1 Introduction

The “Great Recession” is the name now commonly given to the economic contraction that occurred in the United States (and most other developed countries) starting towards the end of 2007. The contraction became magnified in 2008 and the early part of 2009, and somewhat subsided thereafter, though there remains considerable weakness in many parts of the US economy, particularly in the labor market.

There are many aspects to this economic crisis, most of which we will not discuss. In fact, one could offer an entire course on the subject. Many books have and will be written. There will be some re-evaluation of existing economic theories in light of what happened. Our objective in this part of the course is not come up with a definitive explanation of why the Great Recession happened, nor is our objective to develop a full-fledged critique of modern macroeconomics (though many want to do that, and, at least in some instances, I think these criticisms have some merit). Rather, we want to give a brief overview of what happened (i.e. a “positive” description of reality). Then we want to see how, if at all, we can map what happened into the Keynesian model of the business cycle (one could, in principle, also do this in the context of the real business cycle model, but I do not think this model gives a good account of the crisis, nor does it provide a viable framework in which to evaluate some of the policy responses to the crisis). We also want to think about the unprecedented policy responses that we have seen. Finally, we will close with some unanswered questions – things to think about as you move forward in your academic careers.

2 Some Facts

There is no official way to “date” recessions. The National Bureau of Economic Research (NBER), has a “business cycle dating committee” that, well after the fact, decides when recessions began and when they ended. These dates are not based on the behavior of any one macroeconomic series or data set, but are rather based on a broad-based reading of the data. The official dates of the Great Recession in the United States are December of 2007 to June of 2009.
The picture above plots actual real GDP (solid line) and a hypothetical trend line (dashed line) from a linear trend. We see real GDP starting to decline relative to trend at the end of 2006 and beginning of 2007. GDP was pretty flat for 2007, and really contracted in 2008 and into 2009. Unlike in previous deep contractions (such as the 1981-1982 recession), GDP has not grown faster to “catch up” with its old trend line. It’s hard to tell in real time, but it certainly doesn’t appear as though we’ll be returning to our old trend line.

The Great Recession had a particularly large effect on labor markets. Below I show a plot the unemployment rate. Unemployment increased from roughly five percent in early 2007 to about 10 percent in the middle of 2009. Unemployment has remained stubbornly high – unemployment remained above 9 percent through 2010 (well after output had begun to recover), and remained high for several years thereafter. It has currently fallen to close to 5 percent, which is more normal from the perspective of the post-war period (the graph below is dated by a couple of years and so you can’t see this reduction in the unemployment rate down to 5 percent). Many have referred to the last several years as a “Jobless Recovery.”
For reasons about which we have already talked, there are some conceptual issues with the unemployment rate, particularly if people drop out of the labor force. There has been a large reduction in labor force participation in and around the Great Recession. If you look at total hours worked, the picture indeed looks somewhat bleaker. In particular, total hours worked fell by more than 10 percent, and, like the unemployment rate, the recovery has been tepid.

The Great Recession has been associated with lower than average inflation, though, with the exception of one quarter, we have not seen deflation. The fact that inflation has been lower than normal suggests that the underlying cause of the recession has been more demand-side than supply-
side, though some have raised the point that, given the fall in output, the fall in prices (or at least the slowdown in price growth, i.e. inflation) should have been larger. Below I show a plot of annualized inflation as measured by the GDP price deflator, along with a flat line at the mean level of inflation over the last thirty years. By and large, we have had lower than average price growth over the last five years.

Another remarkable thing about the Great Recession has been the behavior of the Federal Funds rate, which has been the main policy interest rate targeted by the Federal Reserve. In particular, the Fed aggressively lowered interest rates (by increasing the money supply) throughout 2007, and by the Fall of 2008 the Fed Funds rate had effectively hit zero. It has been there ever since.
What we’ve shown so far are facts about endogenous variables – how did output, prices, labor market variables, and interest rates behave during and immediately after the Great Recession? What can we say about *causes* of the Great Recession (loosely speaking, which exogenous variables in our model do the data point to as culprits)? There are two areas of the economy that are at the center of any discussion of the Great Recession – housing and the financial sector.

Throughout the early and middle part of the last decade, average house prices across the US experienced unprecedented growth. As measured by the Case-Shiller 20 City House Price Index, average house prices rose by more than 50 percent in the first part of the decade. Many have referred to this as a “bubble.” “Bubble” is a somewhat imprecisely defined term, particularly in the popular literature. In economics, a “bubble” refers to a situation in which the price of an asset deviates from its “fundamental value,” which is defined as the presented discounted value of flow returns from the asset. In the popular usage of the term, a “bubble” usually just refers to a situation in which the price of an asset rose faster than normal (and usually fell after the fact) – for example, the “housing bubble” of the 2000s or the “tech stock bubble” of the 1990s. Determining whether these events were “bubbles” from the perspective of the formal definition economists use is a challenge. I’m not going to take a strong stand either way. What is relevant for our purposes is that house prices rose dramatically in the early part of the decade – this could have resulted from irrational exuberance, credit market innovations that expanded mortgage finance to a wider portion of the population, excessively low interest rates from the Fed, government subsidies to housing from Government Sponsored Enterprises (GSEs) like Fannie Mae and Freddi Mac, etc.
What is relevant from our perspective is that housing prices crashed spectacularly, erasing much of the gains from the early 2000s. Starting in 2006, house prices slowed down, and the decline began in earnest in 2007 and continued through 2008 and into 2009. By the middle of 2009, house prices had declined by 30 percent or more. There has been some stabilization and even growth since then, but we’ve not approached pre-crisis levels of house prices as of yet.

The boom and subsequent bust in housing prices is associated with changing quantities of (i) housing construction and (ii) employment related to housing construction. Total “housing starts” (a measure of new residential construction) fell enormously as house prices fell (this makes perfect economic sense – supply declines as price declines). Employment in the construction industry also fell markedly, by as much as 30 percent. Even though construction is a relatively small fraction of total US employment, the large decline in this industry can account for a decent-sized chunk of the total employment decline observed over the period. Employment in construction has stabilized somewhat, but is barely growing and does not look poised to return to pre-crisis levels any time soon.
Chronologically after the housing market began to collapse, the US (and worldwide) financial system showed signs of weakness and itself began to collapse. The financial collapse was in many ways a direct consequence of the housing collapse. Large financial institutions (banks, shadow banks, investment banks, insurance companies, etc.) had increasing exposure to housing markets through mortgage backed securities, which are essentially bundles of mortgages put into a bond (that pays out every period), with the idea that by bundling a bunch of different mortgages you insure yourself against particular loans going bad. The proliferation of mortgage backed securities (also aided by the GSEs like Fannie and Freddie) is one factor that helped fuel the housing market.
boom in the first place – because mortgage originators could quickly get particular mortgages “off the books” by selling them to a larger institution for bundling, the originators weren’t exposed to much risk and therefore had little incentive to issue mortgages to worthy borrowers. This meant that people who used to not be able to get mortgages were qualifying, which drove up the demand for housing.

This world was all rosy so long as housing prices continued to rise. But when housing prices started to decline, things became problematic. First, if house prices decline enough, a homeowner can end up with “negative equity,” which means that the outstanding mortgage balance exceeds the market value of the home. In this situation, a homeowner may have an incentive to “walk away” – to quit paying the mortgage altogether. Negative equity is more likely if the homeowner put little “down” on the house at the time of mortgage issuance, which was increasingly the case. Other people became unable to pay their mortgages because they had signed up for adjustable rate mortgages (ARMs) and other non-standard methods of finance. These usually started out at very low rates but higher rates would eventually kick in. People could make good on these loans if the price of their home were to rise – when rates were scheduled to increase, they could refinance, using the built up equity in their home (from the appreciation in price) for a downpayment on the refinance, thereby avoiding the higher rates. But when house price appreciations didn’t in fact materialize, this wasn’t an option, and so some other people became unable to pay their mortgages, and these loans also went bad.

Mortgage loans going bad mean that the mortgage backed securities that had bundled together a bunch of loans were now paying out less than expected, and were therefore not as valuable as before. Worse yet, it was difficult to tell where the losses were coming from, increasing uncertainty. As the value of mortgage backed securities declined, the institutions that were heavily exposed to them began to teeter on the edge of insolvency. Worse yet, because of other financial market innovations (like collateralized debt obligations, CDOs, a kind of “insurance”) the financial system was increasingly interconnected. This interconnectedness meant that problems at firm A could bring firm B down, in turn firm C. In other words, there was systemic risk in the sense that risk in one institution threatened many other institutions.

The financial fragility came to the fore in 2008, with the failing and bailout of Bear Stearns in March, the failing of Lehman Brothers in September 2008, the rescue of AIG, etc. Concerns arose that there was effectively a bank run – not a bank run in the traditional sense as had characterized the Great Depression, but a run on psuedo-banks that were outside of conventional regularity structures. In a run, investors/shareholders/depositors/creditors become concerned that an institution will not be able to make good on its financial obligations, and so they try to withdraw their financial support for the institution (by withdrawing their financial capital, selling their stock, taking their deposits out, asking for their loans to be paid back), and this can end up being a self-fulfilling prophecy if the institution is highly levered (debt exceeds equity by a large margin). The Federal Reserve and the US Treasury perceived this run, and stepped in to provide “liquidity” to try to help keep these financial institutions solvent.

There are different ways to measure financial distress in the aggregate. The two that I’ll look
at are (i) the stock market and (ii) corporate bond spreads (the difference between higher risk corporate debt and lower risk debt). Both of these measures show significant distress, particularly in 2008-2009. Stock prices declined by nearly 60 percent, most of which occurred in 2008 and the early part of 2009. Corporate bond spreads shot through the roof at exactly the same time. Both of these measures have subsequently recovered, and stock prices (as measured by the S&P 500 Index) have reached record highs, in spite of the fact that other measures of economic strength (particularly in the labor market) remain rather weak.
In addition to a long period of near-zero interest rates, bailouts, and other non-standard monetary policies, there were also unprecedented fiscal actions. In particular, the American Recovery and Reinvestment Act was a stimulus package totaling roughly $800 billion, issued in 2009. This package constituted a combination of tax cuts, extended unemployment benefits, and spending increases (largely in infrastructure), designed to try to spur on the economy. Partly as a consequence of this stimulus package, US federal debt rose substantially during the crisis, going from around 60 percent of GDP to nearly 100 percent of GDP. At least part of this decline is not attributable to the stimulus package, but rather to a combination of (i) lower GDP and (ii) lower tax revenues resulting from lower GDP. Nevertheless, we’re approaching unchartered territory in terms of our fiscal situation. US fiscal imbalances are particularly problematic when one looks at the demographic situation – lots of old folks soon to retire and take Social Security and Medicare, with relatively few younger people paying in to these social transfer programs. This high level of debt has resulted in more uncertainty and heightened fears about US insolvency and some combination of higher future taxes and/or lower future government services and transfers.

Relatedly, there is also an important international dimension to the crisis. Most developed economies experienced economic contractions (to greater or lesser degrees) around the same time as the US. Like the US, fiscal imbalances in Europe have been problematic, particularly in countries like Greece, Spain, and Ireland. Because of the unique monetary union in Europe, these imbalances in particular countries have raised the spectre of some countries defaulting and/or leaving the monetary union. There is a good deal of financial interconnectedness across countries, and the European debt crisis has certainly had a depressing effect on the US economy. We will not explicitly model this (as we unfortunately haven’t had time to include an international sector in our model), but there is no doubt that what has transpired in Europe has been relevant for the United States.
The following is a quick executive summary of some of these facts:

1. The National Bureau of Economic Research (NBER), the official unofficial dater of business cycles, dates the Great Recession as lasting from December of 2007 to June of 2009, though there is considerable economic weakness, particularly in labor markets, that has persisted to the present.

2. The unemployment rate rose from about 5 percent immediately prior to the recession to about 10 percent. It is now about halfway back down at around 7.5 percent. Total hours worked dropped by around 10 percent.

3. House prices declined by around 30 percent from their pre-recession peak by the middle of 2009.

4. The S&P 500 stock market index declined by almost 60 percent. It has since recovered to record levels.

5. US government debt rose massively, from around 60 percent of GDP to about 100 percent of GDP (give or take, depending on how one measures it).

6. The recession has been marked by unprecedented policy actions. The Federal Funds Rate was lowered basically from 5 percent in the beginning of 2008 to 0 by the end of 2008, and has remained roughly there ever since. There were also unprecedented financial rescue packages of some banks and related financial institutions. There was a large fiscal stimulus package enacted in 2009.

7. There is and has been an important international dimension to the crisis. Most developed countries experienced recession around this time (to varying degrees), and several European countries have struggled with crippling debt situations.

3 Mapping the Facts into Our Model

Given the facts documented above, is there a way in which we can think about these events in the context of our model of the short run economy? I’m going to focus exclusively on the Keynesian model. For the analysis we are about to do here, it does not matter whether the upward-sloping AS curve comes from wage stickiness or price stickiness. All that matters is that the AS curve is not vertical so that demand shocks can matter.

The reasons for focusing on the Keynesian model are threefold. First, the only way in which the neoclassical model can make sense of a recession is through a reduction in $A_t$, total factor productivity. There is actually not strong evidence that productivity declined during the recession, nor does a drop in productivity “gel” with the popular narrative on the crisis. Second, the neoclassical model does not provide a very compelling framework in which to think about the fiscal and monetary responses to the crisis, whereas the Keynesian model does. This is not to say that
the Keynesian model is “right” – any model is, by definition, wrong at some level. It’s just the framework that we are going to use to analyze this episode. Third, the neoclassical model can always be considered a special case of the Keynesian model with a vertical AS curve, so studying the Keynesian model we could map our results into the neoclassical model with a vertical AS.

My own narrative is to divide the crisis into two stages (or three, if you want to count the “post-crisis” period as a stage): the first stage centered around the housing market decline, while the second (and more pernicious, at least from the perspective of lost output) stage centered around the financial crisis. We will think about each stage in our IS-LM-AD-AS model, and use that same framework to think about the policy responses to the crisis.

3.1 Stage 1: 2007 and Housing

Chronologically, the decline in house prices began well before economic activity contracted significantly. Therefore, many/most observers would assign the proximate cause of the Great Recession to the housing market collapse.

How does a housing market collapse factor into the Keynesian model? Though it does not directly show up in our model, housing is a form of wealth for households. For many households who suffer from liquidity constraints, housing wealth also serves as a means by which to access credit and smooth consumption via home equity loans. For both of these reasons, a decline in housing values ought to result in a reduction in desired consumption for every level of income and the interest rate. We could modify the aggregate consumption function to be:

$$C_t = C(Y_t - G_t, Y_{t+1} - G_{t+1}, r_t, H_W_t)$$

Where $H_W_t$ is the value of the housing stock. As noted above, we assume that the partial derivative of the consumption function with respect to $H_W_t$ is positive, so that a decline in $H_W_t$ will result in a decline in desired consumption (again, for two reasons – a direct wealth effect and a liquidity constraint effect).

The initial and immediate effect of the reduction in $H_W_t$ was to shift the IS curve in – with the desired drop in consumption, there would be lower desired expenditure for every interest rate. This inward shift of the IS curve resulted in an inward-shift of the AD curve along a stable AS curve. This would result in a drop in $Y_t$ and a drop in $P_t$, also with a drop in $r_t$. We can see this in the figure below:
Given our standard playbook for optimal policy, monetary policy would like to react by trying to stimulate output through an increase in $M_t$. In the picture below, this would be represented by an increase in $M_t$ from $M_t^0$ to $M_t^1$ in such a way as to restore output (and the price level) to its original level. We end up with a big reduction in the real interest rate, $r_t$ and not much change in output or the price level.
This isn’t a terribly poor description of what actually happened in 2007 and the first part of 2008. In the data, there is some evidence of output dropping (or at least output growth slowing) and price level growth (i.e. inflation) dropping, but not a lot. What is very evident in the data are the aggressive policy actions by the Fed to lower interest rates – the Fed Funds rate dropped precipitously throughout 2007 and into 2008, so much so that, by the Fall of 2008, it was essentially at zero.

3.2 Stage 2: ZLB and the Financial Crisis

The second, more pernicious stage of the crisis took place in the second half of 2008 and into 2009. I’ll refer to this stage as the “financial crisis” stage. As discussed above in the “Facts” section, the financial crisis stage was in many ways the direct result of the housing market collapse – financial institutions, banks, and bank-like entities were heavily exposed to the housing market and heavily interconnected. The housing market collapse resulted in direct hits on the balance sheets of these banks and raised concerns about solvency of many of these institutions.

We can think about the financial shock that occurred in late 2008 in our model as a large
reduction in \( q \): a reduction in the efficiency with which investment gets channeled into new capital; i.e. a shock to the health of the financial system. This shock was exacerbated by the fact that interest rates had (more or less) hit zero by the time the financial system really collapsed (September and October of 2008). Hence, we can think about Stage 2 of the crisis as a reduction in \( q \) occurring while the zero lower bound is binding. As we discussed earlier, the zero lower bound binding means that the LM curve is flat at the negative of the rate of expected inflation, which results in the AD curve becoming vertical. The picture below shows the initial state of affairs:

Starting from this zero lower bound period, we were hit by a reduction in \( q \). This would reduce desired investment for every given interest rate, resulting in an inward shift of the IS curve. The inward shift of the IS curve, in conjunction with the flat LM curve, would result in an inward shift of the AD curve. Given that the LM curve is horizontal and the AD curve vertical, the resulting reduction in output would be much larger than if the zero lower bound were not binding. Were the zero lower bound not binding, the reduction in investment demand would have resulted in falling interest rates, which would have the effect of partially undoing the desired reduction in investment. But with nominal interest rates at zero and expected inflation fixed (by assumption), there was
nowhere for real interest rates to go, so investment fell substantially. The resulting fall in output would lead to a consumption decline. Prices would also be predicted to decline.

\[ r_t^0 = -\pi_{t+1} \quad IS \]

\[ Y_t \quad IS' \]

\[ P_t \quad IS' \]

\[ AD \quad LM \]

\[ AD' \quad AS \]

\[ q \quad shifts IS and hence AD in. \]

Reduction in output much larger than it would have been had ZLB not been binding

The picture that emerges here is roughly consistent with what we actually observed in the data. Output fell, by quite a lot. Consumption and investment tanked. Employment tanked (this would result from falling \( Y_t \)). Once they had hit zero, interest rates didn’t move, because they couldn’t. The aggregate price level fell (or at least slowed down in growth). Note also that, while the financial collapse and reduction in \( q \) were probably the main things going on in late 2008 and early 2009, they probably weren’t everything. There was also high uncertainty (which could further depress demand), contractions in other countries reduced demand for US produced goods, and concerns about international insolvency issues further exacerbated rampant uncertainty in the economy.

4 Policy Responses

We’ve already talked about the “early” stage policy response during 2007 in the wake of the housing market collapse – the Fed responded by aggressively lowering interest rates (through increasing the
money supply). This kind of policy makes sense from the perspective of our model, to the extent to which one thinks that the housing market collapse resulted in a reduction in aggregate demand.

The Fed’s aggressive monetary response was reasonably successful at keeping the economy afloat through much of 2008 – contractions in real economic activity to that point had been small, particularly relative to the collapse in house prices. The major problems occurred because of a confluence of events: (i) the zero lower bound binding (the Fed had essentially lowered interest rates all the way to zero), and (ii) a large, negative financial shock, that in many ways was a direct result of the housing market collapse. This resulted in an inward shift of the AD curve and a large reduction in output (larger than would have been the case absent the ZLB).

The “standard” tool to fight a negative demand shock is to increase the money supply, thereby lowering interest rates and stimulating expenditure. But what can (or should) policy do when there is no further room for interest rates to decline, as was the case by the Fall of 2008? I’ll break the policy responses that were tried down into three different categories: monetary, financial, and fiscal. There is some overlap between them, particularly between monetary and financial responses. One can make a reasoned case for these responses in the context of our model of the economy. Nevertheless, as we will see in the next section, there is no such thing as a free lunch, and these unprecedented policy responses leave unanswered important questions going forward.

4.1 Monetary

The usual monetary policy tool is altering the money supply (though what are called “open market operations,” which amount to purchases of short term government debt) so as to manipulate short term interest rates. With short term interest rates at or near zero, this policy has been an impossibility.

The main alternative that has been taken up has come to be known as “quantitative easing.” Quantitative easing refers to a central bank buying longer term assets (i.e. private sector debt with longer maturities, or longer term government securities; e.g. Treasury “notes” have 2-5 year maturities, as opposed to Treasury “bills” which have maturities less than a year). The idea here is that interest rates relevant for consumer and firm expenditure are typically longer maturity rates – things like mortgages. These are priced relative to “safer” longer term assets like Treasury Notes and Bonds (“Bonds” have 30 year maturities). Normal monetary policy works by affecting short term interest rates, which through a standard term structure argument works to lower longer maturity rates.\footnote{By “term structure” argument I mean that longer maturity rates ought to be related to the product of shorter maturity rates. Hence, by lowering short rates, you mechanically also lower longer term rates.} The idea of quantitative easing is to directly work to lower longer term rates, as opposed to the normal indirect process of operating through shorter term rates.

The Fed has also engaged in non-standard policies called “Operation Twist” and “Forward Guidance.” Operation twist refers to trying to lower long rates relative to short rates by buying bonds of long maturity and selling bonds of shorter maturity. The objective of this procedure, like quantitative easing, is to lower longer term bond yields, with the hope that this would translate into
lower mortgage and other consumer interest rates. “Forward Guidance” involves the Fed explicitly announcing its intentions for short term interest rates for an extended period of time into the future. The idea is here again based on a term structure argument: longer maturity rates between now and some point in the future ought to equal something like the product of shorter maturity rates. By promising to lower short maturity rates in the future, the Fed might be able to lower longer maturity rates in the present.

In our basic model of the economy, there is only one interest rate, so it’s a non-trivial task to think about how to incorporate interest rates of different maturities. Nevertheless, there is a reasonably straightforward way to think about these policies in our model. These policies are all designed, at some basic level, to be inflationary, and in particular to avoid deflation and the kind of deflationary expectations trap about which we briefly talked earlier. We can think of these policies – be they quantitative easing, forward guidance, or operation twist – as implicit signals committing to higher future inflation. A way to think about it is that, by trying to lower longer maturity bond yields, the Fed is effectively promising to engage in future expansionary monetary policy. Expansionary monetary policy raises inflation. If people anticipate this in advance, current expected inflation may rise. Higher expected inflation, if we are at the zero lower bound with nominal rates stuck at zero, lowers real interest rates, thereby stimulating consumption and investment and effectively shifts the vertical AD curve out to the right. We can see this in the picture below:
Fed tries to engineer higher expected inflation in hopes of lowering real interest rate, stimulating demand, and shifting AD out.

The higher expected inflation shifts the horizontal LM curve down. This results in lower real interest rates – effectively, the economy “moves down” the IS curve as the real interest rate declines, with consumption and investment both increasing. The higher consumption and investment shifts the vertical AD curve to the right, leading to higher output and a higher price level.

4.2 Financial

Another facet of the non-standard policy responses to the Great Recession has been direct intervention in financial markets. I will refer to these policies as “financial,” though one might also use the term “credit market policies” or something similar.

As discussed above, particularly in the Fall of 2008, the Fed and Treasury directly intervened in the financial sector via bailouts and the Troubled Asset Relief Program (TARP). The idea of TARP was for the Treasury to purchase troubled mortgage backed securities directly from institutions throughout the country. The goal was to remove the “bad” assets from the books of these institutions to stop financial freefall. In essence, the objective was to stop the “panic” by de-facto promising the solvency of financial institutions.
In terms of our model, there is a straightforward way of thinking about these financial policies. They were designed to effectively raise \( q \) back up after it had fallen. Technically we think of \( q \) as being exogenous, but it is not difficult to think about how \( q \) could be affected via policy. An increase in \( q \) would shift the IS curve to the right and would result in a rightward shift of the AD curve.

\[
\begin{align*}
\pi_t &= -\pi_{t+1} \\
\pi_t^0 &= -\pi_{t+1}
\end{align*}
\]

Financial market reforms and interventions directly targeted at reversing the decline in \( q \) and raising it, which would shift the IS and hence AD curves out.

The rightward shift of the vertical AD curve would result in higher output and higher prices. With the zero lower bound binding, there would be no increase in the real interest rate.

4.3 Fiscal

Finally, another important aspect of the myriad policy responses to the Great Recession was on the fiscal side. The American Recovery and Reinvestment Act of 2009 was a large stimulus package that aimed to increase expenditure, both directly through higher government spending as well as indirectly through higher transfer payments and things like increased unemployment benefits.

The total value of the stimulus package was planned to total $787 billion over a decade long
period (so, loosely, a $100 billion infusion per year). As noted in the paragraph above, this package took a variety of forms: some in the form of direct expenditure (e.g. an increase in $G$), some in the form of greater transfers (e.g. a reduction in $T$), and some in a reduction in taxes (also a reduction in $T$). In our model, Ricardian Equivalence holds, so only the increases in $G$ would have any economic effect. Of course, in the real world Ricardian Equivalence is unlikely to hold perfectly (because of things like informational frictions and credit market constraints), so it is nevertheless likely that reductions in taxes (or increases in transfers) would stimulate demand, at least some.

In our model, fiscal stimulus shifts the IS curve to the right – in the case of an increase in $G$ with Ricardian equivalence, we know that the rightward shift in the IS curve is equal to the change in $G$. A rightward shift of the IS curve would result in a rightward shift of the AD curve, and an increase in output, as shown below:

Most economists have abandoned fiscal policy as a usual means of conducting economic policy. But the Great Recession was anything but usual. Opposition to fiscal policy usually comes from the fact that there may be long implementation and planning delays that do not plague monetary policy. Fiscal policy has nevertheless somewhat come back in vogue. This is in large part because
of the zero lower bound, which left monetary policy impotent, at least from the perspective of the usual means by which monetary policy works. If you look at the picture above long enough, you can see that fiscal policy also makes more sense at the zero lower bound for another reason. In our standard model outside of the ZLB, fiscal expansion leads to increases in real interest rates, which partially crowds out private expenditure. With the nominal interest rate stuck at zero, and expected inflation assumed constant, at the zero lower bound there is no crowding out effect from fiscal expansion – the real interest rate does not rise, so that the increase in $Y_t$ that results from fiscal expansion is equal to the magnitude of the rightward shift in the IS curve. This means that fiscal policy is more effective at the zero lower bound than under normal circumstances.

5 Reprise and Unanswered Questions

Each of the non-standard policies to the Great Recession – monetary policy aimed at increasing expected inflation, financial interventions trying to directly increase financial health and $q$, and fiscal policies designed to stimulate demand – make some sense in the context of our Keynesian model, particularly at the zero lower bound. But did they work? That’s an awfully difficult question to answer. If you ask ten economists, you’ll likely get ten different answers. The economic recovery has been weak, particularly relative to other deep recessions (e.g. 1981-1982). That said, we also haven’t had a repeat of the Great Depression of the 1930s, where unemployment hit 25 percent. It is difficult to construct the counterfactual: it is hard/impossible to know what the economy would have done in the absence of these interventions, so it is therefore difficult to determine whether these policies have helped. My own view is that the financial interventions in the immediate aftermath of the financial collapse of 2008 were very helpful, and staved off a truly deep and long-lasting depression. I’m less confident that the alternative monetary policies since then, and the fiscal stimulus rolled out in 2009, have had large positive effects. That’s more conjecture than fact, though. Reasonable people can look at the data and draw different conclusions.

The non-standard policy responses do raise important questions going forward, however. In the case of financial interventions, there is the much ballyhooed “moral hazard” problem. By bailing out failing financial institutions that had taken on too much risk, the government has sent the message that they will also bail out in the future. But if firms think they will be bailed out, they have an incentive to take on more risk in the present. Taking more risk could get us into this mess again in the future. In the case of the non-standard monetary policies, keeping deflationary expectations at bay makes some sense in the short run, and the idea of creating positive inflationary expectations so as to lower real interest rates also makes sense. But what happens when we eventually leave the zero lower bound regime? Will we have high and runaway inflation? Will people lose faith in the Fed to achieve its mandated goal of price stability? Finally, in the case of fiscal policy, the large interventions have led to a large increase in the US federal debt. This debt must be paid for one way or another. Coupled with an impending demographic problem related to entitlement spending, there are serious concerns that the US may not make good on its obligations. Will the US default? It seems extremely unlikely, though the US credit rating has been downgraded. Will
the US have to raise taxes in the future, or try to inflate away some of its debt, or not make
due on entitlement promises? These outcomes seem (to me, at least) fairly likely. This creates
expectations of higher future taxes and increases uncertainty in the present, which probably work
to depress current demand.

Related to the policy issues discussed above, there are many unanswered questions. Why did we
find ourselves in this mess in the first place? Can we enact policies to prevent another crisis like this
from occurring? Finally, an important question (from my perspective) is why has this been going
on so long? The standard Keynesian story for why inefficiencies creep in (i.e. why output can be
different than its flexible price and wage, or natural level) is because of some kind of nominal price
or wage stickiness. The the weakness in the economy lingered for several years, and there are still
some signs of weakness even today. There is no shred of evidence that suggests prices and wages
are sticky for that long. If we’re this far in, is there some other underlying reason for why labor
markets are weak? Some folks have pointed to structural imbalances related to sectoral imbalances
– the Great Recession was, after all, highly concentrated in construction. Maybe the reason that
the aggregate economy is weak is that it’s taking those workers a long time to get new skills and to
assimilate into other professions. If structural imbalances are the reason why the economy is weak
at present, then policies designed to stimulate demand don’t make much sense from an efficiency
perspective. I’m at least partially sympathetic to the notion that the US economy is suffering from
structural imbalances of this sort at present.

Below is a quick summary of some lingering questions, with some brief “pro/con” for different
policy responses. I don’t want you to walk away thinking that you have all the answers, but I do
want you to be able to ask the right questions and think about the relevant tradeoffs.

1. Why did house prices rise so much and then decline so quickly in the first place?
   - Are there regulatory things that we can do to prevent similar “bubbles”?
   - Pro: maybe you can prevent/mitigate house price booms and busts (although that’s
difficult)
   - Con: restricting/regulating mortgage finance makes it harder for people to buy houses,
     which is one means by which people smooth consumption

2. Why was financial sector so leveraged and interconnected?
   - Can increased/better regulation prevent this from happening in future?
   - Pro: like housing, maybe we can prevent future financial panics
   - Con: there are benefits to leverage, financial institutions taking risks, and large financial
     institutions. If we limit size, leverage, and interconnectedness, will we slow down growth
     in long run?

3. Should government be in business of bailing out banks and other financial institutions?
• Pro: once they got to the brink, not bailing out these institutions would have likely resulted in further economic and financial collapse
• Con: bail outs create moral hazards. Sowing seeds of another crisis?

4. Why has this been going on so long?
• Hard to believe that nominal rigidities (e.g. price stickiness) has kept us this far below potential for five years.
• Labor market mismatch? Higher uncertainty? “New normal?” Demographic issues?

References


