

Was Monetary Policy The Most Effective Tool To Tackle The Great Recession? A Look At Fiscal Policy As An Alternative Solution

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Abstract

Mainstream economists have always considered monetary policy, which focuses on setting the interest rates, a powerful tool to tackle the problems of inflation and unemployment. In the wake of the U.S. 2007-09 Financial Crisis, which led to the Great Recession globally, conventional monetary policy proved to be ineffective, and central banks adopted quantitative easing, the well-known unconventional monetary policy tool. Even though quantitative easing works directly in lowering the long-term interest rates, it is ineffective in reviving an economy where the private sector is in excessive debt and is trying to deleverage. Using a Post-Keynesian framework, this paper argues that fiscal policy becomes essential in stimulating spending and investment in an over-indebted economy. Using Modern Money Theory, this paper also shows that mainstream critiques of fiscal policy, such as the “crowding out”, “Ricardian Equivalence” and “sound finance” arguments are not accurate. A government with fiat money faces no financial constraints because it spends by issuing its own liabilities; however, it still faces real resources constraints.

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Assessing the effectiveness of monetary policy and fiscal policy during the Great Recession

I. Introduction

The financial crisis of 2007-09 not only led to the Great Recession in the U.S. but also spread to other parts of the world and resulted in the European sovereign debt crisis and exacerbated the economic stagnation in Japan. In the U.S., the unemployment rate peaked at 10 percent in October 2009 while GDP contracted 5.1 percent from February 2008 to February 2010. The crisis peaked in the U.S. when the Lehman Brothers investment bank filed for bankruptcy in September of 2008. Many people lost their life savings and millions of workers lost their jobs. Meanwhile, even before the crisis, Japan had been in its own stagnant economy and prolonged deflation. The 2007-09 crisis further worsened the situation in Japan forcing it to adopt further stimulus programs to spur its economy. As different central banks came to the rescue swiftly lowering interest rates to mitigate the impact of the crisis, conventional monetary policy seemed to be no longer effective. Many central banks in the developed world, such as the Fed, the Bank of England, the Bank of Japan and the European Central Bank chose to use unconventional monetary policy, especially the so-called policy of quantitative easing, to stimulate their economies.

In this paper, we argue that Quantitative Easing, although effective in certain situations, is not the most effective policy available to policymakers. We analyze the transmission mechanism of Quantitative Easing demonstrating that QE affects the economy the same way conventional monetary policy does – by changing interest rates. The impact of both conventional and unconventional monetary policy on the economy is indirect – they work if they stimulate more borrowing. However, as the experience of the past few years has demonstrated, lower

interest rates may not stimulate the economy, especially if the economy already suffers from too much debt. In the aftermath of a financial crisis driven by over-indebtedness, the private sector is attempting to deleverage rather than borrow more. Hence, even zero or very low interest rates need not increase borrowing or spending. Furthermore, it is not clear whether policymakers should encourage more borrowing when the problem is too much debt to begin with. In such a situation, fiscal policy, which unlike monetary policy increases the net financial wealth of the private sector, could be more effective in spurring spending and investment.

The rest of the paper is organized as follows. In section II, we discuss conventional and unconventional monetary policies and their transmission mechanisms. We look at the different types of QE policies adopted by Federal Reserve System, the European Central Bank and the Bank of Japan in the wake of the Great Recession. In section III we address the issue of whether Quantitative Easing will be inflationary, as some critics have argued. We demonstrate that such arguments stem from the exogenous money theory, which misunderstands how banks operate. The alternative, endogenous money theory offers a different perspective on the impact of the rise of the monetary base on the economy. Section IV discusses fiscal policy as the more effective tool in stimulating the economy. We use Post Keynesian theory to discuss the impact of fiscal policy on the economy. We also address the main critiques of fiscal policy, concluding that despite the conventional wisdom, government spending need not crowd out private spending and Ricardian Equivalence Theorem does not hold in real life. More importantly, we critically evaluate the “sound finance” view from the perspective of Modern Money Theory. Instead, we propose that fiscal policy be conducted based on the principles of functional finance. Section V concludes.

II. Monetary Policy in the U.S.

1. Conventional Monetary Policy

Central banks use conventional monetary policy, which focuses on the control of short-term interest rates to stabilize the short-term fluctuations in prices and output in the economy (Cecchetti and Schoenholtz, 2014). In the U.S., the Federal Reserve sets a target for the federal funds rate, the interest rate banks charge each other on overnight loans of reserves. The fed funds rate is the benchmark for all other key interest rates in the economy. This short-term rate also affects longer-term rates, which affect the level of investment. When an economy is in a recession, the Fed lowers its federal funds rate target hoping to stimulate the economy. On the other hand, when an economy is in a boom, it increases its interest rate target to keep the economy from overheating to control inflation.

The Fed determines its target for the fed funds rate by looking at economic data, such as the inflation rate, the unemployment rate and the output gap, among other things. However, the effective fed funds rate is determined in the inter-bank loan market. The Fed tries to minimize the deviations of the market fed funds rate from its target through open market operations. Open market operations refer to the Fed's buying (open market purchases) or selling (open market sales) of short-term government securities in the open market. These operations control the fed funds rate through the interaction of the demand and supply of reserves (depicted in *Figure 1*) in the inter-bank lending market, i.e. the federal funds market. Banks can borrow reserves from each other or lend them to each other at the fed funds rate.

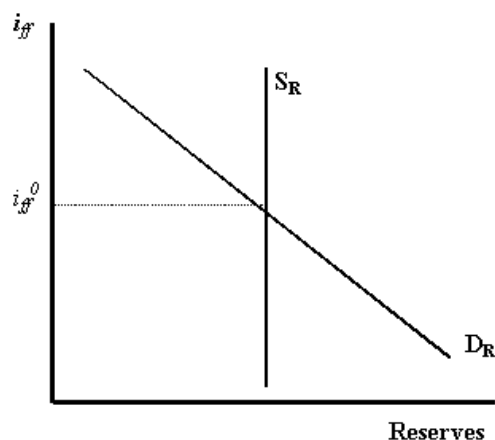


Figure 1. Supply and Demand for Reserves in inter-bank loan market

The Fed can inject reserves to or drain reserves out of the banking system. In the graph, the supply for reserves is perfectly inelastic because the quantity supplied is fixed at any point in time. The demand for reserves is downward sloping because banks demand more reserves when the cost of borrowing decreases. When the central bank targets an increase in the fed funds rate, it will sell short-term government securities to banks and drain reserves from the banking system. An open market sale affects the balance sheet of banks and the Fed as follow:

Banks	
ΔA	ΔL
+ T-Bills - Reserves	

The Fed	
ΔA	ΔL
	+ T-Bills - Reserves

As the supply of reserves decreases, supply curve shifts in, increasing the effective fed funds rate. Therefore, through an open market sale, the Fed can increase the fed funds rate by lowering the supply of reserves.

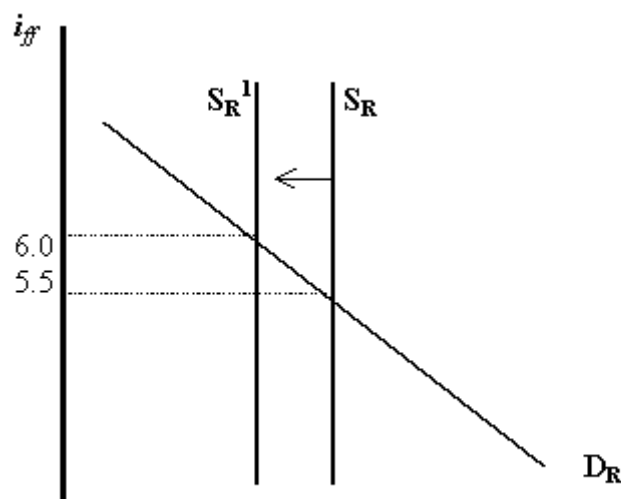


Figure 2. Supply and Demand for Reserves following an Open Market Sale

Similarly, when the Fed targets a lower fed funds rate, it can buy short-term government securities in the open market and increase the level of reserves in the system. The supply curve shifts out, lowering the fed funds rate. In sum, through open market operations, the central bank can control the fed funds rate by changing the supply of reserves in the banking system.

In addition to open market operations, the Federal Reserve can control the fed funds rate using the “corridor” mechanism by setting two key interest rates: the discount rate, the rate at which banks borrow reserves from the Fed and the deposit rate, the rate the Fed pays banks on excess reserves. With the introduction of these two rates, the supply and demand framework for reserves differs slightly from the previous analysis.

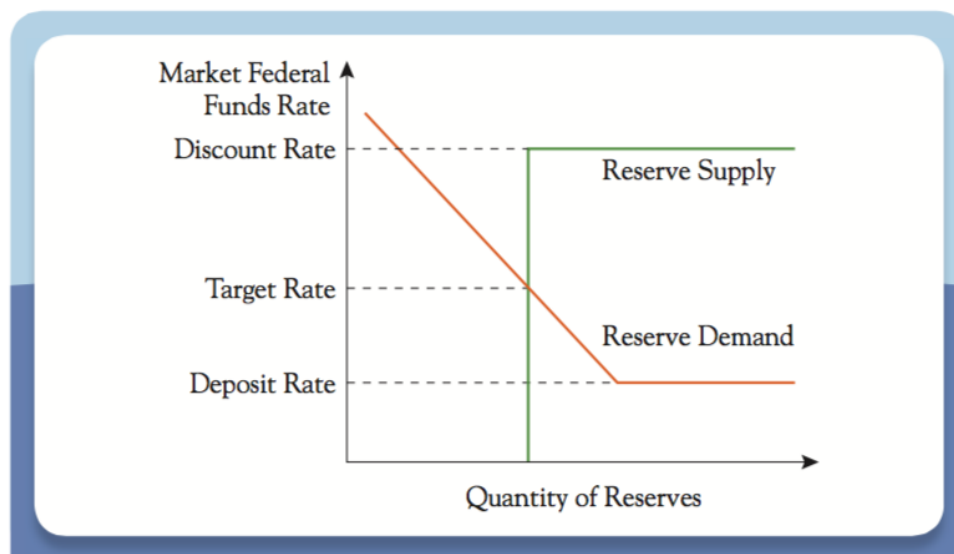


Figure 3. The Market for Bank Reserves (Cecchetti and Schoenholtz, 2014)

The fed funds rate, in most cases, will fall between the deposit rate and the discount rate, with the deposit rate acting as a floor and discount rate acting as a ceiling. When the fed funds rate is higher than the deposit rate, the demand curve for reserves is downward sloping as explained earlier. However, the demand curve turns horizontal at the deposit rate. Since at the deposit rate the price banks pay to borrow reserves is equal to the price they get paid on their excess reserves, the essential cost of borrowing is zero. Therefore, the demand for reserves at this price is infinite and this demand is the total demand of banks to hold reserves, leading to a horizontal demand curve. When the fed funds rate is below the discount rate, the reserve supply curve is vertical as discussed earlier. However, the supply curve turns horizontal at the discount rate. When the fed funds rate is equal to the discount rate, banks can borrow from the Fed rather than borrowing from other banks, and the Fed is committed to provide an unlimited quantity of reserves at the discount rate, making the supply curve horizontal. Therefore, the fed funds rate always lies between the deposit rate and the discount rate and once hitting either of these rates, the price will stay at that floor or ceiling. By setting these two rates and making the corridor

wider or narrower, the Fed directly controls the fed funds rate, bringing it closer to its target. For example, the current discount rate is 1.5% while the current deposit rate is 1% and the target for the fed funds rate is 0.75-1%. The fed funds rate sometimes falls out of the corridor for a few reasons. The fed funds rate can be higher than the discount rate because of the stigma that banks prefer to borrow from each other rather than borrowing from the Fed. Since the Fed is the U.S. lender of last resort, if banks borrow from the Fed, investors might take this as a signal that banks are in trouble. The fed funds rate can also fall below the deposit rate because some institutions such as Fannie Mae, Freddie Mac and GSE do not receive interests on excess reserves so they are willing to offer a lower borrowing cost than the deposit rate.

Before the adoption of the corridor system, the Fed needed to change the quantity of reserves supplied through open market operations to control the price of reserves. However, since the Fed has adopted the “corridor system”, it no longer needs open market operations to control the fed funds rate because it can achieve its target rate by making the corridor as large or as small as it likes (Fullwiler, 2013). In other words, the Fed can now control “short-term interest rates ... independent of the level of reserves” (Keister and McAndrews, 9). However, “because banks in the aggregate cannot alter the quantity of reserve balances” (Fullwiler, 180), central bank’s open market operations are still necessary to accommodate banks’ need for reserves. In sum, the goal of conventional monetary policy is to control the short-term interest rate in order to stabilize prices and output in the short run.

2. Unconventional Monetary Policy

Even though conventional monetary policy seems to work in theory, it is limited because of the zero lower bound for nominal interest rates. Even though low interest rates are supposed to stimulate investment, if profit expectations are negative, zero interest rates still fail to stimulate

the economy. In other words, while there is a lower zero bound for nominal interest rates, there is no zero bound for profit expectations, which can be negative.

Another problem with conventional monetary policy occurs when the financial market is dysfunctional. The goal of the central bank in controlling the short-term interest rates is to influence the long-term interest rates since the latter usually follow short-term interest rates. However, if the financial market is dysfunctional, and for some reason the long-term interest rates do not follow short-term rates, conventional monetary policy fails to stimulate investment and reflate the economy. This happened during the Financial Crisis in the developed economy, especially in the U.S., the Eurozone and Japan, where low interest rates fail to affect the long-term interest rates and fail to boost spending and investment.

Having lowered the FFR target to almost zero during the financial crisis, the Fed started looking at other ways to directly control the long-term interest rates. It shifted from focusing only on the key interest rates to focusing also on the size and composition of its balance sheets. The central bank thus adopted quantitative easing (QE), the well-known unconventional monetary policy. According to Blinder (2010), quantitative easing involves changing the composition and/or size of a central bank's balance sheet to provide liquidity and improve credit conditions in the market. While conventional monetary policy involves the central bank buying and selling short-term government securities, unconventional monetary policy extends the purchases to longer-term government securities and other risky assets. With these assets purchase programs, the Fed either changes the composition of its balance sheet by selling short-term Treasuries or increases the size of its balance sheet by creating more reserves and increasing the monetary base. The effort aims at "influencing interest rates other than the usual short-term official rates" (Joyce, et al. F272).

a. Major Central Banks and Quantitative Easing

The Fed started its QE1 program on November 25, 2008, where it “purchased \$100 billion in government-sponsored enterprise (GSE) debt and \$500 billion in mortgage-backed securities (MBS)” (Fawley and Neely, 60). In March 2009, the Fed announced additional purchases of \$100 billion in GSE debt, \$750 billion in MBS and \$300 billion in Treasury securities. These purchases roughly doubled the size of the U.S. monetary base. After “QE1 (\$1.725 trillion, announcements 2008-09), QE2 (\$600 billion, announcement 2010), and QE3 (\$85 billion per month, announcements 2012)” (Fawley and Neely, 79), the monetary base (the level of reserves in the banking system) almost tripled. At the end of 2012, the Fed had purchased \$1.567 trillion in long-term government bonds, \$1.41 trillion in MBS, and \$175 million in GSE debt, a total of \$3.152 trillion in purchases. As we can see from *Figure 4*, as of 2016, the size of the Fed’s balance sheet has skyrocketed to more than \$4.5 trillion dollars from just around 800 billion in mid-2008.

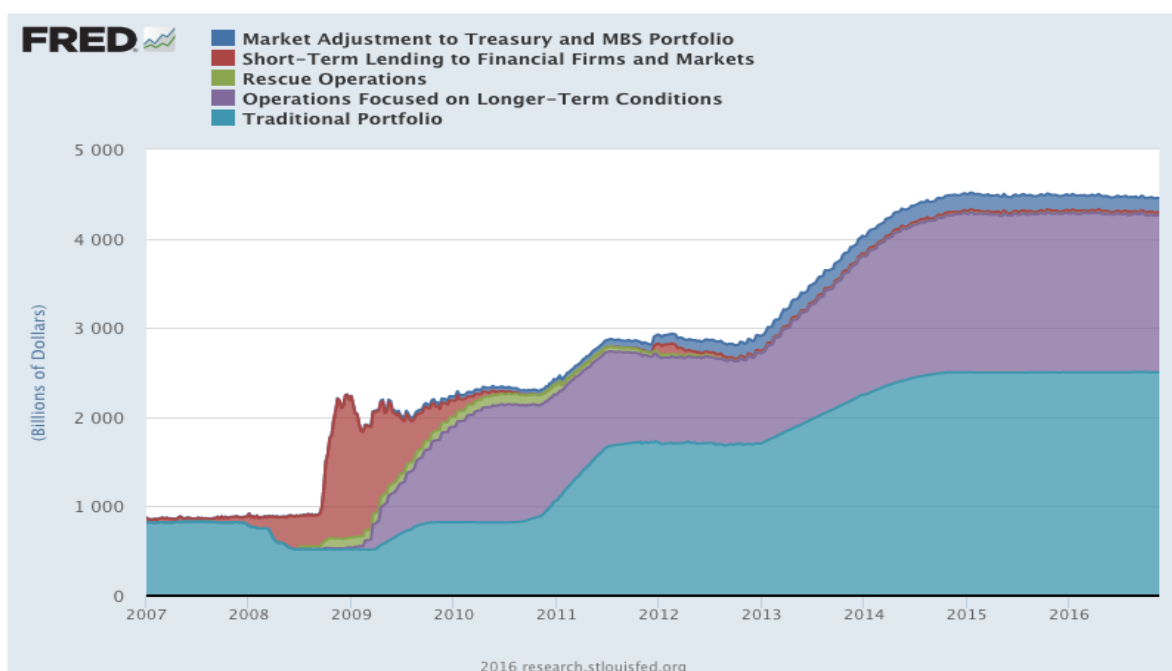


Figure 4. US Financial Data - Composition of Federal Reserve Assets

Like the Federal Reserve, the European Central Bank (ECB) and the Bank of Japan (BoJ) have also conducted QE programs. Facing the European sovereign debt crisis, in May 2009 the European Central Bank created the Covered Bond Purchase Program (CBPP) where the ECB purchased €60 billion of euro-denominated covered bonds in 2009 and €40 billion more in 2011, for a total of €100 billion. In May 2010, the ECB announced the Securities Markets Program (SMP), “which allowed the ECB to purchase government debt in the secondary market” (Fawley and Neely, 71). Then in September 2012, the ECB announced details for its Outright Monetary Transactions (OMTs) program, which allowed the ECB to “purchase euro area sovereign debt in the secondary market if the sovereign abides by the required conditions” (Fawley and Neely, 76). By March 2012, the total ECB asset purchases - including sovereign debt purchases - totaled roughly €320 billion.

Bank of Japan actually adopted quantitative easing programs in early 2000s to fight deflation that resulted from its 1990s asset bubble. According to Fawley and Neely (2013), in March 2001, the BoJ announced a target for bank reserves from ¥4 trillion to ¥5 trillion and by 2004, the target for bank reserves increased to ¥35 trillion with the BoJ also buying public and private debt. In March 2006, the BoJ ended its official QE program and switched back to the uncollateralized overnight call rate policy. However, in December 2008, the BoJ moved back to outright bond purchases and “announced interest in purchasing corporate finance instruments” (Fawley and Neely, 70). Over the January 2009 - December 2012 period, the BoJ had purchased or planned to purchase almost ¥187 trillion in total assets. However, almost 40% of this amount was left over from the BoJ’s QE programs in early 2000s.

b. Quantitative Easing Effectiveness - Transmission Mechanism

The effect of quantitative easing on long-term interest rates can be explained through the following channels: term spread channel, portfolio balance channel and default (credit) risk channel. Term spread refers to the yield difference between those bonds from the same issuer but of different maturities. When the Fed shifts from buying short-term government securities to purchasing long-term government securities, the demand for long-term government securities increases while the supply stays the same. Within the supply-demand framework, this increase in demand increases the price of long-term government securities and lowers their yields. Long-term yields move closer to short-term yields, tightening the term spread. *Figure 5* depicts the 10-year U.S. Government Bond yield. By 2012, the U.S. 10-year yield had decreased to under 2% from more than 3.5% in 2008.

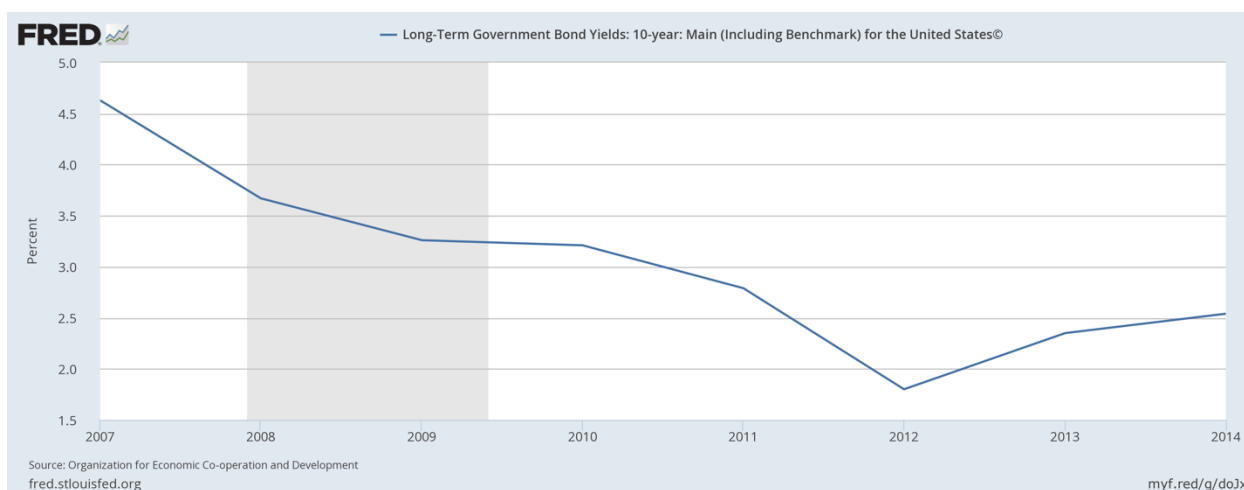


Figure 5. U.S. 10-year Treasury Yield (2007-2014, annually)

The second effect quantitative easing has on the economy is through the portfolio balance channel. According to Joyce, Tong and Woods (2011), central bank's long-term asset purchase can push up prices of the assets bought. When a central bank buys assets, it pays for them by crediting bank reserve accounts (which in turn credit their customers' deposit accounts if the

sellers are not banks). Unless assets and deposits are perfect substitutes “the sellers may attempt to rebalance their portfolios by buying other assets that are better substitutes” (201). Long-term securities and deposits are usually not perfect substitutes because of preferred habitats of investors. When investors sell their long-term government bonds to the central bank for bank deposits, they are exchanging long-term assets for short-term assets. Some investors are fine with the change in their portfolios while others, such as pension funds and insurance companies that have long-term liabilities, would like to match the maturity of their assets and liabilities. They will, therefore, use the proceeds from the sales of the long-term government securities to purchase other long-term assets, such as corporate bonds, to rebalance their portfolio. This imperfect asset substitutability “raises the prices of assets until the point where investors, in aggregate, are willing to hold the overall supplies of assets and money” (201). This leads to higher prices for long-term assets, such as corporate bonds, and lowers their yield. Lower yields, in turn, may stimulate investment by firms by lowering their borrowing costs. Thus, the central bank, by directly purchasing long-term securities and reducing the relative quantities supplied of longer-term assets in the market, “influences the pattern of yields on different assets” (Joyce et al., F227). According to D’Amico et al. (2012), this shortage of long-term assets created by the central bank puts an upward pressure on the financial market prices, and thus, is also referred to as “scarcity effect/channel” (F425).

Lastly, default or credit risk is another channel discussed by Krishnamurthy and Vissing-Jorgensen (2011). Lower graded bonds carry higher default risk and thus have higher yields compared to Treasury bonds. The difference in yields between two bonds of the same maturity but of different riskiness is called the credit spread. During the recession, the credit spread between lower-grade bonds and Treasury bonds became larger. When the government commits

to buying risky assets, investors can expect the default risk of firms who issued those assets to decrease. The yields on these firms' bonds will fall as investors now demand a lower default risk premium. The credit spread between lower graded bonds and the Treasury bonds thus will become smaller. The figure below shows the credit spread between Baa corporate bond yield and 10-year Treasury yield. As can be seen, the spread has decreased from 6% in January 2009 to around 2.5% in Jan 2010.

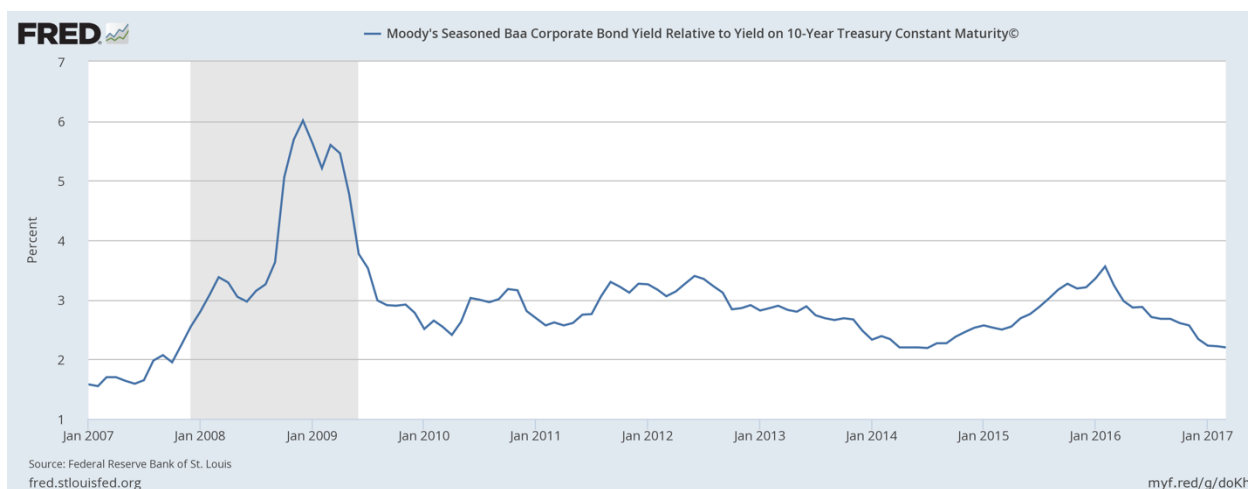


Figure 6. Moody's Seasoned Baa Corporate Bond Yield Relative to Yield on 10-Year Treasury

In summary, through whatever channel, the goal of quantitative easing is to directly lower long-term interest rates in the economy. Therefore the Central Bank purchased long-term government bonds and other long-term risky assets to lower their yields. Since government bond yields are benchmark for other interest rates, when these yields decrease, other interest rates adjust as well. The decrease in long-term interest rates can ease credit conditions and stimulate spending and investment as the cost of borrowing decreases. Quantitative easing can also improve the balance sheets of banks that are looking to deleverage. When the central bank buys bonds from banks and credits them with reserves, banks do not need to hold required capital. The purchases "free up" bank capital and create more room for banks to make new loans.

c. Other Unconventional Monetary Policy Tools

In addition to quantitative easing, the Fed has also engaged in other unconventional monetary policies. One of them is lending to non-bank institutions. Facing the Great Recession, the Fed for the first time since the 1930s “invoked its emergency powers to lend to nonbanks” (Cecchetti and Schoenholtz, 484). The Federal Reserve created a variety of broad-based lending programs such as Term Auction Facility (TAF) to auction one-month and three-month discount window loans to eligible depository institutions, Term Securities Lending Facility (TSLF) to auction loans of U.S. Treasury securities to primary dealers against eligible collateral and Primary Dealer Credit Facility (PDCF) to provide overnight cash loans to primary dealers against eligible collateral. The Fed also assisted individual institutions such as AIG and affiliates of some primary dealers. A study in 2011 by the Government Accountability Office found that loans outstanding for these lending programs peaked at more than \$1 trillion in late 2008.

Another tool the Fed adopted was forward guidance, which helps influence market expectations of future interest rates. Once the central bank announces its monetary policy target, expectations in the market change, and these changes affect the expected path of interest rates. According to the expectation hypothesis, long-term rates will be the average of expected short-term rates. With the central bank signaling its commitment to keep its target rate low for a certain period of time, long-term rates can stay low as well. According to Krishnamurthy and Vissing-Jorgensen (2011), this forward guidance channel is expected to work when there is “credible commitment by the central banks to keep interest rates low even after the economy recovers” (4).

III. Quantitative Easing and Critiques

1. Exogenous Theory of Money

Even though quantitative easing works in lowering long-term interest rates, its effect on the broader economy is subject to a lot of criticism. When the central bank purchases securities from banks, it credits banks with reserves, increasing the total level of reserves or monetary base in the banking system. Some mainstream economists believe that this increase in monetary base leads to an increase in the money supply, which creates inflation. This belief comes from the exogenous theory of money, where the quantity of money is determined exogenously by the central bank. This theory rests on the idea of the money multiplier -- the supply of money is a multiple of the monetary base:

$$Ms = m \times MB$$

where Ms is the money supply, MB is the monetary base and m is the money multiplier. The formula for m according to Cecchetti and Schoenholtz (2014) is

$$m = \frac{\frac{C}{D} + 1}{\frac{C}{D} + r + \frac{ER}{D}}$$

where C is currency, D is checkable deposits, ER is excess reserves and r is required reserve ratio. According to this process, one dollar increase in the monetary base leads to m dollars increase in the money supply. In this theory, banks need to hold reserves first before they can make loans. Therefore, an increase in banks' reserves because of quantitative easing will encourage lending and increase the money supply. Increase in lending and money supply will encourage spending and push up aggregate demand, leading to higher price levels.

Some mainstream economists have criticized the argument above, saying that while it is true that quantitative easing leads to an increase in the monetary base, it does not necessarily lead

to an increase in the money supply and inflation. According to Keister and McAndrews (2009), before the implementation of interest payments on excess reserves, when banks had excess reserves, they would lend out to firms and households because of the opportunity cost of holding these reserves. However, banks no longer face this opportunity cost when the central bank starts paying interest on reserves. Therefore, banks hold reserves instead of lending out. At this point, “the multiplier process halts” (Keister and McAndrews, 8).

We can look at the monetary base and money supply from 1985 to early 2016 and see that starting October 2008, when the Fed first paid interest on reserves, the rise in monetary base no longer leads to a corresponding increase in the money supply.

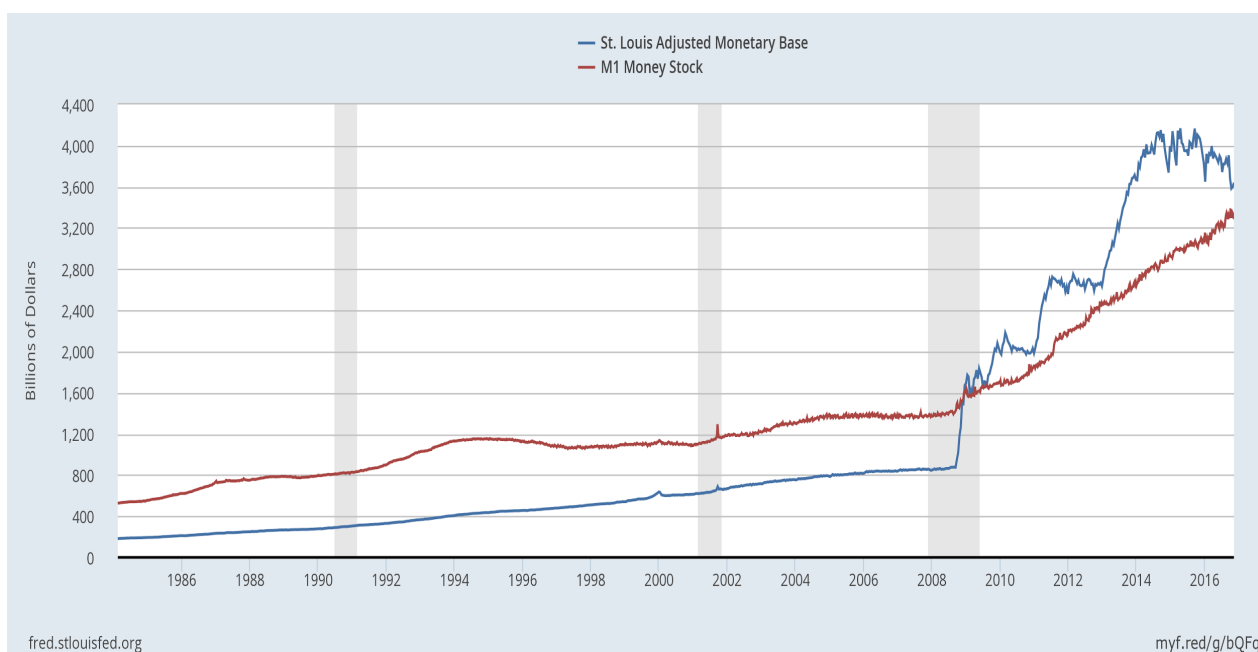


Figure 7. Monetary Base versus M1 (Federal Reserve St. Louis)

2. Endogenous Theory of Money

Keister and McAndrews (2009) are correct to argue that an increase in the monetary base need not lead to an increase in the money supply. However, their argument still assumes the existence of the money multiplier process, which can occasionally break down. There are two

flaws in the assumption that banks will make more loans when they have more reserves. The first flaw lies in the belief that banks lend out reserves. According to Fullwiler and Wray (2010), banks do not and cannot lend out reserves because reserves are banks' checking accounts at the Fed, and banks can only lend them to other institutions that also hold reserves at the Fed. The second flaw, as McLeay, Radi and Thomas (2014) discussed, lies in the misconception that banks “multiply up central bank money to create new loans and deposits” (1).

Let's look at what banks do when they issue loans to borrowers:

Borrowers		Banks	
ΔA	ΔL	ΔA	ΔL
+ Demand Deposits	+ Loans	+ Loans	+ Demand Deposits

Banks make loans by creating demand deposits, i.e. crediting borrowers' bank accounts, thereby creating new money as shown in the balance sheets above. Banks can then go look for reserves in the interbank market or borrow from the Fed if they need reserves to maintain their reserve requirements and, more importantly, for net clearing with other banks. “In the U.S., reserve requirements are calculated as a percentage of end-of-day deposits averaged over a 2-week period less vault cash held by the bank over the same 2-week period” (Fullwiler, 177). Since reserve requirements are met on a delayed basis, banks can issue loans without worrying about the level of reserves they are currently holding. If there are not enough reserves in the banking system, the Fed will step in and lend reserves to banks. If it refuses to provide reserves, it will not be able to hit its federal funds target and may jeopardize the payments system as banks will not have sufficient reserves to clear with other banks. Moreover, banks do not make decisions on granting loans based on their reserves level. If a bank declines to lend to a

creditworthy customer just because of its low level of reserves, it would risk losing customers to its competitors.

Thus, as some Bank of England economists put it, “The relationship between reserves and loans typically operates the reverse way to that described in some economic textbooks.” (McLeay, Radi and Thomas, 2). While in the textbook explanations, which are based on exogenous theory of money, reserves drive loan creation, in endogenous theory, banks first decide how much to lend depending on the profitable opportunities available. These lending decisions then determine how many deposits will be created in the system and it is this amount of deposits that influences the level of reserves in the system. In sum, in contrast to exogenous theory, endogenous theory of money shows that the quantity of money in an economy is determined endogenously via the interactions of other economic variables. Therefore, an increase in monetary base does not necessarily increase the money supply and quantitative easing will not necessarily lead to inflation. This can be seen through the change of average inflation (CPI) data in the U.S. from 2008 to 2012. In 2008, CPI was 3.85% while in 2012, when QE3 ended, CPI went down to 2.07%.

In addition to the inflation criticism, some other economists have argued that quantitative easing fails to increase lending in the system because banks are still holding a lot of reserves. This critique is also invalid because first, as I mentioned above, banks do not need reserves to make loans. “Loans create deposits, and more reserve balances do not increase the ability to lend” (Fullwiler, 179). Even when a bank issues a loan and its borrower spends the money, the total level of reserves in the banking system does not change. These are only transfers of reserves from one bank to another. Let’s briefly look at what happens when customer A finances a car purchase by borrowing from bank A using balance sheet analysis:

Customer A		Bank A	
ΔA	ΔL	ΔA	ΔL
+ Car	+ Loan	+ Loan - Reserves	

Car Dealer		Bank B	
ΔA	ΔL	ΔA	ΔL
- Car + Demand Deposits		+ Reserves	+ Demand Deposits

Central Bank	
ΔA	ΔL
	- Bank A Reserves + Bank B Reserves

Customer A gets a car as his asset but has a loan as his liability. Bank A has a loan as its asset but has less reserves because of the purchase. The car dealer no longer has the car but has demand deposits as payment for the car. Bank B has more reserves but also has demand deposits as its liability to the car dealer. As shown above, even if banks are making loans, the total level of reserves in the system does not change. The reserves in Bank A will be transferred to Bank B and the total reserves in the central bank balance sheet stays the same. Only the central bank or the Treasury can change the level of reserves in the system through sales and purchases of securities (or spending and taxing in case of the Treasury). Therefore, the quantity of excess reserves only “reflects the size of the Federal Reserve’s policy initiatives, but says little or

nothing about their effects on bank lending or on the economy more broadly” (Keister and McAndrews, 2).

Furthermore, as endogenous money theory explains, the supply of loans depends on the demand for loans. If banks are not making loans, that’s not necessarily because they don’t want to, but maybe because there are not many creditworthy customers available. Lending activity has been weak because “the U.S. private sector is already suffering from excessive debt. It makes little sense to encourage more lending and borrowing in a condition of national over indebtedness.” (Fullwiler & Wray, 7). This point will be further discussed in the next section.

IV. Post-Keynesian Supports for Fiscal Policy

Because the 2007-09 financial crisis was a major crisis, the policy responses have been unprecedented as well. Most of the response in the U.S. has been through monetary policy: a total of \$3.152 trillion in QE as mentioned earlier and all the lending programs to banks and nonbank financial institutions. Meanwhile, through the American Recovery and Reinvestment Act of 2009, fiscal stimulus was only \$787 billion. The reliance on monetary policy in general, and during the most recent crisis was driven by mainstream belief that monetary policy is a powerful and more effective stabilization tool than fiscal policy. Since monetary policy focuses on “setting the interest rates as the key policy instrument, along with the adoption of inflation targets” (Arestis and Sawyer, 1), mainstream economists believe monetary policy is the best policy to tackle the challenge of inflation, output gap and unemployment. This rests on the concept of the natural interest rate – the rate of interest which equilibrates saving and investment. The goal of the central bank in setting the nominal rate is to try to achieve a real interest rate equal to the natural rate. Once this is achieved, the economy will be at full employment without inflationary pressures.

There are many reasons to doubt the effectiveness of monetary policy, both conventional and unconventional. Keynes himself was skeptical of the usefulness of monetary policy since it only stimulates aggregate demand indirectly (Dillard, 2005). Monetary policy does not increase the net wealth of the private sector. Rather, it changes its asset composition. According to Fullwiler and Wray (2010), converting the Treasuries the private sector holds into deposits (as QE has done) needs not induce the private sector to spend more. When the central bank buys securities to increase the deposits the private sector holds, the private sector's wealth stays the same. Even if the private sector spends, it would be spending out of its existing wealth, not because its wealth has increased. Furthermore, if the economy is already in a lot of debt, monetary policy, which works by stimulating borrowing, may not be a solution or the best solution. In this situation, quantitative easing, whose goal is to lower interest rate and stimulate investment and spending, is not effective. The private sector will only increase spending if its net financial wealth increases, and this can only happen with fiscal policy.

A perfect example is Japan, having spent trillions of dollars on quantitative easing but failed to revive the economy. After all, monetary policy works by stimulating more lending. Once the private sector is in a lot of debt, it will not increase lending and spending even if the interest rate is low because the private sector is still trying to deleverage. According to Richard Koo (2001), after the asset bubbles in the 1990s, "millions of companies in Japan switched their highest priorities from maximizing profits to minimizing debt" (1). The balance sheet recession happens when households try to save while corporates no longer borrow. The private sector's concern on its balance sheet will encourage it to hoard cash and prevent it from spending, leading to liquidity traps. Recent economic situations with zero-interest rate monetary policy and liquidity trap problem in Japan have called for the restitution of fiscal policy, which emphasizes

on the role of the government spending in supporting the economy. Despite being a supporter of monetary policy, the former Federal Reserve Chairman Ben Bernanke admitted the effectiveness of fiscal policy in reviving a sluggish economy. He argued that fiscal policy was needed during severe downturns, and that monetary policy must facilitate it (Bernanke, 2003). Since the Central Bank has “no unilateral authority to rain money on the population” (Bernanke 1999, 22), quantitative easing involving purchases of short- or long-term bonds may not work. He supported the use of quantitative easing that can work like “helicopter drop of money” that increases the wealth of people. However, quantitative easing that can increase the wealth of people is actually one form of fiscal policy. Bernanke believed that a combination of quantitative easing and fiscal policy should be implemented through a money-financed tax cut (Tcherneva, 2008). According to Bernanke, “under a fiat money system, a government should always be able to generate increased nominal spending and inflation, even when the short-term nominal interest rate is at zero” (Bernanke 2002). He thus proposed that the government can create and credit money into taxpayer accounts and the Central Bank can provide requisite reserves (Tcherneva, 2008). This cooperation will have stronger effect on the economy as the money financed tax cuts will be spent and not saved and will help increase aggregate demand. Even without the support of monetary policy, the effectiveness of fiscal policy is still undeniable.

1. Three effects of fiscal policy on the economy

One camp within economics, the Post Keynesians, have followed Keynes in their skepticism of monetary policy and in their support of fiscal policy. According to Minsky (1986), one of the best-known Post Keynesian economists, there are three effects fiscal policy has on our economy: the income and employment effect, the portfolio/balance sheet effect and the cash-flow effect. First, government can either create employment by hiring people directly, supply

income through Social Security, or spend on services for people through programs such as Medicare and Medicaid. Government can also impose taxes and fees to take income from people. While government's hiring or purchasing activities directly affect employment and output, transfer payments do not. In the standard view, government spending on goods and services contributes directly to the aggregate demand while transfer payments and taxes affect aggregate demand indirectly through disposable income channel.

Second, when the U.S. government runs a budget deficit, it must issue bonds to "finance" the deficit spending. When the private sector receives cash flows from the federal government, "these flows produce stocks of new financial assets in its respective balance sheets" (Tcherneva, 2011, 15). The increased holding of safe and secure government debt by businesses and financial institutions decreases the default risk of their portfolios and improves their liquidity during a recession. Therefore, "the existence of a large and increasing government debt acted as a significant stabilizer of portfolios" (Minsky, 41).

Third, there is a cash-flow effect from government spending, which can be demonstrated using sectoral balance analysis. It is impossible for all sectors of the economy to simultaneously accumulate net financial wealth because of the well-known accounting identity:

$$\text{Domestic Private Balance} + \text{Domestic Government Balance} + \text{Foreign Balance} = 0.$$

The financial balance of any one sector can be in surplus, in balance, or in deficit. The only requirement is that the sum of all the sectoral financial balances must equal to zero. Transactions within the private domestic sector do not change the net financial position of the sector; only transactions with the public sector or external sector can alter the private sector net financial assets. (Mitchell, Wray and Watts, 2016). If one sector decides to run a surplus, at least one of the others must run a deficit. It also means, that "the debts of one sector must equal the

financial wealth of (at least) one of the other sectors” (Wray, 8).

When a recession hits, businesses cut investment spending, which lowers income while households try to save more to deleverage. Private sector’s attempts to increase its surplus or lower its deficit by lowering its spending trigger automatic stabilizers, features of government budget that change automatically with fluctuations in real GDP. The public sector’s balance, therefore, goes into a deficit due to private sector attempts to net save. The increased deficit spending of the government, therefore, is what allows the private sector as a whole to net save. Without the public sector deficit, attempts by the private sector to net save would lead to a decrease in income in a vicious cycle -- lower spending leads to lower income which further lowers spending. As Minsky (1986) argued, government spending “puts a high floor under an economy’s potential downward spiral” (36).

Figure 8 below depicts the U.S. sector financial balances as a percentage of GDP. The U.S. current account is the foreign sector’s balance so when the U.S. is running a current account deficit, it will show on the graph as a foreign sector surplus. According to Wray (2012), the graph shows the “mirror image”: a government deficit from 1980 to the “Goldilocks” years is the mirror image of the private sector’s surplus plus current account deficit. During Clinton years, the private sector’s deficit mirrored the budget surplus plus the current account deficit. As the financial crisis hit, the private sector moved sharply to a large surplus while the current account deficit fell as imports dropped and the budget deficit grew sharply because of automatic stabilizers.

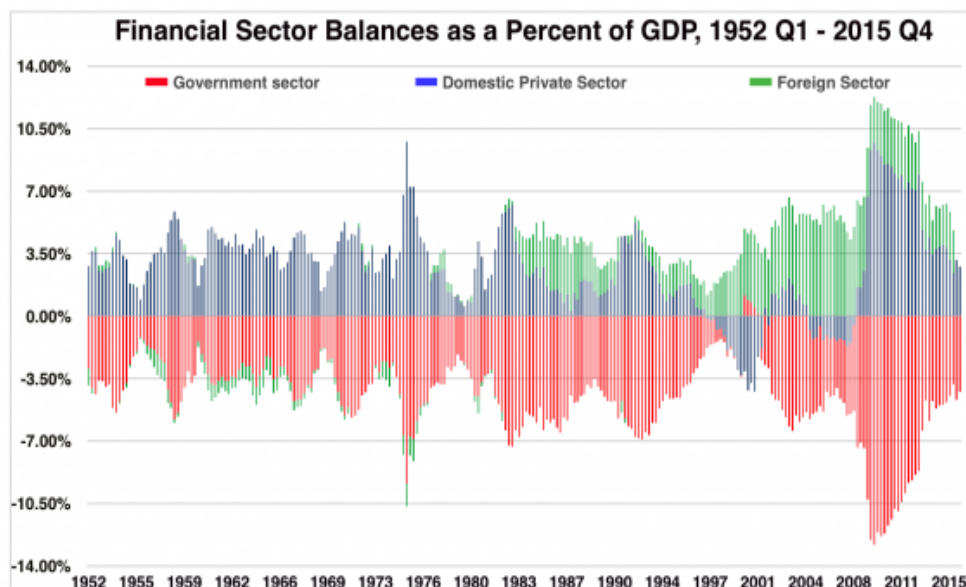


Figure 8. Sector financial balances as a percentage of GDP, 1952Q1 to 2015 Q4

The interaction among the three sectors can best be explained in a sectoral balance map.

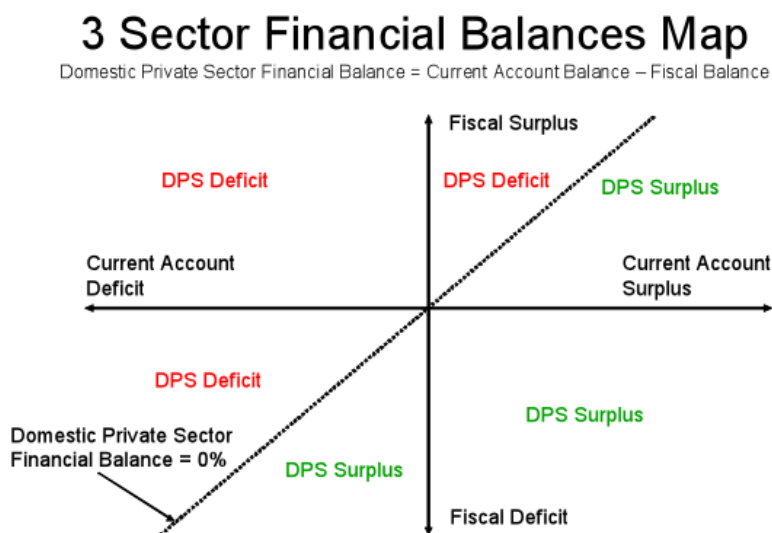


Figure 9. 3 Sector Financial Balances Map

The map shows that changes in one sector's financial balance must be accompanied by changes in at least one other sector balance. If the private sector decides to run a surplus and no changes happen in current account balance, the public sector must run a deficit. In contrast, when

the government wants to maintain budget surplus overtime to pay back its debts, either private sector or foreign sector must run a deficit.

Despite all these effects fiscal policy has on the economy, mainstream economists still oppose the use of fiscal policy because of crowding out effect, Ricardian Equivalence and sound finance argument as discussed in the next section.

2. Mainstream Critiques on Fiscal Policy and Post-Keynesian Response

a. *Crowding out*

According to the mainstream view, government spending can crowd out private spending. Most macroeconomics textbooks introduce the idea of “crowding out” effect government spending has on the economy. As Froyen (2014) explained, if the government budget was in balance ($G = T$) before the increase in government spending, the government deficit is then equal to the increase in government spending ($G-T$). Originally, the equilibrium of the loanable funds market is at point E in the graph below and the supply and demand for loanable funds intersect at the equilibrium interest rate r_0 . Before the increase in government spending, investment I is the only source of demand for loanable funds.

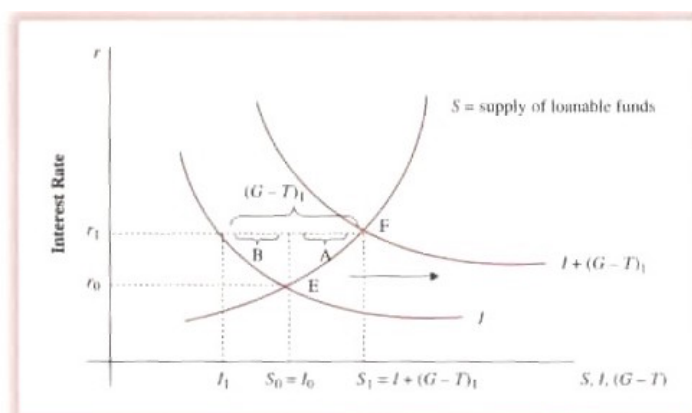


Figure 10. Effect of an Increase in Government Spending on Loanable Funds Market

When the government spends, the total demand for loanable funds will include both

investment (I) and the government's borrowing (G-T), which shifts the demand curve to the right to $I + (G-T)$. Government spending increases the demand for loanable funds, which bids up the interest rate. The equilibrium moves from point E to F and equilibrium interest rate goes up from r_0 to r_1 . The increase in interest rate has effect on both saving and investment. Saving goes up from S_0 to S_1 , which is measured by distance A as households want to save more with higher interest rate. This increase in saving mirrors an equal decline in consumption. Investment, in contrast, decreases from I_0 to I_1 , which is measured by distance B as higher borrowing costs make fewer projects profitable for firms. The rise in interest rate thus increases saving while lowering investment. However, the decline in consumption, which equals the increase in saving, plus the decrease in investment exactly offset the increase in government spending. Government spending therefore bids up the interest rate enough to "crowd out an equal amount of private expenditure (consumption plus investment)" (Froyen, 57). The aggregate demand does not change and government expenditures fail to have an effect on the economy. "Fiscal policy provides additional spending in a world of sparse spending opportunities. The government expenditures are financed in debt markets in competition with private expenditures" (Spencer and Yohe, 13). Because financial market resources are constrained, government spending competes directly and crowds out private expenditure.

However, the crowding out argument can be refuted using sectoral balances analysis discussed in the previous section. According to sectoral balances analysis, a government surplus can lead to a negative cash flow position for the private sector, which overtime can create financial instability for the economy. On the contrary, government deficits increase the private sector's net financial wealth. This fact refutes the validity of crowding out argument. The flaw of the argument lies in the assumption that the supply of "loanable funds", which comes from

saving, is exogenously determined. In fact, domestic saving is endogenously determined by the government deficit, which shifts the supply curve for loanable funds as the government spending increases. Government spending increases private income, adds to the financial assets and increases private wealth. With increased level of wealth, private sector will determine how much to save and in what form they want to keep their savings. Households can decide whether to keep their savings in form of demand deposit or in the form of financial assets such as bonds. Regardless of what form households keep their savings, it is important to realize that the government deficit creates the savings needed to buy government bonds. A balance sheet analysis here can show that process.

Private Sector		Government Treasury	
ΔA	ΔL	ΔA	ΔL
(1) + Demand Deposit		(1) – Treasury Account	
(2) – Demand Deposit + Bonds		(2) + Treasury Account	+ Bond
Your bank		The Fed (Treasury Bank)	
ΔA	ΔL	ΔA	ΔL
(1) + Reserve	+ Demand Deposit		(1) + Reserve - Treasury Account
(2) – Reserve	- Demand Deposit		(2) + Treasury Account - Reserve

As the government spends (1), demand deposit will be credited in the private sector account, Treasury account at the Fed will decrease and reserves will increase. As the government issues bonds to finance its deficit spending (2), the private sector will use the demand deposit created earlier by government spending to buy bonds. Reserves decrease and Treasury account increases. From these balance sheets, we can see that government deficit spending creates the funds for private sector to buy bonds. Classical theory assumes that domestic saving is fixed and

government spending will compete with the private sector spending for that fixed pool of saving. However, the theory fails to realize that the government spending will add to the saving pool, leading to no competition and thus no crowding out. The amount of deficit is exactly equal to the increase in the bonds issuance if all the increase in saving is kept in the form of government bonds.

Another flaw in crowding out argument is that an increase in short-term interest rate will be determined by the Central Bank, which means the change in interest rate depends on the action of a monetary authority instead of the market's crowding out response. Even if the Central Bank acts independently and raises short-term interest rate, the ultimate effect will depend on the investment and saving elasticity of interest rate and crowding out may not materialize. (Arestis and Sawyer, 5). Furthermore, in contrast to the mainstream belief that interest rates will rise when government spends, the fed funds rate will actually decrease due to the reserve effect of government spending. Whenever the government spends, the transactions between the Treasury and the private sector will affect the level of reserves held by commercial banks. "Government spending, increases aggregate bank reserves" (Bell, 605). When the government runs a deficit, net credit of reserves to the banking system can greatly affect the federal funds rate. For example, let's have a look at the change in balance sheets of the private sector and their banks when the government spends.

Commercial Banks		Private Sector	
ΔA	ΔL	ΔA	ΔL
+ Reserves	+ Demand Deposits	+ Demand Deposits - Goods/Services	

When the government spends, it buys goods and services from the private sector,

increasing private sector's demand deposits and bank reserves. This increase in reserves will bid down the fed funds rate unless the Fed intervenes. Therefore, in contrast to mainstream argument, when the government spends, the short-term interest rates actually go down, rather than going up.

b. Ricardian Equivalence Theorem (RET)

Another mainstream critique of fiscal policy is the Ricardian Equivalence Theorem (RET). RET assumes that consumers are forward looking, which means they know that an increase in taxes today will be followed by lower taxes in the future. Therefore, consumers will lower their savings today to offset the increase in taxes, knowing they will not have to pay more taxes in the future. Consumers' permanent income thus does not change as taxes change. "An increase in government saving resulting from a tax increase, is fully offset by lower private saving, so that aggregate demand is not affected" (Arestis and Sawyer, 9). Similarly, a decrease in taxes will have no effect on aggregate demand and fiscal policy fails to stimulate spending and borrowing in the economy.

Quite a few arguments have been raised against the RET. The first argument is that people do not live forever and they focus more on their consumption and situation today rather than the future's change in taxes after their death. The second argument is that private capital markets are imperfect and there exist liquidity constraints that even if consumers are truly forward looking, RET does not hold. Third, future taxes, future income and future economic performance are uncertain and there is no rule that can predict consumers' behavior when the future is uncertain (Arestis and Sawyer, 9).

c. Sound finance

Apart from crowding out effect and Ricardian Equivalence, mainstream view also uses

sound finance theory to argue against fiscal policy and government budget deficits. The traditional view of government finances is no different from that of individuals and firms, whose spending is subject to budget constraints. “Government must abide their intertemporal budget constraints and offset today’s spending by current or future taxes.” (Tcherneva 2008, 10). The mainstream view believes that continuous deficits are unsustainable because it can lead to accumulation of government debt. In the U.S., when the government runs a deficit, it must issue bonds to finance its spending. However, the government can’t borrow from the private sector forever. Its continuous borrowing will cause an unsustainable explosion in the government debt and put “an intolerable tax burden on future generations” (Tcherneva 2008, 11). Accumulation of too much liabilities can cause a government to default on its debt, like Argentina in 2001 and Greece in 2010. Therefore, the mainstream view supports the practice of sound finance where the government runs a balanced budget in the long run to avoid accumulating too much debt and having to default.

However, according to modern money theory, a government with its own fiat money is not financially constrained, and taxes do not finance government spending. It is universally accepted that money is the state’s liability. “One of the most important powers claimed by sovereign government is the authority to levy and collect taxes” (Wray 2012, 48). State imposed taxes on people so that people would demand state's liability. State then “created the money units to standardize payment of taxes” (Wray 1998, 51). Anyone who has obligations to the state “will be willing to accept the pieces of paper with which he can settle the obligations, and all other people will be willing to accept these pieces of paper because they know that the taxpayers, etc., will accept them in return” (Lerner 1947, 313). Under this theory, the state does not collect taxes to finance its spending; it actually spends first to distribute its liability to taxpayers and then

taxpayers will use these liabilities to pay back their obligations.

Let's do a balance sheet analysis when a government taxes and spends:

Government taxing:

Banking System		The Treasury	
ΔA	ΔL	ΔA	ΔL
- Reserves	- Demand Deposits	+ Treasury Account - Tax liabilities	

The Fed		Government (The Fed and The Treasury)	
ΔA	ΔL	ΔA	ΔL
	+ Treasury Account - Reserves	- Tax liabilities	- Reserves

Government spending

Banking System		The Treasury	
ΔA	ΔL	ΔA	ΔL
+ Reserves	+ Demand Deposits	- Treasury Account + Goods & Services	

The Fed		Government (The Fed and The Treasury)	
ΔA	ΔL	ΔA	ΔL
	+ Reserves - Treasury Account	+ Goods & Services	+ Reserves

T-account analysis here shows that after consolidating the Fed and the Treasury balance sheets, what is left is an increase in reserves after the government spends and a decrease in reserves after the government taxes. Therefore, government spending creates money and taxes destroy money. Since taxes destroy money, it is invalid to say the government uses tax revenues to finance its purchases. Under fiat money system, the government is the only entity that spends by issuing its own liabilities, which are not redeemable in another currency or metal. Since the government can always issue its own money-denominated debt to obtain goods and services, it can always afford to spend; the real problem lies in its “position to keep the rate of spending in the economy at the level required to fill its two great responsibilities, the prevention of depression, and the maintenance of the value of money” (Lerner 1947, 314).

Similarly, bonds do not finance government spending. They are only used to minimize the reserve effects on fed funds rate resulted from government spending. As mentioned earlier, when the government spends, demand deposits go up and total level of reserves in the system increase. This bids down the fed funds rate in the interbank market. Therefore, the Treasury and Central Bank must adopt different strategies to minimize the reserve effects on the interest rates. According to Bell (2000), one of the strategies for reducing the reserve effect is to sell bonds to coordinate the Treasury’s operations. Here are the balance sheets showing the effects government spending and the sales of bonds have on banks and the private sector:

Commercial Banks		Private Sector	
ΔA	ΔL	ΔA	ΔL
+ Reserves	+ Demand Deposits	+ Demand Deposits	
- Reserves	- Demand Deposits	- Goods/Services	
		- Demand Deposits	
		+ Bonds	

When the government spends, deposits and reserves go up as mentioned earlier. The government then sells bonds to the private sector, who now holds bonds instead of demand deposits. The amount of demand deposits goes down, decreasing the level of reserves in the system. The sale of bonds exactly offsets the increase in reserves caused by government spending, keeping the fed funds rate unchanged.

Lastly, when the government uses money to pay back its debt, it is basically exchanging one liability for another because both bonds and money are state's liabilities. Therefore, the government cannot default on its debt. Alan Greenspan once said in an interview: "The United States can pay any debt it has because we can always print money to do that. So there is zero probability of default." (NBC, 2011). At least on this issue he was right.

d. Real resources constraint

Just because the government can always afford to spend, it does not mean it should spend. The government's purchasing power would "allow it to bid real resources away from other sectors and, under full-employment conditions, drive up the price level" (Spencer and Yohe, 15). Therefore, government spending can crowd out private spending from a real resources perspective. According to Wray (2012), the government always faces a possible real resource constraint: whether the resources exist and whether they are for sale or for hire. Even if the resources exist, there are concerns over the competition with alternative uses of the resources. Since the government faces no budget constraint, it can "win a bidding war against the private sector" (Wray 2012, 188). Prices and wages might be pushed up to the point where inflation results. Government spending thus leads to higher price levels, higher product costs, yet lower output in those sectors that are losing against the government. This might leave us with a

“bloated public sector and a private sector that is too small” (Wray 2012, 188-190). However, this undesired effects of government spending will not materialize if government spending is used to create more real sources in the future.

In summary, neither taxes nor bonds finance government spending. The government imposes tax liability so that people demand its currency/liability while it issues bonds to minimize the reserve effect on interest rate caused by government spending. However, the government spending is subject to real resources constraints. Therefore, it should spend on goods and services that can help generate more real resources.

Post Keynesian economists, therefore, do not believe in sound finance and instead introduce the idea of functional finance. According to Lerner (1943), the government fiscal policy should be evaluated based on the results it has on the economy and not on the “established traditional doctrine about what is sound or unsound” (39). Functional finance rejects the traditional doctrine through a few main points. First, the government can adjust the total level of spending to prevent both unemployment and inflation. It will spend when total spending is too low and impose tax when total spending is too high. There might be a continually increasing national debt. However, this does not pose any threat to the society as long as Functional Finance supports the appropriate level of total aggregate demand for current output. Furthermore, there is a tendency for the budget to balance in the long run as a result of Functional Finance application even if the government does not balance the budget on purpose. Since the government’s liability is private sector’s assets, “the greater the national debt the greater is the quantity of private wealth” (49). When private wealth is increased, current saving is discouraged because of the previously cumulated savings and thus spending from current income increases. The rise in private sector spending will make up for the aggregate demand required for full employment. It

then became unnecessary for the government to run budget deficit. The budget is balanced and public debt stops growing, reaching an equilibrium level. When the rate of private spending gets too big, it is time for the government to impose tax to prevent inflation and use these taxes to repay its debt and interests. In short, the goal is not to worry about balancing the budget but instead to focus on how deficits can support aggregate demand and full employment.

V. Conclusion

Mainstream economists have been in favor of monetary policy because of their focus on interest rates to equilibrate saving and investment to stabilize the economy. While conventional monetary policy controls short-term interest rates to influence long-term interest rates, unconventional monetary policy, quantitative easing in particular, tries to directly control the long-term interest rates. Quantitative easing transmission mechanism works through three main channels: term spread channel, portfolio balance channel, and default risk channel. Even though quantitative easing is effective in lowering long-term interest rates, the impact on the broader economy is questionable. In an excessively indebted and/or depressed economy, lower interest rates do not increase spending and lending, and quantitative easing fails to support aggregate demand. From a Post Keynesian framework, fiscal policy should be adopted because as it increases the net financial wealth of the private sector, individuals and firms will spend more, stimulating the economy. Under the Modern Money Theory, the mainstream critiques on fiscal policy such as crowding out, Ricardian Equivalence and sound finance are also inaccurate. The government with fiat money system faces no financial constraints because it can always issue its own liabilities to purchase goods and services for sale in its own currency, as well as to pay back its debt. Fiscal policy, thus should be adopted with the cooperation from monetary policy to have a stronger effect on the economy. However, the government still faces real resource constraints,

which indicates the government deficits should be spent to expand the real resources in the economy.

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