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The Economic Policy Options at Low Interest Rates

Since the Global Financial Crisis (GFC) of 2008, monetary authorities around the world have eased their monetary policy to counteract the shock facing the global financial system (Figure 1). However, despite lowering the interest rates to 0%, central banks including the US Federal Reserve, European Central Bank (ECB), and the Bank of Japan (BOJ) have struggled to meet their mandate inflation targets of 2% (Figure 2). To dispel concerns over the limitations of conventional monetary policy, monetary authorities in several economies have adopted on unconventional stimulus measures. As heavily indebted governments embark on fiscal austerity, unconventional monetary policy becomes an increasingly dominant pillar in promoting economic growth. As the effects of these unprecedented measures percolate through, economists are beginning to understand their limitations and ramifications. According to central bankers such as Glenn Stevens, monetary policy alone cannot deliver solutions to economic problems, as there is little room for households, governments and corporations to further expand their balance sheets (2015).

Monetary policy aims to influence the economy through regulating the money supply in the economy. Through open market operations (OMO), monetary authorities can expand or contract the monetary base to reach their target interest rates. According to the IS-LM model, changes to the interest rates due to changing the money supply shift the LM curve which in the short-run alters output due an elastic short-run aggregate supply due to sticky prices. The increase in money supply then translates to a higher aggregate demand, raising output and price levels, creating inflation and reduces unemployment. Based on the IS-LM model and the AD-AS model, other models such as the Phillips curve and NAIRU further prescribe that monetary policy plays a vital role in stimulating the economy, and creating impetus for inflation. Thus reaching inflation targets can bring the economy to its natural rate of output and, consequentially, unemployment (European Central Bank, 2016; Jahan, 2012).

Through the channels of monetary transmission, the economy responds to an easing of monetary policy with a positive increase in aggregate demand. This in turn lowers the costs of borrowing, boosting investment demand as more projects become profitable (Belke & Verheyen, 2014; Cecchetti & Marion, 2012; Mathai, 2012). Lower interest rates translate to higher stock market valuations, real estate values, business investment and household consumption (Cecchetti &

Marion, 2012). Furthermore, there is an intertemporal effect whereby a lower short-term rate makes borrowing at the present relatively more attractive than saving. Through this mechanism, firms and consumers bring their future spending forwards.

An accommodative monetary policy stance also influences international financial markets and currency valuations. Through currency depreciation, an expansion of the money supply raises the country's current accounts (CA) which boosts the domestic aggregate demand. This is achieved through both the volume effect, and the value effect, whereby domestic exports become cheaper and foreign goods become more expensive. The effects of increasing domestic prices due the higher price of imports creates inflation in the economy, while currency depreciation attracts more foreign investments to the domestic economy, creating local jobs (Krugman, et al., 2015). The foreign exchange markets also respond to changes in interest rate spreads between economies causing outflows due to the lowering of domestic interest rates, thus further depreciating the currency.

The low interest rate environment among the advanced economies in lieu of the GFC significantly altered the effectiveness of monetary policy. With nominal interest rates kept at 0%, the presence of positive inflation causes real interest rates to fall below 0%. At the real rate (r) of 0%, the demand for money is infinitely elastic as short-term bond yields become low enough for holding short-term bonds to become equivalent to holding cash (Williamson, 2014). In this situation, monetary expansion will create little change in inflation (Figure 3), thus an economy in this situation is in a liquidity trap. Another concern for the economy in this situation is the zero lower bound (ZLB), beyond which arbitrage opportunities are created and banks will begin to hoard cash (Williamson, 2014; Bauer & Rudebusch, 2015). Due to these constraints, monetary authorities are unable to further stimulate the economy and create stable inflation using conventional monetary policy.

At a global level, the prevalence of zero or negative interest rates in the major developed economies and competitive currency devaluations create a lower global interest rate (Ferrero, 2015). Given a fixed future expected exchange rate, an increase in money supply cannot depreciate the currency further despite expansions in the money supply (Figure 4) (Krugman, et al., 2015). For certain economies, the investors' search for yields and safe haven currencies has

prevented conventional monetary policy from inducing depreciation (Hunter, 2016). Currencies such as the New Zealand Dollar, the Japanese Yen all observed currency appreciation despite recent cuts in interest rates (Figure 5). Thus, a low interest rate environment dampens the currency channels of monetary policy transmission across the global economy. For instance, Japanese inflation data such as the CPI shows that Japan continued to experienced deflation (Figure 6) despite implementing negative rates (Nikkei, 2016).

With conventional policy limited by the ZLB and the liquidity trap, unconventional monetary policies such as quantitative easing (QE) and negative overnight deposit rates remain available to monetary authorities. During shocks to the financial markets such as the GFC, the possibility of corporate defaults incentivises investors to flock to bonds, as sovereign bonds in particular provide a high degree of certainty. Both of these policies create negatively yielding short-term bonds, encouraging bond holders to swap bonds for more liquid assets. This allows monetary authorities to further inject money supply into the economy.

In the US, by buying long-term government bonds and other longer-term debts, the Fed actively lowered the long-term interest rates. In doing so, the Fed's QE programme was able to influence the interest charged on home loans dependent on long-term interest rates to raise housing demand, while having a short-term impact on equity valuations (Krugman, et al., 2015; Zumbur, 2012; Olsen, 2014). Between 2008 and October 2014, through its QE packages and "Operation Twist", a series of large-scale asset purchases (LSAP) were rolled out by the Fed to reduce the supply and the yield of the securities on the market (Federal Reserve, 2015). The packages targeted mortgage-backed securities, and existing government securities in the market. In conjunction with this, the Fed further prepared the market for longer periods of accommodative monetary policy to further flatten the yield curve through forward guidance (Bauer & Rudebusch, 2015). Simulation of the LSAP's effects on mortgage-backed securities (MBS) shows over a hypothetical duration of a 24 week stimulus package, the Federal Reserve's QE policy can create an 11 basis point drop in actual mortgage rates (Hancock & Passmore, 2015) (Figure 7).

The QE programme provided some degree of relief to the financial shocks, however research suggest that the programme did not meet the levels of monetary easing required. At the height of the GFC, it is estimated that the US economy of 2009 needed an interest rate of around -9% to

close the output gap and to meet employment and inflation targets, far below the effective federal funds rate (EFFR) of between 0 to 25 basis points (Bullard, 2012). Using the two dominant models of analysing monetary expansion below the ZLB, the shadow rate term structure model (SRTSM) developed by Wu & Xia (2013), and the Zero Lower Bound-Gaussian affine term structure models (ZLB-GATSM) by Krippner, it is found that the Fed's three QE packages and forward guidance were effective in pushing the shadow interest rate to -3% in middle of 2014 (Figure 8) (Federal Reserve Bank of Atlanta, 2015). However, these rates are still far higher than the rates necessary for those economies as prescribed by the Taylor (1999) rule. Nonetheless, it is evident that bond purchases do provide a downward pressure on bond prices.

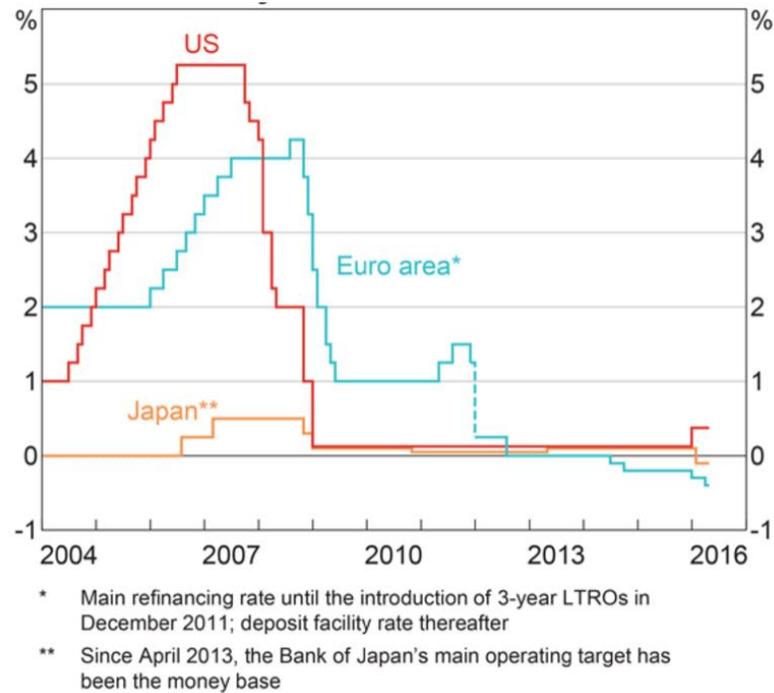
After years of QE by central banks from around the world, the recent bond-buying programme conducted by the Bank of England (BoE) demonstrated the limits of a prolonged period of QE. The £50 million shortfall from the planned purchase of £1.17 billion long-dated UK government gilts at above market prices demonstrated the pressure which insurers, pension funds and other liability-driven funds are facing (Moore & Cumbo, 2016). Due to the negative impact of lower long-term rates, these UK funds which already have amassed a combined £408 billion of debt in July 2016, are pressed to hold on to more bonds as their present value of discounted liabilities and their expected return assumptions of risk assets are squeezed by the falling yields (Credit Suisse, 2015; Mackenzie, 2016; UBS, 2015). Furthermore, according to the permanent income hypothesis, households are inclined to smooth out their life long consumption (UBS, 2015). Thus, despite lower interest rates, households in Japan, Germany, Sweden, Denmark and Switzerland are saving at their highest level since 1995. The low returns to savings drive people to save more to secure their retirement income (Baker, 2016). Households and businesses in debt will also have little room to further increase their debt in response to a further easing of monetary policy. In Switzerland, only one third of Swiss SMEs responded positively to low interest rates having a positive impact on their investment decisions, with limited increase of investment in fixed assets (Credit Suisse, 2015). In summary, it is arguable that QE, despite its viability as an alternative to conventional monetary policy, does pose major risks and becomes less effective after prolonged periods. Due to the specific markets which it targets and its funding of public debt, QE delegitimises the central banks' independence, hinders government balance sheet repair and also poses a major risk future pensions schemes (Belke & Verheyen, 2014; Mathai, 2012).

Another unconventional monetary policy option available to monetary authorities is the adoption of negative interest rates. The adoption of a negative interest rate prevents investors from believing that rates can only rise since the economy is at the ZLB. In doing so, central banks build the expectation for both increases and decreases in the short-term interest rates (Constâncio, 2016). Consequentially, the lowering of interest rates to subzero levels also allows monetary authorities to strengthen its forward guidance and signal to the markets its commitment to achieving price stability (Pradhan, 2016). Major central banks such as the European Central Bank (ECB), the Bank of Japan (BoJ), as well as numerous smaller European central banks have applied a negative interest rate. In order to prevent arbitrage opportunities, both the ECB and BOJ have applied a negative rate only to the overnight deposit rate (Bank of Japan, 2016; European Central Bank, 2016). For the financial system, these costs of negative overnight lending rates remain relatively small, as cash balances only represent a fraction of their asset base (Pradhan, 2016). Therefore negative interest rates have not caused a flight to cash.

However, should interest rates be cut further, adverse effects on the financial system could appear. A further reduction in the profitability of banks in the private sector will cause credit expansion to fall (Pradhan, 2016). Furthermore, higher losses to the banks' cash balance could force banks to consider hoarding cash, as storing liquid assets in physical cash becomes cheaper than paying the central bank's overnight deposit charges (Jones & Shotter, 2016). Similar to QE, negative interest rates as an alternative to conventional monetary policy is also bound by limitations.

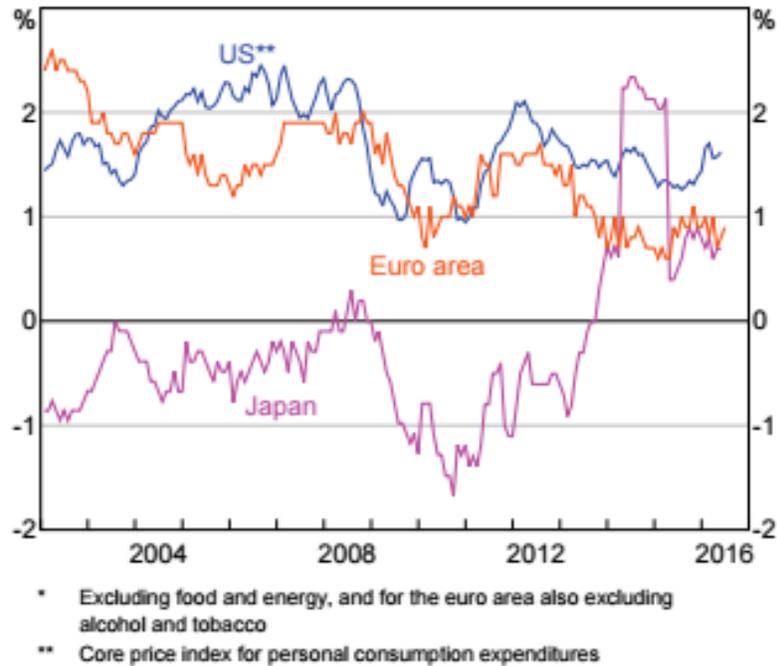
With historically low interest rates around the world, it is evident that monetary authorities face limitations to conventional monetary policy. This paper explores the range of unconventional monetary policies which can be adopted to stimulate economic growth and create inflation; however it is also evident that the alternatives are not free from risks and limitations. Given the limitations that also exist for unconventional monetary policy, fiscal policy may be used to boost economic activity. In the current low-interest rate environment, fiscal authorities benefit from a relatively cheap cost of borrowing costs. However, central banks must work with governments and other institutions to coordinate their policies and to address economic shocks using multi-pronged packages instead of relying on conventional monetary policy alone.

Figure 1: Policy Interest Rates – G3



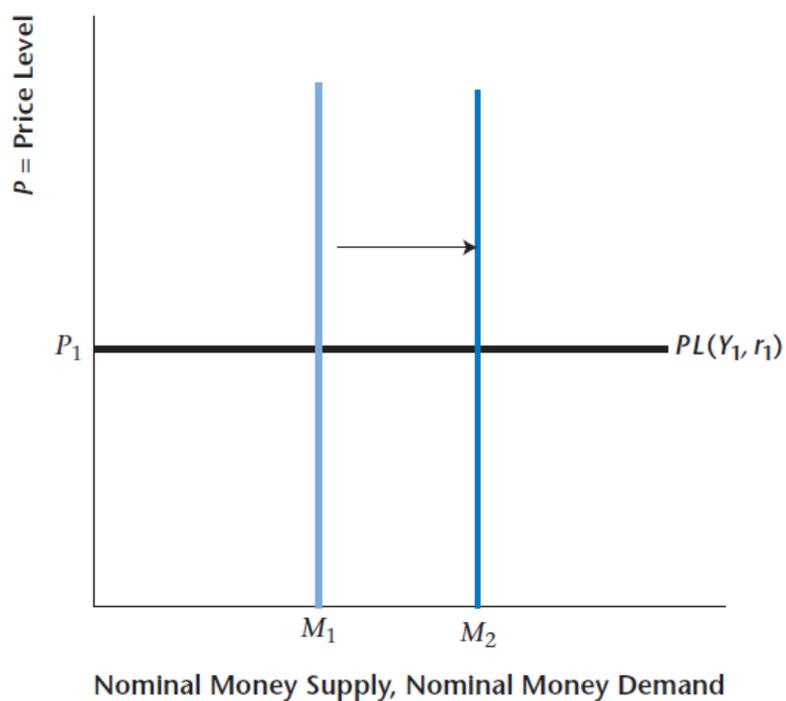
Source: RBA

Figure 2: Core Inflation* --Advanced Economies: Year-Ended



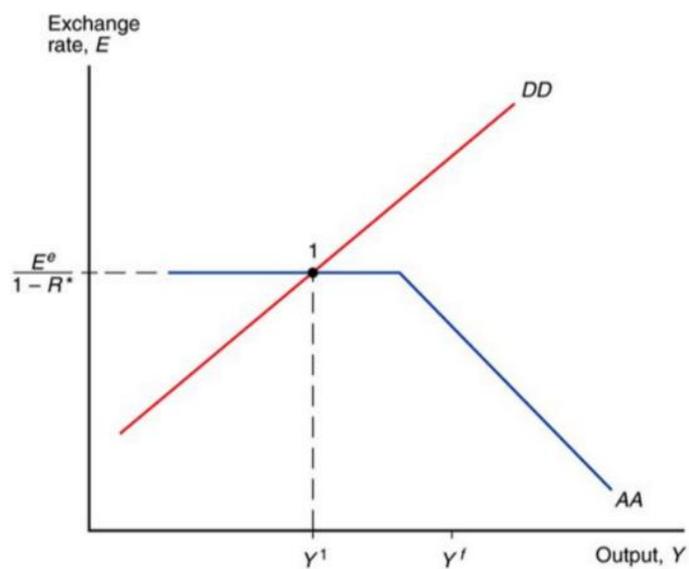
Source: RBA

Figure 3: A Liquidity Trap



Source: Williamson, 2013, p473

Figure 4: The Liquidity Trap on the DD-AA Diagram



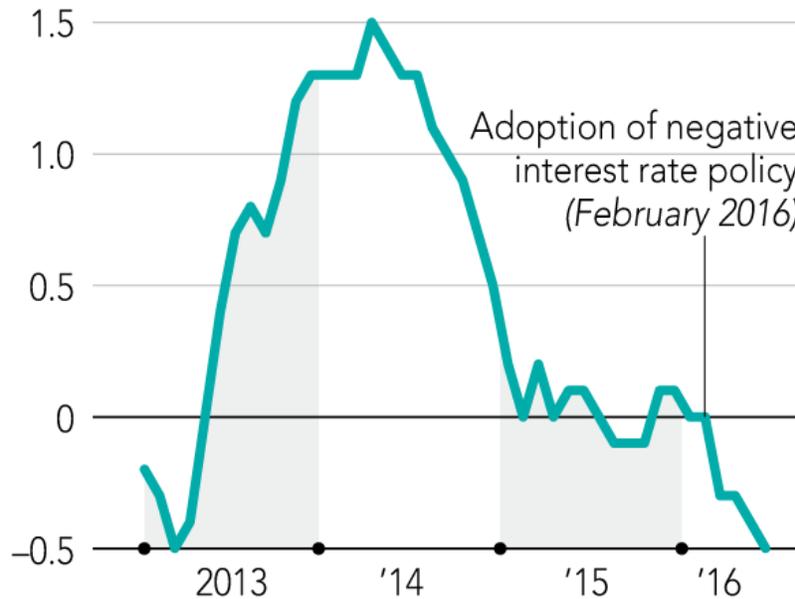
Source: Krugman, et al., 2015

Figure 5: Currency Appreciation against USD



Source: Hunter, Gregor S, 2016

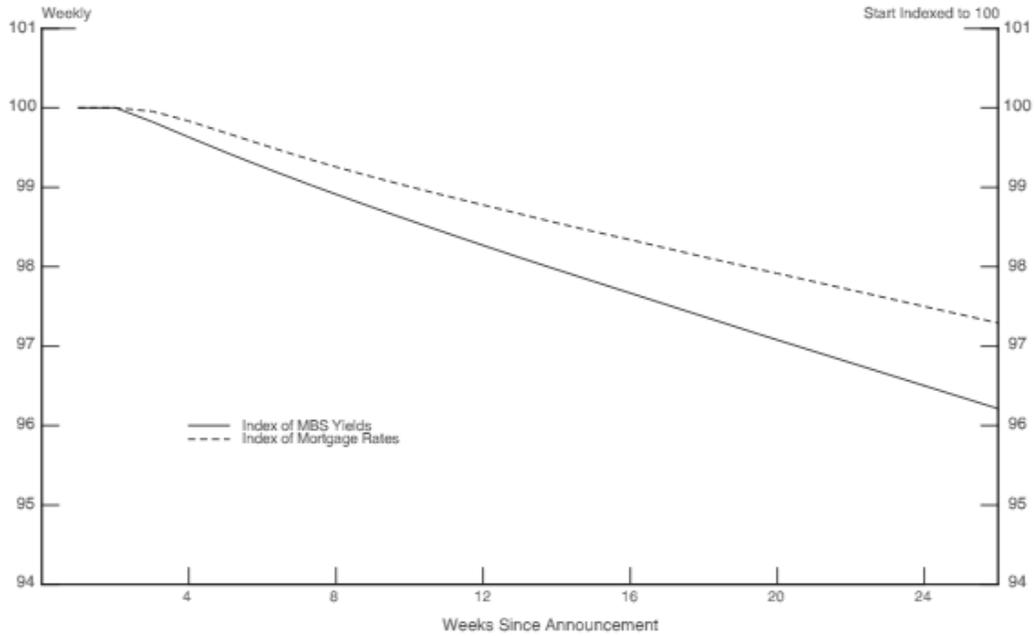
Figure 6: Year-on-Year Changes in Japan's Consumer Price Index



*Effects of consumption tax hike excluded;
fresh food prices excluded*

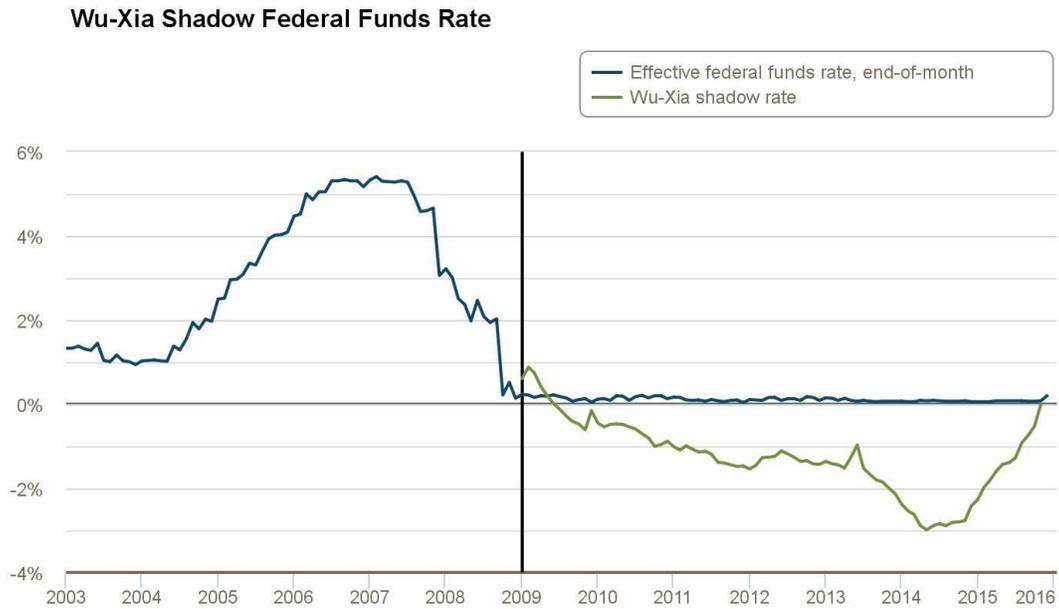
Source: Nikkei, 2016

Figure 7: Simulation of the effect of LSAPs on MBS yields and mortgage rates



Source: Hancock & Passmore

Figure 8: Wu-Xia Shadow Federal Funds Rate



Sources: Board of Governors of the Federal Reserve System and Wu and Xia (2015)

Source: Federal Reserve Bank of Atlanta

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