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The Effect of Government Expenditure on Private Consumption in Selected MENA Countries

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Abstract

This study examines the effect of government expenditure on private consumption in twelve selected MENA countries over the period 1994–2022. The analysis employs panel Autoregressive Distributed Lag (ARDL) estimators and Common Correlated Effects approaches to account for slope heterogeneity and cross-sectional dependence. The empirical findings indicate that real GDP has a positive effect on private consumption in the short run. In the long run, the Mean Group (MG) and Common Correlated Effects Mean Group (CCEMG) estimators show that government expenditure has a positive and statistically significant effect on private consumption. The error-correction results confirm adjustment toward the long-run equilibrium, while the causality analysis indicates bidirectional causality between government expenditure and private consumption. Overall, the findings suggest that fiscal policy plays an important role in shaping household consumption in MENA economies. The study provides policy-relevant evidence on the use of public expenditure to support private consumption while maintaining fiscal sustainability.

Keywords: Government expenditure; Private consumption; Panel ARDL; Common Correlated Effects; MENA.
Jel codes: H50, E21

1. Introduction

Government expenditure is an important driver of economic activity and a key fiscal policy instrument for achieving economic, social, and political objectives. Higher public spending can stimulate aggregate demand, raise income, and support Gross Domestic Product (GDP) growth. As income levels increase, private consumption may also rise, encouraging firms to expand production in response to stronger demand (Al-Masaeed and Tsaregorodtsev, 2018; Khan et al., 2015).

MENA economies have faced several economic and political shocks that have contributed to macroeconomic imbalances, economic contraction, and declining living standards (Dabrowski and Domínguez-Jiménez, 2021). Since the late 1980s, many governments in the region have implemented economic reform programs with the support of the International Monetary Fund (IMF), using fiscal policy instruments, including government expenditure, to address these challenges. However, these efforts have not always achieved their intended objectives. Limited domestic revenues, rising budget deficits, and inefficient resource allocation have constrained the effectiveness of public spending and, in some cases, weakened income growth, private consumption, and living standards (Boukezia et al., 2023).

Given global economic fluctuations and geopolitical uncertainty, examining the relationship between government expenditure and private consumption in MENA countries is particularly important. Public spending may stimulate household consumption by increasing income and supporting economic activity. However, its effectiveness depends on several factors, including fiscal policy design, macroeconomic conditions, and institutional structures (Blanchard & Perotti, 2002).

Therefore, this study addresses the following question: Does government expenditure have a significant impact on private consumption in MENA countries? More specifically, the study examines the magnitude and direction of the relationship between government expenditure and private consumption in selected MENA countries over the period 1994–2022. To achieve this objective, the study employs descriptive and econometric methods, using panel Autoregressive Distributed Lag (ARDL) models, including the Mean Group (MG), Pooled Mean Group (PMG), and Dynamic Fixed Effects (DFE) estimators. In cases of cross-sectional dependence, the study further applies the Common Correlated Effects Mean Group (CCEMG) and Common Correlated Effects Pooled Mean Group (CCEPMG) estimators.

The contribution of this study lies in assessing whether fiscal expansion complements or crowds out private consumption in a region characterized by fiscal pressures, economic volatility, and heterogeneous institutional structures. By providing empirical evidence on this relationship, the study offers insights relevant to the design of fiscal policies aimed at supporting household welfare, macroeconomic stability, and sustainable economic growth.

The rest of the paper is organized as follows. Section 2 reviews the relevant literature. Section 3 presents the theoretical framework. Section 4 describes the data, methodology, and empirical results. Section 5 concludes.

2. Literature Review

The relationship between government expenditure and private consumption is a relevant economic issue that provokes debate among fiscal and economic policymakers.

2.1. Studies on Emerging and Developing Countries

Kwan (2006) examined several East Asian countries during the period from 1960 to 2002, finding a crowding-out relationship between public spending and private consumption (PRIV), i.e. an increase in public sector spending reduces or even eliminates private sector spending. Moreover, the degree of substitution between these types of expenditure varied between Asian countries. In the northeastern countries (China, Hong Kong, Japan, and Korea), the degree of substitution was moderate, with similar values, while in the southeastern countries, there was a significant difference. In Malaysia and Thailand, for example, public spending and PRIV were strong alternatives, while they were complementary in Indonesia and Singapore. In the Philippines, the degree of substitution was close to zero.

Following this line of reasoning, Ferreira (2015) provided empirical evidence of the crowding-out relationship between government expenditure (GOV) and PRIV in Brazil between 1996 and 2014. Applying the vector autoregressive (VAR) model and using data on GOV, gross domestic product (GDP), interest rates, and PRIV, the results showed crowding-out effects between GOV and PRIV, as well as demonstrating that fiscal policy is effective in stimulating GDP and PRIV in the short term.

In turn, some studies on Emerging and Developing Countries show a positive relationship between GOV and PRIV. Using the ARDL model, Khan et al. (2015) showed that GOV has a positive effect on PRIV in China, both in the long and short term. Thus, GOV is considered a good tool to improve the economy, stimulate aggregate demand, and maintain economic growth during periods of recession in China.

In a study of Jordan from 1970 to 2007, Alhiti et al. (2010) investigated the Granger causality relationship between GOV and PRIV along with three variables: money supply, inflation rate, and national income. The study concluded that the causal relationship between public spending and PRIV is bidirectional, meaning that one affects the other.

Durkaya (2012) found evidence supporting the Keynesian approach in Turkey. Using the autoregressive distributed lag (ARDL) model for the period 1980-2010, the author concluded a positive long-run and short-run relationship between GOV and PRIV, as well as being bidirectionally causal in the long-run. The causal relationship that extends from GOV to PRIV is based on the fact that the individual is the determining income in the economic decisions of the private sector, considering GOV participation. In turn, the causal relationship that extends from PRIV to public spending is based on the fact that an increase in PRIV is an indicator of well-being, thus stimulating public spending by increasing the demand for expected individual services.

Ndia et al. (2017) investigated the Granger causality relationship between public expenditure and PRIV in Kenya, indicating a positive long-run unidirectional causality relationship between public expenditure and PRIV. The study used the autoregressive distributed lag model for slow-moving time series intervals (ARDL) to estimate potential long- and short-term relationships, suggesting the increased use of public expenditure to stimulate PRIV.

Certain studies indicate a certain "indecision" regarding the direction of the relationship between GOV and PRIV. According to Dawood and François (2018), private and public consumption are substitutes for Edgeworthian utility, which means that a reduction or increase in GOV will affect PRIV's marginal utility. Their study focused on the internal flexibility of substitution between private and public consumption for 24 African countries between 1981 and 2013.

Furthermore, depending on the methodology employed in the study, there is a certain discrepancy in the direction of this relationship. Using Egyptian data from 1970 to 2016, Almosabbeh (2019) carried out two tests to test the relationship between GOV and PRIV. The test for a common trend in the consumption function using the ARDL model indicated no long-term effect of GOV on consumption. Regarding the second test, the NARDL model was used after dividing GOV shocks into positive and negative shocks, finding an asymmetric relationship between GOV and consumption. The variables in the study included government expenditure, consumption spending, inflation rate, money supply, and national income.

Another factor that should be considered is the great heterogeneity of emerging countries. Taking twelve ECOWAS countries as his study sample, Keho (2019) found significant variations in the impact of public consumption on household consumption between 1970 and 2016 due to the different economic conditions in each country. He concluded that Côte d'Ivoire is the only country where public spending is positively correlated with private conumption.

2.2. Studies on Advanced Countries

Some studies for advanced countries have also focused on discussing the relationship (if any) between GOV and PRIV. Tenhofen et al. (2006) found that the government expenditure shocks led to increases in both output and private consumption with low statistical significance in Germany.

Bouakez and Rebei (2007) developed a Real Business Cycle (RBC) model using U.S. data from 1948 to 2005. They tested the relationship between GOV and PRIV of non-durable goods and services alongside four variables: real GDP, real wages, non-agricultural business hours, and investment, using a VAR model. The study concluded a strong complementary relationship between these two variables. Additionally, they found that PRIV responded positively to GOV shocks.

In Italy, Ercolani and Pavoni (2012) created a database that links private household consumption to government expenditure across regional boundaries. As part of their analysis, they examined the impact of regional fluctuations in government expenditures on individual consumption across various Government categories. As a result, government healthcare expenditures provide consumers with consumption insurance against health shocks by influencing their level of precautionary savings, which, in turn, influences the magnitude of fiscal multipliers in response to health shocks.

A number of studies have delved beyond simply looking at whether or not there is a relationship between GOV and PRIV. Coenen and Straub (2005) examined the effects of GOV shocks on PRIV in the eurozone between 1980 and 1999 using a neo-Keynesian Dynamic Stochastic General Equilibrium (DSGE). Based on their findings, GOV shocks had limited opportunities to affect PRIV, since the estimated share of households was relatively low, in addition to the negative wealth effect resulting from GOV shocks.

Tagkalakis (2008) examined the impact of changes in fiscal policy on private consumption during periods of recession and expansion in 19 OECD countries between 1970 and 2002. During recessionary periods, fiscal policy is more effective at stimulating PRIV than during expansionary periods in the study. Those countries with less developed credit markets experience a greater impact.

Lorusso and Pieroni (2017) analyzed the effects of U.S. fiscal policy shocks on PRIV using the Keynesian DSGE model from 1960 to 2013. This study distinguished fiscal policy shocks into civilian and military spending shocks. Moreover, it found that civilian GOV shocks were less stable than military spending shocks, and civilian expenditure shocks had a positive impact on consumption. Conversely, military expenditure shocks had a negative impact.

3. Theoretical Framework

Government expenditures (GOV) have a direct effect on economic activities, and they are one of the most important indicators of the economic situation in a country. Because there are a variety of theories regarding how the relationship between GOV and PRIV will be determined, there are a number of major theories that have different views regarding the direction and effects of this relationship. These theories include Ricardian equivalence theory, Keynesian theory, and substitution theory (which is referred to as Real Business Cycle Theory).

3.1. Ricardian equivalence theory

Barro (1974) developed the Ricardian equivalence theory. This theory extends the neutrality hypothesis from (Ricardo, 1820) that says fiscal policy has no effect on household consumption allocations in a given economy, whether it is financed by public debt or taxes. The assumption is that households are familiar with economic affairs and therefore have the capability to change their consumption plans in the future according to the choices made by the government regarding the financing of its expenditures. Barro (1974) argues that increased GOV led to an increase in private savings without affecting PRIV, i.e. the neutrality hypothesis. Furthermore, he found that the government could finance its expenditures either through taxation or borrowing. In the event that government bonds are issued, the government will be required to repay this borrowing by raising taxes above what they would have been if no bonds were issued. As a result, taxes are either imposed immediately or in the future. As part of this theory, rational consumers recognize that current deficits imply future taxes and increase their savings accordingly to offset the new government borrowing (Mahumd et al., 2012; Ndia et al., 2017).

3.2. Keynesian theory

The government plays a significant role in determining aggregate expenditure in an economy, according to Keynes (1936), through the application of fiscal policy tools including taxes and government expenditure. As a result of decreased consumption and private investment in recessions, the government must spend to maintain market demand. In addition, he argued that government should address unemployment (Ndia et al., 2017).

As Keynes (Keynes, 1936) argued, current consumption is determined by disposable income, so an increase in government expenditure (expansionary fiscal policy) will result in higher employment and production, and ultimately, a positive crowd-in effect on PRIV. Additionally, there is a causal relationship between GOV and PRIV. Moreover, Keynesian theory suggests that GOV have a multiplier effect on aggregate demand, such that PRIV plays an important role in driving aggregate demand. Furthermore, government is a tool of policy in addition to being an external factor. Due to Keynesian multiplier effects, every dollar spent on investment increases spending by more than one dollar. This multiplier effect begins to occur as households spend the additional income from government-financed employment. Accordingly, the effectiveness of government expenditures is determined by the size of the multiplier, which is determined by the degree of PRIV response to GOV (Ndia et al, 2017) and (Khan et al, 2015).

3.3 Substitution theory

According to Bailey (1962), substitution theory states that an increase in GOV crowds out PRIV, and that substitution between public and private consumption will occur regardless of how the government finances its expenditures. An increase in GOV through taxes results in a decrease in wealth, which in turn reduces a household's permanent income, resulting in a decrease in PRIV. As a result, the family increases labor supply by increasing production in order to avoid a further decline in PRIV.

According to the real business cycle (RBC) model, the substitution effect is insufficient to offset the decline in wealth and PRIV. The decline in household PRIV is therefore less in absolute terms than the decline in disposable income (Bouakez and Rebei, 2007).

4. Methodology and Empirical Analysis

This study aims to examine the relationship between government expenditures and private consumption in 12 selected countries in the MENA region (Algeria, Bahrain, Egypt, Iran, Jordan, Kuwait, Morocco, Oman, Qatar, Saudi Arabia, Tunisia, and Turkey) for the annual period 1994-2022. Using the panel ARDL method, short-run and long-run relationships are examined. In addition, the CCEPMG and CCEMG approaches were applied to examine contemporaneous cross-sectional correlations (Pesaran et al., 1999). Data are primarily sourced from the World Bank.

A model is constructed based on the following equation:

$$\mathrm{LPRIV}_{it} = \beta 0 + \beta 1 INF_{it} + \beta 2 LGOV_{it} + \beta 3 LGDP_{it} + \beta 4 LMS_{it} + \epsilon it \quad (1)$$

Where i=1,…,N represents the number of countries in the index, t=1,…,T represents the time period, and εit is an error term.

There are several variables in this study that are transformed into logarithmic form (other than inflation and money supply), which is useful for addressing heteroscedasticity and minimising biases associated with outliers in the variables (Shahbaz & Lean, 2012).

The dependent variable is defined as follows:

Private Consumption (LPRIV): It refers to the household living expenses, which are measured using the market value of all goods and services, including durable products.

The explanatory variables are defined as follows:

Inflation rate (INF): It refers to the level of increase in the prices of a basket of goods and services that can remain constant or change over a specified period of time. The increase in average prices will result in a decrease in private consumption.

Government expenditure (LGOV): It refer to goods and services purchased as part of its fiscal policy. A rise in the expenditure can have either upward, downward, or neutral effect on private consumption.

Real gross domestic product (LGDP): It represents the overall economic activity. Generally, it has a positive effect on private consumption; as real GDP increases, household incomes rise, leading to a rise in private consumption.

Money Supply (MS): It is an indicator of monetary policy since it represents the total amount of currency and liquid instruments in circulation within a country at a particular point in time. The impact on private consumption is expected to be positive.

The error term (εit): represents the unobserved effects for each observation (i) at each time period (t). It is assumed to be normally distributed with a mean of zero ($\varepsilon it \sim N(0, \sigma^2)$).

4.1. Descriptive Analysis

According to Table 1, LPRIV mean indicates a moderate variability in the performance of the private sector. INF, LGDP & MS exhibit considerable variability, indicating significant fluctuations in economic output across the countries, as well as their price level and their monetary base. The mean value for LGOV is 23.38 with a standard deviation of 1.20, suggesting relatively less variability in government expenditures compared to other variables.

4.1.1i Descriptive Results

Table 1: Descriptive Statistics

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
LPRIV	340	24.39747	1.310599	21.51447	27.09857
INF	341	9.456964	17.14311	-25.9584	143.6397
LGOV	340	23.37768	1.202121	20.88045	26.1653
LGDP	342	27.16434	3.771913	22.22027	37.30005
MS	323	68.69352	25.60921	27.81424	138.8774

The correlation matrix are shown in Table 2. According to the results, government expenditures and private consumption are strongly correlated, suggesting that fiscal policies may have a significant impact on private consumption behavior (see Furceri and Zdzienicka, 2012).

Table 2: Correlation Matrix

	LPRIV	**INF**	**LGOV**	**LGDP**	**MS**
LPRIV	1				
INF	0.2481	1			
LGOV	0.9087	0.1384	1		
LGDP	0.6162	0.2285	0.5496	1	
MS	-0.0873	-0.3486	-0.1638	-0.2214	1

4.2. Empirical Analysis Results

4.2.1. Cross-Sectional Dependence & Slope Heterogeneity

Panel data models generally assume that disturbances are cross-sectionally independent. A growing body of literature on panel-data models has shown that errors have significant cross-sectional dependence (Jalili et al., 2019). This may result from common shocks and unobserved components incorporated into error terms, spatial dependence, and idiosyncratic spatial dependence (De Hoyos and Sarafidis, 2006).

The cross-sectional dependence test developed by Pesaran (2004) is used to examine the contemporaneous correlation across 12 countries. In particular, it is calculated based on the average pairwise correlations between the residuals from each individual regression within the panel. In this case, the null hypothesis is that the selected countries are independent cross-sectionally. According to the results of the cross-sectional dependence test (Table 3), each series in the panel showed cross-sectional dependence.

Table 3: Cross-Sectional dependence test

Variable	CD-test	P-value
LPRIV	40.73	<0.001
INF	11.22	<0.001
LGOV	41.07	<0.001
LGDP	41.75	<0.001
MS	18.58	<0.001

Testing slope heterogeneity (delta tilde, delta tilde adjusted) is conducted in accordance with Pesaran and Yamagata (2008). When slopes are heterogeneous, imposing slope homogeneity may result in inaccurate or biased results (Pesaran and Smith, 1995).

Pesaran and Yamagata (2008) developed a modified version of Swamy's (1970) test to detect slope heterogeneity. As shown in Table 4, this test determines whether panel data are homogeneous or heterogeneous. The two Delta statistics reject the null hypothesis of slope homogeneity at a 1% level

Table 4: Slope heterogeneity test

Slope Heterogeneity	Delta	. P-value
	10.284	<0.001
Adjusted	11.726	<0.001

4.2.2. Unit Root test

A first-generation panel unit-root test assumes that shocks affecting one country do not spill over to others. This assumption is restrictive for MENA economies, where trade linkages, financial integration, oil-price movements, geopolitical shocks, and other unobserved common factors may generate cross-sectional dependence (Hsiao, 2003; Pesaran and Tosetti, 2011). Ignoring such dependence may lead to biased or misleading unit-root inference. This study reports both the first-generation Im-Pesaran-Shin (IPS) test and the second-generation cross-sectionally augmented Dickey-Fuller (CADF) test. IPS assumes cross-sectional independence, whereas CADF augments ADF regressions with cross-sectional averages to account for unobserved common factors and cross-sectional dependence (Im, Pesaran and Shin, 2003; Pesaran, 2007). The null hypothesis in both tests is that the series contains a unit root, while rejection of the null hypothesis indicates stationarity.

The IPS results show that INF is stationary at level, while LPRIV, LGOV, LGDP, and MS become stationary after first differencing. According to CADF results, which are more appropriate in the presence of cross-sectional dependence, INF and LGOV are stationary at level under the constant specification, whereas the remaining variables are stationary after first differencing. Based on our results, the variables are integrated of mixed order, I(0) and I(1), with no evidence that any variable is integrated of order I(2). The results of this study support the use of panel ARDL estimators, which are appropriate when variables are integrated of order I(0), I(1), or a combination of the two.

Table 5: Unit root tests

	CADF Test		IPS Test	
	Constant	**Constant & Trend**	**Constant**	**Constant & Trend**
Levels				
LPRIV	-0.266	0.624	2.4999	0.9982
INF	-3.395***	-1.477*	-7.7869***	-7.6243***
LGOV	-1.968**	-1.459*	1.5682	1.9680
LGDP	2.105	2.646	-0.0165	2.6471
MS	0.120	2.794	1.8290	-3.0755
First Differences				
LPRIV	-5.967***	-5.323***	-7.0163***	-7.2071***
INF	-10.971***	-10.430***	-12.1385***	-12.2683***
LGOV	-8.160***	-6.706***	-6.4229***	-6.7281***
LGDP	-4.576***	-3.389***	-7.0260***	-7.8978***
MS	-4.722***	-3.167***	-9.5045***	-9.6522***

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

4.2.3. Autoregressive Distributed Lag Analysis

A number of methods have been used to address the heterogeneity issue associated with panel data, including ordinary least squares (OLS) for mean group data (Pedroni and Smith 1995), pooled mean group data (Pesaran et al. 1999), panel dynamic OLS (Pedroni 2001), and panel fully modified OLS (Pedroni 2000) (see Jalili et al., 2019). In the event of cross-sectional dependence, however, these methods are incongruent (Neal 2015). A variety of advanced techniques have been developed to deal with the cross-sectional dependency bias. Among these are pooled common correlated effects (Pesaran 2006), mean groups (Bond and Eberhardt 2013), and augmented mean groups (Pesaran 2006).

In small samples, ARDL may be useful, and short-run coefficients can be distinguished from long-run coefficients (Pesaran et al., 1999). Additionally, it can be used to analyze information over a longer period of time. According to Pesaran and Shin (1995), long-term parameters are super-consistent, while short-term parameters are ($\sqrt{T}$) consistent. ARDL (p,q) equations can thus be derived from equation (1), where (p) is the lag for the dependent variable, and (q) is the lag for the independent variable. Based on Pesaran et al. (1999), we can express the ARDL methodology as follows:

$$\Delta y_{it} = \phi_i y_{i,t-1} + \beta'_i X_{it} + \sum_{j=1}^{p-1} \lambda^*_{ij} \Delta y_{i,t-j} + \sum_{j=0}^{q-1} \delta'^*_{ij} \Delta X_{i,t-j} + u_i + \epsilon_{it} \quad (2)$$

i=1, 2,…,N, and t=1, 2,…,T, where, $\phi_i = -\left(1 - \sum_{j=1}^{p} \lambda_{ij}\right)$, $\beta_i = \sum_{j=0}^{q} \delta_{ij}$, $and\ \lambda^*_{ij} = -\sum_{m=j+1}^{p} \lambda_{im}$

A pooled mean group (PMG), a mean group (MG), and a dynamic fixed effect (DFE) estimate the long-run and short-run relationships in the study. When there is long-run homogeneity, PMG is more efficient and consistent, whereas MG is less restrictive and can estimate different coefficients for different countries. DFE is similar to PMG except that the coefficients of integration vectors are limited for all panels. There is a need to select an appropriate lag length for all estimators. According to Pesaran and Shin (1999) and Pesaran et al. ARDL panels can be used to examine long and short-run dynamics of non-stationary variables without requiring cointegration (Asteriou et al, 2021), thus generating the same long-run coefficients regardless of the order of integration, whether I(0) or I (1).

The data collected for the examined countries indicates similar patterns. In spite of this, there is a possibility that short-term behavior will vary across countries due to individual differences. Due to differences between countries, the short term is expected to be non-homogeneous. Additionally, the Hausman test is used to determine whether each estimator is suitable. The PMG and MG estimators are particularly effective at mitigating the endogeneity problem (Pesaran et al. 1999).

Based on Pesaran and Smith's (1995) MG estimator, dynamic panels with heterogeneous slopes can be addressed by averaging time series regression coefficients at individual levels. Each country's ARDL model's long-run parameters are averaged to generate the panel's long-run parameters. PMG estimators combine pooled and heterogeneous estimates (Blackburne and Frank 2007; Ditzen 2018) that allow for heterogeneity in the short-run but enforce homogeneity in the long-run (Pesaran et al. 1999), and are less sensitive to outliers.

To address contemporaneous correlation in this study, we incorporate the common correlated effect into the panel ARDL estimation. The CCEPMG provides cross-sectional averages (weighted) of regressors to account for the common factor's influence. In addition, the CCEMG exhibits resilience regardless of whether the cross-sectional dependence is strong, such as global shocks, or weak, such as local spillover effects (Mao and Shen, 2019; Pesaran and Tosetti, 2011).

In Table 6, we present the panel ARDL estimates based on the PMG, MG, and DFE estimators. Under all three estimation specifications, real GDP has a positive effect on private consumption in the short run. Short-run government expenditures are positive, but they are statistically significant only under the DFE estimator. Inflation has a negative short-run effect under the PMG estimator, suggesting that higher prices may reduce households' real purchasing power and constrain private consumption in the short term. In none of the short-run models is the money supply statistically significant.

Over the long run, government expenditures have a statistically significant positive effect on private consumption. As a result of this finding, higher government expenditure in selected MENA countries is associated with higher private consumption. Under both PMG and DFE estimates, inflation is positive and statistically significant, whereas real GDP is negative and weakly significant only under PMG. There may be a variety of reasons for the uncommon long-run GDP result in the MENA region, including persistent income inequality and geopolitical instability, which may prevent household consumption from being driven by aggregate income growth (Kentikelenis et al., 2023; O'Driscoll et al., 2020). All estimates of the money supply remain statistically insignificant.

All three models show negative and significant error-correction terms, confirming convergence towards the long-run equilibrium. MG's estimator shows the fastest adjustment rate, with approximately 44% of deviations from long-run equilibrium corrected each year. As the slope heterogeneity test rejects homogeneity, and since Pesaran and Smith (1995) argue that imposing homogeneous slope coefficients on dynamic heterogeneous panels may lead to inconsistent estimates, DFE results are not used as the sole basis for inference. In addition, the Hausman (1978) test favors the MG estimator over the PMG estimator, suggesting that long-run coefficients vary from country to country. Therefore, this study relies primarily on MG results, while PMG and DFE estimates provide robustness checks.

Table 6: ARDL Tests

	PMG	MG	DFE
Long Run			
Inf	.0177289***	-.0003696	.0054226**
Lgov	1.150098***	1.117446***	.8332026***
Lgdp	-.2855059*	-.5327302	.3145983
Ms	-.0004058	0.000306	-.0006894
ECT	-.1712688***	-0.4401768***	-.1709652***
Short Run			
D.inf	-.0009065*	-.0005277	-.0000397
D.lgov	.1958266	.0505639	.4230794***
D. lgdp	.7637161***	.4970356*	.5112698***
D. ms	-.0006273	-.0018184	-.0007284
Constant	.8573024***	-1.983731	-.6024131

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

4.2.4. Common Correlated Estimates

Although panel ARDL estimators can identify short- and long-run relationships between variables, they cannot fully accommodate close contemporaneous correlations across countries due to unobserved common factors. Leaving out such factors may result in inconsistent or biased results when using panel estimators (Baltagi, 2014). Since the cross-sectional dependence tests indicate strong dependence between the selected MENA countries, this study also applies Common Correlated Effect estimators to control for unobserved common shocks and cross-country spillovers.

An application of the CCE approach can be made when unobserved factors are correlated with the explanatory variables. Pesaran (2006) shows that the CCE estimator is robust to heterogeneous panels with multifactor error structures. In contrast, Juodis et al. (2021) demonstrate that pooled CCE estimators are robust to relevant forms of unobserved common factor dependence. Thus, the panel ARDL results are robustly checked by using CCEPMG and CCEMG estimators.

Table 7 presents CCEPMG and CCEMG estimates. In both estimators, error-correction terms are statistically significant and negative, indicating convergence toward long-run equilibrium. Under CCEPMG, the speed of adjustment is approximately 41.7% and under CCEMG, it is approximately 65.6%. Only real GDP has a positive effect in the short run under the CCEPMG estimator, while all other short-run coefficients are statistically insignificant.

In the long run, government expenditures significantly impact private consumption under the CCEMG estimator, which is consistent with the MG estimates in Table 6 and confirms that government expenditure contributes positively to private consumption after accounting for cross-sectional dependence and unobserved common shocks. The finding is also consistent with Linnemann (2006), who shows that government spending can be associated with higher private consumption, and with Dada (2013), who reports supportive evidence on the positive relationship between them.

Table 7: Common Correlated Effects Panel ARDL Estimation Results

	CCEPMG	CCEMG
Long Run		
INF	0.0007095	-.0002696
LGOV	0.266514	0.4010955***
LGDP	0.1320406	0.2714046
MS	-0.0010431	-0.0023217
ECT	-0.4174685**	-0.655707***
Short Run		
D.INF	0.0001862	-4.84e-06
D.LGOV	0.1709842	-0.1024156
D. LGDP	0.6397098***	0.2930899
D. MS	0.0000474	-0.0005195

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Parenthesis denote standard errors.

4.2.5. Granger Causality Test

Traditional Granger causality tests fail when non-stationary variables are not cointegrated or are integrated at different orders. Using Toda-Yamamoto (1995). Therefore, a causality test based on Wald's statistic should be used in this case, as its distribution is dependent on the chi-square method. The null hypothesis states that variables have no causal relationship.

Table 8 shows unidirectional causality from LGDP and MS to LRPIV, and from INF to LGOV. Furthermore, we notice a bidirectional causality between LGOV & LGDP, LGOV & MS, and between LGOV and LPRIV.

Table 8: VEC Granger Causality Test

MENA				
dependent Variable	**independent variables**			
LPRIV	**INF**	**LGOV**	**LGDP**	**MS**
Chi-sq	2.0528	4.26358***	5.49746***	5.41353***
P-value	0.8185	0.0037	0.000004	0.00001
INF	**LPRIV**	**LGOV**	**LGDP**	**MS**
Chi-sq	1.91466	2.35368	2.70837	3.39825
P-value	0.6724	0.8478	0.481	0.1117
LGOV	**LPRIV**	**INF**	**LGDP**	**MS**
Chi-sq	5.84225***	4.22666***	7.06209***	4.66358***
P-value	0.0000003	0.0049	1E-11	0.0008
LGDP	**LPRIV**	**INF**	**LGOV**	**MS**
Chi-sq	2.82278	2.50954	5.3301***	4.13805***
P-value	0.3935	0.6715	0.00001	0.009
MS	**LPRIV**	**INF**	**LGOV**	**LGDP**
Chi-sq	3.17206	1.95704	4.34201***	6.16229***
P-value	0.1957	0.7	0.0037	7E-08

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

5. Conclusion

The study examined the relationship between government expenditures and private consumption in twelve MENA countries between 1994 and 2022. Using panel ARDL estimators and Common Correlated Effects approaches, the analysis distinguished between short-run and long-run effects while accounting for slope heterogeneity and cross-sectional dependence.

After accounting for cross-sectional dependence and heterogeneity, private consumption is positively impacted by real GDP under the CCEPMG in the short run, while government expenditures positively affect private consumption under the CCEMG in the long run. Three ARDL model specifications also support expenditure effects.

Based on the causality results, government expenditures and private consumption have bidirectional causality. This study supports the Keynesian view that government expenditures can stimulate private consumption, especially in economies in which public spending remains a significant factor in aggregate demand.

Accordingly, MENA governments should design fiscal policies with long-run consumption effects in mind. A well-targeted and productive government expenditure may contribute to macroeconomic stability, household consumption, and inclusive growth. In order to avoid weakening long-term economic performance, fiscal expansion should be accompanied by efficient resource allocation, debt sustainability, and institutional reforms.

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