

The Asymmetric Effects of Government Expenditure Shocks on Private Consumption: Evidence from Arab Resource-Rich Countries

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Abstract

This paper aims to examine the asymmetric impact of government expenditure shocks on private consumption in Arab resource-rich countries, particularly the Gulf Cooperation Council countries (GCC), using the Nonlinear ARDL approach. Results of the study indicate a positive long-run impact of government expenditure shocks on private consumption in four GCC countries (Saudi Arabia, Kuwait, Qatar, and Oman) while a crowding-out effect is found in only one country (Bahrain). In addition, although we find a negative impact of remittance outflows on private consumption in most GCC countries, the positive effect of government expenditure outweighs the negative effect of remittance outflows. Besides, policymakers in GCC countries have to pay attention to the magnitude of expansionary and contractionary changes in fiscal policy as the impact of government expenditure shocks on private consumption is estimated to be asymmetric in the long run.

Keywords: Private Consumption, Government Spending, Nonlinear ARDL, GCC Countries, Crowding-Out Effect

JEL Classifications: E21, H31, B23

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1. Introduction

The impact of government spending on aggregate demand and output has been an intensely controversial topic among economists since the 1970s when neoclassical economists criticized the conventional Keynesian theory, which predicts a positive impact of government spending on personal consumption and promoted the idea of effective fiscal policy in stimulating aggregate demand, in general, and private consumption, in particular, McLeod (1997). However, the neoclassical view of the economic effects of increases in government expenditure is based on the government spending neutrality assumption towards output, while private consumption and investment are expected to be negatively affected. Since the neoclassical theory states that government spending is mainly financed by borrowing rather than imposing new taxes, this borrowing will result in higher interest rates, which will crowd out private consumption and investment. Besides, the real business cycle theory reached a similar conclusion, as it predicts that a higher government expenditure (deficit financing) produces a negative wealth effect since it decreases the present discounted value of disposable income when taxes increase in the future, which will negatively affect personal consumption.

On the other hand, the notable new classical economist Robert Barro introduced the first studies on David Ricardo's argument (the Ricardian Equivalence) that the increase in deficit financing could result in increased savings by forward-looking taxpayers (Barro (1974) and (1976), and Buchanan (1976). In practice, if the Ricardian Equivalence is true, we should observe a fiscal multiplier with a value of zero, as there will be no change in the interest rate and personal consumption when the government decides to finance its deficit through borrowings. Consequently, the interest will not rise above its initial level and thus, deficit financing will not generate a crowding-out effect¹.

A wide range of empirical studies is developed to test the relationship between government spending and personal consumption using different assumptions, initial conditions, econometric techniques, and data. Not surprisingly, the results are mixed. For example, the first group of studies found a positive and significant impact of government spending on personal consumption (pro-Keynesian theory studies), such as Fatas and Mihov (2001), Ramey (2011), Perotti (2004), Blanchard and Perotti (2002), Galí et al. (2007), Ganelli and Tervala (2009), Tagkalakis (2008), Murphy (2015), Bénassy (2007), and Gogas et al. (2014). On the other hand, Cho and Rhee (2013) and Berben and Brosens (2007) indicate that fiscal expansion crowds out private consumption only in countries with high government debt. Moreover, Castro and Fernandez (2013) and Reitschuler (2008) show that consumers might switch from being non-Ricardian to Ricardian, or vice versa, according to whether government debt is rising or is constant. Khaled (1996) presents mixed results, as he finds fiscal policy to be ineffective in stimulating private consumption in 9 countries out of the 21 developing countries under investigation, while it was effective in some Latin-American countries. However,

¹ The Ricardian Equivalence hypothesis requires many restrictive assumptions to hold that are difficult to be found empirically, such as taxes should be non-distortionary, the infinite horizon for individuals, perfect capital markets, no liquidity constraints imposed on households, no uncertainty regarding future taxes, and forward-looking households.

Divino and Pereira (2013) show that when taking into consideration structural breaks in the time-series data of the same Latin American countries, fiscal policy is found to generate a crowding-out effect.

Recently, most studies find a crowding-in rather than a crowding-out effect of government expenditure in both developing and developed countries. For example, Rahaman and Leon-Gonzalez (2021), find a positive relationship between government expenditure and private consumption in Bangladesh. Ilori et.al. (2022) investigate the international spillover effect of fiscal policy shocks in Germany and the US. Their results indicate a positive relationship between fiscal policy expansions in these two countries and both private consumption and output not only domestically but also internationally (mainly in the G7 and most European countries). Konstantinou and Partheniou (2021), show that private consumption responds positively to government expenditure that is directed to social benefits in OECD countries. Using US data, Fritsche (2021) finds that government spending shocks lead to a crowding-in effect of private consumption. However, this effect will be reduced during times of uncertainty. Similarly, Jørgensen and Ravn (2022) use a Structural Vector Autoregression model to examine the impact of expansionary fiscal policy shocks on inflation, output, and private consumption. They find that positive government spending shocks do not increase prices in the economy while they increase output and private consumption. Liu (2022) study focuses on economies with at least one sudden stop crisis. He finds that the government spending multiplier is higher during sudden stop recessions than in normal times. On the other hand, Li and Li (2018) have a different explanation of the potential crowding-out effect of fiscal stimulus programs. They introduce the “time-to-build” factor (the time lag between announcing a fiscal stimulus plan to build public goods and the actual accumulation of the public goods) as an important variable that pushes households to shift their current consumption to the future, leading to a negative short-run response of private consumption to increases in government expenditure.

In the context of Gulf Cooperation Council (GCC) economies, it is well known that these economies are vulnerable to sharp fluctuations in government revenues, which affects the sustainability of government expenditure since they depend on the hydrocarbon sector to generate the largest amount of government revenues. For example, GCC countries experienced deficits in their budgets during the 1980s and 1990s (after a significant budget surplus in the 1970s) before enjoying a budget surplus during the period 2004-2014. However, a significant drop in oil prices since the fourth quarter of 2014 has resulted, again, in a budget deficit in most of the GCC countries in the last two years. While this problem is faced by many resource-rich countries, GCC countries have distinctive economic, social, and political characteristics that make them deserve special attention and could lead to a different economic policy analysis compared to other resource-rich countries. For example, since GCC countries do not apply personal income taxes to generate revenues, the main source of financing budget deficits is by borrowing from both domestic and international sources. Second, the great dependency on natural resources to generate government revenue makes fiscal

policy procyclical rather than countercyclical. Third, GCC countries are government-driven economies with dominating fiscal policy (mainly government spending) and a passive monetary policy since their currencies are pegged to the US dollar (except Kuwait's dinar which is pegged to a weighted currency basket with the US dollar to have the highest weight). Fourth, the population structure of GCC countries is unique as the percentage of expatriates to total population is usually high and is increasing over the years. Recently, the expatriates to total population ratio ranges from as low as 32.7% in Saudi Arabia to as high as 89.9% in Qatar, according to national statistics of these countries.

These unique characteristics raise an important question: how private consumption expenditure, as a major component of aggregate demand, responds to fiscal policy changes in GCC countries (namely government expenditure) knowing that: 1) households are not subject to, and are not expecting to pay, personal income taxes in the near future² and 2) a significant percentage of those households are staying in GCC countries for only a temporary period. In other words, are government expenditure and private consumption expenditure complements or substitutes? As mentioned earlier, the complementarity between government and private expenditures indicates that fiscal stimulus plans in GCC countries would be effective in increasing aggregate demand while the substitutability points out the existence of a crowding-out effect.

To find an answer to the previous question, this paper aims to examine the impact of government expenditure shocks, which result from oil price fluctuations, on private consumption expenditure in GCC countries and tests for the existence of a crowding-out effect of government expenditure using non-linear ARDL approach (NARDL). The economic intuition behind using the NARDL is based on the findings of different studies that found an asymmetric nonlinear relationship between government expenditure on one hand and private consumption and output growth on the other hand (Pragidis et al., (2018), Wahab (2011), Perotti (1999), Sutherland (1997), and Bertola and Drazen (1993). Their main findings indicate that the magnitude and sign of government expenditure impact on macroeconomic aggregates depend on the initial condition of the government debt (high or low), the public expectations of future fiscal policy changes (expansions and contractions), and whether fiscal policy changes happen in normal or bad times (when governments face fiscal stress shocks to their revenues).

The complexity of the relationship between government expenditure and private expenditure in GCC countries comes from the following facts: the absence of personal income taxes in GCC countries leads us to expect a low or no crowding-out effect of fiscal policy, compared to that of other resource-rich countries that draw significant revenues from personal income taxes. This is because people in the GCC have less incentive to increase their savings, and smooth their consumption intertemporally, during periods of government budget deficit, as they are not expecting to pay

² This fact describes the income tax policy and households' perception towards personal income taxes in the GCC during the period of study, which ends in 2017.

personal income taxes in the future, and thus, the wealth effect should be equal to zero. This means that households in GCC countries might have a tendency to take their consumption decisions based on their current income rather than their permanent income, which means that the segment of households in GCC countries that follow the “rule-of-thumb” behavior should be larger than that of other countries³. If this is proved to be true, then fiscal stimulus plans would succeed in increasing aggregate demand and policymakers should follow the conventional Keynesian fiscal policy theory. However, the large expatriates to population ratio (the expatriates’ effect) might significantly affect households’ consumption decisions regarding the volume of their consumption, especially in periods of budget deficits in which the degree of job instability increases due to budget cuts. The lack of job security is expected to result in higher private savings and remittances and thus; less consumption. In this case, a significant percentage of households in GCC countries (expatriates) would be considered forward-looking (Ricardian consumers). As the degree of expatriates’ job instability increases, it might be difficult for policymakers to use fiscal policy to induce private consumption, which leads us to expect less effective fiscal stimulus plans. Therefore, it is important to find the net effect of both government expenditure and remittances outflow on private consumption expenditure in GCC countries.

Therefore, this study contributes to the government expenditure and private consumption literature in three main aspects; first, it is the first study that investigates how consumers respond to government expenditure shocks in countries that do not apply personal taxes on households’ incomes (GCC countries). Second, the study explores the impact of remittance outflows (due to the large number of expatriates in GCC countries) on consumers spending decisions compared to the impact of government expenditure shocks. Third, the study measures the asymmetric effect of government expenditure on private consumption using the nonlinear ARDL model, which enables policymakers to examine the impact of government expenditure shocks during periods of fiscal policy expansion and contraction.

The study results indicate a positive and significant long-run impact of government consumption expenditure on private consumption expenditure in four GCC countries (Saudi Arabia, Kuwait, Qatar, and Oman) while a crowding-out effect is found in only one country (Bahrain). In addition, although we find a negative impact of remittance outflows on private consumption in most GCC countries under investigation, the positive effect of government consumption expenditure significantly outweighs the negative effect of remittance outflows.

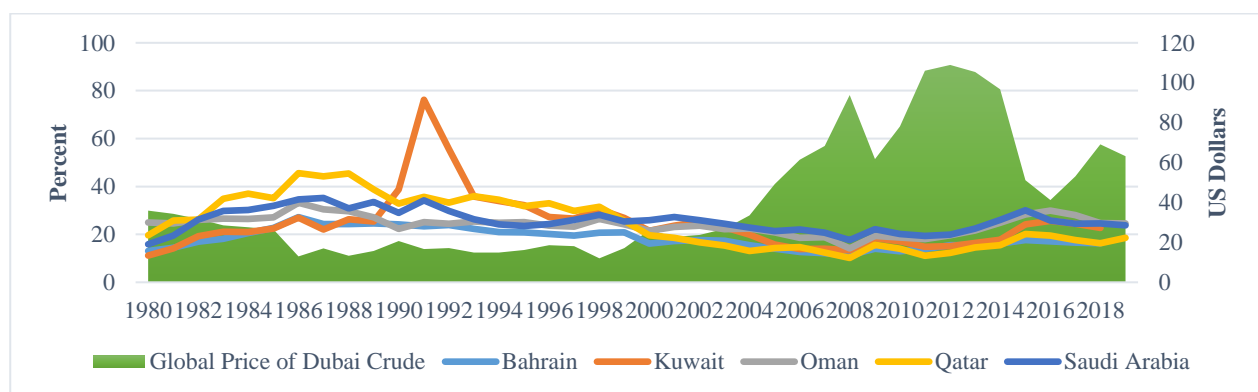
The remainder of the paper is organized as follows. Section 2 provides an overview of government expenditure and private consumption in GCC countries. Section 3 shows the theoretical model that describes the relationship between government expenditure and private consumption. Section 4 explains the estimation methodology (the nonlinear ARDL model), and Section 5 discusses

³ According to Andersson (2011), the rule-of-thumb behavior exists because consumers are either liquidity constrained, extremely myopic, or they use a heuristic decision rule.

the estimation results. Section 6 offers a discussion of the empirical results and policy analysis. Section 7 concludes.

2. Government and private consumption expenditure in resource-rich countries

Figure 1 shows the government final consumption expenditure trends in GCC countries along with the international oil price trend from 1980 to 2019. After the sharp increase in oil prices in 1979 due to the Iranian revolution, oil prices started to decrease gradually from around \$35 per barrel in 1980 to about \$13 per barrel in 1986 due to a failure of coordination between OPEC countries on the level of oil production, on one hand, and the increase in exploration and production of oil outside OPEC, on the other hand. However, the government final consumption expenditure share of GDP kept increasing until the late 1980s due to the ambitious development programs applied in GCC countries and the weak private sector at that time before it decreases in the 1990s and early 2000s, as a result of the prolonged budget deficit and the implementation of economic diversification plans. The sharp increase in oil prices during the period 2004-2014 led to a gradual increase, again, in the government final consumption share of GDP, but it did not reach its levels in the 1980s⁴ before it slightly decreases in the period 2015-2019 due to the drop in the international oil prices since the fourth quarter of 2014.



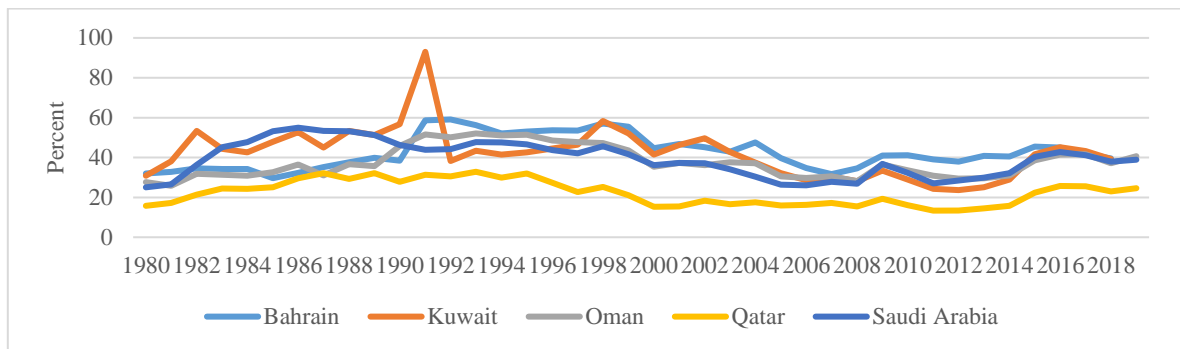
Source: World Development Indicators.

Figure 1. Government Final Consumption Expenditure Share of GDP in GCC Countries

On the other hand, since GCC countries are known as government-driven economies with government expenditure to be the largest component of GDP, household final consumption expenditure is found to be the second-largest component of GDP, as it ranges from as low as 22 percent in Qatar to as high as 42 percent in Bahrain, on average, during the period of study. Another explanation for the relatively low household consumption expenditure share of GDP in GCC countries is the large percentage of expatriates these countries have, as mentioned earlier. Thus, a part

⁴ It is worth mentioning that GCC countries are applying major spending cuts starting from 2015 due to the reduction in international oil prices since the fourth quarter of 2014.

of their annual income is expected to be spent in their home countries, which results in a reduction in their consumption expenditure inside the GCC countries. The average of migrants' remittance outflows during the period of study in GCC countries ranges from 4.7 percent of GDP in Saudi Arabia and 8.3 percent of GDP in Bahrain. Figure 2 shows the households' final consumption expenditure trends in GCC.



Source: World Development Indicators

Figure 2. Household Final Consumption Expenditure Share of GDP in GCC Countries

3. The theoretical framework

Following Leiderman and Razin (1988), Khalid (1996), and Gali et al. (2007), we assume the existence of two types of households, foresighted (Ricardian) and Rule-of-Thumb (non-Ricardian)⁵. Ricardian households (γ) are liquidity-unconstrained consumers who have access to loanable funds. Accordingly, they can smooth their consumption intertemporally. On the other hand, Rule-of-Thumb households ($1 - \gamma$) are liquidity-constrained consumers with limited access to loans. Thus, their consumption is constrained by their labor wages only, which makes it difficult for them to smooth their consumption intertemporally.

Both types of households have their total consumption, c_t , equal to private consumption, pc_t , and public consumption, gc_t , as indicated in Equation (1).

$$c_t = pc_t + \sigma gc_t \tag{1}$$

Where σ represents the degree of substitutability between private and public consumption (the higher the value of σ the greater the degree of substitutability between private and public consumption). As mentioned above, since Ricardian households have no liquidity constraints, their expected utility is given by,

$$E_t \sum_{\tau=0}^{\infty} (\lambda\beta)^\tau U(c_{t+\tau}^{u*}), \tag{2}$$

⁵ We use the term Ricardian households to refer to the group of consumers who are foresighted, rational, and able to smooth out their consumption throughout their lifetime based on their current and future income.

Where E_t is the expectations operator at time t , λ is the probability of living for τ periods, β is the discount factor, and u denotes the unconstrained households. Their lifetime budget constraint could be formulated as

$$c_t^{u*} = b_t^u + d_t + W_t^u N_t^u - \left[\frac{R}{\lambda}\right] b_{t-1}^u - T_t - REM_t + \sigma g c_t \quad (3)$$

Equation (3) shows that the aggregate consumption of Ricardian households is subject to

1 Capital income, which consists of the quantity of the risk-free one-period bonds bought in period $t - 1$, (b_{t-1}^u), and dividends (d_t),

2 Labor income ($W_t^u N_t^u$), where W_t^u is the nominal wage rate and N_t^u is the number of working hours,

3 The effective interest rate paid on the last period debt adjusted for lifetime uncertainty, ($[\frac{R}{\lambda}] b_{t-1}^u$) where $R = 1 + r$ (r is the risk-free real interest rate),

4 The lump-sum tax (or negative taxes if it is in the form of transfer payments), (T_t),

5 Fixed remittances, (REM_t),

6 Public consumption, ($g c_t$), weighted by the degree of substitutability (σ).

On the other hand, as Rule-of-Thumb households are assumed to depend mainly on labor income, their expected utility in any given period is given by the following equation,

$$E_t U(c_t) \quad (4)$$

Their budget constraint is represented as follows,

$$c_t = W_t^u N_t^u - T_t - REM_t + \sigma g c_t \quad (5)$$

We note that since GCC countries do not apply income taxes, then T_t will have the value of either zero or negative (if households receive welfare payments).

4. Econometric Methodology

In this study, we investigate the relationship between government expenditure and private consumption in resource-rich countries using the non-linear ARDL approach (NARDL), which is developed by Shin et al. (2014). The economic intuition that motivates the use of NARDL is presented earlier in the introduction section. This approach has several important advantages compared to the two-step cointegration approach of Engle and Granger (1987), the linear ARDL model of Pesaran et al. (2001), and the nonlinear cointegration approach developed by Yann Schorderet (2003). For instance, contrary to the two-step model of Engle and Granger, the NARDL approach is a one-step model estimation. Moreover, as in the linear ARDL model, the NARDL model allows for possible mixed order of integration of the variables, i.e., I(0) and I(1) order of integration. In addition, the

NARDL model allows us to explore a possible asymmetric impact of explicative variables on the dependent variable. We focus in this study on examining the existence of the asymmetric effects of government spending on private consumption in the short- and/or the long run. It is important to note that the linear ARDL model is a special case of the NARDL model.

4.1. Independent variable decomposition

The merit of the NARDL approach is that it distinguishes between positive and negative increments of time series. The basic idea of this approach is that the variable of interest (government expenditure) is broken down into its initial value and its negative and positive cumulative sums as follows,

$$LGEXP_t = LGEXP_0 + LGEXP_t^+ + LGEXP_t^- \quad (6)$$

Where $LGEXP_0$ is the initial value of government spending, and $LGEXP_t^+$ and $LGEXP_t^-$ are the partial sum of positive and negative values of government spending, respectively. These two partial sums are defined as follows,

$$LGEXP_t^+ = \sum_{j=1}^t \Delta LGEXP_j^+ = \sum_{j=1}^t \max(\Delta LGEXP_j, 0) \quad (7)$$

And in a similar way

$$LGEXP_t^- = \sum_{j=1}^t \Delta LGEXP_j^- = \sum_{j=1}^t \min(\Delta LGEXP_j, 0) \quad (8)$$

5.3. Nonlinear ARDL model

To assess the asymmetric short- and long-run impact of government spending on private consumption, we employ the asymmetric autoregressive distributed lag model as developed by Shin et al. (2014). Adapted to our context for assessing the impact of government spending on private consumption, the model takes the form

$$LCONS_t = \sum_{j=1}^p \phi_j LCONS_{t-j} + \sum_{i_1=0}^{q_1} (\theta_{i_1}^+ LGEXP_{t-i_1}^+ + \theta_{i_1}^- LGEXP_{t-i_1}^-) + \sum_{i_2=0}^{q_2} \delta_{i_2} LRGDP_{t-i_2} + \sum_{i_3=0}^{q_3} \pi_{i_3} LREM_{t-i_3} + \varepsilon_t \quad (9)$$

Where $LCONS_t$, $LGEXP_t$, $LRGDP_t$, and $LREM_t$ represent the logarithm of real private consumption, real government consumption expenditure, real GDP, and real remittance outflows at year t , respectively, p , q_1 , q_2 , q_3 represent the lag length of the dependent and independent variables, ϕ_j is the autoregressive parameters of the model. $\theta_{i_1}^+$ and $\theta_{i_1}^-$ are the asymmetric distributed-lag parameters. ε_t is the error term which is supposed to be an i.i.d process with zero mean and constant variance⁶.

The asymmetric nonlinear ARDL model given by eq. 10 can be rewritten in the error correction form as follows

⁶ Our data set shows that both partial sum series changed many times, which indicates that there is no problem of dominance of positive or negative values of government expenditure growth.

$$\Delta LCONS_t = \rho LCONS_{t-1} + \theta^+ LGEXP_{t-1}^+ + \theta^- LGEXP_{t-1}^- + \alpha LR GDP_{t-1} + \sigma LREM_{t-1} + \sum_{j=1}^{p-1} \gamma_j \Delta LCONS_{t-j} + \sum_{i_1=0}^{q_1-1} (\varphi_{i_1}^+ \Delta LGEXP_{t-i_1}^+ + \varphi_{i_1}^- \Delta LGEXP_{t-i_1}^-) + \sum_{i_2=0}^{q_2-1} \delta_{i_2} \Delta LR GDP_{t-i_2} + \sum_{i_3=0}^{q_3-1} \pi_{i_3} \Delta LREM_{t-i_3} + \varepsilon_t \quad (10)$$

Where $\rho = \sum_{j=1}^p \phi_j - 1$, $\gamma_j = -\sum_{i=j+1}^p \phi_i$ for $j = 1, \dots, p-1$, $\theta^+ = \sum_{i_1=0}^{q_1} \theta_{i_1}^+$, $\theta^- = \sum_{i_1=0}^{q_1} \theta_{i_1}^-$, $\varphi_0^+ = \theta_0^+$, $\varphi_{i_1}^+ = -\sum_{i_1=j+1}^{q_1} \theta_{i_1}^+$ for $i_1 = 1, \dots, q_1 - 1$, $\varphi_0^- = \theta_0^-$, $\varphi_{i_1}^- = -\sum_{i_1=j+1}^{q_1} \theta_{i_1}^-$ for $j = 1, \dots, q - 1$.

The error correction model can be also rewritten as

$$\Delta LCONS_t = \rho Z_{t-1} + \sum_{j=1}^{p-1} \gamma_j \Delta LCONS_{t-j} + \sum_{i_1=1}^{q_1-1} (\theta_{i_1}^+ \Delta LGEXP_{t-i_1}^+ + \theta_{i_1}^- \Delta LGEXP_{t-i_1}^-) + \sum_{i_2=1}^{q_2-1} \delta_{i_2} \Delta LR GDP_{t-i_2} + \sum_{i_3=1}^{q_3-1} \pi_{i_3} \Delta LREM_{t-i_3} + \varepsilon_t \quad (11)$$

Where $Z_{t-1} = LCONS_{t-1} - \beta^+ LGEXP_{t-1}^+ - \beta^- LGEXP_{t-1}^- - \omega LR GDP_{t-1} - \tau LREM_{t-1}$ is the nonlinear error correction term with $\beta^+ = -\theta^+/\rho$ and $\beta^- = -\theta^-/\rho$ are the asymmetric long-run parameters. $\omega = -\alpha/\rho$ and $\tau = -\sigma/\rho$ are the long-run parameters associated with the real GDP and remittances. However, the model used for estimation is a simple modification of the model given in eq. (11) in which a constant term is added and the lag-order (p^*, q_1^*, q_2^*, q_3^*) of the short-run components are supposed to be different. Like in all empirical studies they are determined using information criteria. The final form of the model is given by

$$\Delta LCONS_t = \mu + \rho LCONS_{t-1} + \theta^+ LGEXP_{t-1}^+ + \theta^- LGEXP_{t-1}^- + \alpha LR GDP_{t-1} + \sigma LREM_{t-1} + \sum_{j=1}^{p^*} \gamma_j \Delta LCONS_{t-j} + \sum_{i_1=0}^{q_1^*} (\varphi_{i_1}^+ \Delta LGEXP_{t-i_1}^+ + \varphi_{i_1}^- \Delta LGEXP_{t-i_1}^-) + \sum_{i_2=0}^{q_2^*} \delta_{i_2} \Delta LR GDP_{t-i_2} + \sum_{i_4=0}^{q_3^*} \pi_{i_4} \Delta LREM_{t-i_4} + \varepsilon_t \quad (12)$$

5.3. Tests for asymmetric long-run relationship

Two testing procedures have been used for testing the existence of an asymmetric (nonlinear) long-run relationship (cointegration) between the different variables of interest. The first test is the test of Banerjee et al. (1998) which involves the calculation of a t-statistic test of the null hypothesis of $\rho = 0$ against the alternative of $\rho < 0$ in eq. 12. The second test is Pesaran et al. (2001) test; an F-statistic test where the null hypothesis $H_0: \rho = \theta^+ = \theta^- = \alpha = \sigma = 0$.

Under their respective null hypothesis, these two tests' statistics do not have standard asymptotic distributions. The derivation of the exact asymptotic distributions is complicated, however, as in Pesaran et al. (2001), one can use the bounds-testing approach where the two extremes cases of I(0) and I(1) are considered.

5.3. Tests for long- and short-run asymmetry

To test for both long- and short-run asymmetry, a standard Wald test is employed where the null hypothesis for the long-run asymmetry is given by

$$H_0: \beta^+ = \beta^-$$

Where β^+ and β^- are the asymmetric long-run parameters as mentioned earlier. To test for the short-run relationship, the null hypothesis can take two forms:

- i. The first form is given by $H_0: \varphi_j^+ = \varphi_j^-$ for all $j = 0, \dots, p^*$.
- ii. The second form, which is used in this study, is given by $H_0: \sum_{j=0}^{p^*} \varphi_j^+ = \sum_{j=0}^{p^*} \varphi_j^-$.

5. Empirical results

5.3. Data collection and descriptive statistics

We use annual data for household final consumption expenditure, government final consumption expenditure, remittance outflow, and real GDP for five GCC countries, namely, Kuwait, Oman, Saudi Arabia, Qatar, and Bahrain. All variables are expressed in real per capita terms. The study covers different periods depending on the data available for each country in the sample. The longest period used in this study belongs to Saudi Arabia (1968-2019), and the shortest period is for Qatar (1980-2019). Most of the data are collected from the World Development Indicators (WDI). Data on consumer price indices are collected from local data sources, namely, the country's central bank data set. Table 1 presents a detailed description of the model variables and the expected sign for each variable.

Table 1. Variable description and Economic explanation

Variable	Measure	Expected sign	Economic explanation
<i>CONS</i>	Real household consumption expenditure per capita	No expected sign	NA (dependent variable)
<i>GEXP</i>	Real government consumption expenditure per capita	+/-	A positive impact of government spending on household consumption indicates a crowding-in effect according to the Keynesian theory, while the negative impact indicates a crowding-out effect, according to the neoclassical and real business cycle theories.
<i>GEXP+</i>	An increase in real government consumption expenditure per capita	+/-	A positive sign of the government spending increase coefficient indicates a crowding-in effect, according to the Keynesian theory, while the negative sign indicates a crowding-out effect according to the neoclassical and real business cycle theories.
<i>GEXP-</i>	A decrease in real Government consumption expenditure per capita	+/-	A positive sign of the government spending decrease coefficient indicates a crowding-in effect, according to the Keynesian theory, while the negative sign indicates a crowding-out effect according to the neoclassical and real business cycle theories.
<i>RGDP</i>	Real GDP per capita	+	A higher real GDP per capita is expected to have a positive impact on household consumption expenditure and vice versa.

<i>REM</i>	Real remittance outflows per capita	-	A higher real remittance outflow per capita is expected to have a negative impact on household consumption expenditure.
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A summary of the main descriptive statistics for all the variables is reported in table 2 below. The results show that the GCC countries have on average the highest levels of average real GDP per capita, in the sample of the study, that range from US\$14603.36 in Oman to US\$65283.68 in Qatar. We remark that the levels of the average real household consumption per capita are higher than real government consumption expenditure for all the countries except Saudi Arabia. The results for remittance outflows show that its level varies between US\$224.53 in Saudi Arabia to US\$6701 in Kuwait.

Finally, we calculate the coefficient of variation for all variables as it is a useful statistic to compare the degree of variation between different datasets. The results show that for almost all the series, the coefficients of variations vary between 0.1 and 0.4 except for remittances in Oman and Kuwait.

Table 2. Descriptive Statistics

		Household final consumption expenditure (Constant USD per capita)	Government consumption expenditure (Constant USD per capita)	GDP (Constant USD per capita)	Remittances (Constant USD per capita)
Saudi Arabia	Mean	4857.26	5290.22	23470.27	224.53
	Std. Dev	1580.92	1194.56	7453.76	80.94
	CV	0.325	0.226	0.317	0.359
Qatar	Mean	10800.78	9719.45	65283.68	1062.75
	Std. Dev	2687.75	1562.63	15895.44	250.71
	CV	0.242	0.156	0.237	0.229
Kuwait	Mean	14409.39	7382.95	37622.51	6701.25
	Std. Dev	3306.82	2093.84	8069.20	4741.99
	CV	0.229	0.283	0.214	0.708
Oman	Mean	5393.39	3454.80	14603.36	295.94
	Std. Dev	1751.52	661.07	1377.17	1377.17
	CV	0.325	0.191	0.094	4.653
Bahrain	Mean	8234.77	4576.03	25546.24	6451.54
	Std. Dev	2385.61	1259.23	4945.28	2501.74
	CV	0.289	0.275	0.194	0.388

5.3. Unit root test

Table 3, below, reports the results of applying three standard unit root tests (ADF, PP, and KPSS) on all time series of interest. The results show that the hypothesis of unit root cannot be rejected at a conventional level for all the series taken in level. However, by taking their first difference, all the series become stationary meaning that the original series are I(1).

Table 3. Results of standard unit root tests (ADF, PP, and KPSS)

	<i>CONS</i>	<i>GEXP</i>	<i>GEXP</i> ⁺	<i>GEXP</i> ⁻	<i>RGDP</i>	<i>REM</i>
Saudi Arabia	I(1) ^{a,b,c}	I(1) ^{a,b,c}	I(1) ^{a,b,c}	I(1) ^{a,b,c}	I(1) ^{a,b,c}	I(1) ^{a,b,c}
Qatar	I(1) ^{a,b,c}	I(1) ^{a,b,c}	I(1) ^{a,b,c}	I(1) ^{a,b,c}	I(1) ^{a,b,c}	I(1) ^{a,b,c}
Kuwait	I(1) ^{a,b,c}	I(1) ^{a,b,c}	I(1) ^{a,b,c}	I(1) ^{a,b,c}	I(1) ^{a,b,c}	I(1) ^{a,b,c}
Oman	I(1) ^{a,b,c}	I(1) ^{a,b,c}	I(1) ^{a,b,c}	I(1) ^{a,b,c}	I(1) ^{a,b,c}	I(1) ^{a,b,c}
Bahrain	I(1) ^{a,b,c}	I(1) ^{a,b,c}	I(1) ^{a,b,c}	I(1) ^{a,b,c}	I(1) ^{a,b,c}	I(1) ^{a,b,c}

^{a,b,c} Refer to the ADF, PP, and KPSS unit root tests.

5.3. Non-linear ARDL results

The results of testing for the existence of nonlinear cointegration (asymmetric long-run relationship) as well as the tests for asymmetric effects in the short- and long-run are reported in Table 4. The results show evidence for nonlinear cointegration for the 5 countries as indicated by the $F - stat_{PSS}$ and t_{BDM} tests. Table 4 shows also that the GCC countries are divided into two subgroups, according to the short- and long-run asymmetry test results. The first subgroup consists of Qatar, Kuwait, and Bahrain, where there is strong evidence for both short- and long-run asymmetries, while the second subgroup consists of Saudi Arabia and Oman, where only the long-run asymmetry is valid, i.e., there is no evidence of short-run asymmetry.

Table 4. Test for Nonlinear cointegration and for short- and long-run asymmetry

	Saudi Arabia	Qatar	Kuwait	Oman	Bahrain
$F - stat_{PSS}$	11.206***	6.342***	8.241***	7.172***	5.185***
k	4	3	4	4	4
t_{BDM}	-3.011***	-3.977***	-4.507***	-4.345***	-10.739***
Testing for short- and Long-run asymmetry					
W_{LR}	25.505***	16.846***	36.147***	12.930***	140.274***
W_{SR}	1.503	3.495**	4.158*	1.213	55.224***

Note: (***), (**), and (*) denote significant at 1%, 5%, and 10% level respectively.

The non-linear ARDL model results for the first subgroup, shown in table 5, indicate a positive asymmetric relationship between household consumption expenditure and government consumption expenditure in Qatar and Kuwait in the long-run⁷. The asymmetrical relationship is obvious as a 1 percent increase in government consumption expenditure leads to a 0.655 percent and 1.01 percent increase in household consumption expenditure in Qatar and Kuwait, respectively, while a reduction in government consumption expenditure results in a relatively weaker effect as a 1 percent reduction in government consumption expenditure leads to 0.109 percent and 0.666 percent reduction in household consumption expenditure in Qatar and Kuwait, respectively.

⁷ The results of the analysis of the residuals' properties are reported in the Appendix. The results show that residuals in all models have good properties.

On the contrary, household consumption expenditure is found to be negatively affected by government consumption expenditure in Bahrain, as a 1 percent increase (decrease) in government consumption expenditure leads to a 0.189 percent decrease (0.561 percent increase) in household consumption expenditure. On the other hand, we find also an asymmetry in the short-run as a 1 percent increase in government consumption expenditure leads to a cumulative effect of 1.42, 0.63, and 0.019 percent decrease in household consumption expenditure in Qatar, Kuwait, and Bahrain, respectively.

On the other hand, a 1 percent price decrease in government consumption expenditure leads to a 0.43 and 0.334 percent decrease in household consumption expenditure in Kuwait and Bahrain, respectively, while it is found to have an insignificant effect in Qatar. It is obvious that, in the short run, households in Kuwait and Bahrain do not reverse their spending plans quickly when government consumption expenditure decreases.

Table 5. The nonlinear ARDL model results

	Qatar		Kuwait		Bahrain		Saudi Arabia		Oman		
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	
Long-run equation											
$LGEXP_{t-1}^+$	0.655***	3.764	1.015***	5.030	-	-	$LGEXP_{t-1}^+$	3.211***	5.626	1.062**	2.582
$LGEXP_{t-1}^-$	0.109**	2.125	0.666***	3.986	0.189**	2.032	$LGEXP_{t-1}^-$	1.637***	3.906	1.933***	3.272
$LRGDP_{t-1}$	0.191*	1.850	0.415**	2.719	0.561***	3.419	$LRGDP_{t-1}$	1.757***	5.179	0.333**	2.700
$LREM_{t-1}$	-	-	-	-	-0.032*	1.882	$LREM_{t-1}$	-	-	0.407**	2.483
			0.127**	2.705				1.073***	3.809		
Short-run equation											
<i>Constant</i>	7.063***	3.911	1.621	1.710	-	-	<i>Constant</i>	-0.999	-	-4.622*	-
					2.075***	2.936			1.585		1.794
γ	-	-	-	-	-	-	γ	-	-	-	-
	0.699***	3.977	0.540***	4.507	0.212***	3.211		0.130***	3.011	0.754***	4.345
$\Delta LCONS_{t-1}$	-	-	0.289**	2.267	0.164***	3.241	$\Delta LCONS_{t-1}$	-	-	-	-
$\Delta LCONS_{t-2}$	0.905***	4.272	-	-	0.125**	2.867	$\Delta LCONS_{t-2}$	-	-	-	-
$\Delta LCONS_{t-3}$	0.727***	3.066	0.331***	-	0.129***	3.200	$\Delta LCONS_{t-3}$	-	-	-	-
				3.592							
$\Delta LGEXP_t^+$	-	-	1.141***	6.313	-	-	$\Delta LGEXP_t$	-	-	-	-
					0.111**	2.623					
$\Delta LGEXP_{t-1}^+$	-	-	-	-	-0.023	-	$\Delta LGEXP_{t-1}$	-	-	-	-
	0.737**	2.061	0.940***	3.754		0.531		0.212***	2.757		
$\Delta LGEXP_{t-2}^+$	-0.687*	-	-	-	-0.043	-	$\Delta LGEXP_{t-2}$	-	-	-	-
		1.831				0.942					
$\Delta LGEXP_{t-3}^+$	-	-	-	-	0.092*	1.855	$\Delta LGEXP_{t-3}$	-	-	-	-
			0.832***	3.592				0.116**	2.496		
$\Delta LGEXP_{t-4}^+$	-	-	-	-	-	-	$\Delta LGEXP_{t-4}$	-	-	-	-
$\Delta LGEXP_t^-$	-	-	0.845***	4.612	-	-	$\Delta LRGDP_{t-1}$	-	-	-	-
$\Delta LGEXP_{t-1}^-$	-	-	-	-	0.191***	3.242	$\Delta LRGDP_{t-2}$	-	-	-0.969*	-
											1.787
$\Delta LGEXP_{t-2}^-$	-	-	-	-	0.143***	2.991	$\Delta LRGDP_{t-3}$	-	-	-0.972*	-
			0.415***	3.029				0.212**	2.309		1.954
$\Delta LGEXP_{t-4}^-$	-	-	-	-	-	-	$\Delta LRGDP_{t-4}$	-	-	-	-
$\Delta LRGDP_{t-1}$	-	-	-	-	-	-	$\Delta LREM_{t-1}$	0.329***	6.136	-	-
					0.181**	2.038					
$\Delta LRGDP_{t-2}$	-	-	-	-	-0.135*	-	$\Delta LREM_{t-2}$	-	-	-	-
			0.555***	3.056		1.802		0.132**	2.436		
$\Delta LRGDP_{t-3}$	-	-	0.297**	1.971	-	-	$\Delta LREM_{t-3}$	0.130**	2.187	-	-
										2.010***	4.409
$\Delta LRGDP_{t-4}$	-	-	-	-	-	-	$\Delta LREM_{t-4}$	-	-	-	-
			0.386***	3.202							

Note: (***), (**), and (*) denote significant at 1%, 5%, and 10% level respectively.

The non-linear ARDL model results for the second subgroup also show a positive asymmetric relationship in the long run. The impact of a government consumption expenditure increase on household consumption is found to be twice as much as that of a government consumption expenditure decrease in Saudi Arabia (3.211 and 1.637, respectively), while the impact of a government consumption expenditure increase is found to be about half of that of a government consumption expenditure decrease in Oman (1.062 and 1.933, respectively).

As mentioned earlier, as expatriates account for a significant percentage of GCC countries' population, we believe that it is important to integrate workers' remittance outflows in the model specification of GCC countries⁸. The impact of worker's remittance outflows on households

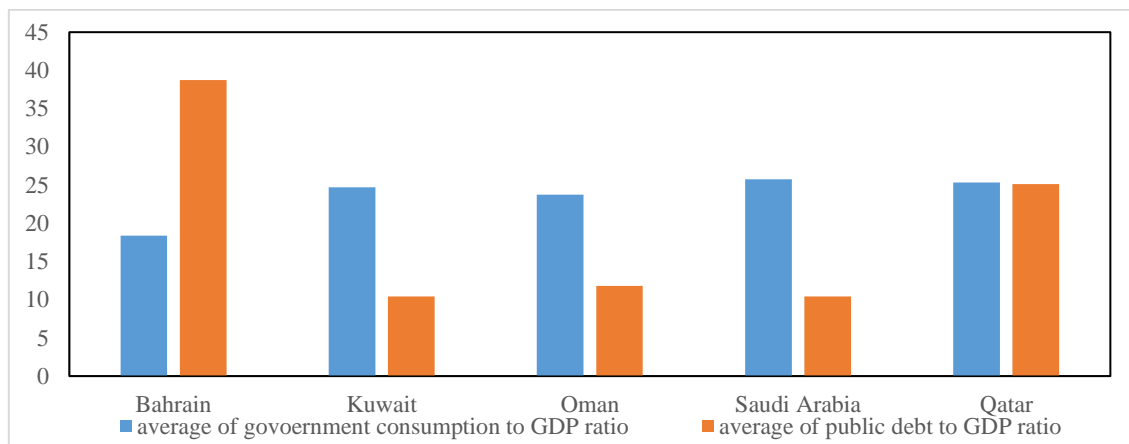
⁸ We did not test the impact of workers' remittances in Qatar, as there are not enough time-series observations.

consumption expenditure is found to have the expected negative and significant effect in GCC countries under investigation, as a 1 percent increase in workers' remittance outflows leads to a decrease in household consumption by 0.127, 0.032, and 1.073 percent in Kuwait, Bahrain, and Saudi Arabia, respectively. However, the only exception to this negative relationship is Oman since we estimate the impact to be positive. A logical explanation of this positive sign could be based on the ethnocentric or patriotic consumer assumption, which will be discussed in the coming section. Finally, the impact of GDP per capita on household consumption is found to be positive and significant as expected in all GCC countries.

6. Discussion and policy analysis

The asymmetrical relationship between government consumption and household consumption expenditures obtained from the non-linear ARDL model enables us to provide important policy analysis in GCC as follows:

First, the positive impact of government consumption expenditure on household consumption in the long run in four GCC countries (Saudi Arabia, Kuwait, Qatar, and Oman) could mean that a significant percentage of households in those four GCC countries follow the rule-of-thumb (non-Ricardian) behavior. This result is expected since GCC households are not paying, and are not expecting to pay, personal income taxes in the near future. Therefore, fiscal stimulus plans would be effective in the long run in boosting household consumption expenditure. The only exception to this result is Bahrain where the study finds a crowding-out effect of government consumption expenditure in the long run. As indicated in Figure 3, Bahrain has the highest average government debt to GDP ratio and the lowest government consumption expenditure to GDP ratio among GCC countries during the period of study (the debt to GDP ratio in Bahrain reached 89 percent in 2018, according to the IMF). This finding matches Cho and Rhee (2013) and Berben and Brosens (2007), Castro and Fernandez (2013), Reitschuler (2008), Perotti (1999), and Bertola and Drazen (1993) results as they indicate that fiscal expansion crowds out private consumption only in countries with high government debt and low government consumption to GDP ratio. As government debt increases, less bank credit will be available to the private sector, which decreases the household's ability to smooth their consumption.



Source: World Development Indicators.

Figure 3. Average of Government Consumption Expenditure and Government Debt to GDP Ratio in GCC Countries (1980-2018)

Second, as mentioned earlier, the asymmetrical effect of government expenditure on households' consumption is evident in all GCC countries under investigation in the long run as the impact of a government expenditure increase is found to be much stronger than a government expenditure decrease in Qatar, Kuwait, and Saudi Arabia, while it is found to be weaker in Oman. This means that fiscal stimulus plans that aim to stimulate household consumption expenditure are expected to be more effective in Qatar, Kuwait, and Saudi Arabia compared to Oman. However, a fiscal contraction would be more successful in Oman. Moreover, another asymmetrical effect exists in the case of Bahrain as the crowding-out effect of the increase in government consumption expenditure (the negative impact of a government consumption expenditure increase on households consumption) is found to be relatively weak compared to the positive impact of the reduction in government consumption expenditure on households consumption. This result indicates that households in Bahrain have a weak response to banks' credit constraints during periods of high government consumption expenditure compared to their response during periods of low government consumption expenditure and fewer credit constraints.

Third, while the rule-of-thumb behavior of households in most GCC countries helps policymakers to achieve the desired outcome when making fiscal policy changes, the negative and significant impact of remittance outflows on household consumption expenditure in GCC countries under investigation (except Oman) lessens the impact of fiscal policy changes. For example, while a one percent increase in government expenditure leads to an increase in households consumption by 1.01 and 3.211 percent in Kuwait and Saudi Arabia, respectively, the negative effect of remittance outflows makes the net effect of a government expenditure increase (the effect of government expenditure increase net of remittance outflows) equals to 0.883 and 2.138 in the same countries.

As mentioned earlier, the positive impact of remittance outflows on household consumption in Oman could be explained by the ethnocentric or patriotic consumer assumption. While this assumption means that local households respond to campaigns that encourage them to buy local

products, the impact of these campaigns might not lead to just buying local products instead of imported products, but also it might lead to an increase in households consumption, i.e. spending more to buy local products. The official campaigns in Oman regarding increasing the awareness of Omanis about the importance of buying local products along with the widespread negative perception among locals towards remittance outflows seem to be successful in encouraging Omanis to increase their consumption expenditure significantly⁹. Mbagha et al (2018) conducted a study on Omani consumers' ethnocentrism using the Consumer Ethnocentric Tendency Scale. Their study finds the majority of Omanis have a positive attitude towards locally produced products as they believe that buying more local goods and services will result in creating more jobs and help the economy as a whole although the prices of some of the locally produced products are relatively high compared to the prices of their imported counterparts.

7. Conclusion

This study provides an analytical framework of the relationship between government consumption expenditure and private consumption in GCC countries (Arab resource-rich countries that do not apply a personal income tax system). The non-linear ARDL model estimation shows that while households in most GCC countries are found to be non-Ricardian, as government expenditure is estimated to have a long-run positive impact on households consumption expenditure, which helps policymakers to use fiscal stimulus plans effectively, the negative and significant impact of remittance outflows is expected to weaken the effect of these plans. However, the crowding-out effect of government expenditure takes place in only one GCC country, Bahrain, because of its high debt to GDP ratio, which explains the dominance of the Ricardian behavior of Bahraini households.

In addition, policymakers in GCC countries have to pay attention to the magnitude of expansionary and contractionary changes in fiscal policy as the impact of government expenditure on households consumption is estimated to be asymmetric in the long run (the impact of a government expenditure increase is found to be stronger than a government expenditure decrease in most GCC countries). The high level of government debt seems to be an important factor in affecting household consumption decisions.

⁹ The negative perception towards expatriates' remittances in Oman reached a level that a parliament member, Mr. Nasser Al Khamisi, has described remittance outflows as "hidden cancer" because of its negative consequences on the Omani economy. For more information, see Rejimon and Al Lawati "Expatriate remittances being probed by Manpower Ministry in Oman", Times of Oman, January 17, 2017.

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Appendix

Table A1. Residual Analysis of each specification

	Saudi Arabia	Qatar	Kuwait	Oman	Bahrain
J-B	0.175 (0.916)	0.822 (0.663)	1.632 (0.442)	0.383 (0.826)	1.565 (0.457)
LM(12) test	1.977* (0.079)	40.512 (0.122)	0.649 (0.721)	2.095 (0.107)	3.306 (0.406)
Q(12)	10.161 (0.602)	8.600 (0.737)	9.331 (0.674)	11.148 (0.446)	11.270 (0.506)
Q ² (12)	5.419 (0.942)	14.897 (0.247)	6.975 (0.859)	12.000 (0.446)	10.926 (0.535)
ARCH(12)	1.173 (0.369)	1.044 (0.519)	0.170 (0.983)	1.097 (0.443)	0.245 (0.987)
RESET(1) test	0.563 (0.351)	1.021 (0.336)	0.431 (0.524)	0.173 (0.681)	2.437 (0.125)

All the above tests are F-statistics tests and have the usual F-distribution with 12 degrees of freedom under the null hypothesis except the Jarque-Bera (J-B) test of normality which has the Chi-square distribution with two degrees of freedom under the null hypothesis and also the RESET test which follows the F-distribution with one degree of freedom. LM test refers to the Breusch-Godfrey serial correlation test, Q(.) and Q²(.) refer to the Ljung-Box statistics for the residuals and squared residuals series. ARCH(.) refer to the ARCH test of Engle (1982) and finally, the RESET test is the Ramsey RESET test of misspecification.

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