A Study on the Relationship between Money Supply and Macroeconomic Variables in Some Selected Middle Eastern Countries

Seçilmiş Bazı Orta Doğu Ülkeleri için Para Arzı ve Makroekonomik Değişkenler Arasındaki İlişki Üzerine Bir Çalışma

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Makale Başvuru Tarihi: 15.12.2021
Makale Kabul Tarihi / Accepted: 23.12.2021
Makale Türü / Article Type: Araştırma Makale

Keywords:

Money Supply,
ARDL Model,
Exchange Rates,
GDP

ABSTRACT

This study analysis the impact of money supply on the economic growth for four countries (Iraq, Turkey, Iran, and Egypt) for the time period of (1980 to 2019). In this research, data were obtained from the Data Market, World Development Indicator and World Bank databases. To achieve this objective, the ARDL model has been used for this study. Through applying the empirical determination process, the descriptive statistics show that the distribution of the sequence under investigation is normal. Sequences properties have been examined through utilizing unit root test, and all of the series were found to be integrated of order one. In addition, Johansen co-integration test was utilized to evaluate the long-run relationship between variables, and based on that, and results were found to be the long-run relationship among or between variables. Long run relation shows that both LMS2L, LINVST has proper or strong relations (positive) with the global GDP variable. On the other hand, LMS2 and LINVST have a positive and statistically significant effect on GDP which is (0.88 and 0.53) respectively. More clearly, in the case of changing LMS2 by 1%, GDP value rise by 0.88% and increasing LINVST by 1% will lead to raising GDP by 0.53%.

Nonetheless, IR, CPI, EX, has a negative and statistically significant impact on economic growth. At the same time, there is a positive and statistically significant impact of LMS2, LINVST on economic growth in those countries.

Anahtar Kelimeler:

Para Arzı,
ARDL Modeli,
Döviz Kuru,
GSMH

ÖZET

Bu çalışma, para arzının dört ülke (Irak, Türkiye, İran ve Mısır) için, (1980-2019) dönemi esas alınarak, ekonomik büyüme üzerindeki etkisini analiz etmektedir. Bu araştırmada kullanılan veriler Veri Piyasası ve Dünya Bankası veri tabanlarından elde edilmiştir. Bu maksatla, bu çalışma için ARDL modeli kullanılmıştır. Çalışmada kullanılan verilerin normal dağıldığı açıklayıcı istatistiklerden anlaşılmaktadır. Veri özellikleri birim kök testi kullanılarak incelenmiştir ve tüm serilerin birinci düzeyde durağan olduğu görülmüştür. Buna ek olarak, değişkenler arasındaki ilişkiyi test etmek için Johansen eşbütünleşme testi kullanılmıştır.

Uzun dönemli ilişki, hem LMS2L hem de LINVST'nin küresel GSYH değişkeni ile uygun veya güçlü ilişkilere sahip olduğunu göstermektedir. Öte yandan, LMS2 ve LINVST GSYH üzerinde sırasıyla (0,88 ve 0,53) olumlu ve istatistiksel olarak anlamlı bir etkiye sahiptir. Daha açık bir şekilde, LMS2'nin %1 oranında değişmesi durumunda GSYH değerinin %0,88 oranında artması ve LINVST'nin %1 oranında artması GSYH'nın %0,53 oranında artmasına yol açacaktır. Bununla birlikte, IR, CPI, EX, ekonomik büyüme üzerinde olumsuz ve istatistiksel olarak önemli bir etkiye sahiptir. Oysa LMS2, LINVST'in bu ülkelerde ekonomik büyüme üzerinde olumlu ve istatistiksel olarak anlamlı bir etkisi vardır.

1. INTRODUCTION

In order to understand the relationship between both money supply and Macroeconomic Variables in various Middle Eastern countries, it is required to know the money supply and macro-economic variables separately. Nowadays, many researchers focus on the relation between money supply and economic growth. So, the money supply could be mentioned as a very significant and sensitive variable in the economic area in which the value and velocity of money supply in any place or country around the world are able to realize the pace of economic movement. Also, the most critical point related to the relation between money supply and Macroeconomic variable is that the alteration in the level of money supply will directly produce a huge impact on macroeconomic variables, including inflation, economic growth, interest rate, exchange rate, investment, real GDP as well because Money supply could be defined as a total amount of money or cash that available in banks that circulate all the time (George et al., 2018).

There are some factors that can be mentioned as key factors that influence demand for money which include: (The level or rate of interest on a loan, the value of financial trades that expect to carry out, the level of expected inflation and so on. (Tutor, 2021).

Moreover, Macroeconomic variables are another significant point which covers several different parts of economic issues, including (inflation, GDP, unemployment and employment, economic output and etc.).

In addition, each mentioned variable play a great or important role in the financial performance or economic performance of any region and country (Sharma et al., 2011). In this regard, a policy has been applied by turkey after the financial crisis in 2008 to expand the money supply. It can be said that the same policy was applied by several other countries. The purpose of Applying this policy was to alter or change several Macroeconomic variable directions because, as mentioned before, there is a strong relation between macroeconomic variables including (GDP, Inflation rate, interest rate and so on) with money supply. Moreover, changing money supply in any place must be done after a proper evaluation regarding endogenous and exogenous outcomes. In other words, expanding money supply will have two outcomes, either endogenous or exogenous, due to direct relation of macroeconomic variables and money supply. Thus, And researcher mentioned that, in money supply issues, both interest rate and inflation rate variables of macroeconomic variables need to take into account practically and theoretically (Kaplan and Güngör, 2017).

Moreover, the basic macroeconomic element that influences economic growth in an economy by ensuring the effective running of economic activities in both public and private sectors through liquidity availability. Actually, through money supply, the private sectors are able to obtain credits to carry on businesses at a price being referred to as interest rate. Money supply is a monetary policy tool that is highly essential in boosting the economic growth of a nation. On the other hand, monetary policy is an important instrument used by countries to maintain economic stability and promote economic growth (Chaitip et al., 2015). Nnanna (2001) defines monetary policy as a tool at the disposal of the monetary authorities to influence the availability and cost of credit/money with the ultimate aim of achieving price stability. Also, monetary authorities, especially in developing countries have a dual role of ensuring price stability and sustainable growth in an economy by employing instruments of monetary policy (Njimanted et al., 2016).

The operation of money supply is called monetary policy, and the aim or feature of money supply is to produce microeconomic outcomes, including exchange rates, inflation, GDP and so on. in addition, this action or policy is performed by banks in order to providing economic stability as well as providing a proper chance for economic growth as well. Based on monetarist's belief, this policy (money supply) will not produce an influence on domestic products and countries output, but it will directly impact inflation. In this regard, monetary policy is considered a critical point of economic growth. Depending on several important debates about the connection between money in the economy, Monetarists trust that mentioned policy (monetary policy) influence prices without producing an effect on unemployment and GDP as well. And Keynesians trust that alteration in money supply will alter the price and output of any country (Chaitip et al., 2015)

The main objectives of this study are:

- To investigate the effectiveness of the new monetary policy in some selected Middle Eastern countries.
- To evaluate and determine the relation between money supply and Macroeconomic variables in some selected Middle Eastern countries.
- To compare the impact of money supply and microeconomic variables between selected Middle Eastern countries

2. LITERATURE REVIEW

High economic sustainability and economic growth is a very significant issue in both developed and developing countries. There are many research and investigation regarding economic sustainability, and due to its significant influence, researchers tried to focus on this issue specifically. (Vinayagathan, 2013) focused on the connection between economic growth and inflation rate as well as realizing the economic growth with the influence of monetary policy on the items price level. Based on previous researches, there are different beliefs between economists in the world regarding the level of the inflation rate and its impact on the growth of the economy everywhere and the result of the studies shows that interest rate is able to produce a great influence on the movement of macroeconomic variables.

(Makinen, 2001) defines inflation in various ways. However, all the definition is often summarized to the same point. Inflation could be a continuous upwards movement (increase) within the general indicator. Alternatively is falling, i.e. the costs are rising. There are details to be considered about this definition. In the first place, it refers to the movement within the general price level. This doesn't indicate a change in one price relative to other prices. This type of change is common even when some level of price is stable.

(Sultana, 2018) Conduct a study about the influence of money supply on some macroeconomic variables such as inflation and interest rate on the economic growth of Bangladesh. In order to provide a clear result, time-series data from 1981 until 2016 with ARDL, which stands for Autoregressive Distributive Lag and ECM, which stands for Error Correction Model, has been utilized. Researchers claim that, through collecting the result from empirical determination connection or relation between money supply, inflation rate, interest rate with economic growth proved. Also, mentioned research concludes that in the case of short-run inflation money supply effect on economic growth is not proportional if the interest rate is ignored.

Furthermore, Wun (2016) performed a study to find out the short-run and long-run relationship between money supply, inflation rate and economic growth in China, and he found that there is a relationship between money supply, inflation rate and economic growth in the long run, while there is bi-directional causality between money supply and inflation rate.

Moreover, Nwankwoeze (2010) found that inflation affects GDP growth negatively, but Li (2005) concluded that a positive relationship between inflation and GDP growth exists before an intensity level and negatively affects after the threshold level.

Conversely, according to Agalega and Antwi (2013), interest rate, GDP, and inflation possess a powerful correlation by examining the information on the corresponding variables of Ghana. Ihsan and Anjuma (2013) concluded that an increase in money supply leads to an increase in the rate of inflation by analyzing the information on finances and rate of inflation of Pakistan during 2000-2011. They argued that GDP would be full of the rate of interest and, therefore. It's necessary to keep up an acceptable charge per unit for keeping the rate of inflation at five to six percent.

According to Feldstein (1996), inflation generator social costs also as a deadweight loss on the economy. Despite these costs, inflation benefits some agents of the economy. People work more hours to keep up their standard of livings within the inflationary periods. This ends up in a flourish in the economic growth, which offset the negative effects of inflation.

For economists who argue that growth in finances will only cause inflation, the money supply is taken into account a vital instrument for controlling inflation when money demand is stable, the changes in the amount of money supply can either be inflationary or deflationary, and these two economic terms are responses to the policy of the central bank. When the central bank expands the number of cash in circulation in circulation, inflation occurs, and when it reduces the amount of cash in circulation, deflation is for certain. An expansion of the money supply will create a proportion increase within the output of goods and services (assuming there are not any changes within the velocity of cash in circulation), and therefore, the general indicant will remain unchanged Okhiria and Salius (2008).

Commonly inflation can be classified by its sources like demand-pull inflation, cost-push inflation, the pricing power of inflation and pectoral inflation. Under the cost-push inflation, prices rise because of the increasing cost of the factors of production. This kind of inflation maintains that price good and servers rises because of trade union's bargaining power. And the pricing policies of firms with market power like oligopolistic and monopolistic firms (Makochekanwa, 2007)

(Kunwar, 2020) studied the connection or relation between domestic products and money supply, and based on their explanation, money supply is considered as whole stock money that circulates in the banks. In addition, money circulation refers to the amount of money in the deposit, currency and so on. So, determination of money supply in everywhere will become a factor to help economists and specialists to provide a proper policy while raising or decreasing the supply of money. Also, it will influence each business cycle and economy as well. The mentioned study tried to explain specific economic variables by selecting factors that affect money supply related to domestic products in Nepal. Researchers collect required data from 1974 to 2017 in order to sketch a clear picture of money supply and economic growth through using empirical relations among them. Dickey fuller test and ARDL- VECM model has been used in this study, and through using mentioned model relation between money supply and economic growth indicated to have strong and long relation measured by GDP.

Few studies resulted in a statistical insignificant and negative relationship between money supply, and growth of economy like Adusei (2013) examined financial development and economic growth for Ghana from (1971 to 2010) (Gatawa et al., 2017) as cited in Dingela and Khobai (2017), examined the impact of supply of money and inflation on the economic process for Nigeria Over during (1973 – 2013), by using the model of VECM, However, Ihsan and Anjum (2013) found a negative relationship between money supply and GDP supported the information on monetary resource and GDP OF Pakistan during (2000-2011). Also, Barro (1991) states that persistent inflation reduces the contribution of saving and investment on GDP depending on the unattractiveness of investing in future projects or contracts by savers and investors. Productive resource reduces due to the difficulties in calculating real returns on investment which results in a reduction in GDP within the long term.

According to Barro (1997), Stable downward movement or progress toward the production function is required for inflation to happen. Based on the mentioned paper, there are several factors that are able to rise or increase aggregate demand, and the majority are Limited and controlled in scope. Moreover, they observe that there is a limit or practical limit on government purchases which may lead to a reduction in tax that is why it's not possible to be continuing for a long period of time. Also, Barro (1997) were not able to observe or detect government purchase higher than total output or all taxes, which produced a negative impact. On the other hand, they mention that at any rate, money supply could be increased, so it's normal to detect the large difference in money growth in the area. In addition, rising money supply for a high level will have two outcomes. Either over several years in moderate inflation or over a few days at the height of hyperinflation is common (Romer, 1996).

Besides, In Nigeria, Gatawal et al. (2017) examined that information on funds, inflation and economic growth from 1073 to 2013 by using the VAR model and Granger causality test error correction framework and concluded that money supply affects economic growth positively and has a negative impact of inflation and rate on economic growth exists within the future.

Related to the influence of money supply, Ogunmuyiwa and Ekone (2010) examined the impact of money supply on economic growth in Nigeria for the period 1980 to 2006 using Ordinary Least Squares (OLS) Granger Causality test and Error Correction Model (ECM). The results revealed that although money supply is positively related to growth, the result is however insignificant in the case of GDP growth rates on the choice between contractionary and expansionary money supply.

Although, Owolabi (2014) examined the effect of money supply and foreign exchange on Nigeria economy with data covering the period 1988 to 2012 using OLS. The result shows that the money supply has a significant positive impact on economic growth in Nigeria. As well, Uduakobong (2014) investigated the role of money supply on economic growth in Nigeria with data covering the period 1985 to 2012 using augmented Cobb-Douglas production function and relying on Co-integration test and Error- Correction Model. The result shows that money supply does not only have a positive impact on economic growth in Nigeria, and such impact is strongly and statistically significant. On the other hand, Similar studies in Nigeria that have found a positive relationship between money supply and economic growth include Ojo (1993); Odedokun (1996); Okedokun(1998); Owoye and Onafowora (2007).

Numerous empirical studies have been conducted on the relationship between investment, saving, and money supply and economic growth. The current study contains a review of many recent and significant empirical studies. Verma (2007), for instance, used ARDL Bound Testing to examine the relationship between investment, saving, and economic growth in the Indian economy and discovered cointegration between gross domestic saving, gross domestic investment, and economic growth. Saving and investing have little effect in the near term. However, over time, investment resulted in economic development. Budha (2012) discovered cointegration between the variables saving, investment, and economic development in the Nepalese setting using the ARDL methodology. The author established bidirectional causation between saving and economic growth as well as

investment and economic growth using the Granger causality test expansion. Taiwo (2012), Chinuba, Akhor, and Akwaden (2015) for Nigeria, Salih (2013) for Saudi Arabia, and Mohamed Aslam (2016) for Sri Lanka all identified a link between economic growth and monetary policy, with all research indicating a positive association between money supply and GDP. Several types of research in the Nepalese context, such as Gyanwaly (2012), Acharya (2018), and Gyanwaly (2019), supported the evidence of a beneficial effect of money supply on economic development via their econometric modelling.

M. Friedman and D. Meiselman (1963) research were the first to use applied statistics to examine the relationship between two variables. Friedman and Schwartz attempted to quantify the link between money and production by examining the monetary history of the United States of America and the function of money in economic cycles over the era (1867-1960). They claim that the rapid contraction that occurred during the Great Depression (1929–1933) was a consequence of the period's significant decrease in the money supply. While Friedman and Meiselman (1963) concentrated on the monetarist-Keynesian debates over the effectiveness of monetary and fiscal policies, they also examined the Keynesian assumption of a stable relationship between income and consumption, as well as the monetarist assumption of stable money demand, and concluded that the monetarist model of the relationship between spending and money demand is more accurate. Brunner and Meltzer claim in their paper (1976) that increasing the money supply to finance increased government spending would raise total expenditure and hence nominal income, which would ultimately result in a rise in real income and prices. Sims (1972) was the first research to use Granger causality to assess the link between money and production in the United States of America. He discovered that money aids in the interpretation of output rather than hinders it, implying that there is a causal link between money and GDP, a finding compatible with Friedman and monetarists. Williams and Gowland (1967) applied Sims's model to the United Kingdom and found that causation flows from output to money (as opposed to the findings of the Sims). This conforms to the Keynesian perspective. Friedman, B., and Kutuner (1992) claim that the link between money and production weakens with increasing time periods in their research of the United States of America from 1960 to 1990. On the other hand, they discovered that the interest rate's explanatory capacity has a greater influence on how output changes are interpreted than the quantity of money. Zapodeanu and Cociuba examine the link between money supply and GDP in order to create a function that expresses this relationship explicitly for Romania, using data on money supply (M3) and GDP over a ten-year period using the ADF. They established that both series are nonstationary, and using the Engle-Granger cointegration technique, and they established that the two series are cointegrated. Abbas (1991) explores the causal link between money and productivity in many Asian nations and finds that money and income in Pakistan, Malaysia, and Thailand are mutually reinforcing. Kalumia and Yourogou (1997) discover a substantial causal association between money and income in five West African nations, implying that money is not neutral. Hussein and Abbas (2000) examined the causal relationship between money, income, and prices in Pakistan and discovered a one-way relationship from income to money, rather than the other way around, indicating that real factors, rather than nominal factors, contribute significantly to Pakistan's national income growth. Abdul Raziq and colleagues (2003) examine the effect on the money supply in Qatar of real GDP, government expenditures, price level, and foreign reserves. They discovered a substantial link between real GDP and money supply; this implies that changes in GDP in Qatar contribute to the explanation of changes in money supply, not the other way around. By using the Granger test, Obaid examines the causal link between the money supply (M3) and real GDP in Egypt from 1970 to 2006. He concludes that there is no causal relationship between the nominal money supply and nominal GDP during the study period, but that when he uses the real money supply and real GDP, he discovers a mutual causality relationship between the real money supply and real GDP in Egypt (non-neutral money), indicating that monetary policy is an effective policy on real GDP in Egypt. Finally, Ogunmuyiwa and Francis investigate the impact of money supply on economic growth in Nigeria between 1980 and 2006. Using the econometric techniques OLS, causality test, and ECM for time series data, they find that, while the money supply is positively related to growth, the relationship is insignificant when GDP growth rates are used to choose between contracts. To our knowledge, just one research has tried to investigate the link between Sudan's money supply and production level. Ahmed and Suliman examine the long-run connection between money supply, real GDP, and price level during the period 1960–2005, concluding that there is no causal link between real GDP and money supply during this era, but that causation exists between money supply and prices. Our analysis is distinct from this one in that it uses more recent data and spans the time after the conclusion of the civil war, which resulted in the country's division into two nations. As evidenced by the analysis of previous studies presented in this section, the relationship between money supply and output or income (expressed in various measures) remains a source of contention in empirical studies (in both developed and developing countries), as well as theoretical frameworks, whether in the short or long run.

3. METHODOLOGY AND MODEL SPECIFICATION

This chapter aims at choosing the methods that will be used to determine the impact of money supply on economic growth. Also, to examine and measure the impact of Money supply on economic growth for four countries (Iraq, Turkey, Iran, and Egypt) for the time period of (1980 to 2019) the data obtained from the Data Market, World Development Indicator and World Bank databases. To achieve this objective, theoretical economic model applications and econometrics models, such (ARDL) as well as panel estimation (fixed and random effects model), will be used in this thesis. Thus, this chapter begins with an introduction to regression analysis. The first section of this chapter is about the time-series regression model, explaining the various steps (that is, stationary, co-integration, estimation and diagnostic checking). The second section looks at the panel estimation model with its different stages (including fixed effects and random effects models and the (Hausman test).

3.1. Stationary and Non-Stationary Time Series

A non-stationary time series is a stochastic process with unit-roots or structural breaks. However, unit-roots are major sources of non-stationary. The presence of a unit root implies that a time series under consideration is non-stationary, while the absence of it entails that a time series is stationary. This depicts that unit root is one of the sources of non-stationarity. A non-stationary stochastic process could be a Trend stationery (deterministic) Process (TSP) or Difference Stationary Process (DSP). A time series is said to be a stationary trend process if the trend is completely predictable and not variable, whereas if it is not predictable, we call it difference or integrated stochastic trend or difference stationary process. In the case of deterministic trends, the divergence from the initial value (represents non-stationary mean) is purely random, and they die out quickly. They do not contribute or affect the long-run development of the time series. However, in the case of integrated stochastic trends, the random component (U_t) or divergence affects the long-run development of the series.

3.2. Cointegration Analysis

Modelling time series in order to keep their long-run information intact can be done through co-integration. Granger (1981) and Engle and Granger(1987) were the first to formalize the idea of co-integration, providing tests and estimation procedures to evaluate the existence of a long-run relationship between a set of variables within a dynamic specification framework. The Co-integration test examines how time series, which though may be individually non-stationary and drift extensively away from equilibrium, can be paired such that the workings of equilibrium forces will ensure they do not drift too far apart. That is, co-integration involves a certain stationary linear combination of variables that are individually non-stationary but integrated to order, $I(d)$. Co-integration is an econometric concept that mimics the existence of a long-run equilibrium among underlying economic time series that converges over time. Thus, co-integration establishes a stronger statistical and economic basis for the empirical error correction model, which brings together short and long-run information in modelling variables. Testing for co-integration is a necessary step to establish if a model empirically exhibits meaningful long-run relationships. If it fails to establish the co-integration among underlying variables, it becomes imperative to continue to work with variables in differences instead. However, the long-run information will be missing. There are several tests of co-integration, other than Engle and Granger (1987) procedure. Among them is; Autoregressive Distributed Lag co-integration technique or bound co-integration testing technique. This becomes the focal point of this paper.

4.RESULTS AND DISCUSSION

This study uses annual panel data for four countries (Iraq, Turkey, Iran, and Egypt) for the time period of (1980 to 2019). The data was obtained from the Data Market, World Development Indicator and World Bank databases. The ARDL method was conducted on sample country groups to investigate a short-and long-run relationship between GDP and MS2, EX, INVST, CPI, and IR. The reasons behind choosing these data sources are their reliability and wide use. Also, the data bank of the World Bank offers various data arrangement tools.

Table 1: Result Of ARDL Estimation For The Countries

Variable	Coefficient	Std. Error	t-Statistic	Prob.*	
Long Run Equation					
LINVST					
LMS2		0.538137	0.047853	11.24565	0.0000
IR		0.887399	0.016405	54.09417	0.0000
		-0.015033	0.005937	-2.532277	0.0132
		-0.000494	0.000230	-2.144196	0.0349
EX		-0.007209	0.001409	-5.118194	0.0000
CPI					

The above Table shows the results of the ARDL estimates and indicates a strong positive relationship between LMS2L, LINVST and the global GDP in the long run. LMS2 and LINVST have a positive and statistically significant effect on GDP which is (0.88 and 0.53) respectively. In other words: if LMS2 changes by 1%, GDP increases by 0.88%, and if LINVST changes by 1%, GDP increases by 0.53%. However, IR, CPI, EX, have a negative and statistically significant effect on economic growth. Thus, most of the results coincide with the theories. According to (nawy theorika bnusa), Furthermore, according to literature presented by (Wun, et al (2016); Ihsan, et al. (2013); Ogunmuyiwa et al (2010); Owolabi, et al (2014); Uduakobong, et al (2014); Chude, et al (2016); Zapodeanu and Cociuba, et al (2010); Aslam, et al (2016); Prasert, et al. (2015); Chaitip et al. (2015); Chepkemoi, et al (2014); Kunwar, et al (2020); Attaitalla et al. (2014); Ikechukwu et al., (2012); Feldstein and Stock (1994); Friedman, et al. (1968).

Moreover, the error correction term Cointeq (-1) is (-0.35), and it is statistically significant at (1% and 5%), which indicates the speed adjustment to restore equilibrium

From the short-run to the long run. Besides, it confirms the existence of a stable long-run relationship between the variables.

The ARDL models are correctly specified. Besides, the table shows that the R2 and adjusted R2 are too high for all economic growth models for all countries. This finding shows that the model fits the data and has a correct specification. Additionally, the table shows the value of S.E regression. This value is important in determining the appropriateness of the model. For the economic growth model, S.E has a very small value.

4.1. Panel Estimation for Economic growth Model

The use of Panel data set offers a solution to the problem of bias caused by unobserved heterogeneity. A common problem in the fitting of models with cross-sectional data sets is omitted variable bias. Additionally, with observations that extent both time and individuals in a cross-section, in panel, more information is available, giving more efficient estimates.

4.2. Fixed effects model

The fixed-effects model is a linear regression of (y) on (x), which adds to the specification a series of indicator variables, A fixed panel refers to the same set of individuals that have been observed for the period of the study.

4.3. Random-effects model

Random effects models are assumed to follow a certain distribution. Instead of estimating the coefficients themselves, the parameters have to be estimated from this distribution. They are used when the aim lies in generalizing the results to the whole population studied

4.4. The results of fixed and random effect models are as follows

Dependent Variable: LGDP

Method: Panel Least Squares

Date: 06/16/21 Time: 15:03

Sample: 1980 2019

Periods included: 40

Cross-sections included: 4

Total panel (unbalanced) observations: 157

White period standard errors & covariance (d.f. corrected)

WARNING: estimated coefficient covariance matrix is of reduced rank

Table 2: Result Of Fixed And Random Effects Models

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	24.11505	2.002455	12.04274	0.0000
LINVST	0.128565	0.056148	2.289751	0.0234
LMS2	0.040020	0.071142	0.562537	0.5746
IR	-0.001377	0.003864	-0.356401	0.7220
EX	-0.000146	1.37E-05	10.65433	0.0000
CPI	-0.031619	0.001232	-25.65591	0.0000

Table 3: Result Of Fixed And Random Effects Models

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.659338	Mean dependent var	23.99776
Adjusted R-squared	0.640924	S.D. dependent var	6.036957
S.E. of regression	3.617525	Akaike info criterion	5.465073
Sum squared resid	1936.800	Schwarz criterion	5.640272
Log likelihood	-420.0082	Hannan-Quinn criter.	5.536228
F-statistic	35.80600	Durbin-Watson stat	1.012711
Prob(F-statistic)	0.000000		

Dependent Variable: LGDP

Method: Panel EGLS (Cross-section random effects)

Date: 06/16/21 Time: 15:05

Sample: 1980 2019

Periods included: 40

Cross-sections included: 4

Total panel (unbalanced) observations: 157

Wallace and Hussain estimator of component variances

White period standard errors & covariance (d.f. corrected)

WARNING: estimated coefficient covariance matrix is of reduced rank

Table 4: Result Of Fixed And Random Effects Models

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	24.7642	1.853917	13.35783	0.0000
LINVST	0.061764	0.049865	1.238627	0.2174
LMS2	0.035872	0.069860	0.513476	0.6084
IR	-0.003841	0.002694	-1.425908	0.1560
EX	-0.000117	1.88E-05	6.228868	0.0000
CPI	-0.032509	0.001135	-28.65167	0.0000

Table 5: Result Of Fixed And Random Effects Models

Effects Specification			
		S.D.	Rho
Cross-section random		1.726289	0.1873
Idiosyncratic random		3.596399	0.8127
Weighted Statistics			
R-squared	0.596079	Mean dependent var	7.572609
Adjusted R-squared	0.582704	S.D. dependent var	5.582467
S.E. of regression	3.604088	Sum squared resid	1961.407
F-statistic	44.56714	Durbin-Watson stat	1.010387
Prob(F-statistic)	0.000000		

CONCLUSION & RECOMMENDATION

This study mainly focused on the effect of money supply on the economic growth of four different countries, including (Iraq, Turkey, Iran, and Egypt) through applying an empirical determination process. The descriptive statistics illustrate that the distribution of the sequence under investigation is normal. Sequences properties have been examined through utilizing unit root test, and all of the series were found to be integrated of order one. In addition, Johansen co-integration test was utilized to evaluate the long-run relationship between variables, and based on that, and results were found to be the long-run relationship among or between variables. Long run relation shows that both LMS2L, LINVST has proper or strong relations (positive) with the global GDP variable. On the other hand, LMS2 and LINVST have a positive and statistically significant effect on GDP which is (0.88 and 0.53) respectively. More clearly, in the case of changing LMS2 by 1%, GDP value rise by 0.88% and increasing LINVST by 1% will lead to raising GDP by 0.53%. However, there was a negative and statistically significant influence of IR, CPI and EX on economic growth. Moreover, the error correction term Cointeq (-1) is (-0.35), and it is statistically significant at (1% and 5%), which indicates the speed adjustment to restore equilibrium From the short-run to the long run. Besides, it confirms the existence of a stable long-run relationship between the variables. However, concerning the issue on how money supply impacts growth, we can conclude that Keynes was right in the long run only in the sense that only in the long run money supply cause growth. While on the other hand, the Classical views' was right only in the short run in the sense that an increase in money supply in the short run is negatively related to growth because it aggravates the price level of goods and services in the short run. And

scholars who believe that money supply raises price levels in the short run but influences growth, in the long run are correct as this research is a concern.

Depending on the obtained conclusion, this study recommends the following points:

The Central Bank will clearly understand the character and role of money supply in increasing and influencing economic growth, as well as come up with monetary policies that will allow money supply to drive the economy correctly and properly in order to achieve economic growth.

The government requirements to provide the requirement of financial structure which is more accurate and richer than the existing ones in order to know the confident influence of a stable monetary policy.

The monetary authorities should develop a money stable policy that would propel the economy towards a positive end.

Government should strengthen its determination in following the rules that are anti-inflationary in nature such that its monetary policy objective will not be derailed.

Study Limitations and Suggestions for Future Research

This part states the limitations of the study and makes suggestions for future research. Based on our findings and analysis, some gaps exist in the current study. Therefore, the following points are suggested for further research to fill the gaps and attract more economic growth.

First: The main limitation and challenge in front of the current study is missing data or not incomplete data for some period, especially for Iraq as a result of the war and economic embargo on Iraq. Yet, these problems and challenges did not have much effect on the study analysis owing to an advanced statistic technique that achieved a highly accurate estimation. Nevertheless, to achieve pure accuracy, this study suggests using complete data. It might be difficult though not impossible, if the government and the authorities of Iraq pay enough attention to this issue.

Second: Another limitation of this study is that the indexes used were not all unified between the countries, and there were different measures as a proxy for GDP and exchange rate. However, using actual GDP and the real exchange rate is difficult but possible. Therefore, future studies can collect information regarding these variables.

Third: This study uses time-series data from (1980 to 2019). Future research can widen the range of time series data to determine more accurate results. Additionally, this study uses some explanatory variables such as (MS2, EX, INVST, CPI, IR....). Nonetheless, future researches can use different variables, for example: (export, import, labour, unemployment ...etc.).

Fourth: This study applies the (ARDL) approaches and (Fixed and Random) effect models for a selection of Four origin countries as a sample. Therefore, a future study can formulate and apply different techniques such as (GLS, GMM, DOLS and FMOLS). Future studies can also apply the same technique and the same countries but use a different time period to compare, evaluate, and achieve more accurate results, and select different developed countries, for example (Germany, Spain and Sweden) and developing countries, for example (China, India and Qatar) or increase number of the countries.

Fifth: This study neither examined the long-run and short-run impact of money supply on economic growth nor forecasted for the data owing to the limitation of master requirements. Future researches may estimate long-run and short-run impacts on economic growth in these four countries and forecast the data to achieve more accurate results.

Sixth: This study only presented a short description of (Iraq, Turkey, Iran, and Egypt) due to the lack of data. It focuses mainly on certain countries and makes comparisons among them. Future researches might study the impact of money supply on economic growth in other different countries.

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