

## Special Feature B

# The Great Recession: Earthquake For Macroeconomics

by Lawrence J. Christiano<sup>1</sup>

## Introduction

The Great Recession, which started in late 2007 in the United States, had a major impact on the lives of people all over the world as well as on the thinking of the academic economists who study these people. The effects, both on the economy and on macroeconomic thinking, were so large as to be comparable to an earthquake. In what follows, I describe aspects of the Great Recession. I explain the reason for the adjective, *Great*, and why it is called a recession and not a depression. After describing, and largely dismissing, some of

the early explanations of the Great Recession, I turn to the explanation that has survived the passage of time. In that section, I address several questions about the Great Recession. What caused it? What made it last so long? Why did so few people predict it? What impact is the Great Recession having on macroeconomics as a discipline? I argue that the impact on macroeconomics has been very large and is likely to be long-lasting.

## The Great Recession

One way to assess the severity of the Great Recession is to compare it to the average recession in the period after 1945. According to the information in Table 1, the drops in output, consumption, investment, employment and hours worked were all far greater in the recent recession

than they were in the average recession since 1945. At the same time, the Great Recession was not the worst recession on record. The declines in the major economic indicators in the Great Depression were many times greater than what they were in the Great Recession.

**Table 1**  
**The 2007–09 Recession in Perspective**

(% Change, Peak to Trough)

	Output	Consumption	Investment	Employment	Hours Worked
2007–09 Recession (Q4 2007 – Q3 2009)	-7.2	-5.4	-33.5	-6.7	-8.7
Average Post WWII Recessions	-4.4	-2.1	-17.8	-3.8	-3.2
US Great Depression* (1929–33)	-36	-23	-69	-27	-

\* See Christiano, Motto and Rostagno (2003).

<sup>1</sup> Lawrence J. Christiano is the Alfred W. Chase Chair in Business Institutions and Professor of Economics at Northwestern University. Professor Christiano visited MAS in Jun–Jul 2015 as the MAS-NUS Term Professor in Economics and Finance. The views in this Special Feature are solely those of the author and should not be attributed to MAS.

Another way to gauge the dimensions of the Great Recession is to examine Chart 1, which displays output per working-age person, adjusted for inflation.<sup>2</sup> The shaded areas in the chart demarcate the starting and ending dates for recessions, as determined by the National Bureau of Economic Research's (NBER) Business Cycle Dating Committee. According to the NBER, the economy began to climb out of the recession by the summer of 2009. But, note how long the economy

is taking to recover: the US economy did not return to the 2007 level of output per capita until a little over five years later, in Q1 2013.<sup>3</sup> Usually, the economy returns more quickly to its pre-recession peak. Even now, the US economy seems not to have returned to its previous 'normal' level. If we take the previous 'normal' to be the 2007 trend growth path, then the US economy is still about 10% below normal.<sup>4</sup>

**Chart 1**  
**Real GDP per Working-age Individual (Aged 15–64) in the US**



Source: Federal Reserve Bank of St. Louis FRED Database

It is not possible to evaluate the health of the US economy simply by examining per capita output. The performance of per capita output depends not only on how well labour and other markets are functioning, but also on the evolution of Total Factor Productivity (TFP). The dynamics of TFP are determined in part by the evolution of technological knowledge. The latter, in turn,

reflects the growth-enhancing impact of longer-term factors that have nothing to do with the current health of financial, labour and other markets. Thus, if the underlying growth rate of TFP had fallen significantly, then the new normal could be substantially below the old normal in 2007. In this case, US output may not be so far from trend as it may at first appear in Chart 1.<sup>5</sup>

<sup>2</sup> The output and population data were obtained from FRED, the online database maintained by the Federal Reserve Bank of St. Louis. The FRED mnemonic for the output measure is GDPC1 and the mnemonic for the working-age population is LFWA64TTUSQ647S.

<sup>3</sup> The exact amount of time required for per capita output to return to its pre-recession peak depends somewhat on the population measure used. If instead the civilian non-institutional population measure (FRED mnemonic, CNP16OV) were used, then the amount of time would have been longer, roughly seven years. The difference from the results in Chart 1 reflects demographic factors that cause the working-age population to grow less rapidly than the population as a whole.

<sup>4</sup> For additional discussion about the trend of US economic output in 2007, see Christiano, Eichenbaum and Trabandt (2015). The 10% number in the text was rounded after doing the following calculations. I fit a linear time trend to the natural logarithm of the output measure in Chart 1, using data from the beginning of the sample to Q3 2007, the quarter before the Great Recession began according to the NBER. I extended the trend to the end of the sample. The difference between the trend at the end of the sample and the (log of the) last data point is 0.136, which I rounded to 0.10. The 10% number reported in the text is this last number, multiplied by 100.

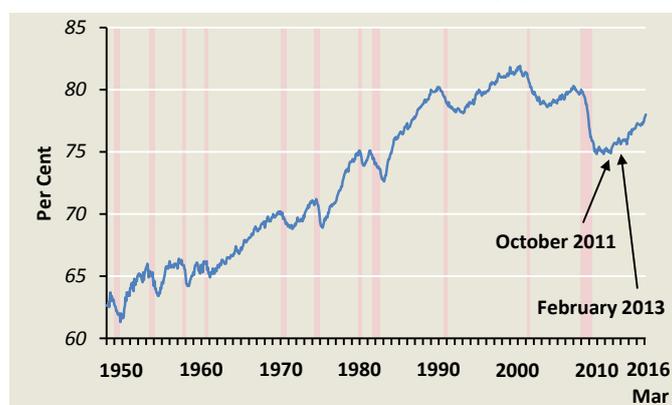
<sup>5</sup> See Gordon (2016) for an elaboration of the view that the growth rate of technological progress in the US may have slowed down significantly.

The employment-to-population ratio, when only people between the ages of 25 and 54 are considered, appears in Chart 2.<sup>6</sup> Inferring the health of the US economy by looking at a labour market variable like the employment ratio has the advantage that labour markets are presumably less sensitive to assumptions about the evolution of technological knowledge.<sup>7</sup> The employment ratio fell by 5% points, an amount that is substantially larger than what happens in a typical recession. Not only did the ratio fall by a large amount, but it was also very slow to recover. In fact, that 5% point drop has still not been reversed, even today. But, demographic considerations inject some uncertainty into how the last observation is to be interpreted. It is well known that the employment ratio has been trending down since the early 2000s.<sup>8</sup> This can be seen in Chart 2, by noting that the peak employment ratio before the 2001

recession is higher than the corresponding peak before the recent recession. So, although the employment ratio undoubtedly remains low, trend changes in demographic factors suggest that it may not be as far below its new normal level as Chart 2 might suggest at first glance.

These and other indicators explain why the Great Recession is called *Great*. There was an unusually large drop in output and employment. Moreover, the recovery has been very slow. Arguably, the US economy has still not completely recovered even though seven years have passed since the start of the recession. To what extent the US economy may have completely recovered from the Great Recession is hard to assess, because that requires taking a difficult-to-quantify stand on the underlying pace of technological change and demographic developments.

**Chart 2**  
**US Employment-to-population Ratio (Aged 25–54)**



Source: Federal Reserve Bank of St. Louis FRED Database

<sup>6</sup> This variable is taken from FRED and has mnemonic, LNS12300060. I use a measure of the employment ratio that covers only a subset of the population in order to reduce the impact of demographic factors such as the increase in the proportion of the population that is retired.

<sup>7</sup> One way to motivate the presumption in the text is to refer to the standard (i.e., ‘divisible labour’) real business cycle model. A well-known feature of this model is that employment is substantially less sensitive to the state of technology than output (see for example, Christiano and Eichenbaum, 1992).

<sup>8</sup> There has been a trend decline in the employment rate for 25–54 year old males since the early 1970s (see the variable in FRED with mnemonic, LREM25MAUSQ156N). The labour force participation of working-age females has exhibited a modest downward trend since the early 2000s (see FRED variable, LREM25FEUSQ156N).

## Initial Views About The Causes Of The Great Recession

The observations about the severity of the recession raise the obvious question: what was the cause of the Great Recession?

In the initial phases of the recession, there was a lot of confusion about the answers to this question. There was a sense of anguish and fear in Washington among policymakers in late 2008, as the signs of dysfunction in financial markets became acute and the decline in economic activity accelerated. That acceleration is evident in Charts 1–2, where we see that the fall in output and employment turned into a free fall a year after the NBER declared that the recession had started. A particularly dramatic moment in the ensuing crisis occurred on 18 Sep 2008, days after the bankruptcy of the long-established and respected investment bank, Lehman Brothers. The senior leadership of the US Congress convened a meeting with the Secretary of Treasury, Hank Paulson, and the Chairman of the Federal Reserve, Ben Bernanke, to discuss their response to the unfolding events. According to Senator Christopher Dodd (Chairman of the Senate Banking Committee at the time), Hank Paulson declared, “Unless you act, the financial system of this country and the world will melt down in a matter of days.” Reportedly, Ben Bernanke followed up by saying, “If we don’t do this [i.e., pass a proposed emergency bill] tomorrow, we won’t have an economy on Monday.” Reflecting on that meeting, Senator Christopher Dodd reported that “There was literally a pause in that room where the oxygen left.”<sup>9</sup>

Various explanations for the Great Recession began to emerge. I refer to these as the *skills Mismatch Hypothesis*, the *Government Policy Uncertainty Hypothesis* and the *Aggregate Demand Hypothesis*. The remainder of this section considers the first two hypotheses. Although, no doubt, all three hypotheses contain some truth in them, I argue that, according to the evidence, the first two probably played only a small role.<sup>10</sup>

### Mismatch Hypothesis

An exaggerated version of the mismatch hypothesis goes something like this. Many construction workers lost their jobs as a result of the collapse in the housing sector during the Great Recession. The US economy had plenty of jobs, but these were mainly in the health services industry. Bulky former construction workers were simply not good candidates to be nurses. Perhaps the most prominent advocate of the mismatch hypothesis was Narayana Kocherlakota, the President of the Federal Reserve Bank of Minneapolis, who stated in 2010 that “Firms have jobs, but can’t find appropriate workers. The workers want to work, but can’t find appropriate jobs.” This mismatch view had important policy implications. According to Kocherlakota, “Whatever the source [of this mismatch] it is hard to see how the Fed can do much to cure this problem.”

As more data came in, it became apparent that mismatch was not the major factor driving the labour market in the dynamics of the Great Recession. For example, Kocherlakota himself abandoned the mismatch view and became the leading advocate at the Federal Reserve for adopting an aggressively expansionary monetary policy.<sup>11</sup> If mismatch had been important, the labour market would have been good to some workers and hard on others. But, in fact, workers of all types were hurt. For example, although workers with more education enjoy lower unemployment on average, workers at all education levels experienced a rise in unemployment during the Great Recession. In fact, the unemployment rate jumped across a broad range of occupation groups during the Great Recession.

Another way of looking at the mismatch issue is to examine the hours of work put in by employees. The average worker in an occupation in which there are a lot of jobs, but few workers qualified to take them, would be expected to be

<sup>9</sup> See Public Broadcasting Service (2009).

<sup>10</sup> My discussion in this section borrows heavily from Shierholz (2013).

<sup>11</sup> See Appelbaum (2014).

working extra hard. That is, we should see some occupations in which average hours per worker is very high (e.g., nursing) and others in which it is low (e.g., construction). Instead, we see from the data that hours worked is down in 2012 relative to 2007 across almost all industries. The only exception is the legal occupation, but even there, hours worked is up by only around 1%.

Under the mismatch hypothesis, firms were held back from hiring because of their inability to find the right type of workers. This implies that wages of some types of workers (the 'right types') should have risen sharply while the wages of the types of workers that were in abundant supply should have been falling. Instead, wages of all types of workers were rising at very modest rates in the Great Recession. Average worker productivity rose by 7.5% over the period from 2007 to 2012. This is a modest benchmark for wage growth and all occupations experienced even lower wage growth (after adjusting for inflation). We do not see the soaring wage growth we would expect to see in some occupations if there were significant mismatch in the labour market.

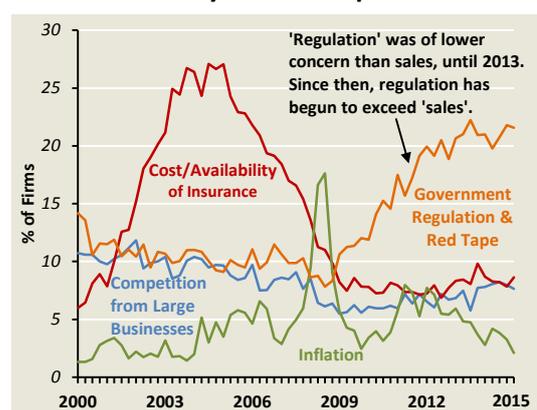
Another way to test the mismatch hypothesis is to simply ask firms why they are not hiring. Since the early 1970s, the National Federation of Independent Business (NFIB), a small business association, has surveyed its members to find out what their 'top problem' is. They are asked to select from among the following 10 categories: taxes, inflation, poor sales, finance & interest rates, cost of labour, government regulations & red tape, competition from large businesses, quality of labour, cost/availability of insurance, other. Under the mismatch hypothesis, a large fraction of firms should have selected 'quality of labour' as their top problem. Charts 3a and 3b display the time series of the fraction of firms that choose each option as their top problem. Chart 3a shows that in normal times, 20% of firms say that 'taxes' are their top problem. 'Quality of labour' is usually a smaller problem. When the Great Recession hit, first in late 2007 and then at an accelerated pace in late 2008, 'quality of labour' fell in importance and 'poor sales' surged beyond all other options as the top problem.

**Chart 3a**  
NFIB Survey: Firms' 'Top Problem'



Source: National Federation of Independent Business

**Chart 3b**  
NFIB Survey: Firms' 'Top Problem'



Source: National Federation of Independent Business

### Government Policy Uncertainty Hypothesis

Under this hypothesis, it was uncertainty about how policymakers would react to the financial disturbances of 2007 and 2008 that dragged the US economy into the Great Recession. For example, some wondered if Bernanke's 'you won't have an economy on Monday' remark might be a symptom of panic among policymakers, which might lead to extreme and

unpredictable policy actions. The logic of the policy uncertainty hypothesis is that under these circumstances firms would have adopted a 'wait-and-see' attitude before taking a decision that would be hard to reverse later.

There is at least superficial support for the policy uncertainty hypothesis. In Q4 2008, the

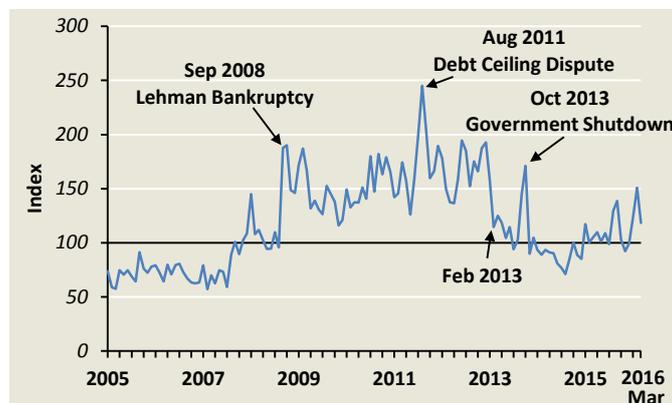
equipment investment component of Gross Private Domestic Investment was 19% lower than it was in the fourth quarter of the previous year. However, this observation can also be explained by the sales shortfall that many firms complained about in the NFIB survey. (Chart 3a) Hiring is another form of investment for firms because in many cases, there are upfront training costs and hiring is costly to reverse. The fact that firms sharply contracted hiring starting in late 2008 appears, on the surface at least, to be consistent with the policy uncertainty hypothesis. But other labour market evidence seems inconsistent with the hypothesis. Suppose the fall in employment did reflect firms' decisions to hold back and wait until the dust settles. If this had been the principal source of downward pressure on employment, then we would have seen firms leaning more heavily on their existing workforce by increasing hours worked and overtime. However, as discussed in the previous section, average hours worked actually fell during the Great Recession.<sup>12</sup> This suggests that forces other than the 'wait-and-see' response to uncertainty played the dominant role in employment decisions.

Recently, Baker, Bloom and Davis (2015) brought valuable discipline to the discussion by constructing a quantitative index of policy

uncertainty. According to Chart 4, their indicator was well on its way back to pre-recession levels by February 2013. With the cloud of policy uncertainty lifted, employment should have bounced back. According to Chart 2, employment did rise somewhat. But, that rise was only 0.8%, hardly a 'bounce back'.

Another way to test the policy uncertainty hypothesis is to examine the results of the NFIB survey discussed above. If uncertainty about government economic policy were a top concern for firms, we might expect a large fraction of them to select 'government regulations & red tape' as their top problem. Chart 3b shows that normally, government regulation is a top problem for 10% of the firms, and this was true from the start of the Great Recession until 2010. As noted above, firms were much more concerned about poor sales. Later, in 2012 and thereafter, more firms began to complain about government regulation. Indeed, in the more recent data, the fraction of firms concerned about government regulation has surpassed the number concerned with poor sales. We infer that government regulation is not a likely cause of the Great Recession, though it may have become a more important factor recently.<sup>13</sup>

**Chart 4**  
**Monthly US Economic Policy Uncertainty Index**



Source: <http://www.policyuncertainty.com/>

<sup>12</sup> Economy-wide data on average hours worked corroborate the results. In particular, average weekly hours of all employees in the private sector began to decline in the fall of 2008 (see the variable, AWHAEPT, in FRED).

<sup>13</sup> Hartford's annual *Small Business Success Study* also asks firms what is holding back employment, among other things (see Hartford Financial Services Group, 2015). In contrast to the NFIB survey, the Hartford survey suggests that even in 2014 and 2015, the main factor holding back business hiring is 'business not growing', which I interpret as corresponding to 'lack of sales' in the NFIB survey. See Mandelbaum (2011) for a comparison of the results of the Hartford and NFIB studies.

The mismatch and policy uncertainty hypotheses initially loomed large in the minds of analysts. With hindsight, it now seems that they played

at best only a modest role in the dynamics of the Great Recession.<sup>14</sup>

## Questions About The Great Recession

In this section, I discuss the following three questions:

- (i) What caused the Great Recession and why has it lasted so long?
- (ii) Why did people (including macroeconomists) not predict it?
- (iii) What impact did it have on macroeconomics as a discipline?

### Why Did It Happen?

Conventional wisdom is now converging on a particular narrative about the cause of the Great Recession. In effect, the Great Recession was a ‘perfect storm’ created by the confluence of three factors. Each factor taken by itself would not have caused a major recession, but in combination they were explosive. The first factor was the decline in housing prices that began in the summer of 2007. Whether this was the end of a ‘bubble’ or just an ordinary fluctuation does not matter for the narrative. The second factor was that the financial system was heavily invested in housing-related assets—mortgage-backed securities. The third factor was that the part of the banking system, the *shadow banking system*, that was invested in housing assets was vulnerable to bank runs.<sup>15</sup>

These three factors are the essential elements in the following narrative about the Great Recession. The fall in housing prices damaged the assets of the shadow banking system and thereby created the conditions under which a run on the shadow banking system could occur. Alas, a run did occur in the summer of 2007, forcing the shadow banking system to sell its assets at fire

sale prices. This asset decline damaged the whole banking system and hindered its ability to intermediate not just house purchases but investment more generally. With reduced credit, purchases of houses declined and the fall in house prices was reinforced. By reducing household wealth, the fall in house prices induced households to cut back on spending. Seeing a fall in sales, firms pulled back on investment. All these forces reinforced each other, sending the economy into the tail-spin documented above.

### Why Did It Last So Long?

The conventional view on why the recession lasted so long is that the events described in the previous paragraph reinforced the desire to save, relative to the desire to invest. If markets were efficient, then the risk-adjusted real interest rate would have fallen to balance the demand and supply of savings. According to the conventional view, this required that real interest rates be substantially negative, something that could not be achieved because of the lower bound on the nominal rate of interest and the fact that inflation expectations were anchored at a low level. Because the real interest rate could not fall enough to clear the lending market, something else had to do it instead. That something else was a fall in aggregate output, which allowed lending markets to clear by reducing saving for consumption-smoothing reasons. This is essentially the logic of the Paradox of Thrift analysed in undergraduate textbooks.<sup>16</sup> Consistent with those textbooks, the drop in output arising from this Paradox of Thrift reasoning could in principle last for a long time.

<sup>14</sup> I have not considered the idea that the Great Recession was caused by the Federal Reserve keeping the Federal funds rate too low, too long in the early 2000s. For a review of this hypothesis and a critique, see Bernanke (2015).

<sup>15</sup> Technically, what happened was a rollover crisis, not a traditional bank run like the ones familiar from movies and pictures from the era of the Great Depression.

<sup>16</sup> The Paradox of Thrift argument described in the text lies at the heart of the analysis of the interest rate lower bound in Eggertsson and Woodford (2003).

### Why Didn't People See It Coming?

Why did people not predict the Great Recession? The emerging consensus is that policymakers were simply not aware of the third factor. They did not realise how big the shadow banking sector was nor how vulnerable it was to runs (see for example, Bernanke, 2010).<sup>17</sup> Much of what we know about financial markets comes about as a side-effect of regulation and the shadow banking system was mostly outside the normal regulatory framework. The implication for policy is that policymakers need to be on the alert for the development of a shadow banking system. They must address the vulnerability of intermediation to runs by offering lender-of-last-resort services. The regulatory environment must be designed to address the resulting moral hazard problems.

### Impact On Macroeconomics

The Great Recession is having an enormous impact on macroeconomics as a discipline, in two ways. First, at its heart, the narrative I described above characterises the Great Recession as the response of the economy to a negative shock in the aggregate demand for goods. This is very much in the spirit of the traditional macroeconomic paradigm captured by the famous IS-LM model, which places demand shocks at the heart of its theory of business cycle fluctuations. Similarly, the Paradox of Thrift argument is also expressed naturally in the IS-LM model.

The IS-LM paradigm, together with the Paradox of Thrift and the notion that a shock to aggregate demand could generate a welfare-reducing drop in output, had been largely discredited among professional macroeconomists since the 1980s. But, the Great Recession seems impossible to understand without invoking Paradox of Thrift logic and appealing to shocks in aggregate demand. As a consequence, the modern equivalent of the IS-LM model—the New Keynesian model—has been returned to centre

stage. To be fair, the return of the IS-LM model had already begun in the late 1990s, but the Great Recession dramatically accelerated the process.

The return of the dynamic version of the IS-LM model is revolutionary because that model is closely allied with the view that equilibrium outcomes are not necessarily efficient, so that government interventions might be desirable. The previous macroeconomic paradigm, the Real Business Cycle model, generally adopted the position that equilibria are efficient, so that government intervention is counterproductive.<sup>18</sup>

The Great Recession has had a second important effect on the practice of macroeconomics. Before it, there was a consensus among professional macroeconomists that dysfunction in the financial sector could safely be ignored in the study of macroeconomics. The idea was that what happens on Wall Street has as little impact on the economy as what happens at the slot machines in Nevada. This idea appeared to receive support from the US experiences in 1987 and the early 2000s, when the economy seemed unfazed by substantial stock market volatility. The idea that financial markets could be ignored in macroeconomics has died with the Great Recession.

Previously, macroeconomics was primarily concerned with the strategy for setting interest rates by the monetary authority, alongside similar questions. Now macroeconomists are also thinking about the financial system and how it should be regulated. This has necessitated the construction of new models. The empirically successful models have generally integrated financial factors into a version of the New Keynesian model, for the reasons discussed above. Much progress on this project has occurred and there is too much to summarise here. One particularly notable set of advances appears in Gertler and Kiyotaki (2015) and Gertler, Kiyotaki and Prestipino (2016). In these papers, banks are modelled as financing

<sup>17</sup> That the shadow banking system was of a similar order of magnitude to the traditional banking system is discussed in Geithner (2008).

<sup>18</sup> Although in one sense the shift from Real Business Cycles to the New Keynesian model is revolutionary, in another it is not. All the technical advances associated with Real Business Cycle analysis have been absorbed into the New Keynesian model. This includes the economic concepts of a private sector equilibrium, Ramsey equilibrium, time consistency, etc. This also includes model solution and econometric methods.

long-term assets with short-term liabilities. This mismatch between assets and liabilities captures the essential reason that real-world financial institutions are vulnerable to runs. The model represents a laboratory in which to think precisely about the sort of run narrative—described by

Bernanke (2010) and others—that launched the Great Recession in 2007. Constructing models of this kind is essential for the design of regulatory and other policies that can prevent a recurrence of a disaster like the Great Recession.

## References

Appelbaum, B (2014), “A Fed Policy Maker, Changing His Mind, Urges More Stimulus”, *The New York Times*, January 27, available at <http://www.nytimes.com/2014/01/28/business/a-federal-reserve-policy-maker-urges-it-to-do-more.html>

Baker, S R, Bloom, N and Davis, S J (2015), “Measuring Economic Policy Uncertainty”, *NBER Working Paper* No. 21633, October.

Bernanke, B S (2010), “Statement by Ben S. Bernanke, Chairman, Board of Governors of the Federal Reserve System, Before the Financial Crisis Inquiry Commission, Washington, D.C.”, (URL <https://www.federalreserve.gov/newsevents/testimony/bernanke20100902a.pdf>).

Bernanke, B S (2015), “The Taylor Rule: A Benchmark for Monetary Policy?”, Brookings Institution, (URL <http://www.brookings.edu/blogs/ben-bernanke/posts/2015/04/28-taylor-rule-monetary-policy>).

Christiano, L J, Motto, R and Rostagno, M (2003), “The Great Depression and the Friedman-Schwartz Hypothesis”, *Journal of Money, Credit, and Banking*, Vol. 35(6), pp. 1119–1197.

Christiano, L J and Eichenbaum, M (1992), “Current Real-Business-Cycle Theories and Aggregate Labor-Market Fluctuations”, *American Economic Review*, Vol. 82(3), pp. 430–450.

Christiano, L J, Eichenbaum, M and Trabandt, M (2015), “Understanding the Great Recession”, *American Economic Journal: Macroeconomics*, Vol. 7(1), pp. 110–167.

Eggertsson, G B and Woodford, M (2003), “The Zero Bound on Interest Rates and Optimal Monetary Policy”, *Brookings Papers on Economic Activity*, pp. 139–233.

Geithner, T F (2008), “Reducing Systemic Risk in a Dynamic Financial System”, remarks at the Economic Club of New York, New York City, available at <https://www.newyorkfed.org/newsevents/speeches/2008/tfg080609.html>

Gertler, M and Kiyotaki, N (2015), “Banking, Liquidity, and Bank Runs in an Infinite Horizon Economy”, *American Economic Review*, Vol. 105(7), pp.2011–2043.

Gertler, M, Kiyotaki, N and Prestipino, A (2016), “Wholesale Banking and Bank Runs in Macroeconomic Modelling of Financial Crises”, *International Finance Discussion Papers* No. 1156, January.

Gordon, R J (2016), *The Rise and Fall of American Growth: The U.S. Standard of Living Since the Civil War*, Princeton University Press.

Hartford Financial Services Group (2015), *2015 Small Business Success Study*, December, available at [https://www.thehartford.com/sites/the\\_hartford/files/executive-summary-2015-sbss.pdf](https://www.thehartford.com/sites/the_hartford/files/executive-summary-2015-sbss.pdf)

Kocherlakota, N (2010), "Inside the FOMC", speech available at <https://www.minneapolisfed.org/news-and-events/presidents-speeches/inside-the-fomc>

Mandelbaum, R (2011), "Do Small-Business Owners Feel Overtaxed and Overregulated? A Survey Says No", *The New York Times*, November 21, available at <http://boss.blogs.nytimes.com/2011/11/21/small-businesses-over-taxed-and-over-regulated-a-survey-says-no/>

Public Broadcasting Service (2009), *Frontline: Inside the Meltdown*, documentary available at <http://www.pbs.org/video/1082087546/>

Shierholz, H (2013), "Is There Really a Shortage of Skilled Workers?", pp. 143–150 in Palley, T I and Horn, G A (eds.), *Restoring Shared Prosperity: A Policy Agenda from Leading Keynesian Economists*, CreateSpace Independent Publishing Platform.