

Impact of the Monetary Policy on the UAE Economic Growth (Post Financial Crises)

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The monetary policy plays an act role in a country's economic growth if it is implemented effectively to maintain price stability and to keep inflation rate at minimum level. Such goals are achieved through a process by which monetary authority of a country controls the supply of money, availability of money, and cost of money or interest rate. Monetary policy is directly associated with the changes in the economy. Thus, the primary objective of the United Arab Emirates (UAE) is promoting the economic growth through its tools, i.e., interest rate, inflation, and money supply to stabilize the appealing economic condition level within the country. The main focus of the paper is to investigate the role of monetary policy in the UAE for the last 10 years on the economic growth of the country. So, a descriptive analysis of the influences of the monetary policy on the Gross Domestic Product (GDP) has been carried out to measure the correlation between them. The data have been obtained from different sources. Information on the Gross Domestic Product and money supply were extracted from the Globe Development Indicators Information (2018). Whereas, the information on the interest rates and inflation are obtained from the official web site of the UAE Central Bank. The analysis outcomes reveal that there is a positive correlation between money supply and the economic growth in the UAE, but it was insignificant. So, there is insufficient evidence supporting this relationship. Also, it has been found that if money supply changes, the interest rate will not change tangibly to enhance the investment, and thus, the economic growth in the country since the monetary policy in the UAE is not totally independent. However, the analysis outcomes showed inverse impact of the interest rate on the GDP with significant evidence. The same insignificant result has been found on the impact of the inflation rates on the GDP. Therefore, the impact of monetary policy on the economic growth was insignificant except for the interest rates.

Keywords: money supply, monetary policy, interest rates, inflation, GDP, monetary authority, central bank

Introduction

Monetary policy impacts the money supply in an economy, which impacts interest rates and the inflation rate. The financial arrangement assumes a demonstration job in a nation's monetary development on the off chance that it is executed successfully to keep up value steadiness and to keep inflation rate at least dimension.

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Such objectives are accomplished through a procedure by which fiscal expert of a nation controls the supply of money, accessibility of cash, and cost of cash or loan cost. Financial strategy relies upon the connection between interest rate in an economy (for example the cost of cash at which cash can be acquired) and the absolute cash supply. Money related expert uses assortment of apparatuses to control either of these factors to impact results, for example, monetary development, expansion, conversion scale with different nations and unemployment.

Monetary policy is a part of the macroeconomic policies that formulated to control the money supply changes of the country parallel with the growth of the Gross Domestic Product (GDP). It associates potent instruments to control the major economic variables, for example, the inflation and interest rates. The monetary authority of the country maintains a stable economic and financial equilibrium via implementing an effective monetary policy tools. There are lots of monetary tools which might be employed by the central bank to achieve the key objectives of the monetary policy. The open market operation, discount rate, and reserve ratios are considered as a key policy tools to maintain the stability within the economy. These tools do not have an immediate influence on the pre-determined monetary policy objectives. However, there is a time lag for the tools to be effective. Actually, the basic objectives of the monetary policy are often fulfilled with the coordination and consistency of the other macroeconomics policy instruments that act as an intermediate target (Bowman, Londono, & Sapriza, 2015).

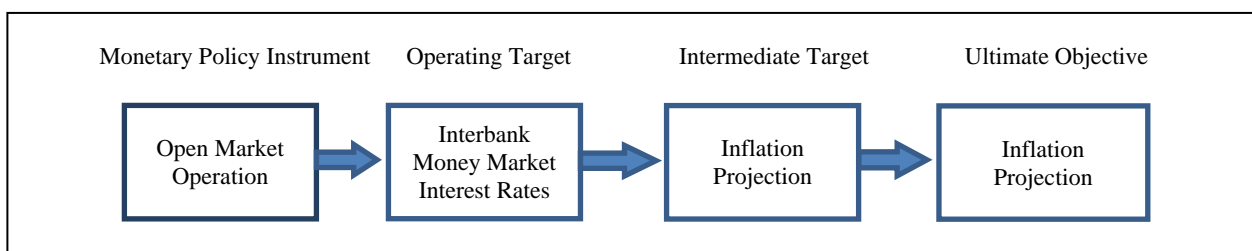


Figure 1. Effective monetary policy tools.

The prime job of a country monetary policy as we mentioned before, is managing the money supply to stabilize the economic condition with various policy tools. Before extending the monetary policy impact analysis on the UAE Gross Domestic Product, the researcher would like to outline the most tools that are used by the central banks globally. The open market operation through buying and selling securities is based on the economics condition. So, the government securities like treasury bills, bonds are bought and sold to manage the money supply in the economy by controlling banks reserves. Therefore, if the monetary authority of United Arab Emirates (UAE) intends to expand the money supply because of an economic recession, it will conduct an open market purchase operation. Thus, the central bank purchases government securities from the state banks that ultimately will increase the reserve and loanable funds within the economy. On the contrary, if the economy is experiencing inflationary phenomenon, the monetary authority will carry out an open market sale operation to decrease the reserve, and loanable funds. So, the central bank will sell the government securities to the state banks that will dampen the money supply within the economy (Spilimbergo, Mishra, Montiel, & Pedroni, 2014).

The discount rate is a monetary policy tool that is employed by the central bank to sustain an appropriate funds level. It is often based on the monetary authority willingness to discount banks loans once they run out of liquidity along with the increase in the money demand in the country. This rate is relatively lower than the market prevailing interest rates. If the objective of the UAE monetary authorities is to decrease the money in circulation

within the economy, then they will increase the discount rates that discourage funds injections. If the aim is to extend the money supply within the economy, then they'll decrease the discount rates that play a key role in funds growth (Rey, 2015).

Reserve requirement ratio is another important tool in monetary policy. It is a mandatory central bank regulation for every commercial bank to keep some percentage of their deposits into reserves. If the central bank goal is to boost the money supply growth in the economy, then the reserves ratio will decrease. The ratio of the reserve requirement will increase, if the objective is to dampen the money supply in the economy. In sum up, these three tools play a key role in the expansion of financial institutions loanable funds, smoothness of business cycles, suitable modification between demand and supply of money, and appropriate interest rate arrangement. In addition, they have a significant importance in achieving the United Arab Emirates monetary policy objectives (Kamin, Ammer, De Pooter, & Erceg, 2016).

Review Literature

In this section, the researcher summarized some prominent studies to get a roadmap or directions from past researches. The connection between monetary policy and economic growth has been a widely discussed topic during the last couple of decades. Many researchers and economists wrote papers on the consequences of expansionary and contractionary policies influences on Gross Domestic Product of the economy.

Monetary policy is a mechanism in which the central bank of the country controls money supply, inflation, interest rate, and availability of money for the purpose of achieving pre-determined objectives of economic growth, high Gross Domestic Product, and low unemployment in the economy (Jarocinski & Karadi, 2018). The monetary authority of the country has some exclusive instruments or tools which can influence the major macroeconomic variables of the economy like GDP, economic growth, and employment level (Furceri, Loungani, & Zdzienicka, 2018).

A seminal contribution is made by Schonfeld et al. (2017) which state that price stability in an economy plays a key role in the formation of an attractive environment for commercially sustainable activities. This stability of prices can only be achieved with an appropriate monetary policy of the central bank of the country. Additionally, it will maximize the Gross Domestic Product of the country, stable interest rate, sustainable economic development, and full employment level (Modugno, Aikman, Lenhart, & Liang, 2017).

Another comprehensive study related to the impacts of monetary policy on the Gross Domestic Product of the economy is conducted by Mahmood, Waheed, and Khalid (2017). The prime aim of their study is to assess the long-term association between the understudy variables for Pakistan economy covering the period from 1983 to 2013. The empirical analysis concluded that there is a significant and positive relationship between money supply (M2) and Gross Domestic Product (GDP) of the Pakistan economy. Moreover, they find that the GDP is negatively associated with the interest rate of State Bank of Pakistan because the increase in interest rate will lower the investment which ultimately lowers down the GDP of the country.

Mehra (2017) studies the monetary policy transmission mechanism with the perspective of developing and developed countries. The fundamental objective of his research is to assess the effectiveness of the monetary policy in terms of major macroeconomic variables including inflation rate, foreign exchange rate, and economic growth. The study concluded that India, China, and USA economies are displaying different characteristics. That is why the effectiveness of monetary policy varies from country to country and a particular monetary policy instrument is not effective across all the understudy economies.

Similarly, Bianchi and Ilut (2017) stated that there is a bulk of readings available proposing that there should be some policy coordination between the fiscal and monetary policy of an economy. The motives behind this prerequisite coordination include that monetary policy can manage the money market of an economy in optimal way. While, fiscal policy can stabilize the goods market in a better way. If policymaker uses some kind of policy mix, as being used in a plenty of developed countries, then a sustainable economic growth can be observed in the economy. Additionally, the empirical studies are suggesting that monetary policy should be by rule rather than discretionary neither expansionary. The Central Bank of UAE should also formulate the monetary policy on some rules, for example, constant money supply growth rule, inflation rate targeting, and interest rate targeting etc. (Naumenkova, Malyutin, & Mishchenko, 2015).

A prominent study in this regard is conducted by Mamo (2012) which is based on the panel data analysis to examine the monetary policy impacts on inflation and economic growth of the understudy countries. He applied a fixed effect model along with the Granger causality test and concluded that inflation is negatively linked with economic growth and puts an adverse effect on the economy. Likewise, Chaturvedi, Kumar, and Dholakia (2009) examined the bilateral relation between economic growth and inflation over the time period of 1970 to 2005. They also applied panel data analysis and covered 140 countries where results state that inflations are very harmful to the growth of the country.

Controlling monetary policy such as managing money supply and adjusting interest rate is one of ways to influence economic output. This principle has been supported by a substantial theoretical literature. According to IS-LM model, monetary policy can be used to influence national output through increasing money supply in order to lower interest rate which, in turn, encourages investors to increase the investment with low-cost funds available for lending. Deriving from IS-LM model, but referring to open economic system, Mundell-Fleming model also stated similar ideas related to the relationship between money supply and economic growth. The model explained that an increase in money supply could lower local interest rate compared to global interest rate. As a result, firms could increase their production through available loan with low interest rate (Mankiw, 2010).

According to Fisher (2008), given velocity and price constant, money supply is considered to have a positive relationship with aggregate output. He laid out this modern quantity theory of money (monetarism) in terms of equation of exchange which states that $MV = PT$, where M equals to stock of money; V is velocity of money; P is price level; and T is the total volume of transactions (total output).

Above all studies are suggesting that there is a strong correlation between monetary policy and economic growth of the country. On the basis of this literature review, the researcher made an empirical study to examine whether the monetary policy of the UAE central bank is supporting or negating these studies of other countries.

Monetary Policy of UAE

The monetary policy is conducted by the central banks to manage the money supply in associate with the stability of the economy along with some pre-determined objectives. The monetary authority of the United Arab Emirates is engaged on the macroeconomic policies and formulates tools associated with the money market. The prime objectives of the UAE monetary system are to: maintain the purchase power of the currency, economic growth, and economic stability. Therefore, the stability of the United Arab Emirates dirham, flow of credit to the productive sectors of the economy is to encourage and promote economic activities in the UAE. The secondary objectives of the UAE financial institutions include: maintaining its internal and external stability on exchanging UAE dirham into other foreign currencies, potent credit policy for reinforcing economic activities, supporting

UAE government in the financial and monetary issues, and maintaining the exchange and gold reserves.

Goals of the United Arab Emirates central bank are based on the dual mandate which includes the achievement of full employment level and the stability of the inflation rate, i.e., general price level. The mechanism of monetary policy looks simple, but it is complex in reality, because of its bulk of transmission channels. Based on, every action of the central bank to achieve its objectives attached with some costs and benefits, for example, a decrease in the interest rate might boost the investment, but the cost could be the reduction of savings (Xiao, Wang, Whited, & Wu, 2017). The following flowchart is summarizing the mechanism of monetary policy.

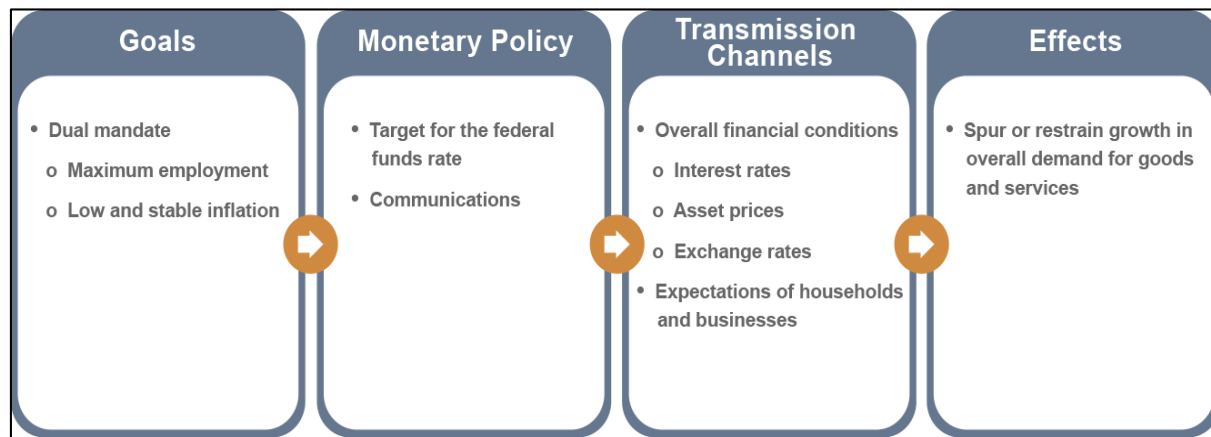


Figure 2. Mechanism of monetary policy.

The Central Bank of UAE was founded in 1973 to supervise the money market of the country and conduct the monetary policy. Initially, it was the Currency Board of UAE which have very limited authority. The central bank started working with the full authorisation of issuing and managing currency of the UAE on 10th Dec. 1980. An overall worth of 13 million dinars and 130 million riyals were exchanged by the monetary authority to UAE dirham 260 million. Since then, the central bank is using an active monetary policy to boost the economic growth process of the country with minimum business cycle fluctuations. The bank is working to control the inflation, generating high employment, and sustaining economic growth of the country. The monetary policy is a strategic weapon which central bank uses to accomplish a higher living standards of the UAE people.

According to the Liquidity Preference Theory of John Keynes, changes in the money supply are directly associated with the interest rate (Spilimbergo et al., 2014). So whenever UAE central bank manipulates the quantity of money supply, it directly affects the rate of interest. In simple words, the rate of interest is a tool on which the central bank monetary policy is based. Because, this interest rate is negatively associated with the foreign direct investment in the UAE. As far as the exchange rate of the UAE is concerned, the central bank is using a conventional peg system where the US dollar is recognized as an exchange rate anchor. Thus, the UAE currency is pegged against US dollar with fixed rate regime at the peg rate of one US dollar which is equal to 3.67 dirhams.

If we examine the last 10 years performance of UAE Central Bank, the interest rate was 1.33 percent on average during the period from 2007 to 2018. The peak point of the interest rate was 4.75 percent in November 2007, while the lowest point was one percent in January 2009. According to the latest monetary policy

announcement on 27th Sep. 2018 by UAE Central Bank, the interest rate is boosted up by the authority by 25 bps which stand at 2.5 percent. This decision is taken by the UAE Central Bank after following the decision of United States of America Federal Reserve of 25 bps hike in interest rates. In addition, the certificates of deposit rate also increased by 25 bps by the Central Bank of UAE. The following chart is explicitly summarizing the last decade trends of the UAE interest rate.

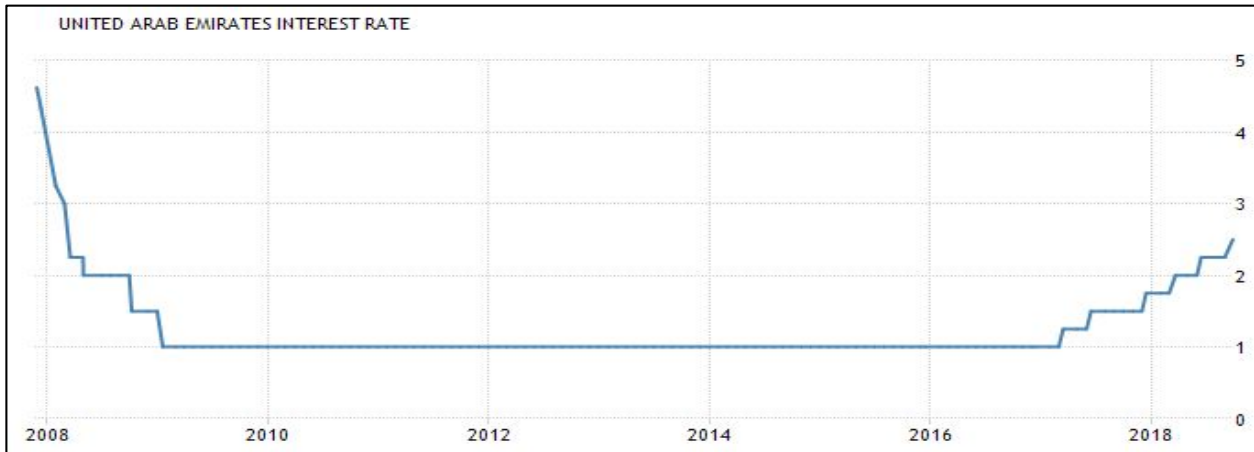


Figure 3. The central bank’s rate of interest in UAE from 2008 to 2018. Source: Central Bank of UAE.

Monetary Policy Theory

Economics is the only science where two different views are getting the Nobel Prize on conflicting arguments. So, every economics theory or model has different types of interpretation and implications. For example, the Classical School view is claiming that markets are always in equilibrium; so there is no need for the active use of monetary or fiscal policies. On the other hand, Keynesian School notion is postulating that market disequilibrium is possible in the short run. So, an active monetary or fiscal policy should be implemented to smooth out these swings. While, the Monetarist School is claiming that all types of fluctuations in the economy are due to the passive monetary policies. Thus, the central bank should use the monetary policy tools to fulfill the economic policy objectives.

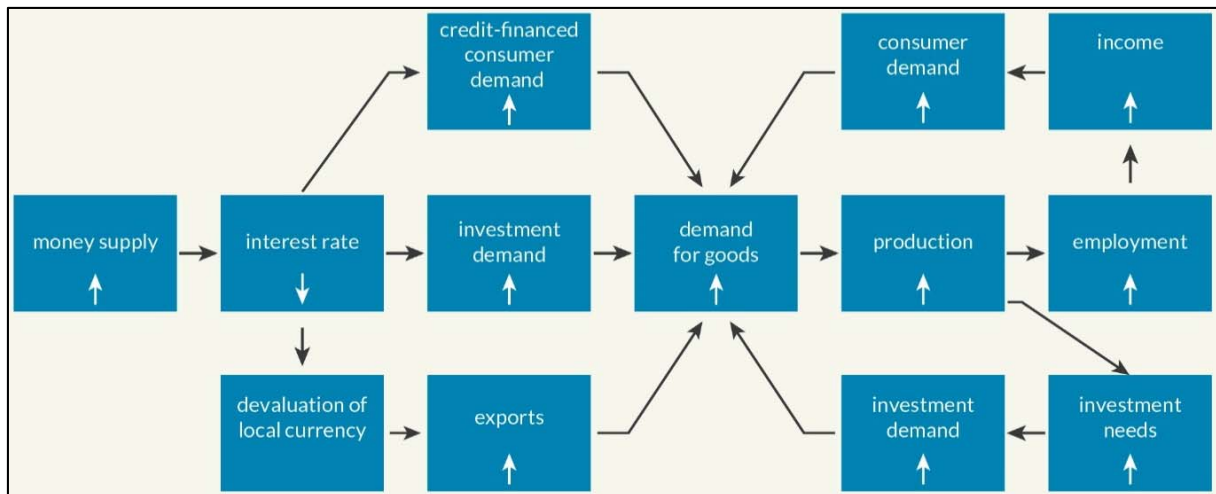


Figure 4. Growth boosting effects of monetary policy (Author’s own diagram).

So, each school has different views on the use of the monetary policy and its impact on the economic growth. As shown in the above chart, when money supply increases, interest rates will decrease to boost investment and then the economic growth. However, the monetarist school of economics states that an increase in the money supply leads to a higher inflation rates. Therefore, it will prohibit the economic growth process since the household purchasing power will be shrunk. Thus, it leads to the reduction in the private consumption which is an important part of the Gross Domestic Product. So, we can conclude that there was an economic controversy on the impact of monetary policy on the economic growth.

Scope of Study

The researcher has gone through a number of literature reviews to examine the impact of the monetary policy on the Gross Domestic Product. However, the researcher has mentioned few reviews of literature which are closely associated with the research topic. This study explored the correlation between economic growth and monetary policy of the UAE Central Bank via various variables, as an example, interest rates, money supply, and inflation rates. The monetary policy has also indirect impacts on the household decision of liquidity preference as a result of changing the interest rates. Thus, monetary authority should anticipate the percentage that household will hold as a cash in hand. So, financial institution's policy changes will have an effect on the entire economy via different financial policy transmission channels. In addition, the outcomes of the study investigate the monetary policy tools impact on the economic variables to the extent of evaluating its effectiveness and solidarity.

Research Objectives

Literature reviews showed that the monetary policy of central banks plays a key role on the fluctuations in the economy significantly within the money market. The basic objective of this paper is to explore the effectiveness of United Arab Emirates' Monetary Authority's Monetary Policy and the impact of the monetary policy on the Gross Domestic Product in UAE for the last decade.

Hypothesis

Hypothesis is an educated guess. Based on the reviews of related studies and his own experience in research, the researcher framed the following null hypothesis for the study.

H_0 : There is an insignificant correlation among the GDP, money supply, inflation and interest rates of United Arab Emirates.

Research Methodology

The research methodology of the study is based on quantitative on descriptive data analysis that is divided into two categories: (1) Graphical Analysis, and (2) Econometrical Analysis. The research methodology is explicitly defined in the following chart. It starts with the problem statement and ends with the policy recommendation going through secondary data roadmap. In this study the researcher has identified four main variables such as Gross Domestic Product, inflation, interest rates, and money supply. Gross Domestic Product is the dependent variable while others are independent variables. The descriptions of the variables are presented in this paper.

The most significant part of any research is the genuineness of the data source. The integrity and reliability of the empirical research results depend on the valid data sources. The study is based on four focal variables

includes GDP, money supply, inflation, and interest rates. Data on GDP and money supply are retrieved from the World Development Indicators Database (2018) while data on the interest rates and inflation are obtained from the official website of Central Bank of United Arab Emirates. This study is based on the time series data which cover the time period from 2007 to 2017.

Gross Domestic Product

All finally made products and services at market price throughout a mere amount of one-year time period inside the territories of an economy considered as Gross Domestic Product (GDP). This concept was born since the book of John Maynard Keynes in 1930 was delineated the GDP into four major classes together with consumption, investment, government expenditure, and net exports. It's a technique of expressing the value of an economy and conjointly the variable of the study model. The following chart shows the historical trends of the GDP in United Arab during the period 1980-2016.

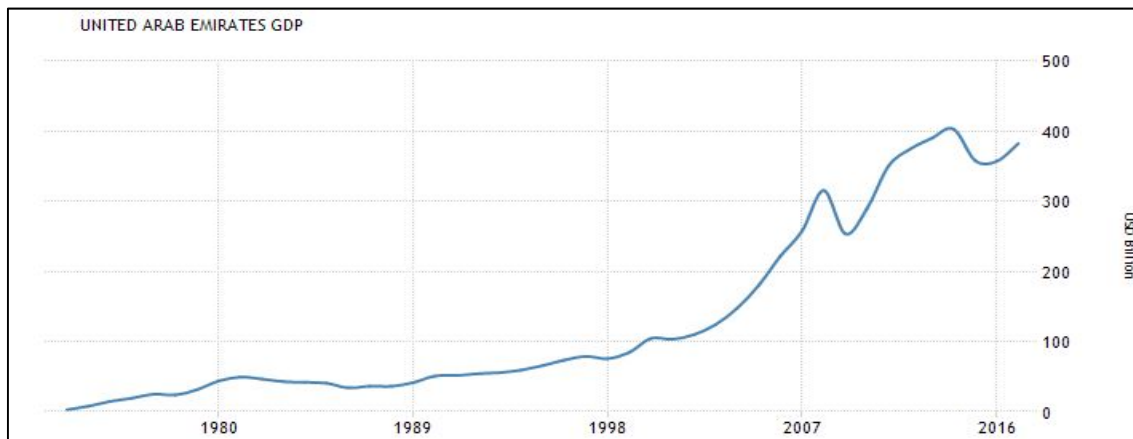


Figure 5. The gross domestic product of UAE from 1980 to 2016. Source: World Bank Database (2018).

Money Supply

Money supply means the quantity of money circulating in an economy during a given time period. This money supply includes money in circulation, current and demand accounts, liquid assets, traveler checks, savings accounts, and retirement accounts etc. Three types of money which are being practiced are M1, M2, and M3. In this study the researcher gave definitions for the three different types of money. M1 is defined as the “transactions money” or liquid assets. Currency in circulation and traveler’s cheques are liquid assets. M2 is defined as liquid assets that is M1 plus money available in the savings account. M3 is broader than liquid assets which includes M1, M2, retirement accounts, and other assets that are difficult to convert to cash. In this study, the researcher used M2 definitions of the money supply, M1 plus savings accounts, which is also known as a broader measure.

Interest Rate

Interest rate is the cost of borrowing or required rate of return. This rate is strongly associated with the economic growth of a country because of the negative relationship with investment. So, whenever interest rates increase, investment will decrease which ultimately leads to the reduction in the Gross Domestic Product and economic growth rate. This percentage is set by the central bank of the country to influence the evolution of monetary variables, for example, credit expansion, inflation rate, exchange rate etc. The following chart is presenting the historical trends of the Central Bank of the UAE interest rate.



Figure 6. The long-term trends in the money supply (M2) of the Central Bank of UAE. Source: Central Bank of the United Arab Emirates (2018).

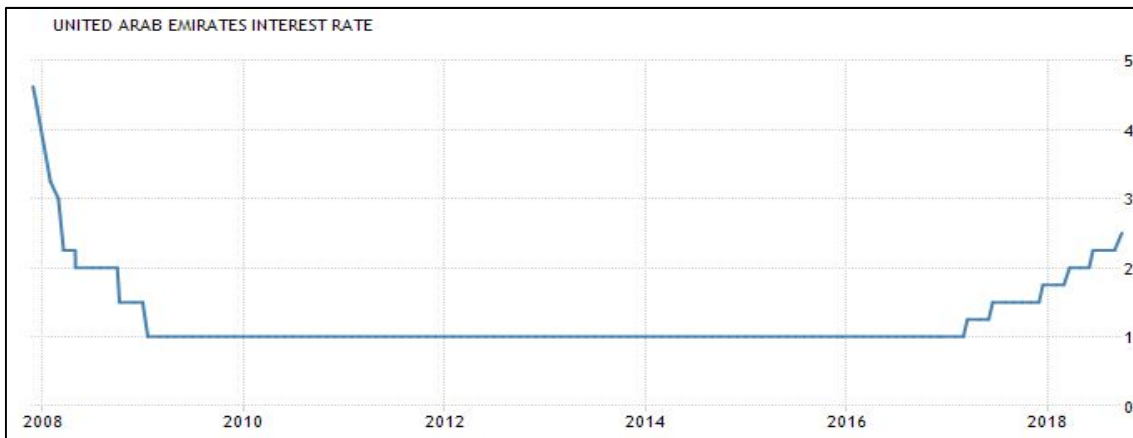


Figure 7. The interest rate of the UAE Central Bank. Source: Central Bank of UAE (2018).

Inflation

Inflation rate is the cost of living or the general level of price index. This rate of inflation has been calculated based on the consumer price index prepared by the central bureau of statistics in the UAE. The following chart is presenting the historical trends of the Central Bank of the UAE inflation rate.

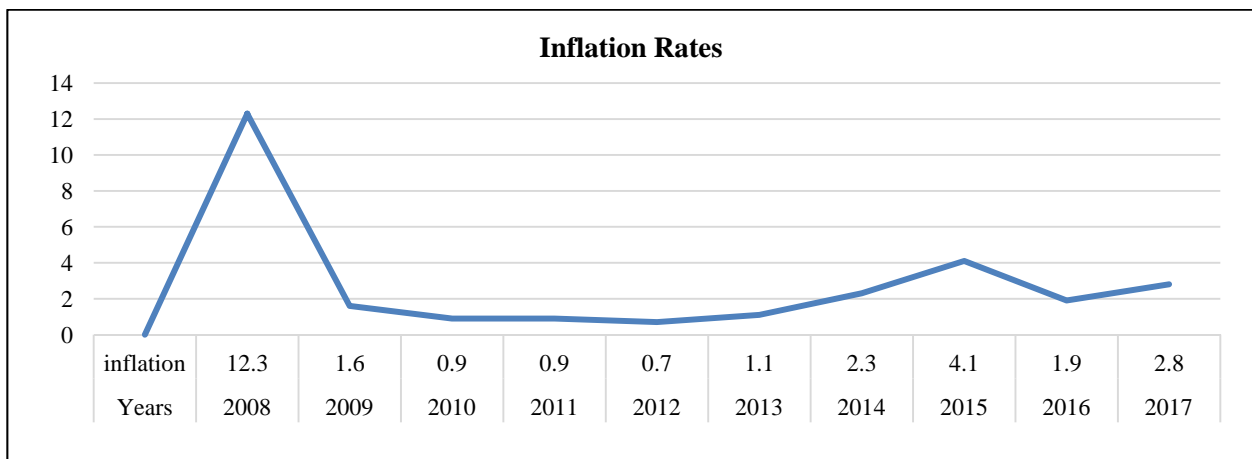


Figure 8. The inflation rate of the Central Bank of UAE from 2008 to 2017. Source: Central Bank of UAE (2018).

Results and Discussion

As stated in the introduction section, the analysis is divided into two segments: (1) Graphical Analysis, and (2) Statistical Analysis. In the graphical analysis, one visualizes the data series used in this study. While in the statistical analysis, the researcher employed an empirical test on the basis of SPSS software.

Graphical Analysis

Graphical analysis is an effective instrument to forecast the behavior of the relationships between dependent and independent variables. It is a visual display of data analysis with the help of using charts and plots which assist the readers to obtain a quick attention of the whole progress. The following charts are showing the trends of the variables used in this data covering the time period of 2008 to 2017.

Figure 13 shows the comparison of fluctuations between GDP and money supply of the United Arab Emirates from 2007 to 2017. The blue line is showing the movement of Gross Domestic Product while the red line is showing the changes in the money supply of the country. Obviously, there is a direct positive correlation between both variables. So, the Gross Domestic Product of the United Arab Emirates increased with the increase of money supply during the last decade. An important thing to mention here is that the graphical analysis provides only an overview trend or guess but not the true quantitative value. In order to get a quantitative evidence, we need to apply some statistical techniques on the collected data which will do next of this monograph.

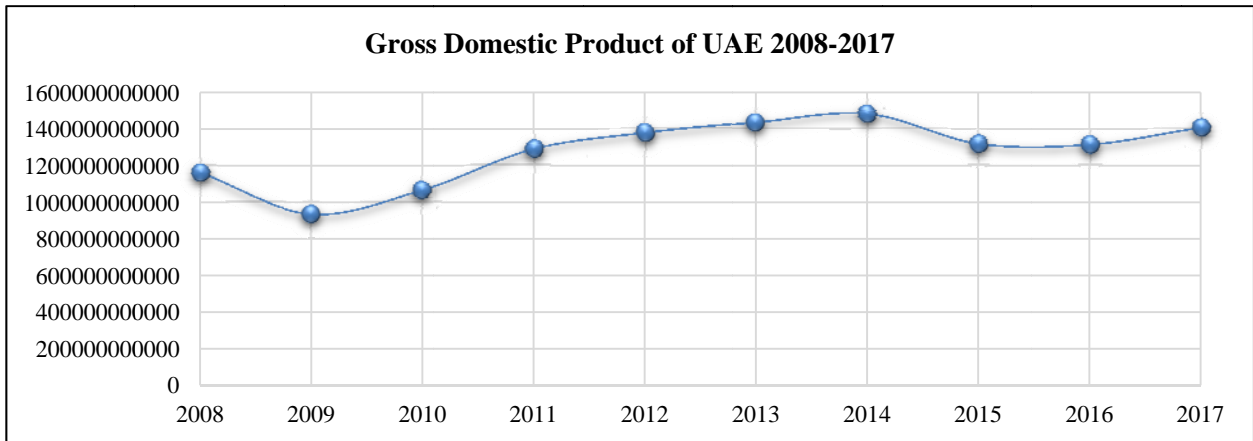


Figure 9. The Gross Domestic product of UAE from 2008-2017.

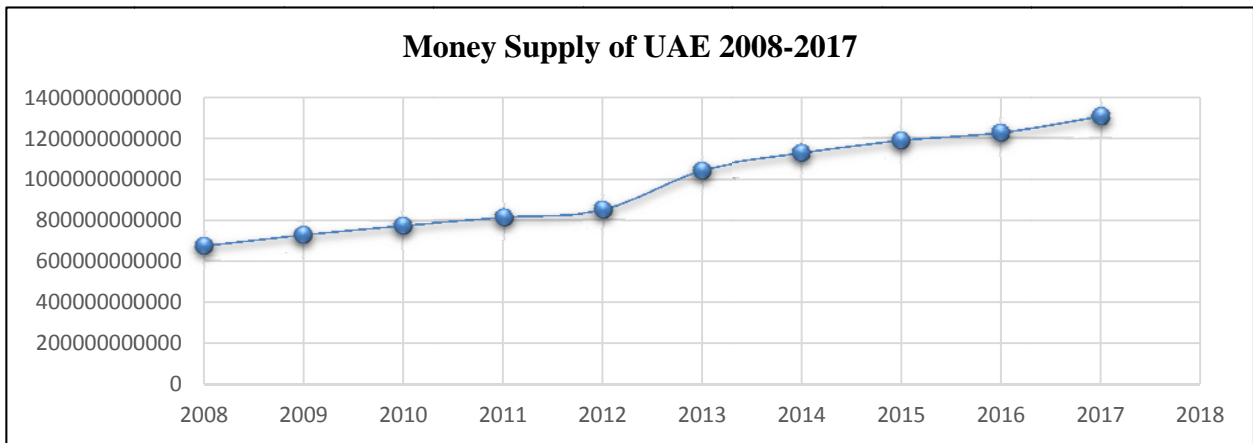


Figure 10. The money supply of UAE from 2008-2017.

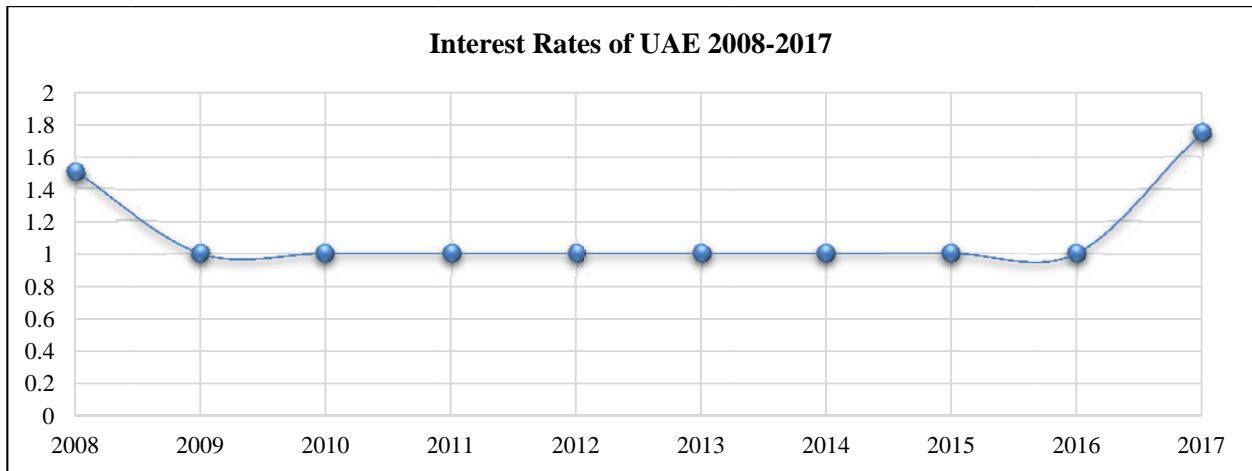


Figure 11. The interest rates of UAE from 2008-2017.

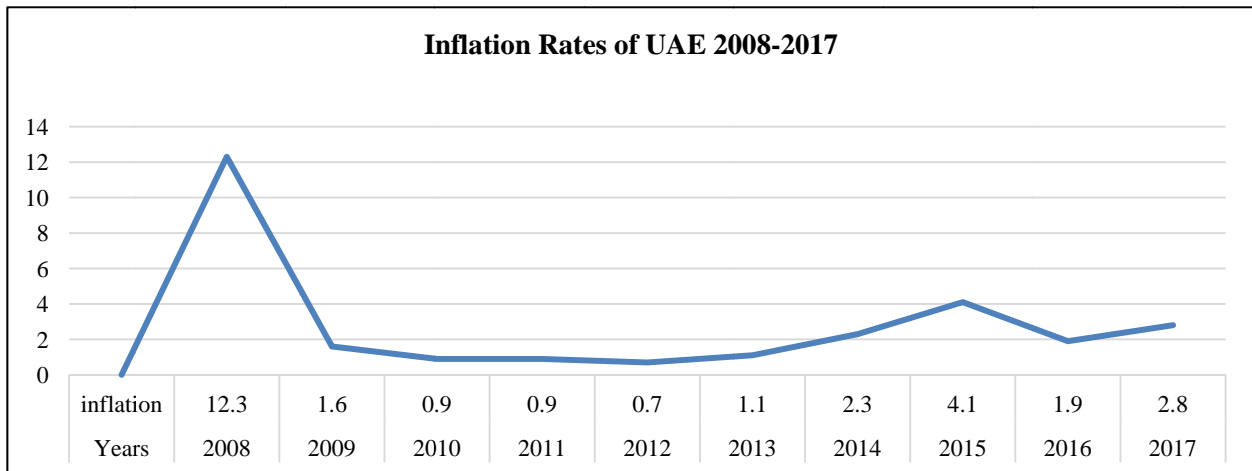


Figure 12. The inflation rates of UAE from 2008-2017.

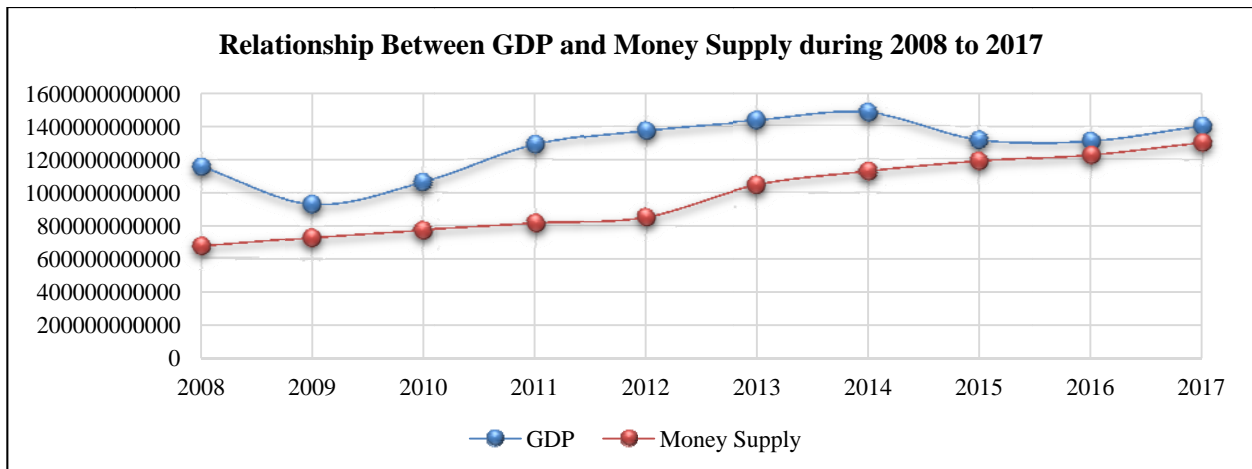


Figure 13. The relationship between GDP and money supply from 2008-2017.

Regression Analysis

This section deals with the empirical analysis of time series data on the four variables for period 2008 to

2017. The prime objective is to examine the impacts of the UAE central monetary policy on the economic growth during the last decade. Regression analysis is a convenient way to explore the relationship between dependent variables and independent variables. In simple words, regression means the responsiveness to change in the dependent variable to the changes in one or group of other independent variables. In this study, as mentioned earlier, the dependent variable is Gross Domestic Product of UAE while interest rates, inflation, and money supply are independent variables. The following equation was formulated as a model of the regression analysis,

$$GDP_t = \alpha + \beta Money Supply_t + \beta_1 Interest Rate_t + \beta_2 Inflation Rate_t + \varepsilon_t \text{ -----}$$

where alpha is representing the intercept of regression while beta is describing the slopes of the regression. In simple words, beta is representing the response in the dependent variable due to the changes in the money supply, inflation, and interest rate respectively.

We estimated the regression with the help of Ordinary Least Squares (OLS) method via using SPSS software. The empirical results and interpretations are presented below.

Model Summary

We estimated the model items with the help of Ordinary Least Squares (OLS) method where GDP is dependent, while interest rate, inflation, and money supply are independent variables. The data were checked also through GARCH model, i.e., GARCH-in-mean; we get the same result. The summary of the estimated model is presented below:

Table 1

The Regression Statistics of the Selected Variables

Summary output							
Regression statistics							
Multiple R 0.907909724							
R Square 0.824300067							
Adjusted R Square 0.7364501							
Standard error 89480513358							
Observations	10						
ANOVA							
	df	SS	MS	F	Significance F		
Regression	3	2.25383E+23	7.51E+22	9.383044	0.011053426		
Residual	6	4.80406E+22	8.01E+21				
Total	9	2.73424E+23					
	Coefficients	Standard error	T Stat	P-Value	Lower 95%	Upper 95%	Upper 95.0%
Intercept	1.79331E+12	3.30622E+11	5.424052	0.001627	9.84307E+11	2.602E+12	2.602E+12
Money supply	0.064229285	0.189129279	0.339605	0.745726	-0.39855339	0.527012	0.527012
Interest rate	3.45906E+11	1.00585E+11	-3.43896	0.013818	-5.92028E+11	-9.98E+10	-9.98E+10
Inflation	28370456565	12020075680	2.360256	0.056264	-1041609068	5.778E+10	5.778E+10

The R of the estimated model tells us the strength of the relationship among variables. In our model, R is 0.91 which means that the strength of the relationship among understudy variables is strong. The R-squared refers to the strength influence of the independent variables together on the dependent variables, also known as the coefficient of determination. The estimation of the model states that the coefficient of determination is 0.82 which means the model is 82 percent strength fit. In other words, it is stating that 82 percent of the changes in

GDP is explained by the independent variables, while 18 percent went to the other factors, for example: foreign direct investment, consumptions, and net exports etc.

Furthermore, we applied the Durbin Watson test on the model to check the problem of autocorrelation, which is a test to examine the correlations between residuals of the estimated regression model. The results of the Durbin Watson Test are presented below:

Table 2

The Durbin Watson Test Results

Residuals	Residual Square	Residuals	1st Lag	Difference	Difference Squared
0.02439623	0.000595176	0.0243962			
-0.08318114	0.006919101	-0.0831811	0.0243962	-0.107577	0.011572889
-0.03654587	0.0013356	-0.0365459	-0.083181	0.0466353	0.002174848
0.037003215	0.001369238	0.0370032	-0.036546	0.0735491	0.005409467
0.057458071	0.00330143	0.0574581	0.0370032	0.0204549	0.000418401
0.036761189	0.001351385	0.0367612	0.0574581	-0.020697	0.000428361
0.03678803	0.001353359	0.036788	0.0367612	2.684E-05	7.20457E-10
-0.02455025	0.000602715	-0.0245503	0.036788	-0.061338	0.003762385
-0.03186533	0.001015399	-0.0318653	-0.02455	-0.007315	5.35103E-05
-0.01626415	0.000264523	-0.0162642	-0.031865	0.0156012	0.000243397
Sum	0.018107926				0.02406326

Table 3

The Durbin-Watson Test of Autocorrelation

Durbin-Watson Test of Autocorrelation	
Sum of squared difference of residuals	0.024063
Sum of squared residuals	0.018108
DW statistics	1.32888

The value of Durbin Watson statistics is 1.33 which is less than the 2 (rule of thumb) so there is an autocorrelation in the estimated model.

Table 4

Coefficients of Regression and Their Interpretations

Variable name	Coefficient	Standard error	T-statistics	P-value
Intercept	1.79E+12	3.31E+11	5.424	0.0016
Money supply	0.062	0.189129	0.339	0.745
Interest rate	-3.45E+11	1.0058E+11	-3.438	0.013
Inflation rate	28370456565	12020075680	2.3602	0.06

If we use the information of the table in the estimation of the regression equations which defined earlier, where the coefficient column is representing the values of alpha beta and gamma, these results can be represented with the help of equation as below:

$$GDP_t = 0.00000000000179 + 0.06422 M2_t - 0.00000000000345 Interest_t + 28370456565 It$$

Alpha, which is also known as the intercept of the model, is equal to 0.00000000000179. It means that the Gross Domestic Product of the United Arab Emirates (UAE) is equal to 0.00000000000179 on average if all the independent variables are equal to zero. This result is significant since the P-value is small 0.001. As

well, beta means the change in the GDP due to the change in the money supply of the UAE. Numerically, if the Central Bank of UAE changes the money supply by one unit then GDP of the UAE will change by 0.06 percent. But, this result is insignificant since the *P*-value is 0.7. Furthermore, the change in GDP due to the change in the interest rate by the UAE central bank was inverse. So, if the central bank of UAE changes the interest rate by 1 basis point then the GDP of the UAE will decrease by -0.0000000034 percent. The result for the interest rates impact on the GDP seems significant since the *P*-value is 0.01. So, there is an evidence of the interest rate impact on the GDP in the UAE. Also, the inflation rate has a positive impact on the change of the GDP but it was insignificant with *P*-value 0.06. Thus, interest rate tool of monetary policy impact on the UAE GDP is justifying the economic theories presented in the introduction and literature review section since the result was significant.

Model Fit Summary

There are plenty of factors that contribute key roles in the diagnostic testing of the estimated model. These factors include R-Squared, Adjusted R-Squared, and Durbin Watson statistics of the model, as shown in the below table. Overall outcomes of the model are satisfactory. In addition, there will be no autocorrelation problem in the estimated model if we take first log of the variables because after taking log it is showing movement towards two which means no autocorrelation.

Table 5

Coefficient of Estimation and Adjusted Coefficient of Estimation

R	R-square	Adjusted R square	Durbin Watson statistics
0.91	0.82	0.74	2.00

F-Test

F-Test is using to check the overall significance of the model. It can be calculated with the help of following formula; k is a number of parameters while n is sample size.

$$F = \frac{\text{explained variation}/(k-1)}{\text{unexplained variation}/(n-k)}$$

$$F = \frac{R^2/(k-1)}{(1-R^2)/(n-k)}$$

F-Statistics = 9.38

P-Value = 0.011

As *P*-value is less than 5% level of significance we conclude that the overall model is significant with regard to the relationships between independent and dependent variables.

T-Statistics

The t-statistics of the model is shown in the following table.

From the table above, we can conclude that the result of the intercept is significant for all variables except for money supply since *T*-value is more than 2 (rule of thumb). The outcome for money supply was insignificant since *T*-value was less than 2. Thus, there is insufficient evidence of the impact of changes in the money supply on the UAE GDP.

Table 6

T-Statistics for Model Variables

Variable name	T-statistics
Intercept	5.42
Money supply	0.33
Interest rate	-3.43
Inflation rate	2.360

Conclusion

In this paper, we have examined the effectiveness of the monetary policy of the United Arab Emirates for the last 10 years. The elemental objective of it absolutely was to explore the effectiveness of the of the monetary policy impacts on the Gross Domestic Product of the UAE. The analysis was split into two segments: (1) Graphical Analysis and (2) Econometrical Analysis. Within the graphical analysis, we analyze the information series data utilized in this study variables. Whereas within the econometrical analysis, we test a model between dependent and independent variables by a statistical software. Information on Gross Domestic Product is obtained from the Globe Development Indicators Information (2018) whereas data on the interest rates are concluded from the official web site of the central bank of the United Arab Emirates. The paper studies the relationships between the variables during the period 2007-2017.

The outcomes stated that there is a strong correlation between money supply and economic growth in the UAE. So, if money supply increases, interest rate will decrease; then the investment sector will be boosted. Therefore, it will increase the economic growth in the UAE. However, the interest rate impact on the UAE GDP was significant as a result of low *P*-value, whereas the result for money supply and inflation were insignificant. Thus, the results signify that the financial institutions of the UAE have to take into consideration this insignificant linkage between money supply growth and inflation rates with the GDP. Therefore, an appropriate future research recommendation for the investigation of the other factors that affect the economic growth in the UAE particularly fiscal policy tools should be carried out.

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