

# The Role of Monetary Policies in Exiting of 2008 Financial Crisis in United States of America and United Kingdom

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**Abstract-** During a short time the gross domestic product of countries decreased because of 2008 financial crisis which began in the housing market of America and their unemployment rate increased. In order to exit from the crisis, various countries, including United States of America and United Kingdom adopted various policies that expansionary monetary policies means increasing of monetary base and reducing of interest rates, is one of them. The purpose of this research is studying on effectiveness of imposed monetary policies on gross domestic product of America and England during the 2008 financial crisis. So is used of gross domestic product data, monetary base, effective exchange rate, interest rate and dummy variable in vector error correction model. Results indicate significant and negative impact of the 2008 financial crisis on gross domestic product, also inefficient of imposed monetary policies in these countries.

**Keywords-** *Monetary policies, the 2008 financial crisis, Systematic risk, Vector error correction model*

## I. INTRODUCTION

The 2008 financial crisis was at the beginning of fiscal, but shortly turned into banking and liquidity crisis. Banks refused about credit and loans to each other and companies, also the danger of lacking liquidity damaged whole credit system and damaging of credit system impacts on Economic situation. In order to deal with the financial crisis, countries' financial authorities have been done actions that could refer to some of them such as reducing of interest rates and increasing of monetary base. This study seeks to answer the question of, how the imposed monetary policies were effective in America and England about controlling and exiting of 2008 financial crisis.

So different parts of this paper are as follow:

The first part reviews the theoretical foundations and conducted studies on monetary policies.

Theoretical foundations include studying on reasons of 2008 financial crisis, conducted measures by financial authorities in some countries in order to deal with financial crisis and views of different schools about influence of currency. In the second part, related data to GDP (Gross domestic product), monetary base and interest rates about 2008

financial crisis of America and England are mentioned. In the third section has been studied on effectiveness of imposed monetary policies on GDP of these two countries with using of vector error correction model. The final section is discussed on conclusion and policies recommendations adapted from article.

## II. THEORETICAL FOUNDATIONS AND LITERATURE OVERVIEW

### A. *Economic recession*

In macroeconomic, recession means reduction of a country's GDP or economic growth rate of a country for a consecutive period. In other words, if total supply is greater than total demand, the economic recession occurs.

Simultaneous with creation of recession in the economy also economic activities enter into the a descending period that could refer to some important of them such as reduction of the employment rate, increasing of unemployment, reduction of investment, reduction of participatory profits and reduction of tendency to manufacturing and industrial activities.

### B. *The reason of Financial Crisis in 2008*

First of all it should be mentioned that this crisis happened in beginning of financing then banking system then it appeared as economic recession. Nowadays, few people relate this crisis to indulgence, embezzlement and inappropriate management of financial managers.

Joseph Stiglitz and Edmund Phelps, Nobel Prize-winning American economist, believe that crisis origins of Subprime are from policies of Central Bank of America in period of Alan Greenspan's Presidency based on low banking interest rate, also lacking of controlling and public regulation on financial transactions. Low banking interest rate, easy money make easy to buying house. But for housing purchase, moreover person who need loan, should have appropriate savings for advance payment also should have enough income to pay the loan. Now if banks themselves give loan to them who do not have these conditions and insure their repayment of loans because of residential houses' mortgage so demanding for housing purchase increases highly. According to increasing of demanding also the prices of estate increases and this matter increases applicants of housing loans. Because according to

low interest rate and easy condition for getting loans and high prices of buying house, worries about loan's repayment are not considerable.

According to increasing of houses' price than to the value of adopted loan, also economic true estimating confirms this matter, too. Nonetheless in this economic estimation one point is neglected. If debtors do not pay their debts and it does not be accidental but be from general aspect and moreover avoid paying debts by some maybe cause others avoid to pay their debts, means risk of failure to pay the loan which has systemic characteristic so many homes in the banking mortgage and financial institutions will be considered for sailing. Therefore, with housing extensive supply and reduction of its demanding, estate price will decline so that will not even repay the loans. In other words, whatsoever are intelligently for a person and in absence of systemic risk from the perspective of economic calculation is not intelligently for collection of persons and existence of systemic risk. In a scientific definition systemic risk is called as creation of economic condition which based on rational responses of economic agents in response to the risks that are observed instead of better distribution of risk is about uncertainty and more instability. A simple example, special meaning of systemic risk clears its difference with other types of risk. If your neighbors have a car accident, this event will not increasing of the accident risk from you; now If your neighbor in a residential complex has not ability to payment of debts and also he is owner of residential building as you, the risk of nonpayment of the current housing expenses by his will be increases your risk by charging more to pay. In this matter risk has systemic characteristic. Now with clarifying the concept of systemic risk we investigate its role in the 2008 financial crisis.

Encouraging Americans to get housing loans even those who could repay it, requires to insurance their loans. How this insurance perform? Insurance of banks' loan to individuals is performed through a third person in the transaction which insures risky loans and because of that receives fixed amount from the bank. By this insurance the investment banks (The separation of banks to commercial banks and investment banks based on Glass - Steagall act took place after the Great Depression in 1929. The duty of commercial banks were collection of household deposits, without having turn to transfer funds invest to firms or financial markets. The latter task is undertaken to investment bank, in order to avoid damage to properties of owners of deposits through crisis.) like J.P.Morgan can remove non-payment risk from their accounting books and release their currency reserves, this type of insurance is called as Credit Default Swaps, that credit insurance is having non-payment high risk. C.D.S is one of the types of securities as toxic stocks which is financial derivatives. This types of financial item is including all risky loans, classifies their value to smaller parts then sales them. According to this matter, can insure the debts that are encounter with systematic risk, so way that will be insure the products without systematic risk. And hence, C.D.S is comprehensive of insurance's classic approach which warren Buffett Great American Capitalist called this as financial instruments for mass murder.

Despite the fact that for the first time in 2003, trades' index of this type of financial item was found in the stock market of United States of America, but in 2004 and 2008 transactions became so fast about this area that finally in the summer of 2008, the figure reached \$ 62 trillion, while the volume of these transactions was nearly about \$ 100 billion in 2000. After the Great financial crisis of September 2008 the volume of transactions fell from 62 trillion to 55 trillion dollars. This figure clears amount and importance of determine this type of financial products in happening of 2008 financial crisis. There was not any governmental supervision on increasing of this type of financial instrument for C.D.S which today are now known as Toxic mortgage or Toxic Securities. The value of these products in the four years before crisis has been increased fourfold of New York stock exchange transactions has been based on wrong-way data base about financed and repayment ability of loan applicants. This matter was not according to any laws. Therefore, two basic factors in the emergence of the financial crisis in 2008 are:

1. Low interest rate; and
2. The financial products out of any kind of public supervision and inherent systemic risk on them.

#### C. *Trying to exit from the crisis*

In this part, there are some examples of conducted measures by Fiscal authorities of different countries in order to exit from the 2008 financial crisis:

In July 2008, two largest credit mortgage companies Fannie-Mae and Freddie-Mac were unable to pay their financial obligations for thousand five hundred billion dollars. Since many large companies such as pension funds, mutual assistance and foreign central banks have been invested in these two firms, the insolubility of America's financial system was depended on preservation of these two firms. Thus, in 7th September 2008, Fannie-Mae and Freddie-Mac became national and this nationalization cost reached to two hundred billion dollars. The danger of falling for these two great institutions also helping of two hundred billion dollars by Treasury to them was as milestones of the recent financial crisis.

On September 19, for first time, America's Treasury proposed the buying "toxic securities" for banks. The cost of this project that was supported by the White House and was known as the Paulson Plan 'Henry Paulson, the chief of America's Treasury' was more than 700 billion dollars. It should be say that, the purpose of government intervention in this period was not only the saving commercial banks, but also saving the insurance companies and investment banks which were as vulnerable circle of financial system.

In October 7, the ministers of Finance and Economy of European countries increased the bankroll up to fifty thousand Euros. This was the first common action from Europe Union. On the eighth of October, Central Banks of the United States of America, Europe Union and other their counterparts in Canada, Great Britain, Sweden and Switzerland reduced simultaneously the banking basic interest rate by half a percentage point in

order to guarantee the banking credits and necessary liquidity for financial system.

Finally, on October 13, fifteen European countries after several weeks on Gordon Brown’s Conversation and consultations, Angela Merkel and Nicolas Sarkozy at the Elysee found a plan that was not based on buying "toxic securities" unlike Paulson plan. But the aim was injection of capital into European banks up to €1300 billion Euros and its nationalization, if it was necessary.

*D. Views of different schools about the impact of money*

Different mentioned views about neutrality of money have a significant difference with together according to assumptions that formed intellectual infrastructure of each of macroeconomic schools. These views involve wide range, including the full effectiveness of monetary policies also their ineffective.

TABLE I. THE VIEW OF DIFFERENT SCHOOLS ABOUT THE IMPACT OF MONEY

School (ism)	View
Classical	Money is neutral and evacuates its effects merely in the nominal section of economic.
Keynesian	Money is not neutral, but there are many obstacles such as a liquidity trap and etc. on its effectiveness.
Monetarists	Money is not neutral in the short term, but is neutral in the long term.
New Classical	The unpredicted monetary policies effect on Production level and other real variables only in short-term.
Real Trade Cycles	Money is neutral and evacuates its effects merely in the nominal section of economic.
New Keynesian	Money is not neutral and the monetary policies are effectiveness.

Source: Moslehi F, (2006), impact of monetary policies on Iran economy from 1959 to 2004. Journal of Iranian Economic Research No. 27, pp. 137.

*E. Literature Overview*

Ghossoub and Reed (2010), in their co-study by describing of the meaning of the Financing liquidity risk, wanted to explain about asymmetric effects of monetary policies in different countries. Financing liquidity risk means the risk of Investor’s inability in him financing situation. Now as regards liquidity risk has an inverse relationship with capital formation or investment so can realize to asymmetric effects of monetary policies in different countries. In the countries with weak financial systems and which have high liquidity risk so the expansionary monetary policies lead to capital formation and do not lead to production growth and in the countries with low liquidity risk like developed countries, it is possible that expansionary monetary policies lead to production growth. As a result, optimal monetary policies depend on a country’s development level.

Berument (2007), in their study has been analyzed the effects of monetary policies in Turkish economy. In this paper he used of monthly data of Turkey for years 1986 to 2000 and

five GDP variables, index of consumer price, exchange rate, interbank interest rate and the volume of money. The used model in this study is Vector Auto regression model. The results suggest that, monetary policies have temporary effects on GDP and shortly when are significant statistically, the impact of this policies decrease. However, the effect of monetary policies is permanent and stable.

Jefferson (1997), he was studied on neutrality of money with separation of money into two parts, external money ‘monetary base’ and internal money ‘Demand deposits account’. He believed that investigation of effectiveness of money on the real production level caused removing the possibility of careful analysis. Because according to his opinion also according to mentioned resources in his paper the external money enable be effective on production level, but it is possible that occurred changes in the internal currency because of changing in interest rate be such that neutralized all imposed effects by external money on production finally lead to the neutrality of money. So in his research, the variables of real and nominal national production variables, GDP price index also demand deposits and monetary base in years 1900 to 1992 were considered as variables and placed them into VAR mode. In the estimations that were done from this model, neutralization of internal money was considered, although their value is very small but has statistical validity.

Moosa (1997), in his paper with using of seasonal data about 29 years for the economy of India studied on seasonal cointegration test and HEGY technique. The results of this study confirmed the super neutrality of money on India’s economy. In performing of this analysis, he used of three national variables including, the volume of currency, circulation coins and consumer price index and results were about lacking of long-term relationship between money and National production level based on the lacking of cointegration relation between these two variables and existing of short-term and long-term relationship between money volume and the level of prices based on cointegration relationship between these two variables.

III. AN OVERVIEW OF THE DATA

Direct consequences of the 2008 financial crisis were declining of GDP, creation of liquidity crisis, bankrupting of economic firms and increasing of unemployment rate in many countries.

In this part, the impact of the 2008 financial crisis on the GDP of United States of America and United Kingdom and conducted measures by the fiscal authorities of these countries in order to deal with the financial crisis are mentioned.

The GDP of the America in fourth season for 2007 year was about was 13272.37 billion dollars that this value is declined to 12820.71 billion dollars in third season for 2008 year which is equal to 3% reduction in GDP during 3 seasons of year.

The United States of America, in order to exit from the crisis focused on policy of increasing the monetary base and increased its monetary base 757.98 from billion dollars in the

fourth season of 2007 to 2266.19 billion dollars in the second season of 2011 which is equivalent to 298% increasing about monetary base. Another used monetary policy was reduction of interest rate. So that the interest rate in the fourth season of 2007 was 4.25% that this value after the financial crisis and due to deal with it reduced about 0.13% in the fourth season of 2008. The GDP of England in the first season of 2008 was 341.68 billion pounds that because of financial crisis declined to 312.26 billion pounds in the second season of 2009 that is equal to 8% reduction in GDP in during 5 seasons.

The central bank of England, in order to deal with the financial crisis increased the monetary base from 62.75 billion pounds in the first season of 2008 to 180.79 billion pounds in the first season of 2010 it means that monetary base increased about 282%. For dealing with the financial crisis, in addition to policy of increasing the monetary base also was focused on policy of decreasing the interest rate. Therefore, the interest rate which was 5.41% in the first season of 2008 decreased to 0.4% in the second season of 2009.

The purpose of this paper is studying on influence of expansionary monetary policies means increasing of monetary base and reduction of banking interest rate on GDP of two countries, United States of America and England during the 2008 financial crisis.

#### IV. THE ANALYSIS OF MODEL

##### A. Stipulation and identification of the model

Hakan Berument in 2007 studied on the impact of monetary policies on the real and nominal economy of the Turkey. He used of variables such as GDP, index of consumer price, exchange rate, interbank rate and the amount of money. Since the purpose of this paper is to estimate the effect of monetary policies on the real economy during the 2008 financial crisis in the countries, United States of America and England, so we used of model similar to Hakan Berument's pattern, with this difference that according to the condition of the 2008 financial crisis and the purpose of this paper some of the variables maybe added or omitted. So the used variables in this paper include: real GDP, real monetary base, real effective exchange rate, real interest rate and a dummy variable that because of appearance of the 2008 financial crisis entered into the model.

Thus, the used logarithmic form of this model is:

$$\text{LnGDP} = C_0 + C_1 \text{LnMB} + C_2 \text{LnREER} + C_3 \text{RR} + C_4 D$$

There are:

LnGDP: logarithm of real GDP according to each country's currency in constant price of 2005 year as the dependent variable

LnMB: logarithm of real monetary base based on each country's currency in constant price of 2005 year

LnREER: logarithm of the real effective exchange rate in constant prices of 2005

RR: real interest rate which is equal to difference of nominal interest rate and inflation

D: dummy variable that in season when the financial crisis occurred was one and in other season is zero

The data are as seasonal from the first season of 1990 to second season of 2011. The references of the all figures about above variables for United States of America and England are from International Monetary Fund.

In order to estimate the mentioned pattern and studying on effects of monetary policies on GDP is used of Vector Error Correction Model that is one of the time series' model. In this model is used of combination of long-term information with short-term adjustment mechanism. In other words, short-term volatility of a variable related to its long-term value. In this model, studying on variables' static and stationary, the determination of the optimal lag length and cointegration between variables is very important. In the vector error correction model, the residual terms resulted by the cointegration equation are used as a variable and its coefficient 'ECM' dedicated as a short-term adjustment coefficient. The value of this coefficient is placed between minus one and zero and is connector between short-term volatility and long-term value of a variable.

##### B. Unit root test and determining of optimal lag length

Augmented Dickey-Fuller unit root test, examines the hypothesis of existence the variable's unit root against to its non-static mood. This test was performed for all variables in the model for United States of America and United Kingdom that the results are summarized in table2 and 3.

The results show that all model's variables are not static in the data level, but repeating the test about data difference shows that all these variables after one difference rejected the no stationary at levels 1, 5 and 10% and become static. Thus, all of the integrated selected variables are one degree or I (1).

TABLE II. THE RESULTS OF AUGMENTED DICKEY-FULLER UNIT ROOT TEST FOR LEVEL AND DIFFERENCE OF MODEL'S VARIABLES FOR AMERICA

Variable	RR	LnREER	LnMB	LnGDP
Statistics of Augmented Dickey-Fuller at data level	-2.13	-1.35	1.50	-1.17
Statistics of Augmented Dickey-Fuller with once difference	*-3.95	*-7.26	*-7.00	*-6.62

MacKinnon critical values at 1, 5 and 10% are respectively -3.51, -2.89 and -2.58. Variables are static at the one percent in assurance level. Source: Eviews6 outputs based on author's calculations.

The optimal lag length for the America based on Akaike criteria (AIC), Hannan - Quinn (HQ) and the Final Prediction Error (FPE), has been selected 3.

TABLE III. THE RESULTS OF AUGMENTED DICKEY-FULLER UNIT ROOT TEST FOR LEVEL AND DIFFERENCE OF MODEL'S VARIABLES FOR ENGLAND

Variable	RR	LnREER	LnMB	LnGDP
Statistics of Augmented Dickey-Fuller at data level	-0.25	-1.93	0.13	-2.02
Statistics of Augmented Dickey-Fuller with once differentiation	*-8.20	*-6.29	*-5.11	*-3.53

MacKinnon critical values at 1, 5 and 10% are respectively -3.51, -2.89 and -2.58; \* Variables are static at the one percent in assurance level. Source: Eviews6 outputs based on author's calculations

The optimal lag length for the America based on Akaike criteria (AIC), Hannan - Quinn (HQ) and the Final Prediction Error (FPE), has been selected 5.

C. Johansen Cointegration test

Johansen Cointegration test with using of Maximum likelihood estimation's method enables the researcher to estimate the cointegration vectors as no static for time series. Johansen and Osterwald-Lenum suggested two Trace Test and Maximum Eigenvalue Test for determining the numbers of Cointegration vectors. There is one cointegration vector among the variables of model for America and England according to both the Trace Test and the Maximum Eigenvalue Test. In other words, there is a linear combination of the variables which stationary is one degree that stationary or accumulation is zero degree, without considering to false regression could estimate the regression at the level. The results of test are summarized in table 4 and 5. In these tables, r indicates the number of cointegration vectors and whenever the statistic of test is greater than the critical amount the null hypothesis is rejected at 5% level based on lacking of at least one cointegration relationship between model's variables at 5% level.

TABLE IV. TEST RESULT OF THE JOHANSEN COINTEGRATION FOR AMERICA

Maximum Eigenvalue Test		Trace Test		opposite hypothesis	null hypothesis
Critical values	test statistic	critical values	test statistic		
28.58808	56.22968	54.07904	91.07973	r>0	r=0
22.29962	23.48700	35.19275	34.85005	r>1	r=1
15.89210	6.270811	20.26184	11.36306	r>2	r=2
9.164546	5.092248	9.164546	5.092248	r>3	r=3

Source: Eviews6 output based on author's calculations

TABLE V. TEST RESULT OF THE JOHANSEN COINTEGRATION TEST FOR ENGLAND

Maximum Eigenvalue Test		Trace Test		opposite hypothesis	null hypothesis
Critical values	test statistic	critical values	test statistic		
32.11832	33.91594	63.87610	70.35549	r>0	r=0
25.82321	23.11184	42.91525	36.43955	r>1	r=1
19.38704	9.161811	25.87211	13.32771	r>2	r=2
12.51798	4.165902	12.51798	4.165902	r>3	r=3

Source: Eviews6 output based on author's calculations

D. Long-term and short-term coefficients after the estimation of the model in America

The long-term coefficients after the estimation of the model in America are as follows:

$$LnGDP = -1.24 + 0.53LnMB + 1.55LnREER - 0.01RR - 0.67D$$

t: [-4.24] [-2.87] [1.06] [4.71]

According to the t statistic, coefficient of monetary base is significant and is .053, which means that increasing of each one percentage in the monetary base caused to .53% unit increasing in GDP. According to t statistic the coefficient of the real effective exchange rate is significant and its amount is 1.55, which means that imposed exchange rate policies have positive impact on economic growth in long-term in America. Also, according to the t statistic, the coefficient of the real interest rate is negative but is not significant which means that reduction of interest rate does not have significant impact on economic growth in the long-term in America. The D Dummy variable has a numeric value -0.67 which is significant statistically that shows negative impacts of the 2008 financial crisis on real GDP of America. F-statistic is 7.34 that indicate the significance of the regression.

ECM or error correction coefficient in fact is the short-term coefficient of the model that shows adjustment speed towards long-term equilibrium. This coefficient shows that what part of imbalance in the dependent variable of previous period is corrected in the current period. It is expected that the sign of this coefficient is negative and its value may change from minus one to zero. ECM indicates the speed of error correction and tendency to long-term equilibrium. This coefficient estimated about -0.02 about America which shows that imposed expansionary monetary policies by Financial authorities of United States of America can be corrected only 2% of created imbalance about real GDP for America due to financial crisis 2008 or in other word, this coefficient shows that speed of the error correction and tendency to long-term equilibrium is only 2% that it is very small and it is because of incompetent of expansionary monetary policies in the short term.

E. Long-term and short-term coefficients after model's estimating in England

The long-term coefficients after model's estimation in England are as follows:

$$LnGDP = 0.53 + 0.47LnMB + 0.72LnREER - 0.01RR - 0.41D$$

t: [-7.93] [-6.17] [1.69] [7.72]

According to the t statistic, the coefficient of the monetary base is significant and its amount is 0.47 which means that increasing of every one percentage in the monetary base caused to increasing of 0.47 Percent in GDP. Based on t statistic the coefficient of the real effective exchange rate is significant and is about 0.72 which means that imposed exchange rate policies have positive impact on economic growth in the England in long-term. Also, according to the t statistic, the coefficient of the real interest rate is negative but is not significant which means that reduction of interest rate does not have significant impact on economic growth in long term in England. The amount of D Dummy variable is -0.41 which is significant statistically, that negative sign of it shows negative impact of the financial crisis 2008 on real GDP of England. The amount of F-statistic is 7.24, shows the significance of the regression.

Also, ECM or error correction coefficient was -0.06 in England that indicates there is only 6 % of created imbalance in the depended variables during previous period corrected in

current period. In other words, the imposed expansionary monetary policies can be corrected only 6% of created imbalances in real GDP of England because of financial crisis 2008 which is very small and indicates the inefficiency of the expansionary monetary policies in the short-term.

## V. CONCLUSION AND THE POLICIES RECOMMENDATIONS

### A. Conclusion

This paper examines the causes and origins of the 2008 financial crisis and the impact of the imposed expansionary monetary policies on GDP of United States of America and England during the financial crisis. In this study, is used of data for real GDP, real monetary base, real effective exchange rate, real interest rate and a dummy variable. Used model in this paper is the vector error correction model which is as time series. The results of model's estimation can be summarized in the following sections:

1. The negative and significant impact of 2008 financial crisis on the GDP of these countries in the long-term;

2. The effectiveness exchange rate policies is more than monetary policies on the GDP for countries in the long-term;

3. Not significant of real interest rates coefficient in both countries; and

4. Very small amount ,maximum -6% for the ECM or error correction coefficient which indicates incompetent of expansionary monetary policies in the short term that this result cannot be verified the perspectives of monetarism who believe that formation of expectations are as comparatively and considered significant role for monetary policies in the short-term. So can say that the result of this study can be as verification on perspective of New classical, that they believe that with considering the formation of expectations as rationally, monetary policies do not have any effect on production and other real variables not only in the long term, but also in the short-term. Based on the opinions of this group, only the unanticipated monetary policies effect on production level and other real variables in the short term.

### B. Policies Recommendations

In the two past decades, we could see the financial crisis in different countries. Wide conjunction of capital markets in the world reduces constraints and difficulties arising from lacking of funds about nationally level. But this financial system as well as speeds the entrance of capital, at the time of risk happening and the first signs of the declining of securities' value leads to fast exiting of funds and may have chain danger and sudden dropping of valuable index in the world stock markets. According to lack of effectiveness of the monetary policies can offer the following suggestions:

1. Need to overview, more effective and more efficient supervision on financial markets;

2. Realization of this matter that the boom power of market's mechanism is gradually but its destructive power is in a moment. So this requires a comprehensive plan or a suitable position for controlling it;

3. Designing a timely warning system till could adopt necessary measures to deal with it when the first signs of the financial crisis appeared; and

4. With increasing of countries like China, India and Brazil in the global economy, review on Bretton woods financial system should be consider.

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