



MACRO-ECONOMIC ANALYSIS OF GLOBAL ECONOMIC RECESSION 2007- 2009 AND POLICY MEASURES THAT ENABLED RECOVERY OF US ECONOMY

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ABSTRACT

The aim of this research paper is to attempt to understand the 'Trilema' which has confounded the economists on how to handle the three parameters like output, interest rates and currency effectively, to achieve the optimum level for a given economy, and even to drive an economy from recession to recovery. The authors used the US economic recession (2007-2009) event as a starting point and looked at policy interventions, both fiscal and monetary. They envisaged as to how the three chosen parameters played out over time, and what economic models can explain the basis of both the policy intervention and recovery. Our exploratory work is to understand the economic policy parameters that are critical to manage; yet which has been complicated by the US's most open economy, to which the basic ISLM models could not support. The team finally found that the Mundell- Fleming model does make sense for open economy like US. The researchers analysed the data from US economy to see if the model is able to justify the data coming out from US from 2006-2016, when many policy interventions were taking place. The team focussed on the causes of this recession; because it was important to understand the variables underneath which caused the crisis in the first place. Another factor explored was the causes of the crisis, which to illustrate how money market was stretched by excess credit creation and excessive risk taking by the commercial banks in the post repeal of Glass–Steagall's Act in 1999. It also led to the phenomenal growth in the derivatives market and rapid integration of global capital markets across the world. This research paper also goes back to the fundamental question, as to if the monetary policy is more effective or fiscal policy is more effective? Or both need to be played in recovery. Was there even a role of fiscal policy and in what form was it deployed in US economic recovery? Finally the authors confirm that forex market equilibrium co-exist together with goods and money market equilibrium for open economies as that of US. It believed that currency markets are very important and important policy decisions should look at the long term impact on the currency stability; in the lens of competitiveness of economy in the global market place.

Keywords: Great Recession, Monetary Policy, Fiscal Policy, Mundell Fleming Model

Cite this Article: Manvinder Singh, Dr S.N. Misra and Dr Biswajit Das, Macro-economic Analysis of Global Economic Recession 2007- 2009 and Policy Measures that Enabled Recovery of US Economy, International Journal of Mechanical Engineering and Technology 9(3), 2018. pp. 256–271.

<http://www.iaeme.com/IJMET/issues.asp?JType=IJMET&VType=9&IType=3>

1. INTRODUCTION

The global economic recession in 2008 created a massive impact on the livelihoods of millions of people. It created the longest recession and financial ruin of banking system. The slow recovery and low inflation; despite monetary and fiscal interventions; appears as of now as a new equilibrium; for years to come (Rogoff, 2009 and Summers, 2013). The econometric analysis work by Stock and Watson, 2012 tends to support the shock in 2008-2009 crisis, which was quite deeper than earlier crisis. Other economists as Gadea Rivas et al. (2014) and Bagliano and Morana (2015) however are of the view that this recession of 2008 is a minor glitch in the overall scheme of ongoing great moderation trend, characterized by low volatility in output and inflation, and large swings in asset prices and risk premia.

While there are innumerable causes assigned by many authors, such as greed, fear, sub-prime mortgage, global slowdown, US real estate bubble, size of derivatives positions and lower interest rates for too long etc. to be the reason, this write up will focus on economic factors only. Economic factors to understand the economic crisis, then look at the monetary and fiscal policy measures that have been used to drive towards recovery, exposing the understanding of policy interventions, that essentially worked.

In fact, the first signal of the crisis came from the OTC market defaults, and then from money markets sudden loss of liquidity. The markets only responded to the crisis which was brewing, and US financial system moved fast to respond. These OTC market defaults signaled the onset of recession, bond defaults and imminent bank failures later on happened to verify the crisis. However, we believe that the run down to recession and policy action in the post-era must be subjected to economic analysis, which can shed light on the actual crisis. The economic analysis will help us examine and understand the root causes of the economic crisis, and also explore if current economic theory is sufficient to explain the crisis, or there are gaps which economics cannot explain. We primarily use the recovery stage to understand the policy interventions which enabled recovery, and explore the theoretical basis within the macroeconomics theory for such a policy intervention. We fully understand there will be a hindsight bias in this analysis but nevertheless we will try to be more objective. Let us look at the crisis in detail.

1.1. Introduction of Crisis:

The crisis of 2007 was more severe than all other crisis before, and the graph below from US treasury, shows the severity. Only Q1 1958 recession contraction of real GDP (on quarterly basis) is more severe, but on semi-annual basis 2007 is worst. The economic 2007 crisis was unique because there was a recessionary environment, and over and above a housing bubble burst at same time, and wiped off 19.2 trillion dollars of household wealth in US, calculation based on 2011 US dollars. Also the 2008 financial crisis led to the failure of a large number of banks in the USA. The Federal Deposit Insurance Corporation (FDIC) closed 465 failed banks from 2008 to 2012.[9,10] In contrast, in the five years prior to 2008, only 10 banks failed. The FRED graph below is evident to the issues and challenges of the times.

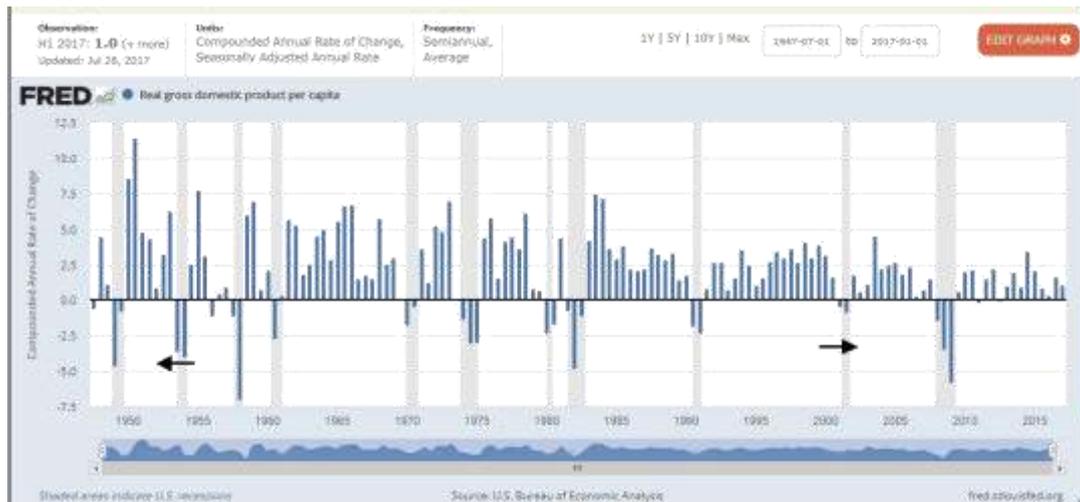


Figure 1 Real Gross GDP Drop was Most Severe and Fast in 2008 Crisis Second only to 1958 Recession

Source: FRED, 2017

2. KEY EVENTS IN BETWEEN 1997 TO 2007

The economies have multiple sheds. Of all the gory financial events, the most connote worthy for deregulation are evident. The rootcause of the banking system to fail are due to the crisis. In most other crisis; the overall banking system remained more or less intact. The snapshot of the issues can be seen below:

Repeal of Glass-Steagal Act, 1999: Of all the events the repeal of Glass-Steagall Act in 1999 was most severe in effect . The repeal removed the separation between investment banks (risky and speculative business and market entry) and depository banks (government backed conduit and to generate credit lend in a conservative way) in the United States. US President Bill Clinton signed into law the Gramm–Leach–Bliley Act, which repealed provisions of the Glass-Steagall Act, which used to earlier prohibit a bank holding company from owning other financial companies. The impact of this was that the separation that previously existed between investment banks and depository banks was dissolved, providing direct approval for a universal risk-taking banking model. Investment banks such as Lehman brothers can directly compete with commercial banks as that of Wells Fargo and Bank of New York Mellon. Most financial gurus say that this contributed to the severity of the financial crisis of 2007–2010 more than anything else. However, we believe that this alone was not sufficient but did encourage lot of lending to sub-prime borrowers by commercial banks due to competition faced in their turf and fear of losing their customers.

Unregulated Derivatives Market: The Federal Reserve chairman Alan Greenspan since 1997 had lobbied to keep the derivatives market unregulated. The Clinton government with the advice of the President's Working Group on Financial Markets(PWG), allowed the self-regulation of over-the-counter (OTC) derivatives market by enacting the Commodity Futures Modernization Act (CFMA) of 2000. The derivative instruments as credit default swaps (CDS) can be used to hedge or speculate against particular credit risks without necessarily owning the underlying debt instruments. The expansion in volumes of CDS outstanding increased 100-fold from 1998 to 2008, with estimates of the debt covered by CDS contracts, as of November 2008, ranging from US\$33 to \$47 trillion. Total over-the-counter (OTC) derivative notional value rose to \$683 trillion by June 2008.

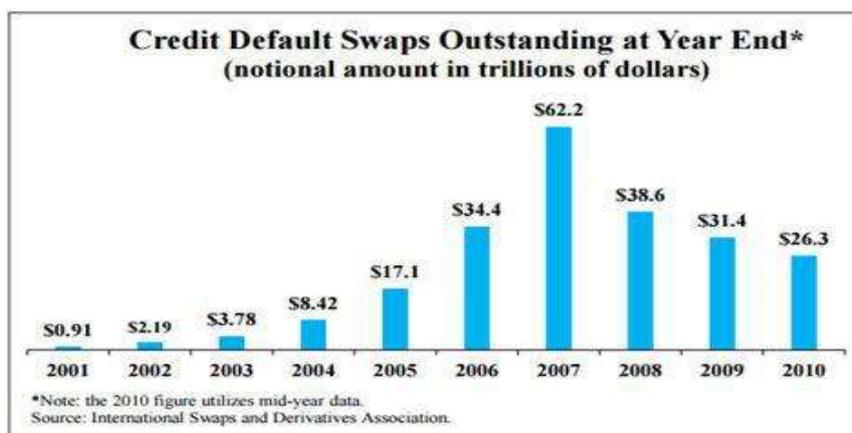


Figure 2 Growth of Credit Default Swaps (CDS)

Source: <http://stats.bis.org/statx/toc/SEC.html>

Securitization: Excessive innovation because regulators and accounting standard-setters allowed depository banks such as Citigroup to move significant amounts of assets and liabilities off-balance sheet into complex legal entities, called structured investment vehicles, masked the weakness of the capital base of major firms, degree of leverage and risk taken. In the year 2009 it was estimated that the top four US banks will have to return between \$500 billion and \$1 trillion to their balance sheets during 2009. This increased uncertainty during the crisis regarding the financial position of the major banks and even Federal Reserve could not estimate the size of bank exposures. The researched team noted that in Enron case, off-balance sheet entities were also used as part of the scandal that brought down that company in 2001. In addition the ability to issue bonds of various rating through tranches also had a role to play. This created too much of credit outside the main banking system without real understanding of balance sheet exposures of real companies. Refer to graph A2 in Appendix

Private Investment Weakening

The authored believe that in economic terms private sector investment in US economy was weakening from 2005 onwards, so the output and GDP were supposed to drop and reduce the scope for employment. This has been explained in Fig 6. This problem aggravated when housing sector further deteriorated and widespread defaults caused financial crisis and failures in banking. Thereafter, most new investment projects could not get funding and it aggravated the problem.

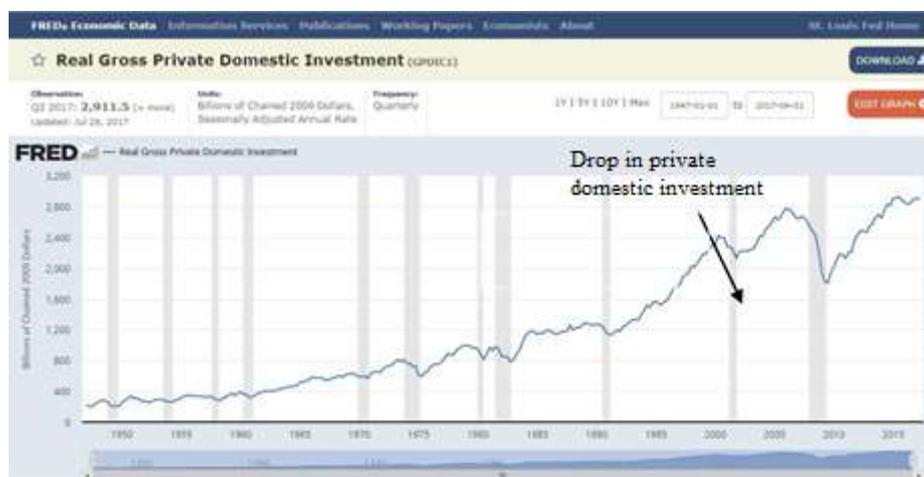


Figure 3 Drop in Private Sector Investment Preceded the Crisis

Source: Federal Reserve of US, 2017

3. POLICY INTERVENTION BY US GOVERNMENT

3.1. Monetary Policy Intervention by Federal Reserve:

When we insight in to year 2000, the year US economy found to be dabbling in recession. At this time, Fed funds rate was brought down from 6.5% to 1% from 2001 to 2003. It softened the effects of dot com crash and September 11 attacks. This lowering of interest rates not only enabled cheap credit to companies, but also fuelled housing boom, as mortgage rates were too low. Monthly payments became much lower and relaxed with lending criteria, as many private players started to give loans to home buyers, in being with direct competition to commercial banks. These led loans being given to many subprime borrowers (given low rates of interests made monthly payments serviceable). As the US economy recovered slowly in haste; the interest rate were increased from 2004 to 2007 back to 5% +. However the recession in 2007-08 immediately followed as prior recovery was a weak recovery. Hence the Fed rate moved to low interest rate regime. This has led to inter bank borrowing rate to be kept low for last 8 years (at sub 1% rate) from 2009 till 2017. This has worked, GDP and labour market have responded well. Essentially the intervention has been a monetary policy intervention. The two graphs below demonstrate the success of policy measures. Both the GDP and employment recovered. The interest rate reduction was a major policy mechanism to restore US economy. The rates reduce to near zero for 5 years (2009-2015). The status can be seen in the graph below.



Figure 4 Drop in Interest Rates vs GDP Contraction

Source: Federal Reserve of USA, 2017

Based on past recessions we know that primarily in US the recovery is achieved through lowering of interest rates; which is a monetary policy intervention. However lower interest rates encourage companies to borrow more to invest and expand the capacity; thereby produce more goods. Households consume more in low interest rate environment; as savings does not fetch a good interest rate, so it works in the increasing household.

The problem in this round of recession was that the housing bubble burst happened at the same time, so the financial system could not be effectively used to counter the recession; as banks were reluctant to lend to customers as well as to each other. Most investment banks were already overleveraged on real estate, in terms of issued bonds and insurance sector

(companies like AIG). AIG had provided cover to the too many real estate bond issues, that a large scale default could not handle. The challenge for US treasury was to save banks first or insurance companies first. Since most of the losses were absorbed by the financial system, the perceived credit risk increased throughout the economy. In this the banking system froze, banks and other financial players stopped new issuances and loans to corporations; and even interbank lending stopped. A look at the graph on TED spread will show light on the fact that the financial system was frozen and impact of fiscal policy was limited till June 2009, as banks were not lending to businesses or each other. In all prior recessions the spike is less; and not so prolonged showing that banking system was not functioning. In fact as per data analyzed by Jeff Holt the real investment spending decreased by 32 percent from the third quarter of 2007 to the second quarter of 2009. The graph of TED spread shows that interbank lending was frozen and banks were not lending even to each other. This triggered extreme business stress and caused lot of effect on the goods market besides money market.



Figure 5 Interbank Lending Status

Source: FRED, 2017

Our research of data in TED suggests that the transmission mechanisms of monetary policy in the form of enhanced money supply in 2008 crisis did not work initially. It is because banks were in panic and fear, as they suspected more defaults from other banks. Therefore, they neither lending to businesses nor lend to each other, and businesses could not access money and prolonged the crisis. The central bank resorted to buying market securities directly to facilitate flow in frozen markets called Quantitative easing (QE). This credit could start flowing again. Fed even intervened to buy commercial paper to ensure business, and companies could have continuous access to working capital. Lastly the much hated interventions in housing finance market restored the financial system as Fed had directly injected liquidity in housing finance market by buying MBS (Mortgage backed securities).

3.2. Fiscal Policy Actions by US Government

The first large fiscal countermeasure to combat 2008 crisis was the injection of government spending under G.W.Bush. The purpose was to purchase a large number of nonperforming financial assets from the stressed balance sheets of commercial banks. Although these purchases were executed by the Federal Reserve, they are execution of fiscal policy because Fed normally does not purchase private sector liabilities from bank portfolios; without congressional authority. In essence, it is the treasury with the assistance of the Fed that bought a large number of financial assets from private banks. For the purpose, Congress provided the Fed with a budget of \$700 billion to execute the purchases of asset-backed securities, agency

paper, and other assets under the first Troubled Asset Relief Program (TARP). The TARP also facilitated a massive infusion of funds into some of the largest US corporations as General Motors and Citigroup, and from the not to forget insurance giant AIG. The objective was to stabilize bank balance sheets to get credit flowing again for the purposes of financing investment, and also preserve the insurance sector guarantees to banks and financial sector players. The second part of the fiscal stabilization plan was under President Obama’s American Recovery and Reinvestment Act of February 2009 (ARRA). This appropriated an additional \$787 billion that included \$288 billion in tax cuts, and benefits to individuals and firms, \$275 billion in contracts, grants and loans, and \$224 billion in entitlements. Overall there was a 4.4% increase in government spending as a fiscal intervention.

3.3. Impact of Two Measures:

In the total budget of \$1,487 trillion; TARP and ARRA alone constituted approximately 10 percent of GDP. Yet they remained inadequate in size and direction, as their net effect on GDP growth or employment was small (Baker 2009). Firstly, as the federal government increased its spending, states, households and firms slashed their spending, which offset the effect. Secondly, these types of injections did not boost output, as much of the fiscal stimulus (TARP program in particular) generated demand for non-reproducible financial assets (Hahn, 1977) as “non-employment inducing demand”. In addition, some of the tax cut payments received by firms and households were used for the purposes of deleveraging. Finally, in the cases when government demand did increase production and output, it did not generate employment benefit much to the agony of policymakers. This we suspect was due to production sector moving to more optimum and efficient phase marked by lean labor force and lower labor costs.

3.4 Why the Monetary Policy Initially did not Work?

The reason suspected is that banks were in panic mode, and had stopped lending to businesses and each other, because their balance sheets were weak and they had low confidence in not only each other, but also in most US business’s ability to sustain and grow. It looked at the failed recovery output parameters. It believed that the consumption was slow to pick, as households were hit by double whammy of job losses as well as negative economic outlook in short term.

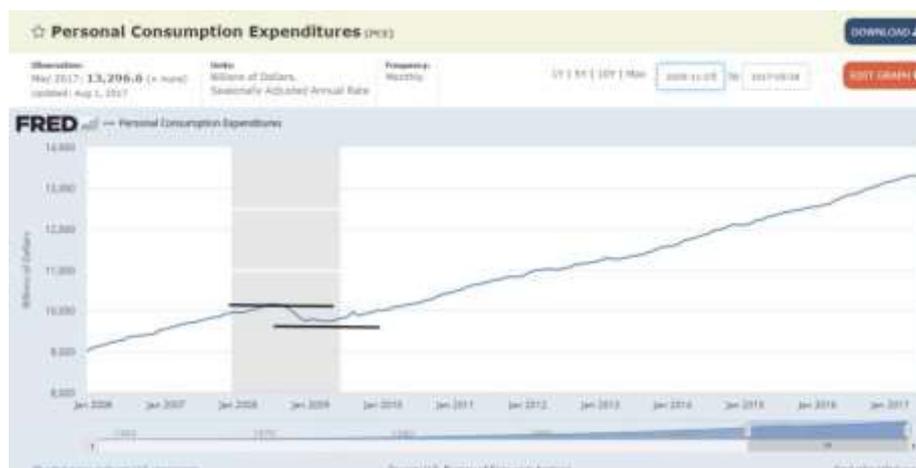


Figure 6 Personal Consumption Expenditure of Ordinary Americans

3.5. What Interventions Happened and how did they Finally Worked?

Monetary policy intervention in a large quantity was implemented and also fiscal policy in optimum dose at the start of the crisis. We consider fiscal policy interventions involved buying securities from the open market as CDO's, CMBS and other securities as commercial paper from banks and markets. We believed that monetary policy did work and increase in government spending.

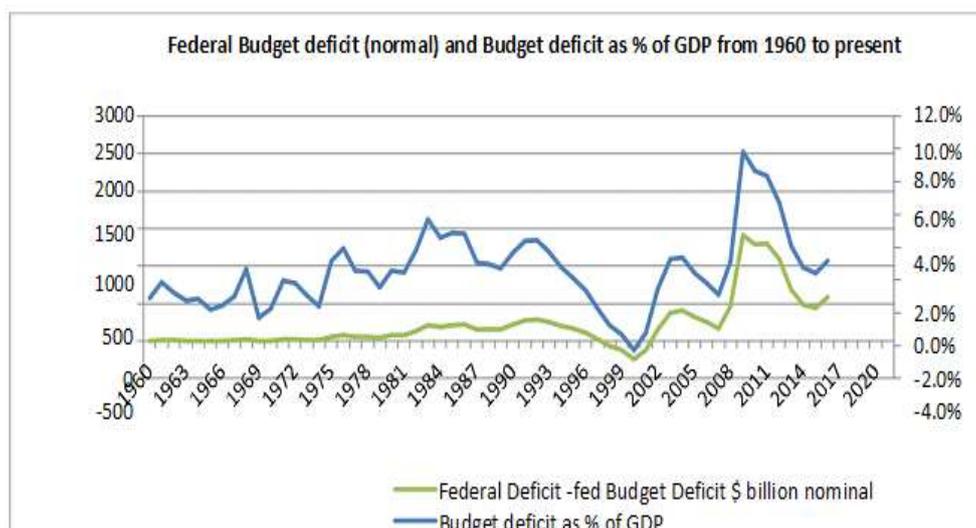


Figure 7 Federal Deficit was Increased to 10% of GDP in Response to the Economic Crisis (Fiscal Response to the Recession)

Source:http://www.usgovernmentsspending.com/spending_chart_1960_2021USb_XXs2li111mcn_G0f#u sgs101

3.6. Summary of Discussion So Far:

The US government handled the crisis primarily through monetary policy intervention and in terms of fiscal intervention. The government enhanced spending up to 10% of GDP, an increase over 1 trillion over normal levels. But larger role was played by monetary policy intervention; where Fed increased money supply with underlying intention; to increase money supply which will lead to increase in aggregate demand for goods and services. Also increase in money supply lowers the rate of interest; which then stimulates more investment demand; and finally increase in investment demand through multiplier process; leads to a greater increase in aggregate demand and national income. But the problem of loose monetary policy is currency devaluation; as we can measure USD value required to purchase an ounce of Gold. The graph below shows that since 2004 when the US government started printing currency the value of USD to purchase ounce of gold has shot up by 300%. Therefore this is confirmation of the fact that a loose monetary policy leads to weakening of currency as predicted by Krugman and Obstfeld (2015) where they pointed out in Money Market/Exchange Rate Linkage.



Figure 9 Expansion of Money Supply Devalues a Currency and USD has Dropped 300% vs Gold Since 2004

Source: Gold.org, 2016

4. STUDY THE IMPACT OF VARIOUS POLICY ACTION ON EMPLOYMENT

The graph reads on the job recovery which started in 2010 for a period of full two years after the recession, when fiscal and monetary stimulus was underway

Series Id: CES0000000001
 Seasonally Adjusted
 Series Title: All employees, thousands, total nonfarm, seasonally adjusted
 Super Sector: Total nonfarm
 Industry: Total nonfarm
 NAICS Code: -
 Data Type: ALL EMPLOYEES, THOUSANDS

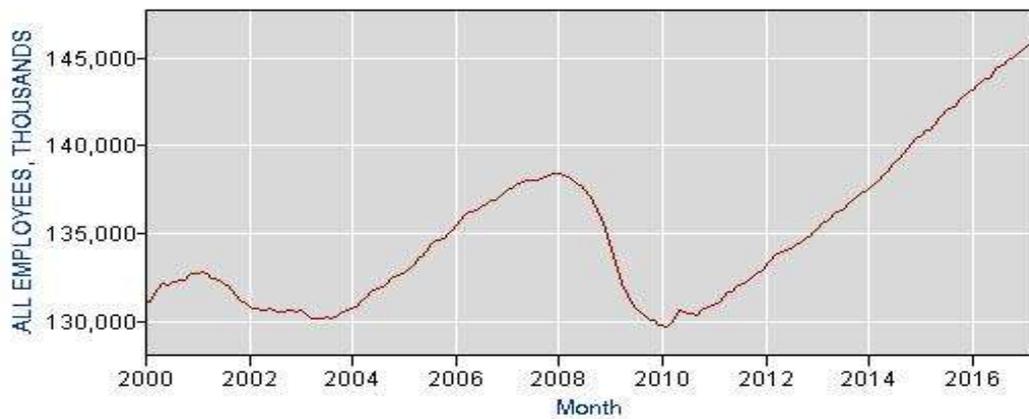


Figure 10 Job Recovery of 2010 after Recession

Source: <https://data.bls.gov/pdq/SurveyOutputServlet>, Bureau of Labour Statistics(US govt.), 2017

The graph depicts the activities of full 8 years, which passed to restore employment rate in USA in the period of post onset of recession.

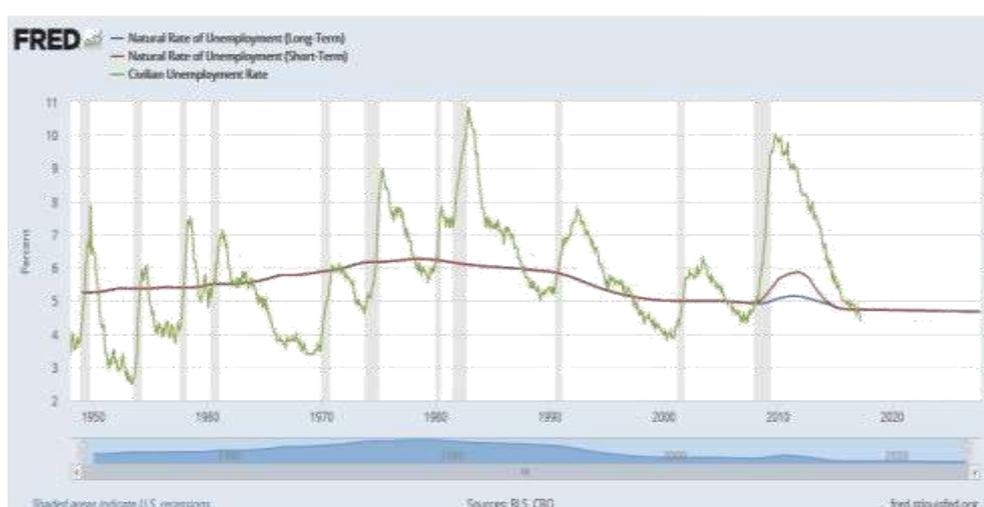


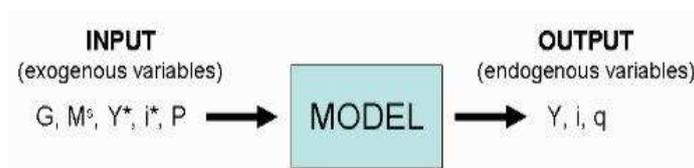
Figure 11 Eight Years to Restore Employment rate in USA in the Post-Recession

Source: <https://fred.stlouisfed.org/graph/?g=NxS#0> , 2017

5. ANALYSIS OF RECESSION AND POLICY RESPONSES BY MUNDELL-FLEMING MODEL

Initially the study was focused on ISLM models to do overall economic analysis of the US recession and government intervention, but we could not find to explain lot of our data till we moved to Mundel Fleming model. The model is very relevant to US economy which is open to rest of the world in terms of goods and capital flows. The model is a version of ISLM framework for open market economy.

Mundell-Fleming Model



Assumptions

Let us summarize the Mundell-Fleming assumptions:

Free float (applies to US economy)

Perfect capital mobility (applies to US economy)

There are under-utilized resources and there is no supply constraint (USA is a Open economy with strong supply chain)

The Marshall-Lerner condition is satisfied (Applies to US economy)

{The Marshall-Lerner condition (after Alfred Marshall and Abba P. Lerner) refers to the condition that an exchange rate devaluation or depreciation will only cause a balance of trade improvement if the absolute sum of the long-term export and import demand elasticity is greater than unity. }

The price level is fixed (in particular, there is no exchange rate pass-through) (Satisfied) No dollarization (no currency substitution) (Satisfied)

Exchange rate expectation is static and/or there is no risk premium (Satisfied) Foreign P^* , Y^* , i^* are given

Key equations are

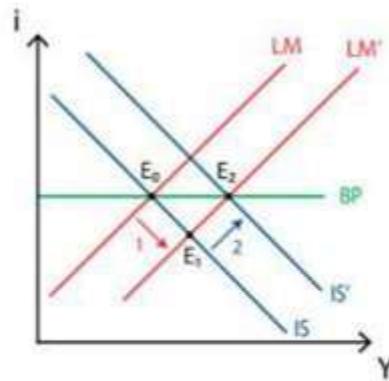
IS: $Y = C(Y-T) + I(Y,i) + G + NX(Y, Y^*, \frac{1+i}{1+i^*} \tilde{E})$

$1+i^*$

LM: $\underline{M} = YL(i)$

P

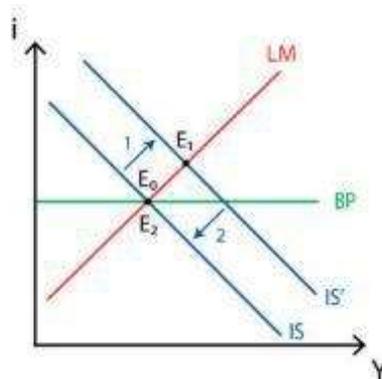
Monetary Policy Impact by MF Model Curves



BP: Here signifies Balance of Payment curve
 I = interest rate
 Y= output
 IS and LM curves depict the goods market curve

As per the curve, the explanation of US currency depreciating in 2008-2010 is as follows. An expansionary monetary policy (as unleashed by Fed) shifted the LM curve to LM, which makes the equilibrium go from point E0 to E1. However, since now exchange rates are flexible, the balance of payments deficit will depreciate the domestic currency. This depreciation in currency will increase net exports (since foreigners can now buy US products with the same amount of money in their currency), which will shift the IS curve to the right (to IS'). The final equilibrium is reached at point E2 where, at the same interest rate, production has increased greatly. Monetary policy works very well under these circumstances of open market economy models as Mundell-Fleming (MF) Model.

Fiscal Policy Approach



Using MF model curves we note that an expansionary fiscal policy where government tries to boost production, will shift the IS curve to IS', moving the equilibrium from point E0 to point E1. The economy will therefore have a balance of payments surplus, which in this case of flexible exchange rate will appreciate the domestic currency. This over the time will

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decrease net exports, since we are able to import more goods and services with less money, while foreigners will import less of our products because of our appreciated domestic currency. This drop in net exports will shift the IS' curve back to its original position. Since now the final equilibrium E2 corresponds to the initial equilibrium, which proves that fiscal policy does not work in this case. We noted that these conclusions are significantly different from those of the domestic version of the IS-LM model. In the domestic version of ISLM, fiscal and monetary policies are both effective, and their relative effectiveness depends on various elasticity and slopes. But in the case of MF curves it is clearly seen that , one policy is utterly impotent and the other policy is doubly potent. By now, it is clear that IS-LM-BoP or Mundell-Fleming model is better to explain an open economy. Looking at US data we find that US exchange rate dropped in 2008 and 2009 as monetary policy was put in action.

Now coming to the final question and a puzzle we can enquire as to how to explain the fact that the excess money supply by US Fed of \$14 trillion approximately, did not cause a very large deterioration of US dollar in currency markets? The answer lies in the table below:

Table 1 Analyse US Economic Data and Related Exchange Rate from 2006-2017

DATA COMPILED: 2006-2017 (US Economy)											
Parameter	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Interest rate (fed rate to banks;)	4.96%	5.02%	1.93%	0.16%	0.18%	0.10%	0.14%	0.11%	0.09%	0.13%	0.40%
Interest rate (Prime lending rate)	7.96%	8.05%	5.09%	3.25%	3.25%	3.25%	3.25%	3.25%	3.25%	3.26%	3.51%
Output (billions of dollars)	13855.9	14477.6	14718.6	14418.7	14964.4	15517.9	16155.3	16691.5	17427.6	18120.7	17862.4.5
Currency exchange rate (USD Vs EURO;)	0.7872	0.71	0.69	0.68	0.78	0.73	0.77	0.74	0.78	0.89	0.90
USD Vs Japanese Yen;	116.7	114.89	105.94	91.07	84.5	76.45	78.18	98.76	109	120.01	101.7
GBP Vs USD ;	1.8892	2.02	1.8129	1.6488	1.5628	1.555	1.623	1.5907	1.6299	1.5498	1.3
USD vs Yuan	7.9	7.5	6.83	6.82	6.7	6.38	6.31	6.12	6.14	6.37	6.67
BOP(balance of payments)	-761.72	-705.38	-708.73	-383.77	-494.66	-548.63	-536.77	-461.88	-490.34	-500.45	-504.79
Consumption(Billions of dollars)	9304	9750.5	10013.6	9847	10202.2	10689.3	11050.6	11361.2	11863.7	12332.3	12820.7
Unemployment in thousands(Year)	6991.25	7073	8948.2	1429.5	14807.8	13738.5	12499.2	11456.6	9598.2	8287.8	7749.6
FDI into USA(Trillions of Dollars)	1.84	1.99	2.05	2.07	2.28	2.43	2.58	2.73	2.95	3.3	3.73
Comparative size of largest 5 economies (US billions)											
Size of US economy	13855.9	14477.6	14718.6	14418.7	14964.4	15517.9	16155.3	16691.5	17427.6	18120.7	17862.4.5
Size of Eurozone economy	12163.1	12877.4	14115.4	12905.5	12642.9	13622.7	12637.6	13187.5	13457.7	11616.1	11885.7
Size of Japanese economy	4530.4	4515.3	4598.2	5110	5700	6157.5	6203.2	5155.7	4848.7	4383.1	4939.4
Size of British economy	2678.3	3063	2875.5	2367.1	2429.7	2608.8	2646	2719.5	2998.8	2861.1	2618.9
Size of Chinese economy	2752.1	3552.2	4598.2	5231.4	6100.6	7572.6	8560.5	9607.2	10482.4	11064.7	11199.1

The interpretation of the above table is as follows. As per row 5 in the table above US dollar did slide for 2008-2009 against Euro; but the recession of 2008 was not only limited to US but affected Europe and other parts of the world. Since other economies as UK, Euro zone also experiences depreciation of their currency (as they also did a monetary policy intervention and printed more of their currency) so depreciation of USD against euro did not continue. However, if we look at major exporters as Japan, we find that USD to Japanese Yen rate continued to drop against till 2012. This was because Japanese currency was viewed as safer bet between 2008-2012. Looking at USD exchange rate w.r.t Chinese Yuan we find that, USD dollar continued to depreciate till 2013 as US economy was healing while Chinese BOP (Balance of Payment) was favorable to Yuan. By 2012-2013 the long term competitiveness of US economy was found intact and FDI (Foreign Direct Investments) flows into USA became stronger and contributed to a stable USD.

6. CONCLUSIONS

The research paper clearly strived to look at crisis and recovery in the economic terms. The team suspected that the real cause of fiscal intervention did not work in this crisis, because of the fact that, US economy is an open economy and is also largely a financial services based economy. Our attempts to understand policy interventions was helped by the Mundell Fleming model. It makes lot of sense why monetary policy intervention was better, and that was a major policy intervention by Federal Reserve. If we look at all the prior crisis, they were much smaller in size and bond markets were more or less intact. As a response measure to unfreeze the financial system around 13-14 trillion worth of Fed injection of funds was needed to re-capitalize the banks and bond market. Direct injection of liquidity in ailing financial institutions through private company bond purchases is evident.

All three authors agree that earlier the injection of liquidity occurs in a recession, and faster will be the revival of money flow in the main economy, and lead to faster economic recovery. Hence the economists must have tools to measure market stress better. In fact delay in policy action paralyses the confidence, and chain reaction of defaults occur due to reverse money velocity issues. In the words of Joseph E. Stiglitz, “the most current financial crisis is failure of mainstream monetary and macroeconomics to analyze credit markets, and ways to reduce the risk of disorderly expansions and contractions is among the central failures of monetary economics in recent decades”.

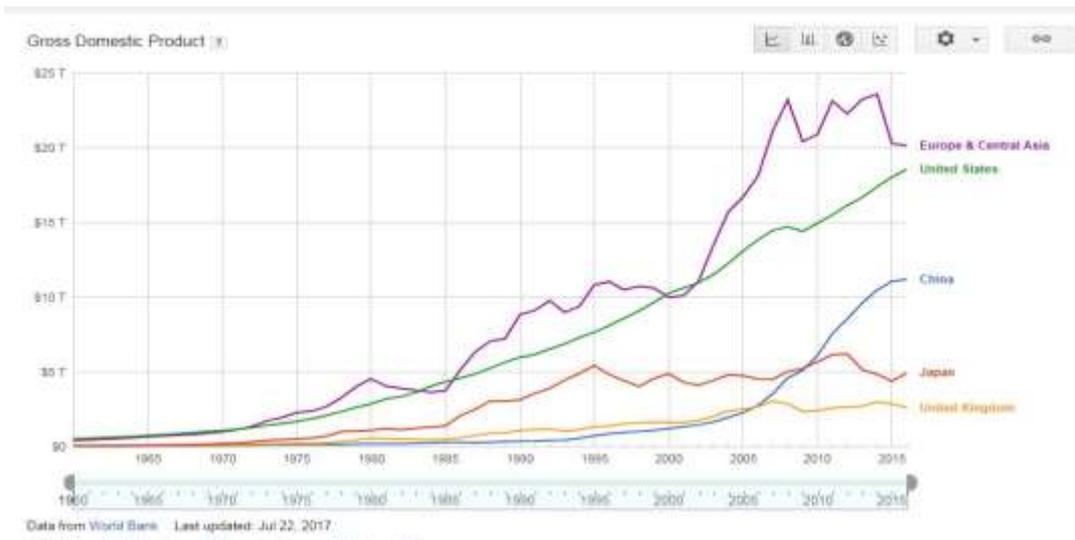
At a holistic level of analysis we feel that the basic economic basis of free market economy is flawed, and this crisis is a wakeup call. The flaw in the free market system is that it underestimates the role of regulation of financial institutions, but believes that market forces will cause correction or restoration to equilibrium. This simplistic view does not accommodate issues; as conflict of interest among financial market participants (FMP), FMP tendency to externalize risk, and role played by unmitigated greed of FMP to pursue a product which makes money immediately, at the expense of creating a product over time whose risk is well understood. As a future work we suggest that there is a need to create better economic and risk models to measure risk across financial system, measure bond and currency markets fluidity and health. There is a need for finance and economists to work together and define new metrics to monitor the OTC markets. Also there is ample scope of work to suggest regulatory mechanisms for the shadow banking system, hedge funds and offshore vehicles.

The researchers believe that IMF with a kitty of USD200-300 billion is not sufficient for large crisis containment but we need an agency of a global level Agency with membership from major central banks to create a intervention mechanism having a kitty of USD 20-30 Trillion to intervene in case of next crisis and focus on financial system preservation (Forex market, bond market, interbank market and global stock markets etc.).

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APPENDIX



Graph A1 Comparison of 5 Major Economies in Terms of Size.

Sources: World Bank –Public data

https://www.google.co.in/publicdata/explore?ds=d5bncppjof8f9_&met_y=ny_gdp_mktp_cd&idim=country:JPN:CHN:KOR&hl=en&dl=en#!ctype=l&strail=false&bcs=d&nselm=h&met_y=ny_gdp_mktp_cd&scale_y=lin&ind_y=false&rdim=region&idim=country:JPN:CHN:GBR:USA&idim=region:ECS&ifdim=region&hl=en_US&dl=en&ind=false



Graph A2 Rise of Securitization from 109 billion in 1992 to 642 billion in 2008 and Demise to 46 billion Since 2011

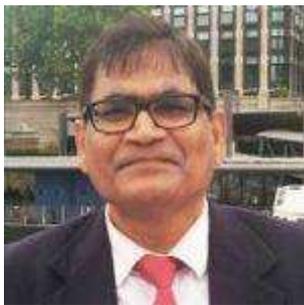
Source: Board of Governors of the Federal Reserve System (US), Securitized Total Consumer Loans, Outstanding [TOTALSEC], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/TOTALSEC>, September 12, 2017.

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