An Analysis of the 2008 Subprime Mortgage Crisis: Causes, Effects and Policy Response

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Abstract – This essay scrutinized the effects of Quantitative Easing (QE) on selected macroeconomic and financial variables. By means of a desktop approach, we find that QE1 had a strong and beneficial impact on the real economy through credit easing whereas QE2 and QE3 had small positive or neutral effects on banks and life Insurers. Although QE did not close the gap left by the 2008 global financial crisis, it helped reduce the rate at which the crisis was rising and proved to be an effective crisis management tool. QE boosts the economy in the short run but weakens the economy in the long run.

I. INTRODUCTION

As a result of the 2008 Global Financial Crisis (GFC) caused by subprime mortgages, central banks including the Bank of England (BoE), Bank of Japan (BoJ) and Federal Reserve, followed the unconventional monetary policy of purchasing large quantities of long-term securities to reduce long term interest rates, thereby spurring economic activity (Krishnamurthy & Jorgensen, 2011). This process is known as Quantitative Easing (QE). Instead of printing new money, the central bank credits the sellers' account which results in new electronic money. QE is considered when interest rates are at or approaching zero. The result of low interest rates has increased spending which raises the profits of non-financial firms.
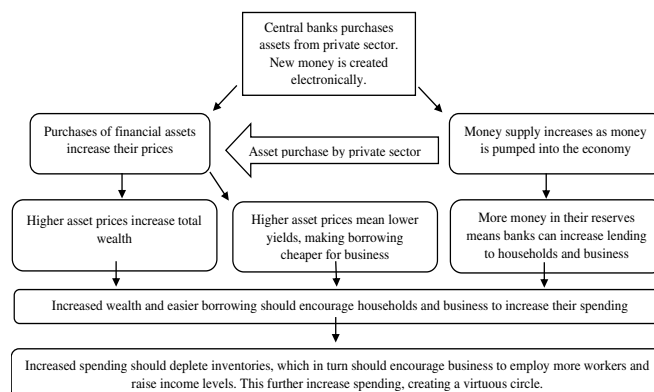
Furthermore, borrowing becomes less costly, resulting in business expansions, declines in unemployment rates, which further leads to lower loan delinquencies and charge-off rates. These are necessary for a healthy economy and sound financial system (Chodorow-ReicH, 2014). Since 2009, the Fed has enacted two sets of QE both with different goals. The first and second rounds of the United States (US) QE began in December 2008 and November 2010 respectively, with the former aimed at increasing the availability of credit in private markets and the latter at strengthening the economic recovery and combating a possible Japanese-style deflationary outcome (Liber8 Newsletter, 2011). The European Central Bank (ECB) later announced its own programme of QE in January 2015 (Oosthuizen, 2016). On the upside, QE has been empirically proven to have positive spill over effects. A recent study by Bhattarai and Chatterjee (2015) using a Bayesian VAR on monthly US macroeconomic and financial data, revealed

that an expansionary policy results in an exchange rate appreciation, increased capital inflows, a stock market boom and reductions in long-term bond yields in Emerging Market Economies (EMEs). Against this backdrop, this essay aims to assess the effectiveness of QE enacted by various central banks since the 2008 GFC. By means of a desktop approach, special attention will be placed on specific macroeconomic and financial variables as leading indicators. The rest of the essay is arranged as follows: Section 2 provides a theoretical framework of QE, sections 3 and 4 detailing the effects of QE on macroeconomic and financial variables, respectively. Finally, Section 5 details unwanted side effects of QE while Section 6 concludes the essay.

II. THEORETICAL FRAMEWORK OF QUANTITATIVE EASING

In this section, the process of QE is explained in detail. Below is a diagram illustrating how the process of QE works and the various component of the economy that are affected.

Figure 1: Quantitative Easing explained

*Source: Bank of England pamphlet (2011)*

Central banks are often concerned with the risks of low inflation rates. As such, they usually reduce their lending rates so that borrowing becomes less costly to financial institutions and the public at large. Since interest rates cannot fall below zero, central banks inject new electronic money into the economy through the purchase of assets such as government bonds and high-quality debt from private companies (Liber8 Newsletter, 2011). The idea is not to print more banknotes but to credit the sellers bank accounts which results in new electronic money in the wider economy. The sellers will have more money in their bank accounts, while their banks will have a comparable claim against the central bank. The sellers, having more money, are then able to increase their spending, thereby boosting growth.

III. THE EFFECTS OF QE ON MACROECONOMIC VARIABLES

3.1. Inflation

QE is not without risks and chief amongst these risks is the risk of inflation. This is because, the amount of money in the economy is increasing but the quantity of goods for sale remains the same. In this instance, if production does not increase rapidly and the money does not exit the economy, inflation will result (Finance Quarterly bulletin, 2011). While high inflation (above target) is a risk to the economy, low inflation/deflation is an equal risk to the economy as it signals low consumer and business confidence. Thus, to overcome deflation, economies usually stimulate the economy through expansionary policies.

Figure 2: Monthly inflation rates in selected economies
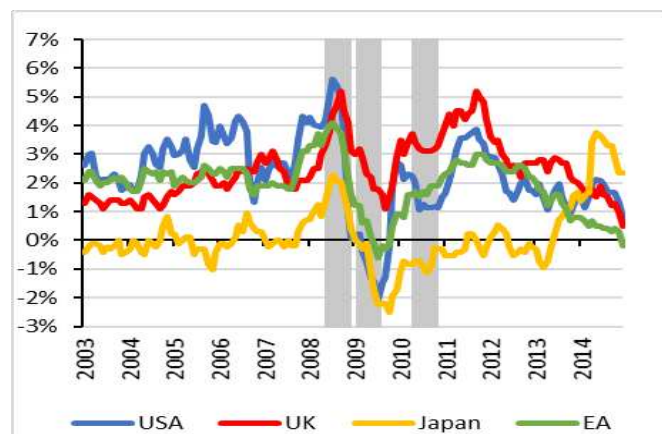
Source: OECD database (2016)

The US and United Kingdom (UK) through the BoE enacted their first rounds of QE in December 2008 (Chodorow-ReicH, 2014). In the Advanced Market Economies (AMEs), headline inflation fell below 1 per

cent in February 2009, while core inflation ranged between 1½–2 per cent with the notable exception of Japan (World Economic Outlook, 2009). However, QE1 came to the rescue towards the end of 2009, pulling advanced economies out from deflation as business and consumer confidence rose. Nonetheless, headline inflation rates in AMEs recuperated in recent months (January – March 2017) as commodity prices bottomed out, although core inflation rates have remained widely unchanged and generally below inflation targets (World Economic Outlook, 2017). One of the goals of QE was to lower deflationary pressures in AMEs and this seems to have been achieved.

3.2. Commodity Prices

As substantial producers and exporters of commodities, EMEs are supposed to benefit from a commodity market recovery (Financial Stability Review, 209). For South Africa, QE resulted in rising prices of precious metals such as gold (SA's major export), platinum and Brent Crude oil (Finance Quarterly Bulletin, 2011).

3.2.1. Gold and Platinum

The price of Gold fell, reaching a trough of $713, 5 per troy ounce, thereby increasing steadily in response to QE and reaching a peak of $1875, 25 later in 2012 as per (SARB data, 2017). This is beneficial to countries exporting gold as it improves their current account, though costly to those importing gold as they pay more money for the same quantity of the commodity. Most investors classified gold as a low risk commodity and can thus be reasonably assumed that money from QE moved into the gold market and increased the price of one of South Africa's major exports (Department of Finance Quarterly Bulletin, 2011). Trends in gold and platinum prices are illustrated in figure 3.

Figure 3: Monthly gold and platinum prices
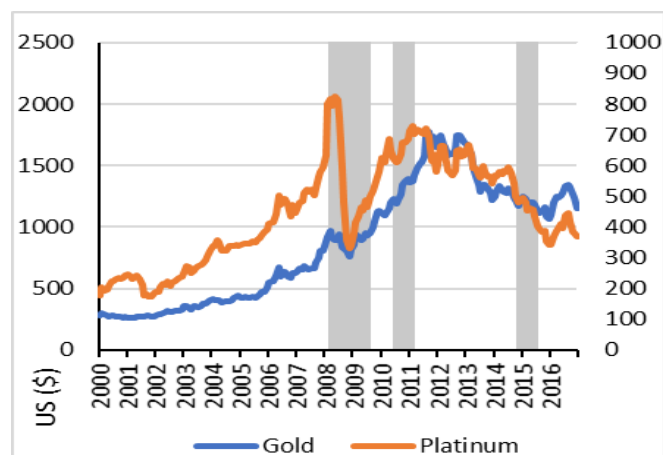

Source: South African Reserve Bank (2017)

Persistent high gold prices had a positive effect on the fiscal revenue of gold-exporting countries while hindering gold-importing countries. The gold price increased by 6,8 per cent in the first half of 2014 (Financial Stability Review, 2014).

3.2.2. Brent Crude Oil

For the importing country, a rise in the price of the commodity, more especially if the commodity is used in the production of other goods, can have serious adverse effects in the functioning of the entire economy. For example, a rise in the price of petrol will eventually lead to a rise in transportation costs, thereby increasing prices in general since transport costs are capitalised as production costs.

The price of Brent crude oil fell to $33,73 per barrel in December 2008. Having fell sharply in 2008, the price rose by 62 per cent during the first half of 2009 (Financial Stability Review, 2009). Although the price of Brent crude oil continued to rise steadily towards the first quarter of 2010, the spot price declined by 9 per cent due to expectations of slower global GDP growth and lower demand for commodities (Financial Stability Review, 2010). However, a weakening US dollar and positive investor sentiment have resulted in a rise in most commodity prices since July 2011.

Figure 4: OPEC Brent crude oil price and output
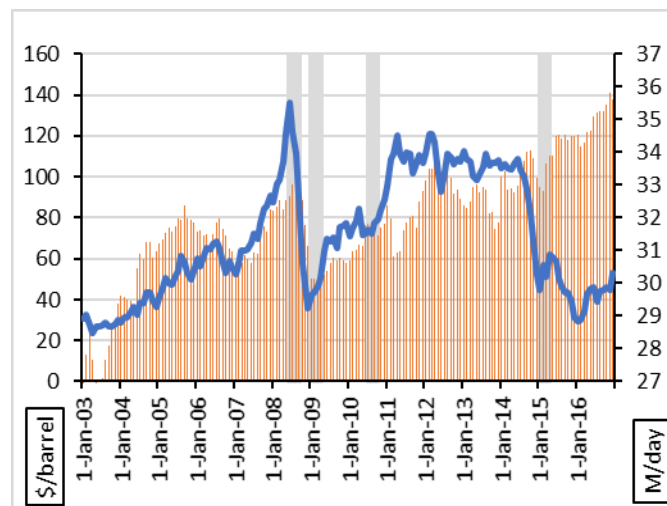
Source: Quandl database (2017)

The spot price of Brent crude oil reached $110 a barrel in April 2011, compared with an average of $34 a barrel over the past 30 years (World Economic Outlook, 2011). Additionally, the Brent crude oil price increased in the first quarter of 2017, reflecting an agreement among major producers to trim supply (World Economic Outlook, 2017).

3.3. Real GDP

Vahey and Oppenheimer (2014) emphasized that the aim of QE is to lower long-term interest rates and lessen lending conditions. This will serve as an incentive for businesses to borrow money for capital expansion as borrowing costs will be lower (Oosthuizen, 2016). Subsequently, unemployment would decrease and national income and Gross Domestic Product (GDP) would rise.

Figure 5: Trends in GDP growth (annual)
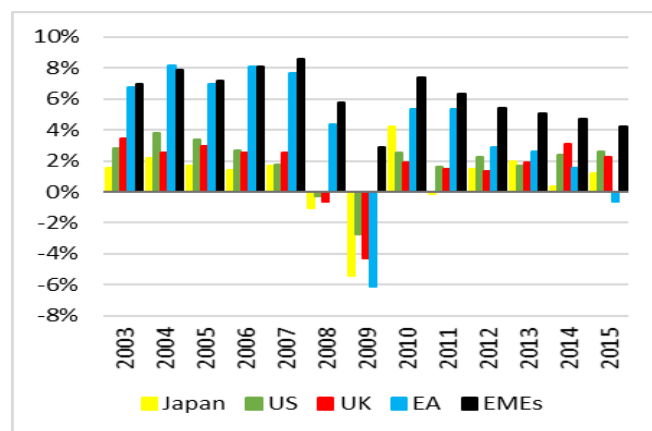
Source: WB & IMF database (2017)

The AMEs faced a downturn in economic activity during the period 2008 – 2009 as apparent from figure 5, experiencing an unparalleled 7,5 per cent decline in real GDP in the fourth quarter of 2008 (World Economic Outlook, 2009). The recovery in economic activity gained momentum in the US and Japan in the fourth quarter of 2009, before moderating somewhat in the first half of 2010 (World Economic Outlook, 2010). In contrast, economic growth in the Euro Area (EA) and UK remained subdued in the first quarter of 2010 before accelerating strongly in the second quarter. World GDP at market exchange rates expanded 3,6 per cent in 2010, one year after an unprecedented contraction of 2,4 per cent that accompanied the financial turmoil in 2009 (World Trade Report, 2011).

3.4. Business Sector

Following the global financial turmoil, global unemployment sharply increased to more than 210 million people, an increase of over 30 million since 2007. This had a huge negative impact on advanced economies, the aftermath being long-term social consequences, including on health and the children of those laid off (IMF News, 2010). Figure 6 shows the annual unemployment rates in selected advanced economies.

Figure 6: Annual unemployment rate
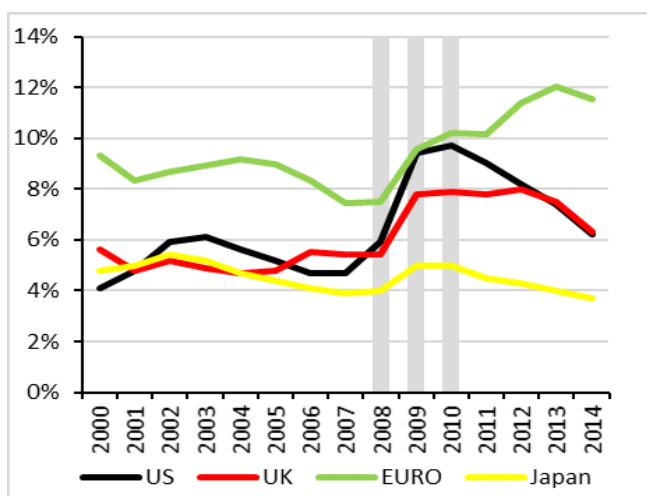
Source: World Bank database (2017)

After the sharp rise in unemployment rates, the overall unemployment rate eased slightly in Japan, the US and UK in the first quarter of 2009. During this period, unemployment averaged 9,6 per cent in the US, 7,9 per cent in the UK and 5 per cent in Japan (World Bank Stats, 2016). On the contrary, the unemployment rate increased in the EA as apparent from Figure 6. For advanced economies, the unemployment rate decreased from 7,1 per cent in 2014 to 6,7 per cent in 2015 (International Labour Organisation Report, 2016). These improvements however, were not sufficient to close the jobs gap that evolved from the global financial turmoil. Unemployment rates for Japan, US and UK have been declining since 2010 and are expected to decline even further due to expected increases in output (World Economic Outlook, 2017). QE in this regard, reduced the rate at which the unemployment rate was increasing.

Figure 7: Business and Consumer confidence
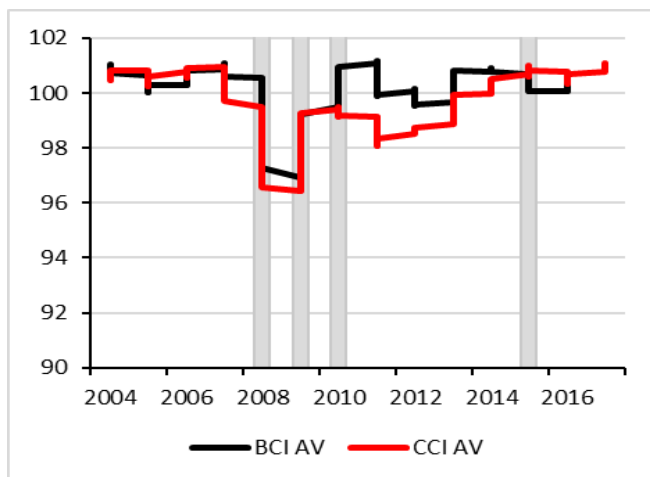
Source: OECD database (2017)

Business and consumer confidence responded positively to the first round of the US QE programme, although consumer confidence responded otherwise to the second round of the US QE programme. Business and consumer confidence in AMEs averaged 99,02 and 99,15 respectively in the second quarter of 2009 compared to 97,28 and 96,58 in 2008 (OECD data, 2017). Notwithstanding, QE enacted by the BoE in early 2015 was not sufficient to boost overall business confidence in AMEs. Hence, the effects of QE on business and consumer confidence remain ambiguous.

3.5. Trade Patterns

The downturn in global economic activity became evident in the second half of 2008 and the first few months of 2009 as world trade flows and production deteriorated, first in AMEs and then in EMEs (World Trade report, 2009). Although global trade grew by 2 per cent in volume terms over the period 2008, it decreased gradually in the second half of the year and was well down on the 6 per cent volume increase recorded in 2007 (World Trade Report, 2009). Nonetheless, global output rose by 3,6 per cent in 2010 as merchandise exports surged to a record high of 14,5 per cent (World Trade Report, 2011). Figures 8 and 9 show movements in trade volumes and prices.

Figure 8: World trade volumes and prices
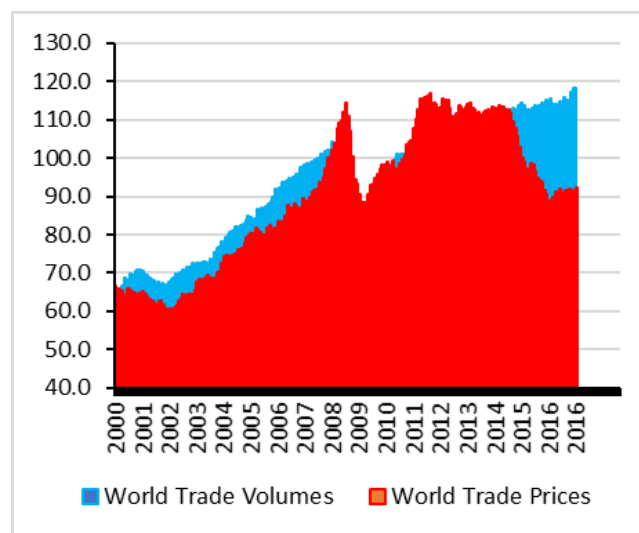
Source: CBP World Trade Monitor (2017)

Figure 9: Trade % of GDP
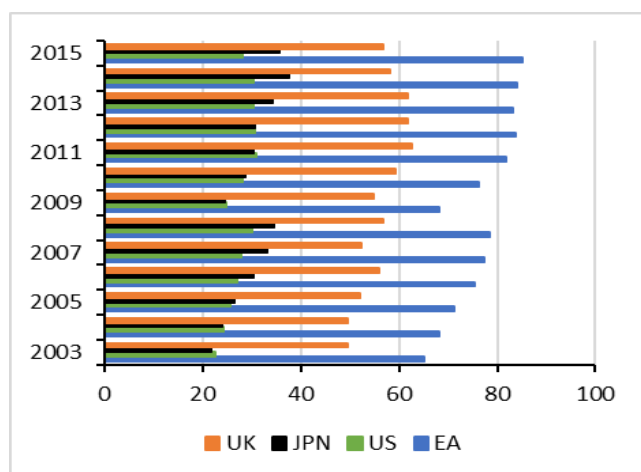
Source: World Bank database (2017)

World trade prices on the other side decreased substantially in the third quarter of 2008 from an average of $114 to a low $88,5 in the first quarter of 2009 (CBP data, 2017). Apparently, China has become a leading manufacturer and exporter of manufactured goods in Asia, having achieved an average growth rate of 22,1 per cent (twice as fast as the world's rate of 10 per cent) a year over 2002 – 2011 (SA Trade Report, 2014). Actual growth in world trade volume was 2,7 per cent in April 2016, revised from an estimate of 2,8 per cent (World Trade Report, 2016).

IV.   THE EFFECTS OF QE ON FINANCIAL VARIABLES

4.1. Interest rates

Central banks including the Fed, BoE and ECB, have reduced policy rates countless times since the sudden fall of Bear Stearns in March 2008 and have also purchased a combined US$12,3 trillions of assets over the period (2008 – 2015) (Financial Stability Review, 2016).

Figure 10: short term nominal interest rates
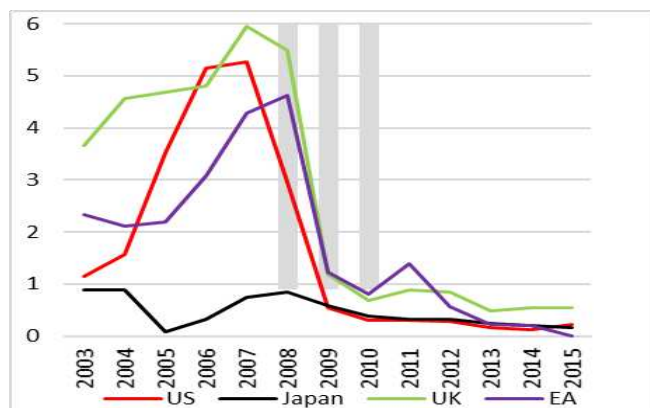
Source: OECD database (2017)

As more money was pumped into the economy through the purchase of long-term government bonds and private sector assets, nominal interest rates across several countries including US, UK and EA fell from high rates of 5,9% in the last quarter of 2007 to low rates of 0,5% in the first half of 2009 (Department of Finance Quarterly Bulletin, 2011).
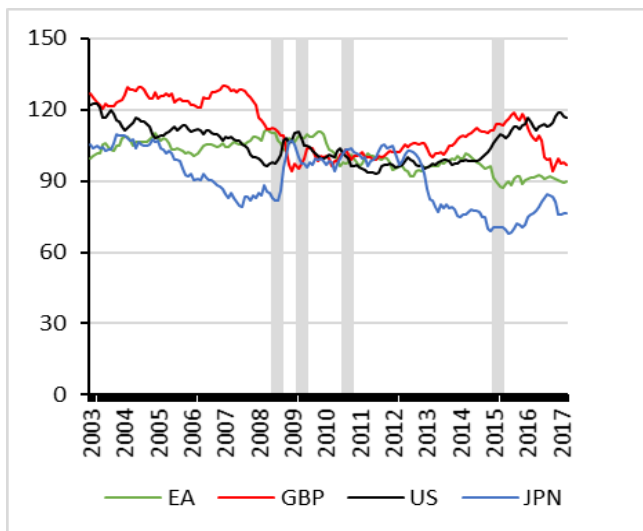
Figure 11: Gross capital formation
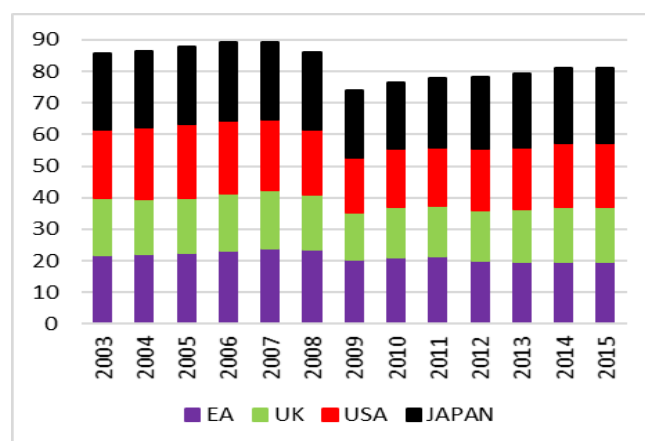
Source: World bank database (2017)

Furthermore, to encourage credit institutions to extend credit to businesses and consumers in order to revive the economy, the ECB's lending to European credit institutions breached €1,2 trillion in August 2012 (Financial Stability Review, 2012). However, long-term real interest rates have risen substantially since August 2016, particularly in the United Kingdom and in the United States since the November election (World Economic Outlook, 2017). Gross capital formation in advanced market economies declined in 2008 and recovered in the first half of 2010 after reductions in interest rates.

4.2. Exchange rates and Market Volatility

Increased risk aversion brought about by the US sub-prime crisis of 2008 prompted a renewed focus on global disparities. Figures 12 and 13 depict exchange rate fluctuations and volatility, respectively. The real effective exchange rate of the US dollar in April 2008 was about 25 per cent below its record high of February 2002 (Bank for International Settlements, 2009). The weakening trend in the exchange rate of the US dollar continued in the first half of 2008, deteriorating by 8 per cent against the euro and 5 per cent against the pound sterling (Financial Stability Review, 2008).

Figure 12: BIS effective exchange rate (EER) indices

On the upside, the US dollar gained momentum in the second half of 2008, appreciating by about 6 per cent and 10 per cent against the euro and pound sterling, respectively (Financial Stability Review, 2009). Notwithstanding, the Japanese yen depreciated against its peers following the start of the Bank of Japan's asset-buying programme (Financial Stability Review, 2013). General uncertainty and high levels of volatility in global financial markets were intensified by the US debt-ceiling discourse.

Figure 13: Volatility index
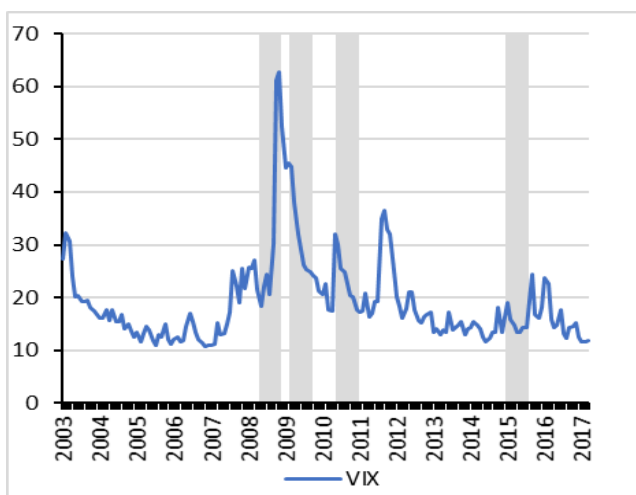
4.3. Bond and Equity Markets

As a result of low interest rates and sufficient liquidity in most, if not all, advanced economies, QE has resulted in substantial capital flows into many EMEs over the period 2008-2015. This is mainly because, these low interest rates encourage investors to seek higher returns in EMEs where interest rates are relatively higher (Russell, 2016). Figures 14 and 15 show changes in government 10yr bond yields and all share prices respectively for US, UK, Japan, Euro area and EMEs.

Figure 14: Long-Term (10 yr) Government Bond Yields (%) Including Benchmark, not seassonally adjusted
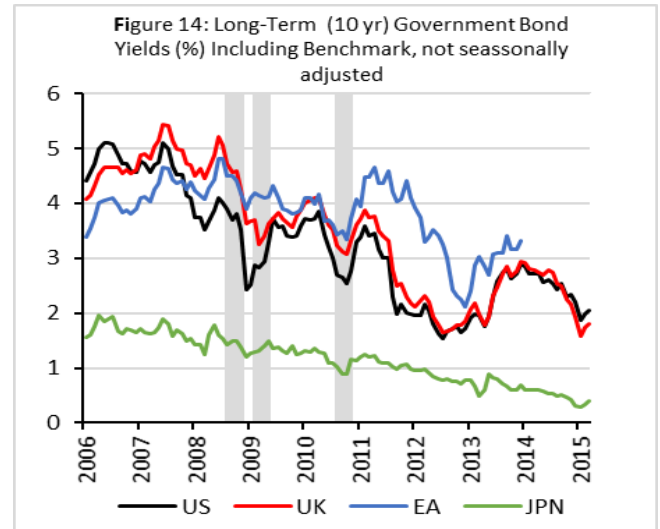
The downward trend in government bond yields in the second half of 2008 reversed in the first half of 2009 due to increased government borrowing. The reversal was related to brisk government expenditure alongside revenue which significantly undershot expectations (Financial Stability Review, 2009). The Morgan Stanley Capital International (MSCI) Emerging Markets Index fell by 37 per cent since the beginning of 2008, reflecting weaker equity and bond markets in many EMEs (Financial Stability Review, 2008).

Figure 15: Total share prices for all shares, monthly, Not seasonally adjusted
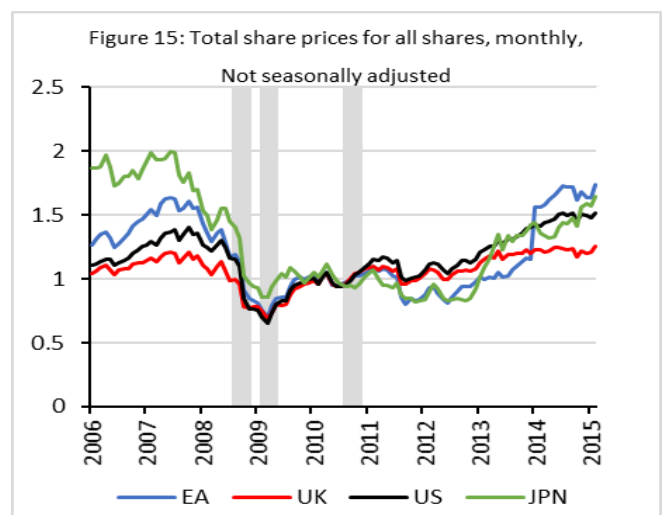
Nonetheless, from the low levels reached in March 2009, the All-Share Index (Alsi) at JSE increased by more than 50 per cent in the year to 31 August 2010 (Financial

Stability Review, 2010). Against a backdrop of heightened financial market distress, global equity indices, on average, fell back early in the second quarter of 2012. Global equity markets rebounded towards the latter part of the second quarter of 2012, mostly reflecting hopes of further unconventional policy easing by major central banks (Financial Stability Review, 2012).

V. LOOKING AHEAD

QE was critically important in breaking the downward trend caused by the 2008 global financial turmoil. However, most studies (i.e. Chodorow-Reich, 2014: IMF, 2013 and Financial Times, 2013) revealed that QE becomes more of a problem than a solution when it is used for a prolonged period. For example, Chodorow-Reich (2014) found that QE1 had a strong, beneficial impact on the real economy through the banking sector where as QE2 had small positive or neutral effects on banks and life Insurers. In addition, a Financial Report by Financial Times (2013) revealed QE to be having dilutive effects on asset prices overtime, as illustrated in figure 16 below.

Figure 16: Long run effects of QE on asset prices
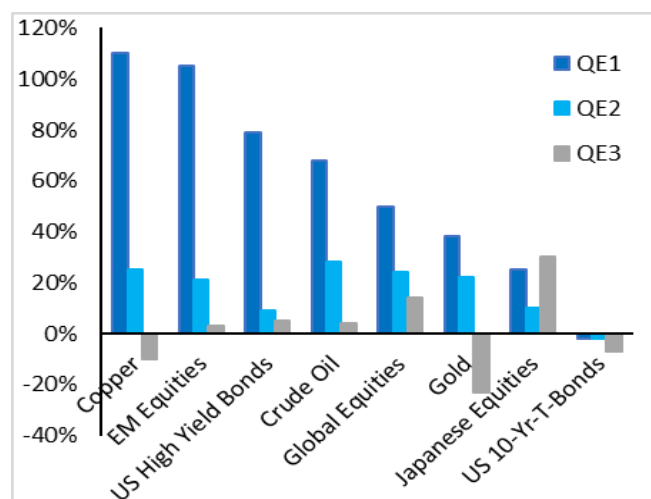
Adapted from: Financial times (2013)

Although QE1 was successful in reviving asset prices as apparent from figure 16, QE2 produced less returns compared to QE1 while the returns from QE3 worsened. Sudeep (2010) argues that QE failed to restore economic growth in Japan. Jensen (2013) adds to the argument that, instead of reflating the global economy, QE in Europe and Japan is shrinking it. QE is well known for raising inflation expectations through the inflation channel, however, QE3 failed to raise inflation expectations in the US, argues the Washington DC (WashingtonsBlog, 2015). The longer the highly

accommodative stance remains in place, the more probable its reactions are to develop (Jensen, 2013). A recent study by Chodorow-Reich (2014) in the US, revealed that the stock price index for life insurers changed by 1,96 percentage points in QE1; 1,29 percentage points in QE2 and 1,19 percentage points in QE3, reflecting diminishing returns. Furthermore, the study revealed that the stock price index for banks changed by 1,07 percentage points in QE1; 1,08 percentage points in QE2 and 0,76 percentage points in QE3.

Later US announcements, instead, had either more muted effects on all foreign assets (such as LSAP 3), or even negative effects on equities and bond yields (IMF, 2013). Although the returns may have been positive, they were increasing at a decreasing rate. Therefore, the following set of questions remains: Is QE still required after such an extended period, or should not central banks rather look at changing monetary policy approach? What about the role of fiscal policy side-by-side with monetary policy? Can the government also not look at structural challenges to the economy, thereby supporting monetary policy to deal with the problems that necessitated QE in the first place? For QE to be effective, banks must be willing to lend while firms and households must be willing to borrow.

VI. CONCLUSION

From the above discussions, it is clear that unconventional monetary policies enacted by various central banks brought about their own benefits and costs. It is also clear that the short run benefits outweighed the costs. Most, if not all, goals of QE were achieved. In the short run, QE led to economic recovery and lowered deflationary pressures. The long-run costs of QE include, amongst others, inflationary pressures, slow growth and low saving rates. Although QE did not close the gap left by the global financial crisis, it helped reduce the rate at which the crisis was rising. Indeed, QE has proven to be an effective crisis management tool. However, because QE is used for an extended period, its side effects are emerging and deepening. QE helps in the short run but weakens the economy in the long run. Hence, this calls for a complete clean-up of the financial sector and a new approach to monetary policy.

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