The Impact of Interest and Inflation Rates on Deposits Behavior of Banks: The Case of Egypt

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Abstract

This paper examines the impact of interest and inflation rates on deposits' behavior of banks and investigates the factors influencing the impact of interest and inflation rates movements on deposits' behaviors of banks in Egypt within the period 2000-2018. Using secondary data for the quarterly time series collected from the Statistical Bulletins published by the Egyptian Central Bank. The ARDL methodology and ARCH & GARCH models are used. The results indicate that the volatility of interest rate is not associated with the deposits' behavior of banks in the local and foreign currencies. Furthermore, the results reveal that inflation rate volatility is positively associated with the deposits' behavior in the local and foreign currencies of banks. It is recommended to examine the deposits' behavior according to different types of deposits.

Keywords

1. **Introduction**

Deposits have a pivotal role in protecting the economy from financial crises that may hit the money markets, through increasing customer demand for banks to withdraw their deposits according to the confidence index of financial institutions. Such a phenomenon may lead to disruption of cash management in financial institutions as well as other problems including interest and inflation rates volatility. Thus, financial institutions may not be able to manage their assets and liabilities which expose them to a high level of financial risks that may lead to their collapse. In addition to that, the scarcity of matching cash flows from assets with cash flows to cover liabilities, and the mismatch of maturity dates of bank assets and liabilities.

Given the diversity of factors affecting the stability of the banking system, these factors are important indicators to evaluate the behavior of the two parties to the banking relationship - Customers and banks; Numerous studies assess the importance of various factors explaining the problem of financial stability. To determine the appropriate policy, some macroeconomic, financial, and monetary variables are highlighted in this research to estimate the extent of their impact on the deposits' behavior of banks in Egypt.

In Egypt (as an emerging market), a shift was observed in 1991 from the domination of a central market economy to the adoption of a free market. One of the most important effects of this economic transformation has been the increased level of interest and quality of financial performance in financial institutions, especially in banks. Inflation in Egypt decreased to about 2.2% annually based on June/July 2000/2001. The Egyptian banking system has undertaken major reforms. Moreover, the banking law (Law No. 88) of 2003 was issued to unify all the banking systems, enhance the independence and regulatory role of the Central Bank of Egypt, harmonize prudential standards of the Basel II agreement, and strengthen the rules of classifying loans.

With increased regulatory reform capabilities, a focus on supervisory risk, and capital requirements - more reform has been thought to lead to reduced state-owned stakes in joint ventures and public banks, enhance credit conditions, and increase access to banking services. where the beginning of the reforms coincided with the capital inflows in Egypt. Growth had increased in 2005 and reached 7% in 2006 in the context of declining inflation. When inflation was high in 2004, it reflected the effects of the devaluation of the Egyptian pound because of laxity and inadequacy of the monetary policy adopted during the year 2003. Decreasing the level of inflation rate during the year 2006 was due to the decline in the broad money growth sense - Money circulating outside the banking system and available to citizens in its various forms "Saving and current deposits with the banking system in local or foreign currency - since early 2004, mainly driven by the growth of net foreign assets, and the appreciation of the exchange rate. Despite the significant appreciation of the local currency value in 2005, the Egyptian authorities considered this rise to portfolio shifts resulting from increased confidence in the Egyptian pound, with no inflationary consequences. To conclude, the inflationary pressures resulting from the decision to liberalize the exchange rate on November 3rd, 2016, the Central Bank of Egypt raised

interest rates by about 3%. In addition to that, re-linking deposits to absorb excess liquidity on the operational structure to implement monetary policy including long-term deposit linkages.1

In Figure 1, the quarterly time series data for both interest rate and the change rate of interest shows that the interest rate often changes negatively and slightly. Positive changes occurred at a slight rate except for periods of structural, financial, and monetary reform in the Egyptian banking sector, and that those sharp deviations in rates of change due to volatility in interest rates both during periods of its rising in March 2007, June-December 2008, June 2010, December 2011, March 2012, June 2016-March 2017, September 2017 where interest rate behavior was 5.08, 8.33, 6.15, 7.25, 5.0, 5.88, 6.94, 5.63, 8.0, 27.16, 9.71, and 19.64%, respectively, or during periods of decline in December 2002, March 2003, December 2005, June-September 2009, December 2013 where interest rate behavior was -6.45, -6.9, -12.16, -8.45, -7.69, and -9.09% respectively.

In Figure 2, quarterly time series data for the inflation rate and the behavior of the inflation rate indicates that the inflation rate reached its maximum volatility from March through September 2017. The volatility values were 30.9, 29.8, and 31.6%, respectively, and the lowest volatility in March 2001 in which the value of fluctuation was 2.1%. Maximum deviations in inflation rate behavior were 187.3, 102.8, 31.5, 28.1, 108.7, 40.3, 61.7, 28.95, 61.7, 28.95, 35.4, 55.6, 65.3, and 32.6%, respectively during the following periods; March 2004, June-December 2006, March-June 2008, March-June 2013, September 2014, June 2016, and December 2016-March 2017. The lowest rates of inflation rate deviations were; -67.1, -33.85, -25.8, -33.88, -31.1, -30.7, -39.3, -25% during the periods of March 2005, June 2007, December 2007, March 2009, September 2011, December 2017-March 2018, December 2018, respectively.

The quarterly time-series data displays the Interest and inflation rates, deposits in local currency/EGP, and deposits in foreign currency/USD (see figures 3, 2, and 1). The high levels of deposits in local currency are at higher rates than deposits in foreign currency, except for the growth wave that occurred from the floating of the local currency on November 3rd, 2016. Moreover, the deposits' behavior of banking in the local currency is highly variable for many factors in comparison with the change in deposits' behavior of banking in foreign currency which is examined in this research. The results revealed that there are fluctuations in the behaviors and rates of change in deposits in local currency and deposits in foreign currency. Its severity and direction vary according to many economic, financial, and monetary factors and policies in the internal environment, and the regional and global external environment surrounding Egypt. The researcher analyzes some control factors to clarify the extent of their impact on the independent study variables, including items of the public budget deficit (revenues and expenditures), exchange rate, GDP (economic growth), domestic liquidity/GDP, total public debt (domestic and external), and government debt service (internal and external) in Egypt.

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[1] CBE. Available at. https://www.cbe.org.eg/ar/EconomicResearch/Publications/Pages/AnnualReport.aspx.

In figure 3, the growth in local currency deposits' behavior was slow and then accelerated; starting from the third quarter of 2013, the growth of local currency deposits' behavior was fluctuating with positive deviations, the deviation has rarely been negative over time. The intensity of deviations during the periods of June-December 2002, December 2006, June 2007, December 2007, March 2011, March 2013, December 2013, December 2014, September 2015, June 2016, December 2016, June-September 2017 at rates of change 6.2, -1.37, 6.6, -0.95, 12.4, 6.4, -3.8, -3.62, 6.7, 8.97, 7.4, 6.96, 7.4, 6.7, and 12.5% respectively. Also, the growth deposits' behavior in foreign currency was at an upward and slow pace for most of the study period except for the period when the pound was floated in November 2016. After that, the growth of deposits' behavior in foreign currency returned to a slow fluctuation upwards and downwards. The deposits' behavior in foreign currency also witnessed a less volatility rate than the deposits' behavior in local currency except for the pound floating period where the rate of change in the deposits' behavior in foreign currency reached 99%.

The Egyptian economy has been exposed to many shocks over time, due to the policies that have been approved by successive governments in Egypt to carry out structural, financial, and monetary reforms to prevent exposure to these shocks. additionally, the gaps that led them in items of the public budget deficit (revenues and expenditures), exchange rate, GDP (economic growth), domestic liquidity/GDP, total public debt (domestic and external), and government debt service (internal and external) in Egypt. Given the recent developments in monetary policy, the devaluation of the local currency, the rise in interest rates, inflation rates, and the expected impact on the deposits' behavior of banking. As a result, this research conducts a statistical analysis to estimate the extent of the change in the deposits' behavior of banks. Exploring the determinants and explaining the deposits' behavior of banks considering these developments, stages and changes in interest and inflation rates in the Egyptian Money market. Additionally, this research examines the factors that may explain the fluctuations in each of interest and inflation rates. The variable of deposits' behavior is evaluated by the change in deposit growth levels from 2000 through 2018.

Accordingly, this study investigates the following research questions:

RQ1: What is the impact of the interest rate on the deposits' behavior of banking in the local currency - EGP - in the Egyptian Money market?

RQ2: What is the impact of the interest rate on the deposits' behavior of banking in foreign currency - USD - in the Egyptian Money market?

RQ3: What is the impact of the inflation rate on the deposits' behavior of banking in the local currency - EGP - in the Egyptian Money market?

RQ4: What is the impact of the inflation rate on the deposits' behavior of banking in foreign currency - USD - in the Egyptian Money market?

RQ5: What are the factors - controlling factors - influencing and explaining the reflection of the effects of interest, and the inflation rates movements on the deposits' behavior of banking in the Egyptian Money market? How much do these factors affect the interest and the inflation rates?

The rest of this paper is structured as follows: Section 2 Literature review and the development of hypotheses. Section 3 presents the measurement of variables. Section 4 describes the data collection and methodology. Section 5 reports the results and analyses. Finally, conclusions and implications are outlined in Section 6.

2. Literature Review and Hypotheses Development

2.1. The relationship between the interest rate and bank deposits' behavior:

The fluctuations in market interest rates affect the market values of assets that always have major repercussions on the performance of financial institutions. Hence, creating financing policies for liquidity and incentives that encourage a positive behavior regarding bank deposits' behavior of banks is becoming increasingly important. Identifying the factors that cause banking crises are also vital. Failure in these policies and incentives leads to a wave of capital flight thus, depositors scurry to withdraw their deposits in a state of panic. Deposit behaviors are usually driven by a wide range of potential impacts in advance, where the rates of these influences affect the deposits' behavior whose behaviors are interrelated, both in terms of balances and paid rates.

Many studies emphasize the importance of controlling the deposits' behavior towards a positive direction and its role in improving a bank's financial performance and minimizing various types of risks, particularly the risks of bankruptcy and liquidation. Many studies have identified, forecasted, analyzed, and evaluated fluctuations in macroeconomic variables, financial and monetary variables, in both developed and emerging markets (e.g. Touny, 2008; Harald & Heiko, 2009; Abduh & Sukmana, 2011; Eriemo, 2014; Mashamba et al., 2014; Ene et al., 2015; Hassan, 2016; Arikewuyo & Akingunola, 2019; Menza, 2019; Doktoralina & Nisha, 2020; Odeigah & Mike, 2020; Ünvan & Yakubu, 2020; Yakubu & Abokor, 2020). For instance, (Kasri & Kassim, 2009) reveal that traditional interest rate is important in explaining saving behavior. (Feilitzen, 2011) points out that if the spread between the deposit rate and the market starts to fluctuate, this leads clients to withdraw their money from bank accounts. (Tareq, 2015) shows that the deposit interest rate and the inflation rate have a profound effect on the behavior of savings mobilization. However, (Ogbulu et al., 2015) and (Obi and Ezeanyeji, 2019) document no significant relationship between all categories of deposit rates and total liabilities from deposits in banks of money deposits, and there is not a causality relationship between deposit rates and liabilities of deposits.

In the context of interest rates, many studies have been directed towards evaluating the effect of the interest rate and the rate of return in enhancing the financial performance, and the effect on the deposits' behavior of banking; and hence reducing the likelihood of financial crises (e.g. Tuyishime et al., 2015; Turhani & Hoda, 2016b; Akhtar et al., 2017; Mushtaq & Siddiqui, 2017; Raza et al., 2017). The key findings of these studies empirically support the positive role of the interest rates in promoting the positive deposits' behavior of banks, as the best financing source in enhancing the competitiveness of financial institutions, the ability of banks in managing assets and

liabilities, and hence minimizing the financial crises risk. For instance, (Otwoko et al., 2021) revealed that deposits size moderated the relationship between interest rate drivers and the financial performance of deposits. While the interest rate fluctuations had a negative and insignificant effect on return on assets (Ibekwe, 2021). Study (Jaya A. H., et al., 2021) underscored the findings regarding the negative effect of interest rates on savings in contradiction with the general economic theory of Money. While (Naufal & John, 2021) confirmed that there was no significant effect of the interest rate on the performance of banks. (Boungou, 2021) Make a study about the impacts of negative interest rates (and if they remained negative for a long time) on customer deposit rates. The findings showed that negative interest rates reduce banks' customer deposit rates.

Deposit mobilization is an important function of any conventional banking system to meet banking requirements. Continued mobilization of deposits adequately ensures banks' ability to continue their lending and investment business, thereby generating profits (Szulczyk, 2014). Deposits represent a major share of bank financing portfolios, exposing banks to changing deposits' behavior. Structural changes in the composition of the deposit portfolio pose significant challenges to banks; depositors are free to withdraw their deposited funds at any time or deposit new cash into their accounts. The concept of deposits' behavior can be represented in the positive or negative difference in the ratios of change in product values from different deposits in financial institutions from time to time; resulting from many factors, variables, or local or global events (Han & Melecky, 2014). The bank's profit reflects the difference between the interest rate charged to the borrower and the interest rate that the bank pays to the investor in its savings account. Interest rates are the main reason for the fluctuations and obstacles in economic development because interest rate funds are a commodity and not a medium of exchange. The sensitivity of the deposit to interest rates mainly depends on the portfolio's preference for depositors. In this context, the type of ownership of various types of deposits is important. Therefore, the deposits' behavior and interest rates are crucial in understanding the economic functions of financial institutions, and accordingly, the interest rate is one of the factors used by financial institutions as a strategy to attract savings and mobilize deposits. The nominal interest rate is defined as an interest rate that does not take inflation into account (Mishkin, 2015:84). In other words, the money borrowing rate, as usually stated, is not adjusted for inflation. This is the annual rate of interest rates announced by the bank.

Many researchers have tried to evaluate the interest rate and the return rate as critical determinants to attract, mobilize deposits, and to maintain the positive deposits' behavior to achieve high performance and reduce the probability of financial distress and crises in money deposit banks (e.g. Currie's, 2004; Kasri & Kassim, 2009; Abduh & Sukmana, 2011; Obamuyi, 2013; Eriemo, 2014; Cevik & Charap, 2015; Tuyishime et al., 2015; kapounek et al., 2016; Lang & Schmidt, 2016; Turhani & Hoda, 2016a; Aysan et al., 2017). For instance, Study (Fung & McCauley, 2001) showed that the increase in foreign currency deposits has a positive statistical significance, as the interest rate on foreign deposits is higher than that on deposits in local currency. (Tun, 2019) confirmed that the real interest rate has a positive and significant effect on deposit mobilization. (Siauwijaya & Steelyana, 2020) argued that the value of deposits

is affected significantly by the rate of interest on deposits. In addition, (Ogbulu et al., 2015) pointed out that there is no significant relationship between all categories of deposit rates and total liabilities from deposits in money deposit banks. (Hassan, 2016) confirmed that there is no significant relationship between interest rates and deposits of commercial banks. (Agwu et al., 2020) argue that the interest rate has no significant relationship with the bank's performance in the short and long term. while (Jayawarsa, et al., 2021) highlighted that the interest rate partially has a negative and significant effect on public savings; so if the interest rate rises, public savings at government commercial banks will decrease, likewise if the interest rate decreases, public savings will increase. (Yunusa, L., et al., 2021) to investigate the source of the dilemma between deposit and lending rates. And also, the impact of deposit and lending rate on saving and investment respectively. The empirical result revealed the main cause of the dilemma to be the fluctuation in the deposit and lending rate, and the deposit rate has a positive impact on savings while the lending rate has a negative impact on investment. It should be noted that literature is scarce on this subject, particularly in the Egyptian context and money deposit banks.

Overall, the prior studies – on the one hand – have provided mixed evidence regarding the impact of interest and return rates on the deposits behavior of banks. On the other hand, the majority of studies revealed that the competition between banks and the disparity of the interest rate and the return rate on deposits would enhance the positive behavior of banks' deposits in the long run. At the same time, the prior studies pay little attention to the use of ARCH & GARCH analysis, for assessing whether the efficiency of the financial performance of banks or the behavior of depositors is the outcome in determining the deposits' behavior of banks, based on the compatibility of the results of the study models with economic theory. Based on these arguments, this study is, up to the knowledge of the authors, one of the few attempts to use ARCH & GARCH analysis to assess the impact of the nominal interest rate on the deposits' behavior of banks in the Egyptian money market. To this end, the present study aims to test the following research hypotheses:

H1: *There is a significant relationship between the nominal interest rate and the deposits' behavior of banking in the local currency (EGP) in the Egyptian money market.*

H2: *There is a significant relationship between the nominal interest rate and the deposits' behavior of banking in the foreign currency (USD) in the Egyptian money market.*

H3: *There is a significant relationship to the effect both of; the public budget deficit items (revenues, expenditures), exchange rate, GDP, gross domestic public debt/GDP, gross foreign public debt/GDP), and government debt service (internal and external) on fluctuations in interest rate in the Egyptian Money market.*

2.2. The relationship between the inflation rate (CPI) and deposit behavior:

Another stream of literature has investigated the impact of inflation rates (CPI) on the deposits' behavior of banking, (e.g. Touny, 2008; Harald & Heiko, 2009; Abduh et al., 2011; Gemedu, 2012; Khaskheli et al., 2013; Islam et al., 2019; Yakubu & Abokor, 2020); The empirical findings of these studies are not conclusive, as they show mixed

evidence regarding their impact on deposits' behavior of banks. For instance, (Hadiyanto & Haryanto, 2013), concluded that there is no causal relationship between the inflation rate and time deposits. (Larbi-Siaw & Lawer, 2015), found that the inflation rate negatively affects banks deposits in both the short term and the long term. According to (Rama & Kassim, 2013), the inflation rate has a significant impact on investment deposit banks in the short term. (Abou El-Seoud, 2014) added that the inflation rate has a positive and significant effect on national savings in the short and long term. This provides support for the precautionary motives to save in the face of economic uncertainty. To evaluate the effect of the inflation rate on savings; The study of (Jaya, A. H., et al., 2021), (Naufal & John, 2021) showed that the level of inflation has no significant effect on the saving variable, and it has no significant impact on the performance of banks and bank deposits. According to (Jayawarsa, A. A., et al. 2021) The results show that inflation and interest rate together have a positive and significant effect on public savings at government commercial banks. Inflation partially has a negative and insignificant effect on public savings, meaning that if inflation rises, public savings at government commercial banks will decrease, likewise if inflation falls, public savings will increase. (Pasaribu, & Fitrawaty, 2020) argue about the effect of interest, inflation rates have no significant effect on the number of deposits, and the gold price has a negative and significant effect on the number of deposits. To examine and analyze the effect of interest rate, inflation, exchange rate, and GDP per capita on time deposits at commercial banks, (Roosaleh & Tria, 2021); indicated that there is a significant long-term equilibrium relationship between inflation and GDP on time-saving. However, in the interest rate and exchange rate variables, there is no long-term equilibrium relationship or no significant effect on time-saving. The four independent variables (interest rate, exchange rate, inflation, and GDP) and the dependent variable (time-saving) in the research model are very influential. All independent variables (interest rate, exchange rate, inflation, and GDP) do not have a short-term equilibrium relationship to the dependent variable (time deposit), but simultaneously all of them affect short-term savings. However, to the best of our knowledge, few studies have been conducted to investigate how interest and inflation rates influence deposits' behavior, in the money market. especially; Banking in Egypt.

Inflation is a monetary phenomenon (Friedman, 1968). Non-intervention by financial and monetary authorities to cope with inflation leads to depositors withdrawing their funds from banks and starting to seek higher-yielding investments, Due to the high chronic inflation rate, the economy is becoming dollarized as a refuge for inflation. So; Foreign currency is used as a store of value or unit of account, and the demand for foreign currency bank accounts often stems from the experience of very high inflation. Inflation leads to uncertainty in future income flows, and thus, it can lead to higher savings for precautionary reasons. This may be especially true for small depositors in developing countries whose income prospects are much more ambiguous than those in developed countries (Abou El-Seoud, 2014:2). Inflation can affect savings by affecting real wealth. It is generally assumed that the total deposit growth is closely linked to negative inflationary expectations. As inflation rates rise, people will be tempted to transfer their savings from bank deposits to any other type of tangible asset because these assets act as a hedge against inflation. Accordingly, the

determinants of short- and long-term inflation vary. It is generally agreed that long-term inflation is a pure money phenomenon, but short-term inflation responds to many controlling factors.

Inflation has different types, the most important of which are: real inflation, creeping inflation, pent-up inflation, and hyperinflation. Inflation is generally defined as a state of continuous and rapid price rise (Mishkin, 2015:617). It is defined as the rate of change in prices continuously (Ferry & Agung, 2013:2). In other words, it's also defined as the rate of continuous and continued change in the real value of the money unit.

This leads to the persistence of inflation at high rates and failure to take necessary measures by the authorities to target inflation, to the erosion of the values of national assets, as well as the wealth of citizens, and various risks threatening the survival of many financial institutions, especially money deposit banks. Several studies reveal the effect of inflation rates on the mobilization of savings and on the deposits' behavior of banking, (e.g. Touny, 2008; Harald & Heiko, 2009; Abduh & Sukmana, 2011; Gemedu, 2012; Ngula, 2012; Khaskheli et al., 2013; Rama & Kassim, 2013; Abdul Karim et al., 2014; Abou El-Seoud, 2014; Mashamba et al., 2014; Larbi-Siaw & Lawer, 2015; Tareq, 2015; kapounek et al., 2016; Akhtar et al., 2017; Mushtaq & Siddiqui, 2017; Arikewuyo & Akingunola, 2019; Menza, 2019; Tho'in & Prastiwi, 2019; Toriola, 2019; Agwu et al., 2020; Ünvan & Yakubu, 2020; Yakubu & Abokor, 2020). For instance, (Obi & Ezeanyeji, 2019) point out that the inflation rate has an insignificant positive effect on savings mobilization. In addition, (Doktoralina & Nisha, 2020) argue that the inflation rate is not affecting deposits of Islamic banks. (Abduh et al., 2011) confirm that the inflation rate negatively affects the total deposits of Islamic banks in the short term and the long term. (Hadiyanto & Haryanto, 2013) point out that there is no causal relationship between the inflation rate and the behavior of time deposits. (Islam et al., 2019) show that the inflation rate has no significant effect on the growth rate of deposits with private commercial banks. Based on the theoretical framework and empirical results of the relationship between inflation rate (CPI), and deposits' behavior of banking, hypotheses can be formulated as follows:

H4: *There is a significant relationship between the effect of the inflation rate (CPI) and the deposits behavior of banking in the local currency (EGP) in the Egyptian money market.*

H5: *There is a significant relationship between the effect of the inflation rate (CPI) and the deposits behavior of banking in foreign currency (USD) in the Egyptian money market.*

H6: *There is a significant relationship to the effect both of; the public budget deficit items (revenues, expenditures), exchange rate, GDP, domestic liquidity/GDP, gross domestic public debt/GDP, gross foreign public debt/GDP), and government debt service (internal and external) on fluctuations in inflation rate in the Egyptian money market.*

3. Measuring nominal interest rate, inflation rate (CPI), and deposits behavior:

3.1. Measurement indicators

This study aims at assessing and interpreting the effect of interest, and inflation rates on the deposits' behavior of banks in the Egyptian Money market. Using quarterly time series data collected from statistical bulletins issued by the Central Bank of Egypt 2. All indicators represent the quarterly averages (values - percentages) of all observations of the study variables.

4. Data collection and methodology:

The methodology of the study is based on the evaluation of a sample of financial institutions in the Egyptian Money market. These are the banking institutions during the period (2000-2018). The main objective of this study is to analyze the effect of interest rate and inflation rate on the deposits behavior of the Egyptian banking system. In addition to that, the interpretation of the impact of interest rate and inflation rate on deposit levels, predicting changes that may occur in levels of bank deposits and improving the ability to take decisions necessary to maintain and increase the profitability of banking institutions. Resulting in reducing risks to an acceptable level by encouraging an effective policy approach in attracting and mobilizing deposits. Furthermore, this study investigates various control factors (items of the public budget deficit- revenues and expenditures, exchange rate, GDP, local liquidity/GDP, gross public debt-domestic and foreign/GDP, service of government debt-internal and external) that may affect the interest rate as well as the inflation rate in Egypt which increases fluctuations in the deposits' behavior of banks in Egypt, and on each other.

4.1. Data collection and sample selection:

Given the large size of the Egyptian money market (financial institutions in Egypt), and its secondary data on quarterly time series, the banking sector represents the sampling unit in the Egyptian Money market. The number of observations of interest and inflation rates is 304 including 76 observations on the interest rate and 76 on the inflation rate, addition; the rates of change for both of them are (76 + 76). (304) observations of the behaviors of each (deposits in local currency/EGP (76), deposits in foreign currency/USD (76)), and the rates of change on each of those deposits in the banking sector are (76+76) in the Egyptian Money market during the period (2000-2018). In addition to the quarterly observations of the factors explaining the fluctuations in the interest and inflation rates during the same period (2000-2018) such as 148 observations of Items of the State Budget Deficit - Revenues and Expenditures (74 +74), 76 exchange rate observations, 70 GDP observations, 68 local liquidity/GDP observations, 149 gross public debt (domestic and foreign (75 +74)/GDP observations,

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2 CBE. Available at. https://www.cbe.org.eg/ar/EconomicResearch/Publications/Pages/AnnualReport.aspx.

74 services of government debt observations; from its various related secondary sources: The Quarterly Time Series issued by the Egyptian Central Bank 3.

4.2. Estimation methods and testing of research hypotheses:

4.2.1. Statistical models:

(Engle, 1982) introduced the Autistic Regression Model of Conditional Variation (ARCH) to be used in time series and measurement of phenomena. (Bollersleve, 1986) generalized ARCH models so that the current conditional variation is not only affected by past shocks but also by previous conditional variations, and is called GARCH (p, q); It is more flexible than (Bollerslev, 1992).

The study contains four models:

Mean Equation N⁰ 1

Deposits' Behavior_L_C = $\beta_0 + \beta_1(INT) - \beta_2(INF) + e$ ………………… (1)

Variable Equation N⁰ 1

$$h_t^2 = \beta_0 + \beta_1 e_{t-1}^2 + \beta_2 h_{t-2}^2 \quad ……………………………………………… (2)$$

Where: Deposits' Behavior_L_C = Deposits' Behavior in Local Currency/EGP, EX = Nominal, INT = Interest Rate, INF = Inflation Rate, β_0 = Constant (+), e=Random Variable, β_1, β_2 = Parameters for Explanatory Variables, ($\pm$) = Expected sign of the explanatory variable, e_{t-1}^2 = The square of the residual variants in the previous period is known as the ARCH tip, h_{t-1}^2 = residual variants in the previous period are known as the GARCH tip.

Mean Equation N⁰ 2

Deposits' Behavior_F_C = $\beta_0 + \beta_1(INT) + \beta_2(INF) + e$ …………………………………… (3)

Variable Equation N⁰ 2

$$h_t^2 = \beta_0 + \beta_1 e_{t-1}^2 + \beta_2 h_{t-2}^2 \quad …………………………………………………… (4)$$

Where: Deposits' Behavior_F_C = Deposits' Behavior in Foreign Currency/USD.

Mean Equation N⁰ 3

Interest Rate = $\beta_0 - \beta_1(REV) + \beta_2(EXP) - \beta_3(EX) - \beta_4(GDP) + \beta_5(GDD/GDP) + \beta_6(TEDGDP) + \beta_7(TDS) + \beta_8(INF) + e$ …………………………………………………………… (5)

Variable Equation N⁰ 3

$$h_t^2 = \beta_0 + \beta_1 e_{t-1}^2 + \beta_2 h_{t-2}^2 \quad ……………………………………………… (6)$$

Where: REV = Public budget deficit item (Revenues), EXP=Public budget deficit item (Expenditures), EX = Exchange rate, GDP = Gross domestic product, GDD/GDP=Gross domestic public debt/Gross domestic product, TED/GDP = Gross foreign public debt/Gross domestic product, TDS = Government debt service.

Mean Equation N⁰ 4

Inflation Rate = β_0 - β_1(REV) + β_2(EXP) - β_3(EX) - β_4(GDP) + β_5(LIQ/GDP) + β_6(GDD/GDP) + β_7(TED/GDP) + β_8(TDS) + β_9(INT) + e .... *(7)*

Variable Equation Nº 4

$$h_t^2 = \beta_0 + \beta_1 e_{t-1}^2 + \beta_2 h_{t-2}^2 \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \quad (8)$$

Where: LIQ/GDP = Gross domestic product, β_1, β_2, β_3, β_4, β_5, β_6, β_7, β_8, β_9 = Parameters for Explanatory Variables.

4.2.2. Methods of statistical analysis:

The study uses appropriate statistical methods to analyze the data and test hypotheses. They are also used to estimate the study models and to evaluate whether the data obtained can be used to statistically understand the deposit behavior. They comprise the descriptive statistical analysis of the quarterly time-series data of the variables. The results are obtained from the E-Views 10.0 statistical program. Including, measures of central tendency and dispersion to illustrate trends and behaviors. The following section presents the applied statistics for the nonlinear models of time series.

4.2.2.1. Data preparation methods:

The unit root test (URT), Augmented Dickey-Fuller (ADF), and Phillips-Perron (P.P) are used to detect the stationary of the time series of the study. Co-integration testing using the ARDL methodology; through the Bounds Test that is used to ensure the presence or absence of a common complement between the rest of the time series of the study models. Hence, the estimated regression relationship between the time series of the study models is not spurious, and the long-term causal relationship is directed from the explanatory variables to the dependent variables.

4.2.2.2: Data analysis methods: Nonlinear Autoregressive

The ARDL methodology is used, to detect the presence or absence of autocorrelation between the new time series of residual quadrants through the Breusch-Godfrey test and the OLS method, to test for the presence of ARCH. Generalized autoregression conditional heteroscedasticity models; via ARCH & GARCH models are also used to estimate the regression of the dependent variable (Y) on the independent variable (X), which aims to capture any long-term relationships between time series; to analyze deposit patterns and trends during the study period. Theil Inequality Coefficient Test is used to test the predictability of the model.

4.2.3: Descriptive statistical analysis of the quarterly time-series data

Table 1 shows descriptive statistics; including measures of central tendency and dispersion (average, maximum, minimum, standard deviations, skewness, and kurtosis values) of the study variables, which are deposits' behavior in local currency, deposits' behavior in foreign currency, interest, and inflation rates. It also presents the control factors that may explain the behavior of the independent study variables, which are items of the state budget deficit, revenues and expenditures, exchange rate, money supply, GDP, gross domestic public debt / GDP, total foreign public debt / GDP, and debt service-internal and external. In the sample; The highest and lowest values are: the means were 890137.9, 7.5; The maximum values were 2731175, 13.4; The

minimum values were 251847, 2.7; The standard deviations values were 640983, 1.7, respectively. Moreover, skewness values were 1.4, 1.9, 1.8, 1.3, 1.8, 1.7, 2.3, 0.03, 0.9, -0.034, 0.57, 4.0 respectively. It's worth noting that the shape of the normal distribution takes the value zero and that positive values (greater than zero) mean that the shape of the normal distribution of the data tilts the tail to the right, and the negative values (less than zero) their tail tilts to the left. The kurtosis values are 4.5, 5.5, 6.1, 4.9, 6.5, 5.9, 6.6, 1.8, 3.0, 2.2, 1.8, and 23.6 respectively. Additionally, the normal distribution shape in it takes the value (3), while the values (greater than 3) mean that the curve is tapered, indicating that it is very steep, while the values (less than 3) mean that the normal distribution shape is less abrupt.

4.2.4: Quantitative analyzes and statistics of the study variables

4.2.4.1. Estimate Standard Models (Data Preparation Methods):

The stationary was investigated by testing the significance of the autocorrelation at the gaps to estimate whether the data obtained can be used to statistically understand deposit behavior. It was tested using the unit root test (URT) with the Augmented Dicky-Fuller Extended Test (ADF) and the Phillips-Peron Test (PP). All the variables were found stationary.

The co-integration test of the time-series of the study models was performed to ensure whether a co-integration exists; the estimated regression relationship between them is not spurious and between the causal relationship yt and xt. Due to the difference in the stationary level of the different variables under study, the ARDL methodology, and the F-Bounds Test were used. It was found that there is a common complementarity for all the variables of the study models. Additionally, there is a long-term relationship that moves from the explained variables to the dependent variable. Furthermore, there was found a co-integration for all the variables of the study models, which means that there is a long-term relationship that moves from the explained variables to the dependent variable.

An Autocorrelation test was performed to detect the presence or absence of autocorrelation using ARDL methodology and the Breusch-Godfrey test. It was found that there is an indication that the four study models are devoid of the problem of autocorrelation serial association of errors.

Three conditions must be met to test ARCH & GARCH models which are: the time series must be stationary; the fluctuations must be volatility and this has been achieved. Then there should be an effect of ARCH, which will be conducted. To perform a trace test for ARCH & GARCH models; means a test of the significance of the parameters of the variance equation; that is, the autocorrelation test for errors, and the error squares test as well; by using the Ordinary Least Squares (OLS) method of the Heteroskedasticity Test; ARCH. Where the presence of ARCH was found for all four-study models. Note that the independent variable (liquidity/GDP-M2) has been deleted from the third model because there is no effect of ARCH in the third model.

4.2.4.2. Estimate Standard Models (Estimation of the study models):

A: First model: table (2) shows that the first study model that was estimated using *GARCH (1.1)* model, with (None, Normal) and that the average and variance equations of the model can be written as follows:

Mean Equation № 1

Deposits' Behavior_L_C = 0.036919 + 0.066328*INT + 0.000939*INF + e

Variance Equation № 1

$$GARCH\,(1,1) = 0.000222 - 0.049293*e^2_{t-1} + 0.716006*h^2_{t-1}$$

B: Second Model: table (2) displays that the second study model that was estimated using the *GARCH (1,1)* model, with (None, Normal), and that the mean and variance equations of the model can be written as follows:

Mean Equation № 2

Deposits' Behavior_F_C = 0.013899 + 0.029649*INT + 0.007427*INF + e

Variance Equation № 2

GARCH (1,1) = 0.003526 − 0.029086*e^2_{t-1} + $0.574121*h^2_{t-1}$ *C: Third Model:* Table No. 2: see an end the article; shows that the third study model was estimated using the *GARCH (1,1)* model, with (None, Student's t with fixed df.). Additionally, the mean and variance equations of the model can be written as follows:

Mean Equation № 3

INTEREST RATE = 0.008959 – 0.011470*REV - 0.000652*EXP + 0.010971*EX – 0.027566*GDP - 0.031246*GDD/GDP + 0.015935*TED/GDP – 0.000222*TDS – 0.004024*INF + e

Variance Equation № 3

$$GARCH\,(1,1) = 0.003442 + 0.202570*e^2_{t-1} + 0.523199*h^2_{t-1}$$

D: Fourth Model: table (2) shows that the fourth study model that was estimated using *GARCH (1,1)* model, with (None, Normal). The means and variance equations of the model can be written as follows:

Mean Equation № 4

INFLATION RATE = 0.054476 - 0.002110*REV + 0.020241*EXP - 0.116197*EX – 0.273988*GDP + 0.117244*M2 + 0.211717*GDD/GDP + 0.015997*TED/GDP + 0.013342*TDS – 0.044194*INT + e

Variance Equation №4

$$GARCH\,(1,1) = 0.066101 + 0.\,019337*e^2_{t-1} + 0.583222*h^2_{t-1}$$

5. Results and analyses:

Using the model GARCH (1,1), for all models, to study the cases and behavior of the phenomenon study.

5.1: The first hypothesis test:

"There is a significant relationship between the nominal interest, inflation rates, and the deposits' behavior of banking in the local currency (EGP) in the Egyptian money market".

The results of the study found that the parameter of the ARCH tip is significant at (0.0066) which is less than the 5% level. This means that the previous information for the volatility of the square of the residual variants significantly affects the dependent variable (deposits behavior of banks in local currency/EGP). However, it is weak because its value is negative, and the value of the constant is -0.049293). It was noted also that the GARCH tip parameter is equal to (0.0000), which is less than the level of significance of 5%, and this means that the previous information of the variants of remnants has a significant influence on the dependent variable (deposits behavior of banks in local currency) because its signal is positive, and the value of the constant is (0.716006). The results showed that the nominal interest rate (0.0867) is not significant, which is greater than the 5% level. It means that the nominal interest rate has no significant effect on the dependent variable (deposits behavior of banks in local currency) and that there is a positive correlation between the nominal interest rate and deposits behavior of banks in local currency. The results revealed that the inflation rate (0.0000) is lower than the 5% level. This means that the inflation rate (CPI) has a significant effect on the dependent variable (deposits behavior of banks in local currency), and the inflation rate is positively correlated with deposits behavior of banks in local currency, and the present value of the deposits behavior of banks in local currency is affected by fluctuations of the previous period. Accordingly, the results partially support the first hypothesis.

5.2: Second hypothesis test:

"There is a significant relationship between the nominal interest, inflation rates, and the deposits' behavior of banking in the foreign currency (USD) in the Egyptian money market".

The results indicated that the parameter of the ARCH tip is significant at (0.0000) which is less than the 5% level. This means that the previous information for the volatility of the square of the residual has a significant effect on the dependent variable (deposits behavior of banks in foreign currency/USD) but this effect is weak. Therefore, its signal is negative, and the value is constant at (-0.029086). Also, the GARCH tip parameter is significant at (0.0003) which is less than the 5% level. This means that the previous information for the fluctuations of the residual variants has a strong and significant effect on the dependent variable (deposits behavior of banks in foreign currency). The GARCH tip parameter is positive, and its value is (0.574121). Furthermore, results indicated that the nominal interest rate (0.8749) is not significant

at 5% level, meaning that the nominal interest rate has no significant effect on the dependent variable (deposits behavior of banks in foreign currency) and that the relationship between the nominal interest rate and the deposits behavior of banks in foreign currency is positively correlated. The results of the study showed that the inflation rate (0.0000) is less than the 5% level. This means that the inflation rate (CPI), has a significant effect on the dependent variable (deposits behavior of banks in foreign currency), and the relationship between inflation rate and deposits behavior of banks in foreign currency is positively correlated, and the present value of the deposits behavior of banks in foreign currency is affected by the fluctuations of the previous period. Accordingly, the results partially support the second hypothesis.

5.3. Third hypothesis test:

"There is a significant correlation to the impact of both; the public budget deficit items (revenues, expenditures), exchange rate, GDP, domestic liquidity/GDP, gross domestic public debt/GDP, gross foreign public debt/GDP), and government debt service (internal and external), and Interest rate on fluctuations in inflation rate in the Egyptian Money market"

The results found that the parameter of the ARCH tip is not significant and is (0.3281), which is greater than the 5% level of significance. This means that the previous information for the volatility of the square of the residual has no significant effect on the dependent variable (nominal interest rate). However, the relationship between them is strong, because its signal is positive and equals (0.202570). It is also noted that the parameter of the GARCH tip is not significant and equals to (0.0667), which is greater than the level of significance of 5%, which means that the previous information of the volatility of residues does not significantly affect the dependent variable (interest rate). Nevertheless, the relationship between them is strong, because its signal is positive and equals (0.523199). The results also displayed a significant inflation rate of (0.0416), but it is weak. The insignificance of the rest of the independent variables, and that the relationship between both (exchange rate, gross foreign public debt/GDP) and the interest rate was positively correlated. The relationship is negative with (revenues, expenses, GDP, gross domestic debt/GDP, total debt service-domestic and foreign, and inflation rate). The present value of interest rate behavior is influenced by the volatility of the previous period. Accordingly, the results do not support the third hypothesis..

5.4: Forth hypothesis test:

"There is a significant relationship to the effect both of; the public budget deficit items (revenues, expenditures), exchange rate, GDP, gross domestic public debt/GDP, gross foreign public debt/GDP), and government debt service (internal and external), and inflation rate on fluctuations in interest rate in the Egyptian Money market"

The results of the study found that the parameter of the ARCH tip is not significant and equals to (0.9225) which is greater than the 5% level of significance. This means that the previous information for the volatility of the square of the residual has no significant effect on the dependent variable (inflation rate). However, the relationship between them is strong, because its signal is positive and equals (0.019337). Moreover, the GARCH tip parameter is not significant at (0.4956), which is greater than the 5% level. This means that the previous information of the residual variations does not significantly affect the dependent variable (inflation rate), however, the relationship between them is strong, because its signal is positive and equals (0.58322). The results also indicated that all the independent variables were not significant and that the relationship between (expenditures, liquidity/GDP, gross domestic public debt/GDP, gross foreign public debt/GDP, government debt service - internal and external) and the inflation rate has shown a positive correlation. And that the relationship is negative with (revenues, exchange rate, GDP, interest rate). The current value of inflation rate behavior is influenced by the volatility of the previous period. Accordingly, the results do not support the fourth hypothesis.

6. Conclusions and implications:

Given the different personal and psychological factors in saving behavior, especially family saving, also according to the prevailing economic and social conditions, the degree of economic and political stability, and the degree of savings awareness, the results of the study may contrast with the assumptions of economic theory, especially in developing countries and emerging economies. There is limited literature on assessing the behavior of bank deposits using ARCH & GARCH analysis. The current study, as far as it can be ascertained, is the first initiative to apply ARCH & GARCH analysis to assess the effect of the exchange rate, interest rate, and inflation on the behavior of bank deposits in the Egyptian money market. The findings of this study contribute to the academic literature and policy implications in several ways, as follows:

A. There is no significant positive correlation between the nominal interest rate and the deposits' behavior of banks in local currency/EGP.

B. There is a significant and positive correlation between the inflation rate - CPI - and the deposits' behavior of banks in local currency/EGP.

C. There is no significant and positive correlation between the nominal interest rate and the deposits' behavior of banks in foreign currency/USD.

D. There is a significant and positive correlation between the inflation rate - CPI - and the deposits' behavior of banks in foreign currency/USD.

E. There is a significant negative correlation between the inflation rate and the interest rate. And there is no significant correlation between the following variables (items of the deficit of the public budget – revenues and expenditures, exchange rate, GDP, gross domestic public debt/GDP, gross foreign public debt/GDP, government debt service- internal and external) and the interest rate. Additionally, the relationship between (the exchange rate, gross foreign public debt/GDP) and the interest rate is positive, and the relationship is negative with

(items of the deficit of the public budget – revenues and expenditures, GDP, gross domestic public debt/GDP), service of government debt - domestic and foreign).

F. There are insignificant of all the independent variables (items of the public budget deficit - Revenues, expenditures, exchange rate, GDP, domestic liquidity/GDP, gross domestic public debt/GDP, gross foreign public debt/GDP, government debt service - internal and external, interest rate), and the relationship between (revenue, domestic liquidity/GDP, gross domestic public debt/GDP, gross foreign public debt/GDP) and the inflation rate is positive. Furthermore, this relationship is negative with (exchange rate, GDP, interest rate).

G. Our findings will also attract the attention of academic researchers, investors, and managers to the superiority of ARCH & GARCH analysis in assessing the deposits behavior of banks. Therefore, the ARCH & GARCH "family" models should be relied on to anticipate future phenomena related to different deposits behavior, and to measure the leverage phenomena in capital and money markets, using; models ARCH & GARCH. Moreover, examining the effect of various macroeconomic variables, financial, and monetary variables, on the phenomena observed in the local environment, and make comparisons with regional and international environments, and in emerging and developed economies.

H. It is recommended to study the deposits' behavior of banks especially, the actual behavioral maturities of bank deposits vs. their contractual maturities, resulting from fluctuations in the largest possible number of macroeconomic factors, financial and monetary factors, according to many of the most popular exchange rates in the commercial and economic sector between Egypt and various countries of the world, according to different economic sectors, and for various types of deposits, including; current deposits or time deposits.

I. Although many have studied the effect of interest, and inflation rates on the deposits' behavior of banks represented in the levels of deposits, the results were contradictory for many reasons: First, the different types of market (developed market - emerging market). Second, the different structures of economic, financial, and monetary reforms from one market to another. Finally, the different behaviors of the two sides of the banking relationship towards macroeconomic, financial, and monetary variables, according to many demographic factors; the nature of the portfolio formation strategy, and the extent of their risk appetite. Thus, this study helps to extend the literature on the significant analysis of the impact of the interest and inflation rates on deposits' behavior of banks, via ARCH and GARCH analysis to assess the efficiency of the banking performance.

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Tables and Figures

Figure (1) shows the nominal interest rate, and rate of change in the interest rate (3 months) (2000-2018).
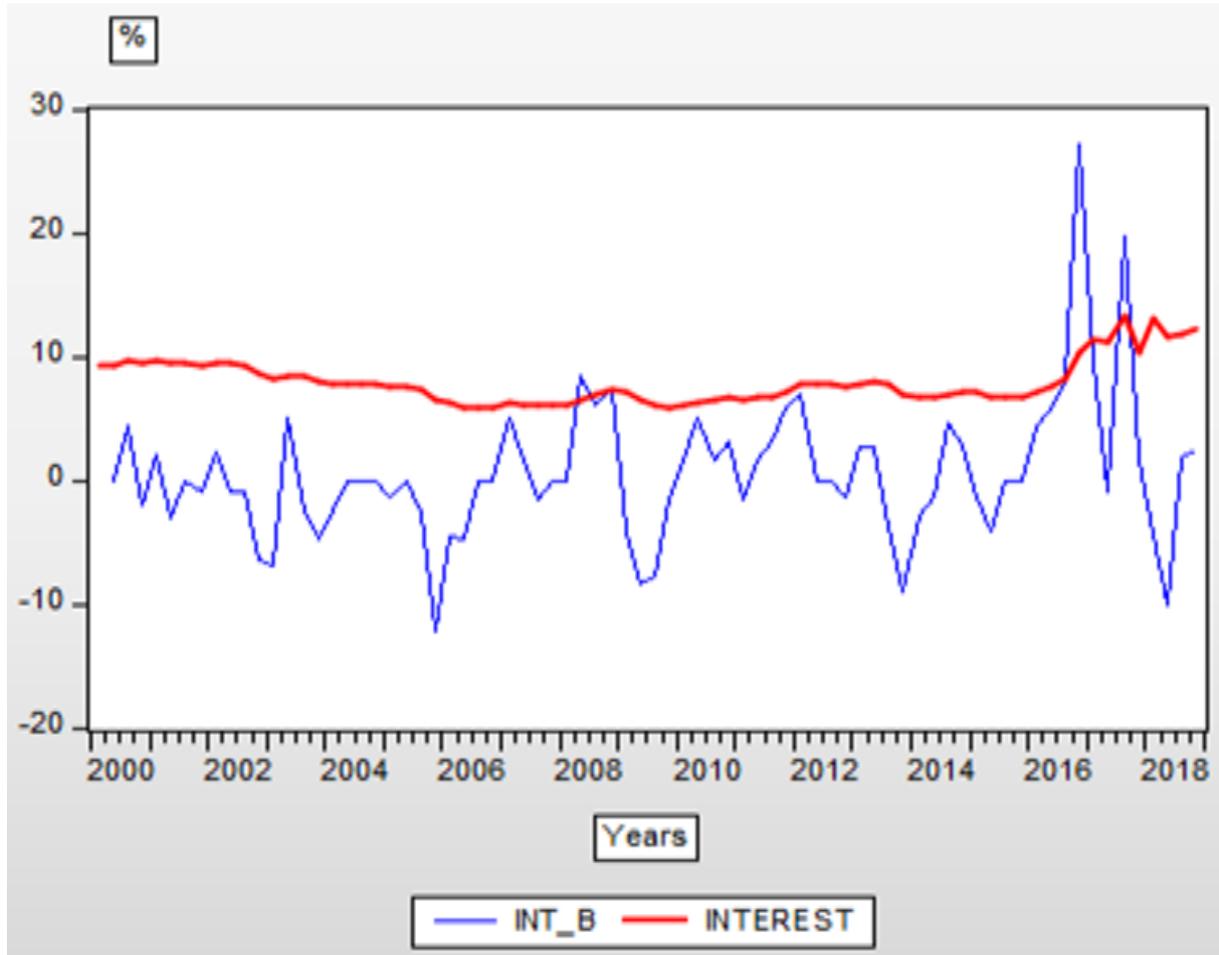
Source: Prepared by the researcher; using the program EViews 10.0.

Figure (2) shows the inflation rate, and rate of change in the inflation rate (CPI) (2000-2018).
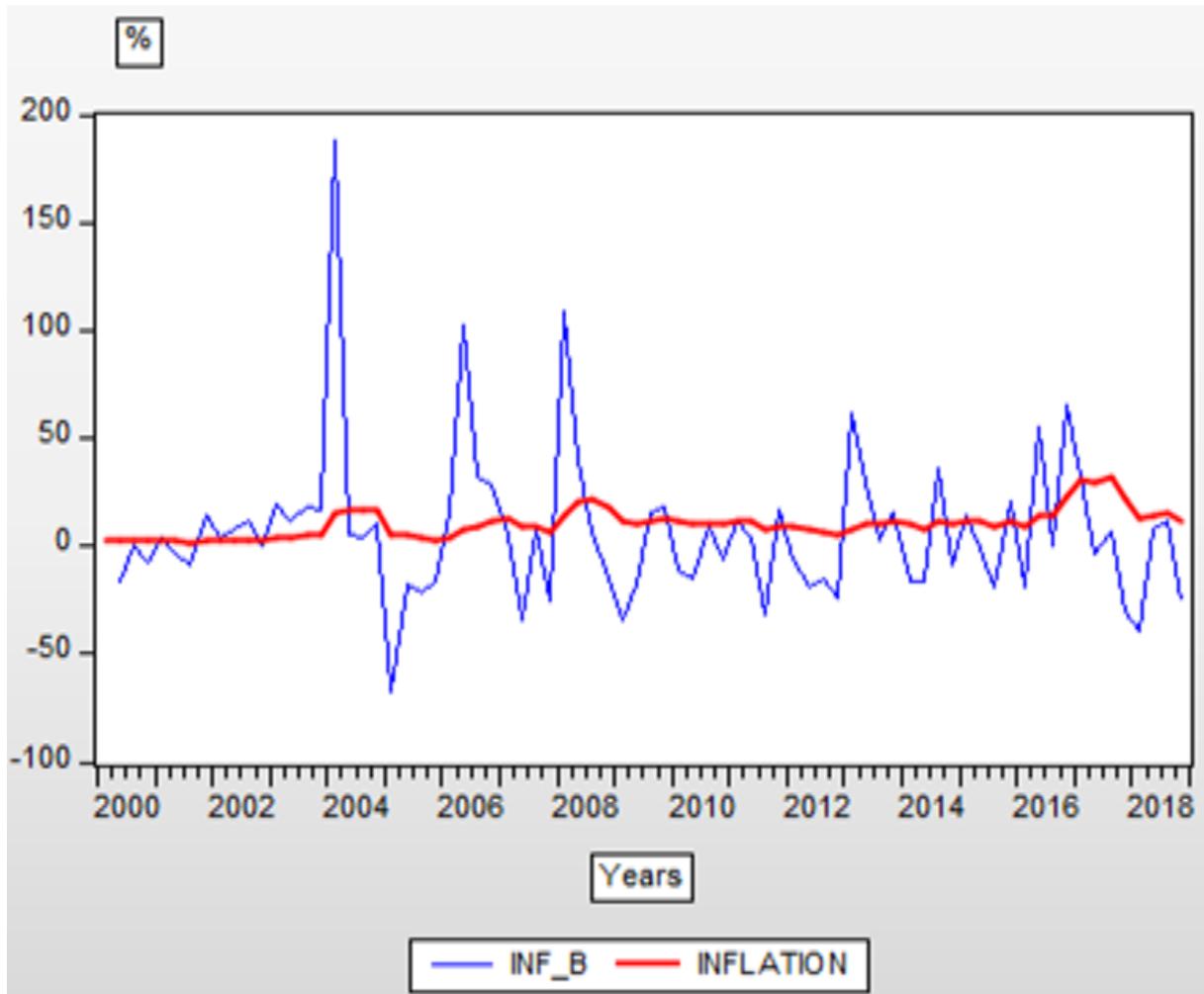
Source: Prepared by the researcher; using the program EViews 10.0.

Figure (3) shows the levels of deposits, and the rate of change in local currency/EGP; the level of deposits, and the rate of change in foreign currency/USD (2000 - 2018).
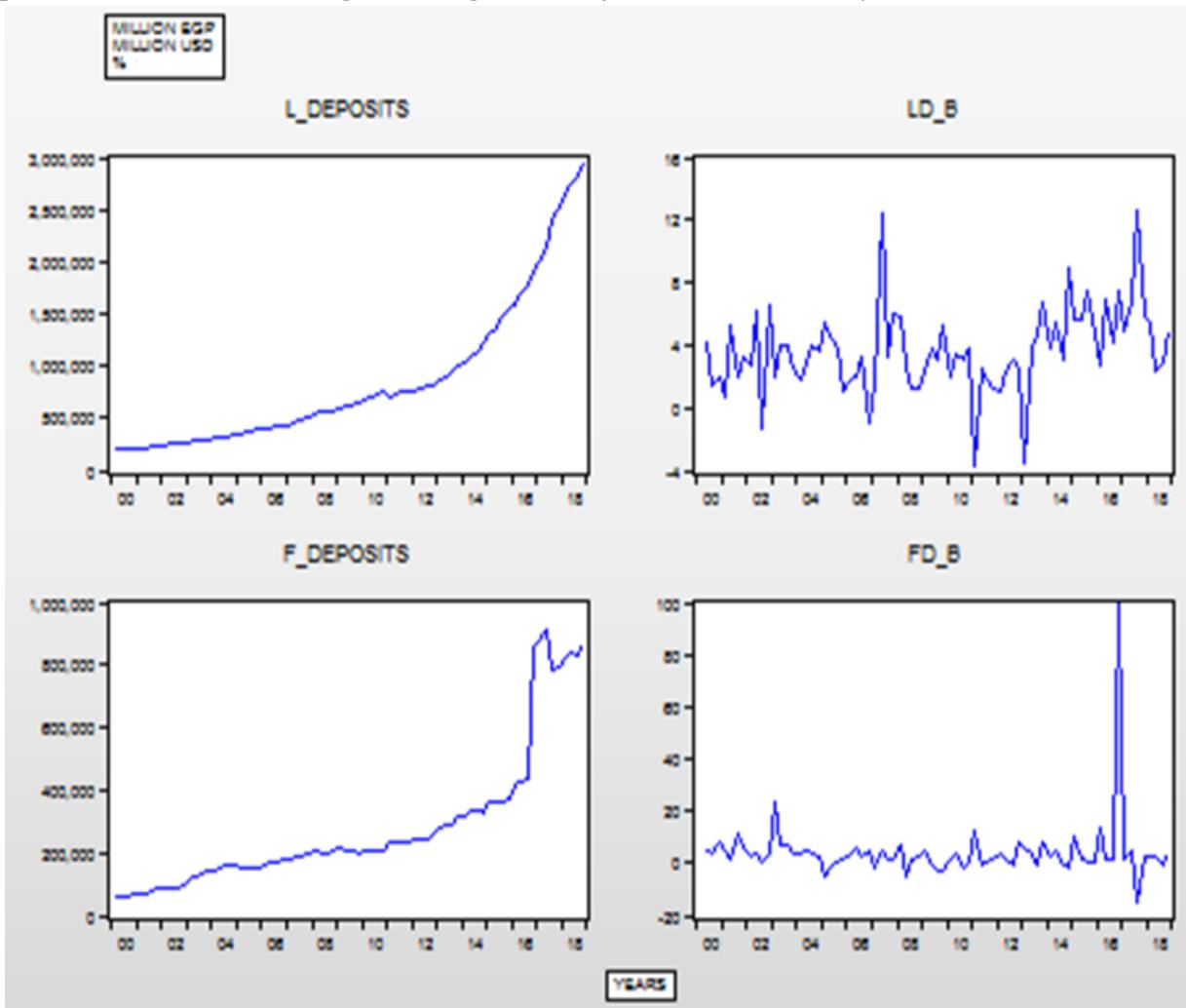
Source: Prepared by the researcher; using the program EViews 10.0.

Table 1: shows the results of the descriptive statistics of the study variables (2000-2018).

	L_DEPOSITS	F_DEPOSITS	INTEREST	INFLATION	REVENUES	EXPENDITURES	EXCHANGE	LIQUIDITY_GDP	GDP	GDDEBT_GDP	TEXTERDEBT_GDP	T_DEBT_SERVICE
Mean	890137.9	294401.0	7.562500	11.48906	173126.1	268967.5	7.488750	77.70313	401.9359	80.55469	22.55000	1008.997
Median	705494.0	210772.5	7.150000	10.20000	113741.0	171029.0	6.022000	77.85500	299.8000	81.50000	18.70000	823.6000
Maximum	2731175	914130.0	13.40000	31.60000	805741.0	1229132.	18.33000	92.04000	1123.6000	96.10000	41.50000	6805.700
Minimum	251847.0	90602.00	5.900000	2.700000	14381.00	25608.00	4.633000	63.25000	86.50000	66.30000	12.00000	333.2000
Std. Dev.	640983.0	209311.6	1.663091	6.405135	159838.4	253699.4	3.752809	8.525422	2843157	7.378905	9.114005	944.9970
Skewness	1.370451	1.900009	1.813930	1.297984	1.783293	1.706473	2.269953	0.025257	0.931435	-0.034891	0.573754	4.003275
Kurtosis	4.050258	5.537713	6.136152	4.912716	6.455703	5.860319	6.559953	1.781655	2.984015	2.230505	1.842568	23.57202
Jarque-Bera	22.97489	55.68034	61.32485	27.72674	65.76645	52.87899	88.75736	3.965111	9.254775	1.591980	7.083793	1299.501
Probability	0.000010	0.000000	0.000000	0.000001	0.000000	0.000000	0.000000	0.137717	0.009780	0.451134	0.028958	0.000000
Observations	64	64	64	64	64	64	64	64	64	64	64	64

Table 1: shows descriptive statistics for the study variables, including measures of central tendency and dispersion (average values, maximum values, minimum values, standard deviations, skewness values, and kurtosis values) of the study variables, which are: (deposit' behavior in local currency, deposit' behavior in foreign currency, interest rate, and inflation rate). Additionally, the control factors that may explain the behavior of the independent study variables, which are: (items of the state budget deficit; revenues and expenditures, exchange rate, Money supply, GDP, gross domestic public debt/GDP, total foreign public debt/GDP, and debt service- internal and external). In the sample, the value of mean was; (890137.9, 294401, 7.6, 11.5, 173126.1, 268967.5, 7.5, 77.7, 401.9, 80.6, 22.6, 1009) respectively. The values of maximum were (2731175, 914130, 13.4, 31.6, 805741, 129132, 18.3, 92.04, 1123.6, 96.1, 41.5, 6805.7) respectively. The values of minimum were (251847, 90602, 5.9, 2.7, 14381, 25608, 4.6, 63.3, 86.5, 66.3, 12, 333.2) respectively. The values of standard deviations were (640983, 209311.6, 1.7, 6.4, 159838.4, 253699.4, 3.8, 8.5, 284.3, 7.4, 9.11, 945) respectively. And skewness values are (1.4, 1.9, 1.8, 1.3, 1.8, 1.7, 2.3, 0.03, 0.9, -0.034, 0.57, 4.0) respectively; Note that the shape of the normal distribution in it takes the value (zero) and that positive values - greater than zero - mean that the shape of the normal distribution of the data tilts the tail to the right, and the negative values - less than zero - the tail tilts to the left. And kurtosis values are (4.5, 5.5, 6.1, 4.9, 6.5, 5.9, 6.6, 1.8, 3.0, 2.2, 1.8, 23.6) respectively; Note that the normal distribution shape in it takes the value (3), while the values (greater than 3) mean that the curve is tapered. Which; is very steep, while the values (less than 3) mean that the normal distribution shape is less abrupt.

Source: Prepared by the researcher based on the results of the EViews 10.0.

Table 2: shows the results of the standard estimation of the study models.

Model Name	Variables	Coefficient	Std.Error	Z-Statistic (Z)	Prob.	R^2
Deposits' Behavior_L_C GARCH(1,1)	Mean Equation					0.018004
	C	0.036919	0.003381	10.92022	0.0000	
	DL_INT	0.066328	0.038716	1.713173	0.0867	
	Variance Equation					
	C	0.000222	6.70E05	3.310424	0.0009	
	RESID(-1)^2	-0.049293	0.018152	-2.715602	0.0066	
	GARCH(-1)	0.716006	0.060112	11.91116	0.0000	
	DL_INF	0.000939	0.000157	5.975118	0.0000	
Deposits' Behavior_F_C GARCH(1,1)	Mean Equation					-0.052513
	C	0.013899	0.016554	0.839595	0.4011	
	INT	0.029649	0.188391	0.157380	0.8749	
	Variance Equation					
	C	0.003526	0.001382	2.550573	0.0108	
	RESID(-1)^2	-0.029086	0.007010	-4.149358	0.0000	
	GARCH(-1)	0.574121	0.157693	3.640759	0.0003	
	DL_INF	0.007427	0.001620	4.583670	0.0000	
Interest Rate GARCH(1,1)	Mean Equation					-0.007229
	C	0.008959	0.010693	0.837810	0.4021	
	DL_REV	-0.011470	0.008280	-1.385289	0.1660	
	Variance Equation					
	C	0.003442	0.001997	1.724159	0.0847	
	RESID(-1)^2	0.202570	0.207151	0.977887	0.3281	
	GARCH(-1)	0.523199	0.285285	1.833955	0.0667	
	DL_EXP	-0.000652	0.003055	-0.213327	0.8311	
	DL_EX	0.010971	0.023012	0.476735	0.6336	
	DL_GDP	-0.027566	0.027972	-0.985483	0.3244	
	DL_GDD/GDP	-0.31246	0.028187	-1.108534	0.2676	
	DL_TED/GDP	0.015935	0.028010	0.568916	0.5694	
	DL_TDS	-0.000222	0.002499	-0.088848	0.9292	
	DL_INF	-0.004024	0.001975	-2.037051	0.0416	
Inflation Rate GARCH(1,1)	Mean Equation					-0.008199
	C	0.054476	0.063021	0.864398	0.3874	
	DL_REV	-0.002110	0.065556	-0.032188	0.9743	
	Variance Equation					
	C	0.066101	0.118477	0.557922	0.5769	
	RESID(-1)^2	0.019337	0.198701	0.097315	0.9225	
	GARCH(-1)	0.583222	0.855925	0.681394	0.4956	
	DL_EXP	0.020241	0.102332	0.197799	0.8432	
	DL_EX	-0.116197	0.305533	-0.380310	0.7037	
	DL_GDP	-0.273988	0.701041	-0.390830	0.6959	
	DL_LIQU/GDP	0.117244	0.854660	0.137182	0.8909	
	DL_GDD/GDP	0.211717	0.809761	0.261457	0.7937	
	DL_TED/GDP	0.015997	0.135698	0.117887	0.9062	
	DL_TDS	0.013342	0.073104	0.182507	0.8552	
	DL_INT	-0.044194	0.481788	-0.091729	0.9269	

Source: Prepared by the researcher; using the program EViews 10.0.