THE NECESSITY OF UNCONVENTIONAL MONETARY POLICY IN THE GLOBAL FINANCIAL CRISIS AND ITS COSEQUENCES BEYOND

(3839 words excluding references)

Introduction

"What should central bankers do when politicians seem incapable of acting?" This is a candid, but valid question that Raghuram Rajan, former governor of the Reserve Bank of India posed to his audience, when arguing for the case of extreme central bank action in the 2008/09 global financial crisis ("the financial crisis"). Citi Bank economist Willem Buiter, in his review article titled "Dysfunctional central banking" blames central bank actions for misguiding the market and overestimating the capacity they have to boost aggregate demand. In addition, there is also the view that it is through these "dysfunctional" banking policies, that central banks will be responsible for the next financial crisis.

As a point of departure, I am of the view that central banks were forced to think creatively when other measures – including conventional policy– failed. They did this by using their power as lender of last resort and market maker of last resort to restore stability in the financial market. Part 1 of this essay shows that due to the fact that the cause and nature of the crisis were unusual and did not respond to conventional measures, unconventional monetary policy needed to be employed.

Part 2 of the essay addresses whether these actions will cause the next financial crisis. The argument put forward here is that when implementing any economic policy, "all is not equal" and the results (whether fully or partly achieved) are never without consequence or risk. The fact that central banks account for these unintended consequences suggest that they have foresight of their potential role in the next crisis. Examples of policy actions by the European Central Bank ("ECB"), Bank of Japan ("BOJ"), Bank of England ("BOE") and U.S Federal Reserve ("the Fed") are used, as these were places where unconventional monetary policy was seen the most. The last section discusses the reactions of emerging markets (EM's).

PART 1: DID CENTRALLY BANKS ACT CORRECTLY IN USING UNCONVENTIONAL METHODS?

The source of the crisis necessitated unconventional monetary policy

Since the "Great Moderation", most Central Banks focused monetary policy on the minimization of inflation and output gaps, and left the task of financial stability to prudential regulators (Mishkin, 2012). Under this focus on monetary policy, the conventional tool used to control inflation is the interest rate. Economic theory stipulates that using this, the conventional response to an economic shock that has put a slump in credit, spending and economic growth would be to lower the cost of

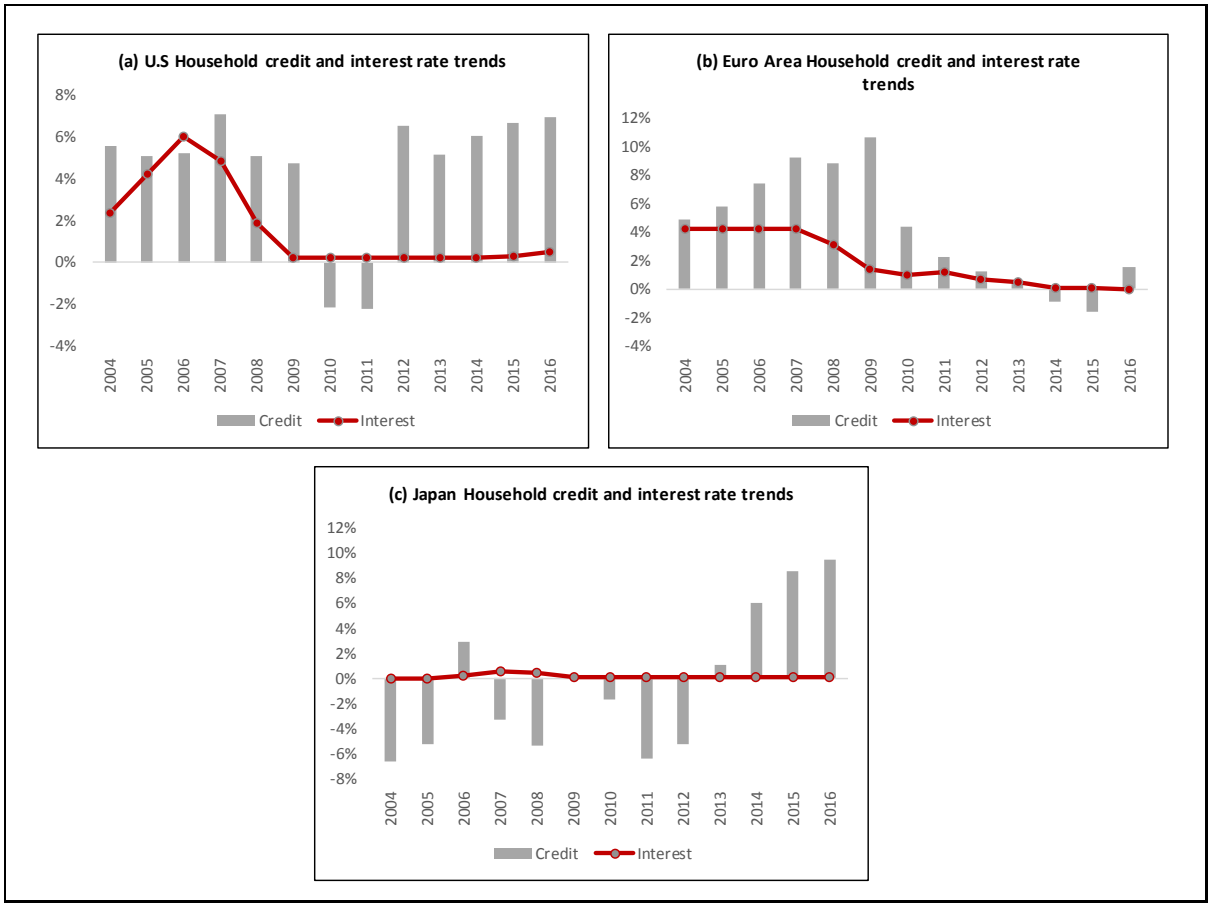
credit (Dwivedi, 2005). This is turn would, ceteris paribus, encourage consumers to borrow more and banks to lend more, which would boost economic activity and contribute to higher growth (Dwivedi, 2005). However, this essay is of the view that the cause of the financial crisis was atypical and required correspondingly atypical reactions from central banks. Smaghi (2009) describes this period as "abnormal times" that warranted conventional monetary policy ineffective. He gives two reasons for this: First, if the shock to the economy is so large that it provides the basis for interest rates to be driven down to zero. If the zero interest rate effect becomes infective, further stimulus may include unconventional action – such as altering expectations of long term interest rates, as well as changing the size and composition of central bank balance sheets. The second reason may be when interest rates remain above zero, but channels of policy transmission are defective. The financial crisis showed combined elements of these. The discussion below gives evidence:

a) There was no appetite for credit

The main cause of the financial crisis, put generally, was too much leverage in the system (LeRoux, 2017). This unleveraged debt "bubble" eventually burst and customers defaulted. In response, commercial banks reacted by moving from one extreme to the other – moving from granting too much credit to becoming very reluctant to lend. As a result, the world was left in an economy where people and other financial institutions did not want to borrow and commercials banks did not want to lend (LeRoux, 2017). Therefore, low interest rates proved to be an ineffective tool.

Figure 1 below plots the average interest rates of the U.S, Euro area and Japan against the corresponding lagged household average credit growth. For the U.S, figure 1(a) shows that when interest rates rise from 2% in 2004 to 6% in 2006, household credit growth falls from 6% to 5% respectively. The theoretical relationship ceases to hold between 2007 and 2011 when interest rates decelerate from 5% to 0% in 2011, corresponding to declining credit growth of 7% to -2%. This shows that low interest rates during this period did not induce a demand for credit. Similarly, in the Euro area, stable interest rates of just over 4% correspond to a steady increase in household credit growth. However, when interest rates decline from 2009, so does credit growth – which reaches -2% at a 0% interest rate. Japan has been going through an economic crisis since the early 2000's, and using the same instruments, near-zero interest rates have not achieved higher credit demand, although this has been seeing some improvement in recent years.

Figure 1: Average interest rate and household credit growth trends before, during and after the financial crisis



Source: U.S Fed Statistics, ECB Statistics, BOJ Statistics and Authors own calculations.

Another reason, according to Mishkin (2012), that limited the effectiveness of the interest rate tool was that banks borrowing less than the discount rate at the time signaled that banks were "desperate" and thus "in trouble", which was a view that most banking executives wished to avoid.

b) The balance sheet problem meant that central banks had to recapitalize the banking system

Kapan and Miniou (2013) reveal that banks that have capital and security of a higher quality (i.e: a strong balance sheet) were better able to recover from and maintain lending during the financial crisis. One of the consequences of the financial crisis was an increase in the number of defaults that banks experienced, which reduced the assets of many commercial banks by at least 20% (Le Roux, 2017). As a consequence, this weakened the balance sheets of the banks – an event which threatened the collapse of the global banking system. In another unconventional move, central banks agreed

collaborate with governments to recapitalize many of the commercial banks. The table below shows examples of such programmes in U.S, UK and Euro Area

Table 1: Bank recapitalization programmes

Programme	Brief description	Value of Programme
Emergency Economic Stabilization Act of 2008	Act signed into law in response to the financial crisis that enabled the U.S Treasury and Federal Reserve to recapitalize banks	$700 billion
2008 U.K bank Rescue Package	Package to help restore market confidence in the British Banking system by providing short term loans and guarantees to troubled banks	$850 billion
Euro Area Bank recapitalization programme under the European Stability Mechanism	Provided capital to banks experiencing difficulties	$605 Billion

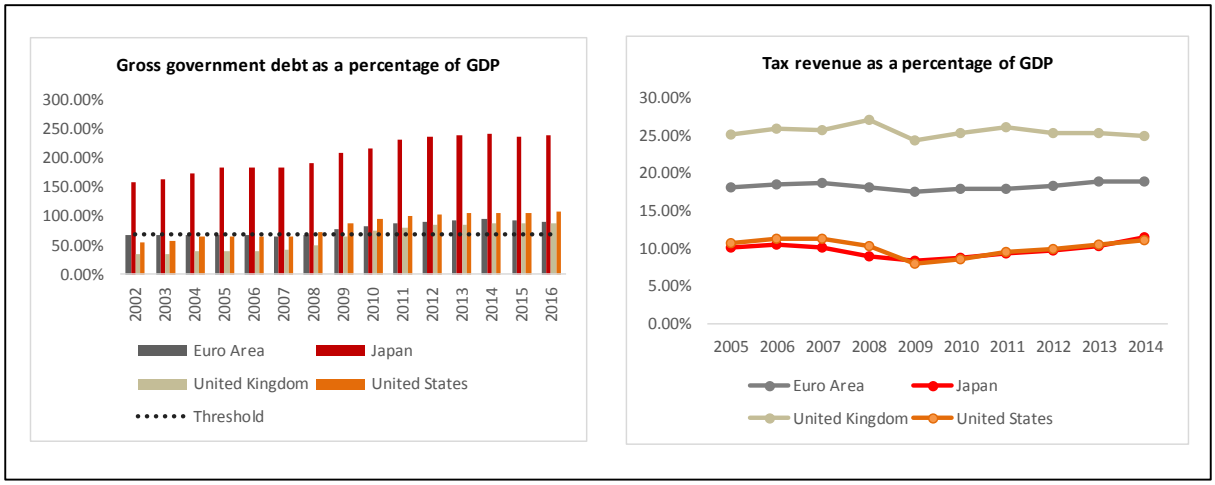
Source: U.S Fed, U.K Office for National Statistics, Eurobank Research

c) Central banks had to monetize deficits

Reinhart and Rogoff (2009) point out that almost after every financial crisis, there is always an increase in government debt and reduction in tax revenue. In line with the bank recapitalization programme discussed above, some central banks indirectly financed this by allowing the government to bailout commercial banks and then using the central bank's balance sheet power to purchase the increased government debt.

Checherita and Rother (2010) conduct an empirical study on the impact of public debt on economic growth. Their findings confirmed that average government debt to GDP in the Euro area was estimated to have risen from 78% in 2009 to 88% in 2011. This is above the 70% threshold that is considered to have an unfavourable impact on economic growth through the channels of private savings, public investments, sovereign long term nominal and real interest rates and total factor productivity.

Figure 2: Government debt and Tax revenue trends for the Euro Area, Japan, UK and US



Source: IMF World Economic Outlook (WEO) database, 2017 and Author's calculations

To prevent this, central bank intervention was necessary. A similar increase in debt is also seen in the U.S for this period, where Japan's government debt has been above this threshold since the early 2000's. Figure 2 shows a graphical representation of this increase.

Table 2: Average GDP growth before, during and after the financial crisis

	Average GDP growth		
	2002-2006	2007-2009	2010-2015
Euro Area	2%	-0.4%	1%
United Kingdom	3%	-0.8%	2%
United States	3%	-0.4%	2%
Japan	1%	-1.6%	2%

Source: IMF WEO and author's own calculations

In assessing whether central banks acted correctly in implementing unconventional monetary policy, it is important to ascertain why these measures were needed in the first place, and mostly importantly, whether they achieved the desired effects. This section of the essay showed that unconventional monetary policy was necessary, due to the nature of the economic shock, to drive the economy out of the recession. The section showed that for the Euro Area and the United States, growth in credit demand was restored to positive territory by 2016 and tax revenue as a percentage of GDP have also reached higher levels than in the crisis. Japan's improvements are slower owing to the fact that the economy was in trouble before the crisis and is reacting slowly to the monetary policy. The ultimate test is whether these measures worked to increase GDP (Amzallag, 2015) and as shown by table 2 above, economic growth post the financial crisis is almost at pre-crisis levels. In the words of Obstfeld

and Adler (2015): “Extraordinary measures prevented a greater economic recession, and arguably a depression, in 2008-09”.

PART 2: ARE CENTRAL BANKS RESPONSIBLE FOR THE NEXT CRISIS?

There are those that believe that the relative success of central banks in pulling out the global economy out of depression is the calm before the storm, in that the unconventional measures used – specifically quantitative easing (QE) – will be the cause of the next financial crisis. Before unpacking whether this is the case, it is first important to understand the rationale behind QE.

The logic behind the madness

One of the aims of QE is to decrease bond yields, so that other classes can become attractive again. Central banks used their balance sheets to purchase government debt and other securities in order to prevent bond yields from steepening further at a time when there was no economic growth (Mishkin, 2012). Traditionally, the role is played by asset managers (LeRoux, 2017). Due to low demand for credit, the central bank asset buybacks helped to create competition and demand for government bonds, thereby forcing long-term interest rates down. This was intended to force investors to move away from the “government debt safe haven”, amongst others, and buy other types of interest bearing assets (such as corporate bonds). According to Gragon et al (2011), these programs improved liquidity in the U.S by lowering 10-year Treasury bond rates by a cumulative 91 bps and long term rates on Mortgage Backed Securities (MBS) and agency securities by 113 and 156 bps respectively. Due to the slow reaction of the economy to QE measures, the BOJ went even further as to purchase equity to prevent their prices from falling further (LeRoux, 2017). By August 2015, the Fed, the BOJ and BOE had purchased more than $3 trillion worth of assets (Spiro, 2015).

The other rationale for QE was the support for the external economy by weakening exchange rates. One of the effects of expansive monetary policy such as QE is to depreciate the local currency, and this works to stimulate exports as domestic products are viewed as cheaper in relation to foreign goods (Agostini, et al., 2016). The transmission mechanism is simple: Higher domestic interest rates have the effect of attracting more foreign capital, which raises the value of the currency. Lower interest rates, created by QE will do the opposite. Between 2009 and 2014, the depreciation in the Dollar, Pound, Yen and Euro contributed to increased export volumes of 4.27% in the U.S in 2014 (2009: -8.79%), 1.46% in the UK (2009: -8.79%), 9.29% in Japan (2009: -23.43%) and 4.21% in the Euro area (2009: -12.48%).

Lastly, QE helped by putting a floor on the equity market. Johnston (2016) states that the willingness of private sector participants to hold government debt depends how risk-return dynamic compares to

holding other debt in the market. Again, QE's effect on lowering bond yields worked to increase appetite for other assets in the equity market. As an example, the S&P 500 earned approximately 30% in returns and 14% dividend reinvestment in the year 2014 (Bloomberg, 2017).

The negative consequences

As well thought out as these measures were, they do not come without risks attached to them. What follows is a discussion of the risks that are perceived as sowing the seeds for the next financial crisis

a) "Bad news is good news" attitude

For example, Spiro (2015) is of the view that global equity markets have become reliant on central bank stimulus so much, that he describes an increasing attitude of "bad news is good news" in investors. This means that economic developments that would have been otherwise viewed as negative developments are now welcome as they increase the likelihood of a central bank stimulus. Brown (2015) supports this view by giving an example of the Eurozone, where stock markets in France and Germany spiked by 18% and 16.5% respectively, despite the fact that the Greek government debt default had brought negative sentiment to the region. In addition, both countries' economies and manufacturing sectors were contracting. Thus, economic fundamentals were against the market and did not support these gains in the stock market.

b) Excessive risk taking encouraged by low interest rate environments

Low interest rate policies set by the Fed between 2002 and 2005 were accompanied excessive risk taking (Mishkin, 2012). Literature provides two reasons for this: The first is that asset managers, under the pressure of their contractual agreements with clients to outperform the market or a bench mark rate, will seek investment assets or strategies that will provide a higher return – often this means riskier assets or strategies (Rajan, 2005). Secondly, Adrian and Liang (2016) describe that low interest rates can entice firms to take on more leverage as they increase margins on net interest and firm value. Furthermore, they also increase the value of collateral, which encourages lending. Although this works for getting firms out the glut, if done excessively this could reach unsustainable levels, thereby creating the next crisis. As an example, the *Securities Industry and Financial Markets Association* estimates that corporate leverage is now at $8.52 trillion in the U.S – 57% more than the last peak in 2008, and risky borrowing has increased dramatically. The IMF's *Global Financial Stability Report* warns that such high leverage levels make the economy vulnerable to sudden slow growth or interest rate rises. Low interest rates also reduce the amount of profits that the banks can make on the loans

that they grant (Coy, 2016). Thus, if there would be another financial crisis, banks would be more vulnerable.

c) The fear of making LIBOR irrelevant

"Once everyone faces the Fed, it is very hard to face anyone else". These are the words of an investment strategist who implies that once commercial banks get used to getting funding from a central bank, it is difficult for them to return to a normal state where they used to get funding elsewhere from each other.

Pre the financial crisis, the London Interbank Offered Rate or LIBOR reflected a rate at which banks agreed that they could borrow and lend each other money (i.e.: the interbank market rate). In fact, the 1 month LIBOR rate tracked, but was slightly above the US Fed rate (Kurt, 2014). For many years, LIBOR was relatively low, reflecting that banks trusted each other to repay their loans. During the course of the financial crisis, increased LIBOR signaled to the market that banks were desperate, and they began to report underpriced LIBOR. As a result, the interbank market froze, freezing liquidity as well. To ward off the liquidity squeeze, the central bank offered credit at a cheaper rate and liquidity began to improve (LeRoux, 2017). Foxman (2012) states that this has made commercial banks rely on credit from central banks and not from each other as was tradition, rendering LIBOR irrelevant to a certain extent, as it no longer reflects the credit risk of other banks but rather a safer rate of borrowing from the central bank. If this is indeed the case, then artificial lending rates that do not reflect the true risk in the market may cause a bubble.

d) The rise in shadow banking

"Prohibition has made nothing but trouble" – Al Capone (1920)

Davies (2015) purports that increases in banking regulation and monitoring by both governments and central banks has led to the growth of the shadow banking system. "Shadow banking" is defined by the U.S Financial Stability Board as "credit intermediation involving entities and activities (fully or partly) outside regular banking system. Coy (2016) says that regulations that act to increase the cost of operations in a normal commercial bank, pushed more of these activities towards shadow banks – hedge funds, mutual funds and others. China is, at the moment, considered to be one of the biggest risks in terms of shadow banking. When the Fed started QE, China was one of the largest recipients of U.S capital outflows – growing the equity market (specifically in housing) by 170% since then. Now it is feared that Fed tapering might reverse this inflow, and through contagion and general lack of transparency in the Hong Kong market, a global crisis may unfold (Holland, 2017).

Table 3: Crisis frequency

Year	Banking Crises	Currency Crises	Twin Crises	All Crises
1880-1913	2.30	1.23	1.38	4.90
1919-39	4.84	4.30	4.03	12.17
1945-71	0.00	6.85	0.19	7.04
1973-97 (21 countries)	2.04	5.18	2.47	9.68
1973-97 (56 countries)	2.29	7.48	2.38	12.15

Source: Goodhart (2010)

History tells us that there is a financial crisis roughly every decade (Goodhart, 2010) as shown in table 3 above. If inference is made from this, there is likelihood of another financial crisis– the cause of which is (partly) the unintended consequences of the unconventional monetary policies implemented by central banks, discussed in the previous section. From that analysis, I concede that central bank actions in the last financial crisis – although necessary – have a role to play in the build up to the next crisis. However, the fact that central banks have taken steps to try and mitigate the risk of another crisis, or minimize the risks of a global fallout if one does occur, suggest that they are aware of the unintended consequences. Some of these include the fact that they have put a gradual unwinding process in place that is dependent on supportive fundamentals, the fact that the market expects this unwinding process and central banks and governments have worked together to regulate the financial industry even further. I unpack this in the following discussion:

a) The building blocks for advanced economy central banks to start unwinding the stimulus are slowly falling into place

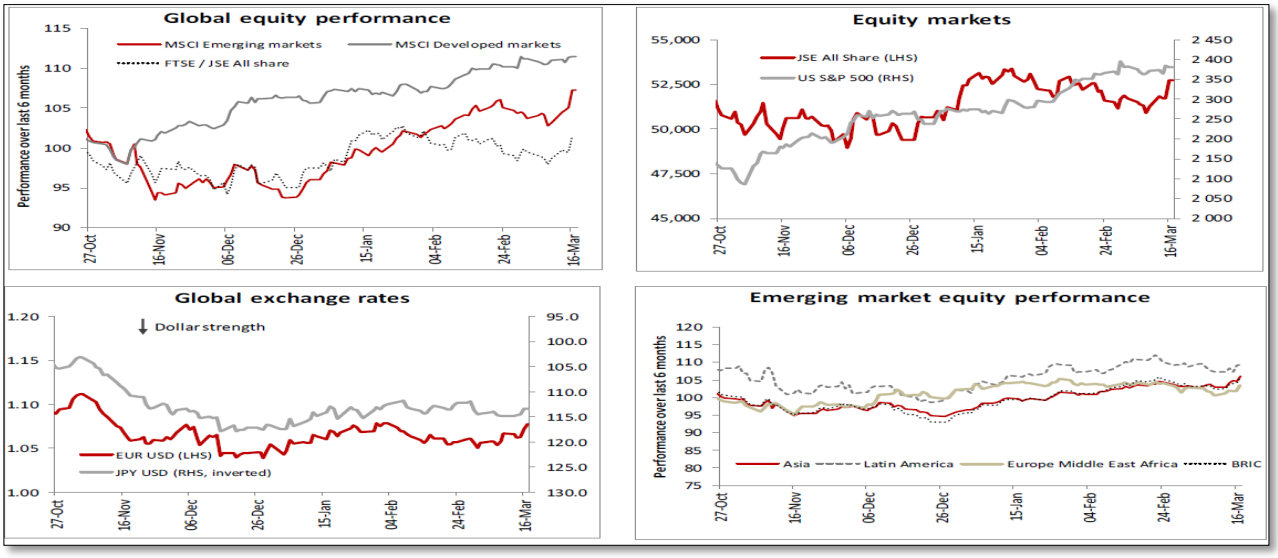
According to the IMF, financial stability has improved since the financial crisis, owing broadly to "accommodative monetary policy". In addition, longer term interest rates are rising. Throughout the years of low interest rates, central banks have indicated that they are waiting for positive economic fundamentals before beginning to gradually unwind the positions they have taken to resolve the effects of the financial crisis. For example, the Fed waited specifically for rising inflation, consumer spending and solid job gains before beginning to hike rates. In March 2017, they were satisfied with the progress of the fundamentals and hiked rates for the second time by 0.25 bps. Around the same week, the BOE held interest rates steady at 2.25% and kept their bond purchasing program unchanged at £435 billion due to weaker than expected retail sales and wage growth. Similarly, the BOJ left its rates at -0.1% and asset purchases of ¥80 trillion annually, due to stubbornly low inflation and

weak/modest economic growth (Lesame, 2017). What these actions show is that the central banks are waiting for the right signals to tighten monetary policy.

b) This unwinding process is also priced into the market

Central Banks also manage expectations of their policy actions (Kahvecia & Odaba, 2016) to avoid large shocks in the markets – in this way, expected policy changes are priced into the market. For example, the Fed rate hike is associated with positive gains in the U.S stock markets (Bernanke & Kuttner, 2005), and this increased in line with expectations as seen in Fig 3. However, the hike was viewed as less aggressive, following dovish comments from Janet Yellen and thus putting strain on the dollar. The markets priced in three more hikes for the remainder of 2017. Due to this, emerging market indices remained relatively stable. The IMF supports this reaction by commenting that emerging markets resilience has been enhanced as they continue to lower corporate leverage and reduce external vulnerabilities (International Monetary Fund, 2017).

Figure 3: Market reaction to Fed monetary policy tightening



Source: The National Treasury of South Africa (2017)

c) New Regulation

Cohen (2016) regards "contagion" as being the major contributor to failure of some financial institutions in the last financial crisis may have put pressure on others, rather than inter-connectedness. Put simply, contagion is "guilt by association". In the last financial crisis for example, confidence in the industry dropped if one big bank sold off its assets quickly. A case in point is that of Lehman Brothers, who were the 4th largest investment bank in the U.S before they collapsed (Metric,

et al., 2014). Being highly leveraged, they began to reduce their MBS exposure by approximately 20% (Metric, et al., 2014)**.** This created doubt over how the company was managed, CDS debt increase and strategic partners pulled available credit lines. When the bank declared bankruptcy in 2008, confidence was lost in the U.S financial market. Chetty et al (2011) cite the strong regulatory framework in SA banking assisted in the resilience of the sector during the GFC. This statement is supported by Ahnert and Bertcsh (2015) who conclude in their study that "policy makers can mitigate contagion by increasing transparency. Guidelines created by Basel III, Dodd Frank, European Market Infrastructure Regulation and others work to enhance transparency

There are other risks at play

Political uncertainty has become a key downside risk for financial stability (IMF, 2016). These include the rise of populist sentiment as such BREXIT and policy changes in the U.S. Protectionism, in general could be a threat to global growth, trade, capital flows and market sentiment. Policy changes in the U.S – particularly the tax reforms and deregulation – could raise risk premiums and volatility – which would have a negative impact on the progress made on financial stability. Protectionism contributes to lower economic growth which leaves an economy defenseless during times of crises (Donnan, 2016). According to the World Trade Organization, G20 economies have put up 1583 restrictive trade measures, and removed just 387 (World Trade Organization, 2016).

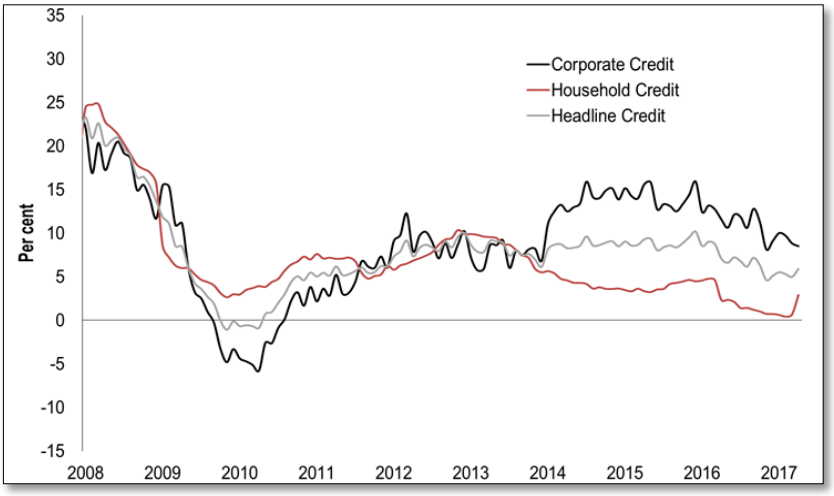
Low growth is a significant risk factor in the current low interest rate environment (International Monetary Fund, 2017). Low interest rates are not only as a result of the current monetary policy, but were also caused (over the long term) by slower growth and structural factors such as the ageing population (Nassr, et al., 2016). A low growth economy means an economy is stagnant in innovation, productivity and credit demand, which could lead to lower profits for financial institutions. Lower profits will either make them vulnerable or force them to "search for yield" in other riskier and probably unsustainable levels

Lastly, China is a risk as described in the shadow banking discussion. While (Brown, 2016) believes that the Chinese government can contain the fallout in China, he is less positive that they will be unable to address the root problem in time to prevent a global fallout from all of the global institutions that have Chinese links.

Emerging market reactions

EM's were also hard hit during the crisis, due to their linkages with advanced economies such s from a demand perspective. Figure 4 below shows SA's credit growth as an example, which experienced a similar dip consistent with advanced economy trends discussed earlier.

Figure 4: Annual growth in total, corporate and household credit

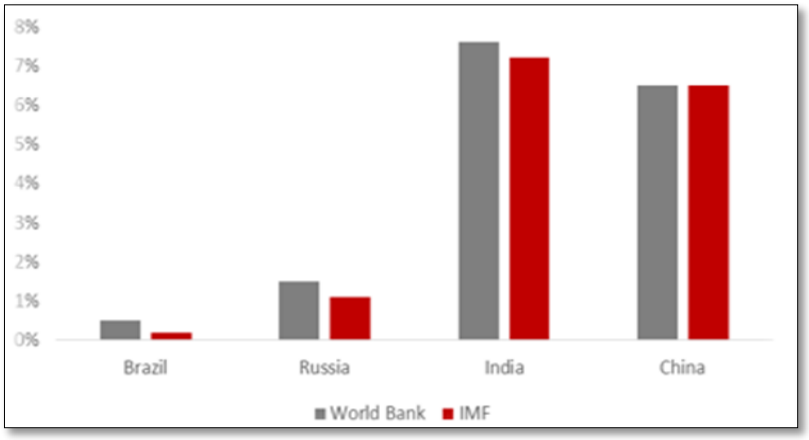


Source: The National Treasury of South Africa (2017)

However, they didn't go as far as developed markets (DM's) with regards to stimulating their economies. Because they were experiencing relatively high growth, they had room to manoeuvre: those that had the capacity to cut taxes did, and so did those that could devalue their currencies. In addition, some EM's financial systems were not as advanced. Their actions led to cutting interest rates in the conventional way (LeRoux, 2017). The important thing to note is that EM's at the time did not have a debt problem, as it was the DM's that were over-borrowing. Thus, cutting interest rates in emerging markets had the desired effect.

In their perusal for yield, advanced economy capital flight flowed to EM's. Burns et al (2014) estimates that a relatively smooth monetary policy normalization process would reduce capital inflows to EM's by approximately 0.6% between 2013 and 2016. However, a more abrupt change in policy is what is considered a bigger risk, as this could cut capital inflows to emerging markets by 50% for a number of months. On a positive note, the IMF notes that EM's are building resilience in their awareness of this. Opritia (2017) also believes that developed market hikes could affect them, but some EM's are becoming less dependent on dollar denominated flows and thus will lessen the blow.

Figure 5: Emerging markets 2017 GDP growth rate



Source: IMF WEO (2017) and World Bank Global Economic Prospects (2017)

Gradual normalization is expected from previously strained economies. Brazil, Nigeria and Russia are expected to emerge from recession. India's demonetization policy did not have dire consequences for the economy either. These are positive developments for reducing vulnerability to crises.

In Sub-Saharan Africa, market volatility, most recently due to the BREXIT and Fed concerns, have depressed capital inflows and increased borrowing costs and currency weakness. This poses fiscal, financial and political challenges. Fiscal deficits remain high as the ability to cut public sector spending, especially employment, is politically difficult, particularly as growth slows. In addition, the ability to borrow from international markets remains strained in many countries. A number of countries, including Kenya, Ghana, Nigeria and Angola, have issued Eurobonds in 2016/17. This raises vulnerability to global risk appetite.

Conclusion

This essay showed that the nature of the shock of the 2008/09 financial crisis created the necessity for central banks to employ unconventional monetary policy to revive credit demand, and bailout both the commercial banking system and government in the developed world. From this, it was clear that conventional monetary policy worked in EM's, but unconventional policy was necessary in DM's. Whether the consequences of these actions will have a role to play in creation the next financial crisis needs to be thought of in two ways: central banks would have played a role by creating access to easy money and distorting market pricing. However, the actions were taken as a calculated risk. It is critical to consider that central banks are trying to mitigate potential negative spillovers through the gradual normalization process (governed by economic signals), learning from the past in terms of regulation and managing expectations. Far more important to note is the role of politics, low growth and bubbles

interconnected countries such as China, that will undo the mitigation measures employed by central banks.

References

Adrian, T. & Liang, N., 2016. Monetary Policy, Financial Conditions, and Financial Stability. *Federal Reserve Bank of New York Staff reports,* Issue 690, pp. 1-44.

Agostini, G. et al., 2016. *Comparative study of central bank quantitative easing programs,* New York: Columbia School of internation and public affairs.

Ahnert, T. & Bertsch, C., 2015. A Wake up Theory of Contagion. *Bank of Canada Working Paper Series,* 14(4), pp. 1-48.

Amzallag, R., 2015. *The role of central banks in the aftermath of the 2008 financial crisis: A banker's perspective,* Montreal: Center for Interuniversity Research and Analysis on Organizations.

Bernanke, B. & Kuttner, K., 2005. What Explains the Stock Market's Reaction to Federal Reserve Policy?. *The American Journal of Finance,* 60(3), pp. 1221-1257.

Brown, D., 2016. How central banks are brewing the next financial crisis. *South China Morning Post*, 30 March.

Buiter, W., 2016. *Global Economics View: Dysfunctional Central Banking,* New York: Citi Bank Research.

Burns, A. et al., 2014. Unconventional monetary policy normalization in high-income countries: Implications for emerging market capital flows and crisis risks. *World Bank Policy research working papers,* Volume 6830, pp. 1-51.

Chcherita, C. & Rother, P., 2010. The impact of high and growing government debt on economic growth: An empirical investigation for the Euro Area. *European Central Bank Working Paper series,* Volume 1237, pp. 2-42.

Chettr, L. et al., 2011. *What are the lessons from the South African banking experience for the rest of the world in escapint the global financial crisis,* Johannesburg: Wits Business School.

Coy, P., 2016. *Bloomberg.* [Online]
Available at: https://www.bloomberg.com/news/articles/2016-10-20/where-the-next-crisis-will-come-from
[Accessed 20 April 2017].

Davies, R., 2015. The moonshine of our times: the gloab rise of shadow banking. *The international economy,* Volume Spring Edition, pp. 70-72.

Donnan, S., 21. WTO warns on rise of protectionist measures by G20 members. *Financial Times*, 2016 June, pp. 1-3.

Dwivedi, D. N., 2005. *Macroeconomics theory and policy.* Second edition ed. New York: McGraw-Hill Companies.

Financial Stability Board, 2016. *Global Shadow Banking Monitoring Report,* New York: U.S Financial Stability Board.

Foxman, S., 2012. This is how central banks could cause the next financial crisis. *Wall Street Journal*, 25 September.

Goodhart, C., 2010. The changing role of central banks. *Bank for International Settlements Working Papers,* Volume 326, pp. 1-16.

Holland, T., 2017. The shadow looming over Hong Kong's pumped up asset prices. *This week in Asia*, 13 March.

IMF Monetary and Capital Markets Department, 2010. *Central Banking Lessons from the Crisis,* Washington: International Monetary Fund.

International Monetary Fund, 2017. *Global Financial Stability Report April 2017,* Washington: International Monetary Fund.

International Monetary Fund, 2017. *World Economic Outlook, April 2017: Gaining Momentum?,* Washington D.C: The International Monetary Fund.

Johnston, M., 2016. *How governments monetize government debt.* [Online]
Available at: http://www.investopedia.com/articles/investing/032516/how-central-banks-monetize-government-debt.asp
[Accessed 05 May 2017].

Kahvecia, E. & Odaba, A., 2016. Central banks' communication strategy and content analysis of monetary statesment: The case if the Fed, ECB and CBRT. *Procedia - Social and Behavioral Sciences ,* Volume 235, pp. 618-629.

Kapan, T. & Miniou, 2013. Balance sheet strength and bank lending in the global financial crisis. *IMF Working paper series,* 13(102).

Kurt, D., 2014. What Is The Relationship Between The Federal Funds, Prime And LIBOR Rates?. *The Journal of Investing*, 02 June.

LeRoux, E., 2017. *Uncoventional Monetary Policy* [Interview] (11 May 2017).

Lesame, K., 2017. Weekly Economic Update. *National Treausry Weekly Economic Update*, 17 March.

Metric, A., Piontek, T. & Wigging, R., 2014. The Lehman Brothers Bankruptcy: Overview. *Yale Program on Financial Stability Case Studies,* 1(3A), pp. 1-23.

Mishkin, F., 2012. *Central Banking after the crisis.* Santiago, Graduate School of Business, Columbia University and National Bureau of Economic Research.

Nassr, I., Wehinger, G. & Yokoi-Arai, M., 2016. Financial risks in the low growth, low interest rate environment. *OECD Journal: Financial Market Trends,* 5(2), pp. 63-90.

Obstfeld, M. & Adler, G., 2015. *International Monetary Fund Annual Research Conference: Top researchers debate unconventional monetary policies.* Washington, IMF Research.

Rajan, R., 2005. *Project syndicate: the only game in town.* [Online]
Available at: https://www.project-syndicate.org/commentary/the-limits-of-unconventional-monetary-policy-by-raghuram-rajan?barrier=accessreg
[Accessed 29 May 2017].

Reinhart, C. & Rogoff, K., 2009. The aftermath of financial crises. *National Bureay of Economic Research Working Paper series,* Volume 14656, pp. 1-14.

Smaghi, L., 2009. *Conventional and unconventional monetary policy.* Geneva, s.n.

Spiro, N., 2015. Global equity markets too dependent on stimulus from central banks. *South China Morning Post*, 4 June.

World Bank, 2017. *Global Economic Prospects, January 2017: Weak Investment in Uncertain Times,* Washington D.C: The World Bank Group.

World Trade Organization, 2016. *World Trade Report 2016: Leveling the trading field for SME's ,* Geneva: World Trade Organization.