

## **How can we simulate growth in the UK economy?**

### **Third Prize – 2<sup>nd</sup> Year Undergraduate Category**

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UK unemployment rates are currently at an all time high since the recession in the 1990s<sup>1</sup> and interest rates are at 0.5%<sup>2</sup>; these are common signs of an economy that is stagnating or in a recession. The UK economy shrank 2% in the fourth quarter of 2011<sup>3</sup>, and it is predicted that it will shrink again in the following quarter. Two consecutive quarters of economic contraction will mean that the UK economy has officially re-entered a recession.

Decreasing interest rates, as shown in an ISLM model (Figure 1), will promote economic growth leading to lower unemployment. Central Banks lower the short-term nominal interest rate through open-market purchases of bonds or other securities, which in-turn increase the supply of bank reserves putting downward pressure on the market clearance rate. Once interest rates get close to zero this form of monetary policy is no longer effective because nominal interest rates must not be lowered below zero. If interest rates were less than zero firms would have no incentive to lend money. This is because no firm will lend £100 if they don't get at least £100 returned; the firm would be losing money by lending. In order to stimulate the economy other policies must be implemented.

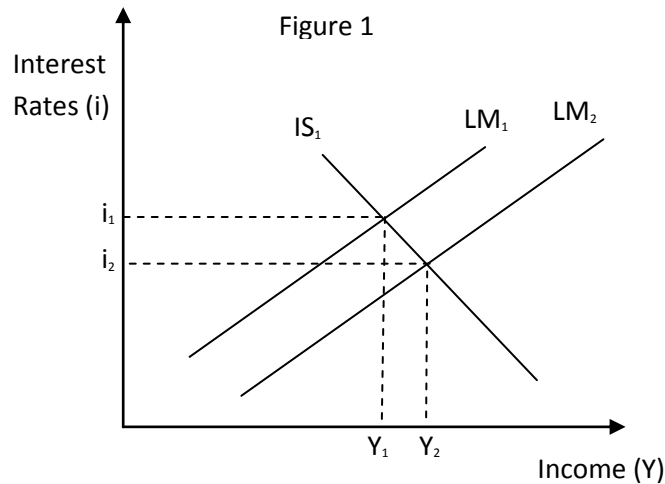
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<sup>1</sup> <http://www.ons.gov.uk/ons/rel/lms/labour-market-statistics/february-2012/statistical-bulletin.html> (accessed 02/03/2012)

<sup>2</sup> <http://www.bankofengland.co.uk/> (accessed 02/03/2012)

<sup>3</sup> <http://www.bbc.co.uk/news/business-16864664> (accessed 02/03/2012)



In this essay I shall focus on three alternative non-standard monetary policies the Central Bank can use to stimulate aggregate demand, promoting economic growth and reducing unemployment; quantitative easing, policy expectations and the composition of the Central Bank's balance sheet. These three policies and their effectiveness have been studied in a lot of literature with some varying and interesting results. I will attempt to analyse a portion of this literature, determining the most effective policy for the Central Bank. I will then move on to discuss the use of fiscal policy and mention other possible policies that could be used to prevent nominal interest-rates reaching the zero bound.

### **Quantitative Easing (QE)**

Quantitative Easing pumps liquidity into the economy through the purchase of government and corporate bonds. In recent years QE has become a more common policy for Central Banks, Japan being one of the first. QE takes effect in a multitude of ways, of which I shall now discuss.

We make the assumption that money and financial assets are imperfect substitutes. Therefore when there is an increase in the money supply through quantitative easing firms will attempt to rebalance their portfolios, which in turn raise the price of assets and lowers yields,

stimulating the economy. Both Keynesians (Brainard & Tobin 1968<sup>4</sup>, and Tobin 1969<sup>5</sup>) and monetarists (Meltzer 2001<sup>6</sup>) agree with this view and the process is demonstrated in a paper written by Andres, Lopez-Salido and Nelson (2003)<sup>7</sup>.

A second possible transition for quantitative easing is the fiscal channel. It assumes that if the Central Bank injects enough money into the economy it will relieve the government's fiscal strain, enabling them to reduce taxes or increase government expenditure without increasing the public holdings of government debt. Auerbach and Obstfeld (2003)<sup>8</sup> conclude that fiscal relief can have substantial effects on improving welfare. However, they did note 'Entrenched price expectations surely are a barrier to policy success in Japan'. The underlying factor determining the effectiveness of the fiscal channel is the credibility of the Central Bank. If firms believe the decrease in taxes is only temporary and will be repaid in future tax increases then the firm policy will become much more inefficient. Both points raised in this paper highlight the importance of public expectations and the credibility of the Central Bank, something I will discuss later in more detail.

The final channel of quantitative easing that I shall discuss is referred to as 'signal channelling'. If the public sector can see physical evidence of the Central Bank liquidity injections, it complements expectations. I don't wish to focus on this channel as it is hard to prove any correlations due to the copious amount of external factors that interfere.

Eggertsson, Gauti & Michael Woodford (2003)<sup>9</sup> doubt the effectiveness of quantitative easing, they believe a frictionless market where fiscal and monetary policies are separated, QE will have no effect. They make two strong and unlikely assumptions, but they demonstrate that the effectiveness of QE depends on frictions within markets. They conclude their analysis stating, if QE proves ineffective through normal channels it still may have positive effects on the

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<sup>4</sup> Brainard, William & James Tobin (May 1968): "Pitfalls in Financial Model Building"

<sup>5</sup> Tobin, James (1969): "A General Equilibrium Approach to Monetary Theory"

<sup>6</sup> Meltzer, Allan (2001): "Monetary Transmission at Low Inflation: Some Clues from Japan in the 1990s"

<sup>7</sup> Andres, Javier & J. David Lopez-Salido & Edward Nelson (2004): "Tobin's Imperfect Asset Substitution in Optimizing General Equilibrium."

<sup>8</sup> Auerbach, Alan & Maurice Obstfeld (April 2003): "The Case for Open-Market Purchases in a Liquidity Trap"

<sup>9</sup> Eggertsson, Gauti & Michael Woodford (2003): "The Zero Bound on Interest Rates and Optimal Monetary Policy"

economy through expectations management complementing the Central Bank's policy. This brings me onto the next potential policy Central Banks should consider; policy expectations.

### **Shaping Policy Expectations**

The importance of shaping policy expectations has been highlighted in many papers, most notably Eggertsson, Gaudi & Michael Woodford (2003). They believe that this is in fact the only tool policymakers have. They focus particularly on advising Central Banks to commit to a policy rule. However, designing policy rules can be difficult, they must function effectively in all cyclical states of the economy and there are often political constraints. Bernanke, Ben & Vincent Reinhart & Brian Sack<sup>10</sup> (pp. 11) believe lowering interest-rate expectations by making a commitment to policy rules '...if credible and not previously expected, should lower longer-term rates, support other asset prices, and boost aggregate demand.' Kohn, Donald & Brian Sack<sup>11</sup> (pp. 28) complement Eggertsson & Woodford and both determine Central Bank statements and policy actions shape expectations and 'should be viewed as a vital component of the monetary policy process.'

One issue that arises within these papers is the lack of benchmark data, there is no information to show what yields would have been without Japan's Zero Interest Rate Policy (ZIRP). However Baba et al. (2005)<sup>12</sup> solve this problem by using a model to determine Japanese yields at each given date under each set of circumstances. Their results showed larger net effects on long-term yields and emphasised the importance of the Japanese Central Bank's commitment to rules. They also draw attention to the increased effects of policy expectations when nominal interest rates are close to zero. Shaping public expectations through communication is a useful tool for any Central Bank, however it is crucial that the Central Bank maintains its credibility, otherwise any attempts to change long-term rates will be in vain.

### **Composition of Central Bank's Balance Sheet**

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<sup>10</sup> Bernanke, Ben & Vincent Reinhart & Brian Sack (2004): "Monetary Policy Alternatives at the Zero Bound – An Empirical Assessment"

<sup>11</sup> Kohn, Donald & Brian Sack (August 2003): "Central Bank Talk: Does It Matter and Why?"

<sup>12</sup> Baba, Naohiko, Shinichi Nishioka, Nobuyuki Oda, Maasaki Shirakawa, Kazuo Ueda, and Hiroshi Ugai (2005): "Japan's Deflation, Problems in the Financial System, and Monetary Policy."

The final non-standard monetary policy I shall discuss is changing the composition of the Central Bank's balance sheet. They are able to buy and sell securities of various maturities, whether it is a few weeks or thirty years, manipulating the supply, and affecting the overall yields. However, there are doubts over the effectiveness of this policy as we assume these assets are substitutes. It is also important to note, as mentioned earlier, that if the market was completely frictionless then this policy would have no effect<sup>13</sup>.

Bernanke, Reinhart & Sack<sup>14</sup> note that in reality markets do include a lot of friction and this policy is viable, in theory. Their paper complements classics such as Frankel (1985)<sup>15</sup> and Friedman (1981)<sup>16</sup> providing evidence that they are imperfect substitutes. However, another paper by Bernanke & Reinhart (2004)<sup>17</sup> uses a model to determine changes in yields based on changes in the composition of the balance sheet. The paper concludes that even with substantial changes we would only see small effects on the yield.

We have now discussed three of the main non-standard monetary policies the Central Bank may use when the manipulation of nominal short term interest rates is no longer possible. Throughout the analysis of each policy a reoccurring theme has been the emphasis placed on the credibility of the Central Bank, and I believe this to be one of the determinant factors dictating the effectiveness of each of these policies, particularly the shaping of public expectations. I will now discuss the fiscal tools available to the government and comment on the effectiveness and recent implementation in times where nominal rates are close to zero.

### **Fiscal Policy**

The liquidity trap occurs when quantitative easing fails to lower interest rates and stimulate economic growth. When firms and individuals have little confidence in the economy they chose not to lend or spend their incomes. This process can be demonstrated in Figure 2; an

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<sup>13</sup> Eggertsson, Gauti & Michael Woodford (2003): "The Zero Bound on Interest Rates and Optimal Monetary Policy"

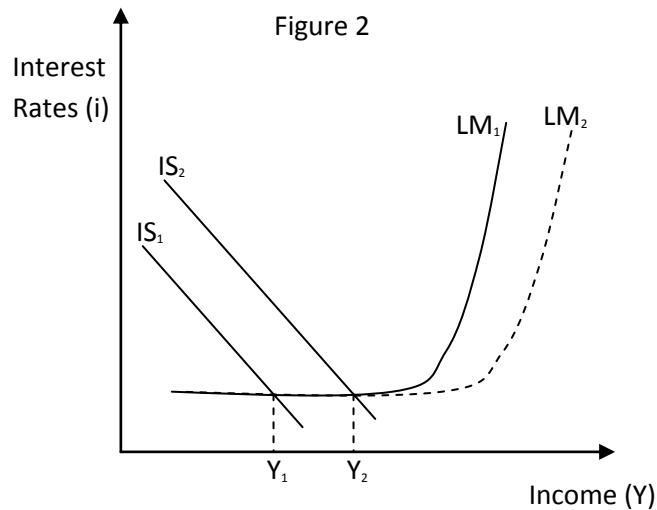
<sup>14</sup> Bernanke, Ben & Vincent Reinhart & Brian Sack (2004): "Monetary Policy Alternatives at the Zero Bound – An Empirical Assessment"

<sup>15</sup> Frankel, Jeffrey (1985): "Portfolio Crowding Out, Empirically Estimated"

<sup>16</sup> Friedman, Benjamin (1981): "Debt Management Policy, Interest Rates, and Economy Activity"

<sup>17</sup> Bernanke, Ben & Vincent Reinhart (January 2004): "Conducting Monetary Policy at Very Low Short-Term Interest Rates"

increase in the money supply has led to no change in economic growth or interest rates, however a shift in the IS curve causes an increase in economic growth whilst interest rates remain the same.



This demonstrates that fiscal expansion can be a very effective policy where a liquidity trap occurs as long as the cost of government borrowing is not too high that the costs outweigh the benefits. The UK currently has a debt equal to approximately 76% of its GDP<sup>18</sup>. As a result its fiscal stance is somewhat compromised by this huge debt, as it cannot continue to borrow, this limits the effectiveness of fiscal policy.

Fiscal policy has inherent time-lags and an emphasis is usually placed on the use of automatic stabilisers, which have little lag. In recent times USA and the UK have used fiscal policy to combat the recession. This is because the recession was believed to last a number of years and the lags associated with fiscal policy would be outweighed by the positive effects it would have on the economy.

<sup>18</sup> <http://www.ons.gov.uk/ons/rel/psa/eu-government-debt-and-deficit-returns/september-2011/stb---september-2011.html>

Normal fiscal lags include formulating a policy, announcing a new policy, introducing the policy, and waiting for the effects to filter through the economy. An example taken from Blanchard, Dell’Ariccia & Mauro<sup>19</sup> (pp. 206) noted that the USA enacted their fiscal stimulus bill over a year after the recession started and ‘less than half of the authorized spending had been spent by the end of 2009.’ This is why automatic fiscal stabilisers are preferred.

Taylor, John (2000)<sup>20</sup> concludes fiscal policy should be left to automatic stabilisers; otherwise it has the potential to conflict with monetary policy decreasing the efficiency of both policies. He believes fiscal policy should only be used if automatic stabilisers aren’t having the necessary effects and there should be clear systematic rules to prevent it interfering with monetary policy. Something interesting to note from this paper is the further emphasis placed on rules and clear policies aiming to increase the transparency of the government and Central Bank, aiding public expectations.

The Ricardian equivalence assumes that governments investing in the economy now will recoup the funds through increase taxes or decreases in expenditure in the future. Firms and consumers recognise this and decide not to adjust their investment/consumption. This means any changes in government expenditure or taxes will have no effect on the economy. Empirical evidence provided by Bernheim (1987)<sup>21</sup> and Feldstein (1988)<sup>22</sup> shows that government deficits stimulate private consumption and the Ricardian equivalence does not hold in practice. However, debt levels in most developed countries in recent times are very high and substantial discretionary fiscal policy to promote aggregate demand has been limited.

Blanchard, Dell’Ariccia & Mauro (2010)<sup>23</sup> highlight the lack of knowledge governments have over the effects of fiscal policy. There is a general lack of awareness of the appropriate

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<sup>19</sup> Blanchard, Olivier & Giovanni Dell’Ariccia & Paolo Mauro (August 2010): “Rethinking Macroeconomic Policy”

<sup>20</sup> Taylor, John (2000): “Reassessing Discretionary Fiscal Policy”

<sup>21</sup> Bernheim, Douglas (1987): “Ricardian Equivalence: An Evaluation of Theory and Evidence”

<sup>22</sup> Feldstein, Martin (1986): “The Effects of Fiscal Policies When Incomes are Uncertain: A Contradiction to Ricardian Equivalence”

<sup>23</sup> Blanchard, Olivier & Giovanni Dell’Ariccia & Paolo Mauro (August 2010): “Rethinking Macroeconomic Policy”

fiscal package and it was demonstrated in the recent recession where we witnessed many different approaches in countries' fiscal stances.

### **Prevent Zero Bound Rates in the Future**

Before concluding I shall briefly discuss how governments can prevent zero bound nominal interest-rates and provide some useful analysis on preventing the liquidity trap associated with zero bound rates. In a paper provided by Rudebusch (2009)<sup>24</sup> he predicted, using a simple Taylor rule, that the United States should have lowered their rates another 3%-5% past zero. This severely limited the effectiveness of monetary policy and non-standard policies were used as well as fiscal policies. Williams (2009)<sup>25</sup> determines that if there was a higher inflation target, this would lead to higher nominal interest rates. This would allow Central Banks and governments to reduce rates further in times of recession, minimising the reduction in output. He also notes that there should be further regulation of the financial markets to reduce the probability of large shocks like those we witnessed in 2007-2008. However, there are associated costs with higher inflation and this is a difficult policy decision for governments. It becomes an opportunity cost between higher inflation and balancing the risks of possible zero bound interest rates.

Improving the budget deficit during good times will create more space for fiscal policy in times where the economy slows or where monetary policy is becoming ineffective. Fiscal lags indicate that governments should focus on designing new or improving existing fiscal stabilisers.

### **Summary and Conclusion**

Monetary policy has three main tools to promote economic growth when nominal short term interest rates reach the zero bound. Whilst the effectiveness of these policies is debated amongst literature, a reoccurring theme throughout the literature discussed demonstrates that public expectations and the credibility of the Central Bank is an important determinant of the effects non-standard policies will have on economies. The manipulation of public expectations

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<sup>24</sup> Rudebusch, Glenn (2009): "The Fed's Monetary Policy Response to the Current Crisis"

<sup>25</sup> Williams, John (2009): "Heeding Daedalus: Optimal Inflation and the Zero Lower Bound"



appears to be more effective where nominal rates are close to zero, and some believe it is the only policy Central Banks have available to them in these times.

I believe prevention is the best cure. The Bank of England should seek to maintain an appropriate level of inflation so that short-term nominal interest rates remain high enough to maximise the effectiveness of monetary policy when it is called upon. Tougher regulations on the financial industry should help to prevent future shocks or limit the impact they have on the global economy. Further research into the effects of fiscal policy should be undertaken and specific rules should be created so as not to interfere with monetary policy. A suitable buffer zone/reserve should be built in to government budgetary positions to allow for the substantial fiscal policies needed to promote aggregate demand and escape the liquidity trap.

The key to the success of any of the policies discussed within this essay is the Bank of England's credibility. They must continue to increase transparency through regular and thorough communications with the public through the use of policy rules, and it is paramount that they do not deviate from their rules.

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