NBER WORKING PAPER SERIES

THE GREAT RECESSION IN THE SHADOW OF THE GREAT DEPRESSION: A REVIEW ESSAY ON "HALL OF MIRRORS: THE GREAT DEPRESSION, THE GREAT RECESSION AND THE USES AND MISUSES OF HISTORY"

Lee E. Ohanian

Working Paper 22239
http://www.nber.org/papers/w22239

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
May 2016

I thank Michael Bordo, John Cochrane, Barry Eichengreen, Jesus Fernandez-Villaverde, and Ellen McGrattan for helpful comments and discussions, and Adrien d'Avernas and Andreas Gulyas for excellent research assistance. The views expressed herein are those of the author and do not necessarily reflect the views of the National Bureau of Economic Research.

The Great Recession in the Shadow of the Great Depression: A Review Essay on "Hall of Mirrors: The Great Depression, The Great Recession and the Uses and Misuses Of History"

Lee E. Ohanian

NBER Working Paper No. 22239
May 2016
JEL No. E13,E6,N0

ABSTRACT

This essay reviews Barry Eichengreen's recent book that compares the Great Depression and the Great Recession. Eichengreen focuses on deficient aggregate demand as the key reason for why both downturns were so deep and why they lasted so long. I assess the book's arguments regarding the causes and consequences of these episodes from a neoclassical perspective. I provide an alternative framework for analyzing these episodes, and argue that a key difference between the 1930s and today reflects the factors that continued to depress both economies after their respective troughs. The post-Depression economy featured rapid productivity growth, whereas today's economy is plagued by low productivity growth. I discuss how the post-Great Depression economy recovered to trend quickly once policies that depressed competition were removed. I also argue that returning today's economy to trend may be considerably more challenging.

Lee E. Ohanian
8283 Bunche Hall
UCLA, Department of Economics
Box 951477
Los Angeles, CA 90095
and NBER
ohanian@econ.ucla.edu

The Great Recession in the Shadow of the Great Depression

A Review Essay on *Hall of Mirrors: The Great Depression, the Great Recession, and the Uses and Misuses of History* by Barry Eichengreen

Lee E. Ohanian[1]

Introduction

Global economic depressions occur infrequently, but when they do, society typically looks to the past for guidance. The Great Recession was no exception, as policymakers and economists turned to the Great Depression of the 1930s to help them understand the world economy of 2008.

Barry Eichengreen's *Hall of Mirrors: The Great Depression, the Great Recession, and the Uses and Misuses of Economic History* presents a unique comparison of these episodes through the eyes of a leading economic historian. Eichengreen draws parallels between these two events through detailed historical narratives that juxtapose macroeconomic and microeconomic aspects of the 1930s with the Great Recession and its aftermath.

Hall of Mirrors argues that the policymakers of 2008, including Federal Reserve Chair Ben Bernanke, an expert on the 1930s, adopted policies in 2008 and 2009 that prevented a repeat of the Great Depression. But according to Eichengreen, the prevention of a *Great Depression* in 2008 ironically increased the depth and duration of the *Great Recession* by reducing the perceived need and political support that would have been required to pass sufficiently large fiscal spending packages. In Eichengreen's view, the parallels between the 1930s and the Great Recession provided plenty of intellectual justification for more government spending since 2008. He concludes that policymakers of the last few years didn't finish their job, and that the world's economies have suffered because of this.

This paper assesses these two episodes from a neoclassical perspective. I show that these two events fundamentally differ in terms of productivity change and the types of policies that were adopted, and that these differences are important for understanding the economic performance of these periods. I argue that the most important implication of these events is that both the 1930s economy and today's economy appear to have shifted onto lower steady state growth paths after their respective troughs. The post-Great Depression economy ultimately returned to its pre-1929 trend. The current economy, however, remains far below its pre-2008 trend. I argue that *Hall of Mirrors'* focus on increasing aggregate demand to expand economic activity today is perhaps overstated, as low productivity growth, which lies outside

[1] I thank Michael Bordo, John Cochrane, Barry Eichengreen, Jesus Fernandez-Villaverde, and Ellen McGrattan for helpful comments and discussions.

the scope of demand-focused policies, is a central problem plaguing advanced economies today.

Despite these different views on the macroeconomics of these episodes, *Hall of Mirrors* is a unique book that provides fascinating and detailed comparisons between the 1930s and today that will generate future research, and that will be of interest to a broad audience.

Organization

Hall of Mirrors provides a detailed comparison between the institutions, players, and events of the 1930s and today. There are other books about the 2008 crisis, including Alan Blinder's *When the Music Stops* (2013), which makes some similar points. *Hall of Mirrors* differs from other books in this area by exploiting Eichengreen's remarkable knowledge of the 1930s that provides a detailed historical perspective on today's economy.

Part I, "The Best of Times," draws parallels between the rise of real estate in the 1920s and the rise of real estate in the 2000s, with comparisons between the expansion of lending from lightly-regulated building and loan associations in the 1920s, to financial deregulation, the expansion of subprime lending, the creation of asset-backed securities, and the increase of shadow banking more recently.

Part II, "The Worst of Times," compares the stock market crash in the fall of 1929, banking crises, and the international spread of the Depression, to the financial crisis of 2007-08, and also describes how the crisis spread to other countries.

Part III, "Toward Better Times," compares policy responses in the 1930s, including FDR's New Deal, to policy responses in 2008 and afterwards, including the American Recovery and Reinvestment Act and unconventional monetary policies.

Part IV, "Avoiding the Next Time," Eichengreen presents his policy views on preventing future crises, including extensive discussions about the separation of commercial and investment banking, and his views about the Euro area debt crisis.

Comparing Crises: Microeconomic Perspectives

Hall of Mirrors presents exceptionally interesting microeconomic comparisons between the 1930s and today. *Hall's* detailed comparison between the 1932 Chicago banking crisis and the 2008 crisis is particularly striking. The U.S. economy was approaching the depth of the Great Depression in mid-1932, and Chicago banks were experiencing considerable distress, which

reflected not only poor business conditions, but also the fact that the Chicago municipal government suspended municipal bond coupon payments. Withdrawals rose considerably, and many banks were on the verge of failing. Enter the Reconstruction Finance Corporation (RFC).

The RFC was created by President Hoover's administration, and passed by Congress in early 1932, to extend loans to banks and industry. Hoover appointed Charles Dawes, who was president of Chicago's Central Republic Trust, to head the RFC. However, Dawes resigned from the RFC to tend to Central Republic Trust during the Chicago banking crisis. RFC's capital was of course just a drop in the bucket relative to business demand for subsidized government loans. This put the RFC in the politically difficult position of having to pick between those who received loans, and those who did not. This is noteworthy, as Hoover himself helped organize the $1.5 billion (in 2015 dollars) rescue of Dawes' troubled Central Republic Trust during the Chicago crisis.

Eichengreen notes that this loan was three times as large as the sum of *all* Federal government loans made to states for unemployment and homeless relief. Supporting Wall Street at the expense of Main Street generated substantial populist criticism at that time, much as the Wall Street bailouts of 2008 generated criticism, Gerstle and Fraser (2009) discuss Depression-era populist protests that are thematically similar to the more recent "Occupy Wall Street" protests.

This comparison highlights the politicization that comes with discretionary government lending. It is juxtaposed beautifully against the 2008 crisis, when Bear Stearns also received an unprecedentedly large rescue involving Treasury Secretary Geithner.

Eichengreen continues this intriguing argument by comparing government decisions in the 1930s and more recently to not support particular institutions. Eichengreen compares Lehman Brothers, which was allowed to fail in the fall of 2008, to the RFC's decision to not lend to one of Henry Ford's banks in Michigan in 1933.

There are striking parallels between these two episodes. Following the June, 1932 Chicago crisis, the RFC was criticized for lending to Central Republic Trust, (which ultimately did fail), just as the Federal Reserve was criticized for rescuing Bear Stearns in the Spring of 2008. Criticisms of both the Central Republic intervention and the Bear Stearns intervention reflected concerns regarding whether proper process and due-diligence had been followed, and whether the bailouts were efficient, or whether they reflected other factors. Speaking in 1932, Pennsylvania Republican Representative Louis McFadden called the RFC "a scheme for taking $500,000,000 of the people's money produced by labor at a cost of toil and suffering and giving it to a supercorporation (sic) for the sinister purpose of helping a gang of financial looters to cover up their tracks." Sound familiar?

A few months after the Chicago crisis, a banking crisis developed in Detroit in early 1933 that included the Union Guardian Bank, which was associated with Henry Ford, the head of Ford Motor Company. To receive an RFC rescue, the RFC advised Ford that he would need to provide a backstop loan for Union Guardian, and to agree that he would not withdraw his nearly $128

million of deposits (2015 dollars) from Union Guardian. Whoever said that wealth concentration is a recent phenomenon?

Ford refused these conditions, however, as he strategically believed that Union Guardian was too big and too important to be allowed to fail. But the RFC did not budge and Union Guardian did not receive the RFC loan, much as Lehman Brothers was not saved in the fall of 2008. This narrative showcases how economic history remains important for not only chronicling past events, but showing how they remain keenly relevant today. It also describes how the same fundamental issues of the politicization of bailouts, dealing with too big to fail institutions, and political and corporate cronyism, are almost always endemic and are challenging to resolve.

Eichengreen broadens these comparisons by providing enormous detail not only on institutions, policies, and events, but on the movers and shakers of these episodes. We learn that Charles Ponzi – yes, that Ponzi – married a 15-year old while developing his infamous pyramid scheme in the 1920s, and we learn how Bernie Madoff figured out how to better hide the fraud involved with Ponzi schemes, which allowed Madoff to construct a scheme involving more than 13,000 customers over decades. We also learn that Angelo Mozilo, the founder of Countrywide Lending, which played a major role in subprime lending in the 2000s, had such an insatiable drive for economic success that he was working as a butcher's helper at the age of 12, and that he was underwriting mortgages by the age of 16. These details shed light on the risky, and sometimes fraudulent choices that some of these individuals made. This comparative detail makes *Hall* a truly unique and fascinating book.

Comparing Crises: Macroeconomic Perspectives

Hall of Mirrors also compares these two episodes from a macroeconomic perspective. It argues that both episodes involved (i) policies and institutions that promoted risk-taking, debt accumulation, and unsustainably high asset prices, (ii) that these policies were the fundamental source of the crises, (ii) that the crises were largely responsible for both depressions, and (iv) that insufficient aggregate demand accounts for the depth and duration of both depressions.

I will first summarize Hall of Mirror's macroeconomic approach, and then provide a neoclassical perspective on these two episodes. Neoclassical analysis indicates that non-competitive policies are central in accounting for the Great Depression, and that the elimination of these policies fostered the U.S. economy's return to its pre-1929 trend. It also suggests that the continuation of the Great Recession reflects a persistent labor market distortion and a decline in productivity growth. Neither of these factors are well understood, and both are important in accounting for the economy's failure to return to its pre-2008 trend.

Macroeconomically, *Hall of Mirrors* is a natural follow-up to *Golden Fetters*, Eichengreen's 1992 book about the Great Depression. *Fetters* argued that worldwide monetary contraction was the exogenous consequence of the gold standard, and that this was responsible for much of the

income and employment losses of the 1930s. Eichengreen's view from his earlier research on the Depression is that much of the losses of the 1930s could have been prevented through internationally coordinated government policies designed to halt deflation and increase spending.

Golden Fetters was not based on an explicit model economy. This is understandable, since there was no paradigm that reasonably could address the 1930s when Eichengreen wrote *Fetters*. Large scale macroeconomic models did not have sufficient theoretical foundations. Real business cycle theory focused on relatively transitory and mild downturns, not the Great Depression. And any equilibrium model of the Depression would need to confront Franco Modigliani's 1977 widely-known barb that market-clearing models of the Depression could only be interpreted as "a severe attack of contagious laziness". When I joined the faculty of the University of Minnesota in 1995, Ed Prescott, one of the founders of real business cycle theory, remarked to me that "We need new theory for understanding the Great Depression. It is a pathological event that is beyond the scope of standard economics". In the absence of a model, *Golden Fetters* supports its arguments using considerable data that are organized in roughly 100 figures and tables throughout the book.

Hall of Mirrors does not use an explicit economic model, nor does it systematically present data. Instead, *Hall of Mirrors* uses traditional Keynesian reasoning to interpret both the 1930s and today. The ideas of Keynes (1936), and the concept of aggregate demand as a primitive object, are front and center. The equilibrium macroeconomic frameworks that supplanted Keynesian economics in the 1970s and 1980s are found to be implausible and lacking empirical relevance.

However, macroeconomic modeling has evolved enormously in the last 20 years, and this evolution includes several models tailored to the 1930s and today. These developments have created new approaches to macroeconomic history that are advancing our understanding of depressions by explicitly characterizing how regulatory, trade, tax, fiscal, and monetary policies affected economic activity in the 1930s and during other depressions[2].

[2] Models of the Great Depression feature the wage fixing and work-sharing policies of Herbert Hoover (Ohanian, 2009, Ebel and Ritschl, 2011, and Amaral and Mcgree, 2012), the worker-industry cartels of the National Industrial Recovery Act and the National Labor Relations Act (Cole and Ohanian, 1999, 2004), the tax on distributed and undistributed corporate profits (McGrattan, 2012), the cartel policies of Mussolini in Italy and Hitler in Germany (Cole and Ohanian, 2016), the impact of contractionary monetary policy on labor markets (Bordo, Erceg and Evans, 2000), the impact of monetary policy on the money multiplier and liquidity (Christiano et. al., 2003), the impact of tarrifs (Crucini and Kahn (1996)), and the impact of changes in productivity in both competitive models (Kehoe and Prescott, 2007) and in search and matching models (Petrosky-Nadeau and Zhang, 2014).

There are now many explicit frameworks to study depressions. But omitting an explicit model expands the readership of *Hall of Mirrors* considerably by making it accessible to those who are not professional economists. Moreover, Eichengreen argues that policymakers were under considerable real-time pressures that made it difficult to deploy explicit models. Eichengreen therefore frames his discussion from the perspective of today's policymakers who turned to history, rather than to formal models, for guidance.

Eichengreen is almost certainly correct that the pressure for policymakers to move quickly affected the conduct and depth of economic policy analysis. This is unfortunate, because the analytical discipline of models is very useful for providing guidance during periods of rapid change and uncertainty. Explicit models were not eschewed entirely, however. Monetary policymakers, who are the policymakers confronted with the most rapidly changing environments, did apply models. At the September 10, 2007 Federal Open Market Committee meeting, Richmond Federal Reserve President Jeff Lacker presented a sophisticated discussion of adverse selection related to the Fed's Term Auction Loan Facility (TALF), which is followed by Federal Reserve Chair Ben Bernanke, who presented an alternative perspective on TALF by citing Franklin Allen and Douglas Gale's research on market liquidity.

One can interpret Fed actions during the recent crisis from the perspective of two very different theoretical models. Karaken and Wallace (1978) focus on the incentive for financial institutions to take on risk when there is a government lender of last resort. An important policy lesson from Karaken-Wallace suggests caution in bailing out banks, and this may shed light on the Fed's decision to allow Lehman Brothers to fail in the fall of 2008.

Bryant (1980) and Diamond and Dybvig (1983) develop very different models in which there are no incentive problems with risk-taking, and bailouts are efficient in the wake of panics that otherwise would render institutions insolvent. The importance of providing ample liquidity in these models captures key aspects of Fed bailouts during the crisis.

Fiscal policymakers seemed to have made less use of explicit models in the Great Recession. Part of this may reflect policymaker perspectives on the benefits of modern models. Lawrence Summers, former head of President Obama's National Economic Council, remarked in 2011 that older, informal discussions of crises were more useful to him than explicit models:

"I attempted to read none of the papers that used the words "neoclassical," "choice-theoretic," "real business cycle," or "optimizing model of..." There is a lot in Bagehot that is about the crisis we just went through. There's more in Minksy and perhaps more still in Kindleberger."

Consequently, fiscal policy measures, such as the American Recovery and Reinvestment Act were not based on any explicit theory, but rather were adopted because they were expected to expand aggregate demand. Fiscal policy responses during the Great Recession connect more closely with Keynes (1936) than with modern research.

While it is understandable that Eichengreen omits models from *Hall*, this omission limits the book's analytical contributions. Modern equilibrium models are well-suited for studying

depressions, as these model do not necessarily feature Pareto optimal allocations, nor do they feature Walrasian market clearing, as suggested by Modigliani's (1977) early characterization. Models as discipline devices are critical because this allows researchers to determine whether their ideas are internally consistent.

What might seem to be an obvious argument outside of a model may be far from obvious within a model. Economic models share one characteristic with mules: they are very stubborn. Models resist delivering what you want if the desired result deviates very much from sensible choices made by economic actors. For example, some economists argue that lower wealth will depress an economy by reducing demand. But in a model, lower wealth reduces the demand for *all* normal goods, including leisure. This means that lower wealth, ceteris paribus, will tend to increase labor supply unless the researcher somehow shuts off this channel (see Guerrieri and Lorenzoni (2015)).

It becomes difficult to generate a large depression within an explicit model without changes that directly depress or impede the incentives or the opportunities to produce and trade, such as changes in efficiency, institutions, taxes, regulations, or trading technologies. To see this, consider Eggertsson's (2011) research on how the zero lower bound (ZLB) and deflation may generate a depression. Deflation by itself doesn't generate large effects on allocations in many classes of monetary models. Eggertsson engineers a depression with deflation by assuming a taste shock that depresses current consumption demand and assumes nominal pricing imperfections so that the relevant margins of substitution simply cannot adjust. Completely cutting off substitution margins is the key to generating a persistent and large depression in this environment.

One may be tempted to rephrase Modigliani's (1977) quip about a severe attack of contagious laziness, as an attack of contagious asceticism in this setting. However the key point is that Eggertsson's analysis clearly articulates the assumptions needed to deliver a Depression in this model. This makes it possible for other researchers to study this issue. Others have found that the ZLB results may be sensitive to the details of price-setting, alternative solution methods, specification of stochastic processes, equilibrium selection, and the inclusion of capital goods[3]. None of this would be known in the absence of modeling.

Models also provide new insights. The depression studies in Kehoe and Prescott (2007) show that even the simplest calculations from an aggregate production technology provide potentially important findings. The Kehoe-Prescott volume reports large productivity declines in many depressions, including those of the 1930s. Much of the profession initially viewed TFP declines during depressions with skepticism, and naturally so. But economists are now analyzing TFP changes from alternative perspectives than just the narrow interpretation that

[3] See Fernández-Villaverde et. al. 2014, Fernández-Villaverde et. al., 2015, Braun et. al., 2013, Christiano et. al., 2003, Cochrane, 2015, Ngo and Miao, 2015.

the economy's production possibility frontier shifted inwards. Perhaps the largest literature in this area studies how resource misallocation impacts productivity during depressions and crises[4]. The following section shows large productivity differences between the Great Depression and the Great Recession, and discusses the implications of these differences for understanding these episodes.

Key Differences between the Great Depression and the Great Recession

This section compares these two episodes by focusing on the main variables in the optimal growth model: output and its components, labor input, and productivity. All data are measured in per-capita terms and are measured relative to long-run trend, so that the balanced growth path values of all variables are normalized to 100. These data show very different patterns in total factor productivity across the two episodes, and these differences will motivate alternative theories about these episodes.

Table 1 shows these variables during the Great Depression. The data are from Cole and Ohanian (1999). The Depression featured an unprecedented decline in output, consumption, investment, and labor input, and it also shows that these variables remain far below trend after the Depression. In particular, there is very little recovery in labor input and consumption after 1933.

Table 2 shows these same variables during the Great Recession. There are similar qualitative patterns in that output, consumption, investment and labor input decline considerably, though not nearly as much as in the Depression. These variables also remain below trend after the 2009 depression trough.

However, the tables show that productivity change differs considerably between these episodes. Productivity falls substantially during the Great Depression, with TFP falling about 14 percent below trend. Following the 1933 trough, productivity rises very quickly, recovering to trend by 1936, and rising above trend after that. In contrast, productivity falls much less in the early stages of the Great Recession, and does not recover after the 2009 trough. TFP is about five percent below trend in 2009, it is about seven percent below trend in 2014, and is likely to be even further below trend in 2015.

These productivity differences, particularly those after the respective troughs, portray fundamentally different economies. Cole and Ohanian (1999) argue that rapid productivity growth following 1933 indicates a strong underlying economy that should have recovered to trend much faster from the Great Depression. In contrast, very low productivity growth after 2009 indicate an underlying weak economy following the Great Recession.

---

[4] See Moll, 2014, Oberfeld (2013), Buera and Moll, 2015, Ziebarth, 2014, Chen and Irarrazabal, 2013, Bond et. al. (2013), Sandleris and Wright (2014), and Midrigan and Xu (2014) among others.

Accounting for the Great Depression: The Importance of Anti-Competitive Policies

Neoclassical studies of depressions, and other periods with large changes in economic activity, often begin with the application of business cycle accounting[5]. These analyses identify a large productivity drop and a labor wedge that account for the downturn phase (1929-33) of the Depression, and identify only a labor wedge in accounting for the failure of the economy to return to trend afterwards.

The labor wedge is the percentage deviation in the standard atemporal first order condition that theoretically equates the marginal rate of substitution between consumption and leisure to the marginal product of labor. Plugging in output, labor, and consumption data into this first order condition that is constructed using log preferences over consumption and leisure, and a Cobb-Douglas production function, yields a marginal rate of substitution that is about 30 percent lower than the marginal product of labor. This finding suggests a large distortion to either the incentives or the opportunities to trade labor services. Changes in competitive forces distort this first order condition, and competition policies indeed changed significantly in the 1930s.

Policies began to shift in the Fall of 1929, when President Herbert Hoover met with industry heads following the stock market crash, and advised them to maintain existing nominal wages and to share work among employees, rather than lay workers off. In return, Hoover promised industry that he would keep organized labor at bay. Hoover believed that high wages would keep demand high, and maintaining industrial peace would maintain efficiency. Many major employers followed the Hoover program. Employment fell quickly, however, as deflation, combined with fixed nominal wages and lower productivity, increased unit labor costs considerably.

Ohanian (2009) developed a model with Hoover's nominal wage fixing and work-sharing policies. The model includes both a manufacturing sector and an agricultural sector, as the Hoover policies did not directly affect agriculture. Deflation is exogenously fed into the model, which raises the real value of the fixed nominal wage. This reduces labor demand and creates work-sharing in response to lower labor demand. The model generates an 18 percent drop in output, which accounts for about 2/3 of the actual decline of real output through late 1931. The model provides a theory for why deflation was apparently so damaging in the early 1930s but not at other times, such as the early 1920s. The model is consistent with the fact that the manufacturing sector declined much more than the agricultural sector, and is also consistent with declining real wages in agriculture.

The Hoover policies also generate a growing labor wedge by preventing the non-agricultural labor market from clearing. This is consistent with Simon's (2001) microeconomic analysis of "situation wanted" advertisements in the 1930s, in which job seekers advertised their qualifications and their desired wage in a newspaper advertisement. Simon found that wages

[5] See Cole and Ohanian (2002), and Chari, Kehoe and McGrattan, (2006, 2016).

paid, and advertised desired wages, were about the same before the depression. However, he found that desired wages were about 30 percent below actual paid wages during the Depression. Simon concluded that there was considerable excess supply of labor, and that the non-agricultural labor market did not clear. The research summarized here indicates that Hoover's well-intentioned policy backfired by preventing the industrial labor market from clearing, which in turn depressed consumption, investment, and output.

Business cycle accounting studies indicate that the labor wedge grew after 1933, despite the fact that Hoover's policies ended. Cole and Ohanian's (2004) research indicates that this growing labor wedge reflected anti-competitive policies, and that these policies prevented the economy from returning to trend after 1933. The failure of the economy to return to trend had long been considered a puzzle, because many post-1933 economic fundamentals were strong. Productivity grew rapidly, deflation and monetary contraction ended, banking panics were eliminated, and real interest rates declined significantly.

Cole and Ohanian (2004) identify President Roosevelt's industrial and labor policies as depressing competition. In 1933, FDR and several of his advisers proposed policies that would restrict competition and that would virtually eliminate new business formation and new entrepreneurship. Roosevelt remarked that:

"A mere builder of more industrial plants, a creator of more railroad systems, an organizer of more corporations, is as likely to be a danger as a help. Our task is not …necessarily producing more goods. It is the soberer, less dramatic business of administering resources and plants already in hand." (FDR as quoted in Cole and Ohanian, 2004).

FDR's vision of restoring prosperity is strongly at variance with modern concepts of the benefits of competitive markets and the empirical importance of new business creation in the growth process. But FDR's ideas were the foundation of the National Industrial Recover Act (NIRA), which took effect in June, 1933. The NIRA was the centerpiece of FDR's recovery program, allowing industries to cartelize by writing an industry "Code of Fair Competition". Ultimately, there were over 500 of these codes passed, which included minimum prices, production quotas, restriction on investment, and restrictions on cutting prices. These Codes were approved by government provided that industry agreed to raised wages and engage in collective bargaining.

Cole and Ohanian (2004) document that prices and wages jumped under the NIRA. They argue that other New Deal policies, including the National Labor Relations Act (NLRA) also restricted competition and further increased prices and wages. Under the NLRA, the unionization rate rose from about 7 percent in 1929 to over 20 percent by the late 1930s. The sit-down strike, in which strikers forcibly occupied a factory to prevent production, led to the unionized of General Motors in 1937 and the threat of a sit-down strike led to the unionization of US Steel later that year. Cole and Ohanian (2004) calculate that real wages in manufacturing were nearly 20 percent above trend in 1937, despite the continuation of substantial unemployment.

Cole and Ohanian's model of New Deal policies generates rising real wages and substantial industrial collusion through a dynamic bargaining model patterned after the NIRA, in which workers and firms bargain over industry rents. They found that these policies depressed output and labor by about 14 percent relative to trend, which accounts for about 60 percent of the failure of real income and output to recover.

There is also evidence suggesting that changes in labor and industrial policies contributed to the World War II economic expansion. FDR ultimately recognized the damage of cartel policies, and began to reverse these policies in the late 1930s. In a 1938 speech, FDR stated that the American economy had become a "concealed cartel system like Europe" (quoted in Cole and Ohanian (2004)). Antitrust activity was restored in 1938 and the antitrust budget was doubled.

Union power also declined in the late 1930s and afterwards. The Supreme Court rejected the sit-down strike in *National Labor Relations Board vs. Fansteel Mettalurgical* (1939). Labor bargaining power declined further in World War II as the National War Labor Board largely limited wage increases to cost-of-living changes. Wartime labor strikes, particularly coal strikes, turned public opinion against unions. After the War, labor market competition increased with the passage of the Taft-Hartley Act of 1947, which prohibited the closed shop, restricted the union shop, and allowed states to pass right-to-work legislation, which are laws that prevent an employee from being forced to join or financially support a union. These policy shifts appear to be quantitatively important in terms of the relationship between productivity and wages. Cole and Ohanian (2004) show that the 20 percent gap between manufacturing wages and productivity that existed in the mid-1930s had declined to about three percent by 1947.

The studies summarized above provide a single theme for understanding why the Depression was initially so severe, why deflation was apparently much more depressing in the 1930s than at other times, and why labor input did not recover after 1933, despite rapidly rising productivity, the end of deflation, the end of banking crises, and low real interest rates. These studies also indicate that there would have been a Great Depression and a delayed recovery even without the banking crises of the 1930s.

These macroeconomic findings contrast with those of *Hall of Mirrors*. The lack of an explicit theoretical framework in *Hall of Mirrors* limits the extent that readers can understand these differences. *Hall of Mirrors* evaluates the Hoover program and New Deal cartelization policies in terms of how they increased aggregate demand. The book is critical of the NIRA for not "expanding demand" (page 242), but is more favorable about Hoover's program of nominal wage fixing because "this (the Hoover wage-fixing) policy was important for preventing demand from falling faster" than it otherwise would have (page 124).

It is not clear why Eichengreen negatively views policies that increased real wages and promoted monopoly during the mid-1930s, but has a more positive view of similar policies that were operative in 1930 and 1931. New Keynesian models of the NIRA (see Eggertsson, 2012) and of the Hoover wage-fixing program (see Roulleau-Passdeloup and Zhutova, 2015) conclude that both sets of policies raised aggregate demand. One potential reason for the difference

between Eichengreen's views and the implications of modern Keynesian models is that modern models share relatively little with the older Keynesian approach of *Hall of Mirrors*. The modern Keynesian analysis of fiscal expansion is based on environments in which there is effectively a zero marginal propensity to consume. Fiscal expansion works by getting around the zero lower nominal interest rate bound and lowering the real interest rate. An explicit framework would have helped clarify Eichengreen's different views on the Hoover policy and the Roosevelt policy, and how his assessment of policies differs from those of New Keynesian models of the Depression.

Hall of Mirrors places the primary blame for the Depression on banking crises, not on policies that distorted competition. There is a widely-held presumption, extending back to at least Friedman and Schwartz (1963), that banking crises were the major contributing factor to the Great Depression. However, there are data that raise questions about the quantitative importance of these crises.

One key issue is that the Depression was well underway before the banking crises. There is a mistaken perception that the Great Depression was a "garden variety recession" before the banking crises occurred. But the Great Depression was "Great" before these crises. Industrial production had already declined by 35 percent before the first banking crisis cited by Friedman and Schwartz (1963), which occurred in November, 1930.

The fact that the Depression was well underway before banking crises complicates assessing the contribution of crises to the Depression, and there are debates about the macroeconomic impact of the crises. Hetzel (2012), drawing on studies that have appeared since Friedman and Schwartz, concludes that the crises were largely consequences of the Depression, not the cause of the Depression. Wicker (1996) argues that the first macroeconomically important crisis did not occur until September, 1931, at which point industrial production had declined by about 48 percent. Thus, there is a very large decline in economic activity that occurs prior to the impact of banking crises, whether one takes the Friedman-Schwartz view or the Wicker-Hetzel view.

Another issue is the size of the shock associated with the banking crises. Economists often implicitly measure this as the number of banks that exited the industry. The number of banks declined by roughly one-third during the Depression, which is certainly large. However, this statistic is uninformative about the loss of banking capacity during the Depression, as it does not capture the size of these banks, nor does it account for mergers and acquisitions that would reduce the number of banks, but that would preserve banking capacity.

Cole and Ohanian (2001) measure the size of the Depression banking crises by the share of deposits in banks that either failed or temporarily suspended operations. The affected banks were small. The share of demand deposits in banks that suspended operations in the 1930-32 period averaged less than three percent per year of national demand deposits, and the share of deposits in banks that failed averaged only about 0.6 percent per year of national demand deposits. This is much smaller than what is implied by the statistic that the number of banks fell by one-third during the Depression.

Cole and Ohanian (2001) also argue that it is challenging to reconcile the pattern in corporate retained earnings with models of banking crises. They document that retained earnings fell considerably during the Depression, as large firms reduced their internal cash holdings in order to pay dividends. If banking distress was the major factor, then firms would have strong incentives to preserve a large internal buffer stock of cash rather than distribute the cash to shareholders. Cole and Ohanian (2001) also document that there is no correlation between the severity of banking crises, as measured by deposits in suspended or failed banks, and the severity of depression at the state level.

There is other research implicitly suggesting that banking crises were not the major depressing factor. Richardson and Troost (2006) compare changes in bank failures and output in the Depression by dividing the state of Mississippi between the Atlanta and the St. Louis Federal Reserve districts. The Atlanta Fed lent much more to Mississippi banks during the 1930 banking crisis than the St. Louis Fed, and many more Mississippi banks suspended operations or were liquidated in the St. Louis District than in the Atlanta Fed district.

However, there is no major difference in output change between the two districts. Nominal wholesale trade declined by 66 percent in the St. Louis Federal Reserve district of Mississippi during 1929-33, and by 58 percent in the Atlanta Federal Reserve district of Mississippi. It is difficult to draw firm conclusions regarding this difference, as this is a nominal change rather than a real change, the measure of production is wholesale transactions, rather than final output, there may be other differences in these two districts that affect output, and the comparison involves only one state. Given these caveats, the fairly small difference in the change in nominal wholesale trade in the two Federal Reserve districts of Mississippi does not provide much support for the view that banking crises were the key factor in the Depression. While more research is needed, the findings summarized here suggest that the quantitative importance of banking crises remains an open question.

The American economy ultimately returned to its pre-Great Depression trend. This recovery began with the expansion of pro-competitive policies in the late 1930s and World War II. After the war, there were a number of policies that promoted market economic activity, including major infrastructure investments such as the National Highway system, tax reforms, and deregulation of transportation, telecommunications, energy, and airlines. In the next section, I will argue that restoring prosperity following the Great Recession may be considerably more challenging than after the Great Depression.

The Great Recession in the Shadow of the Great Depression

Hall of Mirrors draws close parallels between the Great Depression and the Great Recession, but the data presented here, and the analysis in Ohanian (2010), suggest that there are fundamentally different forces at work. In Ohanian (2010), I showed that a rising labor wedge, which is observationally equivalent to the effect of a 13 percentage point increase in a labor

income tax rate, accounts for much of the early stages of the Great Recession. This labor wedge, however, has persisted long after the NBER judged that the recession was over in mid-2009, suggesting that the factors affecting the labor market have continued. Moreover, Table 2 shows that the failure of the economy to recover to its pre-2008 trend also reflects declining productivity relative to trend.

At some level, the forces driving the Great Recession and its aftermath are more difficult to understand than those of the Great Depression. This idea may seem odd, since most economists cite the 2008 financial crisis as the major factor behind the Great Recession. However, standard models of financial crises, such as Bernanke, Gertler, and Gilchrist (1999) do not generate a labor wedge, nor do they generate productivity loss following the crisis. This means that we do not yet have a theory of the behavior of the labor market over the last several years, nor do we have a theory of the chronic productivity decline.

This lack of theory suggests that fiscal policy responses to the recession, such as the American Recovery and Reinvestment Act, Cash for Clunkers, the Homebuyer Tax Credits, and the Payroll Tax Holiday reflected the older ideas of expanding aggregate demand and subsidizing struggling industries. There are many studies of the macroeconomic effect of Great Recession fiscal policies, and they reach very different conclusions (see Ramey (2011) for a survey). Some economists, including Barro (2009) and Taylor (2011), argue that these policies did little to restore jobs, while Eichengreen and a number of other economists argue that these policies were effective, with a multiplier well above one. They conclude that government should have done more.

We may never have a clear answer regarding the macroeconomic impact of Great Recession fiscal policies. There are significant empirical challenges in addressing this question, which partially reflects the fact that the aggregate magnitudes of the 2009 fiscal policies are relatively small. This contrasts with the case of World War II fiscal policies, in which the aggregate magnitudes of the policy changes were much larger, and thus are easier to evaluate. Some studies find that the World War fiscal "multiplier", however, was below one (see Barro (2008) and McGrattan and Ohanian (2010)).

This raises the broader question of whether governments should have done more during the crisis and recession. There is historical evidence, which is also supported by conventional economic theory, that government interventions aimed at improving the economy, particularly interventions not supported by theory, should be viewed with caution. For the United States, this not only includes Hoover's wage fixing policies in the early 1930s and FDR's cartelization policies of the mid-1930s, but also includes the Hawley-Smoot tariff of 1930, Nixon's wage and price controls in the early 1970s, energy price controls and rationing in the mid-1970s, stop-and-go inflationary monetary policy in the 1970s, and credit controls in 1980. In Europe, this includes the expansion of labor and product market restrictions and regulations in the 1970s and 1980s. "Doing less" would seem to have been better in these cases.

Moreover, it is particularly important to exercise caution when considering large policy shifts in an economy that is not well understood, such as today's economy. To see this, note that policymakers consistently have misperceived the evolution of the U.S. economy since the Great Recession. Lansing and Pyle (2015) show that the Federal Reserve consistently forecasted higher economic growth than actual growth since 2007, and the Council of Economic Advisors made similar forecast errors. These forecast errors are largely the consequence of the economy shifting to a lower steady state growth path such that output, labor, and other aggregate variables have not recovered to their pre-2007 trend levels. Standard models of financial crises do not generate a lower steady state growth path for the economy, and thus are not informative for understanding this transition to a lower steady state.

The persistent accumulation of income and employment losses from the Great Recession means that the aftermath of the Great Recession is becoming increasingly more costly than the recession itself. The civilian employment-population ratio was about the same at the end of 2015, as it was at the trough of the Great Recession in June, 2009, and real GDP has been roughly seven percent below its pre-2008 trend for several years.

The post-2009 data are very troublesome and invite a comparison with the post-1933 U.S. economy. The large difference in post-trough productivity between the Great Depression and the Great Recession are important for understanding the differences in these shifts. The failure of the economy to recover to trend after 1933 occurred during a period of unprecedented strong productivity growth, in which productivity quickly returned to its trend. But the failure of the economy to recover to its pre-2007 trend is occurring during a period of unprecedented weak productivity growth. Fernald's (2012) measure of business-sector TFP grew on average about 1.4 percent between 1947 and 2007, but has grown only about 0.6 percent per year in the last five years.

The sources of the TFP growth decline is a major open question for understanding the lack of recovery from the Great Recession. McGrattan and Prescott (2011) discuss recent productivity trends from the perspective of intangible investment, which they argue has declined considerably in recent years. This factor has considerable potential, but would benefit from additional improvements in national accounts measurement of these factors. Haltiwanger et al. (2015) present data suggesting that the long-run potential growth of the economy may have declined. They document that job creation and job destruction rates have both declined considerably since the 1980s, and note a large decline in the new business start-up rate, which has declined about 30 percent since the early 1980s. About half of this decline in the start-up rate has occurred since 2009.

Start-ups are important for U.S. economic growth, as they are the source for considerable innovation and they also are responsible for a disproportionate share of job creation. Haltiwanger et al. note that net job creation is *negative* during an average year in the U.S. economy across all incumbent firms.

The lower start-up rate has important implications for understanding U.S. economic growth. A very small share of start-ups become successful and grow substantially, but ultimately are overtaken by future generations of successful startups. At one time, the major industrial companies, such as General Motors and U.S. Steel were among the most important drivers of U.S. economic growth. More recently, relatively young companies in the area of information technology, such as Apple, Microsoft, Oracle, and Google, and in retailing, such as Walmart, Costco, Amazon, and Home Depot, have been important drivers of growth.

There is a lifecycle for firms, and a growing economy systematically reallocates resources from mature enterprises, which become relatively smaller over time, to young, growing enterprises. It is interesting and potentially important that the Great Recession bailout policies protected mature, incumbent producers. These policies helped keep bank and auto firms afloat by shifting resources to old firms, but these bailouts also may have impeded the natural process of reallocation that is necessary for economic growth.

Deficient productivity growth is an even more important issue in other advanced countries, particularly in Europe. The Penn World Tables (see Feenstra et al. (2013)) constructs TFP for many countries. Their TFP measures add public sector capital to the capital stock and adjust labor input for changes in educational attainment. These adjustments are quantitatively important, as European governments invested substantially in public capital, and the average number of years of schooling in Europe rose considerably.

Fernandez-Villaverde and Ohanian (2014) report that the Penn World Tables measure of TFP in all major Eurozone countries – Germany, France, Italy, and Spain – is no different today than it was in the 1980, despite remarkable technological change. They suggest that various distortions, including subsidies and other forms of protection for incumbent producers, restrictions and taxes on resource reallocation, high startup costs, and an inefficient venture capital system, may be to blame.

While the Penn World Tables may overstate Europe's productivity deficiency, the bulk of the evidence suggests that Europe has been struggling for decades with fundamentally underperforming economies. Europe's long-run problems are perhaps best highlighted in one statistic reported by Phillipon and Veron (2008). They document that only one business in Continental Europe founded between 1976 and 2007 made the Financial Times list of the largest 500 global companies, compared to 20 such companies from the U.S.

Many recent discussions of Europe's economic troubles, however, gloss over Europe's fundamental long-run weaknesses and focus on European debt and the failure of European governments to spend more. European debt is certainly an important problem, but most of these discussions implicitly suggest that the European economies would be healthy in the absence of debt problems, and if European countries chose to increase government spending. For example, Eichengreen writes in *Hall of Mirrors*:

"Policymakers could have done more. And their failure to do so largely explains why the recovery continued to disappoint." (Page 311)

This discussion suggests two very different views of the Great Recession's aftermath of weak economic performance. One view focuses on "supply side" factors, such as productivity growth, resource reallocation, and entrepreneurship, and the other view focuses on "demand side" factors, such as spending and monetary policy. Hansen and Ohanian (2016) present evidence that suggests supply-side factors may be most important for understanding the Great Recession's aftermath. They decompose U.S. time series of output, hours worked, productivity, consumption, and investment into traditional business cycle components, and into longer run components. They find that the bulk of variation in these time series since the early 1980s is accounted for by the long-run component, which suggests a limited role for demand-side factors that typically operate through the transient channels of temporarily inflexible prices and/or wages, or imperfections in debt and other financial markets.

In terms of supply-side factors, understanding low TFP growth poses a challenge for the profession. The long-run changes in job creation, job destruction, and startup rates documented by Haltiwanger et al. are compelling, but much of the decline in TFP growth has come recently. Economists and policymakers have tried for many years to develop policies that will increase TFP growth, but this remains elusive. Given the potentially important role of start-ups in the growth process, it may be relevant to consider proposals that expand immigration of foreign entrepreneurs. About half of all successful technology startups were founded or co-founded by an immigrant, and about 40 percent of the current Fortune 500 were founded by an immigrant or by the child of an immigrant.

Gordon (2015) presents a very pessimistic view about the future of productivity growth. He argues that returning TFP growth to its historic norm will become increasingly difficult, given that remarkable technological advances have already occurred, including the microprocessor, the personal computer, the internet, smart phones, and the digitization of world knowledge. Understanding recent productivity trends, and what they may augur for the future is perhaps the major priority of macroeconomics today.

In contrast to the supply side view, the aggregate demand view, which is the focus of *Hall of Mirror*s, stresses more spending. Many of the discussions of spending programs or the elimination of these programs within the economics literature and particularly in popular media, are framed using terms such as "stimulus" and "austerity". But this language is very imprecise, and the tendency to define policies in a "one size fits all" description of one term or the other doesn't advance our understanding of the effects of policies.

To see this, note that the impact of any fiscal policy depends on many factors, including how resources are used, and how the spending will be financed. For example, Prescott (2004), and Ohanian, Raffo, and Rogerson (2006) find that government spending that substitutes closely for private consumption, in conjunction with higher tax rates on consumption and labor, can account for much of the large decline in hours worked in many European countries since the 1960s, including a nearly 40 percent drop in hours worked per capita in Germany. In contrast, McGrattan and Ohanian (2010) show that the negative wealth effect of World War II spending,

which didn't substitute for private spending, combined with considerable debt issue, accounts for much of the large increase in hours worked in the 1940s. This indicates that the effects of fiscal policy changes cannot be assessed reliably without an explicit model.

While debate continues regarding the role of expanding aggregate demand as a means of expanding employment and output, I anticipate that economists will increasingly analyze the continuing economic deficiencies in the U.S. and Europe from the perspective of some type of growth theory. The alternative, demand-based view becomes a less compelling explanation of chronically underperforming economies as the crisis and the Great Recession become increasingly distant events, and as TFP falls further below its long-run trend.

Conclusions

Hall of Mirrors is an intriguing and rich tale written by one of the most knowledgeable economist historians of our time. The book compares the economies and the institutions of the 1930s and today based on a thesis of too much risk-taking and not enough demand. It will naturally appeal to readers who are sympathetic to Keynesian themes, but also will be of interest to many others because of its fascinating and unique historical detail and comparisons. After reading this book, you will wish you could take a course in economic history from Eichengreen.

This book proposes a remedy of increasing government spending to restore prosperity. If Eichengreen's aggregate demand interpretation of today's underperforming economies is correct, then we have been living with enormous policy mistakes that in principle would have been straightforward to correct. While we can't replay the 1930s, the debate about the sources of deficient economic performance is relevant for today.

This debate largely boils down to whether *Hall of Mirrors* policy proposals of higher government spending would significantly boost the U.S. and European economies. We do not yet have an answer to this question, but declining productivity growth, long-run declines in job creation, entrepreneurship, and resource reallocation, an aging workforce, and a growing pool of workers who do not have the skills to be competitive for high-paying jobs, indicate that it may be considerably more challenging to restore prosperity today than suggested in *Hall of Mirrors.*

References

Amaral, Pedro S., and James C. MacGee. 2012. "Re-Examining the Role of Sticky Wages in the US Great Contraction: A Multisector Approach." EPRI Working Paper 2012-5

Barro, Robert J. 2008. *Macroeconomics: A Modern* Cincinnati, South-Western College Publishing.

Bernanke, Ben S., Mark Gertler, and Simon Gilchrist. "The financial accelerator in a quantitative business cycle framework." *Handbook of Macroeconomics* 1 (1999): 1341-1393.

Blinder, Alan S. 2013. *After the music stopped: The financial crisis, the response, and the work ahead*. New York: Penguin.

Bond, Eric W., Mario J. Crucini, Tristan Potter, and Joel Rodrigue. "Misallocation and productivity effects of the Smoot–Hawley tariff." *Review of Economic Dynamics* 16, no. 1 (2013): 120-134.

Bordo, Michael D., Christopher J. Erceg, and Charles L. Evans. "Money, Sticky Wages, and the Great Depression." *American Economic Review* 90, no. 5 (2000): 1447-1463.

Braun, R. Anton, Lena M. Koerber, and Yuichiro Waki. 2013. "Small and orthodox fiscal multipliers at the zero lower bound." FRB Atlanta Working Paper 2013-13.

Bryant, John. "A Model of Reserves, Bank Runs, and Deposit Insurance." *Journal of Banking and Finance* 4 (1980) 335 – 344.

Buera, Francisco J., and Benjamin Moll. "Aggregate implications of a credit crunch: The importance of heterogeneity." *American Economic Journal: Macroeconomics* 7, no. 3 (2015): 1-42.

Chari, Varadarajan V., Patrick J. Kehoe, and Ellen R. McGrattan. "Business cycle accounting." *Econometrica* 75, no. 3 (2007): 781-836.

Chari, Varadarajan, Patrick Kehoe, and Ellen R. McGrattan. Forthcoming. "Business Cycle Accounting" in *Handbook of Macroeconomics*, edited by John Taylor and Harald Uhlig.

Chen, Kaiji, and Alfonso Irarrazabal. 2013. "Misallocation and the recovery of manufacturing TFP after a financial crisis." Norges Bank Working Paper 2013-01.

Christiano, Lawrence, Roberto Motto and Massimo Rostagno. "The Great Depression and the Friedman-Schwartz Hypothesis." *Journal of Money, Credit and Banking 35, no. 6 (2003)*: 1119-1197.

Cogan, John and John B. Taylor. 2010. "What the Government Purchases Multiplier Actually Multiplied in the 2009 Stimulus Package." in *Government Policies and the Delayed Economic Recovery,* edited by Lee E. Ohanian, John B. Taylor, and Ian Wright. Stanford, CA.: Hoover Institution Press.

Cochrane, John. 2015. "The New Keynesian Liquidity Trap." http://faculty.chicagobooth.edu/john.cochrane/research/papers/zero_bound_2.pdf

Cole, Harold L., and Lee E. Ohanian. "The Great Depression in the United States From A Neoclassical Perspective." *Federal Reserve Bank of Minneapolis Quarterly Review* 23, no. 1 (1999): 2-24.

Cole, Harold L., and Lee E. Ohanian. "Re-examining the contributions of money and banking shocks to the US Great Depression." *NBER Macroeconomics Annual 2000, Volume 15*. MIT Press, (2001): 183-260.

Cole, Harold L., and Lee E. Ohanian. "The US and UK Great Depressions through the lens of neoclassical growth theory." *American Economic Review* 92, no. 2 (2002): 28-32.

Cole, Harold L., and Lee E. Ohanian. "New Deal policies and the persistence of the Great Depression: A general equilibrium analysis." *Journal of Political Economy* 112, no. 4 (2004): 779-816.

Cole, Harold L. and Lee E. Ohanian. 2016 “The Impact of Cartelization, Money, and Productivity Shocks on the International Great Depression.” Unpublished.

Crucini, Mario and James Kahn. “Tariffs and Aggregate Economic Activity: Lessons from the Great Depression.” Journal of Monetary Economics 38, no. 3 (1996): 427-467.

Diamond, Douglas and Philip Dybvig. “Bank Runs, Deposit Insurance, and Liquidity.” Journal of Political Economy 91, no. 3 (1983) 401-419.

Ebell, Monique and Albrecht Ritschl. 2008. "Real Origins of the Great Depression: Monopoly Power, Unions and the American Business Cycle in the 1920s," CEP Discussion Paper No. 876

Eggertsson, Gauti B. "What fiscal policy is effective at zero interest rates?"*NBER Macroeconomics Annual 2010, Volume 25*. University of Chicago Press, (2011): 59-112.

Eggertsson, Gauti B. "Was the New Deal Contractionary?" *The American Economic Review* 102, no. 1 (2012): 524-555.

Eichengreen, Barry. *Golden fetters: the gold standard and the Great Depression, 1919-1939*. Oxford: Oxford University Press, 1992.

Feenstra, Robert C., Robert Inklaar, and Marcel P. Timmer. "The Next Generation of the Penn World Table." *The American Economic Review* 105, no. 10 (2015): 3150-3182.

Fernald, John. 2014. "A quarterly, utilization-adjusted series on total factor productivity." *Federal Reserve Bank of San Francisco Working paper* 2012-19.

Fernández-Villaverde, Jesús, Pablo Guerrón-Quintana and Juan F. Rubio-Ramírez. "Supply-side policies and the zero lower bound." *IMF Economic Review* 62, no. 2 (2014): 248-260.

Fernández-Villaverde, Jesús, Grey Gordon, Pablo Guerrón-Quintana and Juan F. Rubio-Ramírez. "Nonlinear adventures at the zero lower bound." *Journal of Economic Dynamics and Control*, Volume 57 (2015): 182-204

Fraser, Steve, and Gary Gerstle. 1989. *The Rise and Fall of the New Deal Order, 1930-1980*. Princeton, N.J.: Princeton University Press.

Friedman, Milton, and Schwartz, Anna J. 1963. *Monetary History of the United States, 1867-1960.* Cambridge, MA: NBER Books.

Gerstle, Gary, and Steve Fraser. 2009. *Ruling America: A history of wealth and power in a democracy*. Cambridge, MA.: Harvard University Press.

Gordon, Robert J. "Secular Stagnation: A Supply-Side View." *American Economic Review* 105, no. 5 (2015): 54-59.

Guerrieri, Veronica and Guido Lorenzoni. 2015. "Credit Crises, Precautionary Savings, and the Liquidity Trap."
http://faculty.chicagobooth.edu/veronica.Guerrieri/research/Credit%20Crises%20Jan%202015.pdf

Haltiwanger, John. 2015. "Top Ten Signs of Declining Business Dynamism and Entrepreneurship in the US."
http://econweb.umd.edu/~haltiwan/Haltiwanger_Kauffman_Conference_August_1_2015.pdf

Hetzel, Robert. 2012. *The Great Recession: Market Failure or Policy Failure?* Cambridge, England: Cambridge University Press.

Kehoe, Timothy J., and Edward C. Prescott. 2007. "*Great depressions of the twentieth century*."
http://www.econ.umn.edu/~tkehoe/papers/depressions.pdf

Keynes, John Maynard. 1936. *The General Theory of Employment, Interest, and Money*. London: Macmillan.

Kareken, John H., and Neil Wallace. 1978. "Deposit Insurance and Bank Regulation: A Partial-Equilibrium Exposition." *Journal of Business* 51 413–38

Lansing, Kevin and Benjamin Pyle. 2015. "Persistent Overoptimism about Economic Growth", FRBSF Economic Letters, 2015-03

Lucas, Robert E. Jr. 2012. “The Recession of 2007-2012.” Lecture presented at the Friedman Forum Lecture, University of Chicago, Chicago.

Ngo, Phuong, and Jianjun Miao. 2014. "Does Calvo Meet Rotemberg at the Zero Lower Bound?" http://people.bu.edu/miaoj/CalvoRotemberg06.pdf

McGrattan, Ellen R. "Capital Taxation During the US Great Depression." *The Quarterly Journal of Economics* 127, no. 3 (2012): 1515-1550.

McGrattan, Ellen R., and Lee E. Ohanian. "Does Neoclassical Theory Account for the Effects of Big Fiscal Shocks? Evidence from World War II*." *International Economic Review* 51, no. 2 (2010): 509-532.

McGrattan, Ellen R. and Edward C. Prescott. 2011. “The Great Recession and Delayed Recovery: A Labor Productivity Puzzle?”, in *Policies and the Delayed Economic Recovery,* edited by Lee E. Ohanian, John B. Taylor, and Ian Wright. Stanford, CA: Hoover Institution Press**.**

Modigliani, Franco. "The Monetarist Controversy or, Should We Forsake Stabilization Policies?" *American Economic Review* 67, no. 2 (1977): 1-19.

Moll, Benjamin. "Productivity Losses from Financial Frictions: Can Self-Financing Undo Capital Misallocation?." *The American Economic Review* 104, no. 10 (2014): 3186-3221.

Oberfield, Ezra. "Productivity and misallocation during a crisis: Evidence from the Chilean crisis of 1982." *Review of Economic Dynamics* 16, no. 1 (2013): 100-119.

Ohanian, Lee E. "Why did productivity fall so much during the Great Depression?." *American Economic Review* 91, no. 2 (2001): 34-38.

Ohanian, Lee E. "What–or who–started the great depression?." *Journal of Economic Theory* 144, no. 6 (2009): 2310-2335.

Ohanian, Lee E. "The economic crisis from a neoclassical perspective." *The Journal of Economic Perspectives* 24, no. 4 (2010): 45-66.

Ohanian, Lee E. "Comment on "What Fiscal Policy is Effective at Zero Interest Rates?"." *NBER Macroeconomics Annual 2010, Volume 25*. University of Chicago Press, (2011): 125-137.

Petrosky-Nadeau, Nicolas, and Lu Zhang. 2013. “Unemployment crises.” NBER Working Paper No. 19207.

Philippon, Thomas and Nicolas Véron. 2008. "Financing Europe's fast movers." Bruegel Policy Briefs, 2008-01.

Prescott, Edward C. "Why Do Americans Work So Much More Than Europeans?." *Federal Reserve Bank of Minneapolis Quarterly Review* 28, no. 1 (2004): 2-13.

Prescott, Edward C. 2015. “The Poor Economic Performance in EU and US Problems are Political, not Economic”, Lecture presented at the Annual Meetings of the Society of Economic Dynamics, Warsaw.

Ramey, Valerie A. "Can government purchases stimulate the economy?." *Journal of Economic Literature* 49, no. 3 (2011): 673-685.

Roulleau-Pasdeloup, Jordan, and Anastasia Zhutova. 2015. “Labor Market Policies and the" Missing Deflation" Puzzle: Lessons from Hoover Policies during the US Great Depression.” https://dl.dropboxusercontent.com/u/99438343/papers/Roulleau-Pasdeloup_Zhutova_2015.pdf

Sandleris, Guido, and Mark LJ Wright. "The costs of financial crises: Resource misallocation, productivity, and welfare in the 2001 argentine crisis." *The Scandinavian Journal of Economics* 116, no. 1 (2014): 87-127.

Summers, Lawrence (2011) “A Conversation on New Economic Thinking”, http://larrysummers.com/commentary/speeches/brenton-woods-speech/

Taylor, John B. "An empirical analysis of the revival of fiscal activism in the 2000s." *Journal of Economic Literature* 49, no. 3 (2011): 686-702.

Wicker, Elmus. 1996. *The Banking Panics of the Great Depression.* Cambridge, England: Cambridge University Press.

Ziebarth, Nicolas L. 2014. "Misallocation and Productivity in the Great Depression." Unpublished.

Table 1: Detrended Real Output, Labor Input and Productivity in the Great Depression
Index 1929 = 100

Year	Output	Consumption	Business Fixed Investment	Government Purchases	Hours Worked	TFP
1930	87.3	90.8	69.2	105.1	91.9	94.8
1931	78.0	85.2	46.1	105.3	83.5	93.5
1932	65.1	75.8	22.2	97.2	73.4	87.8
1933	61.7	71.9	21.8	91.5	72.6	85.9
1934	64.4	71.9	27.9	100.8	71.7	92.6
1935	67.9	72.9	41.7	99.8	74.7	96.6
1936	74.7	76.7	52.6	113.5	80.6	99.9
1937	75.7	76.9	59.5	105.8	83.0	100.5
1938	70.2	73.9	38.6	111.5	76.3	100.3
1939	73.2	74.6	49.0	112.3	78.7	103.1

Table 2: Detrended Real Output, Labor Input and Productivity in the Great Recession
Index 2007 = 100

Year	Output	Consumption	Business Fixed Investment	Government Purchases	Hours Worked	TFP
2008	97.3	97.9	96.9	100.3	98.5	96.8
2009	92.2	94.4	79.8	100.9	92.0	95.0
2010	92.2	93.3	79.7	98.4	91.6	96.5
2011	91.5	92.8	83.8	93.2	92.0	95.4
2012	91.0	91.0	88.8	88.9	93.4	95.2
2013	90.3	90.0	89.5	84.4	94.4	93.8
2014	90.4	90.1	92.9	82.1	95.2	92.9