MEASURING THE IMPACT OF MONETARY POLICY VARIABLES ON THE GENERAL INDEX OF THE IRAQI STOCK MARKET USING TESTS OF STRUCTURAL BREAKS AND MARKOV MODELS WITH VARIABLE SYSTEMS

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Abstract

In this study, the general index of the Iraqi Stock Exchange was chosen as the dependent variable (stock exchange index), and the independent variables were the wide money supply (M2), interest rate, exchange rate, and inflation. No reliance was placed on a monthly time series for the period from January 2004 to December 2020 to study the impact of monetary policy variables on this index. We tested (Bai-Perron) to identify structural breakdowns in the time series in order to understand the monetary decisions made by the monetary policy makers during the periods of shocks and crises experienced by the rentier economy of Iraq, which depends on crude oil to finance public spending. As a result, it is difficult to measure the monetary effects of the index of the Iraqi Stock Exchange. The monetary effects are asymmetrical as a tool for monetary policy's control over the stock index, and monetary policy does not immediately respond to a dramatic shift in prices; instead, it reacts gradually to obtain an inflation rate that is acceptable and does not significantly affect the economy.

Keywords: monetary policy, general index of the stock market, Markov models

1. Introduction

The goal of this paper is to use the Bai-Perron test to determine whether certain economic variables may have structural changes during periods of crisis and shock for a monthly time series that spans from 2004 to 2020, and to then use the Markov model of switching regime to demonstrate the effects of these independent variables on the general index of the stock market, which is one of the nonlinear time series models that share multiple matrices in this model for various systems. By its actions as a result of shocks and changes over time. In order to confirm that economic shocks and crises that result in structural interruptions drive monetary policy to make the right option without turning to time series splitting, this is to quantify the impact of specific macroeconomic factors on the stock index.

The research aims to detect structural intervals is a fundamental task for statistical analysis of time series, for example, to synthesize their standard models In short, structural intervals are time points in which the behavior of the time series usually changes dramatically, there is no solid basic knowledge of the time series under study. (Jiang 2017)

Therefore, the optimal approach (Bai-Perron tests) is our method of testing the detection of structural interruptions of the time series of some macroeconomic indicators in Iraq, to study the impact of the broad money supply, interest rate, and exchange rate on the general index of the stock market, as the Iraqi economy is a unilateral rentier economy that depends largely on crude oil as a major source of financing public spending, so any shock in crude oil prices, whether local, regional or global, negatively affects revenues of their size. Final.

2. Literature Review

The results of Faiza Hassan Msgit's study in 2020 indicated that the inflation rate had a significant impact on the overall index of stock prices, whereas the other variables had less of an impact. This decline is attributable to the unique circumstances of the stock market in Iraq, which is significantly impacted by the country's unstable economic and security conditions. However, this does not imply that these other factors are not significant in influencing trading. The primary goal of the study by Zahra Darwish, Alaa Al-Din Al-Qadri, and Mohammed Al-Khatib Nimr, published in 2019, was to determine the effect of fluctuations in the Malaysian Ringgit exchange rate on the general index of Kuala Lumpur prices listed on the Malaysian Stock Exchange. The results of the standard analysis revealed an inverse relationship between the aforementioned variables, with the exchange rate moving in the opposite direction to the Kuala Lumpur A study by Ziane Noura in 2019 found that while Algeria's financial liberalization policy allowed rates to be lowered and the establishment of numerous domestic and foreign banks and private financial institutions, the role of financial liberalization in achieving economic growth was diminished by poor security and the spread of corruption, in contrast to a study by Navaz Naghavi in 2018 that found the opposite. After determining a particular level of institutional development, provide research on the impact of financial openness on the performance of the stock market in emerging markets. The findings indicate that there is a positive relationship between liberalization and efficiency in particular, and that financial liberalization had a positive and significant impact on the stock market's information efficiency after it reached a certain threshold level of institutional development. However, Shahida Perveen and Mustaghis' study found that this relationship was negative. While there is only a short-term correlation between monetary policy indicators and stock market success, it speaks to a long-term relationship between both policies and stock market performance. Additionally, research shown that while tax revenues and interest rates had a significant negative influence on the long-term capitalization of the stock market, government spending, budget characteristics, and the money supply had a significant positive impact. According to Jamal Qassem Mahmoud's (2018) research, the growth rate of the money supply contributes to the explanation of GDP fluctuations in varying degrees, reaching 6% in Jordan, 4% in the UAE, 6% in Saudi Arabia, and 10% in Morocco, while it reached about 1.7% in Egypt in the second year. This suggests that the money supply has a significant influence on the explanation of GDP fluctuations in some Arab countries that are not related to oil. Monetary policy has less of an effect in explaining Egypt's different line of appreciation than does fiscal policy. While fiscal policy has a stronger influence in explaining the range of miscalculation in Saudi Arabia, the UAE, Jordan, and Morocco, monetary policy is more important. The study (Idris, 2017)

sought to ascertain the degree to which financial liberalization under banking reform can positively affect key banking industry indicators, including the financial depth index, monetary stability coefficient, capital adequacy index, credit development indicators, and deposit growth indicators, and in the end, the growth and raising of the banking industry's efficiency in Iraq. A group has received the study. The study (2018 Bijan Safavi) confirmed that there is an indirect negative impact of financial liberalization caused by the global financial crisis of 2008 due to the fragility of the financial system and its high exposure to the outside world. The relationship between financial liberalization and the stock exchange in Iraq was also confirmed as one of the study's most significant findings. During the course of a study (honorary and competent): 2016 The study's findings demonstrated a clear and moral connection between financial liberalization and the banking profitability index of private commercial banks as a result of changes in interest rates, as well as a negative relationship between these factors and the index of banking profitability of government commercial banks.

3. Methodology and Data

3 .1. Methodology

Since this paper aims to identify the structural changes of some economic variables, to determine the type of this structural change whether it is a temporary or permanent shock or a combination between them, whether it has an immediate or gradual effect and whether it is caused by asymmetry or thresholds or transmission systems, and determine whether these structural breakdowns are caused by a crisis or by economic cycles, and then we seek to determine the appropriate model to test the impact of the selected variables on the general index of the stock market, if selected The Markov model of switching-regime to measure the impact under the boom and bust systems of compatibility of these systems with the behavior of nonlinear time series. The research question is whether the results of the Markov model of switching-regime in determining the boom and bust systems are identical to the tests of structural refractions of the time series. Can economic policymakers make the right decision through the economic policy reaction during the boom and bust systems?

To achieve the main objective of the study, we built three hypotheses for research:

- Global crises and shocks in global oil prices have caused structural changes in the time series of selected variables, which are temporary real-time changes that are considered transition systems.

- The estimated model is not linear due to structural changes in the selected time series.

- The supremacy of monetary policy instruments through the intervention of the Central Bank by withdrawing part of the surplus money supply within the economy in a way that affects the stock exchange index

1.1.3. Regression analysis with structural breaks

In order to identify structural changes in the relationships between each independent variable and the constant limit with independent regression equations for each variable, the regression model was applied with the Bai-Perron sequential test of structural interruption. Bai-Perron proposed a (Bai and Perron 1998) (Bai and Perron 2003) sequential method that starts with testing the presence of a single structural interruption and can also indicate multiple structural break. To estimate the model (using Markov Smoothing Regime Switching Models) and analyze the time series without separating each period because monetary policy only has one decision throughout the duration of the study, one must know the type of these structural breakdowns for each variable within the model of the problem that is being studied. However, knowing these interruptions generates sufficient knowledge of the time series over time and the extent to which the results of the analysis are affected by these interruptions. Keep in mind that the time series is prone to changes as a result of economic fluctuations, crises, changes in the political and technological landscape after economic system changes, developments, innovations, natural disasters, war, etc. Understanding the time series' structural breaks is crucial because it provides the foundation for understanding the findings and formulating a solution to the issue, particularly when using the Bai-Perron algorithm (Göktaş and Dişbudak 2014), which recognizes many structural periods. (Jastrzbska, Jaboski, and Bartak 2021).

1.2.3. Markov model of switching-regime

In order to identify structural changes in the relationships between each independent variable and the constant limit with independent regression equations for each variable, the regression model was applied with the Bai-Perron sequential test of structural interruption. Bai-Perron proposed a (Bai and Perron 1998) (Bai and Perron 2003) sequential method that starts with testing the presence of a single structural interruption and can also indicate multiple structural break. To estimate the model (using Markov Smoothing Regime Switching Models) and analyze the time series without separating each period because monetary policy only has one decision throughout the duration of the study, one must know the type of these structural breakdowns for each variable within the model of the problem that is being studied. However, knowing these interruptions generates sufficient knowledge of the time series over time and the extent to which the results of the analysis are affected by these interruptions. Keep in mind that the time series is prone to changes as a result of economic fluctuations, crises, changes in the political and technological landscape after economic system changes, developments, innovations, natural disasters, war, etc. Understanding the time series' structural breaks is crucial because it provides the foundation for understanding the findings and formulating a solution to the issue, particularly when using the Bai-Perron algorithm (Göktaş and Dişbudak 2014), which recognizes many structural periods. (Jastrzbska, Jaboski, and Bartak 2021).

The Markov Switching regime, introduced by Hamilton (1989), is an extension of Goldfeld and Quandt's switching regression model (1973) based on Quandt's (1972) switch regression model defined as a mixture of natural distributions, and is one of the nonlinear models of time series that share multiple arrays in this model for different systems consistent with the behavior of nonlinear time series whose behavior is difficult to predict due to the effects of shocks and

shifts over time. Since this model can capture complex dynamic patterns by allowing the change of systems and Markov switching models have become more realistic and used in economic studies, especially monetary and financial, as they have played an increasing role in the study of long-term fluctuations, as the replacement models provide Markov with a simple way to capture fluctuations and overcome the assumption of stability of volatility assumed by the classic, and the method of switching to Markov assumed that the transition from one system to another within the same model is only an internal change, The Markov Switch Model (MS) takes the following general formula: (Schnatter 2006)

$$Y_t = \mathbf{x}_t \boldsymbol{\beta}_{S_t} + \varepsilon_t, \varepsilon_t \sim \mathcal{N}\left(0, \sigma^2_{\varepsilon, S_t}\right) \quad \dots \quad (1)$$

Whereas: () is the hidden Markov series in the sense of S_t a variable hidden and represents the state of the system and takes the values (S, ...,1,2) since (S) is the number of possible states, () the explanatory mvector-matrixof variables including the constant for explanatory variables of a discrete value ($\mathbf{x}_t$Lindgren, 1978; Cosslett and Lee, 1985), () Variance of the second system, () The arithmetic mean of the system symbolizes the probability of transition between states by symbol () and is positive and confined between zero and one and takes the following form:-
$$\sigma^2 \; \varepsilon_t p_{ij} P(S_t = j \mid S_{t-1} = i) = p_{ij}, \text{avec}: \sum_{j=1}^{s} p_{ij} = 1 \forall i \quad \dots \quad (2)$$

If (S=2) is a hypothesis, then the variable (Y) will take two systems: (Schnatter 2006)

$$y_t = \begin{cases} \phi_{01} + \phi_{11}y_{t-1} + \varepsilon_t & \text{si} \quad S_t = 1 \\ \phi_{02} + \phi_{12}y_{t-1} + \varepsilon_t & \text{si} \quad S_t = 2 \end{cases}$$

The possibilities of moving from one situation to another are: - (Franses and Van Dijk 2000)

$$\begin{aligned} P(S_t = 1 \mid S_{t-1} = 1) &= p_{11} \\ P(S_t = 2 \mid S_{t-1} = 1) &= p_{12} \\ P(S_t = 1 \mid S_{t-1} = 2) &= p_{21} \\ P(S_t = 2 \mid S_{t-1} = 2) &= p_{22} \end{aligned} \quad \dots \quad (3)$$

Whereas: () is the probability of transition from state (p_{ij}i) at the period (t-1) to state (j) at the period (t), noting that:, from which the matrix of transition between systems can be formulated as follows:$p_{11} + p_{12} = 1$, $p_{21} + p_{22} = 1$ (Park and Hong 2013)

$$\begin{pmatrix} p_{11} & 1 - p_{22} \\ 1 - p_{11} & p_{22} \end{pmatrix} \quad \dots \quad (4)$$

These probabilities generated from the matrix allow us to know an indicator of continuity that gives us the expected period in which each system remains, in economic cases if we know that the system exists in case (i) the expected period of a particular system is according to the following relationship: -

$$\sum_{k=1}^{\infty} k p_{ii}^{k-1}(1 - p_{ii}) \to (1 - p_{ii})^{-1} \quad \dots \quad (5)$$

From the above equation we can conclude that the duration of the first system will remain and the duration of the second system will remain. $(1 - p_{11})^{-1}(1 - p_{22})^{-1}$ (Shabi, Mohammed and Mohammed 2016, 92)

3.2. Data

In this research, some variables of monetary policy were selected, namely (money supply, interest rate, exchange rate, inflation), which represent independent variables, while the dependent variable is expressed in the index of the Iraqi Stock Exchange. (Mohsin and Farhani 2021)

Variable	The Logarithm	Symbol
General Index of the Iraq Stock Exchange	LnY	And
Wide Money Supply (M2)	LnX1	X1
interest rate	LnX2	X2
Exchange rate	LnX3	X3
Inflation	LnX4	X4

The research period covers the monthly data from January 2004 to December 2020, as during this period the global financial crisis of 2008 occurred as well as multiple local, regional and international crises that led to several changes in global crude oil prices, which are the main source of financing public spending in Iraq by more than (95%) and represent (50%) of the volume of GDP (Central Bank of Iraq 2004-2020). Therefore, any change in global oil prices leads to a change in the approach of fiscal and monetary policy adopted to cover the deficit in public revenues, which generates an influential factor at the general level of prices in the economy and thus influence the Iraqi stock market. The time series was used from the toxic website of the Central Bank of Iraq (Iraq central Bank n.d.)

4. Result

4.1. Regression analysis with structural breaks

Through the Multiple breakpoint tests in the regression equation (NLY) using the methodology (Bai-Perron tests) for each variable separately, where the result of the broad money supply variable (LNX1) Table No. (1) that there was a structural interruption in 2007M01, (2009M02), (2013M07), (2013M09) and (2015M01) In (2007) Iraq witnessed the stage of sectarian war and in (2009) the global financial crisis, while (2013) is the stage of the internal Iraqi crisis, while in (2015) it affected the occupation of a third of the area of Iraq by ISIS gangs, and these periods witnessed crises that led to a decline in global crude oil prices significantly, which negatively affected the volume of public revenues in Iraq and then affected the money supply, which causes changes in the general index of the Iraqi stock market.

Table 1: Bai–Perron sequential test results for the LNX1

Break Test	F-Statistic	Critical Value *	Break Date
LNX1			
1 *	244.2141	11.47	2015M01
2 *	465.9623	9.75	2013M09
3 *	442.8367	8.36	2013M07
4 *	390.1574	7.19	2009M02
5 *	323.0428	5.85	2007M01

* Bai-Perron critical values for significance level 5%. Source: authors' own calculations based on

As for the result of the interest rate variable (LNX2) Table No. (2) was (2014M07, 2015M01, 2007M01, 2009M02) and is identical to the reality in the Iraqi economy, as these interruptions occurred due to the deterioration of oil prices in international markets as well as the war on terrorism in that period and caused changes in the stock exchange index

Table 2: Bai–Perron sequential test results for the LnX2

Break Test	F-Statistic	Critical Value *	Break Date
LNX2			
0 vs. 1 *	207.1146	11.47	2015M01
1 vs. 2 *	76.95385	12.95	2014M07
2 vs. 3 *	32.15529	14.03	2009M02
3 vs. 4 *	10.36857	14.85	2007M01

* Bai-Perron critical values for significance level 5%. Source: authors' own calculations based on

As for the result (LNX3) Table No. (3) was (2018M07, 2016M01, 2013M07, 2009M07, 2006M11), and is also identical to the reality in the Iraqi economy as these years represent changes in exchange rates during these years. Huge increases in the volume of internal public debt that have been relied on as part of financing the volume of public spending and filling the deficit in the federal public budget during years exposed to the decline in global crude oil prices, which in turn also affected the Iraqi stock exchange index.

Table 3: Bai–Perron sequential test results for the LNDX3

Break Test	F-Statistic	Critical Value *	Break Date
LNX3			
0 vs. 1*	207.1146	11.47	2018M07
1 vs. 2*	76.95385	12.95	2016M01
2 vs. 3*	32.15529	14.03	2013M07
3 vs. 4 *	10.36857	14.85	2009M07
4 vs. 5 *	1.423510	15.29	2006M11

* Bai-Perron critical values for significance level 5%. Source: authors' own calculations based on

As for the result of (LNX4) Table No. (3) was (2015M01, 2013M07, 2009M02, 2006M11), as these years represent changes in the inflation rate in Iraq, which affected the index of the Iraqi Stock Exchange

Table 3: Bai–Perron sequential test results for the LNDX4

Break Test	F-Statistic	Critical Value *	Break Date
LNX4			
0 vs. 1*	219.6290	11.47	2015M01
1 vs. 2*	68.18922	12.95	2013M07
2 vs. 3*	25.94521	14.03	2009M02
3 vs. 4 *	10.86879	14.85	2006M11

* Bai-Perron critical values for significance level 5%. Source: authors' own calculations based on

It is also noted that any shock to exchange rates (whether rising or falling) is swiftly followed by a shock to the money supply. This is a predictable outcome in line with economic theory, and in line with economic theory, what is occurring is realistic because the increase in the money supply's size is caused by the increase in spending, which is typically caused when a drop in public revenues forces governments to finance public spending through other means. For security. It is noted from the previous analysis that most of these structural breaks are not sequential and sequential but at intermittent intervals, which confirms the congruence of the results of the analysis of the model with the reality of the Iraqi economy, as all these structural breaks are crises that occurred and greatly affected the Iraqi economy and the decisions of fiscal and monetary policy in that period.

4.2. Result Regime Switching Models

Markov's models with the smoothing regime switching models were analyzed through the self-regression model (AR), where the variable X t is considered as a function of its previous value X_{t-1}, and the self-regression (AR) models take the following formula: - (Meitz and Saikkonen 2021, 603)

$$X_t = \mu + \theta_1 X_{t-1} + \theta_2 X_{t-2} + \cdots + \theta_p X_{t-p} + Z_t \quad \dots \quad (35)$$

Whereas: () Model parameters () are random variables that are not related to each other by a mean of zero and variance () i.e. that: $\mu, \theta_1, \theta_2, \cdots, \theta_p Z_t \sigma_z^2$

$$E(Z_t) = 0$$

$$E(Z_t Z_{i+k}) = \begin{cases} 0 & k \neq 0 \\ \sigma_z^2 & k = 0 \end{cases}$$

Through the analysis of the time series of the period under consideration for the Iraqi economy, the variables of the wide money supply, interest rate, exchange rate and inflation rate were selected as independent variables and the general index of the Iraqi stock market as a dependent variable, and two basic systems were estimated in the previous consideration of the variables, as the first system represents the boom or the system of high prices, so the parameters of the

system and the probability of being followed by the variables and the likelihood of moving from it and to it, while the second system is the system of depression or low prices, taking into account Taking into account the specificity of the Iraqi economy due to the considerations of structural shocks experienced during the research period by the rise in crude oil prices, which is considered a state of popularity or decline, which is considered a state of depression, The results were as in Table 4.

From the results of Table (4) it is noted that the first system (Regime 1) is significant, and that the variable of the wide money supply (X1) is associated with a direct and moral relationship with the general index of the stock market (Y), that is, the increase of (X1) by (1%) led to an increase in (Y) by (0.46%), a result consistent with economic theory because in times of boom and increase in the money supply becomes a financial surplus for individuals, which motivates them to buy shares, bonds and real estate, which increases the number of points of the general index of the market Securities, as for the interest rate (X2) is directly related to the variable of the general index of the stock market (Y), that is, an increase (X2) by (1%) leads to an increase in (Y) by (1.31%) and this is explained by the fact that in times of boom and increase in public spending and money supply the demand for money becomes large leading to an increase in interest rates, and the exchange rate variable (X3) is associated with an inverse and moral relationship with (Y).), that is, the increase of (X3) by (1%) led to a decrease (Y) by (-3.30%), which is an abnormal case of the relationship between the two variables, that the negative indication can be explained that stocks are not the only alternative in front of investors, they may exchange their money from local currencies (Iraqi dinar) with other currencies such as dollars or other currencies within the framework of the foreign exchange market without resorting to the stock market, so foreign currencies are an easy alternative and soon compared to stocks and bonds, And that the inflation rate (X4) is related to a direct and significant relationship with (Y), that is, the increase of (X4) by (1%) led to an increase in (Y) by (0.09%), and this is explained by the fact that in times of boom the good on shares increases so shares are sold at a higher price, which leads to higher prices.

The second system (Regime 2) shows that the variable of the wide money supply (X1) is related to a direct and significant relationship with the general index of the stock market (Y), that is, the increase of (X1) by (1%) led to an increase (Y) by (0.32%), and we note that in times of recession or low prices, the percentage of increase in the money supply is lower, especially in the first months, as for the interest rate (X2).) is related to an inverse and moral relationship with the variable of the general index of the stock market (Y), that is, an increase (X2) by (1%) leads to an increase in the decrease of (Y) by (-0.910%), a result consistent with economic theory because in times of recession and low prices, the market will collapse and the demand for money decreases, so the relationship between interest rates and the stock market index becomes inverse. As for the exchange rate variable (X3) is related to a direct and moral relationship with (Y), that is, the increase of (X3) by (1%) led to an increase (Y) by (0.43%) In times of recession the monetary authorities resort to changing the exchange rate, so investors tend to exchange their currencies for Iraqi dinars to buy more shares, which are often sold in times of boom, and that the inflation rate (X4) is associated with a direct and insignificant relationship with (Y).), that is, an increase of (X4) by (1%) led to an increase of

(Y) by (0.006%), which is a very weak percentage, because inflation in times of depression becomes ineffective due to low prices, low demand for money and low bond purchases, as frightened investors will sell shares at a lower price to avoid larger losses.

Table 4: Markov Smoothing Switch regime results

Dependent Variable: Y
Method: Markov Switching Regression (BFGS / Marquardt steps)
Date: 02/04/22   Time: 19:29
Sample: 2004M01 2020M12
Included observations: 170
Number of states: 2
Initial probabilities obtained from ergodic solution
Standard errors & covariance computed using observed Hessian
Random search: 25 starting values with 10 iterations using 1 standard
deviation (rng=kn, seed=2090422202)
Convergence achieved after 60 iterations

Variable	Coefficient	Std. Error	z-Statistic	Prob.
Regime 1				
X1	0.462673	0.115594	4.002576	0.0001
X2	1.312411	0.355627	3.690415	0.0002
X3	-3.307567	1.674649	-1.975080	0.0483
X4	0.095499	0.027270	3.502009	0.0005
Regime 2				
X1	0.322555	0.010987	29.35861	0.0000
X2	-0.910186	0.048228	-18.87265	0.0000
X3	0.435045	0.173394	2.508997	0.0121
X4	0.006280	0.022400	0.280357	0.7792
Common				
LOG(SIGMA)	-1.678542	0.056077	-29.93255	0.0000
Transition Matrix Parameters				
P11-C	5.107538	1.349505	3.784750	0.0002
P21-C	-5.421123	1.214268	-4.464518	0.0000
Mean dependent var	4.879011	S.D. dependent var		1.091284
S.E. of regression	0.250276	Sum squared resid		10.08472
Durbin-Watson stat	0.706584	Log likelihood		37.84697
Akaike info criterion	-0.315847	Schwarz criterion		-0.112942
Hannan-Quinn criter.	-0.233510			

Source: Prepared by the researcher based on the outputs of the statistical program (Eviews 12).

The transition matrix was as follows:

$$\begin{bmatrix} 0.993984 & 0.006016 \\ 0.004403 & 0.995597 \end{bmatrix}$$

The probability of the transition in the first system (Regime 1) at the period (t) (boom system) is (99.39%), that is, most of the time the system to which the general index of the stock market is subject and its relationship with the variables of monetary policy, is the system of popularity or the high stock index index, with an estimated probability of (99.55%) as the probability of

the transition in the system of popularity always in the period (t+1), which means that the prevailing system is the system of popularity or high indicators.

This result is explained economically by the fact that at a time of boom, economic recovery and high oil prices, this leads to an increase in public revenues, which leads to increased spending and an increase in the money supply, which in turn leads to an increase in banking operations, and an increase in the volume of trading in the financial markets all these reasons lead to a rise in the general index of the stock market.

Either the probability of moving to the second system of depression or low indicators or low prices (Regime 2) during the period (t) is (0.44%), which is very weak, and the probability that the transition in the system in the period (t+1) is (0.60%), which is also a very weak percentage, because the shocks that hit the Iraqi economy are external shocks and linked to oil prices, on which the Iraqi economy depends by (95% to 99%).

Figure (8) shows the various smooth transitions and changes in the relationship between the variables of monetary policy according to the estimated model, noting that there have been several transitions between the two systems, as it represents the bottom figure that the recession system was prevalent for the period from 2014 to 2020 due to the poor security conditions in Iraq and the decline in global oil prices, which was reflected on monetary policy and on the stock market index, As for the higher fee, it refers to the system of popularity, and this system prevailed in the period 2004-2014, a period when oil prices were high and before the security situation worsened and ISIS occupied several Iraqi provinces.
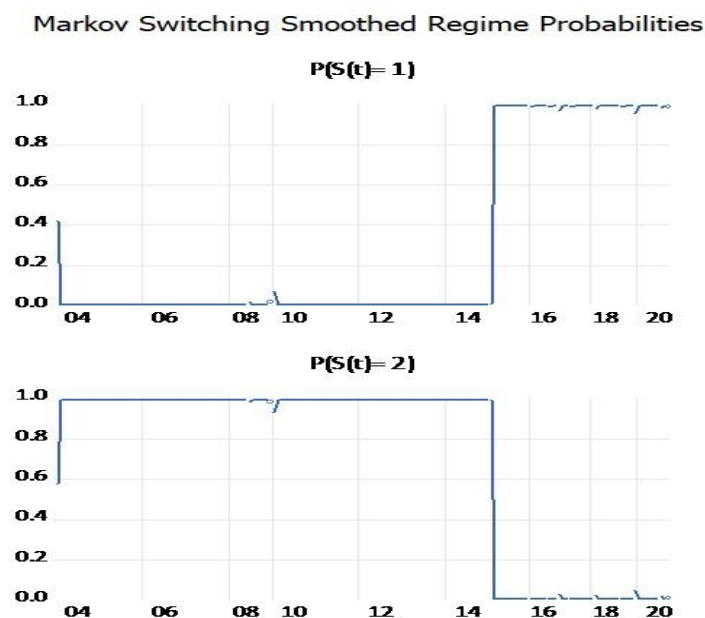
Figure 8: Transition between systems for the relationship between monetary policy variables and the stock index

From the above analysis, it is clear that the first system (boom system) is higher than the second system (recession system) in the monetary policy tools used by the central bank, which control the money supply, interest rate, exchange rate and inflation level, as the central bank controls the size of the money supply, which leads to relative stability in the volume of inflation, and also controls the interest rate rate as well as the exchange rates in the short and long term.

From the analysis above, it is possible to assess the effectiveness of fiscal and monetary policy in regulating price levels over the course of the study, and this is evident in the first system (boom system) being higher than the second system (recession system), as the Central Bank of Iraq's monetary policy tools, which regulate the size of the money supply within the economy, are somewhat common. As a result, the Central Bank's intervention by withdrawing some of t this result, when extrapolated over both the short and long terms, supports the relevance of the money supply coefficient in the estimated model as well as the depreciation of the second system (the depression system) at a probability level less than 5%. Other tests, like ARDL, VAR, and SEM, might not be able to detect these results because they always produce a single factor over the course of a period, making it impossible to distinguish between the fiscal and monetary responses to increases in the general level of prices or to interpret the results of the estimated model when the Iraqi economy is experiencing periods of economic volatility.

5. Conclusion and outlook

According to the findings, monetary policy has an impact on the general index of the Iraqi Stock Exchange through the Central Bank's tools of monetary policy (broad monetary interest, interest rate, exchange rate, and inflation) and structural breaks in the time series for the relevant period (2004-2020) Iraq is anticipated to move toward investing in securities in the coming years because traditional current investments do not yield high profits and are always exposed to risks in an unsafe environment. As a result, it is anticipated that the Central Bank will provide more facilities for people to invest their financial assets in the stock exchange and control them electronically, making them more convenient.

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