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Asymmetric consequences of government spending shock with the effect of government spending effectiveness indicators on the country's economic activities; the role of periodic structural models

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Abstract

This article explains the mechanism of the asymmetric consequences of government spending shock with the effect of government spending effectiveness indicators on the economic activities of the country using SVAR structural vector autoregression model for 2019-2019. Based on the estimation results of the SVAR model; A shock from oil revenues causes a 9% reduction in investment, 45% production and 1% employment, and a shock from the size of the government causes a 0.1% reduction in investment, 33% production and 6% employment respectively. will be Impulses coming from the government's current and construction expenses; It reduces production by 19% and employment by 90%. Generally; The impact of monetary and oil impulses in Iran's economy depends more on the inflationary state of Iran's economy; In such a way that with the increase of inflation, the effect of financial impulses (implementation of expansionary and contractionary policies) on production decreases and even at very high levels of inflation it can have a negative effect on real production. Considering the different infrastructures, models and economic conditions of Iran, a separate study of how the Iranian market is influenced by the uncertainty of the government's financial policies, the government's foreign exchange policies and investment costs can provide a correct view of the country's macro decisions. How production changes in the Iranian market as a result of these fluctuations.

Keywords: government spending, production, employment, economic activity, SVAR model
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1 Introduction

Fiscal policy uses the sum of government revenue (tax) and expenditure (expenditure) to influence the economy. The two main tools of fiscal policy are taxes and government spending. Changes in the level and composition of government taxes and expenditures can affect important economic variables such as consumption, wages, employment

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and investment in the economy. Expansionary fiscal policy is chosen in conditions of lack of full employment, especially in conditions of market and economic recession, and consists of increasing government spending or reducing taxes or a combination of both of them, which are used to expand economic activities [24]. On the other hand, contractionary fiscal policy is chosen in conditions of high employment and inflation caused by excess exploitation of production resources, and it is a suitable policy to reduce demand pressure and inflation through increasing taxes and reducing government spending or combining both of them. is done Economic experts do not agree on economic policies and their results; Some economists argue that the economic system is witnessing shocks that regularly affect total supply and demand; If policy makers use monetary and financial policy to stabilize the economic system, they can minimize the effect of economic shocks on macroeconomic variables such as production, inflation and unemployment [7]. On the contrary, economists like Milton Friedman think that the economic system is fundamentally stable; This group of economists consider inappropriate economic policy as the main cause of abnormal economic fluctuations. In order to achieve economic goals, governments often use various tools to achieve the desired goals according to the existing conditions and limitations in the form of monetary and financial and income policies and other policies, but the government's intervention in the economy To what extent it can affect the quantitative and qualitative improvement of the economic system has been discussed and examined by many economic experts for years [1]. Can expansionary and contractionary financial policies implemented by governments in different economic conditions effectively and continuously affect the economic activities of the country?

A look at the evolution of the global economy in recent decades indicates that the increase in effectiveness and efficiency, transparency and accuracy in economic processes and policies has practically become a global approach. This fact has been manifested with the emergence and expansion of information more and more [13]. These conditions have caused the processes and activities in the field of economic corruption to become more complex and continue to exist with minimal transparency while benefiting from the progress made. It is obvious that in this situation, recognition, problem solving, analysis and policy making in this part of the economy seems necessary. Analyzing the economic and social effects of economic corruption can open a window for researchers to better understand these activities. In this regard, among the effects of economic corruption activities are its impact on the country's economic activities, policy-making process, productivity, tax revenues, false employment, monetary exchange system and general government budget deficit [12]. As economic corruption spreads more and more, the government's income decreases and this causes the government's budget deficit and increase in financial restrictions. Therefore, in order to compensate for their budget deficit, governments increase tax rates, which leads to an increase in corruption and, as a result, a decrease in the amount of taxes received by the government, and creates a vicious circle [7].

Corruption is a phenomenon that exists more or less in all countries of the world. But its type, form, amount and extent are different in each country, just as its results and consequences are also different according to the type of political and economic organization and the level of development. In any case, corruption causes degeneration, puts the government's policies in conflict with the interests of the majority, causes waste of national resources, and reduces the effectiveness of governments in managing affairs, thus reducing people's trust in governmental and non-governmental institutions Indifference, laziness and incompetence increase. Corruption shakes the belief and moral values of the society, increases the cost of doing things and makes the growth of competitiveness difficult. Corruption hinders investment and faces many obstacles in the path of economic growth and development, and by improperly directing talents and potential and actual human resources towards wrong activities to obtain easy income, it provides the basis for recession in all dimensions [13]. On the other hand, wherever corruption takes root, it increases day by day, it becomes very difficult to deal with it, and its roots penetrate deeper into the society [1]. On the other hand, with the widening of the duties of governments in recent centuries and the pursuit of goals such as economic growth, employment, fair distribution of income, development of the financial system and creation of economic security by the government, its issues and problems have increased, especially in the field of economy. Government revenues and budget deficit reduction are more important in many countries compared to other sources of income and are widely used in controlling adverse economic effects. We will be underground and increase the budget deficit [13].

The results of many studies including; (Kim and Gil [15]), (Goodness [2]), (Shao Z., Dou L. [21]) and (Van et al [24]) show that the effect of volatility and uncertainty in financial policies and government spending on economic activities is the same among all countries. It will not be, but it depends on the level of development of the countries. In countries with a low level of development, this effect will be unclear. In some studies, this positive effect has been reported, while in others, zero and even negative effects have been reported. In countries with a high level of development, the financial deficit and government debt will definitely have a negative impact on economic activities. Hogg [10] states that the reason for this is that in larger financial markets, more opportunities for risk management are created, therefore larger financial markets are more efficient. Also, Sundrarajan and Baliño [22]have shown based on the experience of different countries that the development of the financial system will be effective if the executive

authorities have sufficient skills to manage this development. The major part of this skill is also created in the process of learning while doing, that is, with efficient executives, the financial sector can be developed to some extent, before its rules are complicated and cause economic growth.

On the other hand, in economic studies, the analysis of the effects of economic policies, including the uncertain variables of monetary policy, on the labor market is very important. On the other hand, in recent decades, the emergence and spread of financial crises have had direct and indirect effects on the economy of many countries. Therefore, in order to deal with this crisis, it is necessary to adopt a set of coherent policies in all the countries that have been directly or indirectly affected, because otherwise, economic stagnation will dominate the world's economic growth prospects. The delay in the implementation of the necessary policies will only lead to the aggravation of the crisis and the acceleration of the transmission of its effects to other sectors [14]. Although the country needs to implement financial adjustments to get out of the crisis, the intensity of this adjustment depends on the specific economic conditions of the country. However, there is a need to identify the factors that affect the uncertainty of a country's financial and economic policies and economic crises. Finally, the results should be provided to the economic policy makers to take advantage of these results in adopting appropriate policies [12]. Therefore, in order to answer this question, many empirical studies have been conducted, most of them have investigated the quantitative and qualitative relationship between financial policies in the economy of different countries. Since the study of the asymmetric consequences of the government spending shock with the effect of the effectiveness and efficiency indicators of the government spending on the economic activities of the country is one of the important topics in policy making, therefore, according to this issue, the main discussion in this study is to investigate the effects of the asymmetric consequences of the shock [23]. Government spending with impact is one of the indicators of the effectiveness and efficiency of government spending on the country's economic activities using the structural periodic model (SVAR). Also, the structure of the article is set in such a way that in the second part, the theoretical foundations including the proposed theories and the results of the experimental studies conducted in connection with the subject are presented. In the third part of the model, the research method and the tests used are described. The fourth section is dedicated to the results of tests and model estimation. Summary and conclusion are presented in the fifth section.

2 Theoretical foundations of research

The degree of government intervention in the economy has always been one of the most challenging topics among economists, but what should be noted is that the root of the debates raised in agreement or opposition to the government's presence in the economy is the difference of opinion about the effects It is a remnant of the government's intervention on the economy [12]. Therefore, apart from the issues raised regarding the size of the government and its optimal amount, the investigation of the effects of government intervention includes a significant part of the studies and researches conducted in the field of economics, and this indicates the importance of this part of the economy. The intervention of the government in the economy is carried out by adopting various financial policies that are directly decided and implemented by the government. The effect of the implementation of these policies on the economy will be different according to the assumptions considered for the economy. In other words, the existing difference regarding the size of the government and the type of its intervention in economic schools goes back to the assumptions that each of them consider regarding different economic markets [3]. Financial policy is a part of demand management policies implemented by the government. The flow of payments and receipts of the government, which is revealed in the form of budget expenditures and revenues, constitute the main variables of the government's financial policy. The most important features of the government budget and financial policy variables are the short period of time of their impact on macroeconomic variables, mobilizing the activities of non-governmental sectors, using the country's stagnant resources, and directing them in the direction of growth and development [4]. Also, the influence of government policies and financial variables on major variables such as consumption, investment, inflation, gross domestic product and macroeconomic goals, including distribution goals, allocative and stabilization goals, is undeniable. One of the desirable features of financial policy is the flexibility of its tools; It means expenses and taxes. But usually there is no necessary flexibility in the financial policy of developing countries. Taxes are easily reduced, but their increase is associated with problems; The opposite of this phenomenon is true for subsidies. Government spending increases easily, but it can be reduced with difficulty [14]. Therefore, it can be said that financial flexibility is not easily done. In the following, the impact of financial policies on production and employment in different economic schools is discussed. ssumptions.

2.1 The impact of government spending on the country's economic activities

The possibility of the positive impact of government spending on the country's economic activities is one of the well-known topics in the economic literature, and the government sector is considered one of the most important

sectors in the economic circular flow. The government's financial role in this flow consists of two basic components. On the one hand, governments earn income through taxes and other methods of earning income, and on the other hand, they allocate these incomes to government expenses through the distributive budget. The expendable expenses of the government lead to establishing a relationship between the sector and the two markets of consumer goods and services and the market of production factors. The most common model that shows the relationship between the activity of the public sector and real production on the demand side is the model for determining the equilibrium level of national income. As one of the elements of injections, government spending is a factor in determining the level of total demand and subsequently, the balance level of national income [14]. After the theories of Keynes, we saw the presentation of new theories in the field of economic literature, among which the model of Samuelson [18] can be mentioned. Using Keynesian tools, Samuelson examines the dynamic state of national income changes in the long term. In Samuelson's model, the investment function has two variables. First, independent investment, which is independent of national income and depends on factors such as interest rates, economic status, population, social security, and other factors, and the second is induced investment, which It depends on changes in the amount of final demand and changes in national income. This function can be written as follows:

$$I_t = I_0 + B(y_t - y_{t-1}) \tag{2.1}$$

In this equation, I_0 is independent investment and B is known as the acceleration coefficient, which represents the constant ratio of capital to production, and y_t is the amount of production at time t Equation (2.1) expresses the principle of acceleration. In some cases, current investment depends on changes in national income in two periods, and as a result, it can be written [19]:

$$I_t = I_0 + B(y_{t-1} - y_{t-2}). \tag{2.2}$$

When this function is combined with other elements of the simple Keynesian model, it links the acceleration principle to the multiplier as a means of creating business cycles. In the simple pattern of determining national income, we have:

$$y_t = C_t + I_t + G_t, \tag{2.3}$$

where C, I, and G represent private consumption expenditures, private investment, and government expenditures, respectively. If we write the consumption function with a time delay of one year as follows:

$$C_t{=}a + by_{t-1}, \tag{2.4}$$

and considering the investment function based on the relation (2.2) and putting it together with the relation (2.3) in the relation (2.4), we will have:

$$y_t{=}a + by_{t-1} + I_0 + B\left(y_{t-1} - y_{t-2}\right) + G_t. \tag{2.5}$$

By arranging the relation (2.5) we will have:

$$y_t = (b + B)\, y_{t-1} - By_{t-2} + a + I_0 + G_t. \tag{2.6}$$

Relationship (2.6) shows the effect of government spending on the level of national income. Among other theories proposed in this field is the growth theory of neoclassics. In these theories, like Solo's growth, the economic growth rate is a function of the growth rate of the labor force and the growth rate of capital, considering that the expendable expenses of the government, especially in developing countries, are a factor in changing the growth rate of capital, in terms of the volume of capital (19). created by the public sector, both in terms of creating infrastructure facilities and in order to encourage private sector investment, so it is possible to establish a logical relationship between the growth of government expendable expenditures and the rate of economic growth [16].

On the other hand, government transfer payments as another part of government spending can affect the quality of life of different income deciles. This quality change can be seen in the level and amount of use of educational, health and welfare facilities [1]. Also, improving income distribution can help reduce poverty. All these changes are indirectly considered as a factor in economic growth. Economic growth in countries has shown that since the 1970s, the issue of poverty and equality has become the main issue of economic development [9]. Because eradicating poverty and improving the quality of life is a factor in increasing labor productivity and economic growth. Improvement in income distribution can change the pattern of consumption and demand in a country. If incomes are distributed more equitably, the demand pattern will be more related to the production of food and other essential goods, and considering that the production of such goods is mostly user-friendly and does not have complex technology, it can lead to an increase in production and employment in this sector. provided the countries. While some believe that the

unequal distribution of income is a necessary condition for creating rapid economic growth, because high incomes of individuals and companies are a necessary condition for creating savings, and these savings in turn lead to investment and economic growth through a mechanism such as the Harrod model mechanism [8]. - Dumar makes it possible. As a result, an economy that faces unequal distribution of income has faster savings and economic growth.

2.2 Examining the relationship between oil and currency shocks and the country's economic activities

Examining fluctuations in countries' production and its causes has always been one of the topics of interest in economic analysis. Changes and fluctuations in oil prices affect macroeconomic variables in different ways. In addition, the effect of oil price on the economy can be examined from different aspects. One of the important aspects of this influence is the symmetric or asymmetric effect of oil shocks on economic variables, and another dimension of the influence of oil prices is the uncertainty effect caused by oil price fluctuations on economic variables. Also, the type of currency system of the countries is one of the factors that can be important in the fluctuation of the exchange rate of a country. Based on strong documents and studies, the more the exchange rate system moves towards the floating currency system, the more the rate fluctuations will be [2].

The effect of oil price fluctuations on oil growth and its price affects oil exporting and importing countries through different mechanisms. For oil importing countries, the price of oil affects real activities through two supply and demand channels. The effect of the supply side is because crude oil is a main input in production and an increase in the price of oil leads to an increase in production costs, which reduces production. Also, an increase in the price causes a decrease in investment, because an increase in the price of oil increases the cost of the company [21].

Due to their economic structure, oil exporting countries are not greatly affected by the high trend of oil prices, and oil prices affect the economy of these countries through different mechanisms. The increase in oil prices stimulates both the supply and demand sides in oil-dependent economies, but due to the support systems of the energy sector and the payment of government subsidies in this sector and basic goods, it causes an increase in costs in activities that use energy (oil and oil products) to The title of production inputs is meant, it will not be, as a result, it does not transfer the macro supply curve and only stimulates demand [14]. Also, oil-exporting countries mainly have state economies that are governed by oil revenues. Therefore, most infrastructure investments and even other investments are financed from government oil revenues. A decrease in the price of oil in oil-exporting countries causes a decrease in government oil revenues. Since the current expenses are sticky towards the bottom and it is not possible to reduce it easily when the oil revenues decrease, the decrease in oil revenues causes a decrease in infrastructure investments, which in turn causes a decrease in production [13]. In general, theoretically, oil price fluctuations have different and opposite effects on production, investment and employment in developing countries, and the total effect depends on the outcome of these effects.

2.3 Research background

2.3.1 Foreign studies

Vu Van et al. [24] in his research, he has studied the effect of government spending on productivity and its breakdown before and during the outbreak of COVID-19. Using panel data from 158 economies, the research shows that health care spending increases productivity, while military spending reduces productivity and breaks it down. These effects are even greater in the context of COVID-19, suggesting that spending on health care and avoiding conflict and military escalation are important for future economies to sustain growth.

Shaddady [20]. This study rigorously investigates the non-monotonic phenomenon of the government spending–growth nexus in the EECA. Using panel data from 19 countries over the period 1995–2019, a nonlinear quadratic estimator and cubic nonlinear estimator were applied to quantile regressions. in elucidating the nexus between government spending and economic growth, the study found that most macroeconomic and governance variables are relaxing in explaining GS.

Shao, Dou [21]. In this study, it was used to estimate and model the effect of health expenditure on investment in non-financial assets in China from 1990 to 2019. First, the estimates show that health spending and FDI have a significant long-run reduction effect on non-financial assets in China by 0.451 and 0.234%. Second, economic growth and gross capital formation significantly affect the non-financial assets of the economy. Likewise, ICT and carbon emissions are also positively correlated with an explained variable in China. Findings show that as health costs and foreign direct investment increase, the economy invests less. This study generates important policy implications for the selected country to achieve the desired goals based on the empirical results.

Montazeri shoorekchali J., Zahed gharavi M. [17] The present study investigates the causal relationship between government size and economic growth in Iran. The findings of this study show that the size of the government in the form of a two-regime structure (regime zero: 1361-1345 and regime one: 1362-1396) had a negative and significant effect on economic growth, although this negative effect was in regime one. Compared to the zero regime, it was larger, and this larger negative effect can be rooted in the fact that the share of current expenditures from the total government expenditures in the years related to the first regime (compared to the zero regime) was noticeably larger, and Finally - contrary to Wagner's law - in this study, there is no evidence of a positive and significant effect of economic growth on the size of the government in Iran's economy.

Monfared et al. [16] investigated the role of financial development in the efficiency of Iran's monetary policy in determining production and inflation during the period of 1358-1399 with the filter-Kalman approach. The estimation results of the first two models showed that with the improvement of financial development indicators, the effectiveness of monetary policy in influencing economic growth will decrease. The estimation results of two other models also showed that the effect of financial development indicators on the effectiveness of monetary policy in influencing inflation was negative and statistically significant; Based on the results, it is suggested that the economic policy maker in Iran should give more freedom of action to the banks in the deposit and loan sectors so that they can have a more appropriate function in the free economy, although this behavior will still increase the instability and changeability of the variables; But it can improve the real performance of monetary policy for both the household and the producer.

Seyed Salehi et al. [19] analyzed government revenues in a small oil-exporting economy using the Dynamic Stochastic General Equilibrium (DSGE) method. In this article, in order to analyze the shock, two scenarios were designed. In the first scenario, it was assumed that the government has oil revenue and all oil revenue is spent by the government and the government does not rely on tax revenue. In the second scenario, it is assumed that 40% of the government's oil revenues are injected into the development fund and a percentage of it is allocated as facilities to the production sectors, and the government finances its expenses by relying more on various types of tax revenues. The results show that the tax and oil shock, i.e. the reduction of dependence on oil and reliance on tax revenues, has a negative effect on macroeconomic variables in the short term, but in the long term, with the increase in tax revenues, the amount of production and, as a result, investment, consumption Employment in the economy has increased [19].

Kim [14] in their research, they examined the uncertainty of government spending policies and economic activity for the United States using the VAR model. This model shows that increasing uncertainty in government spending policies has significant and long-term negative effects on economic activities. The premium on foreign financing of firms appears to be an important transmission channel of the uncertainty shock of government spending policies [14].

Tamai et al. [23] in the research, they investigated financial costs, public investment, economic growth and welfare in an intertwined pattern. The results of the study show; that the effect of public capital productivity and the weight of consumption tools from private consumption in the retirement period are essential factors for growth and the welfare effects of financial policy on the budget deficit. For example, higher amounts of public capital and the survival rate of public investment are supported by budget deficits [23].

Fesharaki et al. [12] investigated the effect of inflation and improving the business environment on foreign investment in selected countries and Iran. The research results show that the effect of inflation on foreign investment was negative and the effect of improving the business environment was positive.

In this research, the SVAR method was used to estimate the model, and in order to be able to analyze the results of the long-term equilibrium relationship for the SVAR structural vector autoregression model, the instantaneous reaction functions were estimated and the effects of the impulses on the variables and the response to the impulse from The area of economic activities of the country has been examined, and for this purpose, the current research has innovation [3].

3 Research methodology

In the present study, following the studies; Kim [15] and Tamai et al. [23] the order of variables in the SVAR structural vector autoregression model regarding the study of impulses from oil revenues, government tax revenues, government spending policy, government size, The quality of regulations, corruption control, financial development on investment, production and employment in Iran's economy is designed based on the country's economic conditions, so

the order of structural equations in the following matrix is designed based on Iran's economic conditions:

$$\begin{bmatrix} \varepsilon_{\text{OILR}} \\ \varepsilon_{\text{TAXR}} \\ \varepsilon_{\text{EXP}} \\ \varepsilon_{\text{GE}} \\ \varepsilon_{\text{RO}} \\ \varepsilon_{\text{CC}} \\ \varepsilon_{\text{FD}} \\ \varepsilon_{\text{INV}} \\ \varepsilon_{\text{GDP}]} \\ \varepsilon_{EMP} \end{bmatrix} = \begin{bmatrix} a_{11}(1) & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ a_{21}(1) & a_{22}(1) & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ a_{31}(1) & a_{32}(1) & a_{33}(1) & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ a_{41}(1) & a_{42}(1) & a_{43}(1) & a_{44}(1) & 0 & 0 & 0 & 0 & 0 & 0 \\ a_{51}(1) & a_{52}(1) & a_{53}(1) & a_{54}(1) & a_{55}(1) & 0 & 0 & 0 & 0 & 0 \\ a_{61}(1) & a_{62}(1) & a_{63}(1) & a_{64}(1) & a_{65}(1) & a_{66}(1) & 0 & 0 & 0 & 0 \\ a_{71}(1) & a_{72}(1) & a_{73}(1) & a_{74}(1) & a_{75}(1) & a_{76}(1) & a_{77}(1) & 0 & 0 & 0 \\ a_{81}(1) & a_{82}(1) & a_{83}(1) & a_{84}(1) & a_{85}(1) & a_{86}(1) & a_{87}(1) & a_{88}(1) & 0 & 0 \\ a_{91}(1) & a_{92}(1) & a_{93}(1) & a_{94}(1) & a_{95}(1) & a_{96}(1) & a_{97}(1) & a_{98}(1) & a_{99}(1) & 0 \\ a_{101}(1) & a_{102}(1) & a_{103}(1) & a_{104}(1) & a_{105}(1) & a_{106}(1) & a_{107}(1) & a_{108}(1) & a_{109}(1) & a_{1010}(1) \end{bmatrix} \times \begin{bmatrix} U_{\text{OILR}} \\ U_{\text{TAXR}} \\ U_{\text{EXP}} \\ U_{\text{GE}} \\ U_{\text{RO}} \\ U_{\text{CC}} \\ U_{\text{FD}} \\ U_{\text{INV}} \\ U_{\text{GDP}} \\ U_{\text{EMP}} \end{bmatrix}$$

The left side of the above equation actually shows the logarithm order difference of the dependent variables. On the right side of the equation, the matrix $A(L)$ is a square matrix containing polynomials in terms of the interval operator. For example, the index of the i row and the j- column of the matrix $A(L)$, $a_{ij}(L)$, which shows the response of the i- variable to the j-structural variable. The vector $E = [U_{ij}]$ contains sentences of structural disturbance. which are defined as follows:

U_{OILR}: Impulses are related to oil income. U_{TAXR}: Impulses are related to tax revenues. U_{EXP}: Impulses are related to current and construction costs of the government. U_{GE}: Impulses are related to the size of the government. U_{RO}: Impulses related to the quality of regulations, U_{CC}: The impulses are related to corruption control. U_{FD}: Impulses are related to the financial development of the country. U_{INV}: Impulses related to investment, U_{GDP}: The impulses are related to the economic growth rate and U_{EMP}: Impulses related to employment.

4 Model estimation and analysis of findings

4.1 Introduction of SVAR model

To evaluate the reliability of the variables, Phillips-Perron and Dickey-Fuller tests were used and the detrending results are presented in Table 1.

Table 1: The results of the unit root test

	statistics ADF		statistics pp		
Result	statistics	statistics	probability	statistics	Variables
I(1)	0.0000	-8.98	0.0000	-6.98	OILR
I(1)	0.0028	-4.78	0.0000	-7.89	TAXR
I(1)	0.0008	-5.28	0.0000	-6.54	EXP
I(1)	0.0000	-8.88	0.0083	-4.41	GE
I(1)	0.0401	-3.89	0.0019	-4.91	RO
I(1)	0.0000	-6.61	0.0413	-3.77	CC
I(1)	0.0000	-7.78	0.0017	-4.95	FD
I(1)	0.0000	-8.12	0.0000	-7.09	INV
I(1)	0.0000	-8.45	0.0000	-9.96	GDP
I(1)	0.0000	-6.78	0.0000	-8.45	EMP

5 Research findings

After the reliability test for the reliability of the model variables, the results of which indicate that all the variables are reliable in the first order, the first problem in auto-regression vector models is to determine the optimal interval length, Schwarz information criterion (SC), Akaike information criterion (AIC), Final Prediction Error (FPE), Hannan-Quinn information criterion (HQ) and Likelihood Ratio (LR) are used to determine the interval length. The results of Table 1 show that in the desired model, based on the criteria of true likelihood ratio, the final prediction error, Akaik and Hanan Quinn put interval two as the optimal interval of the model. While, based on Shuratz-Bayesin criteria, one interval is selected as the optimal interval. Finally, since the Schwarz-Bayesian criterion follows the principle of

frugality and gives the most importance to reducing parameters or simplifying the device (against better fit), it is more suitable for small sample sizes, especially selected sample sizes. Therefore, interval one is chosen as the optimal interval of the model.

Table 2: Determining the optimal break in the VAR model

HQ	SC	AIC	FPE	LR	LogL	Lag
-7.12536	-6.85446	-7.56328	3.12e-11	NA	125.4951	0
-17.12536	-16.3265	-19.4875	3.08e-16	147.0216	325.21458	1
-17.14416	-16.14523	-19.3652	3.07e-16	51.75335	468.7058	2

Source: research findings

5.1 Circle unit root test

To ensure that the regression is not false and virtual, the unit root test of the entire regression model was also performed. If the SVAR model is not stable, the obtained results are not reliable, in order to check the stability of the estimated model, we use the AR chart. This inverse diagram shows the characteristic roots of an AR process. If the absolute magnitude of all these roots is smaller than unity and is placed inside the unit circle, the estimated SVAR model is stable. The AR diagram of the model in the figure shows that the inverse of all characteristic roots are placed inside the unit circle and the estimated SVAR model of these models provides the stability condition.

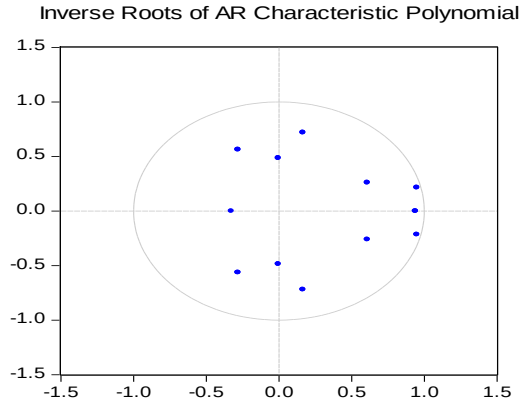


Figure 1: Unit root test (Source: research findings)

5.2 Model estimation results

The results of the SVAR model to investigate the effect of explanatory variables on the country's economic activities (investment, production and employment) are reported in Table 2.

The results of the estimation of the SVAR model show that the coefficients of the main variables and the impulses affecting each other in the matrix equations are significant and in accordance with the conditions of the Iranian economy. The main variables that are necessary and can be analyzed in the results of the SVAR model; Impulses from oil revenues, tax revenues, current and construction expenses of the government, size of the government, quality of regulations, corruption control and financial development are on investment, production and employment. In the same way that an impulse from the area of oil revenues causes a decrease of 9% in investment, 45% of production and 1% of employment, also an impulse from the area of the size of the government causes a decrease of 0.1% in investment, 33% in production and 6% respectively. The percentage of employment. The impetus from the financial development area caused a decrease in order; 7%, 0.4% and 11% are investment, production and employment. Also, the impulses from the government's current and construction expenses; It reduces production by 19% and employment by 90%. In other words, it can be concluded that with the increase in foreign exchange earnings caused by the increase in oil prices, these funds are spent on imports instead of entering production and investing in production sectors, which is generally done in order to fight inflation. In this case, many production sectors face serious damage and leave the production cycle, and for this reason, part of the investments made in the economy remain unused and the amount of production decreases. Imports have also decreased, and part of the decrease in imports is directed towards capital

Table 3: Estimation of structural vector autoregression model

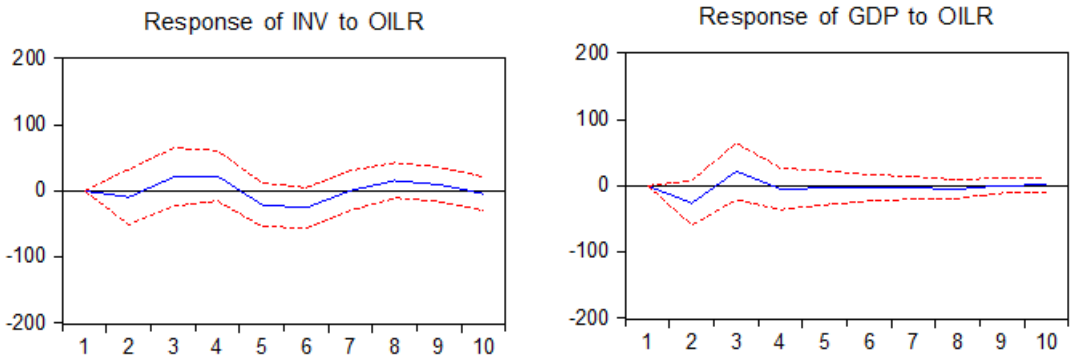
Structural VAR Estimates Sample (adjusted): 1372 1399 Structural VAR is just-identified				
	Coefficient	standard deviation	t statistic	probability level
Coefficient of impulses of oil revenues in investment equation C(23)	-0.092756	0.043199	-2.147184	0.0318
Coefficient of impulses of tax revenues in investment equation C(24)	0.035050	0.034240	1.023658	0.3060
Coefficient of impulses of current and construction costs of the government in the investment equation C(25)	-0.007230	0.009088	-0.795514	0.4263
Coefficient of government size impulses in investment equation C(26)	-0.001161	0.000317	-3.663222	0.0002
Coefficient of regulation quality impulses in investment equation C(27)	-0.006733	0.002589	-2.600783	0.0093
Coefficient of corruption control impulses in investment equation C(28)	-0.126901	0.06358	1.469485	-0.1417
Coefficient of financial development impulses in investment equation C(29)	-0.077384	0.010161	-7.615773	0.0000
Coefficient of impulses of oil revenues in the production equation C(31)	-0.458748	0.070479	-6.508975	0.0000
Coefficient of impulses of tax revenues in the production equation C(32)	-0.053752	0.022425	-2.396934	0.0165
Coefficient of impulses of current and construction expenses of the government in the production equation C(33)	-0.197885	0.085146	-2.324058	0.0201
Coefficient of government size impulses in the production equation C(34)	-0.331289	0.175069	-1.892335	0.0584
Coefficient of quality impulses of regulations in production equation C(35)	-0.077751	0.022145	-3.511031	0.0004
Coefficient of corruption control impulses in production equation C(36)	-0.263579	0.434018	-0.607300	0.5437
Coefficient of financial development impulses in production equation C(37)	-0.004336	0.001899	-2.283348	0.0224
Coefficient of investment impulses in the production equation C(38)	-0.000334	0.058.92	-3.747390	0.0002
Coefficient of impulses of oil revenues in employment equation C(39)	-0.010101	0.005710	-1.768823	0.0769
Coefficient of impulses of tax revenues in employment equation C(40)	-0.022717	0.010298	-2.205968	0.0274
Coefficient of impulses of current and construction costs of the government in the employment equation C(41)	-0.900150	0.190371	-4.728396	0.0000
Coefficient of government size impulses in employment equation C(42)	-0.065123	0.032376	-2.011449	0.0443
Coefficient of impulses of the quality of regulations in the employment equation C(43)	-0.405377	0.164099	-2.470328	0.0135
Coefficient of corruption control impulses in employment equation C(44)	-0.080371	0.074717	-1.075672	0.2821
Coefficient of impulses of financial development in employment equation C(45)	-0.117820	0.070857	-1.662799	0.0964
Coefficient of investment impulses in employment equation C(46)	-0.006141	0.012618	-0.486663	0.6265
Coefficient of production impulses in employment equation C(47)	-0.001947	0.027590	-0.070572	0.9437

Source: Researchers' findings

goods and production machinery, which will result in a decrease in investment, production, and employment. The sectors that were removed from the production cycle due to the high import of consumer goods during the period of increased oil income, will not be revived in this period. So, in general, it can be said that; The impact of financial and oil impulses in Iran's economy mostly depends on the inflationary situation of Iran's economy. In such a way that with the increase of inflation, the effect of financial impulses (implementation of expansionary and contractionary policies) on production decreases and even at very high levels of inflation it can have a negative effect on real production.

5.2.1 Instant reaction functions

In order to be able to properly analyze the results of the long-term equilibrium relationship for the SVAR structural vector autoregression model, we need to examine the instantaneous reaction functions and variance analysis for the model. In other words, the SVAR model provides two powerful tools for economic volatility analysis: instantaneous reaction functions (IRF) and variance analysis. Therefore, after estimating the SVAR model, it is possible to examine the results of instantaneous response functions and variance analysis. An instantaneous response function, in fact, expresses the effects of one standard deviation of shocks on the endogenous variables in the model. For the model used in this research, the reaction of the variable investment, production and employment to a sudden impulse or change equal to one standard deviation in each of the endogenous variables of the model including oil revenues, tax revenues, government current and construction costs, government size , the quality of regulations, corruption control and financial development on investment, production and employment are shown as a diagram in Figure 2 for the model. On the horizontal axis of time is annual periods and on the vertical axis the growth percentage of variable changes.



The results of the instantaneous reaction functions (Chart No. 2) for the model show that the impact of oil impulses on investment goes down for two periods and then goes up, the oil impulses on production and employment up to two periods. The period goes through a downward trend and then an upward trend, in other words, as mentioned above, with the increase in the price of oil and foreign exchange earnings, instead of going into production and investing in the production sectors, capital is spent on imports, which It is generally done to deal with inflation. In this case, many production sectors will face serious damage and will be left out of the production cycle, and therefore part of the investments made in the economy will remain unused and the amount of production and employment will decrease. Also, the impulses from the government's current and construction expenses on investment, production and employment go through four periods of downward trend and then upward trend. In other words, the effect of the government's policies on Iran's production is to invest the income from the sale of oil, and as a result, the physical capital will increase, and this, in turn, will increase the production.

During periods of increasing oil prices, we see an increase in government spending, investment and production, and on the contrary, when oil income falls, we see a decrease in production. But the problem that exists for Iran's economy; The increase in oil revenues has not been managed well and instead long-term investments have been spent on short-term current expenses, which has resulted in nothing but inflation and increased liquidity. The cost that Iran's economy pays due to lack of trust and uncertainty is very high. Some believe that the structural and institutional weaknesses of the country's society have created obstacles for the proper use of the potential of oil revenues, and sometimes oil rents have intensified those weaknesses. As a result, while the oil income has helped consumption and production in the country in some ways, it has caused economic and political backwardness in other ways. A group of supporters of this view believe that the positive effect of oil on the country's economy can be strengthened by making efforts to compensate for structural weaknesses and adopting appropriate policies. But many people consider the existence of oil rents as the main problem. In their opinion, oil is a big disaster for the country. According to the supporters of this point of view, oil revenues in other ways have prevented the country's productive forces from making the necessary efforts for industrial development. For example, these revenues have diverted the attention of the government and the private sector too much, away from production and towards imports. More importantly, in some periods, the conflict between different social and political groups to capture a larger share of this huge rent has increased and imposed a lot of costs on the country's economy. In some other periods, a few people have been able to take control of the oil rents and thereby realize the monopoly of power for themselves.

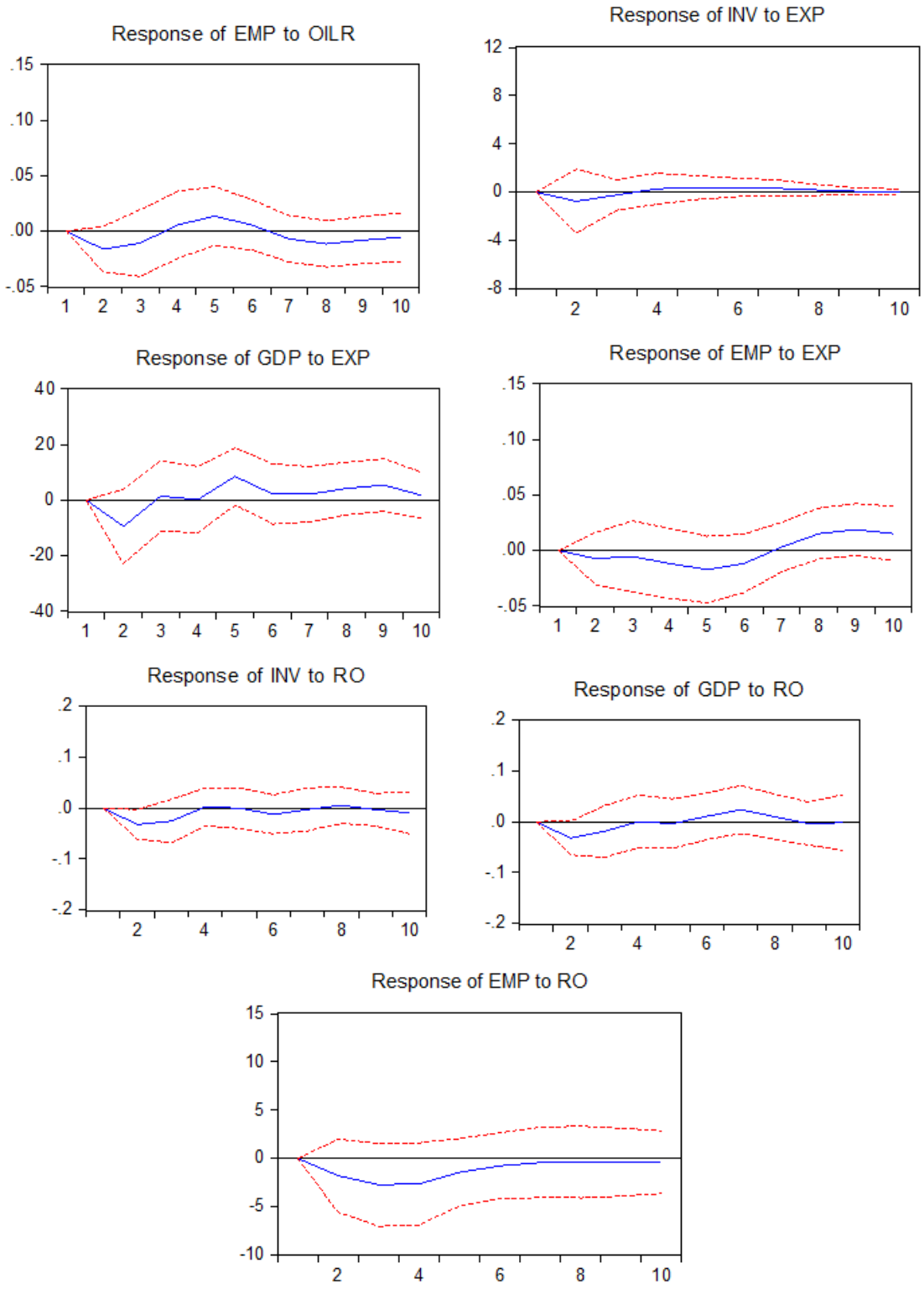


Figure 2: Results of instantaneous reaction functions for the model (Source: research findings)

5.2.2 Variance analysis

In this part, according to the estimated model, the variance analysis of the model variables has been done, the results of which can be seen in Table 4 for the model. In this table, the S.E column shows the prediction error of the relevant variables during different periods. Since this error is calculated every year based on the previous year's error

and the source of this error is the change in current values and future impulses, it increases over time. The results of Table 4 for the model show that the prediction error was 0.181 in the first period and 0.186 in the second period and increased over time. The next columns show the percentage of variance due to a specific sudden change or impulse.

The third column shows that although in the first period 100 percent of the changes and in the second period 85.58 percent of the changes were caused by oil price impulses, but in the third period, 62.55 percent of the changes in this index were related to oil income impulses. 21.30 percent related to current and construction cost impulse, 2.62 percent related to tax revenue impulse, 3.2 percent related to government size impulse, 0.58 percent related to corruption control impulse, 3.005 percent related to regulatory quality impulse, 2.06 was related to the investment impulse, 2.32 was related to the production impulse and 2.23 was related to the employment impulse and among the variables of the model; Oil income impulses, current and construction expenditure impulses, and government size impulses have respectively accounted for the highest percentage of explaining the changes in the model during the period under review, which is completely justified for Iran's economy.

Table 4: Variance analysis for model

EMP	GDP	INV	FD	CC	RO	GE	EXP	TAXR	OILR	S.E.	period
0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	100.0000	0.181256	**1**
1.210554	0.566909	1.134097	0.107704	0.155188	3.387783	1.110045	6.129130	0.614923	85.58367	0.186644	**2**
2.231477	2.320863	2.068153	0.107184	0.584305	3.005168	3.200684	21.30081	2.628233	62.55312	0.229479	**3**
11.05963	9.163095	3.217574	0.093341	0.975254	2.255745	7.169458	16.17381	2.813578	47.07851	0.282150	**4**
9.200225	7.483055	2.969363	0.106218	3.671826	4.639813	7.038848	17.97308	3.174208	43.74336	0.320751	**5**
7.752693	16.56044	4.119484	0.089437	3.005849	3.720306	6.450271	18.66423	3.493246	36.14404	0.339418	**6**
7.458813	15.93100	3.970955	0.115241	3.049431	4.078381	6.956518	19.19600	3.391191	35.85246	0.357997	**7**
7.082337	15.60329	3.921551	0.113206	2.888593	4.049280	6.714823	19.95489	3.719517	35.95251	0.377153	**8**
7.131818	15.51485	3.877351	0.114138	2.914190	4.001158	6.727507	20.05438	3.769434	35.89517	0.389696	**9**
6.965410	15.41191	4.242780	0.112815	2.946464	4.496788	6.683229	19.59950	3.874440	35.66666	0.395850	**10**

Source: Research's findings

6 Conclusion and presentation of policy proposals

The aim of the present study was to investigate the asymmetric consequences of the government spending shock with the effect of the government spending effectiveness indicators on the country's economic activities, for this purpose, the SVAR structural vector autoregression impulse model was used for the period of 2012-2018.

According to the research results, Kim [15] in a study investigated the uncertainty of government spending policies and economic activity for the United States using the VAR model. This model shows that increasing uncertainty in government spending policies has significant and long-term negative effects on economic activities. It seems that the insurance premium of foreign financing of companies is an important transmission channel of the uncertainty shock of government spending policies, and the results of this research were in line with the current research.

According to the research results of Shaddady [20] This study rigorously investigates the non-monotonic phenomenon of the government spending–growth nexus in the EECA. Using panel data from 19 countries over the period 1995–2019, a nonlinear quadratic estimator and cubic nonlinear estimator were applied to quantile regressions. in elucidating the nexus between government spending and economic growth, the study found that most macroeconomic and governance variables are relaxing in explaining GS. The results of their research indicate the existence of a negative and significant relationship between economic growth and the size of the government (the ratio of government spending to GDP), which the results of this research were in line with the current research.

Based on the research results, the following suggestions are presented:

- If the government budget deficit in the country is due to an increase in current expenditures (consumption expenditures), given that current expenditures only increase total demand, it may cause inflation, but if the government budget deficit is due to the implementation of an active financial policy In order to free the economy from stagnation, the government should implement an expansionary financial policy by increasing its investment expenditures and creating a deficit in the budget. It is also necessary to determine the type of financial policies in accordance with the economic conditions of the country; In other words, expansionary and contractionary financial policies should be carried out according to the conditions of recession and economic prosperity.

- The results obtained from the estimation of the model indicate that the uncertainty of current expenditures and construction expenditures have a significant effect on production and employment in the country. Therefore,

considering the large share of current expenditures and tax revenues in creating uncertainty in the GDP, it is better to use construction expenditures as a financial policy lever over current expenditures and tax revenues.

- Developing countries, including Iran, have a high degree of uncertainty in macroeconomic variables. Growth, inflation, liquidity, exchange rate and other macroeconomic variables are more exposed to shocks and uncertainties compared to the economies of industrialized countries, and the effects of these uncertainties and their continuation can lead to the formation of more structural problems in different economic sectors. countries. Uncertainty in these indicators affects the market by creating risk and uncertainty, affecting investment and investors' decisions. Uncertainty in these indicators will have an important impact on liquidity, investment, export and import, production in the country, and therefore it is very important for the country's economic officials. Due to the different infrastructures, models and economic conditions of Iran, a separate study of how the Iranian market is influenced by the uncertainty of the government's monetary policies, government's financial policies, government's foreign exchange policies and investment costs can be used in macro decisions. The country should provide a correct view of how production changes in the Iranian market due to these fluctuations.

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