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The Impact of the Exchange, Interest, and Inflation Rates on Economic Growth- The Case of Arab Republic of Egypt

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Abstract
This paper aims to explore the impact of the exchange, interest, & inflation rates on economic growth in the Arab Republic of Egypt during the period (2013-2016). In order to meet the study's goals, a descriptive analytical approach was adopted. The paper uses multiple regression analysis to model the relationship between the dependent variable and the independent variables. The paper found that the exchange rate has a statistically significant impact on economic growth in Egypt. In addition, it was found that the interest and inflation rates don't have any statistically significant impact on economic growth in Egypt. It was also found that the (exchange, interest, and inflation rates) jointly do not have any statistically significant impact on economic growth in Egypt.
Keywords: Exchange Rate, Interest Rate, Inflation Rate, Economic Growth, Egypt.
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1 Introduction
The change in economic variables has been receiving much attention by the researchers specialized in the field of economy. That is because such a change significantly affects the macroeconomic indicators. The national budgets of most of the developing counties are characterized with suffering from a deficit. That is because the value of the imports surpasses the value of the exports (Khader, 2012). It should be noted that the exchange rate affects the prices of the foreign and local commodities. It also affects the country's extent of participation in international commerce. As for the interest rate, it affects the investment volume, the inflation rate, and the purchasing power. Through the present study, the researcher aimed to explore the impact of the exchange, interest, & inflation rates on economic growth in Egypt. In the present study, Egypt serves as a model representing developing countries.

1.1 Statement of the Problem
The size of a state's economy affects its amount of the foreign exchange reserve. It should be noted that the interest rate fluctuation shall negatively affect the international trade. Thus, it shall negatively affect the balance of payment and the gross domestic product. In the light of the aforementioned, the researcher aimed to explore the impact of several economic variables on economic growth in Egypt. To be specific, the present study aimed to provide empirical and theoretical answers to the following questions:
-What is the impact of the exchange rate on economic growth in Egypt?
-What is the impact of the interest rate on economic growth in Egypt?
-What is the impact of the inflation rate on economic growth in Egypt?
-What is the impact of the (exchange, interest, & inflation rates) jointly on economic growth in Egypt?

1.2 The Study's Objectives
The present study aimed to:
-Identify the impact of the exchange rate on economic growth in Egypt.
-Identify the impact of the interest rate on economic growth in Egypt.
-Identify the impact of the inflation rate on economic growth in Egypt
-Identify the impact of (exchange, interest, & inflation rates) jointly on economic growth in Egypt.

1.3 The Study's Significance
The significance of the present study arises from the significance of economic growth. It also arises from the significance of identifying the economic variables that affect economic growth. The present study is significant because there aren't many studies that explore the impact of the exchange, interest, & inflation rates on economic growth in Egypt. The present study is significant because it shall provide decision makers with knowledge about the impact of the exchange, interest, & inflation rates on economic growth in Egypt. The present study shall enable decision makers to recognize the significance of providing attention to the exchange, interest, & inflation rates due to their impact on individuals' lives and states.

1.4 The Study's Hypothesis
Ha.1: The exchange rate has a statistically significant impact on economic growth in Egypt.

Ha.2: The interest rate has a statistically significant impact on economic growth in Egypt.
Ha.3: The inflation rate has a statistically significant impact on economic growth in Egypt.
Ha.4: (Exchange, interest, & inflation rates) jointly have a statistically significant impact on economic growth in Egypt.

1.5 The theoretical framework

1.5.1 Economic Growth

Economic growth is considered a very significant pillar that supports the development of states. That is because economic growth significantly affects economic and political aspects, individuals' lives and states. Achieving economic growth is considered a requirement that must be met for rising the living standard and welfare of individuals in a society. Economic growth can be defined as an ongoing rise in the actual average per capita income. Throughout time, such rise shall lead to a rising the living standard. When economic growth is achieved, several economic problems shall be eliminated. Such problems include: high inflation rates and fluctuation of the balance of payments (Abed Al-Qader, 2002).

1.6 The factors affecting economic growth

There are four primary factors that affect economic growth. These factors are: (Al-Rabee'y, and Al-Asady, 2010)
-The quantity and quality of natural resources
-The amount of the actual capital that's available
-The quantity and quality of human resources
-The technologies available in the state and how advanced they are.
There are several types for economic growth. They are illustrated below (Mansour, 2014):
-Natural growth: This type of growth occurs through going into the following stages:
-The first stage: Through this stage, the work tasks shall be distributed. In addition, there shall be shifts in focus from focusing on agriculture, to handicraft to machine-based industry
-The second stage: Through this stage, an initial accumulation of capital shall occur.
-The third stage: Through this stage, the commodity production shall be dominant, and the production operations shall expand. That shall be done to increase the number of transactions, rather than meeting the demand for specific products. Through the income that one earns, one shall be able to acquire commodities.
-The fourth stage: Through this stage, the local market shall be created, and each product will have its own market. That shall pave the path towards the creation of a broad national market.
Some countries went through some of these stages, whereas other countries went through all these stages. For example, the developing countries didn't go through all these stages. It should be noted that developing countries didn't excel in commodity production. Thus, developing countries couldn't adopt a capitalist system.
-Transitional growth: This type of growth lacks stability and sustainability. It's achieved as a result of contingent factors. Such factors are usually external factors. Once these factors disappear, the transitional growth associated with them shall fade away. This type of growth occurs in the countries that are characterized with having rigid cultural and social structures. Such countries include the developing countries.
-Planned growth: This type of growth is achieved as a result of a comprehensive planning for the way of managing resources and meeting the community's demands. This type of growth is affected by the capabilities of planners, effectiveness of the implementation of plans and how realistic the plans are.

1.5.2 The exchange rate

The exchange rate has a significant impact on economy. That applies in developing and developed countries. The exchange rate is considered the driving force of the economic development of any country. For instance, the exchange rate affects the extent of carrying out external trade processes, including the exporting and importing processes. It is defined as the rate at which 1 currency shall be exchanged for another one. It can be also defined as the price at which 2 currencies may be exchanged against each other (Al-Sarbity, 2009).

1.5.2.1 Types of exchange rate

-Nominal exchange rate: Its value is determined based on the supply and demand. It's used to measure the value of a domestic currency in relation to another currency
-The real exchange rate: The number of units of a foreign currency which are needed to obtain 1 unit of a domestic currency.

1.5.2.2 Functions of exchange rate

-Measuring function: The exchange rate enables local producers to conduct a comparison between the prices of products in the local market and the prices of the counterpart products in the global market.
-Developmental function: The exchange rate is used for raising the extent of exporting specific commodities. It can be also used for encouraging people to import specific commodities. That's because the cost of importing some commodities is less than the cost of manufacturing them.
-Distributive function: There's a relationship between the exchange rate and the foreign trade. For instance, the

exchange rate participates in re-allocating the gross national income. It also participates in re-allocating the national wealth among countries.

1.5.3 The Interest Rate

The interest rate plays a significant role. For instance, it helps central banks in controlling the amount of money supply. It affects the circulation of money. For instance, when the interest rate rises, the liquidity rate in the market shall decrease

1.5.3.1 Types of interest rate

The types of interest rate vary due to the variation of the types of economy. The types of interest rate are presented below (Mariam, and Sabreenah, 2016)

1. The market interest rates

-The money market interest rates: They refer to the rates which maturity shall become due after a short period. These rates include: the interest rates of the certificates of deposit and the interest rates of promissory notes.

-The financial market interest rates: They refer to the rates which maturity shall become due after a long period. Such period is usually 2-10 years. These rates include: the interest rates of bonds, and the interest rates of negotiable medium-term treasury bonds.

-The primary interest rate: They are the interest rate that are enforced on the loans that are borrowed by commercial banks from the central bank. This type of rate affects the loan interest rates which are generally accepted by banks.

2. The credit and debit interest rates:

-The debit interest rate: It refers to the cash returns on deposits, which depositors get in exchange for giving up liquidity for a specific period of time.

-The credit interest rate: It refers to the costs incurred by the borrower when borrowing money from banks. Such costs are determined based on the credit interest rates that were already determined.

3. Administrative and non-administrative interest rates

-Administrative interest rate: The interest rates in developing countries are determined administratively. That is done through enforcing legislations that govern the process of determining the interest rates of loans and deposits

-Non-administrative interest rates. These interest rates are determined based on the supply and demand in the market.

4. Stated and effective interest rates: These types differ from one another in terms of the payment time. This difference in payment time is attributed to the desire to invest the interest itself. The sooner the interest rate is paid, the greater the effective interest rate shall be.

5. Nominal and real interest rates:

-Nominal interest rate: It refers to the interest rate before taking the rate of inflation into account.

-Real interest rates: It refers to the interest rate after taking the rate of inflation into account.

1.5.4 The Inflation rate

The inflation rate is considered a very important economic indicator. It reflects the state's economic status. Inflation significantly affects the economic status. It's not considered as a problem, unless the inflation rate surpasses the accepted rate. If a low inflation rate is stable for a long period of time, it indicates that the economic status is good. That‘s because the inflation rate serves as an indicator that points out to positive or negative facts. There must be preventive measures taken to prevent the rise of the inflation rates. There are several types of inflation, such as:

-The price inflation: It refers to the excessive rise of prices.

-Income inflation: It refers to the excessive rise of cash returns. That includes: wage inflation and profit inflation.

-Costs inflation: It refers to the excessive rise of costs

-Bank credit inflation: It refers to the excessive rise of bank credit (Institute of Banking Studies, 2012)

1.5.4.1 Types of inflation

-Hyperinflation: It refers to a sever inflation through which prices shall rise excessively and the value of the currency shall significantly decrease. With time, the value of the currency shall become trivial.

-Creeping inflation: It refers to the excessive rise of the prices of goods. However, such a rise is less severe than the counterpart rise witnessed in the case of the hyperinflation. The impacts of creeping inflation on the national economy is less serious than the counterpart impacts of hyperinflation.

-Demand-pull inflation: It occurs when the aggregate demand for goods significantly outweighs the aggregate supply (Institute of Banking Studies, 2012; and Abu Ramadan, 2016).

2 Literature Review

The exchange rate is considered significant. That's because it affects the economic growth. Due to the importance of exchange rate, many researchers aimed to shed a light on the impact of the exchange rate on economic growth. For instance, Al-Sharifi, and Ben Sha'a (2018) aimed to explore the impact of the exchange rate on economic growth in Algeria during 1980-2016. The latter researchers used the autoregressive distributed lag model (ARDL). They found that there's a complementary relationship between the study's variables. These variables are: the gross domestic product, the real exchange rate, inflation rate, money supply, and oil price. It was found that the real exchange rate has a positive impact on the gross domestic product on the long and short terms.

Fawzeya (2016) aimed to explore the impact of the exchange rate change on several macroeconomic variables in Algeria during the period (2000-2015). In order to meet the study's goals, a descriptive analytical approach was adopted. It was found that the Dinar exchange rate affects economic growth, inflation, the movement of international capital across several channels, interest rate, monetary policy, foreign exchange reserves and oil prices. It was found that the Dinar exchange rate is affected by these variables too. The latter researcher recommends developing economic institutions in order to improve their competitiveness and increase their productivity.

Barakat et al. (2016) aimed to explore the impact of several macroeconomic variables on the indices of the Egyptian stock exchange and the Tunisia stock exchange during the period (1998-2014). In order to meet the study's goals, an auto-regression model was adopted. The latter researchers checked the statistical stability of data. They conducted cointegration analysis and granger causality test. The study's independent variables are: inflation, exchange rate, money supply, and interest rate. The study's dependent variables are: the index of stock exchange market. It was found that there's a causal relationship between: the index of the Egyptian stock exchange from one hand and inflation, exchange rate, money supply, and interest rate from another hand. It was found that there's a causal relationship between: the index of Tunisia stock exchange from one hand and the exchange rate, money supply, and interest rate from another hand.

The latter researchers believe that the Egyptian and Tunisian governments must take into consideration the relationship between the aforementioned economic variables and the index of the stock exchange market. They also believe that the latter governments must pay more attention to the fluctuations of the index of the stock exchange market.

Al-Hassan (2015) aimed to explore the impact of the exchange rate fluctuation on the balance of payments during (1970-2013) in Sudan. He also aimed to identify the factors that affect the balance of payments in Sudan. In order to meet the study's goals, a descriptive analytical approach was adopted. The latter researcher conducted a multiple regression analysis. It was found that the exchange rate fluctuation has a negative impact on the balance of payment. It was found that the rise of the exchange rate by 1% shall lead to the decrease of the balance of payment by 5.35%. It was found that 78% of the changes in the balance of payment are attributed to the interest rate. The latter researcher recommends fighting against inflation and increasing the exports. He also recommends fighting against Arab and foreign currency speculations.

Semuel & Nurina (2015) aimed to explore the impact of the exchange, interest, & inflation rates on the gross domestic product in Indonesia during the period of (2005-2013). In order to meet the study's goals, a descriptive analytical approach was adopted. The latter researchers conducted a multiple regression analysis. It was found that the interest, & inflation rates have a positive impact on the gross domestic product in Indonesia. It was found that the exchange rate doesn't have any statistically significant impact on the gross domestic product. The latter researchers recommend conducting more studies that aim at identifying the factors that affect gross domestic product. They also recommend conducting similar studies with selecting a big sample in order to raise the reliability of the results.

Baycan (2015) aimed to explore the impact of the exchange rate flotation on economic growth in 164 countries during the period 1970-2007. In order to meet the study's goals, a descriptive analytical approach was adopted. Linear regression analysis was conducted. It was found that the exchange rate flotation doesn't have any statistically significant impact on economic growth.

Adeniran et al. (2014) aimed to explore the impact of the exchange rate on economic growth in Nigeria during the period 1986-2013. In order to meet the study's goals, a descriptive analytical approach was adopted. Linear regression analysis was conducted. It was found that the exchange rate has a positive minor impact on economic growth in Nigeria. It was found that the interest, & inflation rates have a negative minor impact on economic growth in Nigeria.

The latter researchers recommend exerting effort in the aim of achieving economic stability and security. They also recommend taking measures for facilitating the way in which financial transactions are conducted. They recommend improving the economic infrastructure because it plays a significant role in attracting investors. They believe that the Nigerian government must encourage people to export goods in order to maintain a high balance of payments surplus.

Mlambo et al. (2013) aimed to explore the impact of the real exchange rate on economic growth in South Africa during the period 1994-2010. The latter researchers used an error correction model and conducted Johansen test. It was found that the real exchange rate has a negative impact on economic growth on the long-term. It was found that the real exchange rate has a positive impact on economic growth on the short-term. It was found that any decrease in the real exchange rate shall have positive effects on the short and long terms.

Ali et al. (2013) aimed to explore the impact of inflation, nominal exchange rate, foreign direct investment and capital on economic growth in Pakistan during the period (1975-2011). In order to meet the study's goals, a descriptive analytical approach was adopted. Linear regression analysis was conducted. It was found that inflation and exchange rate have a negative statistically significant impact on economic growth in Pakistan. It was found that the increase of the foreign direct investment by 1% shall lead to the increase of the gross domestic product by 37%. It was found that the increase of the exchange rate by 1% shall lead to the decrease of the economic growth by 55%. It was found that the increase of the inflation rate by 1% shall lead to the decrease of the economic growth by 29%.

Lashkary and Kashani (2011) aimed to explore the impact of several monetary variables on economic growth in Iran during the period (1959 – 2008). In order to meet the study's goals, a descriptive analytical approach was adopted. The latter researchers conducted a multiple regression analysis. The examined monetary variables are: money supply, employment, productivity, and the government expenditure. It was found that there isn't any statistically significant relationship between the money supply, employment, productivity, and the government expenditure from one hand and the economic growth from another hand in Iran. The latter growth was measured by the gross domestic product.

3 Methodology and Outcomes

This paper is based on the descriptive approach to achieve the objectives of this study. All information and inquiries will be obtained through references to relevant literature. multiple regression analysis will be constructed and attempts to model the relationship between the dependent variable and the independent variables, The researcher adopted the following model to determine the relationship between independent and dependent variables:

GDP = α+B1 EX +B2 INF + B3 INT

Whereas:

EX: Exchange Rates
INF: Inflation
INT: Interest rate
GDP: Gross domestic product
B1 B2 B3: Regression coefficients
α: the value of the constant

3.1 Data Analysis

In this paper, the dependent variable s to analyze and forecast the growth rate of gross domestic product (GDP). As for the independent variables, they are represented in the Exchange Rates, Interest rate and Inflation. The ordinary least squares (OLS) was used to analyze collection of statistical data and test hypotheses.

Description of Study Variables.

First: The Results of Descriptive Analysis

In this part, the results of descriptive statistics are used to present quantitative descriptions. For instance, table (1) shows the variables, means, standard deviations, maximum value, and minimum value.

Table (1) shows the results of descriptive statistics of the study variables and the relationship between them during the period (2013-2016)

Table (1): The results of Descriptive Analysis

Variables	Means	SD	Maximum Value (max)	Minimum Value (min)
GDP	569026.0063	91625.37638	702181.00	420690.80
EX	7.9272	1.95907	14.88	6.73
IR	10.0833	1.45804	14.25	8.75
CPI	1.0834	0.79939	3.23	0.04

* Source: prepared by the researcher according to the results of statistical analysis.

Table (1) shows the following:

Gross domestic product (GDP): The highest value of GDP is (702181). As for the lowest value of GDP is (420690.80) whereas the mean of this variable is (569026.0063) with a standard deviation is (91625.37638)

Exchange Rates (EX): The highest value of the Exchange Rates is (14.88). As for the lowest value of the Exchange Rates variable is (6.73) whereas the mean of this variable is (7.9272) with a standard deviation is (1.95907)

Interest rate (IR): The highest value of the Interest rate (14.25). As for the lowest value of IR variable, it is (8.75) As for the mean of this variable is (10.0833) with a standard deviation is (1.45804).

Inflation (CPI): The highest value of CPI is (3.23). As for the lowest value of CPI is (0.04) As for the mean of this variable is (1.0834) with a standard deviation is (0.79939).

Table (2): Correlation between study variables

Variable	GDP	EX	IR	CPI
GDP	**1**			
EX	0.478	**1**		
IR	0.380	0.878*	**1**	
CPI	0.265	0.739*	0.726*	**1**
				1

* Source: prepared by the researcher according to the results of statistical analysis.

Table (2) shows that:

- There is a positive and weak correlation between the dependent variable (GDP) and all independent variables: Exchange Rates (EX), Interest rate (IR), Inflations (CPI), This indicates that there isn't any Autocorrelation problem.
- There is a strong and statistically significant correlation at (1%) Between the variable of (EX) and interest rate (IR) and the inflation variable (CPI). The strength of this relationship was (87.8%) and (73.9%) respectively.
- There is a strong statistical correlation at (1%) between the variable of interest rate (IR) and the variable of inflation (CPI) and the strength of this relationship was (72.6%).

Second: The results of regression analysis test

The study data were analyzed using the ordinary least squares (OLS) of regression analysis to test the hypotheses and identify the nature of the relationship between variables:

The First Hypothesis: There is a statistical effect of Exchange Rates on economic growth in Egypt

Table (3): The results of regression analysis test (OLS)*

Variable	(Sig.)	(β) Value	(t) Value
EX	0.061*	0.478	2.035
R-Squared	0.228		
***** Statistical significance at (1%)**	**** Statistical significance at (5%)**	*** Statistical significance at (10%)**	

* Source: prepared by the researcher according to the results of statistical analysis.

Table (3) shows that**:**

- There is a positive and significant relationship of the exchange rate at (10%) on the economic growth in Egypt, whereas the value is (0.061). whereas that the increase of exchange rate leads to increase economic growth in Egypt and therefore the first hypothesis is accepted.
- Coefficient of determination value is (22.8%). That independent variable explains none of the variation in the dependent variable is (22.8%). and that (77.2%) Of changes in the dependent variable are explained by other factors and variables.

The Second Hypothesis: There is a significant statistical effect of Interest rate on economic growth in Egypt.

Table (4): The results of regression analysis test (OLS)*

Variable	(Sig.)	(β) Value	(t) Value
IR	0.147	0.380	1.535
R-Squared	0.144		
***** Statistical significance at (1%)**	**** Statistical significance at (5%)**	**((10%* Statistical significance at**	

* Source: prepared by the researcher according to the results of statistical analysis.

Table (4) shows that there isn't any a statistically significant impact for Exchange Rates at the significance level (≤ 0.05) on economic growth in Egypt. The significance value is (0.147) which is not a statistically significant based on that. The Second Hypothesis is rejected.

Coefficient of determination value (R-Squared) is (14.4%). That independent variable explains none of the variation in the dependent variable is (14.4%). the changes that occur in the dependent variable. There are other factors that can interpret (85.6%) of the changes that occur in the dependent variable.

The Third Hypothesis: There is a statistical effect of Inflation rate on on economic growth in Egypt

Table (5): The results of regression analysis test (OLS)*

Variable	(Sig.)	(â) Value	(t) Value
CPI	0.321	0.265	1.029
R-Squared	0.070		
*** Statistical significance at (1%)	** Statistical significance at (5%)		* Statistical significance at (10%)

* Source: prepared by the researcher according to the results of statistical analysis.

Table (5) shows that:

- There isn't any statistically significant impact for Inflation rate at (≤ 0.05) on economic growth in Egypt. The significance value is (0.321). Based on that, The Second Hypothesis is rejected.
- Coefficient of determination value (R-Squared) is (7%). independent variable explains none of the variation in the dependent variable is (7%) the changes that occur in the dependent variable. There are other factors that can interpret (93%) of the changes that occur in the dependent variable.

Table (6): The results of regression analysis test (OLS)*

Variable	(Sig.)	(â) Value	(t) Value
EX	0.222	0.707	1.287
IR	0.835	-0.115	-0.213
CPI	0.658	-0.174	-0.454
R-Squared	0.248		
The value (Sig.) Of the model	0.314		
The value (â) of the constant	0.4012		
*** Statistical significance at (1%)	** Statistical significance at (5%)		* Statistical significance at (10%)

* Source: prepared by the researcher according to the results of statistical analysis.

Table (6) shows that:

- There isn't any statistically significant impact for Exchange Rates, Interest rate and Inflation rate at the significance level (0.05 ≤ ل) on economic growth in Egypt. The significance value is (0.222), (0.835), (0.658) Respectively. which is not statistically significant. Based on that. the main Hypothesis is rejected.
- Coefficient of determination value (R-Squared) is (24.8%). independent variable explains none of the variation in the dependent variable is (24.8%) the changes that occur in the dependent variable. There are other factors that can interpret (75.2%) of the changes that occur in the dependent variable.

The regression equation can be written as follows:

GDP= 0.4012+ 0.707 EX - 0.115 IR - 0.174 CPI

4 Conclusions

This paper aims to explore the impact of the exchange, interest, & inflation rates on economic growth in the Arab Republic of Egypt during the period (2013-2016). In order to meet the study's goals, a descriptive analytical approach was adopted. The paper uses multiple regression analysis to model the relationship between the dependent variable and the independent variables. The paper found the following:

1. The exchange rate has a statistically significant impact on economic growth in Egypt.
2. The interest rate doesn't have any statistically significant impact on economic growth in Egypt.
3. The inflation rate doesn't have any statistically significant impact on economic growth in Egypt
4. The exchange, interest, & inflation rates jointly don't have any statistically significant impact on economic growth in Egypt.

The paper recommends that there is need to pay more attention to the exchange, interest, & inflation rates by the Egyptian government. He also recommends following up these rates by the latter government. That's because following up these rates shall positively affect the economic growth. Moreover, conducting similar studies that shed a light on the exchange rate of Arab and foreign currencies against the US Dollar. Furthermore, conducting a study that aims to explore the impact of the exchange rate on economic growth in Jordan and Egypt with adopting a comparative approach.

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