IMPACT OF MONETARY POLICY ON AGRICULTURAL DOMESTIC PRODUCT IN IRAQ FOR THE PERIOD (1990- 2014)

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ABSTRACT
This research aims to investigate the impact of monetary policy on agricultural GDP through monetary indicators such as exchange rate, interest rate, money supply and inflation for the period (1990-2014). The relationship was estimated through the (VECM) error correction model using statistical beam. The long - run equilibrium relationship between the variables of the model and the results of the estimation of the relationship in the short run revealed that the agricultural GDP is affected by the variables of monetary policy has been found that both inflation and money supply has a positive and significant the effect means that the increase in money supply by 1% will lead to an increase in output. The GDP by 0.25% and this is Identically by the economic logic, in other words, the expansion of any activity needs more capital just the increasing in the inflation rate by 1% will lead to an increase in agricultural GDP by 0.05%.This means that the high level of prices encourages investors and producers to expand production capacities and increase production, while the price of exchange and the price of interest has not proved significant each. In the long term, the most influential variables are the interest rate as a 1% drop in interest rates will lead to higher GDP Agricultural by 0.3%.The Inflation came after the interest rate in terms of impact and came with positive signal and this is opposed   to economic logic. The research concluded that inflation has a positive effect on agricultural production in the short and long run. Furthermore, increasing the money supply by expanding credit has a significant role that exceeds the rest of the variables. The research recommended adopting an expansionary monetary policy while taking into consideration the control of inflation with reducing it in the future and contributing to price stability. Including prices of agricultural products and inputs. In addition to incentive private banks to expand agricultural credit and take into account the monetary indicators and development in the making of agricultural policies.

تحليل اقتصادي لتأثير بعض مؤشرات السياسة النقدية في الناتج المحلي الزراعي في العراق للمدة(1990−2014)

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المستخلص
يهدف البحث الى تحديد اثر السياسة النقدية في الناتج المحلي الزراعي من خلال المؤشرات النقدية متمثلة بسعر الصرف وسعر الفائدة وعرض النقود والتضخم للمدة (1990-2014) وتم تقدير العلاقة من خلال انموذج تصحيح الخطأ VECM باستخدام الحزم الاحصائية eviews9 واختبرت العلاقة التوازنية طويلة الاجل بين متغيرات الانموذج وقد بينت نتائج تقدير العلاقة في فترة الاجل القصير ان الناتج المحلي الزراعي يتأثر بمتغيرات السياسة النقدية فقد وجد ان كل من التضخم وعرض النقود ذو تأثير ايجابي ومعنوي اذ ان زيادة عرض النقود بنسبة 1% يؤدي الى زيادة الناتج المحلي الزراعي بنسبة 0.25% وهذا يتفق مع المنطق الاقتصادي اذ ان التوسع في اي نشاط يحتاج الى المزيد من النقود اما زيادة معدل التضخم بنسبة 1% يؤدي الى زيادة الناتج المحلي الزراعي بنسبة 0.05% اذ ان ارتفاع مستوى الاسعار يشجع المستثمرين والمنتجين في توسيع الطاقات الانتاجية وزيادة الانتاج، اما سعر الصرف وسعر الفائدة لم تثبت معنوية كل منهما .اما في فترة الاجل الطويل فان اكثر المتغيرات تأثيرا هو سعر الفائدة اذ ان انخفاض سعر الفائدة بمقدار 1% سيؤدي الى ارتفاع الناتج المحلي الزراعي بنسبة 0.3 %اما التضخم فقد جاء بعد سعر الفائدة من حيث التأثير وجاء بإشارة موجبة وهذا مخالف للمنطق الاقتصادي. وقد استنتج البحث ان التضخم له تأثير ايجابي في الانتاج الزراعي على المديين القصير والطويل ، كما ان زيادة عرض النقود بتوسيع الائتمان له دوراً مهماً تفوق على بقية المتغيرات واوصى البحث بأتباع سياسة نقدية توسعية مع الاخذ بنظر الاعتبار السيطرة على التضخم والحد من ارتفاعه بالمستقبل والمساهمة في استقرار الاسعار ومنها اسعار المنتجات والمدخلات الزراعية اضافة الى تحفيز المصارف الخاصة على توسيع الائتمان الزراعي وان يأخذ بنظر الاعتبار المؤشرات النقدية وتطورها عند وضع السياسات الزراعية.

INTRODUCTION

The agricultural sector is one of the essential economic sectors in Iraq with GDP 14% during the period 1990-2014. However, the statics shows that the rural population is about 11 million (27%) in the same period, and the majority of them work in agriculture. The cultivation area is approximately 28 million acres (16.1%) of the total space in Iraq. The activates of this sector have been related to the provision of basic and human needs and the achievement of food security through adoption by the state of appropriate policies (9). Despite its importance, the agriculture in Iraq still faces many techno- econ- social challenges. Besides, the shortcomings and failure of government policies to achieve the agricultural development goals due to the un-rational plans and programs. As a result, the rates of the agricultural growth do not change, and perhaps due to neglect the overlap between influence the monetary and financial policy and the failure to take the impact of monetary indicators into consideration when developing agricultural strategies is one of the reasons for this deficiency. The Macro variables and monetary policy have a significant impact on the agricultural output and income. However, it may appear far from reality and is ambiguous. The weakness of the systems and its ability to influence the address of problems associated with economic activity and the deficiency of available data; which affects the results of studies and therefore neglect this effect and does not give enough attention. Despite its importance, the research aims to set a model of the general equilibirum between the variables of monetary policy, suchas interest rate, exchange rate, money supply, inflation, and the agricultural sector, verification of the relationship and determining the impact of the change in the monetary policy on agricultural GDP. Besides, suggest appropriate monetary policies to ensure the success of government programmes and fiscal policy for raising the level of agricultural growth.

MATERIALS AND METHODS:

Monetary policy affects economic activities, including the agricultural, with the diversity of concepts and definitions of monetary policy. However, it meets or similar in its components and actions was taken by the objectives and aimed to achieve them. They are defined as those that the state used to influence money supply (1) and According to Qawi, is defined it "a set of procedures and measures taken by the monetary authority to make an impact on the economy and in order to ensure the stability of exchange rates." While Ritter defined it "as those measures taken by the Central Bank to control the money supply in the national economy so that this offer is proportional to the growth in the production of goods and services" (23) Klise defined it as "the ability of the central bank to use specific monetary tools such as the discount rate, mandatory reserve, and open market operations in order to influence the intermediate monetary targets (money supply and interest rates) in the money market and then affect the final economic goals such as economic growth and unemployment "(19) Also, Khalil defined monetary policy as "the measures adopted by the government or monetary authorities to manage the money supply and interest rate to achieve or maintain full employment without inflation"(21). Based on these definitions, monetary policy stimulates agricultural growth and thus achieve agrarian development through financial indicators such as money supply, total prices (exchange rate and interest rate). Also, inflation, increase the supply of money through the expansion of credit and facilitate the terms of lending and stability of the general level of prices, with an appropriate exchange rate that could affect agricultural GDP. As the total prices indirectly affect the selected technologies in agricultural production, for example, when lowering the interest rates for agricultural loans, including import loans for machinery, equipment, processing plants and technology that can contribute to the development of the agricultural sector. Many researchers were interested in studying the relationship between the indicators of monetary policy and AGDP and agricultural output. The results of these studies are essential indicators for the formulation and success of agricultural policies (2) (10) (18) (22). Their studies focused on the effect of monetary policy on economic and agricultural growth(3),(11).

While others , pay attention to the impact of one of the indicators of monetary policy in the prices of farm products. (14)(16)(24)(25). So, some researchers have studied the importance of credit and agricultural finance (12) in the growth and development of the agricultural sector and increase its contribution to GDP. The results of most of these studies showed an essential relationship between monetary policy and GDP. However, there is a difference on the impact of these indicators from country to another. Some variables were influential on agricultural GDP in some countries, but they are not instrumental in other countries. Therefore, studying this relationship in Iraq is vital in formulating appropriate agricultural policies for monetary policy indicators.

The research indicates these variables The interest rate: the particular amount of Interest which a borrower is required to pay to a lender for borrowing a particular sum of money to finance spending on consumption and the purchase of capital assets. The interest rate is defined as the return on the capital of the investor through the price which is obtained by the waiver for the management of the money which is lent for a specified period. The price varies by period, whether monthly or annual and according to the amount borrowed. The longer the borrowing period, the higher the risk (20). Money supply: The total stock of money circulating in an economy is the money supply. The current money involves the currency, printed notes, money in the deposit accounts and the form of other liquid assets (13). Valuation and analysis of the money supply help the economist and policymakers to frame the policy or to alter the existing policy of increasing or reducing the supply of money. The valuation is crucial as it ultimately affects the business cycle and thereby affects the economy (4). Periodically, every country's central bank publishes the money supply data based on the monetary aggregates set by them. In India, the Reserve Bank of India follows M0, M1, M2, M3 and M4 monetary aggregates. Money supply is one of the main factors of monetary policy which has a significant role in influencing economic variables it also works to determine the pattern of the state's cash supply style of monetary policy whether it is expansive or deflationary

by increasing the money supply or reducing it. There is considerable controversy in defining a specific definition of money supply among economists and how to calculate it over a specified period. The dispute has centered around a fundamental point of the elements of the money supply. Keynes has introduced money supply (monetary quantity) and can be defined as direct purchasing power the ability to convert immediately to all the goods and services available for exchange; on the other hand, the ability to discharge all debts to another country.Exchange rate: The concept of the exchange rate can be explained as "the value of one unit of foreign currency estimated in national currency units" and can be inversely defined as "the value of one unit of national currency against units of foreign currency" (15). The foreign exchange rate is defined as the price at which a currency is exchanged in another one (8). Inflation: It does not hide on one of the specialists or others what inflation has a great impact on any economy that holds the facility and limits its growth and exhausting even the power of any economy(7) ,The rise in the general levels of prices of goods and services accompanied by a decrease in the purchasing power of the monetary unit (dinar). Inflation has different definitions because of the differences in views. Thus, the development of economic thought and economic theory without going into the various concepts that are indicated by economic theory. The definition of inflation as a situation in which there is an increasing rise in price rates or a general trend towards a continuous increase in the overall level of prices (17).

RESULTS AND DISCUSSION

We used data collected from the Central Statistical Organization (CSO) at the Ministry of Planning, Ministry of Agriculture and the Central Bank of Iraq (CBI). Besides the literature results which published during the period (1990-2014). The data analyzed using the stability of the time series of variables included the model of Johannesburg cointegration Model, and the error correction model, which requires that all variables be stable at the first difference, and it shows as follows:

Ly = f (lm, le, linf, lr) The dependent variable (LY): the agricultural GDP as a logarithm.

The independent variables in logarithmic formulas included:

Rate of Interest, (Lr) Inflation, (Linf) Money Supply (Lm), Exchange Rate (Le).

We used e-views 10 to accomplish the results and it shows as the following steps:

First: Test stability of time series of variables:

The macro variables are usually characterized by instability as confirmed by most local and international researches and studies because of their economic nature. There are several ways to detect the stability of time series. The most important of these is the examination of the time series, including the expanded Dicky Fuller test(5). Take it as a logarithmic formula to reduce contrast and settle it. Second: Unit Root Testing: The objective of the unit root test is to measure the stability of time series using the extended Dicky Fuller test (6).

The ADF test shows that all model variables have stabilized at the first difference, I(1) Therefore It was adopted Johannesn Cointegration Test.

Table 1. Unit root test using (ADF) test

LINF	LE	LM	LR	LY	Significant	Variables / Tests
		At level				
-1.521174	-1.309474	-3.508790	-3.181618	-2.163080	t-statistic	With Constant
0.5060	0.06029	0.0176	0.0344	0.2238	Prob.	
No	No	**	**	No		
-3.151929	-3.381468	-2.970351	-3.626663	-2.773786	t-statistic	With constant & Trend
0.1176	0.0786	0.1610	0.0496	0.2192	Prob.	
No	**	No	*	No		
-1.169728	-0.458344	-4.997936	-0.260097	-0.639860	t-statistic	None
0.2140	0.5036	1.0000	0.7519	0.8475	Prob.	
No	No	***	No	No		
		At first difference				
-6.463759	-3.917649	-2.091036	-4.886345	4.823810	t-statistic	With Constant
0.0000	0.0079	0.2496	0.0009	0.0009	Prob.	
***	***	No	***	***		
-6.463759	-2.399108	-3.572181	-4.742232	-4.668433	t-statistic	With Constant & Trend
0.0000	0.3687	0.0585	0.0057	0.0062	Prob.	
***	No	*	***	***		
-6.294267	-4.569688	-1.482408	-4.993208	-4.722677	t-statistic	None
0.0002	0.0001	0.1262	0.0000	0.0001	Prob.	
***	***	No	***	***		

Source: The work of the researcher based on the statistical program (EViews .10)
* Significant at the level of 10%.
** Significant at the level of 5%.
*** Morale at the level of 1%.
No: Not significant.

Second: Determination of the lag period: Before conducting the cointegration test, the deceleration period should be determined according to the most accurate criteria used

Table 2. Test (var) to determine the lag period

```
VAR Lag Order Selection Criteria
Endogenous variables: LY LM LR LE LINF
Exogenous variables: C
Date: 07/05/18   Time: 22:11
Sample: 1990 2014
Included observations: 24
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Lag	LogL	LR	FPE	AIC	SC	HQ
0	-112.0526	NA	0.011858	9.754382	9.999810	9.819495
1	21.32955	200.0732*	1.50e-06*	0.722537*	2.195105*	1.113210*

```
* 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
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Source: The work of the researcher based on the statistical program (Eviews .10)

A delay will be chosen based on five scales   LR, SC, FPE, AIC, HQ as shown in Table (2)

Fourthly: Johansen cointegration test: To test for a long-run equilibrium relationship, the Johansen test was used. There are two types of testing: impact testing and maximum value testing

Table 3. Johansen Integration test

Date: 07/05/18   Time: 22:14
Sample (adjusted): 1992 2014
Included observations: 23 after adjustments
Trend assumption: Linear deterministic trend
Series: LY LM LR LE LINF
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.863648	93.91789	69.81889	0.0002
At most 1 *	0.632470	48.09008	47.85613	0.0475
At most 2	0.489434	25.06824	29.79707	0.1590
At most 3	0.337714	9.606818	15.49471	0.3122
At most 4	0.005615	0.129500	3.841466	0.7189

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.863648	45.82780	33.87687	0.0012
At most 1	0.632470	23.02184	27.58434	0.1725
At most 2	0.489434	15.46143	21.13162	0.2579
At most 3	0.337714	9.477318	14.26460	0.2486
At most 4	0.005615	0.129500	3.841466	0.7189

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: the researcher based on the statistical program (EViews .10)

Table 3 shows that there is a long-run equilibrium relationship between model variables using both the impact test and the maximum value

1- trace test: In none, since the calculated value of the maximum potential rate is 93.91789, which is higher than the critical value of 69.81889 at the level of 5%, indicating the rejection of the null hypothesis that there is no vector of co-integration. Another formula for cointegration . At most2 and most3, the calculated value of the maximum potential rate is smaller than the critical value at the level of 5%; there is no possibility of a third vector of co-integration

2- Max value test: At none, since the calculated value of the maximum potential 45.82780 is higher than the critical importance of 33.87687 at the level of 5%, indicating the rejection of the null hypothesis that there is no vector of co-integration It is clear that there is a formula for joint integration. At most 1At most 2 and at most3, the calculated value of the maximum potential rate is smaller than the critical value at the level of 5%, the possibility of a second co-integration thus, the time series are moving simultaneously with time, and the difference between them is constant (static) even if it contains a collision vector. Fourth: Estimating the error correction model

Table 4. the relationship between agricultural GDP and explanatory variables in the short run

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Dependent Variable: D(LY)
Method: Least Squares
Date: 07/05/18   Time: 21:41
Sample (adjusted): 1992 2014
Included observations: 23 after adjustments
D(LY) = C(1)*( LY(-1) + 0.0185800970704*LM(-1) - 0.0510044573043*LE(
        -1) + 0.167227010765*LINF(-1) + 0.325277441844*LR(-1) -
        9.6394430798 ) + C(2)*D(LY(-1)) + C(3)*D(LM(-1)) + C(4)*D(LE(-1)) +
        C(5)*D(LINF(-1)) + C(6)*D(LR(-1)) + C(7)
```

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.739437	0.193541	-3.820564	0.0015
C(2)	0.030384	0.155333	0.195607	0.8474
C(3)	0.256229	0.143113	1.790401	0.0923
C(4)	0.046141	0.069047	0.668250	0.5135
C(5)	0.056353	0.024661	2.285083	0.0363
C(6)	0.244660	0.160673	1.522717	0.1473
C(7)	-0.072163	0.049295	-1.463897	0.1626

R-squared	0.624227	Mean dependent var	0.030455
Adjusted R-squared	0.483313	S.D. dependent var	0.152540
S.E. of regression	0.109647	Akaike info criterion	-1.337304
Sum squared resid	0.192361	Schwarz criterion	-0.991718
Log likelihood	22.37899	Hannan-Quinn criter.	-1.250390
F-statistic	4.429824	Durbin-Watson stat	2.180055
Prob(F-statistic)	0.007960		

Source: Work of the researcher based on the statistical program (EViews .10)

First: the short-term relationship

The results of the estimation in Table 4 show that the C1 error correction coefficient was negative and significant at 5% and less than 1 (-0.739437). The agricultural GDP is affected by the mentioned monetary policy variables by 73% of none equilibrium can be corrected in the long term according to the data studied. The other variables C3 and C5, which represent the money supply and inflation respectively, were significant and identical regarding the reference to the economic logic as the increase in money supply by 1%, the agricultural GDP will increase by 0.25% because the expansion of any economic activity and agricultural activity needs to increase the money supply especially with the high inflation rates. the real quantity of money will decline, and therefore we will need more money supply, while the high inflation rate of 1% will lead to a rise in agricultural GDP by 0.05%. The rise in prices during the period will encourage producers and investors to increase production via to the rise in prices of the final goods. Precedes rising costs in the inflationary process, either C4 and C6 have not proved their respective significance as C4 exchange rate ,C6 interest rate, and the interest rate was positive, and this is contrary to economic logic, but there is a mathematical explanation as the real interest rates were negative and when the interest rates are negative, this is in the interest of investors and producers where the higher the rate of interest rate decreased and therefore the reference was positive because the real interest rates are negative, which were calculated according to inflation rates, and the effect is not significant and the reason is that investment decisions affected by other factors more influential, especially during the study period, including the stability of the security and political situation and the reluctance of private banks to grant agricultural loans to the high risk rate and many farmers are interested in loans are prohibited according to Islamic law. As for the exchange rate coefficient, it was positive and insignificant in the short term because most of the imports of production inputs, especially machinery, seeds, and fertilizers, are imported by the government and are subsidized by them to help the farmers. The government revenues depend mainly on the revenue generated from oil revenues. The exchange rate does not significantly affect the volume of government imports and constitutes the bulk of imports.

However, the exchange rate may affect the volume of imports from other inputs that are imported by the private sector, mainly livestock imports Intention and food processing machines and imports as the imports of food could affect production decisions and weaken the incentive to agricultural investment in the case of the increase. C7 represents the fixed limit, and the signal is negative and insignificant.

Second: Long-term equation:

D (ly) = 0.0186 lm (-1) + 0.325 lr (-1) + 0.167 linf (-1) - 0.051 le (-1)

The equation showed that the most influential variables are the interest rate, as the decrease of the real interest rate by 1% will lead to a rise in agricultural GDP by 0.3. Inflation came after the interest rate regarding the impact and reached a positive signal, and this is contrary to economic logic because of the survival of the price level in the long term leading to higher costs and consequently lower production.Where the agricultural production depends on two types of inputs traded such as fertilizers, seeds, equipment, machinery, and animal assets. However, they are mostly imported from abroad and receive implicit support through the exchange rate and customs exemptions. Also, the explicit support by the government, which maintains the lack of high prices as for the second type of inputs, which are not traded, such as agricultural land and unskilled labor. Inflation does not have a significant impact on it, especially the wages of workers in the farm sector, as there are no trade union organizations push to raise wages of workers with the high level of prices.

However, the work in agriculture depends mostly on family members who are not paid an explicit wage and therefore inflation remains positive impact on the increase in production even in the long term. The money supply was confident, and in line with the economic logic both in the short and long run, the expansion of money supply and agricultural credit works to expand agricultural activities to provide the necessary cash to spend on investment projects to expand production capacities and thus increase agricultural production. The affections of the exchange rate were insignificant in the agricultural GDP in the short run and in the long run, its effect is adverse. The dumping of imported agricultural commodities affects the agricultural output in the long run and weakens the incentive for production. The continuation of the central bank's policy of the exchange rate and its survival at an almost constant rate which encourages the importation of agricultural commodities and foodstuffs, its effect will be adverse, the agricultural output of the production field. The research recommended adopting an expansionary monetary policy while taking into consideration the control of inflation with reducing it in the future and contributing to price stability. Including prices of agricultural products and inputs. In addition to incentive private banks to expand agricultural credit and take into account the monetary indicators and development in the making of agricultural policies. Estimated model tests: For the purpose of validation and the accuracy of the results obtained must be some important tests, including:

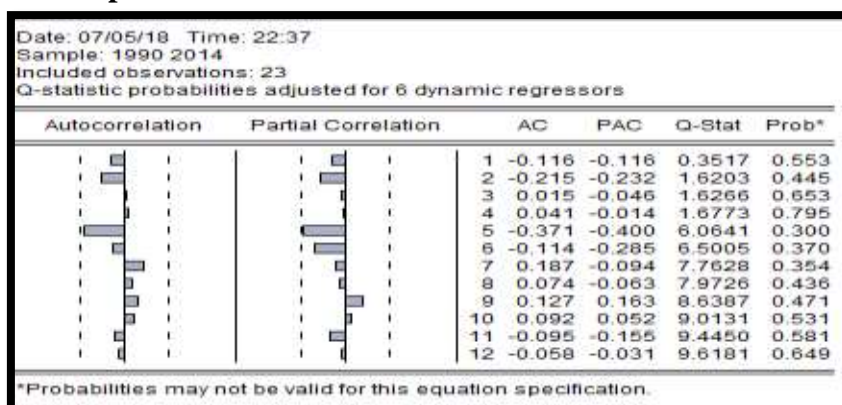**the partial and Auto correlation function of the residual**

Figure 1. the partial correlation function of residual
Source: work of the researcher based on the statistical program EViews(10)

Date: 07/05/18 Time: 22:38
Sample: 1990 2014
Included observations: 23

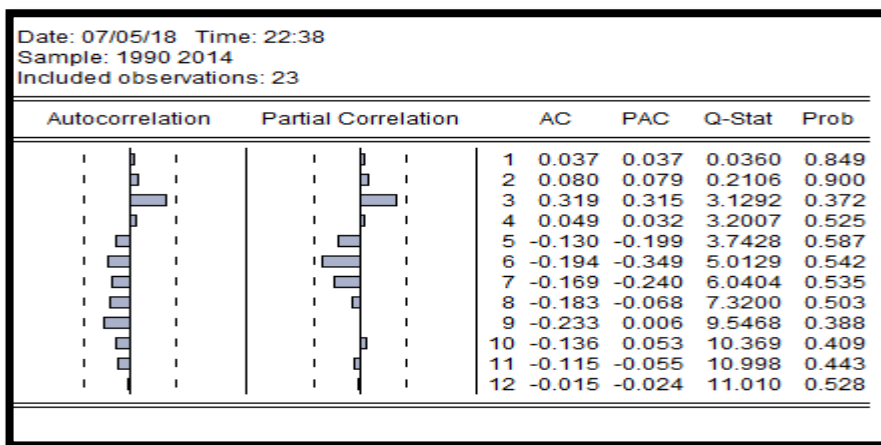| Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.037	0.037	0.0360	0.849
		2	0.080	0.079	0.2106	0.900
		3	0.319	0.315	3.1292	0.372
		4	0.049	0.032	3.2007	0.525
		5	-0.130	-0.199	3.7428	0.587
		6	-0.194	-0.349	5.0129	0.542
		7	-0.169	-0.240	6.0404	0.535
		8	-0.183	-0.068	7.3200	0.503
		9	-0.233	0.006	9.5468	0.388
		10	-0.136	0.053	10.369	0.409
		11	-0.115	-0.055	10.998	0.443
		12	-0.015	-0.024	11.010	0.528

Figure 2 Auto correlation function of the residual
Source: work of the researcher based on the statistical program EViews(10)
Test of the normal distribution of residual

Series: Residuals
Sample 1992 2014
Observations 23

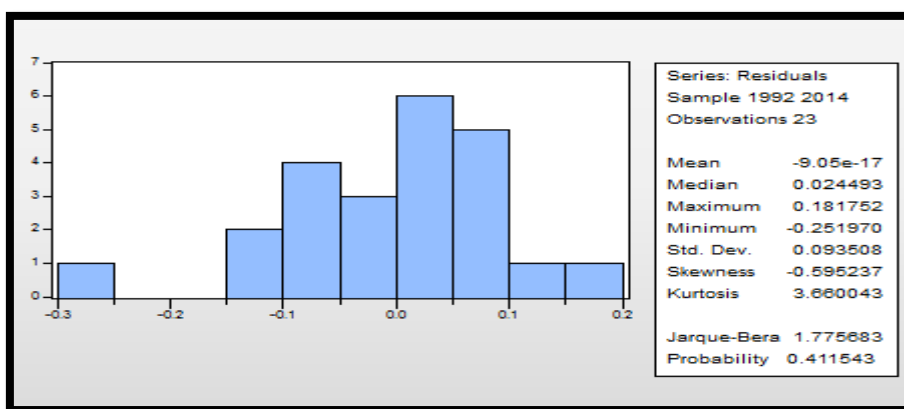|	
Mean	-9.05e-17
Median	0.024493
Maximum	0.181752
Minimum	-0.251970
Std. Dev.	0.093508
Skewness	-0.595237
Kurtosis	3.660043
Jarque-Bera	1.775683
Probability	0.411543

Figure 3.The normal distribution of residual for the period (1990-2104)
Source: work of the researchers based on the statistical program (EViews .10)

Since the value of the Jarque-Bera test indicates that the null hypothesis must be accepted because the value of probabilities P-value is greater than 5% so the residueales are distributed normaly, and this is a good indicator of the quality of the estimated model.
3. Detection of the auto-correlation by LM test and the problem of the instability of variance:

Table 6. Diagnostic statistics of the estimated model during the study period

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.002278	Prob. F(2,14)	0.3919
Obs*R-squared	2.880730	Prob. Chi-Square(2)	0.2368

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.150073	Prob. F(10,12)	0.4034
Obs*R-squared	11.25568	Prob. Chi-Square(10)	0.3379
Scaled explained SS	7.244606	Prob. Chi-Square(10)	0.7022

Source: work of the researcher based on the statistical program (EViews 10)

Table 7 indicates that the model has passed the standard tests (the test of the auto-correlation problem and the problem of the instability of variance). The results of the LM test showed a probability value of 0.2368 and we can accept the null hypothesis that the model does not suffer from the auto-correlation problem there is no problem of variance instability using a probability value of 0.3379 greater than 0.05. The model does not suffer from the problem. To test the suitability of the regression model (determine the validity of the sample selection), the cusum test was used
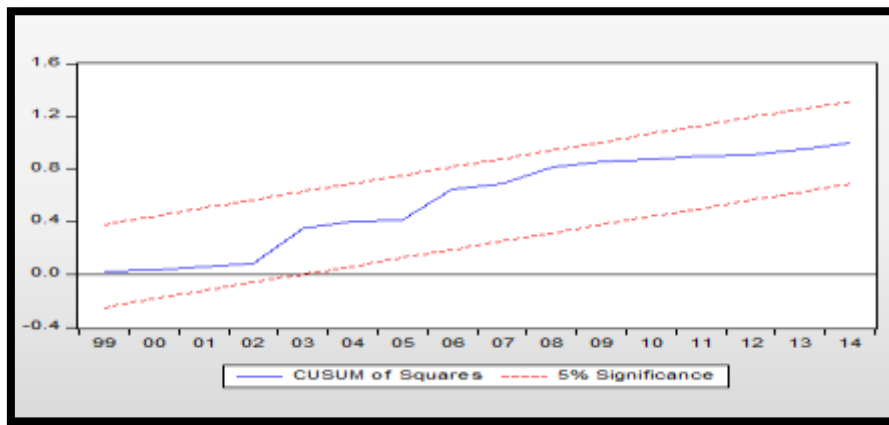
Figure 4. the cusum test
Source: work of the researcher based on the statistical program (EViews 10)

Source: The work of the researcher based on the statistical program EViews (10). The extent of the fit of the estimated model was tested as shown in the figure. It is noted that all values of the auto-correlation coefficients are within confidence limits, which means that the chain of residues is random and that the model used is excellent and appropriate.

4- Granger's test of causality relations:
The problem of causality is one of the most critical axes in determining the formulas of economic models. Results show the causes of economic phenomena understanding and distinguishing between the aspects of independent phenomena explained to them.

Table 8. Granger's causatity test

Null Hypothesis:	Obs	F-Statistic	Prob.
LM does not Granger Cause LY	24	4.02603	0.0579
LY does not Granger Cause LM		0.65126	0.4287
LE does not Granger Cause LY	24	6.53041	0.0184
LY does not Granger Cause LE		0.53773	0.4715
LR does not Granger Cause LY	24	2.66913	0.1172
LY does not Granger Cause LR		3.13755	0.0910
LINF does not Granger Cause LY	24	0.92791	0.3464
LY does not Granger Cause LINF		0.96695	0.3366
LE does not Granger Cause LM	24	0.09579	0.7600
LM does not Granger Cause LE		2.85473	0.1059
LR does not Granger Cause LM	24	0.01831	0.8937
LM does not Granger Cause LR		0.81491	0.3769
LINF does not Granger Cause LM	24	7.54417	0.0121
LM does not Granger Cause LINF		10.3601	0.0041
LR does not Granger Cause LE	24	0.08871	0.7688
LE does not Granger Cause LR		0.08981	0.7674
LINF does not Granger Cause LE	24	3.33940	0.0819
LE does not Granger Cause LINF		6.36039	0.0198
LINF does not Granger Cause LR	24	0.44769	0.5107
LR does not Granger Cause LINF		4.39172	0.0484

Pairwise Granger Causality Tests
Date: 09/17/18   Time: 18:37
Sample: 1990 2014
Lags: 1

Source: work of the researcher based on the statistical program EViews(10)

Table 8 results of causality testing showed that the lag period Which makes a causal relationship a year and by extrapolating the results of the causal analysis. It appears that there is a causal link between inflation and money supply and a one-way relation between the exchange rate and the local agricultural product between the exchange rate and inflation and the interest rate and inflation.

There is no causal relationship between the other variables. So, this is normal if the total variables are linked with each other.

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