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Is Government Spending Shock More Effective in Financial Boom or During Recessions?

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Abstract

The primary objective of the present article is to study the impact of positive and negative shocks in government expenditures during different financial cycles on economic variables in Iran. The relationship between the financial sector and the real sector of the economy will cause the importance of financial markets. To this end, first, the financial condition index was created through principal components analysis. Then, using the LR non-linear test and the data related to the period of 2005 to 2019, while studying non-linearity among variables relationship, the threshold value variable was estimated exogenously. Therefore, the value of the threshold of the financial index is considered to be -0.36. Seasons lower than the threshold variable indicate the period of recession and higher than the threshold variable indicate the period of financial prosperity. Threshold vector Autoregression Model (TVAR) with the assumption of the possibility of regime switching and generalized impulse-response functions are extracted to examine the impact of positive and negative shocks government expenditures. Based on the results, the reaction of economic variables to positive shocks in government expenditures will be independent of the financial cycle whereas the reaction to negative shocks in government expenditures is influenced by the financial cycle, especially during the period of recession.

Highlights

- This study explores effects of government spending shocks during the financial cycle.
- The index of financial conditions can be defined as the current state of financial variables.
- The impact of negative shocks on government spending is influenced by financial cycle.

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1. Introduction

Fiscal and monetary policies are considered the bases of policymaking (Praggidis et al., 2015). Fiscal policy was once considered an efficient instrument for economic stabilization. Nonetheless, such policies had led to enormous public debts and deficiencies while failing to decrease and manage the growing unemployment rate. Hence, economists started to question the usefulness of fiscal policies regarding macroeconomic stabilization. On the other hand, Beetsma and Beetsma (2011) argued that active fiscal policies can be implemented to deal with economic issues. Candelon and Lieb (2013) asserted that there has been a great number of studies on the impact of various fiscal policies as the most effective instruments to stabilize the economy. Following the Great Recession, stemming from recent financial crises, monetary policies fail to influence the economy by lowering interest rate (Klein & Linnemann, 2019).

From the point of view of all economic schools, government intermediation in the economy is necessary (Fotros et al., 2020). The global financial crisis had severe implications on the real economy (Duprey & Klaus, 2017). Fiscal policy has been referred to as an effective instrument to help stabilize the economy shortly, particularly because of the contemporary economic crisis. Nonetheless, the extent of the effectiveness of fiscal policies (e.g., government expenditure) on encouraging (discouraging) economic activities is still unclear. Moreover, there is no theoretical consensus regarding the effect of government spending shock on major economic variables (Hauptmeier et al., 2010; Brückner & Tuladhar, 2014). The Great Recession indicated a significant correlation among financial markets, macroeconomic dynamics, and the influence of fiscal policies (Ferrarsi et al., 2013). Given that fiscal policies are implemented to moderate economic turbulences and influence consumers' welfare, it is necessary to understand the impact of government expenditure shocks on economy (Ma, 2019).

Therefore, the macroeconomic has experienced a renewed interest in the study of financial cycle. Both policy makers and academics were caught off guard by the global financial crisis of 2008-2009, which was highly unexpected and whose consequences were severe. Developments during the global financial crisis of 2008-2009 and its aftermath revealed once again that volatility in the financial side of the economy can affect real activity in deep and lasting way (Karamisheva et al., 2019). Furthermore, the authors reported a significant correlation between various phases of business cycle and financial cycle; Consequently, financial market developments will be critical for the economy (Yan & Huang, 2020). The dynamics of business cycles are therefore triggered by the financial sector structure in each country (Cao et al., 2021). Despite most of the assumptions of empirical models that fiscal policy all the time and under all conditions have the same effects, no agreement is observed over the similarity of macroeconomic impacts of fiscal policies in various situations and time intervals. Hence, such fiscal policy shocks might have some significant nonlinear and time-dependent influences. There are a number of variables to manipulate the impact of fiscal expenditure shocks on the economy, including the monetary policy, financial

constraints on households, the international environment (Klein & Linnemann, 2019). Government spending models have been increasingly developed to evaluate their impact on the economy. Nevertheless, researchers are still struggling to determine the most appropriate spending shock model for empirical assessments (Kormilitsina & Zubairy, 2018). In this paper, we intend to examine the impacts of encouraging and adverse government expenditure shocks on key economic indicators during financial cycle. First, only a few studies have investigated the impact of government spending shocks during the financial cycle, and most empirical studies do not clearly consider the financial sector into account. second, we try to consider the financial sector. there is a wide range of variables that can show financial activities. therefore, in the first step, we will create a financial condition index by principal component analysis. this index is considered as a threshold variable. In the second step, we isolated government spending shocks by the Hodrick-Prescott filter. finally, we examine the effects of government spending shocks on main economic variables such as GDP, Private consumption, Private investment, ... by threshold vector autoregression model.

Ignoring the importance of the financial sector will lead to misleading results. results of the threshold vector autoregression model in Iran's economy showed that the financial condition index led to the nonlinearity of the relationship between the variables used in the research, in which the first regime (financial condition below -0.36 in each season) indicates the period of financial recession and the second regime (financial condition above -0.36 in each season) indicates a financial boom in the Iranian economy. the results of this research showed that negative government spending has an effective effect on the main economic variables in recession financial.

2. Literature Review

The literature on economy encompasses many researches examining the impacts of various fiscal policies as stabilizing instruments for the economy (Candelon & Lieb, 2013). In his study, Ma (2019) asserted that the effect of state expenditure shocks are significantly different on consumers with a variety of income levels in a way that any increase in government expenditure will result in an increasing consumption rate for the poor and a decreasing consumption rate for the rich. The results of Klein and Linnemann (2019) reveal that the recent Great Recession period is characterized by enormous influence of fiscal shocks. However, it is asserted that the reaction of fiscal policies may not fully conform to the New Keynesian model of an economy regarding nominal interest rate.

Specifically, Atems (2019) finds that the expenditure multiplier is larger during recessions; it is also rather larger when there are fewer debts; and the expenditure multiplier is comparatively smaller for states with moderate provisions.

Parab et al. (2020) conclude that investors show short-term instant positive or negative responses to economic measures. Their findings were also in contrast to the efficient market hypothesis in the Indian context since unexpected

economic events have more significant influences. Nasir et al. (2018) argued that, as a causative element, financial improvement is regarded as the crucial characteristic of economic growth. Given that the impact of non-public sector on GDP ratio series is considered as a sign of economic promotion, the financial sector highlights the prominence of the economic development. According to the empirical findings of a seminal study by Yan and Huang (2020), the business cycle is positively associated with the financial cycle. Nevertheless, there is an insignificant correlation between the two during the Great Moderation at business-cycle. The financial cycle is believed to be the major driver of real interest rate, the financial cycle, and the business cycle; moreover, it can largely lead to instabilities in the business cycle.

Furthermore, Ferraresi et al. (2013) investigated of the association between non-linear credit markets and fiscal policies. They concluded that the output will have more significant and durable reactions to fiscal policy shocks, particularly for "tight" credit economy. Compared to the growing financing expenses, the fiscal multipliers will be significantly higher. Nonetheless, such multipliers should be weaker in comparison with "normal" credit regimes. Afonso et al. (2011) studied whether the conditions of financial market are associated with effects of fiscal policy on economic affairs. The results demonstrated the following assumptions: economic growth has a positive reaction to fiscal policies in both financial stress regimes; there is a strong relationship between various types of behaviors within each regime and the nonlinearity of the output growth reaction to fiscal shock; there are greater fiscal multipliers compared to the last crises; and there is an adverse relationship between financial stress and output growth, leading to the decline of fiscal status.

Ma and Zhang (2016) highlighted the prominent role of financial cycle in the business cycle. Moreover, they argued that financial cycle shock is regarded as the primary incentive during macroeconomic, and particularly financial, turbulences. Pragidis et al. (2018) demonstrated the relationship between government expenditure and financial circumstances. Particularly, they asserted that the extent of government spending multiplier can be influenced by a contractionary or expansionary policy, where the former exacerbates financial conditions and the latter facilities them. In addition, financially stress periods may lead to greater multiplier for a negative expenditure shock. In contrast, financial tranquility provides the grounds for the smallest (near zero) values of government expenditure multipliers for either encouraging or deleterious shocks.

Among studies conducted, the neglect of the financial sector of the economy is very significant. We can divide the studies into two separate parts. the first sector involves studies that consider just the business cycle. the second sector involves studies that consider the interaction between the business cycle and financial cycle. While the role of financial cycles is important in the effectiveness of financial policies, especially government spending. A significant point in this research is, Considered a wide range of financial market variables. the aim of this

research investigates how the financial cycle can affect policymaking. Government spending is one of the politics used by policymakers.

3. Theoretical Framework

Debt-constrained households are inevitable within each economic condition. Financial conditions of households and consequently financial status of the agents are associated with fiscal policies. For instance, adverse government expenditure shocks may result in a reduction in household income, leading to the depletion of family savings and initiation of borrowing. Given that borrowing increases the extent of consumption in the community, this condition will make up for higher multiplier. In response, these borrowers will be more likely to pay back their debt and start saving if expansionary fiscal policies are employed. Hence, the agents will tend to implement more cautions and practical lifestyles in order to reduce the risk of becoming a borrower (Pragidis et al., 2018). By implementing a theoretical model and by solving consumers' problems in the framework of the model, Benigno (2015) as well as Eggertsson and Krugman (2012) highlighted new Keynesians extracted the function of total demand and showed that the shocks of financial markets and the primary circumstances of the economy will change the way fiscal policy affects production. Under this assumption, it is believed that the initial wealth and time inclinations are the most critical elements determining the future state of household agents. On the other hand, other issues such as exogenous microeconomic shocks can also influence the frictions of χ_b of borrowers,$\chi_s$of savers. Such factors are capable of manipulating budget limits for the agents and particularly marginal agents, which can either lead to a net saver or a net borrower. This is also applicable for macroeconomic shocks since they can also affect the size and type of households. Nonetheless, it is noteworthy that fiscal policies might have different impacts on each single agent that results in mobility within the regimes. Consequently, these policies can develop Minsky circumstances that help reduce borrowing and generate saving procedures. It highlights the need for making efforts and avoiding wasting because fiscal multiplier are more significant in times of fluctuations. New-Keynesian models have introduced some improvements to household and business behaviors. According to Benigno's (2015) proposed model, businesses are required to resolve optimization issues based on household's decisions on labor-supply chain where households should decide over the optimum provision of consumption. Households perceive usefulness by consuming and ineffectiveness by working. Hence, they should decide over the optimum allocation of work and consumption (resources/spending) given the usual resource limitations. with explain and expand Benigno's (2015) model assumed borrowers and savers are functions of fiscal policy.

$$\chi_s=\chi_s(\mathrm{g}), \chi_b=\chi_b(\mathrm{g}) \quad (1)$$

According to (2) equations, the fiscal policy of government spending is defined:

$$\mathrm{G}=(\mathrm{G}-\bar{Y})/\bar{Y} \quad (2)$$

Benigno's (2015) by solving consumer problems and maximum consumer utility function, savers and borrowers, was able to obtain an aggregate demand curve.

$$y=\bar{y}_n - \varphi[i-(\bar{p}^*-p)- \rho] +\frac{1}{x}[(g-\bar{g})-(1-x)\ (t_b-\bar{t}_b)]\frac{(1-x)}{x}[\hat{d}+d_0(p-p^e)] \quad (3)$$

In equation (3), the aggregate demand curve is for a state where the economy has consumers, s borrowers, and savers.

where $\bar{p}^*$ demonstrates the long-run prices and φ is a non-negative parameter, which is defined as $\varphi\equiv[\sigma_x+(1-x)d_0\beta]/x$.

3 equations have achieved by considering financial markets condition such as credit markets and borrowers and savers. the slope of the aggregate demand equation $\frac{(1-x)}{x}[\hat{d}+d_0(p-p^e)]$ due to fiscal policy can change, because fiscal policy can change the fraction of savers to borrowers. An expansionary fiscal policy such as government spending will lead to an increased fraction of savers to a fraction of borrowers. According to equation (3), increasing (χ(g))will lead to decreasing the slope of the aggregate demand curve which means is Less effective fiscal policy in output. but a contractionary fiscal policy will lead to decreasing fraction of savers to borrowers. according to the equation (3), decreasing χ(g) will lead to increasing the slope of the aggregate demand curve which means is a more effective fiscal policy on output. According to the aggregate demand function in equation (3), a negative fiscal policy shock has a greater impact on production than a positive shock. on the other hand, according to the aggregate demand in the equation (3), we can investigate how to affect fiscal policy such as government spending during the financial condition. overall, according to the aggregate demand function in equation (3), the effect of fiscal policies such as government spending depends on the macroeconomic parameters, the components of aggregate demand, and the state of the supply function.

The association between the price and existing output is demonstrated in short-run AD equation, considering the impact of debt-constrained agents on positive changes in slope. Consequently, it proposes two distinct channels: 1. the real value of the existing debt will reduce due to increasing price levels, which results in a growth in borrowers' immediate consumption rate and the total demand. It can be contributed to the Fisher effect because the price can manipulate actual values of nominal debt; and 2. the present real rate will increase and the borrowers' immediate debt volume will reduce because of an increase in the existing price level. It decreases their short-run consumption rate and the total demand (Pragidis et al., 2018).

4. Methodology

To estimate the responses of government spending shocks under different regimes, a regime-switching model will be implemented, as a rich framework, to investigate the impact of financial stress on economic activity. In particular, it is plausible that switching between regimes might be affected by the level of financial stress and economic activity (Troy Davig & Hakkio, 2010). We first

propose an identification procedure that aim at isolating the positive and negative government spending shocks. Then, we investigate responses of variables to shocks in government spending that occur during a specific regime (financial).

4.1 Identification of Government Spending Shocks

Hodrick-Prescott's filter is used in order to extract the positive and negative shocks in government spending fiscal policy (Karras, 1996; Cover, 1992). Extracting positive and negative government spending shocks according to the aforementioned filter is as follows: First, through the smoothing function of this filter, the trend of the government spending fiscal policies (trend G) is obtained and expressed by HPG. Then, in order to identify the shocks of government spending fiscal policies, by subtracting the smoothed trend from the real values, based on equation (4), the operation is run:

$$Shock = G - HPG \quad (4)$$

Based on equations (5) and (6), in which positive shocks (POS) and negative shocks (NEG) are obtained:

$$pos = \max(0, shock) \quad (5)$$

$$neg = \min(shock, 0) \quad (6)$$

Accordingly, for a dummy variable with equations (5) and (6) definition, positive shocks are equal to 1 and negative shocks are equal to 0 and vice versa. By multiplying the resulting dummy variable at the variable of shocks of fiscal policies, positive and negative shocks are distinguished. The important point lies in the fact that the dummy variables of 0 and 1 which reflect the shocks in expansionary and contractionary fiscal policies in economics follow the same logic as Markov-Switching Model which uses the dummy values of 0 and 1 to account for policymakers' behavioral regimes in order to study the effects of economic policies in different circumstances (Delangizan & Khazir, 2013).

4.2 Financial Conditions Index

Yan and Huang (2020) argued that there have been a great number of studies on the interaction between real economic measures and the financial sector Moreover, the majority of these inquiries highlighted the significant correlation between economic activities and financial status in a country (Dumičić & Krznar, 2013). Although the term "financial cycle" has been used in the macroeconomic literature for decades, there is yet no clear definition of the phenomenon (Karamisheva et al., 2019). In general, financial stress refers to any deviations from the standard performance of financial markets (Hakkio & Keeton, 2009). Compared to conventional business cycles, financial cycles are mostly longer and the summit point is commonly associated with financial disparities. Accordingly, financial cycles are considered as the driver for macro-prudent policies. Moreover, it is noteworthy that financial inequalities can have strong impacts on real economy. Consequently, it is essential to identify financial cycles to promote growth predictions (Grinderslev et al., 2017). The growing uncertainty among lenders and investors about the fundamental importance of financial assets might

lead to financial stress. uncertainty about the other investors' behavior, unbalanced information between lenders and borrowers or buyers and sellers of financial assets, Decreased enthusiasm to hold dangerous assets, and strictly decreased enthusiasm to hold illiquid assets are commons sing of financial stress. Such reductions in holding risky financial resources are regarded as an indicator of financial stress in addition, any significant decreases in willingness to hold illiquid assets can be considered as another sign of financial stress (Hakkio & Keeton, 2009). As a result, financial market development is necessary for real economy. Nonetheless, it is difficult to opt for the most appropriate financial variable and approach so as to build financial cycles. Previous studies have either implemented one specific variable (e.g., house prices, credit, equity prices, and credit-to-GDP) or a synthesis of variables to develop financial cycles (Yan & Huang, 2020).

The variables for the financial condition index (FCI) were selected based on the following criteria: (1) all variables are required to demonstrate at least one of the characteristics of financial stress and (2) all variables should represent financial market prices or outputs (Hakkio & Keeton, 2009). It is believed that the combination of different economic and financial variables, influencing the operational circumstances of domestic sectors in a given time period, are likely to determine the financial condition. FCI is generally developed through the assessment of weighted mean score of variables as well as the effectiveness of each single variable (Dumičić & Krznar, 2013). The weighted mean scores of different factors involved in the health of a financial system might lead to the establishment of financial condition index. Besides, principal component analysis (PCA) is typically implemented to assess the effect size of each factor (Brave & Butters, 2011). PCA is the pioneering practice of multivariate data analysis, which was first proposed by Pearson (1901) and developed independently by Hotelling (1933). The underlying idea of PCA is to decrease the dimensionality of a data set with a large number of correlated variables, while retaining the maximum variation in that data set (Mishra et al., 2017). PCA method attempts to save the maximum available information out of the initial variable set with a small number of components. Therefore, FCI mainly pursues to select the most appropriate available indicators of financing (Dumičić & Krznar, 2013). Hence, PCA is capable of demonstrating the unique significance of a great number of indicators in order to determine the compatibility of the observed weights and the background of each variable regarding the fluctuations in a more extensive financial system (Brave & Butters, 2011). The present study makes use of eight indices for financial development validated by the world Bank along with the average price for one square meter of land and the average price for one square meter of residential infrastructure: Stock market capitalization to GDP (%), Stock market total value traded to GDP (%), Stock market turnover ratio (%), Bank deposits to GDP (%), Deposit money bank assets to deposit money bank assets and central bank assets (%), Liquid liabilities to GDP (%), Private credit by deposit money banks to GDP (%),Stock Market Turnover Ratio, Average price

per square meter of land, Average price per square meter of housing (Abounoori & Teimoury, 2013; Aboutorabietal, 2016; Nikooghadam & Aboutorabi, 2019).

One of the statistics through which the researcher is able to determine and specify the fitness of data (the sufficiency of the statistical sample) for factor analysis is KMO test, the value of which constantly fluctuates between 0 and 1 (Darisavi et al., 2010). As it is suggested in the Table 1, the value of KMO statistic was estimated as 0.537 which is indicative of the appropriateness of the data for factor analysis. In addition to the Table 1 statistic, the correlation matrices that underlie the factor analysis are not equal to zero in our statistical population, and therefore, Bartlett test should be used. Bartlett test tests the hypothesis that the observed correlation matrices belong to a population with correlated variables. For this reason, in order for a factor model to be appropriate or significant, the variables need to be correlated; otherwise, the data will not be appropriate for factor analysis (Pourasghar Sangachin et al., 2012). The result of Bartlett test in Table 1is also meaningful and confirms the appropriateness of the data for factor analysis.

Table 1. KMO and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.537
Bartlett's Test of Approx. Chi-Square	1592.498
Sphericity df	45
Sig	0.000

***Source**: Author's calculations*

Figure 1 showed the financial condition index trend during 2005-2019 years. The financial condition index is usually created as weighted averages of several financial sector indicators that indicate the financial system's health.

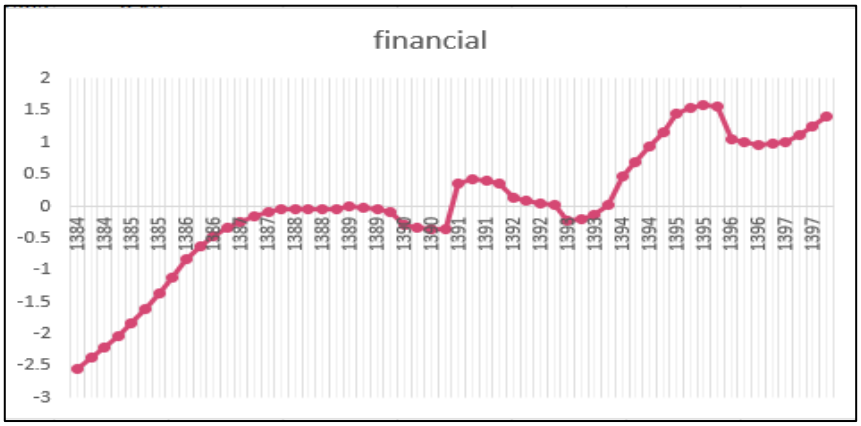


Figure 1. Financial condition index
***Source**: Author's calculations*

5. The Data Analysis

5.1 Unit Root and Cointegration

We gathered a set of data through quarterly observations of economic conditions in Iran, including private investment (privest), real GDP, interest rate, private total consumption (private), government oil revenue (income), total government expenditures, and inflation. All variables are seasonally adjusted. The data were collected from 2005Q1 to 2018Q4. The entire variables are extracted from the World Bank website, Central Bank of Iran, and Statistical Centre of Iran. As stated in above, we use FCI index as financial cycle indicator. All the variables are used logarithmically. In order to identify a meaningful relationship between the variables and unbiased estimate of the model, estimated coefficients should be stationary. The most common method for testing the stationarity of time series variables is using Augmented Dickey Fuller (ADF) test. The Table 2 presents the results of stationarity test.

According to the Table 2, the variables of government oil revenue, real gross domestic product, interest rate, and financial conditions index are not at a stationary level and will become stationary through first differencing. Furthermore, the variables of private sector consumption, private sector investment, inflation rate and the positive and negative shocks of government expenditures are at a stationary level. If there is a long-term balanced relationship between multiple non-stationary variables, the linear combination of these variables is cointegrating and a linear relationship is indicated. As the results obtained from stationarity test suggested, all variables are non-stationary and have one single unit root. However, the linear combination of these variables is stationary which is suggestive of a balanced and cointegrating long-term relationship between these variables.

Table 2. Dickey-Fuller test results

variables	t-Statistic	Critical value (5%)	P-value	result
government oil revenue (income)	-1.757425	-2.917650	0.3972	I (1)
private total consumption (private)	-3.583725	-2.917650	0.0094	I (0)
private investment (privest)	-3.013589	-2.921175	0.0404	I (0)
Real GDP	-2.131014	-2.915522	0.2337	I (1)
Interest rate(lfund)	-2.223191	-2.915522	0.2006	I (1)
Inflation(dindex)	-3.670731	-2.915522	0.0073	I (0)
Positive government spending	-7.189975	-2.915522	0.0000	I (0)
Negative government spending	-4.980450	-2.918778	0.0001	I (0)
FCI(Financial)	-2.079579	-2.916566	0.2535	I (1)

Source: *Author's calculations*

In Table 3, we only consider the long-run relationship between positive and negative government spending shocks and other variables. To this end, in order to show this balanced long-term relationship, error correction model (ECM) is utilized (Abdi, 2017). Differencing for the purpose of making the time series variables stationary is generally of little use in macroeconomics since differencing only takes into account the short-term dynamic relations. However, in macroeconomics, we are mainly interested in long-term relations. According to Pesaran and Shin, it is probable to evaluate co-integration on a series that includes I (0), I (1), or even I (d) (where d is a non-integer) using the Autoregressive Distributed Lag approach. Moreover, co-integration reflects the concept of continuous balance (Petkov, 2008). The first step in bounds testing is the null hypothesis which states that there is no relationship between co-integration, that is:

H0: $\beta1=\beta2=0$, H1: $\beta1\neq\beta2\neq0$

we have defined the lower bound for I (0) regressors and the upper bound for I (1) regressors, under the assumptions that all variables are I (0) and all variables are I (1), (Shirin Bakhsh, 2005).

According to Table 3, if F-statistics are beyond critical margins, an absolute decision can be made for cointegration regardless of knowing the order of integration of the regressors. Consequently, the null hypothesis concerning no co-integration will be rejected if the obtained F-statistic is beyond the maximum critical value. On the other hand, the null hypothesis concerning no co-integration will not be rejected in case the obtained statistic is lower than the minimum critical value (Smyth & Narayan, 2004). Eventually, the Schwartz Bayesian criterion was employed to determine the optimal lag length.

Table 3. Bound test results

F- Statistic to examine the long-run relationship between variables		
F- Statistic	Critical Pesaran (2001) %5	Critical Narayan (2004) %5
Positive (Positive: Income, Private, Privest, Real GDP, Lfund, Dindex, Negative, Financial) =10.46	I (1) =3.15 I (0) =2.11	I (1) = 4.3167 I (0) = 2.1110
Negative (Negative: Income, Private, Privest, Real GDP, Lfund, Dindex, Positive, Financial) =4.49	I (1) =3.15 I (0) =2.11	I (1) = 4.3167 I (0) = 2.1110

Source: *Author's calculations*

Based on Table 4, Considering a negative coefficient, error correction would be statistically significant at 1%. Therefore, there should be a decline in fluctuations toward balance, if the lagged error correction coefficient ranges from -1 to -2. Since the short-term model suggests a lagged error correction coefficient of -1.14, error correction would fluctuate away from the balance path.

Consequently, it is concluded that error correction process would lean toward a diminishing path in the long run. Nevertheless, it will rapidly converge toward equilibrium after the process is fully over (Narayan, 2004).

Table 4. Diagnostic tests

Diagnostic tests	Error correction	Serial co rrelation	Normality	heterosceda sticity	R^2
Positive (Positive: Incom, Private, Privest, Realgdp, Lfund, Dindex, Negative, Financial)	-1.14 (0.000)	0.235 (0.916)	0.956 (0.61)	1.650 (0.204)	0.65 1
Negative (Negative: Incom, Private, Privest, Realgdp, Lfund, Dindex, Positive, Financial)	-0.840 (0.000)	2.20 (0.08)	5.61 (0.06)	0.548 (0.462)	0.65 5

***Source**: Author's calculations*

5.2 The Econometric Model

Threshold VARs are regarded as piecewise linear models, proposing opposing autoregressive matrices in different regimes. Moreover, a transition variable will be employed to select the regimes are determined by a transition variable (either endogenous or exogenous). Despite it is likely to select at least one critical threshold and two regimes, we decided to concentrate on a two-regime model for the purpose of simplicity.

Therefore, the VAR with a finite order p would be defined as a set of k inactive endogenous variables considering yt = (y1t, ..., ykt)' and T observations:

$$y_t = \Gamma_0 + \Gamma_1 y_{t-1} + ... + \Gamma_p y_{t-p} + u_t \quad (7)$$

where Γ_0 refers to a k-dimensional vector encompassing decisive elements such as a constant, a linear time trend, or dummy variables. Γ_i with i = 1, ..., p are squared coefficient matrices of order k, and u t refers to a sequence of serially independent random vectors given the mean score of zero, and covariance matrix Cov (ut)= Σ u. Eventually, equation (7) can be reformulated:

$$y_t = \Gamma X_t + u_t \quad (8)$$

with $\Gamma = (\Gamma_0, \Gamma_1, \ldots . \Gamma_p)$ and $X_t = (1, y_{t-1}, \ldots ., y_{t-p})'$. As a result, a threshold VAR is characterized by

$$y_t = \Gamma_1 X_t + \Gamma_2 X_t I\,[z_{t-d} \geq z^*] + u_t \quad (9)$$

$z_{t-d}$is the threshold variable determining the prevailing regime of the system, with a possible lag d. I [·] should equal 1 when the threshold variable z t − d is higher than the threshold value z∗, and the value will be 0 otherwise. It is likely for the coefficient matrices Γ 1 and Γ 2, along the concurrent error matrix u t to fluctuate across regimes. As unknown parameters, the delay lag d and critical

threshold value z∗ would be determined alongside the parameters. It is crucial to assess the nonlinearity of the system prior to decide over any estimations. At first, a series z should be developed to reflect the threshold variable with $-\infty = z\ 0 < z\ 1 < \ldots < z\ s - 1 < \infty$ according to the assessment approach proposed by Tsay (1989, 1998). Moreover, z should be static with an unremitting distribution, constrained to a bounded set S = [z, z], where S refers to a comprehensive range of the threshold variable. Then, it is required to have a cropped interval to ensure we can perform adequate observations in each subsample. Initially, it is necessary to determine the lag order p and the threshold lag d, provided that p is obtained through standard information criteria in the linear VAR appraisal. Furthermore, economic reasoning will be implemented to select appropriate values for d. The regression framework of equation (8) might be reformulated according to equation (10):

$y_t' = X_t'\Gamma + u_t'$, t = h + 1, ...n, (10)

where Γ refers to the parameter matrix, $X_t = (1, y_{t-1}', \ldots\ldots y_{t-p}')$ and h = max (p, d). Consequently, the threshold variable z t – d will be used to help reorder the cases, representing the i-th lowest values in the interval S as z(i) (equals the m-th smallest value of all observations.) The modified regression will be formulated according to equation (11):

$y_{t(i)+d}' = X_{t(i)+d}'\Gamma + u_{t(i)+d}'$, i = 1, ..., n − h, (11)

where t(i) denotes the time index of z(i). Hence, the values in the threshold variable should be ordered with respect to their sizes, and divided based on the threshold value z(i). After conducting m observations below z(i) by OLS, the model will be appraised to obtain $\widehat{\Gamma' m}$. Later, OLS should be conducted over for the first m + 1 observations with z (i + 1) and so on. Then, a series of OLS regressions will be obtained as a result of performing m ranked observations in sequence. The assessment indicator is asymptotically chi-square with k (pk + 1) degrees of freedom. Following the detection of a threshold, the sum of least square values will be used within both regimes to estimate the coefficients. In other words, the LS estimate of Γ (i) for regimes (i) = 1, 2 should be calculated as follows for different values of z:

$\hat{\Gamma}_{(i)}(z) = (\sum_t^{(i)} X_t(z) X_t(z)')\text{-}1\ (\sum_t^{(i)} X_t(z))\, y_t$ (12)

with residuals $\hat{u}_{(i)}(z) = y_t - X_t(z)'\hat{\Gamma}_{(i)}(z)$, and residual variance

$$\hat{\sigma}_{(i)}^2 = \frac{\sum_t^{(i)} \hat{u}_{t(i)}^2(z)}{n_{(i)} - k} \quad (13)$$

Where $\sum_t^{(i)} is$ the total observations in regime (i) and n (i) denotes the number of explorations in regime (i). The sum of squared residuals is:

$\hat{R}_{(z)} = \hat{R}_{(1)}(z) + \hat{R}_{(2)}(z)$ (14)

where $\hat{R}_{(i)}(z) = (n_{(i)} - k)\hat{\sigma}_{(i)}^2(z)$. Finally, the conditional threshold value $\hat{z}_*$ is

obtained by

$\hat{z}^* = \text{argminz} = \hat{R}(z)$ (15)

(Baum and Koester, 2011).

5.3 Estimation

The researchers have employed different model selection tests to obtain the optimal lag length. Schwarz SIC is used to obtain the lag length of the endogenous variables (p), where more estimated coefficients in the model will result in a larger penalty. According to the Schwarz Information Criterion (SIC), only one lag would suffice; nonetheless, the Akaike Information Criterion (AIC) and the Hannan-Quinn (HQ) Criterion demand the implementation of four lags and the prediction error (FPE). Based on Table 5, we use the Schwarz Information Criterion (SIC) as optimal lag length selection criteria.

Table 5. Lag selection criteria

Model Selection	Lag = 1	Lag = 2	Lag = 3	Lag = 4
AIC	-35.40526	-35.91120	-35.88767	-40.22689*
HQ	-34.11054	-33.45123	-32.26246	-35.43642*
SC	-32.02811*	-29.49461	-26.43165	-27.73142
FPE	3.55E-27	2.82E-27	6.58E-27	6.84E-28*

Source: *Author's calculations*

From Table 6, the estimated reduced -from VAR of lag order 1 indicates no evidence of serial correlation. The presence of residual serial correlation makes the result less effective.

Table 6. Residual serial correlation LM tests for the VAR model

Lags	LM-Stat	Prob
1	93.617	0.197
2	90.740	0.258
3	84.607	0.421
4	68.980	0.854

Source: *Author's calculations*

For this purpose, a nonlinearity test was developed in response to the linear VAR model. The output growth is achieved at any turning point that is beyond the threshold and associated with the expansion regime. Thus, a multivariate modification of the linearity test by Hansen (1999) is implemented to make a comparison between the null hypothesis of the linearity test and the nonlinearity

test (t = 1, 2), where t indicates the threshold value. The likelihood ratio (LR) test is formulated as follows: LR_{01}= T (ln (det $\hat{\Sigma}_0$) − ln (det $\hat{\Sigma}_1$)), where the estimated covariance matrix $\hat{\Sigma}_0$, is related to the null hypothesis, and $\hat{\Sigma}1$ refers to the expected covariance matrix for the substitute hypothesis. Therefore, the primary objective is to determine the possibility of the rejection of a purely linear model. Then, in the presence of the threshold(s), the likelihood of the model with one or two threshold(s) should be investigated (Chevallier, 2013; Romyen et al., 2019).

Table 7 demonstrates the findings of the threshold tests given that the trimming is optimum at 15%. Consequently, the null hypothesis was rejected based on the results of LR test. Therefore, the effect of government spending shocks during the financial cycle is well defined by the one-threshold VAR model.

Table 7. Result LR-test (Financial index as Threshold variable)

LR-test	LR- Statistic
Linear VAR versus 1 threshold TVAR	169.6048(0.000)
Linear VAR versus 2 threshold2 TVAR	450.4122(0.000)
1 threshold TAR versus 2 threshold2 TVAR	280.8074(0.000)

Source: *Author's calculations*
Note: *p-values in brackets.*

Table 8 reports that the TVAR model of the effect of government spending shocks during the financial cycle is explained by the one-threshold VAR model or the two-regime TVAR model. The financial condition index (FCI) represents the threshold variable. The main macroeconomic variables' behavior responding to financial crises can be reasonably characterized by the one-threshold VAR model. The empirical findings convey that the research variables pass through the lower regime, and react to changes in the structure.

Table 8. Results of threshold vector autoregressive (TVAR) model with 1thresholds

Variables	Regime 1 F (−1) ≤-0.36 Percentage of Observations of 23.6%	Regime 2 -0.36≤ F (−1) Percentage of Observations of 76.4%
Positive		
Intercept	50.5198(48.7796)	-3.0898(3.6817)
Trend	-0.0027(0.0129)	-0.0054(0.0040)
Income (-1)	0.9145(0.6270)	0.0972(0.0874)
Private (-1)	2.7589(2.7223)	-0.3589(1.4920)
Privest (-1)	-2.5295(2.3343)	-0.6428(0.5877)
Real GDP (-1)	-15.6557(11.8852)	1.8922(1.4660)
Lfund (-1)	-1.8036(3.1913)	0.0393(0.4135)

Table 8 (Continued). Results of threshold vector autoregressive (TVAR) model with 1thresholds

Dindex (-1)	-12.4825(11.6240)	0.0083(0.6749)
Positive (-1)	1.7252(1.6693)	-0.1177(0.2112)
Negative (-1)	-2.1501(1.3624)	0.0229(0.2991)
Financial (-1)	0.6464(0.6651)	0.0008(0.0494)
Variables	Regime 1 F (−1) ≤-0.36 Percentage of Observations of 23.6%	Regime 2 -0.36≤ F (−1) Percentage of Observations of 76.4%
Negative		
Intercept	93.9881(33.8675) **	2.2617(2.5562)
Trend	-0.0149(0.0090)	0.0018(0.0028)
Income (-1)	1.7691(0.4353) ***	-0.0284(0.0607)
Private (-1)	2.0888(1.8901)	0.0201(1.0359)
Privest (-1)	-4.6477(1.6207) **	-0.3783(0.4080)
Real GDP (-1)	-26.7827(8.2519) **	-0.1734(1.0178)
Lfund (-1)	-2.6698(2.2157)	-0.5283(0.2871).
Dindex (-1)	-19.1672(8.0705) *	-0.2396(0.4686)
Positive (-1)	3.8686(1.1590) **	0.1910(0.1466)
Negative (-1)	-4.1459(0.9459) ***	-0.1335(0.2076)
Financial (-1)	1.3245(0.4618) **	-0.0556(0.0343)

Note: *1. Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1*
Note: *2. Threshold value: -0.36*

Source: *Author's calculations*

Furthermore, TVAR models require the selection of threshold variables proportionate to the number of regimes. For this purpose, a grid search was conducted on a set of potential values so that it can help switch from one regime to another (Romyen et al., 2019). Consequently, threshold variables were estimated at -0.36. Figure 2 indicates the trend of financial condition index during two different regimes, so that those seasons in which the financial condition index has been lower than -0.36 are placed in the first regime (Percentage of Observations of 23.6%), and those seasons in which the financial index has been higher than -0.36 are placed in the second regime (Percentage of Observations of 23.6%).

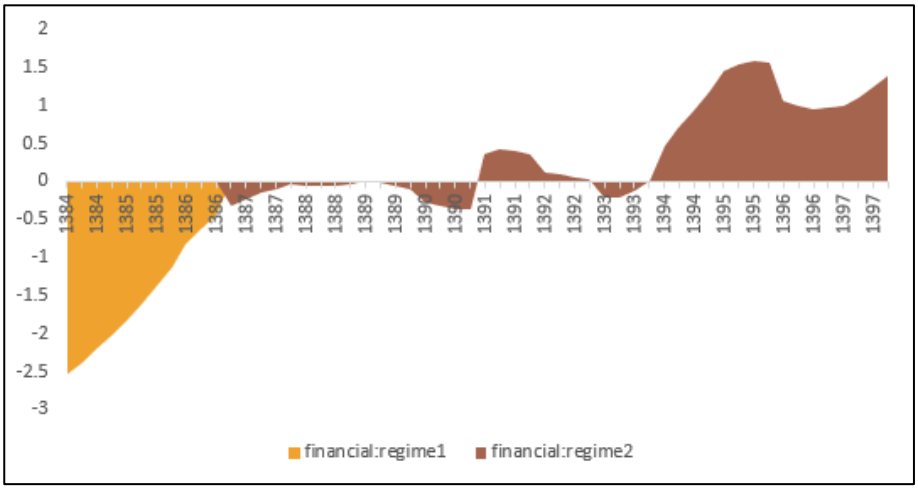


Figure 2. Financial index in each regime
***Source**: Author's calculations*

5.3.1 Generalized Impulse Response Function (GIRF)

Following the estimation of TVAR, the impulse response function will be evaluated. These criteria are implemented to investigate endogenous variable response to shocks: the initial size of the shock and economic conditions, the background, as well as the size of the shocks and economic conditions during interest (a shock at time t can generate the switching of regime till time t+d, where d refers to the estimated lag of the threshold). Thus, the response of an endogenous variable to a shock in a non-linear system is affected by the background, the economic condition, the scope of the shock at time 0, as well as the scope and the impact of all the shocks over the economy throughout the interest (a shock at time t is likely to initiate a changing of regime till time t+d, where d refers to the estimated lag of the threshold). Hence, it is essential to implement simulation approaches to make up for the generalized impulse function so that it might moderate the impact of background and other types of shocks (Koop et al., 1996). Specifically, the GIRF will be defined as follows for any εt shock to the target variable, any horizon of m, and any background of Ωt−1, we can define the GIRF as:

$$GIRF = E\left[X_{t+m} \mid \varepsilon_t, \varepsilon_{t+1} = 0, \ldots, \varepsilon_{t+m} = 0, \Omega_{t-1}\right] - E\left[X_{t+m} \mid \varepsilon_t = 0, \varepsilon_{t+1} = 0, \ldots, \varepsilon_{t+m} = 0, \Omega_{t-1}\right] \quad (16)$$

It is, thus, recommended to employ bootstrapped shocks to the system to simulate the model for given initial points throughout a particular time horizon. It is also suggested to continue the process by adding new shocks with a pre-determined size (equal to the standard deviation of the central shocks in the linear model). For this purpose, afresh generated bootstrapped residuals are used extensively. Therefore, the simulation results are used to moderate the reactions to the shocks in a specific regime. Non-linear impulse reactions were evaluated to

prepare the ground for endogenous regime-switching. It is noteworthy that impulse reactions in non-linear VAR system are calculated using a more complex and time-consuming approaches. On the other hand, linear VAR system suggests that any particular shock would only correspond with a specific time. Therefore, these linear systems work independent from the background and each single shock primarily determines the responses. In the linear case, the response to a shock is computed under the assumption that a shock only hits the economy at a particular point in time but neither before nor during the forecasting horizon. Linear VARs are thus history-independent and reaction to shocks are strictly proportional to the shock itself. In contrast, threshold VARs rely on the system being in one of the two regimes (Schmidt, 2013; Romyen et al., 2019).

Figures 3 and 4 suggest the responses to positive shocks in government expenditures during upper and lower regimes (the prosperity and recession periods). Fiscal development might have different impacts on economic dynamics from recession or stress in financial markets to normal conditions (Afonso et al., 2011).

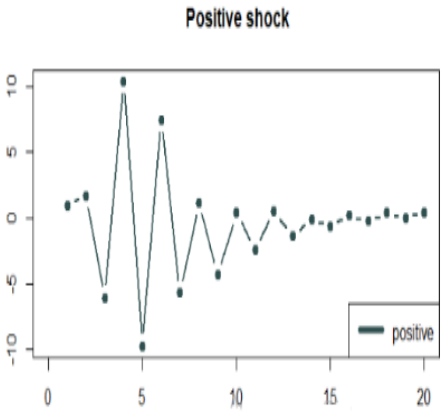


Figure 3. positive shock (Regime1)

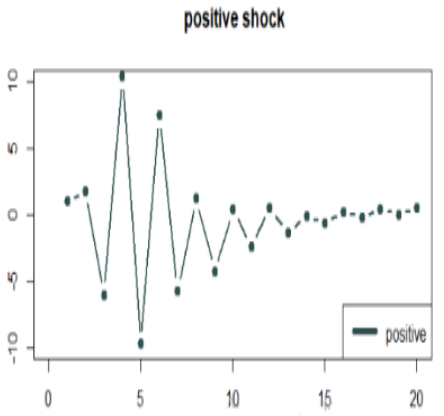


Figure 4. positive shock (Regime2)

According to figures 5 and 6, The government's oil revenues show a similar reaction to positive shocks in government expenditures during different periods so that with any fluctuation in the positive shocks in government expenditures, oil revenues indicate a similar movement along higher intensity. It is also necessary to investigate the encouraging the influence of government expenditure shock on private consumption (Kormilitsina & Zubairy, 2018).

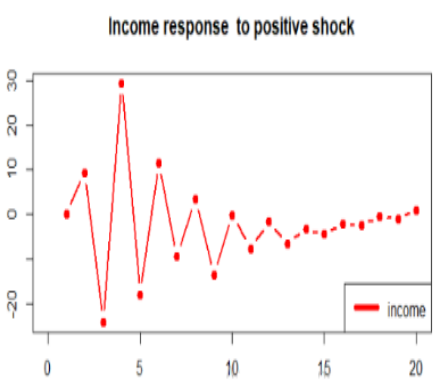


Figure 5. Response oil income to positive shock (Regime1)

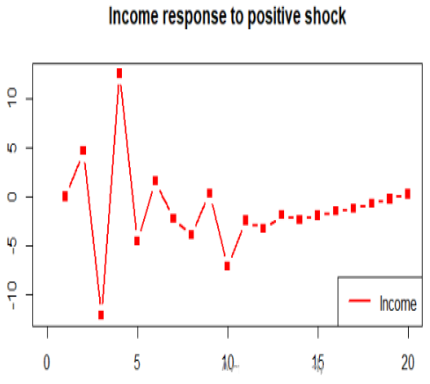


Figure 6. Response oil income to positive shock (Regime2)

According to Figures 7 and 8, The effect of positive shocks in government expenditures during different financial periods on the consumption and investment of private sector is similar with a milder intensity and in spite of a reduction of fluctuations in positive shocks in government expenditures, the consumption and investment of private sector adopts an upward trend from the 16th period onwards. Different empirical approaches have resulted in contradictory empirical findings regarding the influence of government expenditure shock on critical elements like wage and consumption. Perotti (2007) gets to the point: … there is a general disagreement between the well-known economists regarding the fundamental theoretical impacts of fiscal policy and the perception of the available empirical evidence (Fragetta & Gasteiger, 2012). The impact of government expenditure shocks are significantly different among various consumers, and Anderson et al. (2016) concluded that such differences might be due to their income and age levels. Moreover, De Giorgi and Gambetti (2012) recently found that consumption rises for poor individuals while it declines for the rich with an unanticipated rise in government expenditure. However, theoretical backgrounds for these empirical findings are unclear (Ma, 2019). Uncertainty and the occurrence of unexpected shocks in government expenditures increases households' mental discount rate. In direct effect, an increase in uncertainty towards the government's policies through a tendency to save can lead to a reduction of consumption level in households. In indirect effect, can lead to an increase in manufacturing in the community and, therefore, the income level increase. The pure effect of uncertainty towards the government's policies on households' consumption is, therefore, unclear (Shafiei et al., 2017). The welfare of the agents is mostly determined by the private consumption. Nevertheless, there is still no particular economic theory to provide a general guideline on the dynamic effects and implications of these shocks to public spending and welfare

(Horvath, 2009). According to Jacob (2015), "crowding-out" refers to the impact of fiscal expansion on negative wealth that leads to the reduction of private consumption. The country characteristics are important in explaining the response of private consumption when faced with government spending shocks (Sabaj, 2019). Regarding the influence of government spending on private investment, classical economists highlighted the increased interest rate and decreased private investment as a result of growing government spending. Nonetheless, Keynesian economists emphasized the direct relationship between government spending and private investment, which is regarded as an essential channel for fiscal policy efficacy for the enhancement of economy (Hussain et al., 2009).

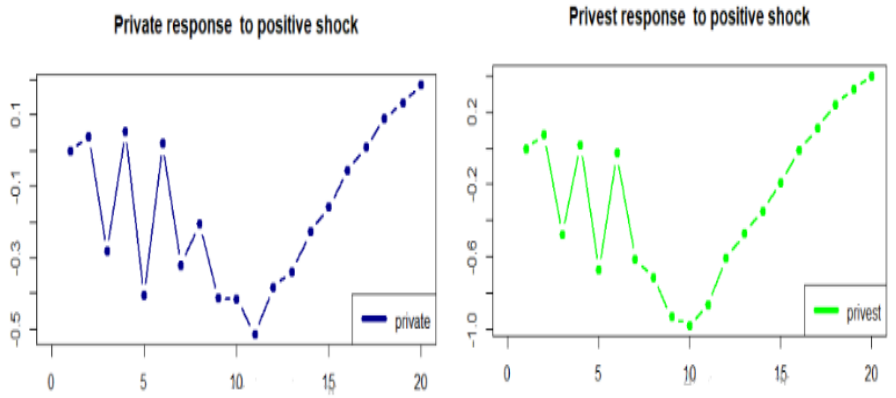


Figure 7. Response private consumption and private investment to positive shock (Regime1)

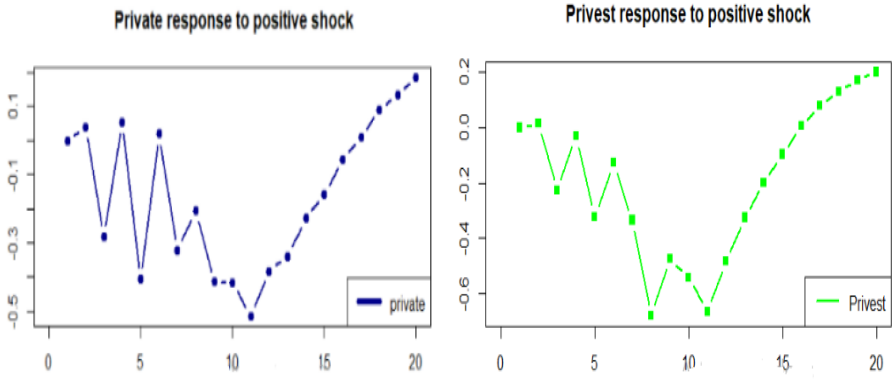


Figure 8. Response private consumption and private investment to positive shock (Regime2)

Figures 9 an10 indicate response Real GDP to positive government spending shock during financial cycle. The reaction of gross domestic product to positive shocks in government expenditures during recession period is similar to positive shocks in expenditures; however, the intensity of the reaction is less severe. Policy makers intend to moderate the influence of financial fluctuations on the economy. Nevertheless, adverse policies can be considered as the driver of financial fluctuations (Afonso et al., 2011). The effect of government spending is likely to depend on features of the economy that evolve over time (Alloza, 2017).

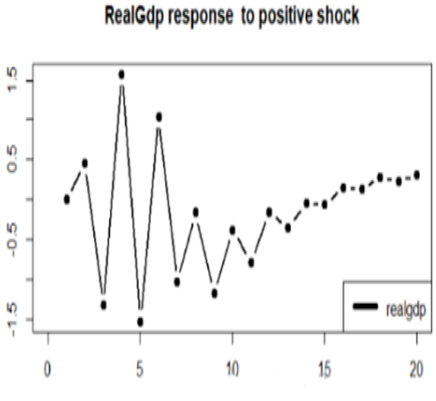


Figure 9. Response real GDP to positive shock (Regime1)

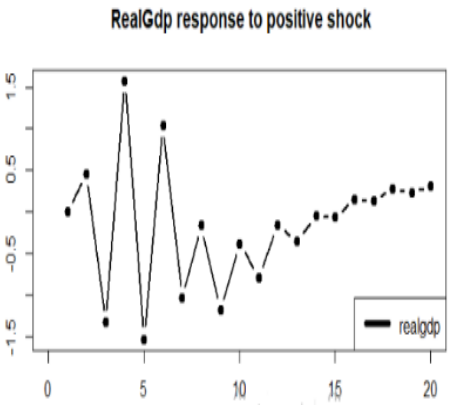


Figure10. Response real GDP to positive shock (Regime2)

Government expenditures multiplier during different financial periods, regardless of their positive or negative shocks ,are as Table 9:

Table9. Government spending multiplier

multiplier					
	Multiplier (h=1)	Multiplier(h=4)	Multiplier (h=8)	Cumulative multiplier(h=10)	Cumulative multiplier(h=20)
Regime1	1.15E-05	2.80E-02	4.87E-01	-1.01989	-2.40E+00
Regime2	4.10E-06	8.94E-03	-1.01E-01	-1.10033	4.08E-01

Source: *Author's calculations*

Figures 11 and 12 show this, the reaction of long-term interest rates to positive shocks during recession periods is in reverse, so that an increase in positive shocks in government expenditures can lead to a reduction in interest rates and vice versa. Given that the level of capital stock and government debt can

determine the scope of interest rate, empirical evaluation of the effectiveness of government debt on interest rate can be sought through a theoretical framework (Engen & Hubbard, 2004). Insufficient and imbalanced budget can lead to higher nominal interest rates. (Afonso & Sousa, 2008). Consequently, interest rates in credit markets might be influenced by the government debt. According to neoclassical economic models, private savings can balance increasing government debt. This will rule out any changes in capital stock due to government debt, and in turn, in variations in the interest rate (Engen & Hubbard, 2004).

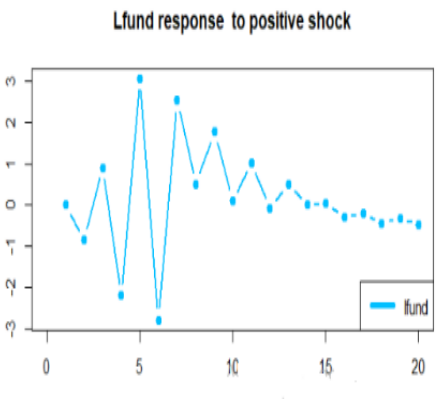


Figure 11. Response interest rate (LFund) to positive shock (Regime1)

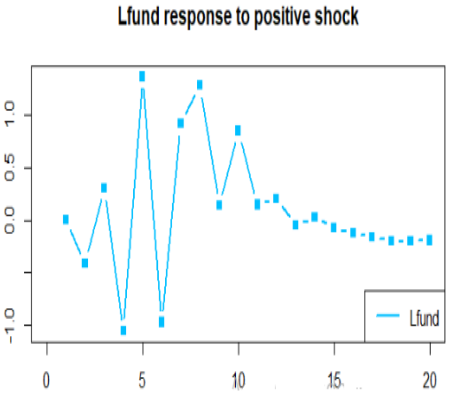


Figure 12. Response interest rate (LFund) to positive shock (Regime2)

According to figures 13 and 14, The reaction of inflation to positive shocks in government expenditures during recession period is similar to these changes. Total demand is regarded as the primary factor highlighting the impact of government spending on inflation. On the other hand, printing new money is considered as an alternative approach for the governments to finance their spending. However, growing monetary base of the central bank will lead to higher aggregate money supply and consequently greater inflation (Nguyen, 2019). Price variations are mostly believed to occur as a result of fiscal policy. Nonetheless, price differentials would decline through balance budget shocks (Canova & Pappa, 2007).

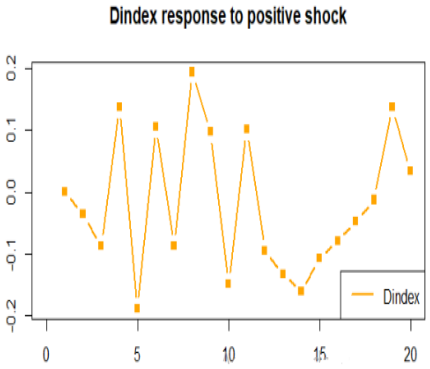


Figure 13. Response inflation (dindex) to positive shock (Regime1)

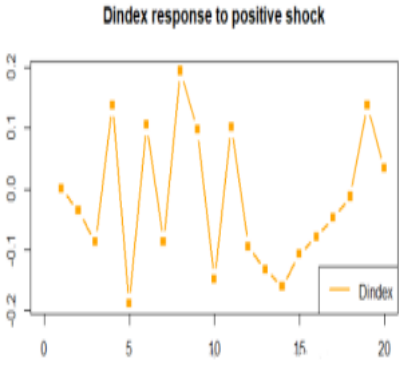


Figure 14. Response inflation (dindex) to positive shock (Regime2)

figures 15 and 16 show negative government spending shock trends during the financial cycle. these figures show that the effect financial cycle is more effective on negative government spending shock.

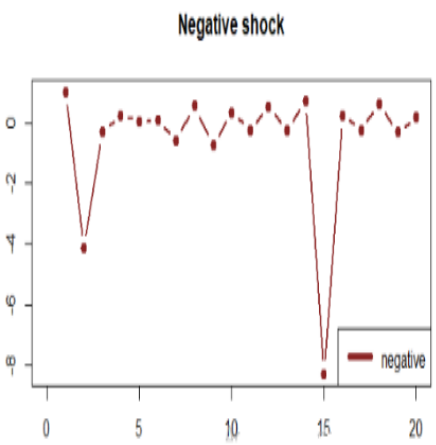


Figure 15. Negative shock (Regime1)

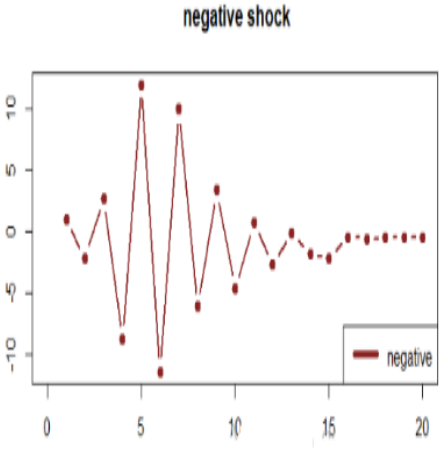


Figure 16. Negative shock (Regime2)

Oil price shock has a significant impact on macroeconomic variables such as GDP, interest rates, investment, inflation. exogenous changes such as changes in oil prices the structure of the domestic economy and all indicators will easily change (Feizi et al., 2020). Figures 17 and 18 show that the reaction of oil revenues to negative shocks in government expenditures during different financial period (prosperity and recession) is similar to move negative government spending shock. During recession period, a negative shock in government

expenditures can lead to a significant decrease in oil revenues. However, during prosperity of financial markets, the significant reduction of oil revenues is made up for to a great extent. It is believed that the size of the fiscal multiplier can determine the usefulness of fiscal policies; this is affected by the reaction of demand-related variables (e.g., investment and consumption) to the growing expenditure by the government. Despite the positive view of macroeconomic models toward fiscal multipliers, there are still some inconsistencies in terms of their impacts on consumption. Therefore, labor reaction and the elasticity of labor resources can affect the growing government expenditure Galí et al. (2007).

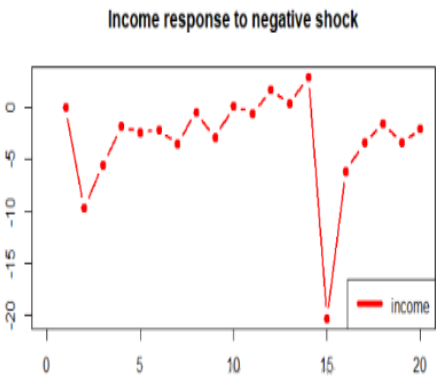


Figure 17. Response oil income to negative shock (Regime1)

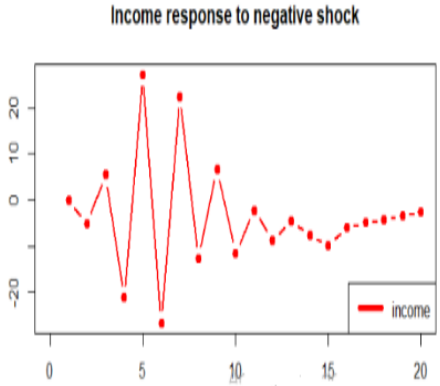


Figure 18. Response oil income to negative shock (Regime2)

The reaction of consumption spending and the investment of the private sector to negative shocks in government expenditures during different financial periods in the first regime is so that a reduction in government expenditures can lead to a reduction to consumption expenditures of the private sector. Figures 19 and 20 indicate that with the continuation of low fluctuations, the shock of government expenditures between the third to the beginning of the fifteenth time horizon can reduce the descending trend of consumption expenditures of the private sector. However, with the significant reduction of government expenditures. During the fifteenth time horizon, the consumption expenditures of the private sector decrease yet again and then experience an increasing trend. The investment of the private sector follows a decreasing trend in reaction to negative shocks in government expenditures during the recession of financial markets until the third time horizon; however, due to a reduction in interest rates, it then follows an increasing trend. During the prosperity of financial markets, investment will decrease since an increase in investment during recession period and the return of capital and the beginning of prosperity period for financial markets lead to a decrease in the number of investors in the private sector.

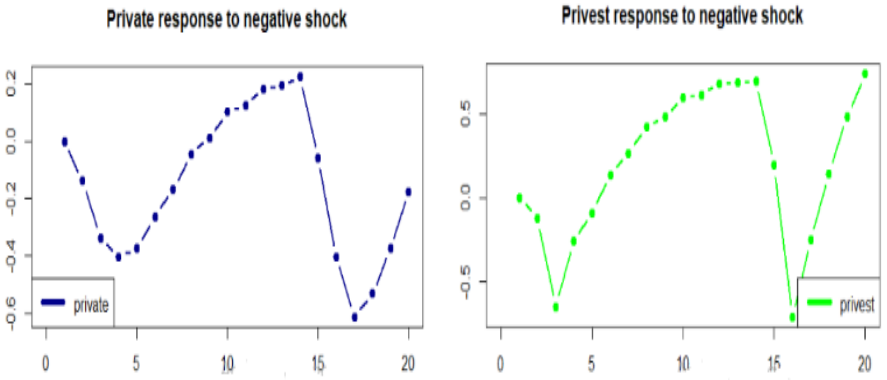


Figure 19. Response private consumption and private investment to negative shock (Regime1)

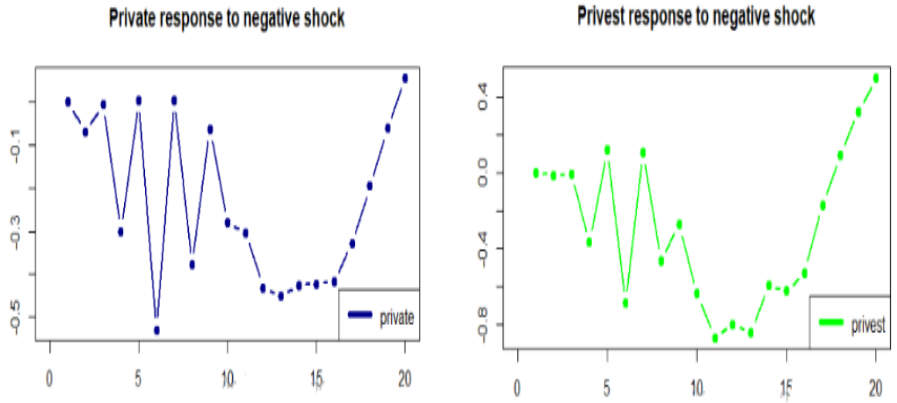
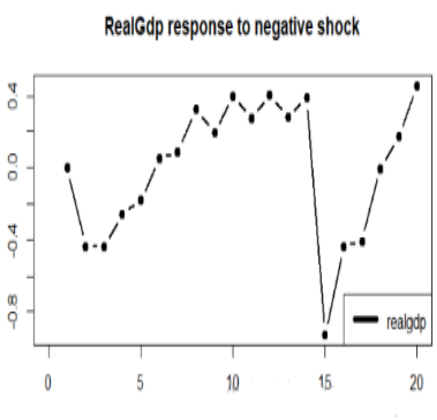


Figure 20. Response private consumption and private investment to negative shock (Regime2)

The reaction of production to negative shocks in government expenditures during financial periods is in accordance with the theory. Figures 21 and 22 explain, given that there is no correlation between government spending and investment, classical extremists believe that government expenditure cannot affect GDP (Fouladi, 2010).



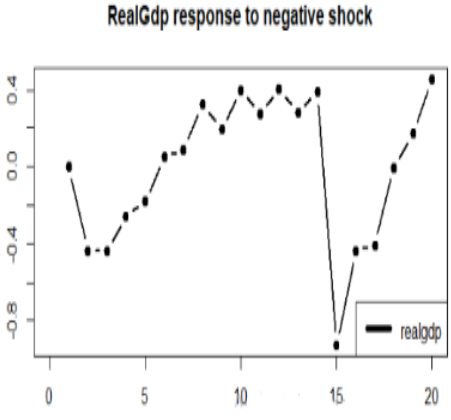
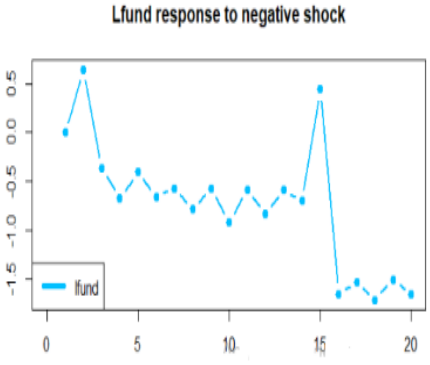


Figure 21. Response real GDP to negative shock (Regime1)

Figure 22. Response real GDP to negative shock (Regime2)

The relative controlling function of fiscal policies is affected by their impact on nominal and real variables (Kandil, 2006). figures 23 and 24 confirm this, as for interest rate, once the effect of the negative shocks dominates market recession, it will increase; however, with a reduction in the effect of negative shocks on government expenditures, interest rates will also drop. During prosperity periods, financial markets will show a similar reaction; however, during this period, the shock will have a greater impact and the downward trend will continue.



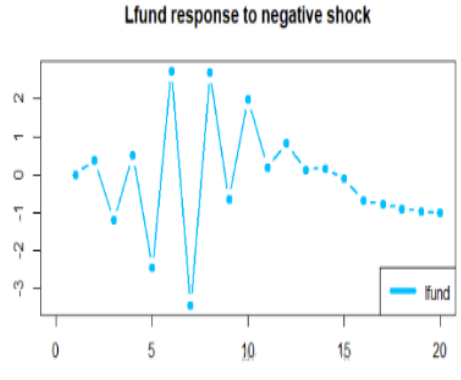


Figure 23. Response interest rate (LFund) to positive shock (Regime1)

Figure 24. Response interest rate (LFund) to positive shock (Regime2)

Based on figures25 and 26, the impact of negative shocks on inflation during fiscal periods is in accordance with the theories. Theoretically, it is argued that different economic perspectives can determine economic influences of fiscal policies. According to Ricardian perspective, there is no significant relationship between policies and total demand. Classical theory claims that private sector measures are superior to fiscal policies and can have more significant impact on economy. Finally, Keynesian view stipulates those fiscal policies are likely to moderate economic instabilities (Chatziantoniou et al., 2013).

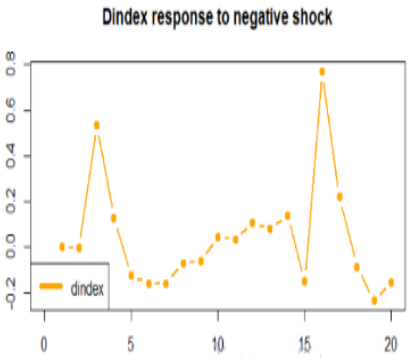


Figure 25. Response inflation (dindex) to negative shock (Regime1)

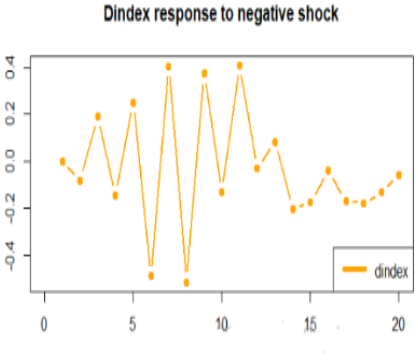


Figure 26. Response inflation (dindex) to negative shock (Regime2)

According to classical economists, the financial sector together with the real sector are two parts of an economy, and achieving higher economic growth in any society that requires both real and financial sectors is efficient, complementary and powerful. In less developed countries, first the growth and expansion of the financial sector leads to economic growth and then over time the importance of the financial sector in economic development has decreased. Liang & Teng (2006) Believed that if the financial system does not allocate capital and resources optimally, in addition to economic growth will not occur, because the financial system is not supported by the market; The economy remains incomplete and underdeveloped. Briefly, what our results indicate that uncertain about government spending shocks will differently effect. For example, a temporary increase in government spending reduces the permanent income of consumers, which means the approximate stability of private sector spending. As a result, at a given interest rate, aggregate net demand increases; But since there has been no change in the permanent income of labor suppliers, in this case the total supply chart will not be transmitted as other conditions remain constant. In this situation, due to the balance of the commodity market, the real interest rate increases, which this temporary increase in interest rates will lead to an increase in labor supply due to cross-sectoral substitution. In contrast, a steady increase in government spending will have different effect. Uncertainty about government policies and

the implementation of unforeseen policies by them can cause irreparable damage. The uncertainty of economic agents in implementing these policies will lead to different actions. Inflation due to liquidity trap in Iran's economy will cause economic instability, economic fluctuations and irregular and unreasonable increase in prices. How government spending is affected is affected by how government spending is financed on the one hand and how it is allocated on the other. According to Mehrara et al. (2015) If government spending is financed through tax increases or budget deficits and borrowing, the crowding- out effects of government spending on private consumption and investment are expected to offset the positive effects of rising government spending and the negative effects of declining private consumption and investment. However, if the increase in government spending is financed through oil revenues, it can be expected that the crowding- out effects of government spending on private consumption and investment will be limited, and overall the increase in government spending will have a positive effect on production in the long run.

6. Concluding Remarks

The economy of a country is affected by periodic, yet irregular, fluctuations. These fluctuations can be the result of positive and negative shocks in government expenditures. In fact, the impact of government expenditures is dependent upon economic characteristics. Meanwhile, global financial catastrophes showed that the real and fiscal sectors of the economy are interrelated. The certainty of the private sector can be very helpful in interpreting these results since, in the presence of encouraging and adverse shocks in government expenditures and the simultaneity of these shocks with fiscal catastrophes, their perspectives with regard to the economic situation is decisive. Depending on the type of the shock, there will be a significant difference in the impact of the shock in government expenditures. Positive shocks in government expenditures during fiscal periods (prosperity and recession) have had a similar impact on economic variables so that it could be stated that expectations regarding fiscal policies can significantly influence the responses of macroeconomy to fiscal shocks; however, this itself is dependent upon other factors such as financial situation and the government’s level of debt. The present study seeks to study the effects of positive and negative shocks in government expenditures using Threshold Vector Autoregression Model. Developing countries including Iran cannot improve the real sector due to structural and regulatory problems in the financial sector. Government ownership of banks, lack of competitive environment in the country's banking system, inefficient interest rates, transfer of credit to inefficient economic sectors are some of the reasons why the financial sector does not affect a country's economy. The results of other studies also confirm that the financial sector has not been able to have a significant impact on the real sector of the economy and sometimes has a negative impact on economic growth (Dejpasand & bokharaei, 2016; Akbarian & Heydaripour, 2009). Relying on high oil revenues and non-optimal allocation of such revenues to investment projects without considering the technical, economic,

financial justification will reduce the efficiency of investment and consequently the inefficiency of financial instruments. In the Iranian economy, most government expenditures are financed by oil revenues, so it can be expected that the crowding- out effects of government expenditures in Iran have been limited, but in contrast to how government expenditures are allocated in the Iranian economy is not very efficient. Inefficient allocation of government expenditures has weakened the efficiency of Iran's economy in the long run Since these two effects offset each other, it can be expected that government spending will not have a strong a significant effect on the long-term growth of Iran's economy.

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Conflicts of Interest

The authors declare no conflict of interest.

Data Availability Statement

The data used in the study were taken from http://www.cbi.ir., https://www.amar.org.ir., https://data.worldbank.org

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