Multicultural Education
ISSN: 10683844
Volume 6, Issue 1, 2020

The Causal Relationship Between The Foreign Exchange Window And Financial Stability In Iraq For The Period (2004-2018)

Aqeel Abdul-Hussein Odeh, Naeem Sabah Jearah, Faiza Hassan Mosachet, Mustafa Mohammed Ibrahim

Article Info

Article History

Received:
May 04,2020

Accepted:
July 09, 2020

Keywords

Exchange Rate, Foreign Currency Sale Window, Financial Stability and Its Aggregate Indicators

DOI:
10.5281/zenodo.4066688

Abstract

The Central Bank of Iraq began implementing the foreign currency sale window on 4/10/2003 and it has continued until now, as the Central Bank of Iraq has become a central market for foreign currency, and the Central Bank of Iraq has adopted the managed floating method of the Iraqi dinar exchange rate. The goal of the window is to reduce fluctuations in the value of the Iraqi dinar against the US dollar, and to approximate the real exchange rate from its nominal level after the Iraqi dinar suffered from a multiplicity in its exchange rates before 2003, as it reached (13) the exchange rate of the Iraqi dinar, and the Central Bank was able Iraqi has built foreign currency reserves that exceeded the IMF's expectations of about (10) billion dollars in order to ensure the state of financial stability. From this standpoint, the research focused on the window for selling the foreign currency in order to verify the effect that the window affected on the elements of financial stability, both for the banking sector and non-financial institutions. The research reached a set of conclusions and recommendations.

Introduction

Research Problem

The Iraqi economy (rentier) after 2003 suffered from a unilateral and suffocating economy and the failure to develop other economic sectors, which led to reliance only on the window for selling foreign currency to feed imports in order to absorb the surplus domestic demand, which caused the failure to achieve economic and financial stability, which afflicted the Iraqi economy Paralyzed most sectors of production.

Research Significance

A statement of the effect of the currency sale window on financial stability and then the economic situation, especially after using standard indicators in order to support sustainable economic development, operate all economic sectors, and create an appropriate investment environment.

Research Hypothesis

- *Is there a standard moral sign between the window of selling foreign currency and financial stability?*

Research Objectives

A. Measuring the effect of the foreign currency sale window on the financial stability elements.
B. Using the (VAR) method in order to measure the effect of the currency selling window on the financial stability elements.
C. Evaluating the effect of the foreign currency selling window in the long term, as well as the error correction vector (VECM).

Research Limits

There are duration limits for research and extending from 2003-2018, as well as spatial limits, which is the Central Bank of Iraq.

Structure Search

The research is divided into two requirements:

A. The first axis: the theoretical framework for the window for selling foreign currency and financial stability.
B. The second axis: measuring and analyzing the effect of the foreign currency sale window on selected variables for financial stability.
C. Conclusions and recommendations.

THE THEORETICAL FRAMEWORK FOR THE WINDOW OF SELLING FOREIGN CURRENCY AND FINANCIAL STABILITY

First. The Concept of Foreign Currency Sale Window

The Central Bank of Iraq used the method of selling foreign currency as a mechanism of the open market in order to work to raise and stabilize the exchange rate of the Iraqi dinar and control the monetary mass and general liquidity, with the aim of reducing inflation and stabilizing the general level of prices by stabilizing aggregate demand, by making a supply Money equals the commodity supply.This is the first tool that has been applied since 4/10/2003 and is still working with it in order to control the excessive increase in money and control the volume of liquidity, by controlling the cash basis (Akawi, Salman, 2014: 70). Managing the process of selling foreign currency in order to maintain monetary stability and face any quantities needed by the market for the purpose of financing trade for the private sector and meeting the needs of the Ministry of Finance in terms of local currency (Al-Nusayri, 2017: 70).Qasim defined it as "the only tool to cover private sector imports, and it is the mechanism that created a strong and effective interdependence between the components of the money supply and its subjection to the factors of demand for cash" (Qasim, 2012: 85).

Second. The Objectives of The Foreign Currency Sale Window

There has been a noticeable increase in the demand for the dollar, as the total sales at the beginning of the window's work in 2003 reached approximately (17.8) million dollars, and it has continued to rise, which has generated an obsession for dollar dealers (represented by the intervention of the Central Bank of Iraq in the money market. It is a method that has not been used before during the past years.And as a result of the window's continuing to carry out its business on a regular basis, this contributed to creating a state of openness in the local currency market, thus allowing traders to freely deal in foreign currency in order to finance their imports. This resulted in an increase in the commodity supply in a manner that covered the demand for local needs that was suppressed for a long time which contributed to achieving the state of stability in the local market, and based on the above, the most prominent objectives of the window for selling foreign currency are (Abd al-Nabi, 2015: 5-7) :

1. A direct intervention tool to achieve stability in the value of the Iraqi dinar by defending a balanced exchange rate, which reflects positively on the general level of prices, especially the final imported goods and production inputs, and strengthens the export base and then realizes the development of this sector.
2. A means of applying the indirect tools of monetary policy in managing the economy's liquidity and controlling its levels. It is considered a case of applying open market operations that are required on an ongoing basis in achieving balance in the monetary market and strengthening the chances of financial stability.
3. A major source in financing the private sector's trade in goods and services that the Iraqi market needs and is a major financier for it.
4. Raising the purchasing power of people with limited income through the level of improvement in the Iraqi dinar and its reflection on the real value of incomes and improving the standard of living.
5. Providing resources in foreign currency to banks for the purpose of enabling them to open documentary credits and letters of guarantee and conduct money transfers in foreign currencies.
6. Opening up investment horizons for (bank customers) for the purpose of developing their investments and developmental economic projects and providing the necessary currency for religious tourism, medical treatment, and studies outside Iraq.

7. The foreign currency sale window has greatly contributed to curbing the growth of money supply and printed currency through the central bank's purchase of foreign currency available with the Ministry of Finance and purchased by the Central Bank for the purpose of enabling the ministry to pay the operational expenses of the country's general budget in Iraqi dinars without the need to issue an additional currency that increases the size Monetary mass and contribute to raising inflation.

The foreign currency selling window has become the appropriate area in determining the exchange rate that the monetary policy aims and adopts, establishing a nominal anchor or an intermediate target of monetary policy in order to achieve its ultimate goal represented by stabilizing the general level of prices and reducing inflationary pressures.As the foreign currency sale window contributed to achieving a balance between the local currency supply (demand for foreign currency) and the local currency demand (foreign currency supply), which led to improvement and stability of the dollar / dinar exchange rate during the period (2004-2015), which is a direct result of increasing reserves International reserves at the Central Bank of Iraq stemming mainly from the latter's monetization of the government's oil revenues, which represent the only source of foreign currency. And chock for its value (Geek, 2016: 10-11).As the heavy dependence of the Iraqi economy on imports makes the exchange rate one of the variables affecting the general level of prices in Iraq, but controlling the exchange rate alone is not sufficient to contain inflation and achieve price stability (George, 2012: 86).

Third. Financial Stability

The Norwegian Central Bank defined the flexibility of the financial system in the face of unforeseen dangerous shocks that enable it to continue to perform the functions of financial institutions (Norwegian Central Bank, 2003: 1), and financial stability is defined as the state in which the financial system is the markets The main financial system and the banking system are assessed to shocks and able to perform its basic functions of financial intermediation, facilitating economic operations, managing risks and arranging payments (Mohsen, 2016: 362).There is another definition that shows financial stability that it is a specific circumstance in which the financial system consisting of intermediary financial institutions, markets and anchor structures is able to withstand shocks and address financial imbalances. Implementing or achieving its tasks, goals or objectives in an appropriate manner within an unspecified period of time by correcting the recurring imbalances in its operational mechanisms (Ali, 2011: 9).

Fourth. FinancialStability Conditions

To achieve financial stability, there are several conditions that must be met to ensure financial stability:

A. Financial stability is a vital condition for economic growth, as most transactions are stabilized in the real economy through the financial system, for example, banks may be reluctant to finance profitable projects, asset prices may deviate excessively from the real values on which they are based, or payments may not be settled. In a timely manner in extreme cases, which may lead to financial instability due to inflation or the collapse of the stock market.
B. That the financial system is able to withstand shocks without expanding the space for the cumulative processes that impede the allocation of savings to investment opportunities and the processing of payments in the economy. This condition raises the issue of defining the financial system, which consists of all financial intermediaries, organized and unregulated markets, payments and settlement between departments and the technical infrastructure that support Financial activity, legal and regulatory provisions, and supervisory agencies, as this condition gives a complete picture of the ways in which savings are directed towards investment opportunities, information is disseminated and processed, risk is shared among economic agents, and payments are facilitated across the economy.
C. Financial stability is related to financing that basically involves a lack of confidence, that is, the dynamic or kinetic between the time period and consists of many interrelated and evolutionary elements (infrastructure, markets and institutions) (Al-Shakurji, Al-Sharabi, 2017: 207-208).

Fifth. Selected Financial Stability Indicators

There are several indicators of financial stability, and each central bank has its own indicators, but most global central banks are united by the following indicators (Macroprudential Indicators, 2015: 5):

1. Financial Risk Exposure Scale: This measure includes a set of indicators presented by the International Monetary Fund in its reports on countries. This group describes macroeconomic stability and the prevailing financing structure. It is easy for the public or investors to obtain these indicators and analyze them, as the sustainable values of these indicators show that the financial system In a healthy situation and able to respond and withstand potential shocks, this scale consists of the following indicators:
   i) Inflation rate: This indicator illustrates exposure to macroeconomic risks. The main objective of the central bank is to achieve price stability. The stable level of this indicator holds the confidence of investors.
   ii) Public budget deficit to GDP: If the budget deficit is high, investors lose their confidence in the government's ability to ensure sustainable future economic growth.
   iii) The current account deficit to the gross domestic product: the large current account deficit shows the existence of a large economic imbalance and requires a future correction, which affects financial stability. Foreign direct investment is required to sustain this consumption, and if for one reason or another these foreign investments are to decline, the financial system is exposed to risk.
   iv) Excessive rise or fall in the real effective exchange rate: The large volatility in REER shows that the economy is subject to major corrections through the exchange rate, which can negatively affect financial stability in the sense that the absolute changes in the REER reflect adjustments in exchange rates as a corrective measure in the economy.
   v) The ratio of private credit to total credit: private credit here is represented by non-government credit and reflects private sector credit financing, and it has become a large part of these non-performing loans. Therefore, the depreciation of this indicator reflects the presence of a positive attitude, and banks 'reserves are a guarantee linked to the ability of these banks to respond for deposit withdrawals, the minimum statutory reserve requirement may be used as an important monetary policy tool.
   vi) Loan-to-deposit ratio: The ratio of reserves to deposits is high in underdeveloped financial systems, as the preference for high liquidity and the rise in these reserves affects the remaining amounts granted as loans and the greater the preference for cash payments, the greater the possibility of higher withdrawals.
   vii) The ratio of deposits to money supply: This ratio reflects the relationship between savings and consumption, as the deterioration of the value of this indicator shows a decrease in the value of the currency and at the same time a decrease in savings, an increase in consumption, and perhaps a rise in inflation.
   viii) The ratio between reserves to deposits, banknotes and coins to money supply in a broad sense: An important indicator that indicates the ability to send signals about an actual crisis is that the credit boom that is not associated with the expansion of deposits shows a potential imbalance in the financial system and reflects reserves as a share of Deposits The ability of the banking sector to respond to heavy withdrawals of deposits, while banknotes and coins into the broad money supply reflect the preference for liquidity at the level of the economy. The high liquidity preference associated with low reserves exposes the financial system to risk.
2. Financial Safety Scale: This measure includes indicators proposed or used by international financial institutions in assessing the practices of the integrity of the financial system. This information must be obtained and from the indicators of this scale are (Central Bank of the Republic of Turkey, 2006: 1):
   i) The ratio of bad loans to total loans: This indicator reflects the quality of loans granted by banks and means quality that the volume of bad loans usually increases when the credit boom occurs, while this indicator deteriorates after the outbreak of crises, as happened after the outbreak of the subprime mortgage crisis in 2007.

ii) Capital-to-assets ratio: This indicator describes the extent of the capitalization of the banking sector, as the information in this index is related to the ability of financial institutions to perform the obligations or debts arising from them.
iii) The ratio of private capital to total assets: This indicator describes the extent or level of capitalization of the banking system and compares this indicator between capital and assets in terms of financial solvency. The market and the high importance of return on assets reflects a more profitable and sound financial system.
iv) Actual liquidity ratio to required liquidity: This indicator reflects what is actually available in terms of liquidity with the banking system, as it is able to respond to the withdrawals submitted in comparison with what is required or specified by the authorities regarding the required liquidity.
v) General risk ratio: This indicator reflects the total level of risk that the financial system may be exposed to and that this indicator is chosen to analyze some important aspects of the safety of banking institutions such as performance of lending activity, capital adequacy, profitability, and ability to perform debts or obligations.

MEASURING AND ANALYZING THE EFFECT OF THE FOREIGN CURRENCY SALE WINDOW ON SELECTED FINANCIAL STABILITY VARIABLES

The foreign currency sale window (WFC) is an independent variable that exerts its influence on the variables of financial stability in Iraq. A set of variables have been chosen, which are the ratio of bad loans to total loans (IPL), the ratio of capital to total assets (CR), and the liquidity ratio (LR).)as an example of the FSI. And variable rate of inflation (INR)
The ratio of budget deficit to gross domestic product (DR) as a representative of the set of variables of financial exposure (FVI). They are dependent variables in order to know the amount and direction of the impact that the local currency sale window has in it.

First. An introduction to the stability and standardization tests

1. Stability Tests

Three tests will be used to detect the stability of time series, which are as follows:

A. Extended Dickey-Fuller test (ADF)

This test was created to analyze the nature and properties of time series by Dickie-Fuller in 1981 and it was called the Extended Dikki -Fuller Test (ADF), and that this test is the most efficient unit root test in its attempt to correct the problem of autocorrelation in the residues by including The test function has a specified number of differences of the slowing dependent variable by estimating the following regression equation:

$$\Delta \mathbf{y_t} = \lambda_{\mathbf{t-1}} + \sum_{\mathbf{i=1}}^{\mathbf{k}} \mathbf{B}\Delta\lambda_{\mathbf{t-1}} + \mathbf{e_T}$$

This test is used in the same way as the simple Dickie-Fuller method, where the (t) statistic of the parameter is examined and this statistic is compared to the tabular values and when the tabular t is greater than its calculated value, and in this case we accept the null hypothesis, i.e. the existence of the unit root and then the instability of the chain The time series here requires taking the differences until the time series stabilizes and then conducting the Extended Unit Root Test (ADF) on the differences, and if the time series is stable at the first differences, then the series is integrated in degree I (1).
But if the time series is stable after taking the second difference, then it is integrated of the second degree I (2), but if the tabular value of t is less than its calculated value here, the alternative hypothesis is accepted, i.e. the absence of a unit root and the stability of the time series .. (Attiyah, 658: 2000).

B. The Phillips-Perron Test

Both Phelps and Peron developed the extended Dikki-Fuller test in 1988 by working on correcting the autocorrelation in the remainder of the regression equation to test the unit root by using an parametric method for model variance to take into account the presence of autocorrelation and to reflect the dynamic nature of the series as it allows the random error term to be independent. In a small and heterogeneous distribution, it thus abandons the traditional conditions for the distribution of the random error limit, and depends on the computation of the unit root first and then transforming the statistic to get rid of the effects of self-correlation on the probability distribution of the test statistic and the variance can be estimated as follows:

$$\mathbf{S_u^2 = T^{-1} \sum_{i=1}^{T} \widehat{u^2}_t + 2T^{-1} = \sum_{j=1}^{l} \sum_{t=j+1}^{T} \hat{u}_t \hat{u}_{t=1}}$$

This test uses the WA + formulas for the same tabular values as the Dickey-Fuller test, where the first formula takes the constant term without the constant term and without a time trend, and the second takes the constant term only to assume that the series mean is not equal to zero, and the third formula takes the constant term with the time trend. The calculated (t) is greater than the tabular (t). This indicates the stability of the time series. The Phillips-Perron test has better and more accurate statistical test capacity than the Dickie-Fuller-expanded test when the sample size is small.

C. KPSS Test

Kwiatkowski-Phillips-Schmidt-Shin (KPSS) from 1992 performed this time series stability test, which is a complementary test to the Extended Dick Filler Stability Test. Where the null hypothesis states that the time series is stable, unlike the extended Dickie Filler test in which the null hypothesis is unstable.
It is assumed that there is no vector:

$$\mathbf{y_t = \xi + e_t}$$

Where et is stable and t is a random path where: t = ξt − 1 + vtvt ~ IID (0, σv2)
If the variance is zero, then ξ = 0 for each t and yt are stable. Using a simple regression, the equation is:

$$\mathbf{KPSS = \frac{1}{T^2} . \frac{\sum_{t=1}^{T} S_t^2}{\sigma_\infty^2}}$$

It is a Lagrange factorial test of the hypothesis that the series has a random path with a zero variance. The KPSS is a complement to the Dickey Filler Extended Test.

2. Vector Autoregressive (VAR) Test

Multivariate time series self-regression models are used. And each variable has a linear function from past periods in itself and the backwardness of the past period from other variables. As an example, we assume that we measure time series for three different variables, xt, 1, xt, 2, xt, 3, so the self-regression vector model is as follows:

$$\boldsymbol{xt,1 = \alpha 1 + \phi 11 xt-1,1 + \phi 12 xt-1,2 + \phi 13 xt-1,3 + wt,1}$$
$$\boldsymbol{xt,2 = \alpha 2 + \phi 21 xt-1,1 + \phi 22 xt-1,2 + \phi 23 xt-1,3 + wt,2}$$
$$\boldsymbol{xt,3 = \alpha 3 + \phi 31 xt-1,1 + \phi 32 xt-1,2 + \phi 33 xt-1,3 + wt,3}$$

Each variable is a linear function of the lag values of one time for all the variables in the set. In the self-regression vector model, the time-delayed values are added for all the variables to the right sides of the equations, and in the case of the three variables x (or time series) there will be any predictors of each of the three interval predictions.
The method of the self-regression vector assumes in a simplified form the modeling of simultaneous equations, as many internal variables are considered together, but each internal variable is interpreted through a value in the past or late periods of time, and past values also for the rest of the internal variables in the model and usually there are no external variables in the model. (Gigaratti, 1092: 2015).

3. Johansen-Juselius Test

The Johansen test of covalent integration is used to determine the long-term equilibrium between economic time series that contain a unit root of one degree or more, and this test does not require that the time series of

related variables be stable of the same degree, and it can be employed in the case of small and large samples as well.

Which means that the Johanssen test is superior to the Angle-Kranger test, and this test is appropriate for small-sized samples. Also, this test reveals whether there is a common complementarity, as the common complement is achieved only in the case of the slope of the dependent variable on the independent variables, and Johansen tests the existence of a long-term equilibrium between the two variable sequences of the same rank despite the short-term imbalance.

This test is also a test of the matrix order (π), and the existence of a common integration between the time series requires that the matrix (π) is not of a complete order [O <r (11) = r <n]. In order to determine the number of integration vectors, two statistical tests are used in two constructs on the Likelihood Ratio Test (LRs):

Trace test (trace ƛ)

Maximum Eigenvalues Test (Max)

The impact test is known as the following mathematical formula or equation:

$$ƛ\boldsymbol{trace} = -\boldsymbol{T}\sum_{\boldsymbol{i}}^{\boldsymbol{n}} = \boldsymbol{r} + \mathbf{1}\log(\hat{ƛ})$$

The null hypothesis is tested that the number of cointegration vectors r <1 versus the alternative hypothesis, since the number of cognitive vectors r = 1

r = 0, 1,2

The greatest potential test is known as the following mathematical formula:

ƛ Max = -T log⁡](1-ƛ ^ ⁡[(i)

If the computed value of the greatest probability rate is greater than the tabular (critical) null hypothesis (r = 0) and the alternative hypothesis (r = 1) is accepted, which states the existence of at least one vector of the covalent integration, and vice versa in the case of accepting the null hypothesis and rejecting the alternative hypothesis (Abdali, 2007: 5).

4. Vector Error Correction Model (VECM)

This method is distinguished from the Angel-Granger model in that it separates the relationship in the long-run from the short-term, and the parameter estimated in the model is more consistent than other methods, such as the Angle-Grangeroguansen method, and it is preferable to use (VECM) to verify the shape of the equilibrium relationship (short and long term) or the dynamic relationship. Between the economic variables and can be applied in the case of small samples, unlike the previous traditional methods. This model is only applied after the success of the Johansen test of cointegration, and if we have two economic variables, Y_t and X_t, complementary of degree one, then the error correction model can be written as follows:

$$\Delta\boldsymbol{Y_T} = \boldsymbol{a_{10}} + \boldsymbol{a_{11}}(\boldsymbol{Y_{t-1}} - \boldsymbol{B_0} - \boldsymbol{B_1}\boldsymbol{X_{T-1}}) + \boldsymbol{V_t^y}$$
$$\Delta\boldsymbol{X_T} = \boldsymbol{a_{20}} + \boldsymbol{a_{21}}(\boldsymbol{Y_{t-1}} - \boldsymbol{B_0} - \boldsymbol{B_1}\boldsymbol{X_{T-1}}) + \boldsymbol{V_t^x}$$

Parameters a11 and a21 represent the error correction factor in the two equations as this method is used when the time series is converted from an unstable time series to a stable time series. There are several methods and procedures for converting the time series from unstable time series to stable time series, and these methods depend on the nature of And the features of instability in time series, and among these methods is the logarithmic transformation or the square root transformation of time series that are characterized by the stability of variance, and the method of differences for the general direction series and the series characterized by periodic fluctuations,And it loses important information about the relationships that bind the time series under study in the long term. Therefore, what is known as the method of correcting errors has been developed, which requires the presence of a mixture of information in its level and differences in the equation itself.

Secondly. Stability Tests

The results obtained from examining the stability of the time series for the variables of the effect of the foreign currency sale window in the financial stability variables for the period (2016Q4-2004Q1) were as follows:

Table (1)
Stability Results of The Foreign Currency Sale Window and The Financial Safety Group and Exposure to Financial Risks in Iraq For the Period (2016 Q4-2004Q1)

	Variant	**Level**			**The First Difference**		
		ADF / Prob			ADF / Prob		
		Int.	Int.+ T	Non	Int.	Int.+ T	Non
ADF	**WFC**	-1.7 (0.3)	-1.3 (0.8)	-0.6 (0.4)	-6.7 (0.0000)	-6.9 (0.0000)	-6.8 (0.0000)
	IPL	-2.1 (0.2)	-0.01 (0.9)	-2.6 (0.01)	-4.5 (0.0006)	-4.6 (0.002)	-4.4 (0.0000)
	CR	-3.07 (0.035)	-3.08 (0.12)	-1.4 (0.13)	-3.8 (0.004)	-3.7 (0.025)	-3.8 (0.0002)
	LR	-2.1 (0.21)	-2.3 (0.4)	-1.3 (0.16)	-3.1 (0.028)	-3.2 (0.090)	-3.2 (0.001)
	INR	-3.1 (0.03)	-4.3 (0.0054)	-2.6 (0.008)			
	DR	-3.5 (0.009)	-4.08 (0.01)	-2.03 (0.04)			
PP	**WFC**	-1.7 (0.4)	-1.2 (0.8)	-0.6 (0.4)	-6.7 (0.0000)	-7.5 (0.0000)	-6.8 (0.0000)
	IPL	-2.5 (0.1)	-2.4 (0.3)	-2.3 (0.019)	-4.6 (0.0004)	-4.6 (0.002)	-4.6 (0.0000)
	CR	-2.3 (0.15)	-2.3 (0.38)	-1.1 (0.20)	-3.9 (0.003)	-3.9 (0.017)	-4.01 (0.0001)
	LR	-1.6 (0.42)	-1.7 (0.7)	-0.9 (0.3)	-3.3 (0.019)	-3.3 (0.068)	-3.3 (0.001)
	INR	-2.4 (0.14)	-2.7 (0.22)	-2.1 (0.03)			
	DR	-3.7 (0.0054)	-4.2 (0.007)	-1.8 (0.066)			
KPSS - LM	**WFC**	0.6	0.2		0.2	0.06	
	IPL	0.8	0.149		0.1	0.03	
	CR	0.09	0.07				
	LR	0.8	0.3		0.1	0.09	
	INR	0.37	0.06				
	DR	0.14	0.07				

Source: Prepared by researchers based on the outputs of the Eviews9 statistical program.

It is evident from the three stability tests above that the time series for both the Foreign Currency Sale Window (WFC) and the Financial Safety Group (FSI) did not stabilize at the level of the three formulas (fixed limit, fixed limit with time trend, without fixed limit), and the first difference was made to it and became Stable, with the exception of the third test (KPSS) which recognized the stability of the time series of the ratio of capital to total assets (CR), which confirms that the static characteristic is not achieved, which leads to the acceptance of the null hypothesis that says the existence of the unit root in the time series data.The results, after taking the first difference of the variables and performing the unit root test, indicate the realization of the static characteristic at the first difference of the variables, which enables the rejection of the null hypothesis and the acceptance of the alternative hypothesis, which means that the time series of the

variables are static at its first difference. As for the financial exposure group (FVI), it was stable at the three formulas (fixed term, fixed term with a time trend, without a fixed term) in all three tests. Here, the alternative hypothesis is accepted, i.e., those time series are still (not containing the unit root).

Table (2)

Vector Autoregressive (VAR) test results for study variables duration (2016Q4-2004Q1)

Vector Autoregression Estimates
Date: 09/29/17 Time: 23:28
Sample (adjusted): 2004Q3 2016Q4
Included observations: 50 after adjustments
Standard errors in ( ) & t-statistics in [ ]

DR	*INR*	*LR*	*CR*	*IPL*	
0.194679	*-6.634290*	*-0.059030*	*0.217935*	*2.022287*	*IPL(-1)*
(1.16952)	*(6.60262)*	*(0.10322)*	*(0.44578)*	*(0.85967)*	
[0.16646]	*[-1.00480]*	*[-0.57187]*	*[0.48889]*	*[2.35240]*	
0.123342	*6.820274*	*0.048905*	*-0.226925*	*-1.120921*	*IPL(-2)*
(1.07486)	*(6.06820)*	*(0.09487)*	*(0.40969)*	*(0.79009)*	
[0.11475]	*[1.12394]*	*[0.51551]*	*[-0.55389]*	*[-1.41873]*	
-0.257342	*-9.147017*	*-0.057444*	*1.640039*	*1.008627*	*CR(-1)*
(0.81514)	*(4.60196)*	*(0.07194)*	*(0.31070)*	*(0.59918)*	
[-0.31570]	*[-1.98763]*	*[-0.79845]*	*[5.27850]*	*[1.68334]*	
0.186712	*9.391885*	*0.055977*	*-0.806803*	*-0.966793*	*CR(-2)*
(0.77840)	*(4.39454)*	*(0.06870)*	*(0.29670)*	*(0.57217)*	
[0.23987]	*[2.13717]*	*[0.81478]*	*[-2.71928]*	*[-1.68968]*	
0.828688	*31.81643*	*1.634791*	*-0.667748*	*-3.683113*	*LR(-1)*
(2.32080)	*(13.1023)*	*(0.20483)*	*(0.88460)*	*(1.70594)*	
[0.35707]	*[2.42831]*	*[7.98103]*	*[-0.75486]*	*[-2.15900]*	
0.369626	*-32.37469*	*-0.730944*	*0.574736*	*3.569941*	*LR(-2)*
(2.32347)	*(13.1174)*	*(0.20507)*	*(0.88562)*	*(1.70790)*	
[0.15908]	*[-2.46808]*	*[-3.56436]*	*[0.64897]*	*[2.09026]*	
0.029668	*-0.108825*	*-0.007185*	*0.037331*	*0.159849*	*INR(-1)*
(0.15595)	*(0.88045)*	*(0.01376)*	*(0.05944)*	*(0.11464)*	
[0.19023]	*[-0.12360]*	*[-0.52201]*	*[0.62801]*	*[1.39441]*	
0.003653	*0.611474*	*0.005816*	*-0.037822*	*-0.106034*	*INR(-2)*
(0.13918)	*(0.78574)*	*(0.01228)*	*(0.05305)*	*(0.10230)*	
[0.02625]	*[0.77821]*	*[0.47347]*	*[-0.71295]*	*[-1.03645]*	
1.096234	*-1.903024*	*-0.000105*	*0.080184*	*0.215034*	*DR(-1)*
(0.22592)	*(1.27546)*	*(0.01994)*	*(0.08611)*	*(0.16607)*	
[4.85230]	*[-1.49203]*	*[-0.00528]*	*[0.93116]*	*[1.29487]*	
-0.423299	*2.059902*	*-0.003663*	*-0.055584*	*-0.263231*	*DR(-2)*
(0.17722)	*(1.00051)*	*(0.01564)*	*(0.06755)*	*(0.13027)*	
[-2.38855]	*[2.05885]*	*[-0.23421]*	*[-0.82286]*	*[-2.02069]*	

-0.761088	*-27.14370*	*0.038193*	*0.639828*	*2.904068*	*C*
(1.72915)	*(9.76209)*	*(0.15262)*	*(0.65909)*	*(1.27104)*	
[-0.44015]	*[-2.78052]*	*[0.25026]*	*[0.97078]*	*[2.28480]*	
0.000639	*0.021778*	*0.000045*	*-0.000351*	*-0.002245*	*WFC*
(0.00158)	*(0.00891)*	*(0.00014)*	*(0.00060)*	*(0.00116)*	
[0.40518]	*[2.44431]*	*[0.07494]*	*[-0.58282]*	*[-1.93566]*	
0.918890	*0.882318*	*0.961675*	*0.884966*	*0.918419*	*R-squared*
0.895411	*0.848252*	*0.950581*	*0.851667*	*0.894804*	*Adj. R-squared*
10.23084	*326.0849*	*0.079697*	*1.486387*	*5.527915*	*Sum sq. resids*
0.518876	*2.929366*	*0.045796*	*0.197776*	*0.381407*	*S.E. equation*
39.13634	*25.90039*	*86.68375*	*26.57616*	*38.89048*	*F-statistic*
-31.28151	*-117.8253*	*90.09170*	*16.94495*	*-15.89162*	*Log likelihood*
1.731260	*5.193012*	*-3.123668*	*-0.197798*	*1.115665*	*Akaike AIC*
2.190146	*5.651897*	*-2.664782*	*0.261088*	*1.574550*	*Schwarz SC*
2.769900	*4.101875*	*0.244750*	*1.238900*	*1.449925*	*Mean dependent*
1.604429	*7.519906*	*0.206007*	*0.513517*	*1.175949*	*S.D. dependent*
			2.21E-07	*Determinant resid covariance (dof adj.)*	
			5.61E-08	*Determinant resid covariance*	
			62.65927	*Log likelihood*	
			-0.106371	*Akaike information criterion*	
			2.188057	*Schwarz criterion*	

Source: Prepared by researchers based on the outputs of the Eviews9 statistical program

It is evident from Table (2), according to the VAR test, that the window for selling the foreign currency has exerted an influence on the variables of financial safety and exposure to financial risks during the study period where the parameters were statistically significant less than (5%), if the window of selling currency increased The ratio of non-performing loans to total loans (IPL) decreases by (0.002245), the ratio of capital to total assets (CR) decreases by (0.000351), and the liquidity ratio (LR) increases by (0.000045). The inflation rate (INR) increases by (0.021778), and the ratio of the budget deficit to GDP (DR) increases by (0.000639). The statistical tests were good, as the explanatory strength of the variables reached (91.8%, 88.4%, 96.1%, 88.2%, 91.8%), respectively, and the *Fisher test* was significant at a significant level (5%).

Fourth.Test for Optimum Idle Times

The results of the three tests (AIC, HQ, SC), which were used to determine the optimal slowdown period that achieve the best estimate of the error correction vector model, showed that that period is the second period and for all variables that is because its value is the lowest compared to the rest of the values in the three tests as stipulated Those tests, therefore, that period will be adopted in estimating this model, which means that the error correction vector model that will be used in detecting the direction of the relationship between the variables under study will include the second slowdown period.

Table (3)

Delay period for study variables for the period (2016Q4-2004Q1)

VAR Lag Order Selection Criteria
Endogenous variables: X1Q X3Q X4Q
Exogenous variables: Y
Date: 09/29/17 Time: 23:36
Sample: 2004Q1 2016Q4
Included observations: 48

HQ	SC	AIC	FPE	LR	LogL	Lag
8.966239	9.038993	8.922043	1.504454	NA	-211.1290	0
2.304842	2.595860	2.128060	0.001688	315.4353	-39.07344	1
1.520500*	2.029781*	1.211131*	0.000678*	52.96909*	-8.067138	2
1.795617	2.523162	1.353661	0.000792	8.833851	-2.487863	3
2.210842	3.156650	1.636299	0.001075	3.232677	-0.271171	4

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Source: Prepared by researchers based on the outputs of the Eviews9 statistical program.

Fifth. Johansen-Juselius Test

The Unit Root Test of the time series static (Dicke Fuller Extended Test), (Phillips Perron) test and (KPSS) test proved that most of the model variables are static after the first difference, which may indicate the possibility of a co-integration relationship between the model variables. Model variables using the Johansen-Juselius methodology (Johansen-Juselius1990), which is one of the best methods used to estimate the cointegration vector and confirm its unilateralism based on the trace test (traceλ) and the Maxigan Values test, which demonstrate the existence of a long-term equilibrium relationship between The economic variables of the study sample and the results were as shown in Table (4).

Table (4)
(Johansen-Juselius) for the study model duration (2016Q4-2004Q1)

Decision	Null Hypothesis	Alternative Hypothesis	Prob.	Statistic value	Critical Value
					Trace decision
Trace test indicates 4 co integrating eqn.(s) at the 0.05 level.	R=1	R=0	0.0023	112.2681	95.75366
			0.0058	80.27680	69.81889
			0.0130	53.62074	47.85613
	R=0	R>1	0.0955	27.25682	29.79707
denotes rejection of the hypothesis at the 0.05 level			0.1023	13.35980	15.49471
			0.0215	5.286851	3.841466
					Maximum Decision
Max-eigenvalue test indicates 2 co integrating eqn.(s) at the 0.05 level.	R=1	R=0	0.3035	31.99129	40.07757
			0.2822	26.65606	33.87687
	R=0	R>1	0.0710	26.36392	27.58434
			0.3735	13.89701	21.13162
denotes rejection of the hypothesis at the 0.05 level			0.3713	8.072953	14.26460
			0.0215	5.286851	3.841466

Source: Prepared by researchers based on the outputs of the Eviews9 statistical program.

After conducting a test of the common integration between the variables, it was found that there are a number of vectors of joint integration between these variables as in Appendix (2), as the results of the trace test shown in Table (4) showed that there are four significant vectors at (5) %), Which means rejecting the null hypothesis and accepting the alternative hypothesis R> 1 that there are four vectors of covariant integration.
As for the maximum eigen value () statistic, it indicates the existence of a co-integration between a single significant vector at% 5), which means rejecting the null hypothesis (r = 0) and accepting the alternative hypothesis. There may be a long-term relationship, even if it is limited between the vectors, which may indicate Some vectors are moving in the same direction in the long term, although there are some deviations in the short term.Based on the results of the cointegration test, VECM error correction vector model will be adopted.

Sixth. VECM Error Correction Vector Test

Table (5)
VECM error correction vector test for duration study variables (2016Q4-2004Q1)

Vector Error Correction Estimates
Date: 09/29/17 Time: 23:30
Sample (adjusted): 2004Q4 2016Q4
Included observations: 49 after adjustments
Standard errors in ( ) & t-statistics in [ ]

				CointEq1	*Cointegrating Eq:*
				1.000000	*IPL(-1)*
				-0.858326 *(0.25967)* *[-3.30548]*	*CR(-1)*
				3.392023 *(0.52823)* *[6.42145]*	*LR(-1)*
				-0.135113 *(0.02544)* *[-5.31155]*	*INR(-1)*
				-0.496807 *(0.11632)* *[-4.27118]*	*DR(-1)*
				0.719932	*C*
D(DR)	*D(INR)*	*D(LR)*	*D(CR)*	*D(IPL)*	*Error Correction:*
-0.023818 *(0.11788)* *[-0.20206]*	*2.907330* *(0.56930)* *[5.10689]*	*4.78E-05* *(0.00936)* *[0.00510]*	*0.008000* *(0.04220)* *[0.18958]*	*-0.380816* *(0.07245)* *[-5.25596]*	*CointEq1*
-0.158372 *(1.40175)* *[-0.11298]*	*-3.693168* *(6.76985)* *[-0.54553]*	*-0.031086* *(0.11134)* *[-0.27921]*	*0.065132* *(0.50183)* *[0.12979]*	*0.980216* *(0.86160)* *[1.13767]*	*D(IPL(-1))*

0.895002	*-4.790414*	*0.056456*	*-0.258164*	*1.119925*	*D(IPL(-2))*
(1.43377)	*(6.92447)*	*(0.11388)*	*(0.51329)*	*(0.88127)*	
[0.62423]	*[-0.69181]*	*[0.49575]*	*[-0.50296]*	*[1.27080]*	
-0.208470	*-7.187037*	*-0.042463*	*0.534827*	*0.937662*	*D(CR(-1))*
(1.10433)	*(5.33344)*	*(0.08771)*	*(0.39535)*	*(0.67879)*	
[-0.18877]	*[-1.34754]*	*[-0.48412]*	*[1.35279]*	*[1.38138]*	
0.459855	*-2.704540*	*0.021745*	*-0.092255*	*0.604859*	*D(CR(-2))*
(1.07999)	*(5.21588)*	*(0.08578)*	*(0.38664)*	*(0.66382)*	
[0.42580]	*[-0.51852]*	*[0.25350]*	*[-0.23861]*	*[0.91117]*	
0.554993	*21.88851*	*0.612719*	*-0.316247*	*-2.812445*	*D(LR(-1))*
(3.13445)	*(15.1380)*	*(0.24896)*	*(1.12213)*	*(1.92661)*	
[0.17706]	*[1.44593]*	*[2.46115]*	*[-0.28183]*	*[-1.45979]*	
-1.383662	*8.703870*	*-0.011221*	*0.417872*	*-1.953068*	*D(LR(-2))*
(3.23256)	*(15.6118)*	*(0.25675)*	*(1.15726)*	*(1.98691)*	
[-0.42804]	*[0.55752]*	*[-0.04370]*	*[0.36109]*	*[-0.98297]*	
-0.017103	*-0.193072*	*-0.003970*	*0.011934*	*0.088711*	*D(INR(-1))*
(0.18437)	*(0.89043)*	*(0.01464)*	*(0.06601)*	*(0.11333)*	
[-0.09276]	*[-0.21683]*	*[-0.27113]*	*[0.18081]*	*[0.78280]*	
0.116692	*-0.275310*	*0.008044*	*-0.030211*	*0.099320*	*D(INR(-2))*
(0.18536)	*(0.89522)*	*(0.01472)*	*(0.06636)*	*(0.11393)*	
[0.62953]	*[-0.30753]*	*[0.54635]*	*[-0.45526]*	*[0.87174]*	
0.451795	*-2.735204*	*-0.004218*	*0.017189*	*0.339094*	*D(DR(-1))*
(0.27333)	*(1.32005)*	*(0.02171)*	*(0.09785)*	*(0.16800)*	
[1.65295]	*[-2.07205]*	*[-0.19428]*	*[0.17566]*	*[2.01839]*	
0.142816	*-0.885170*	*0.002491*	*0.018833*	*0.096753*	*D(DR(-2))*
(0.22965)	*(1.10909)*	*(0.01824)*	*(0.08221)*	*(0.14115)*	
[0.62190]	*[-0.79811]*	*[0.13660]*	*[0.22908]*	*[0.68545]*	
1.312363	*-38.12584*	*0.047204*	*0.452378*	*4.925693*	*C*
(1.90551)	*(9.20277)*	*(0.15135)*	*(0.68217)*	*(1.17123)*	
[0.68872]	*[-4.14287]*	*[0.31189]*	*[0.66314]*	*[4.20556]*	
-0.001016	*0.029459*	*-3.51E-05*	*-0.000376*	*-0.003794*	*WFC*
(0.00150)	*(0.00725)*	*(0.00012)*	*(0.00054)*	*(0.00092)*	
[-0.67681]	*[4.06509]*	*[-0.29453]*	*[-0.70000]*	*[-4.11412]*	
0.433490	*0.554643*	*0.420150*	*0.298095*	*0.572344*	*R-squared*
0.244653	*0.406190*	*0.226866*	*0.064127*	*0.429792*	*Adj. R-squared*
14.55485	*339.4865*	*0.091819*	*1.865413*	*5.498860*	*Sum sq. resids*
0.635847	*3.070860*	*0.050503*	*0.227634*	*0.390827*	*S.E. equation*
2.295580	*3.736165*	*2.173749*	*1.274085*	*4.014986*	*F-statistic*
-39.78754	*-116.9505*	*84.32599*	*10.54628*	*-15.93964*	*Log likelihood*
2.154593	*5.304103*	*-2.911265*	*0.100152*	*1.181210*	*Akaike AIC*
2.656505	*5.806015*	*-2.409353*	*0.602063*	*1.683121*	*Schwarz SC*

-0.009592	*-0.000941*	*0.003549*	*-0.008866*	*-0.079898*	*Mean dependent*
0.731610	*3.985074*	*0.057437*	*0.235303*	*0.517569*	*S.D. dependent*
			5.49E-07	*Determinant resid covariance (dof adj.)*	
			1.17E-07	*Determinant resid covariance*	
			43.31453	*Log likelihood*	
			1.089203	*Akaike information criterion*	
			3.791803	*Schwarz criterion*	

Source: Prepared by researchers based on the outputs of the Eviews9

It is noted from Table (5) that the changes in the window of selling foreign currency have an effect on the changes occurring in some variables (DR, INR, LR, CR, IPL), as the window has only had a long-term effect with the ratio of bad loans to total loans (IPL) The inflation rate (INR) is at a probability level less than (5%) as in Appendix (3). The value of the error correction factor in the model was (-0.380816), which is negative and significant, as the P-value reached (0.000), which is less than 5%, meaning that it is significant, and this indicates that the window for selling foreign currency does not affect all components of the stability of the financial system as its effect is limited to one of the selected financial safety variables and one of the variables of exposure to the selected financial risks, and the value of the error correction factor indicates that The speed of adjusting the system to the equilibrium state is moving at a rate of adjustment of (38%) every four months.

Seventh. Standardized Tests Related to Time Series Analysis of The Study Model

After completing the evaluation of the model, and for the purpose of ensuring the correctness and accuracy of the results obtained above, some important tests must be performed, including:

1. **Serial Correlation LM test**

This test is used to ensure that the estimated model is free of the self-correlation problem, and by using the Breusch-Godfrey test to detect the self-correlation problem. F (3.33) = 0.0615)) which is greater than (5%), meaning accepting the null hypothesis (which states that there is no self-correlation between random residues), and rejecting the alternative hypothesis, which indicates that the model is free from the problem of correlation between random residues This enhances the reliability of the model results for analysis, forecasting and policy-making.

2. **Heteroskedasticity test**

This test is used to detect the problem of heterogeneity of variance. By adopting Engle's ARCH test, the results in Appendix (4) indicate that the model is free from the problem of heterogeneity of variance based on the probability value of the F-StatisticProb statistic. F (1,46) = 0.4831)), which is greater than 5%. That is, in the sense of accepting the null hypothesis (which states that the homogeneity of the variance is not stable), and rejecting the alternative hypothesis, indicating that the model is free from the problem of the non-stability of the homogeneity of variance, which enhances the acceptability Model results.

4.CONCLUSIONS

1. Most of the model variables have stabilized at the first difference according to the stability results in Table (1) based on three tests, which are the most efficient in this field, namely the Dicky-Fuller Extended Test, Phillips Peyron Test and (KPSS) test, with the exception of the variables of exposure to financial risks which were stable.
2. Based on the results of the self-regression vector test in Table (2), the foreign currency sale window (WFC), when it increases by one, affects the ratio of non-performing loans to total loans (IPL) towards a decrease in the amount (0.002245), which is a very limited amount. Towards a decrease in the ratio of capital to total assets (CR) by (0.000351), which is also a relatively limited amount, and the window affects the direction of increasing the liquidity ratio (LR) by (0.000045), which is a small amount.And that the foreign currency selling window affects the increase in the inflation rate (INR) by (0.021778),

which is acceptable to some extent. Accordingly, the foreign currency selling window exerts a relatively limited effect on (IPL) and (INR). As for its effect on the other study variables, it was very small.

3. The results of the Johansen test confirm the effect test with the presence of four vectors for cointegration, while the maximum eigen value test indicates the existence of one vector for the cointegration according to Table (4).
4. The results of the VECM vector in Table (5) confirm the limited impact of the foreign currency sale window on the financial stability variables as mentioned in Appendix (3) and that the correction factor has reached (38%) in every four months.

5. RECOMMENDATIONS

1. The need to support the window for selling foreign currency with monetary and financial instruments that would support financial stability in the Iraqi economy.
2. The monetary policy cooperation with the fiscal policy would stimulate the financial environment and support the components of financial stability.
3. The need to educate individuals about the importance of monetary policy measures and the main goal of the foreign currency sale window, in order to avoid speculations that push the economy on its proper course.

References

Abdul Nabi, Walid Idi, (2015), Foreign Currency Auction and its Role in Stabilizing the Exchange Rate of the Iraqi Dinar, Central Bank of Iraq, Research and Studies, Available on the Central Bank of Iraq website, Baghdad.

Akawi, Omar Mahmoud, Salman, Zuhair Hamed, (2014), The role of foreign currency auction in achieving stability in the value of the Iraqi dinar for the period 2003-2011, Journal of Administration and Economy, the thirty-seventh year, issue one hundred and one, Baghdad.

Al-Abdali, Abed bin Abed, (2007), Estimating the Determinants of Demand for Imports in the Kingdom of Saudi Arabia within the Framework of Joint Integration and Correction of Error, Journal of Saleh Abdullah Kamel Center for Islamic Economics, Issue 32, at Al-Azhar University.

Ali, Ahmad Abrihi, (2011), International Financial Stability Requirements, Macro-Precaution and Post-Crisis Balance of Payments, Iraqi Journal of Economic Sciences, Ninth Year, Issue 29, Baghdad.

Al-Nasiri, Samir, (2017), Methodology of Economic and Banking Reform in Iraq, Association of Iraqi Private Banks, Baghdad.

Al-Shakurji, Bashar Thanoun Muhammad, Al-Sharabi, Muhammad Yunus Muhammad, (2017), Predicting the financial stability of Iraqi private banks using financial safety indicators for the period 2008-2012, Kirkuk University Journal of Administrative and Economic Sciences, Volume 7, Issue 1, Kirkuk.

Attia, Abdel Qader Mohamed, (2000), Political Economy between Theory and Practice, Second Edition, University Institution for Printing, Publishing and Distribution, Alexandria.

Central Bank of the Republic of Turkey, (2006).

George, Hatem. (2012). "The Role of the Exchange Rate in Determining the General Level of Prices and the Problem of Monetary Policy in Iraq," Arab Economic Research, Issues 60-59.

Gigarati, Damodar, (2015), Econometrics "Part Two", translated by: Dr. Hana Abdel Ghaffar Odeh, House of Mars, Saudi Arabia.

Macro prudential Indicators and Data Decimation- Background (2015),Paper (SM/99/295).

Mahwas, Hussein Atwan, (2016), the Iraqi dinar exchange rate between the fluctuation of global oil prices and the pressure on international reserves, Monetary Policy Research Journal, Central Bank of Iraq, Baghdad.

Mohsen, MahaMazher, (2016), The Financial Stability Test of the Banking Sector in Iraq According to Standard Ratios During the Period 2009-2013, Journal of Economic and Administrative Sciences, Volume 22, Issue 92, Baghdad.

Norwegian Central Bank,(2003).

Qasim, Mazhar Muhammad Salih, (2012), Monetary Policy in Iraq Building Macroeconomic Stability and Maintaining a Sound Financial System, House of Wisdom, First Edition, Baghdad.

Author Information

Aqeel Abdul-Hussein Odeh
University of Thi-Qar, College of Administration and Economics

Faiza Hassan Mosachet
University of Basrah, College of Administration and Economics

Prof. Dr. Naeem Sabah Jearah
University of Basrah, College of Administration and Economics

Mustafa Mohammed Ibrahim
Central Bank of Iraq