ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 8.4
IJAR 2020; 6(11): 211-216
www.allresearchjournal.com
Received: 09-09-2020
Accepted: 13-10-2020

Dr. MohamadSaad AboKaresh
Assistant Professor,
Department of Economics,
Bani Walid University, Bani Walid, Libya

Corresponding Author:
Dr. MohamadSaad AboKaresh
Assistant Professor,
Department of Economics,
BaniWalid University, Bani Walid, Libya

Exploring the impact of inflation, the exchange rate and money supply on economic growth in Libya

Dr. MohamadSaad AboKaresh

Abstract
This study aims to analyze the impact of a group of economic factors on economic growth rates in Libya, where the exchange rate, money supply and inflation were used as independent variables and GDP (as an indicator of the economic growth process) as a dependent variable during the period 1990-2014, and it was used to estimate the relationship in the long and short term integration tests The study concluded that the results of the estimation in the long and short term showed a positive relationship between GDP and the quantity of money supply, and an inverse relationship with the level of the exchange rate, while the rate of inflation was inversely related to output in the long term and directly in Short term.

Keywords: Exchange rate, money supply, inflation, GDP

Introduction
Monetary stability is one of the most important conditions for achieving stability in the local currency in the face of foreign currencies. Therefore, stability of the value of the local currency is the basis of the exchange rate policy. Therefore, most countries seek to adopt policies aimed at stabilizing the exchange rate of their currency in order to avoid sharp fluctuations in the currency from one period to another. Because of the change of factors affecting the exchange rate, the most important of which are political factors**.**

Also, controlling the money supply and the exchange rate is one of the basic tasks that the central bank looks forward to in developed and developing economies alike. Through monetary policy, the monetary authority tries to control the exchange rate, as the importance of this role reflects a set of basic economic indicators, including (Growth rates, inflation, unemployment) which are used to evaluate the success and health of any economic system**.**

In view of the conditions that the Libyan state is going through and the increasing challenges facing the Libyan economy in light of the insecurity and political division, the decline in the global oil price below $ 30 a barrel, the rise in the general level of prices and the depreciation of the local currency against other currencies, and at a time considered The Libyan economy has a rentier economy, as it depends on oil and gas exports for its financing by about 95%. Given the importance of the exchange rate and its relationship to economic growth, this study deals with research and analysis studying the extent of the impact of economic factors (money supply, inflation, exchange rate) on economic growth rates in Libya, where GDP is used as an indicator of the economic growth process.

Problem statement
In economic reality, there is a direct and indirect relationship between economic growth rates, exchange rate policy, and money supply management and inflation levels. The Central Bank of Libya, which is authorized to set monetary and financial policies, would work to adapt and manage the rates of money supply, inflation and the exchange rate with the current economic situation. In the period following the year 2011, Libya witnessed several economic fluctuations, which affected the level of money supply and high inflation rates in light of the near stability of the exchange rate and the decline in the real value of the Libyan dinar against foreign currencies.

Objectives of the study

The study aims to clarify the impact of economic factors (money supply, inflation, exchange rate) on the rates of economic growth in Libya, where the gross domestic product is taken as an indicator of the economic growth process.

The hypothesis of the study

As a result of the intertwining relationship between the various economic indicators, the levels of money supply and the rate of inflation in light of the near stability of exchange rates contributed to the deterioration of economic growth.

Previous studies

Sumaya and Mohamed (2016) [3] focused on analyzing the effect of the effective real exchange rate on economic growth in Algeria during the period (1980-2013), and applying the common complementarity test and the regular small squares methodology fully corrected. The study concluded that there is a long-term relationship between economic growth and the variables, money supply, employee productivity, government spending, effective real exchange rate, and the estimate showed that there is a negative impact of the effective real exchange rate on economic growth. In similar study, Deniran, Y, A, (2014) [10, 18] examined the effect of the exchange rate on economic growth in Nigeria during The period 1986-2013 using regression and correlation analysis, the study concluded that the exchange rate has a positive effect on economic growth, and that the interest rate and inflation rate have a negative impact on economic growth.

Also, Curna (2014) dealt with the relationship between money supply, inflation and growth in Turkey using the joint integration method during the period (1999-2012). The results of the study showed that money supply and the speed of money circulation are the main determinants of inflation in the long run in Turkey. The study also concluded that reducing Income by 1% leads to a 1% reduction in inflation. Similarly, Manoel, (2014) [13] explored role of inflation rates in determining economic growth in sub-Saharan African countries between 1980 and 2009. The results concluded that inflation was it has a detrimental effect on growth in the area.

Iqra, 2013 [11, 19] (Saleem) investigated the effect of the general level of prices, interest rate and inflation in the State of Pakistan during the period 2000-2011 using multiple regression, and the study concluded that the general level of prices and the interest rate have a positive effect on the gross national product and that inflation has a negative effect on the national product Total.

Abdullah (2013) [2] studied the effect of money supply in a broad sense on the official exchange rate of the Libyan dinar against the US dollar, using two variables, namely the money supply as an independent variable and the exchange rate as a dependent variable during the period 1970-2010. The results of the study indicated that there is a causal relationship in two directions between the variables. Thanaba (2013) [14] notes the existence of a non-linear relationship between inflation and economic growth of 32 Asian countries during the period 1980-2009. Inflation threshold of about 5.43%, at 1% level of significance. The study found that inflation harms growth when it exceeds 5.43%, but has no effect below this level.

Pradana (2013) [12] examined, in the short and long term, the relationship between economic growth and inflation in three Asian countries during the period 1980-2010. The methodology used in this study is co-integration and causation testing. The results showed that there is a negative and significant long-term relationship between economic growth and inflation in Sri Lanka. While there is no statistically significant relationship between the variables in China and India, the relationship in the short term is negative and important for China. The causation results reveal that there is a one-way causal relationship that stems from economic growth to inflation in China.

Ali (2012) [7] studied the relationship between inflation and economic growth during the period from 1970-2009 using Khan and Senhaji model to determine the inflation threshold, and the result of the study was that the inflation threshold in Algeria is 6%, meaning that inflation rates greater than 6% may cause damage to economic growth in Algeria.

Wang (2012) [15] focused on the relationship between money supply and economic growth, and inflation in China 1998-2007 with joint integration and the Granger test, and the results showed that there is no joint complementarity relationship between money supply, inflation and economic growth, but there is a joint complementary relationship between money supply and inflation, While there is no co-complementarity relationship between the money supply and economic growth. And that there is a contradiction between the objective of economic growth and price stability in China. Imad (2006) [8]. The researcher studied the effect of some economic variables on inflation in Syria, using the method of joint integration and testing the causality. The study concluded that there is a long-term effect between both the economic recession index and the index. Monetary policy regarding inflation in Syria, as well as showing that there is a long-term and short-term causal relationship heading from these two indicators to the inflation index.

Through previous studies, it becomes clear that there are many factors affecting economic growth, the most important of which is the exchange rate, which is one of the most important variables that have an impact on economic activity in general and on economic growth in particular, in addition to money supply and inflation, and the results of previous studies have differed. This is due to the difference in economic conditions from one country to another, as well as the influence of non-economic factors in all macroeconomic variables.

Eighth: Description of the standard model

Multiple Liner Regression is one of the advanced statistical methods that guarantee the accuracy of inference in order to improve the results of the research by optimizing the use of data in finding the causal relationships between different phenomena. In addition, it is a mathematical equation that expresses the relationship between several variables, and is used to estimate the regression of the dependent variable (Y) over many independent variables X1, X2, ... XK (Cohen & Holliday, 1996). Relying on economic theories and some previous studies that have been covered, it is possible to test the most important variables that affect economic growth, represented by GDP at constant prices (as an indicator of economic growth), money supply, inflation rate and

exchange rates as independent variables according to the following equation:

$$Y = a + b1X1 + b2X2 + b3X3 \ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

Whereas:
Y: GDP,
X1: Money Supply,
X2: Inflation,
X3: the exchange rate.

Ninth: Estimating the standard model:

Unit root tests

Most time series are non-static. Therefore, applying traditional standard methods to statistically non-static data may harm the production of a false estimate whose results cannot be relied upon. Such as the Augmented Dickey Fuller test and the Phillips and Perron test to determine the degree of integration and stability of time series and to avoid the problem of false correlation between variables. By conducting the two tests, the following results were obtained. Table (1) and Table (2).

Table 1: Results of the modified dickey filler test (ADF)

Variables	Level	1st difference
	Constant	Constant
Y	-1.028377 $^{0.0001}$	-1.028377 $^{0.0001}$
X_1	0.055273 $^{0.1991}$	0.739287 $^{0.0019}$
X_2	-0.359012 $^{0.0352}$	-1.203289 $^{0.0000}$
X_3	-0.051743 $^{0.3714}$	-0.810744 $^{0.0011}$

Table 2: P-PT test results

Variables	Level	1st difference
	Constant	Constant
Y	$-1.028377^{0.0001}$	$-1.476329^{0.0000}$
X_1	$0.055273^{0.1991}$	$-0.739287^{0.0019}$
X_2	$-0.359012^{0.0352}$	$-1.203289^{-1.203289}$
X_3	$-0.051743^{0.3714}$	$-0.810744^{0.0011}$

Through the developed Dickey Filler Test (ADF), the obtained results showed that all the time series of the variables used in the study suffer from instability at their original levels except for the variable Y (gross domestic product), while the rest of the variables ((X1 X2 X3) stabilized after taking their first differences.

When applying the Phillips Perron test (PP), Table (2) to confirm the results obtained in the developed Dickey Filler test (ADF), it was found that there is a match between the results obtained from the two tests (ADF) and (PP), which confirms that all The time series of the used variables were stabilized after taking their first differences, except for the variable Y was stable at the original level.

Co-integration test

The unit root results showed that the variables (X1, X2, X3) are static at the first level of the first differences, while the variable Y stabilized at the original level. That the non-static time series at the level does not negate the existence of a long-term linear relationship between the variables, and therefore when performing the Johansen Co-integration Test for the multiple joint integration, the results shown in Table (3) were obtained:

Table 3: Shows the results of the Johansen test for the common integration between the study variables

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.772898	74.98331	47.85613	0.0000
At most 1 *	0.632371	42.37152	29.79707	0.0011
At most 2 *	0.499269	20.35651	15.49471	0.0085
At most 3 *	0.208330	5.139429	3.841466	0.0234
Trace test indicates 4 co integrating eqn(s) at the 0.05 level * denotes rejection of the hypothesis at the 0.05 level **MacKinnon-Haug-Michelis (1999) p-values				
Hypothesized No. of CE(s)	**Eigen value**	**Max-Eigen Statistic**	**0.05 Critical Value**	**Prob.****
None *	0.772898	32.61180	27.58434	0.0103
At most 1 *	0.632371	22.01500	21.13162	0.0375
At most 2 *	0.499269	15.21708	14.26460	0.0353
At most 3 *	0.208330	5.139429	3.841466	0.0234
Max-eigenvalue test indicates 4 cointegratingeqn(s) at the 0.05 level * denotes rejection of the hypothesis at the 0.05 level **MacKinnon-Haug-Michelis (1999) p-values				

Based on the results of the tests of the trace statistic and the maximum value (Max-Eigen) in Table (3), it was found that there are four equilibrium relationships between the study variables according to the impact statistic and the maximum value. Therefore, it can be said that there is a long-term equilibrium relationship between GDP (Y), the amount of money supply (X1), the rate of inflation (X2) and the levels of exchange rates (X3). The results also reveal the rejection of the hypothesis of the absence of common complementarity, and that the presence of at least one integral vector indicates a long-term relationship between the variables. And depending on the results of estimating the long-term relationship through Equation No. (2), it was found that there is a relationship between the variables that correspond to the economic logic, which is that

$$D(Y) = 86431.3 + 2.02 * X1 - 7705.9 * X2 - 49565.2 * X3 \quad (2)$$

The gross domestic product has a positive effect on the quantity of money supply, and the negative relationship with both the rate of inflation and the levels of exchange rates at a significant level of 5%, as well as that the amount of money supply has more influence on the size of economic growth (GDP). The existence of a long-term relationship between variables indicates rejection of the hypothesis of non-integration.

Estimating the study model in the short term using the error correction model (ECM)

After conducting the Johansen test for co-integration in the long term, and through the results obtained, which showed that there is a balanced relationship between the variables included in the study, and for the purpose of explaining the relationship between the study variables in the short term, the analysis will depend on the error correction model, through the results shown in The following equation:

$$D(Y) = -200606.294401 + 43.12533506 * X1(-1) + 17266.867955 * X2(-1) - 1059343.91845 * X3(-1) \quad (3)$$

The estimation in the previous equation shows that the value of the error correction factor (ECT) is negative at the level of significance of 5%, and this explains the relationship between the dependent variable (GDP) and the explanatory variables (money supply, inflation and exchange rate) in the long term. And that the model is able to correct the deviations that occur over time, as the model's ability to correct is 32.4%, meaning that the balance in economic growth takes a long period to return to the normal level. Also, based on the results of the estimate, it becomes clear that there is a direct relationship of influence between the money supply (X1) and the inflation rate (X2) on the one hand and the GDP (Y) on the other hand, and an inverse relationship of exchange rates (X3) with the GDP (Y).

Also, the results of the Wald Test showed that there is no statistical relationship at the level of 5% between the value of the current GDP (Y) and its peak in the previous year (Y-1) and the previous two years (Y-2), as for the quantity of money supply (X1), It has been proven that there is a positive relationship for the previous year (X1-1) and the previous two years (X1-2) with the current GDP at the value of P-Value = 0.0513, and this explains that the decrease in the quantity of money supply harms the decline of GDP growth In the previous year and the previous two years. Also, from the test results, it was found that there is no relationship between the current GDP (Y) and the inflation rate (X2) at the value of (P-value = 0.12), also at the value of 4P-Value = 0.0. The results of the estimate showed an adverse effect between exchange rates. In the previous year (X3-1), and the previous two years (X3-2) on the GDP (Y), this means that an increase in the exchange rate ratio led to a decline in the growth of the GDP.

Through the results obtained from diagnostic tests of the rest of the error correction model according to Table No. (4) below:

Table 4: Illustrates the diagnosis of the residual error correction model

Residual Diagnostic Tests	Obs.R^2	Chi-Square	Result
Breusch-Godfrey Serial Correlation LM	3.126353	0.2095	No
Heteroskedasticity Test: Breusch-Pagan-Godfrey	17.81851	0.1213	No
Normality test	Jarque-Bera	0.018560	No
	7.973510		

The table above shows the value of Obs.R2 = 3.126353, indicating that the model does not suffer from the problem of serial correlation between the remainder with a significance level (P-Value = 0.2095) through the "Breusch-Godfrey Serial Correlation LM" test. In addition, the model estimated based on the results of the "Heteroskedasticity Test: Breusch-Pagan-Godfrey" does not suffer from the error limit variance problem, as the value (= 17.81851 Obs.R2 at the value of P-Value = 0.2095), as The results indicated based on the (Jarque-Bera) test, whose value was (Jarque-Bera = 7.973510) at the level of (P-Value = 0.583986), that the estimated model was normally distributed. The value of the DW Test = 2.265295 obtained was also explained that the model It is free from the problem of self-correlation, because with these tests the previous results and the quality of the model estimation were confirmed.

Tenth: Discussing the results economically

This paper mainly aimed to identify the variables affecting the gross domestic product in the long and short term, so that identifying the variables in the two terms enables the monetary and financial authorities to use effective influencing tools to try to create an economic balance.

Moreover, statistical tests explained the existence of a positive relationship in the long term between economic growth represented in the gross domestic product and money supply on the one hand, and negative with both inflation and exchange rate levels on the other hand, and this confirms the economic relationship in theory.

The study also showed the existence of a positive relationship in the short term between the gross domestic product, money supply and inflation, while the opposite effect of the exchange rate level was recorded. It is observed that the results obtained match the quality of the relationship in the long and short terms for all variables under study, except for the rate of inflation, where the effect was opposite in the long term and the effect was positive in the short term.

When tracking the data on the variables under study during the period 1990-2010, it is noticed that this period was characterized by a kind of stability in the relationship between the factors affecting economic growth, as the gross domestic product at constant prices recorded its highest value (52,009.90) in 2010, while the values of Money supply, inflation rate and exchange rate level are (46350.7, 2.799, 1.24) respectively. This refers to the established monetary and financial policies that were able to achieve a kind of economic balance by its financing capacity for the amount of money supply and to maintain an increase in output through the revenue of oil exports in light of achieving low rates of inflation and almost constant exchange rate levels.

As for the period following the year 2010, the output declined to its lowest level in 2014, 6.30 in the year 2011, while the money supply values and the inflation rate rose to their highest levels in light of the constant exchange rate (57940.9, 15.518, 1.25), respectively. In the years following the year 2011 P to 2014 Q witnessed a slow growth in output, then it retreated to a low level with a decrease in the rate of inflation, high rates of money supply, and almost constant level of the exchange rate. This deterioration in the economic balance is attributed to the deficit of fiscal policy makers and the limited ability of monetary policy officials (the Central Bank of Libya), from this crisis as a result of political instability and the resulting security instability.

On the other hand, the Libyan economy is a rentier economy that depends on the revenue of oil and gas exports at a rate of approximately 95%, which led to a decrease in the value of output as a result of the sharp decline in oil exports due to the absence of the security factor, which forced the Central Bank of Libya to adopt policies that would address the economic crisis and This is by financing the deficit in the money supply by disposing of part of the cash reserves and issuing a paper currency without a monetary cover, which caused the continuous deterioration of the value of the Libyan dinar and the sharp rise in prices.

Results

1. The Libyan economy for the period from 1990 to 2010 witnessed economic stability, as it recorded high rates that were balanced between output and money supply, and a low rate of inflation, while the period following the year 2010, i.e. the period (2011P - 2014P), the economy suffered from instability and The emergence of a severe financial and economic crisis that affected the livelihood of the citizen, in light of the inability of the financial and monetary authorities to find appropriate solutions.
2. The results of the estimation in the long and short term showed a positive relationship between GDP and the quantity of money supply, and an inverse relationship with the level of the exchange rate, while the inflation rate was inversely related to output in the long term and directly in the short term.
3. As a result of political division, weak security stability, and the absence of deterrent regulatory agencies, which contributed to the exacerbation of the financial and economic crisis, the spread of corruption in the banking apparatus and the quasi-halt in oil exports, which resulted in a decline in the value of output and an increase in the amount of money supply, and Consequently, the rise in prices and the deterioration of the Libyan dinar value against other currencies.

Recommendations

1. Emphasis on creating and developing monetary and financial policy tools that can be dealt with in the monetary market and in a way that reflects the financial and monetary position of the banking system, as well as restructuring and modernizing the financial and banking system with the help of specialized international institutions.
2. As a result of the nature of the Libyan rentier economy, which is mainly dependent on oil and gas revenues and considering this resource depleted on the one hand, and fluctuating prices on the other hand, which pushes in the direction of diversifying sources of income by supporting private sector projects and increasing and following up the volume of foreign investments for the state Libyan.
3. Coordination between fiscal and monetary policy makers to address financial and monetary stability and rationalize spending to limit the aggravation of the financial and economic crisis.
4. The need to follow economic policies that would encourage local producers to increase production and limit the import of unnecessary goods and goods that can be produced locally.
5. The need to raise the exchange rate of the Libyan dinar against other currencies to eliminate the parallel market and to protect the local currency from collapse as a result of the depletion of reserves of hard currency and the inability to compensate it in the short term.

References

1. Marwan Atwan. Monetary and Financial Markets, Stock Exchanges and Their Problems in the World of Monetary and Financial. University Publications Bureau, Algeria 1993.
2. Abdullah Ibrahim Noureddine. Causal relationship between money supply and the exchange rate in Libya 2013.
3. Sumaya Zirar, Mohamed Moussaoui. The Impact of Effective Exchange Rate on Economic Growth: A Case Study of Algeria. Jordanian Journal of Economic Sciences 2013;3(1):2016.
4. Belkacem Al-Abbas. Exchange Rate Policies, Arab Planning Institute 2003;23.
5. Robert Glebin. The Political Economy of International Relations. Gulf Research Center, United Arab Emirates 2004.
6. Al-Wondawi originated, measuring the effect of the general level of prices and money supply on the exchange rate of the Iraqi dinar for the period (1980-2002) using the partial adjustment model. Journal of Management and Economics 2010;82.
7. Ali Youssefat. The threshold of inflation and economic growth in Algeria, a standard study for the period from 1970-2009. Al-Baheth Journal 2012;11.
8. Imad al-Din Ahmad al-Musbah. Determinants of inflation in Syria during the period 1970-2004, Journal of Social Sciences, Kuwait 2006;34(4):45-71.
9. Alex J Agric Res 2013;58(2):149- 160.
10. Deniran YA. The Impact of Exchange Rate Fluctuation on the Nigerian Economic Growth: An Empirical Investigation. International Journal of Academic Research in Business and Social Sciences 2014;4(8).
11. IqraIhsan, Saleem Anjum. Impact of Money Supply (M2) on GDP of Pakistan. Global Journal of Management and Business Research Finance 2013;13 (6).
12. Pradana M Rathnayake. Testing the Link between Inflation and Economic Growth: Evidence from Asia, Modern Economy 2013;4:87-92.
13. Manoel Seleteng. Inflation and Economic Growth: Evidence from the Southern African Development Community. ERSA working paper 405 2014.
14. Thanabalasingam. Inflation and Economic Growth: A Dynamic Panel Threshold Analysis for Asian

Economies. National Graduate Institute for Policy Studies Tokyo, Japan 2013.
15. Wang Yan-liang. Relationship Research on Money Supply, Economic Growth and Inflation. Journal of Convergence Information technology (JCIT) 2012;7(11).
16. Cuma Bozkurt. Money, inflation and growth relation: The Turkish case, International journal of economics and financial issue 2014;4(2).
17. Alex J Agric Res 2013;58(2):149- 160.
18. Deniran YA. The Impact of Exchange Rate Fluctuation on the Nigerian Economic Growth: An Empirical Investigation. International Journal of Academic Research in Business and Social Sciences 2014;4(8).
19. IqraIhsan, Saleem Anjum. Impact of Money Supply (M2) on GDP of Pakistan. Global Journal of Management and Business Research Finance 2013;13(6).
20. Cohen L, Holliday M. Practical statistics for students: An introductory text. SAGE Publications Limited 1996.