. There were differences, though, with securitization of mortgages being important in the United States but not in Ireland, and Irish malefactors likely being immune to prosecution.

Carbó-Valverde et al. (2012) examine securitization in Spain and the changes in the quality of the resultant securities. Spain had a substantial increase and a subsequent decrease in housing prices. Spain also had a substantial increase in securitizations, rising to 90 billion euro in 2006 from 5 billion euro in 1999. This securitization of bank credit was associated with a substantial increase in private sector debt, in particular mortgage debt. The authors present evidence that banks' characteristics such as solvency have substantial effects on securitized loans' ratings and that higher loan growth is associated with a higher fraction of loans that are nonperforming a couple of years later.

The paper by Andrew Sentance, Mark P. Taylor and Tomasz Wieladek (2012) echoes many themes of other papers. Before the crisis, U.K. housing prices increased substantially, quite a bit more than in the United States. In addition, the United Kingdom had substantial capital inflows associated with growth of private sector debt. Combined with a large financial sector exposed to foreign developments, these factors led many observers to expect a worse experience than has transpired. Indeed, the run on Northern Rock in the United Kingdom in September 2007 is one of the first major developments in the financial crisis (Dwyer and Tkac, 2009). Sentance et al. (2012) attribute the economy's resilience to fiscal and monetary policy since the crisis, to greater flexibility in the labor market than even ten years ago, and to the United Kingdom's relatively low restrictions on business activity.

4. Additional evidence

Monetary policy's role in the crisis has been quite controversial. One controversy concerns whether monetary policy in the United States and abroad contributed to the financial crisis. Another controversy concerns the appropriateness of monetary policy since the crisis. In an earlier paper, Lothian (2011) examined whether monetary policy in the United States, as measured by the stock of money, contributed to the mildness of the output effects of the crisis compared to the Great Depression. That analysis updated an earlier analysis by Milton Friedman (2005) comparing the behavior of the money supply, nominal income and stock prices in the Great Depression in the United States, Japan in the 1980s and early 1990s, and the United States in the 1990s and early 2000s. The three episodes, he argued, provided a natural experiment to test his and Anna J. Schwartz's explanation of the Great Depression from 1929 to 1933 (or as they called it, the Great Contraction). In all three episodes, there were substantial stock-market booms and continual growth in money and nominal income prior to the cyclical decline. The dramatic decline in the money supply that took place in the Depression was avoided in the Japanese and U.S. episodes. That difference, Friedman argued, was the reason that collapses of nominal income and stock prices that characterized the Depression were avoided in the other two instances.

Lothian added data for the United States in the recent financial crisis to Friedman's data and found very much the same thing for that episode. In contrast to the Depression's precipitous decrease in the money stock, the money stock accelerated following the recent crisis. Consistent with Friedman's explanation, nominal income and stock prices experienced much more muted declines and recovered

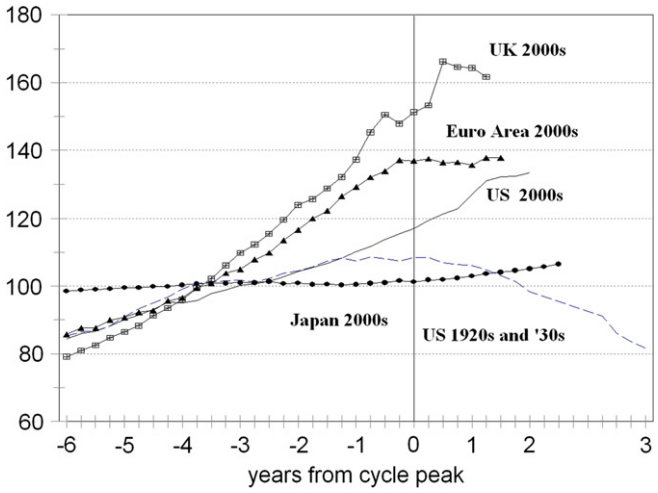

Fig. 1. Money as a percentage of the average for six years prior to peak.

more quickly. Lothian concluded that monetary policy during and after the financial crisis in 2007 and 2008 had been helpful at least in this respect.

Here we compare the behavior of nominal income, stock prices and the nominal stock of money, broadly defined, in the euro area, Japan and the United Kingdom and the United States in the years surrounding the recent crisis to behavior of all three variables in the years surrounding the Great Depression in the United States.

Fig. 1 through Fig. 3, which are patterned on Friedman's presentation, show the time paths of the quantity of money, nominal income (GDP or GNP, depending upon data availability) and stock prices for the Great Depression in the United States and the recent contractions in the Euro area, Japan, the United Kingdom and the United States as well as the boom periods that preceded these episodes.[2] In all three charts, the series are quarterly averages aligned at the cycle peak. As in Friedman's presentation, all of these data are in the form of indices expressed as ratios of the quarterly observations to the respective averages during the six years prior to the cycle peak. For the money stock and nominal income, the peaks are the quarterly business cycle peaks; for stock prices these are the specific cycle peaks. The initial date in each instance is the quarter 24 quarters prior to the peak. Fig. 2.

In the expansions prior to the recent crisis, nominal income and stock prices behave in a similar manner to their counterparts in the United States the late 1920s. The same is true for the nominal money stock. Where the series diverge is in the period after the cycle peak.

In the recent recessions, there were no severe monetary shocks of the sort experienced in the 1930s. The recent recessions, though severe in most cases, have been both much milder and a good deal shorter than the Great Depression. This, in turn, is exactly what the Friedman and Schwartz hypothesis predicts.

A second issue concerns the recovery from the crisis, which in the United States through 2011 has been weak. One explanation of the weak recovery is that cyclical contractions accompanied by financial crises have longer recoveries. Though rather widely believed, that explanation flies in the face of two stylized facts: deep recessions generally are followed by steep recoveries – ("Zarnowitz's rule" 1981) – and most severe recessions in the United States have in fact been accompanied by financial crises – see Table 1.

[2] An appendix that is available from the authors on request lists the data and their sources along with the cycle dates.

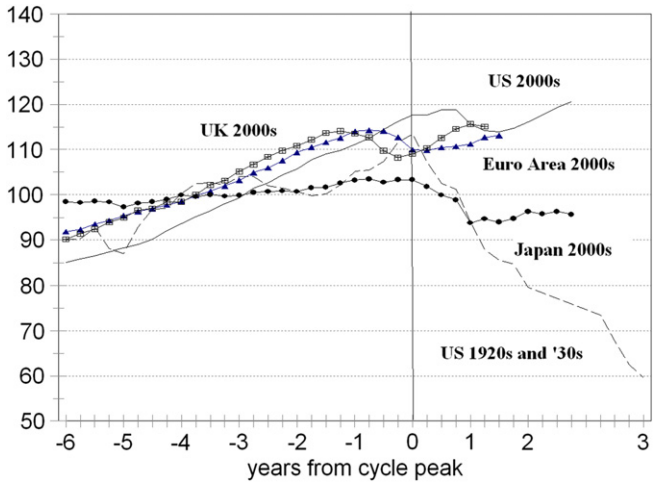

Fig. 2. Nominal GDP as a percentage of the average for six years prior to peak.

The data in Table 1 and in Fig. 4 speak to these questions. Plotted in Fig. 4 are the cyclical declines and increases in real GNP in the six historical U.S. crises and the current crisis. A 45-degree line through the origin is drawn in the chart as a point of reference. Table 1 shows the cumulative quarterly declines and increases in real GNP and the differences between the absolute values of the two in the six recessions with crises, in the two severe U.S. contractions with no crisis and in the recent crisis with its recession.

These data lend very little support to the notion that financial crises are characterized by weak and slow recoveries. The changes in real income during the contraction phases of the cycle range from a 31 percent decline in 1929–33 to 1.8 percent increases in 1882–85. As Fig. 1 shows these are highly correlated with the subsequent increases in real income.

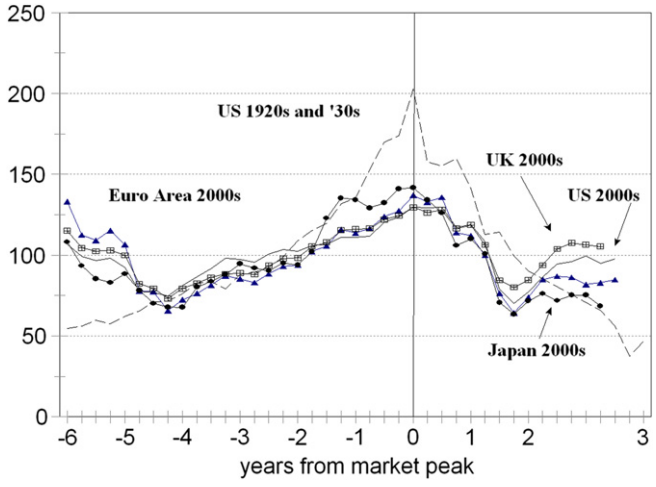

Fig. 3. Stock prices as a percentage of the average for six years prior to peak.

Table 1
The cyclical behavior of U.S. Real GNP: The recent recession in historical comparison.

NBER reference cycle dates			Real GNP change (pct.)		
Peak	Trough	Peak	Contraction	Expansion	Difference
Severe cycles with panics					
1882 (I)	1885 (II)	1887 (II)	1.83	8.62	6.79
1893(I)	1894 (II)	1895 (IV)	−11.75	17.97	6.22
1907(II)	1908 (II)	1910 (I)	−12.58	17.15	4.57
1929(III)	1933 (I)	1937 (II)	−31.17	29.53	−1.64
Mild cycles with panics					
1890(III)	1891 (II)	1893 (I)	−1.05	14.39	13.34
1913(I)	1914 (IV)	1918 (III)[a]	−4.36	10.89	6.53
Severe cycles with no panics					
1920(I)	1921 (III)	1923 (II)	−11.68	24.16	12.48
1937(II)	1938 (II)	1945 (I)[a]	−10.57	15.54	4.97
Recent recession					
2007(IV)	2009 (II)	2011 (II)[b]	−5.64	5.47	−0.17
Means					
Severe cycles with panics			−13.42	18.32	3.98
All cycles with panics			−9.85	16.43	5.97
All severe cycles			−12.65	18.83	5.56

The classification of cycles follows Cagan (1965). Real GNP data are from Balke and Gordon (1986) for the period from 1875 to 1946 and from the Bureau of Economic Analysis thereafter.
[a] The expansion data are for 8 quarters following the cycle trough.
[b] Last point for which data are available.

In five of six historical cases – the Great Depression is the lone exception – the strength of the recovery in real GNP exceeded the previous decline by a substantial amount – close to six percentage points on average.[3] That is, moreover, qualitatively similar to what we see in the two severe contractions in which there was no financial crisis. It is, however, quite different from what the United States has recently experienced – an increase in real GNP that two years after the cyclical trough is still a tad short of matching the decline. In this respect, though not in most others, the recent crisis has resembled the Great Depression.

Why has the U.S. economy rebounded sluggishly after the financial crisis? One argument is insufficient aggregate demand due to insufficient stimulus by monetary and fiscal policy. Another argument voiced by a number of economists is continued uncertainty about economic policy.[4] It is not simple to test alternative theories tailored to fit the data for one observation – recent U.S. experience.

Similar arguments have been made though for the extraordinarily long recovery from the Great Contraction from 1929 to 1933. Economic activity was in fact depressed from 1929 to 1941, at least judging by as the unemployment rate and similar measures. The recovery after 1933 is so long that the eight years after the contraction from 1929 to 1933 are often thought of as being part of the Great Depression from 1929 to 1941.

The connection between the pace of recovery and government policy has been made by Roose (1954, pp. 45–47), seconded by Friedman and Schwartz (1963, pp. 494–495) and developed more recently by Higgs, (1997).[5] With more precise analysis but less detail about the explanation, Cole and Ohanian (2004) and Kehoe and Prescott (2007) suggest that government policies that decrease productivity are most important in prolonging depressed economic conditions in this and other instances. No doubt coming years will see detailed examinations of the importance of uncertainty

[3] See Bordo and Haubrich (2011) for corroborative evidence.
[4] This discussion is ongoing in policy circles and elsewhere. A clear non-analytical summary of the aggregate demand argument is made by Paul Krugman (2010). Craig Pirrong (2011) provides an analytical basis for uncertainty. See, also, Becker (2011).
[5] Mayer and Chatterji (1985) present some evidence inconsistent with a direct connection between political shocks and private investment. The results are not inconsistent with the general argument about regime uncertainty but with a particular testable version of a quite general hypothesis (O'Brien, 1990; Mayer and Chatterji, 1990).

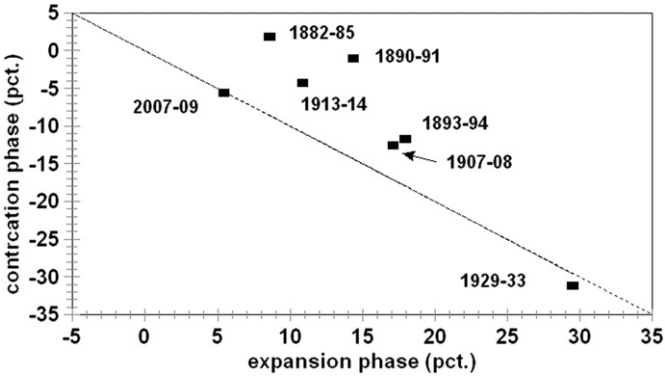

Fig. 4. Cyclical changes in U.S. Real GNP in panic periods, 1882 to 2007.

compared to aggregate demand issues, although a divide between those who put their stock in one explanation or the other is likely to persist just as it has for the Great Depression.

5. Conclusions

There is much to be learned from the international effects of the crisis. It is common and incorrect to attribute other countries' problems to subprime mortgages in the United States. Developments in Ireland or Spain for example are more a mirror of developments in the United States than effects of these developments. These mirrored developments, of course, are unlikely to be a coincidence. Once the crisis metastasized in autumn 2008, financial markets did move very much in sync, stock prices around the world falling by 30 percent or more (Bartram and Bodnar, 2009). While securities based on U.S. subprime mortgages may have contributed to spreading difficulties by heightening uncertainty, they generally were not the underlying cause of other countries' difficulties. Cross-country evidence and analyses of individual countries suggest a common explanation is likely to be based in rapid credit expansion and economic growth, although additional systematic evidence will be necessary to have a sound basis for assessing its importance.

The importance of monetary policy in the developments is quite controversial. We present evidence that central banks avoided the collapse of the money stock and subsequent collapses of nominal income and nominal stock prices. Despite this, the recovery in the U.S. has been slow with very high unemployment. We also present evidence that a more rapid recovery would be expected based on U.S. experience, which is inconsistent with the common observation that severe recessions with financial crises are followed by slow recoveries. The slow recovery may well be due to uncertainty about government policy.

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Data appendix

United States, 1923–1933

Nominal income: GNP in current prices from Balke and Gordon (1986).

Nominal stock of money: M2 from Friedman and Schwartz (1963).

Stock prices: Standard and Poor's Composite Index from Robert J. Shiller's web page.http://www.econ.yale.edu/~shiller/data.htm

Euro area

Nominal income: GDP in current prices, IFS on CD ROM.
Nominal stock of money: M3, IFS on CD ROM.
Stock prices: Stoxx 50, Yahoo Finance http://finance.yahoo.com/q/hp?s=^STOXX50E+Historical+Prices.

Japan

Nominal income: GDP in current prices, IFS on CD ROM.
Nominal stock of money: M3, IFS on CD ROM.
Stock prices: Nikkei, IFS on CD ROM.

United Kingdom

Nominal income: GDP in current prices, IFS on CD ROM.
Nominal stock of money: M4, IFS on CD ROM.
Stock prices: FTSE 100, IFS on CD ROM.

United States, 2001–2009

Nominal and real income: GDP in current and constant prices, FRED database maintained by the Federal Reserve Bank of St. Louis.
Nominal stock of money: M2, FRED database.
Stock prices: Standard and Poor's Composite Index from Robert J. Shiller's web page http://www.econ.yale.edu/~shiller/data.htm.

Business cycle peaks

U.S. 1929 q3 Euro area 2008 q1 Japan 2008 q1 U.K. 2007 q3 U.S. 2007 q4.

Stock price peaks

U.S. 1929 q3 Euro area 2007 q2 Japan 2008 q1 U.K. 2007 q2 U.S. 2007 q2.

The initial date in each instance is the quarter 24 quarters prior to the peak. The terminal dates in the respective episodes are 1933 q1 and 2010 q4.

References

Balke, N., Gordon, R.J., 1986. Appendix B historical data. In: Gordon, R.J. (Ed.), The American Business Cycle: Continuity and Change. University of Chicago Press for the NBER, pp. 781–850.
Bartram, S.M., Bodnar, G.M., 2009. No place to hide: the global crisis in equity markets in 2008/2009. Journal of International Money and Finance 28 (8), 1246–1292.
Becker, G., 2011. The Slow Economic Recovery. http://www.becker-posner-blog.com/2011/06/the-slow-economic-recovery-becker.html.
Berkmen, P., Gelos, G., Rennhack, R., Walsh, J.P., 2012. The global financial crisis: explaining cross-country differences in the output impact. Journal of International Money and Finance 31 (1), 42–59.
Bordo, M.D., Redish A., Rockoff, H., 2011. Why Didn't Canada Have a Banking Crisis in 2008 (or in 1930, or 1907, or.)?. NBER Working Paper 17312.
Bordo, M.D., Haubrich, J.G., 2011. Deep recessions, fast recoveries and financial crises: evidence from the American record. Working paper, Rutgers University.
Cagan, P., 1965. Determinants and Effects of Changes in the Stock of Money, 1875–1960. Columbia University Press, New York.
Carbó Valverde, S., Marqués Ibañez, D., Rodríguez-Fernández, F., 2012. Securitization, risk transferring, and financial instability: the case of Spain. Journal of International Money and Finance 31 (1), 80–101.
Cole, Harold L., Ohanian, Lee E., 2004. New deal policies and the persistence of the great depression. A General Equilibrium Analysis 112 (4), 779–816.
Connor, G., Flavin, T., O'Kelly, B, 2012. The U.S. and Irish credit crises: their distinctive differences and common features. Journal of International Money and Finance 31 (1), 60–79.

Dwyer, G.P., Tkac, P., 2009. The financial crisis of 2008 in fixed-income markets. Journal of International Money and Finance 28 (8), 1293–1316.
Friedman, M., 2005. A natural experiment in monetary policy covering three episodes of growth and decline in the economy and the stock market. Journal of Economic Perspectives 19 (4), 145–150.
Friedman, M., Schwartz, A.J., 1963. A Monetary History of the United States, 1867–1960. Princeton University Press for the National Bureau of Economic Research, Princeton.
Fry, R., 2009. Australia's Resilience during the GFC. Presentation at the Conference "Regulating Systemic Risk," Hosted by the Center for Financial Innovation and Stability, Federal Reserve Bank of Atlanta. Available at: http://www.frbatlanta.org/documents/news/conferences/09-regulating_systemic_risk_presentation_fry.pdf.
Higgs, R., 1997. Regime uncertainty. The Independent Review 1 (4), 561–590.
Kamin, S.B., DeMarco, L.P., 2012. How did a domestic housing slump turn into a global financial crisis? Journal of International Money and Finance 31 (1), 10–41.
Kehoe, T.J., Prescott, E.C., 2007. Introduction. In: Kehoe, T.J., Prescott, E.C. (Eds.), In Great Depressions of the Twentieth Century. Federal Reserve Bank of Minneapolis, Minneapolis.
Krugman, P., 2010. It's Demand, Stupid. New York Times, September 15. Available at: http://krugman.blogs.nytimes.com/2010/09/15/its-demand-stupid/.
Lothian, J.R., 2011. Why money matters: a Fourth natural experiment. Open Economies Review 22 (2), 179–187.
Mayer, T., Chatterji, M., 1990. Reply to O'Brien. Journal of Economic History 50 (4), 942–944.
Mayer, T., Chatterji, M., 1985. Political shocks and investment. Journal of Economic History 45 (4), 913–924.
O'Brien, A.P., 1990. Were businessmen afraid of FDR? A comment on Mayer and Chatterji. Journal of Economic History 40 (4), 936–941.
Pirrong, C., 2011. Regime Uncertainty: The Real Option Deal. http://streetwiseprofessor.com/?p=5493.
Roose, K., 1954. The Economics of Recession and Revival. Yale University Press, New Haven.
Sentance, A., Taylor, M.P., Wieladek, T., 2012. How the UK economy weathered the financial storm. Journal of International Money and Finance 31 (1), 102–123.
Zarnowitz, V., 1981. Business Cycles and Growth: Some Reflections and Measures. National Bureau of Economic Research Working Paper 665.