Crowding out or Crowding in? Government Spending Effects on the Private Sector in Iran

Somaye Rasouli Firoozabadi [*1], **Nazar Dahmardeh Ghaleno**[2], **Mohammad Nabi Shahiki Tash**[3]

[1] Department of Economics, Faculty of Economics, University of Sistan and Baluchestan, Zahedan, Iran

[2] Department of Economics, Faculty of Economics, University of Sistan and Baluchestan, Zahedan, Iran

[3] Department of Economics, Faculty of Economics, University of Sistan and Baluchestan, Zahedan, Iran

Abstract

Given that changes in interest rates can only partly empower financial authorities to enhance the country's economy, there has been a major shift toward outcomes of fiscal policies, particularly after the big financial crises and the global recession. Thus, the government's spending plans are implemented to motivate the economy. The present study aims to investigate government expenditure shocks on consumption spending, private investment, and financial cycles during 2005-2018 using the Structural Vector Auto Regression (SVAR) model. The findings indicate that there is no significant relationship between government expenditure shocks and consumption spending and private investment. The findings show a crowding out effect between government spending shock and the private sector in Iran. However, you can see a positive relationship between GDP and the private sector. Moreover, these shocks can lead to a positive impact on GDP accordingly. However, government expenditure shocks may only have short-term effects on business cycles because of the instabilities and uncertainties in government spending.

Keywords: Structural Vector Auto Regression, Government Spending Shock, Crowding Out.

JEL Classification: H11, H3, H5.

[*] Corresponding Author, Email: somayerasouli98@yahoo.com

1. Introduction

Compared to the great body of empirical literature concerning the impacts of monetary policy, fiscal policy was rarely investigated in economic research (Fatás & Mihov, 2001). The effective implementation of fiscal policy has revived longstanding policy debates following the global financial crisis and drawn attention to an essential theoretical insight. The likely impact of fiscal policy should be evaluated through the investigation of key factors characterizing the economic environment in each country over time (Corsetti, et al., 2012). There is no debate that the private sector should operate in an environment that is shaped by the government through enforcing laws, defining environmental policies, providing subsidies, charging taxes, regulating competition, etc. Therefore, governments are in charge of everything, and they are allowed to change the rules very often resulting in financial market instability as a response to price changes. It is asserted that if the market is not capable of anticipating such changes in the economy, the responses to these shocks will be significant (Pastor & Veronesi, 2012). Even though the majority of macroeconomic models contend that growing government purchases will lead to the expansion of output, there is still no consensus over the implied effects on consumption (Galí, et al., 2007). The economic literature has always aimed to appraise different fiscal policies to develop the most effective instrument for economic stabilization. Therefore, this is a critical issue for politicians and economists. Moreover, there has been an intense and controversial discussion over this issue among the public and academic society, but it has failed to provide an acceptable response. Previous studies have already implemented VARs in order to evaluate the potential responses of the economy to these policies (e.g., fiscal policy instabilities) (Candelon & Lieb, 2013). Narrative and structural VAR approaches have been implemented to determine fiscal shocks. The structural approach to VAR aims to identify the variance/covariance matrix through organizational data or economic theory. Thus, it results in fiscal revolutions and novelties (Arin, Koray, & Spagnolo, 2015). The present study employed a structural vector auto regression approach aiming to investigate the impact of government spending shock on economic measures in the Iranian context. For this purpose, the following variables were analyzed using quarterly data: inflation, positive and negative government spending shocks, real outcome, interest rate, industrial production, private consumption, private investment, and oil income. In this regard, Section 2 of the study deals with the literature and empirical approach. It is followed by a demonstration of the methodology in Section 3. Section 4 deals with the distribution and nature of the data. The effects of government spending shocks on macroeconomic variables are discussed in Section 5. Finally, Section 6 represents the concluding remarks.

2. Review of the Related Literature

Monetary policy and fiscal policy are regarded as the most recognized scales that form the cornerstone of a country's economic policy. However, a recent study by Praggidis, et al. (2013) show that the majority of studies conducted before 2000 only investigated the impact of monetary policy. Meanwhile, there was a controversial debate over governmental strategies following the 2008 global crisis. Some believed that governments should exploit fiscal stimulus programs to revive the growth rate, while others contended that governments have to apply strict packages to control insufficiencies and decrease debt to compensate for a portion of GDP. According to economic theories such as the Keynesian economics, there is a direct relationship between government spending and tax and private income. Such theories also propose that the economy is likely to progress as a result of active demand. Given the weak impact of wealth and the lack of crowding out effect in Keynesian paradigm, the fiscal multiplier will be optimal. Nevertheless, other elements (e.g., open economy, monetary policies, and exchange rate system) can also play a crucial role in determining the multiplier's precise value.

On the other hand, the Ricardian equivalence in the neoclassical school proposes no direct relationship between GDP and government expenditure and/or tax cut. It is noteworthy that the wealth effect can lead to potentially higher taxes because of the debt burden of the fiscal stimulus. Consequently, the

private consumption will remain unaffected given the growing disposable income, which in turn motivates policymakers to seek more savings. Contrary to the Keynesian economics paradigm, the contractionary fiscal expansion effect, which is regarded as a new class of research, highlighted the positive impact of the multiplier of fiscal contraction. This paradigm is also known as expansionary fiscal contraction and is developed based on the wealth effect, that is, consumers give priority to future consumption. The classical school and the Keynesian school, which are regarded as crucial economic theories, propose various perspectives to investigate the association between the government spending and private consumption expenses (Almosabbeh, 2019). According to Keynesian theory, there is a direct (integrating) relationship between government expenditure and private spending. Nonetheless, the new classical theory asserts an adverse (crowding-out) relationship between these two variables.

Accordingly, government expenses are supplied or covered a portion of personal income (tax). It is also noteworthy that there is a general tendency toward consumption in developing countries, and any increase in taxes should be moderated by supplying the required expenses from the disposable income. This means that consumption expenditure is crowded out by government expenses. Meanwhile, the government may intend to increase note issues (deficit financing) so that it can cover the existing expenses. Consequently, it will lead to more severe inflation that is adversely correlated to individuals' consumption spending (Almosabbeh, 2019). A fiscal policy shock is based on an unplanned and unexpected change, which is not an acceptable term within the latest modifications to the field of economics. Modern macroeconomics highlight the dynamic nature of the economy as a stochastic system. Therefore, they propose the analysis of different reactions to previous and present economic shocks in order to acquire a comprehensive perception of related processes. Accordingly, as empirical instruments, vector auto regressions (VARs) have been widely implemented by several researchers (Mountford & Uhlig, 2009). Consequently, there is a general disagreement among different economic theories in terms of the role of the government in the economy and the impact of government expenditure on various economic sectors. However, macroeconomic theories assert that there is a direct and significant relationship between government expenditure and private sector decision-making. Government spending, as a means of financial policy, has an unclear impact on financial cycles. It can have both positive and negative impacts on these cycles; hence, it is difficult to propose a general model concerning these two variables. If the government's financial policies lead to an increase in demands for goods and services without any alternative impacts, there will be a negative relationship between fiscal policies and financial cycles. Otherwise, the government's fiscal policies can result in adverse effects on the workforce and private investment (Feshari, 2017). Therefore, it is essential to observe the relationship between government and private sectors, taking into account the impact of government expenditure (both consumption and investment spending) on private investment decisions. Hence, the present study intends to investigate the impact of positive and negative government expenditure shocks on private sector decisions (consumption and investment) in Iran's economy. This study particularly aims to examine the nature of these impacts, whether such shocks have negative impacts and replace private sector decisions or they have a positive effect and act as a complement to private sector investment.

As illustrated by Aryusmar (2020), there is a significant and positive relationship between household consumption and GDP. Nonetheless, there is no significant relationship between the investment variable, government spending, as well as net export and GDP.

Fathizadeh, et al. (2020) indicated that energy intensity growth and financial development have had a large share of economic growth fluctuations in different sectors of the Iranian economy. Similarly, economic growth and financial development have also played a significant role in the energy intensity fluctuations of the sectors. Finally, energy intensity has the largest share of fluctuations in financial development in the industry sector, while economic growth has also played a considerable role in the fluctuations of financial development in the services sector. Mallick (2019) evaluated the

government investment shocks on private investment and national income by observing 'crowding-in' or 'crowding-out' impacts in India. The findings revealed that the non-infrastructure sector within government investment is associated with the crowding-out effect. Moreover, this study concluded that private investment imposes a more significant impact on income compared to public investment.

According to Boiciuc (2015), the findings are in line with the results of other studies on developing economies. Given that macroeconomic variables are only slightly affected by fiscal shocks, the fiscal shocks are insignificant. Abdollahi Arani, et al. (2017) opined that in comparison with other productive sectors of the economy, the growth of the industry has become one of the most essential approaches to economic development. Their results show that among all variables pertaining to monetary and fiscal policy shocks, only positive shocks in government spending increase output in the industry sector during the studied period, and interest rate shocks have negative effects on output in this sector. The positive shocks of the interest rate have reduced employment in the industry sector.

Beyer and Milivojevic (2020) examined the worsening or moderating role of fiscal policy in South Asia business cycle instabilities. Their results showed that changes in the gross domestic product (GDP) were more frequent than tax revenue, but public spending increased more than proportionally. There is no significant relationship between tax revenue and economic activity; nonetheless, the government expenditure multiplier is significantly positive.

Garry and Rivas Valdivia (2017) tried to develop different complementary approaches to define the influence of public expenditure on economic growth. They evaluated the evolution of the countries' fiscal performance and reported a strong association between public spending and economic growth. Their results have shown that there is a long-run correlation between capital expenditure and GDP enhancement. Also, public spending has a constant significant multiplier effect over time. The following section illustrates the SVAR approaches implemented in the present research.

3. Methodology

The structural approach to the VAR model (SVAR) was employed to analyze the impact of fiscal policies in the present study:

$$A_0 x_t = A(L) x_{t-1} + v_t \qquad (1)$$

where A_0 refers to the matrix of concurrent association between the variables, x_t indicates a (n x1) vector of the local macroeconomic variables (positive government spending shock (positive), negative government spending shock (negative), oil revenue (oil), long- term interest rate (lfund), inflation (inf), real GDP (real), private consumption (private), private investment (privest), industrial production(inp)), X_{t-1} is the lagged valued, and v_t represents the error terms.

The short form that is determined as equation (1) is multiplied by an opposite matrix A_0^{-1} is used to calculate the SVAR model. Therefore, the short form of the VAR is represented in equation (2):

$$x_t = C(L) x_{t-1} + u_t \qquad (2)$$

where $C(L) = A_0^{-1} A(L)$ and $u_t = A_0^{-1} \varepsilon_t$. $u_t = A_0^{-1} \varepsilon_t$. u_t is a (n x1) vector of socks in reduced form. Although these normally distributed variables are not correlated, there is a concurrent correlation between them. Hence, the association between declined shocks and structural shocks is as follows:

$$A u_t = \varepsilon_t \qquad (3)$$

The variance-covariance between the observed element, u_t and the non-observed element, ε_t, is shown in equation (3) (Razmi, et al., 2017; Boiciuc, 2015). The variables can be presented in the following order: real outcome, inflation, interest rate, positive and negative government expenditure shocks, industrial production, private consumption, private investment, and oil income.

Equation 4, which is extracted from $A u_t = \varepsilon_t$, represents the limitation of the structural VAR model in the present study.

$$
\begin{bmatrix}
\varepsilon^{oil} \\
\varepsilon^{positive} \\
\varepsilon^{negative} \\
\varepsilon^{real} \\
\varepsilon^{\inf} \\
\varepsilon^{interest} \\
\varepsilon^{private} \\
\varepsilon^{privest} \\
\varepsilon^{cycle}
\end{bmatrix} =
$$

$$
\begin{bmatrix}
\alpha_{11} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
\alpha_{21} & \alpha_{22} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
\alpha_{31} & 0 & \alpha_{33} & 0 & 0 & 0 & 0 & 0 & 0 \\
\alpha_{41} & \alpha_{42} & \alpha_{43} & 1 & 0 & 0 & 0 & 0 & 0 \\
0 & \alpha_{52} & \alpha_{53} & \alpha_{54} & 1 & 0 & 0 & 0 & \alpha_{59} \\
\alpha_{61} & \alpha_{62} & \alpha_{63} & \alpha_{64} & \alpha_{65} & 1 & 0 & 0 & 0 \\
\alpha_{71} & \alpha_{72} & \alpha_{73} & \alpha_{74} & \alpha_{75} & \alpha_{76} & 1 & 0 & 0 \\
\alpha_{81} & \alpha_{82} & \alpha_{83} & \alpha_{84} & \alpha_{85} & \alpha_{86} & 0 & 1 & 0 \\
\alpha_{91} & \alpha_{92} & \alpha_{93} & \alpha_{94} & 0 & \alpha_{96} & 0 & 0 & 1
\end{bmatrix}
$$

Equation 4

In the first row of equation (4) oil represents an exogenous variable. It is difficult to evaluate the association between energy and cumulative economy. Therefore, oil price shocks may lead to a higher energy price and reduced energy in the production process, which can also influence the outcome through the cumulative production function. It has long been argued that there is an adverse relationship between energy shocks and the economy. Furthermore, the total demand also is subject to change in accordance with changes in energy price (Bjørnland, 2009).

$$\varepsilon^{oil} = \alpha_{11} u^{oil}{}_t \qquad (1\text{-}4)$$

economy through fiscal and export channels. There will be a significant benefit to the income capital (foreign currency) in oil-exporting countries when oil prices experience an increase. Besides, the price of imported products will decrease due to the growing exchange rate of the local money. Therefore, the general price level drops (deflation), and the interest rate declines as a response to the monetary policy (Alekhina & Yoshino, 2018). According to economic theory, the interest rate level proportionally varies with periods of economic expansion and recessions (Simionescu, Popescu, & Firescu, 2017). Another function that affects interest rate is inflation. Inflation doubt can affect economic undertakings by distorting the inter-temporal and intra-temporal distribution of resources. The former affects outputs through changes in the interest rates, while the latter affects the changes in relative prices (Cheong, Kim, & Podivinsky, 2010).

$$
\varepsilon^{interest} = \alpha_{61} u_t{}^{oil} + \alpha_{62}\ u_t{}^{positive} + \\
\alpha_{63} u_t{}^{negative} + \alpha_{64} u_t{}^{real} + \qquad (5) \\
\alpha_{65} u_t{}^{inf} + \alpha_{66} u_t{}^{interest}
$$

The seventh row of Equation (4) is representative of private consumption in Iran. Accordingly, energy price shocks can influence consumption spending through four direct channels. The flexible income channel may result in changes in energy prices, even for adjustable purchase decisions. Consequently, consumers will tend to enhance their precautionary savings to comply with energy price shocks, which leads to a decline in household consumption. The increasing energy prices might influence the consumption of durables by operating cost effect (Vizek, Lee, & Payne, 2020).

On the theoretical ground, there are different schools of thought on the impact of government spending on private consumption such as the Keynesian theory of absolute income hypothesis and the standard real business cycle model. The growing government expenditure through taxes declines household permanent income (Keho, 2019).

Economic growth refers to a rising total income and per-capita income considering the growing population associated with fundamental changes in the country's economic structure (Rafiy, Adam, Bachmid, & Saenong, 2018). Income is a primary determinant of consumption along with access to credit sources and subsistence activities (Diacon & Maha, 2015). The interest rate is regarded as a crucial variable of macroeconomics known as the cost of capital from the investor's viewpoint and opportunity cost from the depositors' viewpoint (Mirza & Rashidi, 2018). The interest rate can influence private consumption given the potential limitation in the household budget. Due to such budget limitations, consumption expenses should be supplied from credits, income, or assets. Nonetheless, diverse interest rates necessitate a differentiation between credits and assets (Hansen, 1996). Periods of inflation influence consumers to save rather than consume because of pessimism and uncertainty in the economy. Also, inflation influences consumer spending behavior by influencing both liquid and illiquid assets in periods of inflation. A household's income distribution is changed by inflation (Effah

Nyamekye & Adusei Poku, 2017).

$$\varepsilon^{private} = \alpha_{71}u_t^{oil} + \alpha_{72}u_t^{positive} +$$
$$\alpha_{73}u_t^{negative} + \alpha_{74}u_t^{real} + \alpha_{75}u_t^{inf} + \qquad (7\text{-}4)$$
$$\alpha_{76}u_t^{interest} + \alpha_{77}u_t^{private}$$

According to different theories about productivity and evolution, each country should seek capital development to achieve economic growth (Wiafe, Barnor, & Quaidoo, 2014).

The oil income operates through its impact on private and public capital accumulation. Insignificant domestic savings can often lead to limitations in private investment, which is recommended to deal with using oil income (Dreger & Rahmani, 2014).

One of the important variables that affect private investment is inflation. There are a lot of different theoretical descriptions that explained the relationship between inflation and private investment in the literature (e.g. endogenous growth theory). Inflation can prevent investors to invest because of lacking confidence in long-term treaties in the stock market. Also, inflation uncertainty is the most important factor, after the product, affecting private investment (Pahlavani & Bashiri, 2013).

According to economic theories, investment plans and business cycles are significantly associated with capital costs. For example, growing capital costs negatively affect investment perspectives and lead to limited business activities. Former high rates of interest have constrained investing undertakings. However, consumers are still less likely to pursue investment activities, even if there is a decline in interest rates (Cagan, 1969).

$$\varepsilon^{private} = \alpha_{81}u_t^{oil} + \alpha_{82}u_t^{positive} +$$
$$\alpha_{83}u_t^{negative} + \alpha_{84}u_t^{real} + \qquad (8\text{-}4)$$
$$\alpha_{85}u_t^{inf} + \alpha_{86}u_t^{interest}$$

Business cycles in macroeconomic measures refer to unbalanced fluctuations, emerging from organizations' activities and the market economy. Therefore, technology, fiscal and monetary policies, trade shocks (e.g., shocks imposed by potential changes in oil price), as well as a variety of consumers' investments and demands can lead to the development of business cycles. The oil sector plays a crucial role in supplying the required energy for economic development and growth

in Iran. Furthermore, oil supplies are supposed to meet international exchange demands that facilitate the implementation of economic growth plans in the country (Ganjoei, Asfiji, & Shanbeh, 2021). Business cycles in developing countries are spurred by political and economic crises. These crises induce macroeconomic fluctuations which are evidenced by the wave of shock triggered by either domestic or external factors (Amu, Osabuohien, Alege, & Ejemeyovwi, 2021). Given the financial and economic crisis in the late 2000s, many industrialized countries had to implement flexible fiscal policy measures to deal with the economic recession. Although such activities are estimated to avoid stricter economic downturns. There is still no consensus over the effectiveness of these fiscal policies (Cimadomo, Hauptmeier, & Sola, 2011).

Macroeconomic policies are developed to moderate business cycle instabilities (Calderon & Schmidt-Hebbel, 2008). During the last three decades, many researchers and policymakers have investigated the impact of fiscal policy in moderating business cycles. They showed that short-term and long-term business activities will increase as a result of negative shocks to government wages. Meanwhile, it can lead to a decline in labor demand and wages, which can consequently rise business profits and investment (Arin et al., 2015). According to standard Keynesian premises, fiscal policies (considered counter-cyclical) should have a moderating role. However, the findings demonstrated that government expenditure reacts pro-cyclically in developing countries. Also, there are numerous explanations for the pro-cyclicality bias of fiscal policies in countries (Calderon & Schmidt-Hebbel, 2008). Since the late 2000s, there has been a significant reduction in growth pace among advanced economies after the global financial crisis. Macroeconomists and policymakers have developed different theories concerning the demand and supply issues. Enduring economic development has been pursued at a slower pace due to insufficient demand caused by that crisis. In other words, researchers believe that lack of novelty and significant demographic instabilities, as major supply-related issues, have had negative impacts on economic growth in the long run (Kaihatsu, Koga, Sakata, & Hara, 2019). In the economic theory, the cost of

capital has an important influence on decisions to invest and, therefore, on business cycles. Even though long-term rates are associated with the installation of equipment and residential accommodations, short-term rates affect inventory investment and business credit. Initially, it is more likely to moderate contracts and orders. Consequently, it will influence assumptions and spending (Cagan, 1969).

$$\varepsilon^{cycle} = \alpha_{91}u_t{}^{oil} + \alpha_{92}u_t{}^{positive} + \\ \alpha_{93}u_t{}^{negative} + \alpha_{95}u_t{}^{real} + \alpha_{96}u_t{}^{interest} \qquad (9\text{-}4)$$

Colacito, Riddiough, and Sarno (2020) measure macroeconomic conditions using the output gap, and industrial production data. They also employed the filter proposed by Hodrick and Prescott. The economy of a country usually reflects irregular fluctuations over a long period of time. These instabilities are called business cycles and mostly involve shifts over time between periods of contraction and expansion (Jiang, 2020).

2. Results
The quarterly data for this study were collected from 2005 to 2018. Besides, the following macroeconomic variables were used to investigate the impact of fiscal policy shocks: real outcome, interest rate, positive and negative government expenditure shocks, industrial production (business cycle), inflation, private consumption, private investment, and oil income. All these variables extracted from the national central bank websites are used in the logarithm.

Positive and negative government expenditure shocks have been regarded as distinct output variables in order to observe the impact of government expenditure shocks (consumption and investment) on economic factors in Iran. Therefore, these positive and negative shocks were separated based on Hodrick-Prescott Filter and then entered the model.

4.1. Hodrick-Prescott Filter
Hodrick and Prescott (1980) proposed the time series y_t, which is sometimes known as a major signal. They defined it as the sum of two elements of cyclical growth or permanent growth trend g_t and cyclical changes c_t as follows:

$$y_t = g_t + c_t$$

Given that it is difficult to observe the components of the major or serial signal as two elements of process and cycle, all the distributions are performed based on artificial concepts. Therefore, de-trending approaches begin with a particular definition of the target trend or cycle. Hodrick-Prescott Filter is usually used to extract the cyclical part of a time series. The growth particles or permanent trends are obtained using the following optimizing solution g_t :

$$\text{Min} \sum_{t=1}^{T}(y_t \text{-} g_t) + \lambda \sum_{t=2}^{T-1}[(g_t \text{-} g_{t-1}) \text{-} (g_{t-1} \text{-} g_{t-2})]^2$$

The first segment of this equation reflects the goodness of fit and the second segment refers to the penalty for the inconsistency in the series trend. In other words, it shows that the lower the variance (whether in the previous period or the next one), the better the results. Moreover, if $\cdot \rightarrow \lambda$ then it shows a real time series trend, and if $\lambda \rightarrow \infty$ then it indicates a direct linear trend. The present study employed this filter to extract financial cycle fluctuation and distinguish positive and negative government expenditure shocks and enter into the model (Khanzadi, Moradi, & Heidarian, 2017). It is believed that economic activity happens within the boundaries of growth (i.e., economic affluence) and recession (i.e., economic failure). Therefore, numerous studies have recently investigated the integration of these two extremes, which is known as the business cycle.

Furthermore, there is a debate over the analysis of fluctuations as an economic movement or as a general trend. The former highlights turning points within real economic measures, while the latter is conducted based on the examination of growth cycles throughout economic development and economic shrinkage trends. Nonetheless, these two perspectives are equally critical for economic agents because they need the adequate perception of the present and future circumstances to make economically appropriate and effective decisions (Bengoechea, Camacho, & Perez-Quiros, 2006).

Figure 1: Business cycle
Source: Author's calculations

4.2. Unit Root Test

Regression with time series data assumes that the data should be durable. If time series variables are non-stationary, it may result in false regression. Given that data analysis is performed based on data logarithm, the unit root test will also be performed using data logarithm (Fathizadeh et al., 2020). The Augmented Dickey-Fuller (ADF), the test is used to perform the unit root test or data stationary in the present study. The results of the test at the first order level and differentiation are presented in Table 1.

Table 1. Dickey-Fuller Test Results

variables	T-Statistic	Critical value (%5)	P-value	result
Oil	-10.840	-2.91765	0.000	I (1)
Real	-7.103	-2.916	0.000	I (1)
Positive	-7.264	-2.9155	0.000	I (0)
Negative	-3.047	-2.917	0.036	I(0)
Inf	-3.670	-2.915	0.007	I(0)
interest	-7.222	-2.916	0.000	I (1)
Private	-3.583	-2.917	0.000	I(0)
Privest	-3.0135	-2.921	0.040	I(0)
cycle	-2.925	-2.915	0.048	I(0)

(Source: Authors' Calculations)

According to the obtained results, some variables, including private sector consumption and investment, are regarded stationary and some other variables provide unit roots. All the variables are reported stationary at the first order differentiation. Thus, the implementation of the OLS approach to estimate the equations may lead to false regression. On the other hand,

all the variables are likely to have a reciprocal cointegration relationship. The cointegration approach, which necessitates the equal order of integrated variables, has been already implemented to observe an enduring correlation between those variables (Johansen, 1992; Johansen & Juselius, 1990). Meanwhile, unit root tests are employed to establish the integration order. The low power of such tests may be insufficient to reject the nonstationary null hypothesis.

Optimum lag lengths are used to obtain the results of these tests; however, it is difficult to measure lag lengths distinctively. Therefore, the ARDL model was developed to respond to these problems because the proposed model implements bounds testing method to evaluate the potential long-term association of the variables. Consequently, the equal integration order of the variables is not necessary for this model. Traditional approaches developed by Engle and Granger (1987), Gregory and Hansen (1996), as well as Saikkonen and Lutkepohl (2000) are developed based on precise values of the integration order of variables. On the other hand, the ARDL model can be implemented even if the integration order of variables is unclear and vague, that is, purely I (0), purely I (1), or I (0) / I(1). It is also noteworthy that the dependent variable should be level I (1), while the explanatory variables should be lower than I (2). Eventually, it is recommended to implement the ARDL approach, instead of the multivariate cointegration method, for small sample

properties (Fatukasi, Olorunleke, Olajide, &   Alimi, 2015).

Table 2. Bound Test Results

f- Statistic to examine the long-run relationship between variables		
f- Statistic	Critical Pesaran (2001) %5	Critical Narayan (2004) %5
Real ⊥ oil, positive, negative, inf, interest, private, privest, cycle (4.81)	I(0)=2.12 I(1)=4.33	I(0)=2.11 I(1)=3.15
Oil ⊥ Real, positive, negative, inf, interest, private, privest, cycle (4.98)	I(0)=2.12 I(1)=4.33	I(0)=2.11 I(1)=3.15
positive⊥ Oil, Real, negative, inf, interest, private, privest, cycle (8.04)	I(0)=2.12 I(1)=4.33	I(0)=2.11 I(1)=3.15
negative⊥ Oil, Real, positive, inf, interest, private, privest, cycle (4.19)	I(0)=2.12 I(1)=4.33	I(0)=2.11 I(1)=3.15
inf⊥ Oil, Real, positive, negative, interest, private, privest, cycle (4.58)	I(0)=2.12 I(1)=4.33	I(0)=2.11 I(1)=3.15
interest⊥ Oil, Real, positive, negative, inf, private, privest, cycle (6.91)	I(0)=2.12 I(1)=4.33	I(0)=2.11 I(1)=3.15
private⊥ Oil, Real, positive, negative, inf, interest, privest, cycle (3.47)	I(0)=2.12 I(1)=4.33	I(0)=2.11 I(1)=3.15
privest⊥ Oil, Real, positive, negative, inf, interest, private, cycle (1.43)	I(0)=2.12 I(1)=4.33	I(0)=2.11 I(1)=3.15
cycle⊥ Oil, Real, positive, negative, inf, interest, private, privest(4.73)	I(0)=2.12 I(1)=4.33	I(0)=2.11 I(1)=3.15

Source: Authors' Calculations

Table 3. Diagnostic Tests

Diagnostic Tests	Error correction	Serial correlation	Normality	Heteroscedasticity
Real	-0.49	0.52	0.37	0.10
Oil	-0.79	0.03	0.06	0.050
Positive	-1.18	0.82	0.86	0.28
Negative	-0.23	0.26	0.16	0.99
Inf	-0.82	0.13	0.42	0.28
Interest	-0.54	0.03	0.39	0.89
Private	-0.3	0.07	0.88	0.11
Privest	-0.13	0.44	0.16	0.14
cycle	-0.41	0.88	0.54	0.82

Source: Authors' Calculations

Given that the analysis is conducted based on instinct reactions and immediate variance decay, it is unnecessary to employ stationary variables. Besides, differences lead to uncertainty concerning the collaboration among the variables (Razmi et al., 2017). Akhbari and Amadeh (2015) asserted that for the variables of I(0) and I(1), it is expected to observe heteroscedasticity. Thus, the present study also reported heteroscedasticity, which may not have a significant impact on the findings of this study. According to selection criteria (Akaike

Information Criterion and Schwarz Information Criterion), a 1 lag vector autoregressive model is estimated.

2.3. Empirical Results
This section investigates the effectiveness of government expenditure shocks using impulse response function and variance analysis. The impulse response function indicates the dynamic behavior of the variables (within one variance) when facing shocks during a particular period.
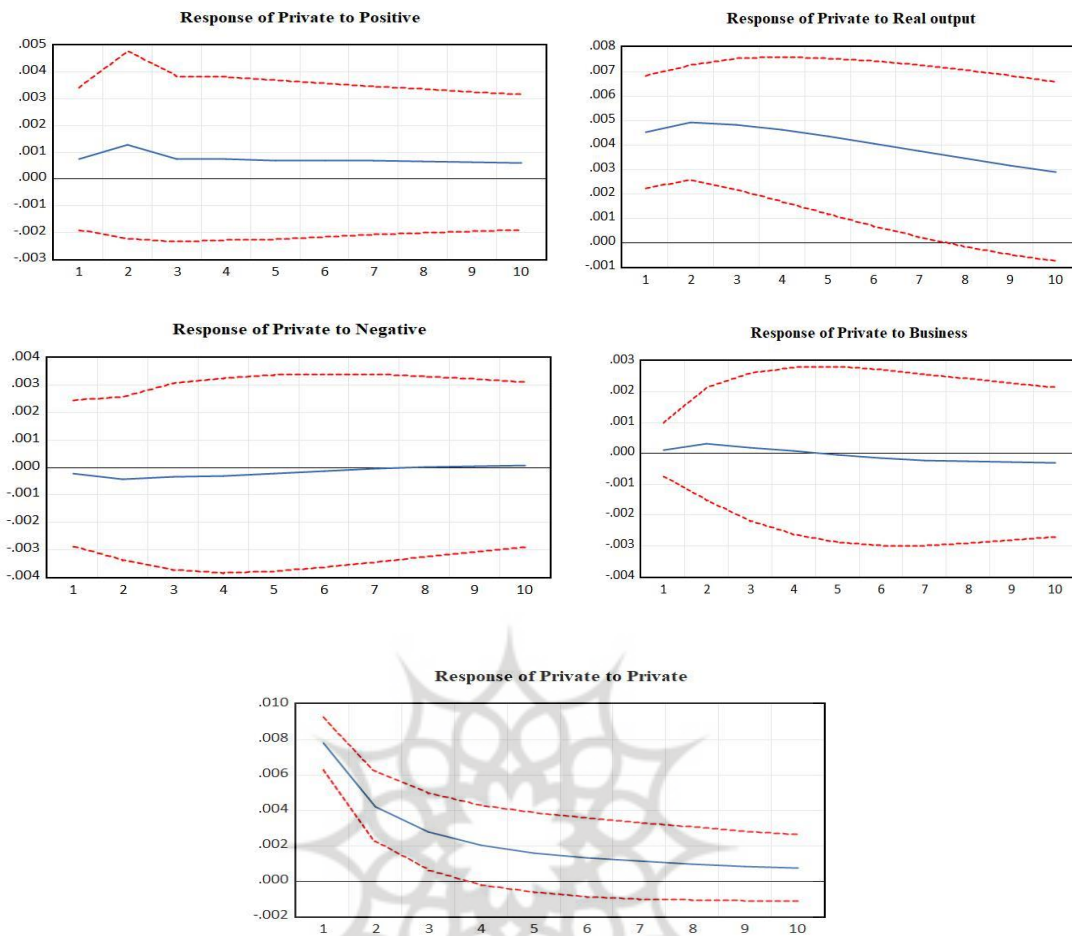
Figure 2: Impulse Response Function of Private Sector Consumption
Source: Authors' Calculations

According to Figure 2, there is no significant relationship between positive and negative government expenditure shocks and private sector consumption spending. The effectiveness of government expense relies on supplying the aggregate expenditure as well as the allocation of the expenditure. Governments can supply their spending through tax, financial loans, and budget constraints, which can have significant impacts on private sector investment and consumption. Since the positive effects of government expenditure and the negative effects of the reduction in private sector consumption and investment can be neutralized, overall, the growing government expenditure should not result in any significantly positive impacts. On the other hand, if governments supply their expenditure through oil-export income, it will have limited impacts on private sector consumption and investment. Therefore, growing government

expenditure might lead to positive impacts on production (Hatami, Imamverdi, Zeraat, & Soltanololamaei, 2017).

There is a controversy over the theoretical and empirical impacts of government expenditure on private consumption (Furceri & Sousa, 2009). Although macroeconomic models propose different theories concerning the implied impacts on consumption, the majority of them assert that increasing government purchases will lead to the expansion of the output (Galí et al., 2007). There is a discrepancy in the findings of modern macroeconomic models about the impact of government expenditure on private economic measures. General consumption models might be associated with a crowding-out or crowding-in effect between government expenditure and private consumption. However, the traditional IS-LM model proposed that there is a direct relationship

between government spending and the tax burden on residents. Thus, higher government expenditure will lead to a decline in individuals' disposable income and consumption. Consequently, public consumption could be replaced with private consumption in this regard (Cheng et al., 2021).

According to Furceri and Sousa (2009), government expenditure may lead to considerable crowding-out effects because it has an adverse impact on private consumption and investment. While the effects may not be controlled by different phases of the economic cycle, private sector consumption would have a significantly positive response to GDP shocks. Consumption is a vital factor in the gross domestic product (GDP). The total expenditure in an economy calculated as the sum of households, and public expenditures is very important in terms of its contribution to economic growth. Consumption is, therefore, one of the most crucial components of GDP

(Alper, 2018). It is a major growth engine. Supply-side economics is a macroeconomic theory, explaining that economic growth can be most effectively created by investing in capital and by lowering barriers to the production of goods and services. Consumers will benefit from a greater supply of goods and services at lower prices (Kim, 2017). Private sector investment shocks will not have any significant positive impacts on private sector consumption. Investment is firms spending and Consumption is the flow of households' spending. Financial cycles' shocks do not have a significant impact on private sector consumption in Iran, which is because fiscal policies have long-term effects on economic elements. Accordingly, the enacted policy might have been developed for a recession but can have an impact on the economy in a period of economic growth due to a break or suspension (Gholami & Hozhabr Kiani, 2014).
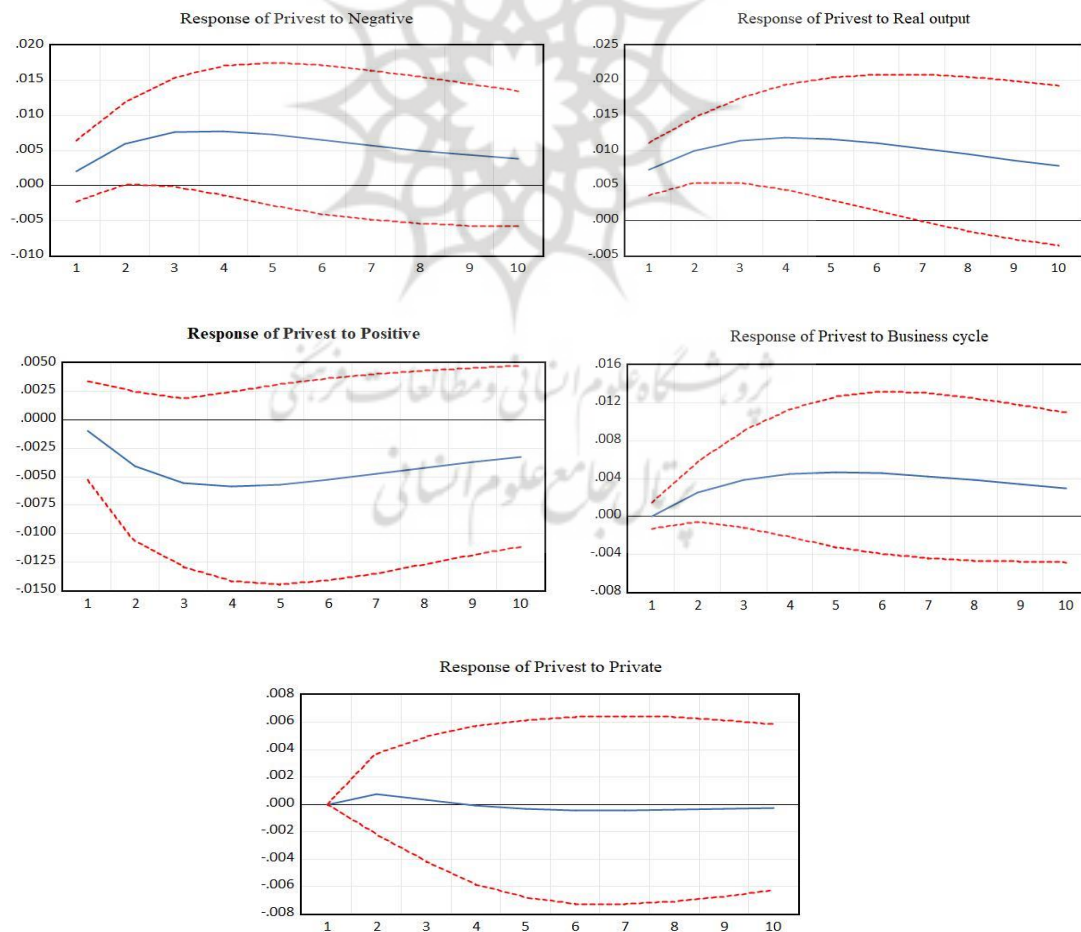

Figure 3: Impulse Response Function of Privest Sector Consumption
Source: Authors' Calculations

Positive and negative shocks of government expenditure have insignificant and adverse effects on private investment spending. Classical and neoclassical economists support free markets and highlight the need for minimum government intervention in the economy. They argue that increasing government spending is supplied by borrowing from the capital market, which causes an increase in interest rates because of potential competition. Therefore, any increase in the interest rates will rise the cost of capital for the private sector and reduce private investment. The "crowding-out" hypothesis refers to the increase in government spending that reduces private investment (Başar, Polat, & Oltulular,

2011). It is necessary to compare the present and future consumption rates prior to making any financial decisions and organizational choices. Owners and stakeholders may opt to invest for the long-term profit of the organization or take into account the existing conditions of their consumers and make short-term decisions accordingly. It is therefore noteworthy that personal consumption activities will be deferred if priority is given to others' capital (Bergo, 2003). Consistent with private sector consumption, private investment spending will have a significantly positive response to GDP growth. On the other hand, the response of private investment expenditures to financial cycles will not be significant.
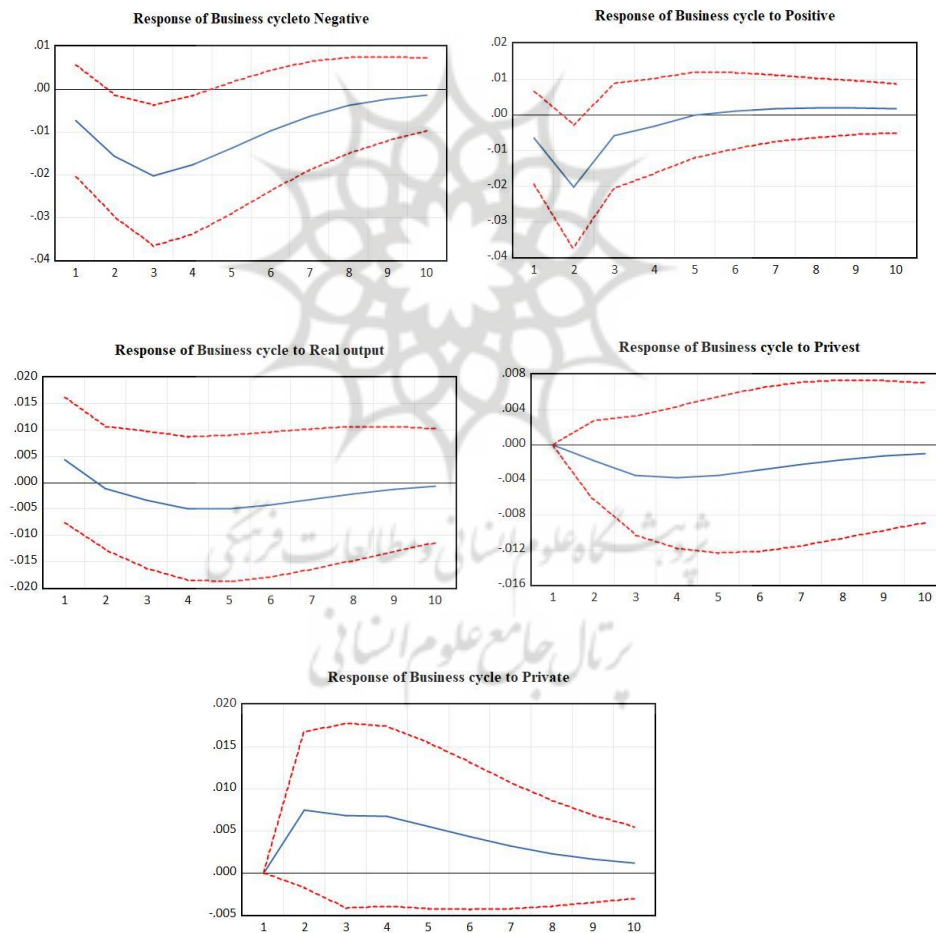

Figure 4: Impulse Response Function of the Business Cycle
Source: Authors' Calculations

Positive and negative government expenditure shocks (consumption and investment) will have significant negative

impacts on financial cycles in the second and third periods, but the impact will be insignificant afterward. Given the variety of

costs, growing government spending can have different impacts on the economy. If the expenses of government consumption rise, employment, production, and investment will decline accordingly. Moreover, the destination and nature of government investment expenses can determine their influence on the country's economy. Consequently, any increase in the expenditure of government investment in the domains of 'service' and 'oil industry' is directly associated with GDP and investment growth. On the other hand, increasing government investment in 'construction', 'mining', and 'agriculture' can lead to adverse economic effects because of the decline in production. Similarly, the implementation of fiscal policies may have different impacts on the economy, which relies on the destination sector of such expenditure. Hence, fiscal policies may either cause the development of investment and GDP or demonstrate a detrimental impact on the economy resulting in the reduction of GDP (Fouladi, 2010). In other words, the efficiency and level of effectiveness of government spending may be a result of more effective expenditure management (Iweriebor, Egharevba, & Adegboye, 2015).

Economic growth and private investment can be impeded by public investment in many ways: 1) it is likely to crowd out beneficial private sector investment if it is based on debt supplies; 2) although the private sector might be considered more productive, public investment is capable of imposing strict and direct competition by producing a variety of goods; and 3) governmental initiatives with crucial subsidies, which are often inefficient, mostly support public investment. Nevertheless, researchers believe that it is necessary to determine the extent and nature of the impact of public investment on private financing and economic development. The prominence of public and private investment in economic growth has been investigated based on the nature of the components of investment (substitutes or complements). According to the local growth theory, it is recommended to employ public investment to supply goods or foods if only the private sector fails to provide adequately. This shortage of production might be due to the lack of competition in consumption or because of the overwhelming and inseparable nature of investment programs. Public investment can influence economic

development as a result of moderating private investment through crowding-in and crowding-out effects. Nonetheless, it is difficult to report precise values for such an impact, so it needs to be estimated empirically (Makuyana & Odhiambo, 2018). There is no significant relationship between GDP and financial cycles. Moreover, many researchers argue that the long-term economic growth process is distinguished from that of the short-term economic development. Macroeconomic analysis has been greatly influenced by the two opposing factors of economic growth and business cycles. Business cycles are associated with short-term economic fluctuations, which are mainly concerned with demand-related issues. On the other hand, economic growth is oriented toward supply-related factors. Besides, it highlights the long-term economic changes such as technological development, demographic features, and capital growth (Kaihatsu et al., 2019).

3. Conclusion

Iran's government plays a significant role in the economy. Therefore, the present study investigated the positive and negative government expenditure shocks on private sector investment and consumption spending as well as financial cycles from 2005 to 2018. The industry index has been used as a representative of financial cycles. Besides, the Hodrick-Prescott Filter was used to distinguish the positive and negative shocks of government spending. The results revealed that government spending does not have a significantly positive impact on private sector investment and consumption in Iran. It is because the output effect of government expenditure on private sector consumption and investment neutralizes the shock effects. Therefore, it will be difficult to predict the macroeconomic variables indexes in the country's planning system. However, GDP is the only effective variable, which has a significantly positive effect. In addition, positive and negative government expenditure shocks will only have significantly negative impacts on financial cycles in a single period, because government spending may be more effective and efficient as a result of expenditure management. Nonetheless, the crucial part of government revenues comes from oil revenues in Iran, so these revenues are very critical in financing government expenditures. However,

since oil prices are not entirely controlled by oil-exporting countries, such as Iran, potential fluctuations in oil prices can lead to instabilities and uncertainty in government oil revenues. Consequently, these fluctuations can lead to instabilities in government expenditure and the budget.

References

Abdollahi Arani, M., Ghasemi, M., & Safakish, M. (2017). The effects of monetary and fiscal policy shocks on the industry sector of Iran's economy: SVAR approach over the period 2004-2017. *The Journal of Planning and Budgeting*, *22*(3), 109-140.

Akhbary, R., Amadeh, H. (2015). Bounds Test Approach to Cointegration Analysis of the Relationship between Unemployment and Economic Growth: Evidence from Iran. *Economics Research*, *15*(59), 125-160.

Alekhina, V., & Yoshino, N. (2018). Impact of world oil prices on an energy exporting economy including monetary policy. *ADBI Working Papers* 828, *Asian Development Bank Institute*. Retrieved form https://www.adb.org/sites/default/files/publication/411171/adbi-wp828.pdf

Almosabbeh, I. A. (2019). Is the relationship between government spending and private consumption in Egypt symmetric?. *International Journal of Developing and Emerging Economies*, *7*(4), 41-60.

Alper, A. E. (2018). The relationship of economic growth with consumption, investment, unemployment rates, saving rates and portfolio investments in the developing countries. *Gaziantep University Journal of Social Sciences*, *17*(3), 980-987.

Amu, B., Osabuohien, E. S., Alege, P. O., & Ejemeyovwi, J. O. (2021). Impact of real shocks on business cycles in selected sub-Saharan African countries. *Cogent Business & Management,* *8*(1), 1875548.

Arin, K. P., Koray, F., & Spagnolo, N. (2015). Fiscal multipliers in good times and bad times. *Journal of Macroeconomics*, *44*, 303-311.

Aryusmar, D. (2020). The effect of the household consumption, investment, government expenditures and net exports on Indonesia's GDP in the Jokowi-Jk era. *International Journal of Advanced Science and Technology*, *29*(12s), 1471-1478.

Başar, S., Polat, O., & Oltulular, S. (2011). Crowding out effect of government spending on private investment in Turkey a cointegration analysis. *Sosyal Bilimler Enstitüsü Dergisi Journal of the Institute of Social Sciences*, *1*(8), 11-20.

Bergo, J. (2003). The role of the interest rate in the economy. Deputy Governor of Norges Bank (Central Bank of Norway), Retrieved form https://www.bis.org/review/r031104f.pdf

Bengoechea, P., Camacho, M., & Perez-Quiros, G. (2006). A useful tool for forecasting the Euro-area business cycle phases. *International Journal of Forecasting*, *22*(4), 735-749.

Beyer, R., & Milivojevic, L. (2020). Fiscal policy and economic activity in South Asia. *Review of Development Economics*, *25*(1), 340-358.

Bjørnland, H. C. (2009). Oil price shocks and stock market booms in an oil exporting country. *Scottish Journal of Political Economy*, *56*(2), 232-254.

Boiciuc, I. (2015). The effects of fiscal policy shocks in Romania. A SVAR Approach. *Procedia Economics and Finance*, *32*, 1131-1139.

Cagan, P. H. (1969). The influence of interest rates on the duration of business cycles. *Essays on Interest Rates*, *1*, 3-28.

Calderon, C., & Schmidt-Hebbel, K. (2008). Business cycles and fiscal policies: The role of institutions and financial markets. *Working Papers Central Bank of Chile from Central Bank of Chile* , Retrieved form https://econpapers.repec.org/scripts/redir.pf?u=https%3A%2F%2Fsi2.bcentral.cl%2Fpublic%2Fpdf%2Fdocumentos-trabajo%2Fpdf%2Fdtbc481.pdf;h=repec:chb:bcchwp:481

Candelon, B., & Lieb, L. (2013). Fiscal policy in good and bad times. *Journal of Economic Dynamics and Control*, *37*(12), 2679-2694.

Cheng, H., Zhi, Y. P., Deng, Z. W., Gao, Q., & Jiang R. (2021). Crowding-out or crowding-in: Government health investment and household consumption. *Frontiers in Public Health*, *9*, 761.

Cheong, C., Kim, G. H., & Podivinsky, J. M. (2010). *The impact of inflation uncertainty on interest rates*. Retrieved form https://scholar.google.com/scholar?q=The+I

mpact+of+Inflation+Uncertainty+on+Intere st+Rates&hl=fa&as_sdt=0&as_vis=1&oi=s cholart

Cimadomo, J., Hauptmeier, S., & Sola, S. (2011). Identifying the effects of government spending shocks with and without expected reversal: An approach based on US real-time data. *IHEID Working Papers 12-2011, Economics Section, The Graduate Institute of International Studies*. Retrieved form https://www.ecb.europa.eu/pub/pdf/scpwps/ ecbwp1361.pdf

Colacito, R., Riddiough, S., & Sarno, L. (2020). Business cycles and currency returns. *Journal of Financial Economics*, *137*(3), 659-678.

Corsetti, G., Meier, A., & Müller, G. J. (2012). What determines government spending multipliers?. *Economic Policy*, *27*(72), 521-565.

Diacon, P. E., & Maha, L. G. (2015). The relationship between income, consumption and GDP: A time series, cross-country analysis. *2nd Global Conference on Business, Economics, Management and Tourism.* 30-31 October 2014, Prague, Czech Republic.

Dreger, Ch., & Rahmani, T. (2014). The impact of oil revenues on the Iranian economy and the gulf states. *SSRN Electronic Journal*, *40*(1).

Effah Nyamekye, G., & Adusei Poku, E. (2017). What is the effect of inflation on consumer spending behaviour in Ghana?. *MPRA Paper 81081, University Library of Munich, Germany*. Retrieved form https://econpapers.repec.org/scripts/redir.pf? u=https%3A%2F%2Fmpra.ub.uni-muenchen.de%2F81081%2F1%2FMPRA_p aper_81081.pdf;h=repec:pra:mprapa:81081

Engle, R. F. and Granger, C. W. J. (1987). Cointegration and error correction representation: estimation and testing. *Econometrica, 55*, 251–276.

Farzanegan, M-R. (2011). Oil revenue shocks and government spending behavior in Iran. *Energy Economics, 33*, 1055–1069.

Fatás, A., & Mihov, I. (2001). the effects of fiscal policy on consumption and employment: theory and evidence. *CEPR Discussion Papers 2760, C.E.P.R. Discussion Papers*. Retrieved form

https://faculty.insead.edu/fatas/fiscal.pdf

Fathizadeh, H., Nonejad, M., Haghighat, A., & Aminifard, A. (2020). The relationship between economic growth, energy intensity and financial development in sectors of Iranian economy. *Quarterly Journal Economic Growth and Development Research*, *10*(40), 55-76.

Fatukasi, B., Olorunleke, G. K., Olajide, G. F., & Alimi, R. S. (2015). Bounds testing approaches to the analysis of macroeconomic relationships in Nigeria. *European Journal of Business and management*, *7*(8), 26-34.

Feshari, M. (2017). The Investigation of Cyclical Nature of Government Expenditures in Iran (Markov-Switching Non-linear Approach). *Journal of Econometric Modelling*, 2(2), 89-116.

Fouladi, M. (2010). The Impact of government expenditure on GDP, employment and private investment a CGE model approach. *Iranian Economic Review (IER), Faculty of Economics, University of Tehran*, *15*(27), 53-76.

Furceri, D., & Sousa, R. M. (2009). The impact of government spending on the private sector: Crowding-out versus crowding-in effects. *Kyklos, 64*(4), 516-533.

Galí, J., Vallés, J and López-Salido.D.(2007). Understanding the effects of government spending on consumption. Journal of the European Economic ,5(1):227–270.

Ganjoei, R., Salehi Asfiji, N and Shanbeh, E. (2021). Investigating the Effect of Oil Revenue Shocks on Business Cycles and the Synchronism of Cycles with Selected OECD Countries. *Mathematical Problems in Engineering 2021(2)*:1-10.

Garry, S., & Rivas Valdivia, J. C. (2017). An analysis of the contribution of public expenditure to economic growth and fiscal multipliers in Mexico, Central America and the Dominican Republic, 1990-2015. *Economic growth and fiscal multipliers*. Retrieved form https://www.researchgate.net/publication/32 3811312_An_analysis_of_the_contribution_ of_public_expenditure_to_economic_growt h_and_fiscal_multipliers_in_Mexico_Centr al_America_and_the_Dominican_Republic_ 1990-2015

Gregory, A. W. and Hansen, B.E. (1996). Residual-based tests for cointegration in

models with Regime Shifts. *Journal of Econometrics, Volume 70*, pp. 99-126

Ghalayini, L. (2011). The interaction between oil price and economic growth. *Middle Eastern Finance and Economics, 13*, 127–41.

Gholami, E., & Hozhabr Kiani, K. (2014). Evaluating of the business cycle status in Iran and its impact on the effectiveness of fiscal stimulus programs and investment. *Journal of Investment Knowledge*, *3*, 253-272.

Hansen, H. J. (1996). The impact of interest rates on private consumption in Germany. *Discussion Paper Series 1: Economic Studies 1996,03e, Deutsche Bundesbank,* Retrieved form https://www.econstor.eu/handle/10419/107157

Hatami, A., Imamverdi, Q., Zeraat, M., & Soltanololamaei, M. H. (2017). The impact of uncertainty of government expenditures on economic growth of Iran (application of fully modified ordinary least square approach). *Quarterly Journal of Ravand*, *24*(79), 15-40.

Hodrick, R. and Prescott, E. (1980). Post-war US Business Cycles:An empirical Investigation , working paper, Carnegie-Mellon Uni, Retrieved form
https://www0.gsb.columbia.edu/faculty/rhodrick/prescott-hodrick1997.pdf

Iweriebor, S., Egharevba, M. I., & Adegboye, A. C. (2015). Government spending and industrial development in Nigeria: A dynamic investigation. *Annals of the University of Petrosani, Economics, University of Petrosani, Romania*, *15*(1), 179-190.

Jiang, Y. (2020). Identification of business cycles and the great moderation in the post-war US economy. *Economics Letters*, *190*, 109072.

Johansen, S. (1992). Cointegration in partial systems and the efficiency of single-equation analysis. *Journal of Econometrics, 52*, 389-402.

Johansen, S. and Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration with application to the demand for money. *Oxford Bulletin of Economics and Statistics, 52*, 169-210

Kaihatsu, S., Koga, M., Sakata, T., & Hara, N.

(2019). Interaction between business cycles and economic growth. *Monetary and Economic Studies*, *37*(1), 99-126.

Keho, Y. (2019). Impact of government spending on private consumption: Evidence from ECOWAS countries. *Modern Economy*, *10*(03), 600-614.

? Khanzadi, A., Moradi, S., & Heidarian, M. (2017). Analyzing of oil revenues shocks asymmetric effects on misery index in Iran using vector error correction model. *Quarterly Journal of Applied Theories of Economics*, *3*(4), 129-152.

Kim, H. (2017). The effect of consumption on economic growth in Asia. *Journal of Global Economics*, *5*(3), 1-8.

Makuyana, G., & Odhiambo, N. M. (2018). Public and private investment and economic growth: An empirical investigation. *Studia Universitatis Babeș-Bolyai Oeconomica, Sciendo*, *63*(2), 87-106.

Mallick, J. (2019). The effects of government investment shocks on private investment: Empirical evidence from the developing economy. *Indian Economic Review*, *54*(2), 291-316.

Mirza, A., & Rashidi, M. (2018). Causal relationship between interest rate and inflation rate: A study of SAARC economies. *Kardan Journal of Economics and Management Sciences*, *1*(2), 157-169.

Mountford, A., & Uhlig, H. (2009). What are the effects of fiscal policy shocks?. *Journal of Applied Econometrics, 24*(6), 960-992.

Murphy, D., & Walsh, K. J. (2022). Government spending and interest rates. *Journal of International Money and Finance*, *123*, 102598.

Nguyen, T. D. (2019). Impact of government spending on inflation in Asian emerging economies: Evidence from India, China, and Indonesia. *The Singapore Economic Review (SER), 64*(05), 1171-1200.

Pahlavani, M., & Bashiri, S. (2013). Dynamic relationship between inflation uncertainty and private investment in Iran: An application of VAR-GARCH-M model. *International Journal of Business and Development Studies*, *5*(1), 61-76.

Pastor, L., & Veronesi, P. (2012). Uncertainty about government policy and stock prices. *The Journal of Finance*, *6*(4) , 1219-

1264.

Praggidis, I., Gogas, P., Plakandaras, V., & Papadimitriou, T. (2013). Fiscal shocks and asymmetric effects: A comparative analysis. *SSRN Electronic Journal*, *12*(1).

Rafiy, M., Adam, P., Bachmid, G., & Saenong, Z. (2018). An analysis of the effect of consumption spending and investment on Indonesia's economic growth. *Iranian Economic Review*, *22*(3), 753-766.

Razmi, F., Mohamed, A., Chin, L., & Habibullah, M. S. (2017). How does monetary policy affect economic vulnerability to oil price shock as against US economy shock? *International Journal of Economics and Financial Issues*, *7*(2), 544-550.

Saikkonen, P. and Lutkepohl, H. (2000). Testing for the cointegration rank of a VAR process with structural shifts. *Journal of Business and Economic Statistics, Volume 18*(4), pp. 451-464

Simionescu, M., Popescu, J., & Firescu, V. (2017). The relationship between gross domestic product and monetary variables in Romania. A Bayesian approach. *Economic Research-Ekonomska Istraživanja*, *30*(1), 464–476.

Tatom, J. (1978). Does the Stage of the Business Cycle Affect the Inflation Rate? Retrieved form https://files.stlouisfed.org/files/htdocs/public ations/review/78/09/Stage_Sep1978.pdf

Vizek, M., Lee, J., & Payne, J. (2020). Oil prices and European household consumption expenditures. *OPEC Energy Review*, *44*(1), 59-90.

Wiafe, E. A., Barnor, Ch., & Quaidoo, C. (2014). Oil price shocks and domestic price investment in Ghana. *MPRA Paper 60777, University Library of Munich, Germany*. Retrieved form https://mpra.ub.uni-muenchen.de/60777/