The impact of government final consumption expenditure on Egypt's economic growth

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Armey Curve, Economic Growth, Government Expenditure, Gross Domestic Product (GDP), Public Debt, Public Spending

Aabstract
The study seeks to explore the correlation between government final consumption expenditure and economic growth in Egypt. Utilizing yearly time-series data from 1990 to 2023, this study employs the Auto-Regressive Distributed Lag (ARDL) cointegration regression. It introduces a unique approach that considers the degree of openness and the budget deficit. The findings reveal a noteworthy inverse correlation between government spending and economic growth, both in the long and short term. Although the inflation rate and trade openness did not have a significant effect on GDP growth, the budget deficit had a negative impact in the short term. The Cointegration Equation (CointEq(-1)) revealed a significant long-term relationship between the variables, suggesting that the system gradually approaches a state of balance. These findings highlight the significance of responsible financial management and focused government expenditure in promoting long-term economic growth.

Introduction

The relationship between government expenditure and economic growth has been a subject of extensive research, drawing on diverse methodologies and theoretical frameworks (Keynes, 1936; Wagner, 1980; Barro, 1990; Armey, 1995). Armey's (1995) concept of a non-linear, inverted U-shaped relationship between government size and economic growth has been particularly influential. This 'Armey curve' posits that initial government spending is productive, reducing transaction costs and fostering a favourable business environment. However, beyond an optimal threshold, increased public spending necessitates higher taxes, potentially hindering growth.

This study aims to investigate the impact of government final consumption expenditure as a percentage of GDP on Egypt's economic growth over a 30-year period (1990-2022). Building on seminal works and recent empirical studies (Ocheni, 2018; Ahuja & Pandit, 2020; Ambya, 2020; Kutasi & Marton, 2020), we employ the ARDL method to analyse this relationship in the Egyptian context. During the examined timeframe, Egypt's economic growth varied between 1.13% and 7.16%. Particularly in the 1990s, after adopting IMF and World Bank economic reforms, government consumption expenditure as a percentage of GDP notably increased from 10.37% in 1996 to 11.61% in 1999, continuing to rise thereafter. This period also saw GDP growth rise from 4.99% in 1996 to 6.05% in 1999, highlighting the significant impact of government spending on Egypt's economic performance.

Our research extends beyond direct impacts, incorporating key control variables such inflation rate, trade openness and budget deficit. This comprehensive approach allows for a nuanced understanding of the factors influencing Egypt's economic performance in recent decades.

By elucidating the relationship between government expenditure fluctuations and optimal spending levels as suggested by the Armey curve, this study aims to inform effective fiscal policies that promote sustainable economic growth and enhance public welfare in Egypt. The findings may have significant implications for policymakers in optimizing government spending strategies, particularly in areas such as education, healthcare, and infrastructure.

The remainder of the study proceeds with the following structure: section two provides a review of relevant literature, while section three presents the econometric model method and describes the utilized data. Section four presents the empirical findings, while section five provides recommendations based on our findings.

literature review

A lot of research has been done on how government spending affects economic growth, using a variety of methods and theories, Barro was the first author who developed an endogenous growth model with public expenditures in 1990. As well as studies done by (Armey, 1995) the Armey curve, the Rahn Curve, and the "BARS" curve. There is a consensus that government spending has a positive impact on economic growth. The debate on the role of government expenditure in economic growth has evolved significantly since Keynes' (1936) influential work following the Great Depression. This discourse has produced diverse theoretical perspectives and empirical findings, highlighting the potential positive aspects and intricate complexities of understanding the connection between government spending and economic growth.

Positive effect on economic growth

Barro (1990) made a significant contribution by developing an endogenous growth model incorporating public expenditures, demonstrating that the growth rate depends on the structure of government spending. Ashauer (1987) and Erden and Holcomb (2005) provided evidence that public spending stimulates private capital and investment, thus enhancing economic growth. Felice (2016) further supported this view by showing that productive public expenditure affects growth both directly and indirectly in a dual-sector model.

Devarajan et al. (1996) found that the share of current expenditures positively affects growth in developing countries, while Cullison (1993) showed that among 21 categories of public expenditures, only education and labour training had significant positive effects on growth. Additionally, an emerging strand of literature highlights the crucial role of institutions in mediating the relationship between government expenditure and economic growth. Studies by Kim et al. (2018) and Hall and Ahmad (2012) suggest that the effectiveness of government spending is contingent on the quality of institutions and governance, indicating that well-functioning institutions enhance the positive impact of government expenditure on economic growth.

Negative effect on economic growth

Conversely, some researchers have found that government expenditure can have negative or insignificant effects on economic growth. Tatom (1991) and Holtz-Eakin (1994) argued that the effect of infrastructure spending is not significant, challenging the notion that all forms of public expenditure are beneficial. Manamperi (2016) found that military expenditure has a negative impact on growth in Turkey and no significant effect in Greece, highlighting that the type of government spending matters.

Devarajan et al. (1996) also found that capital expenditures have a negative relationship with growth in developing countries, suggesting that not all public investments lead to positive outcomes. Moreover, an important strand of literature suggests a non-linear relationship between government expenditure and growth, often represented by an inverted U-shaped curve known as the Armey curve (Armey, 1995). This concept posits that there is an optimal level of government expenditure beyond which additional spending becomes detrimental to growth. Altunc and Aydin (2013) estimated that the optimal government expenditure for Turkey, Romania, and Bulgaria ranges from 22% to 25% of GDP, and Asimakopoulos and Karavias (2015) confirmed this non-linear relationship using a novel panel GMM approach, indicating that excessive government spending can hinder economic growth.

Effect on growth in Egypt

Examining Egypt's government expenditure against economic production, Al-Demerdash and Muhammad (2023) found Particularly in times of economic crisis, they discovered that the Egyptian government has regularly used government expenditure as a main tool for financial stimulus of economic activity. While financing economic development, this expenditure has been important; but it has also resulted in a budget deficit and worsened public debt problems. As shown in figure 1, their study of the

GDP growth rate against government expenditure as a proportion of GDP depicts that sometimes of higher government expenditure matched reduced GDP growth rates. On the other hand, there were times when lower government expenditure linked to more GDP increase. These results imply Egypt's government expenditure and economic production may have a non-linear or asymmetric connection

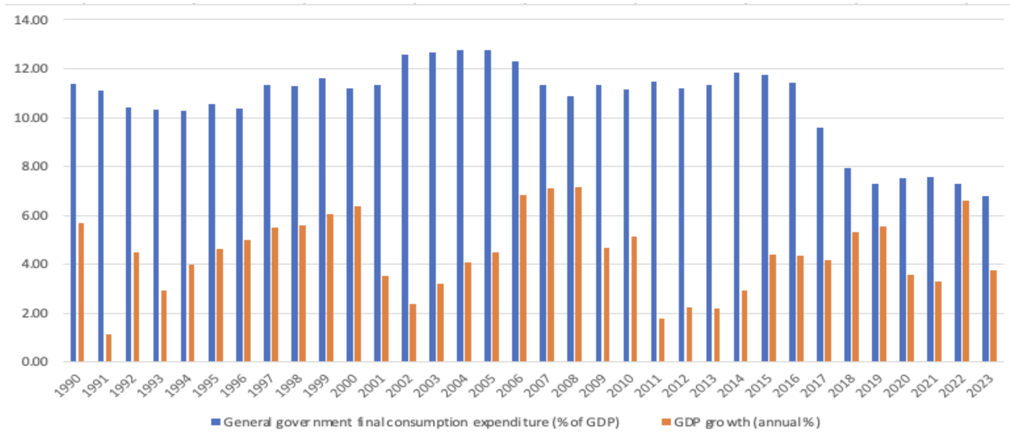

Figure 1: Government Spending as a percentage of GDP and Growth in Egypt from 1990-2023, Source: The World Bank database

Additionally, using multiple variables, including total government expenditure, government consumer expenditure, and government investment expenditures, Mohammad Abd Al Kareem (2024) examined Egypt's government size development. In keeping with the worldwide crisis that resulted in a drop in public income and an increase in the general budget deficit as a percentage of GDP, Abd Al Kareem's analysis shows a drop in the ratio of total expenditures to GDP from 2009 to 2012. Rising overall public spending relative to GDP from 2012 to 2014 resulted from the start of the January 25, 2011, revolution and later political unrest along with demands for better salaries and continuous minimum wage rises. Starting in 2014, this percentage thereafter followed its downward pattern until the end of the period, finishing at a rate of 24.6% as seen in figure (2).

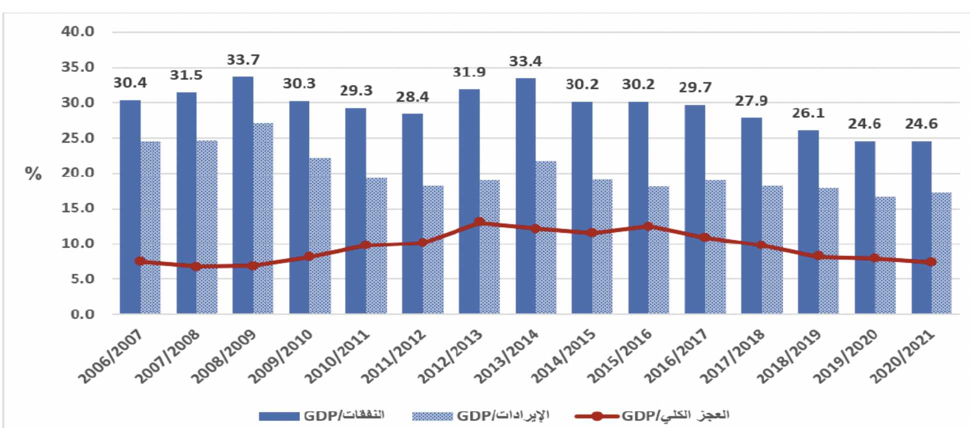

Figure 2: Ratios of expenditures, revenues, and total deficit to GDP during the period from 2006-2021, The Central Bank of Egypt

The Evolution of Government final Expenditure -Egypt

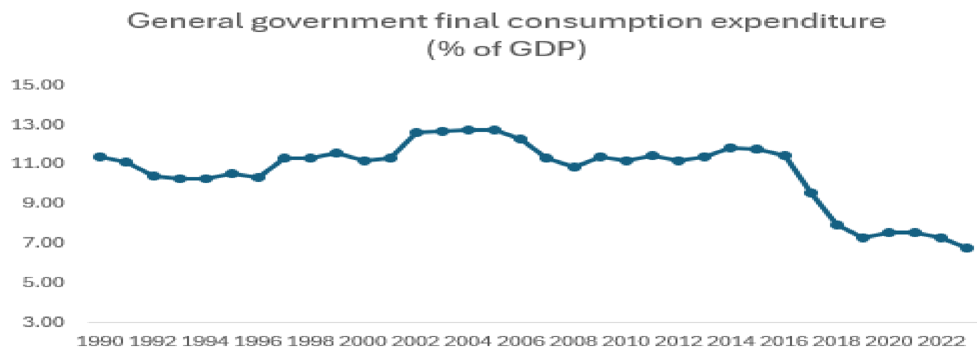

Figure (3) the evolution of General government final expenditure % GDP (1990-2023)
Source: world bank database 2023

As figure (3) shows in the beginning of 1990s Egypt implemented the economic reform and structural adjustment program, one of the goals of which was to reduce the budget deficit by reducing public expenditures. As in the 1990s there has an average GFCE of 10.87% of GDP after which in the early 2000s it reached an average of 11.85% however in the second decade of the 2000s in decreased again to reach an average of 10.14% and in the past 3 years it reached its lowest average in the past 50 years reaching an average of 7.20% this general negative (downward) trend in government spending due to Egypt suffering from a permanent deficit in the state's general budget, so it seeks to remedy this deficit by reducing government spending the average value of the period was 10.65% the highest value was in 2004 which was 10.75% and the lowest value was in 2023 which was 6.79% .

Data and Methodology

Variable	Measurment	Data Source
GDP growth (annual %)	The percentage increase in GDP from one year to the next.	World Bank
Government expenditure (% of GDP)	Total government spending as a share of the country's GDP.	World Bank
Inflation (annual %)	The year-over-year percentage change in the Consumer Price Index (CPI).	World Bank
Trade (% of GDP)	The percentage of GDP that comes from the total value of exports and imports.	World Bank
Budget Deficit (% of GDP)	The percentage of GDP by which government expenditure exceeds government revenue.	World Bank

Model Specification

The study utilized Autoregressive Distributed Lag Model (ARDL) which can be used regardless integration level as it can includes time series integrated at degree zero or one (Engle and Granger, 1987; Hassler and Wolters, 2006). ARDL model takes the following form:

$$\Delta y_t = \beta_0 + \sum_{i=1}^{m} \beta_i \Delta y_{t-i} + \sum_{i=1}^{n} \theta_i \Delta x_{t-i} + \varphi_1 y_{t-1} + \varphi_2 x_{t-1} + \varepsilon_t$$

Where y_t is the dependent variable, x_t is the independent variables where φ_1 and φ_2 reflect the relationship over the long run, while β_i and θ_i are coefficients over the short term. In addition, m and n reflect lag periods for dependent variable and independent variable, respectively.

We depend on Bound test to explore the long run relationship between the dependent and independent variables by using Fisher statistic and with depending on critical values which developed by Pesaran et. al. (2001), that depicts lower and upper critical values, then we cannot reject H0 which states there is no long run relationship if Fisher statistic is larger than the upper value.

Rewrite the formula:

$$\Delta Yt = \beta 0 + \Sigma^{m}_{j=1} \alpha_j \Delta Yt\text{-}j + \Sigma^{k}_{i=0} (\beta_{1i}\Delta GFCEt\text{-}i + \beta_{2i}\Delta INFt\text{-}i + \beta_{3i}\Delta OPNt\text{-}i + \beta_{4i}\Delta BDt\text{-}i) + \theta_1 Yt\text{-}1 + \theta_2 GFCEt\text{-}1 + \theta_3 INFt\text{-}1 + \theta_4 OPNt\text{-}1 + \theta_5 BDt\text{-}1 + \varepsilon t$$

Where Yt is the dependent variable (GDP), GFCEt is Government Final Consumption Expenditure, CABt is Current Account Balance, INFt is Inflation Rate, GCFt is Gross Capital Formation, OPNt is Openness, and BDt is Budget Deficit. These are the independent variables. β0 is the intercept, α_j and β_i are short-run coefficients, θ_i are long-run coefficients, and εt is the error term. m and k reflect lag periods for the dependent variable and independent variables respectively.

ARDL Model
Stationarity test:

Variable	P-Value at Level	P-Value at First Difference	Order of Integration I(d)
Y	0.0179	0	(I0)
X1	0.7481	0.014	(I1)
X2	0.029	0	(I0)
X3	0.1269	0.0015	(I1)
X4	0.0417	0.0001	(I0)

Table 2: Unit root Results, World Bank (Open Data),

Main Independent
Variable (X_1):

General government final consumption expenditure (% of GDP), (X_2): Inflation, consumer prices (annual %), Independent Variable (X_3): Trade (% of GDP), Independent Variable (X_4): Budget Deficit (% of GDP). Where the dependent variable Y (GDP growth rate).

Selected Model: ARDL(3, 1, 3, 1, 2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Y(-1)	0.448527	0.135901	3.300390	0.0049
Y(-2)	-0.101384	0.128111	-0.791374	0.4411
Y(-3)	-0.239719	0.103009	-2.327168	0.0344
X1	-1.338841	0.373231	-3.587162	0.0027
X1(-1)	0.924881	0.364885	2.534722	0.0229
X2	-0.006067	0.034372	-0.176509	0.8623
X2(-1)	-0.096116	0.038143	-2.519871	0.0236
X2(-2)	-0.010743	0.036776	-0.292107	0.7742
X2(-3)	-0.156939	0.035443	-4.427978	0.0005
X3	-0.060150	0.042875	-1.402930	0.1810
X3(-1)	0.094181	0.047211	1.994896	0.0646
X4	-0.104383	0.054677	-1.909094	0.0756
X4(-1)	-0.141597	0.064655	-2.190058	0.0447
X4(-2)	0.152438	0.042530	3.584242	0.0027
C	10.13056	2.046070	4.951229	0.0002

R-squared	0.879883	Mean dependent var	4.496395
Adjusted R-squared	0.767773	S.D. dependent var	1.523143
S.E. of regression	0.734002	Akaike info criterion	2.526243
Sum squared resid	8.081384	Schwarz criterion	3.226842
Log likelihood	-22.89364	Hannan-Quinn criter.	2.750370
F-statistic	7.848411	Durbin-Watson stat	2.465632
Prob(F-statistic)	0.000146		

Table 3: Autoregressive Distributed Lag (ARDL) using EViews

Interpretation of the significant variables

X_1: Whenever X_1 increases by 1 unit Y decreases by 1.3388 units.

$X_1(-1)$: Whenever the lagged value of $X_1(-1)$ increases by 1 unit Y increases by 0.9248 units.

$X_2(-1)$: Whenever the lagged value of $X_2(-1)$ increases by 1 unit Y decreases by 0.0961 units.

$X_2(-3)$: Whenever the lagged value of $X_2(-3)$ increases by 1 unit Y decreases by 0.1569 units.

$X_4(-1)$: Whenever the lagged value of $X_4(-1)$ increases by 1 unit Y decreases by 0.1415 units.

$X_4(-2)$: Whenever the lagged value of $X_4(-2)$ increases by 1 unit Y increases by 0.1524 units.

R-squared = 0.879, meaning that 87.9% of the variation in Y can be explained through the model.

F-test (significance of the model) = The probability value of the F-test equals 0.0001 which is less than 0.05, meaning that the whole model is significant, and the X variables cam jointly explain Y.

Lag Selection:

Model	LogL	AIC*	BIC	HQ	Adj. R-sq	Specification
138	-22.893643	2.526243	3.226842	2.750370	0.767773	ARDL(3, 1, 3, 1, 2)
74	-22.504765	2.566984	3.314290	2.806054	0.757553	ARDL(3, 2, 3, 1, 2)

Table 4: Model Selection Summary using EViews

The hosen lag amount according to the Akaike Information Criterion is 3 lags for Y, 1 lag for X_1, 3 lags for X_2, 1 lag for X_3, and 2 lags for X_4. The meaning of lag the time delay between the independent variable and its effect on a dependent variable.

Bounds Test:

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
		Asymptotic: n=1000		
F-statistic	8.964595	10%	2.2	3.09
k	4	5%	2.56	3.49
		2.5%	2.88	3.87
		1%	3.29	4.37
Actual Sample Size	30	Finite Sample: n=30		
		10%	2.525	3.56
		5%	3.058	4.223
		1%	4.28	5.84

Table 5: Long Run Form and Bounds Test using EViews

If the calculated F-statistic is greater than the critical value for the upper bound I (1), then it can be concluded that there is a long-run relationship between the explanatory variables and the explained variable.

H_0: No cointegrating Equation

H_1: There is a long Run relationship.

Criteria: F-statistic for Significance of 5%

The F-Stat value which is equal to 8.96 is greater than the Upper bound Value (3.49) at 5% which leads us to conclude that there is a long run relationship between the Variables.

Short-run Causality (Wald Test)

Variable	Chi-Square Prob.	Result
X1	0.0003	There's short-run causality between X1 and Y
X2	0	There's short-run causality between X2 and Y
X3	—	Insignificant
X4	0.0016	There's short-run causality between X4 and Y

Table 6: Wald Test, Researcher

X3 did not show statistical significance in the ARDL model, and therefore, it was excluded from the Wald test, which focuses on evaluating the short-run causality of significant variables and their lags with respect to Y.

Long-run Causality (Error Correction Term):

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(Y(-1))	0.341103	0.104817	3.254286	0.0053
D(Y(-2))	0.239719	0.084155	2.848550	0.0122
D(X1)	-1.338841	0.253218	-5.287295	0.0001
D(X2)	-0.006067	0.027801	-0.218228	0.8302
D(X2(-1))	0.167682	0.035230	4.759576	0.0003
D(X2(-2))	0.156939	0.026110	6.010797	0.0000
D(X3)	-0.060150	0.032787	-1.834562	0.0865
D(X4)	-0.104383	0.041233	-2.531552	0.0230
D(X4(-1))	-0.152438	0.035615	-4.280230	0.0007
CointEq(-1)*	-0.892577	0.105399	-8.468575	0.0000

R-squared	0.861404	Mean dependent var	0.070500
Adjusted R-squared	0.799036	S.D. dependent var	1.417975
S.E. of regression	0.635664	Akaike info criterion	2.192910
Sum squared resid	8.081384	Schwarz criterion	2.659975
Log likelihood	-22.89364	Hannan-Quinn criter.	2.342328
Durbin-Watson stat	2.465632		

Table 7: Error Correction Form using EViews

*A negative and significant coefficient of the error correction term indicates the presence of long-run causal relationship. According to the CointEq (-1) * which is a negative coefficient and significant due to the probability value being less than 0.05, there is a long run causality.*

Speed of adjustment directly estimates the speed at which a dependent variable returns to equilibrium after a change in other variables, and the estimated coefficient indicates that about 89.2 percent of this disequilibrium is corrected between 1 year.

Diagnostic Tests

Test	Probability	Result
Jarque-Bera Normality Test	0.874485	Variables are normally distributed.
Heteroskedasticity Test: Breusch-Pagan-Godfrey	0.1513	There's no Heteroskedasticity problem.
Breusch-Godfrey Serial Correlation LM test	0.009	There's a Serial Correlation problem.

Table 8: Residual Diagnostics, Researcher

Stability Test:

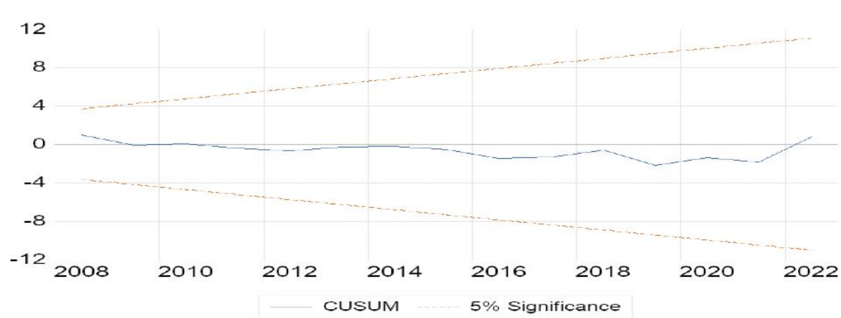

Figure 3: Stability Diagnostics using EViews

If the CUSUM line is between the borders, the model is stable.

Findings and Results

The results of our analysis provide significant, precise details about the complex dynamics of Egypt's economic development and the role that government spending plays in it.

Results in the Long-run and the Short-run			
Variable	Coefficient	T-statistic	Prob. Value
C	10.13056	4.951229	0.0002
Government Expenditure	-1.338841	-3.587162	0.0027
Inflation Rate	-0.006067	-0.176509	0.8623
Openness Degree	-0.06015	-1.40293	0.181
Budget Deficit	-0.104383	-1.909094	0.0756
D(Government Expenditure)	-1.338841	-5.287295	0.0001
D(Inflation Rate)	-0.006067	-0.218228	0.8302
D(OPN)	-0.06015	-1.834562	0.0865
D(Budget Deficit)	-0.104383	-2.531552	0.023
CointEq(-1)*	-0.892577	-8.468575	0

Table 9: Findings in the Short Run and the Long Run,

Regarding the long-run effects, government expenditure has a negative and significant impact on GDP, with a coefficient of -1.338841 (p = 0.0027). This implies that increased government spending is associated with a reduction in economic growth in the long term, potentially due to inefficiencies or the crowding out of private investment. The budget deficit also shows a negative coefficient (-0.104383) and is marginally significant (p = 0.0756), suggesting that higher budget deficits may adversely affect long-term economic growth. The inflation rate has a negative coefficient (-0.006067), but it is not statistically significant (p = 0.8623), indicating that inflation does not have a notable impact on GDP in the long term. The degree of openness also has a negative coefficient (-0.06015) but is not significant (p = 0.181), suggesting that trade openness does not significantly affect long-term economic growth in this context. The cointegration coefficient (CointEq(-1)) is -0.892577 and highly significant (p = 0.0000), implying that the variables adjust towards their long-term equilibrium at a considerable rate of approximately 89.26% of deviations corrected within the next period.

Regarding the short-run effects, changes in government expenditure have a negative and highly significant impact on GDP, with a coefficient of -1.338841 (p = 0.0001), indicating that increases in government spending can reduce economic growth in the short term. The budget deficit also has a negative and significant short-term effect on GDP, with a coefficient of -0.104383 (p = 0.023), suggesting that higher deficits can weaken economic activity in the short run. Conversely, the inflation rate in the short run has a negative coefficient (-0.006067) but is not significant (p = 0.8302), showing no notable immediate impact on GDP. The degree of openness, with a negative coefficient of -0.06015, is marginally significant (p = 0.0865), indicating a potential negative short-term effect on GDP. Overall, these short-run results, combined with the Wald test indicating short-run causality, show that changes in government expenditure, inflation rate, and budget deficit can significantly influence GDP. The significant cointegration coefficient reinforces the idea that the variables move towards equilibrium, suggesting both short-term and long-term adjustments are essential in understanding the dynamics of Egypt's economic growth.

Our methodology finds both short- and long-term empirically significant causal links between government spending and economic growth. This emphasizes how important government spending is in determining the pace of economic growth. The results of the study also reveal a negative long-term impact of government spending on GDP, aligning with Tatom (1991) and Holtz-Eakin (1994), who argued that infrastructure spending's effect is not significant. This aligns with the non-linear relationship described by Armey (1995) through the Armey curve, which suggests that beyond an optimal threshold, increased public spending may hinder growth.

Moreover, the sector-specific advantages proposed by Gemmell et al. (2016) and the non-linear effects shown by Hajamini and Falahi (2014) further complicate this relationship. These studies indicate that the type and efficiency of government expenditure play crucial roles. Our findings are consistent with these complex viewpoints, suggesting that while government spending is critical for economic growth, its impact varies based on the context and manner of allocation. This comprehensive approach allows for a nuanced understanding of the factors influencing Egypt's economic performance in recent decades.

Conclusion and Discussions

The study explores the complex link between Egypt's economic growth and government final consumption expenditure during the years 1990–2022. Through means of an in-depth study using the Autoregressive Distributed Lag (ARDL) bounds testing method, it has been discovered important findings that illustrate the dynamics of economic growth in Egypt.

The study demonstrates how government spending is essential to both short- and long-term economic growth. The significance of the causal association between GDP growth and government spending emphasizes the need of cautious budgeting practices to support sustainable economic growth. Our research also shows the existence of an error correction term, which suggests that any variations are quickly adjusted towards long-term equilibrium. This highlights the flexibility of the Egyptian economy and reveals a certain degree of sustainability.

This study further underscores the importance of various economic variables, such as inflation rate, trade openness, and budget deficit, in shaping the direction of economic growth. Our findings demonstrate the necessity of considering these factors holistically when formulating effective growth policies.

References

Ahuja, D., & Pandit, D. (2020, August 5). Public Expenditure and Economic Growth: Evidence from the Developing Countries. *FIIB Business Review*, *9*(3), 228–236. https://doi.org/10.1177/2319714520938901

Ambya, A. (2020, June 4). How Government Spending on Public Sector Affect the Economic Growth? *JEJAK*, *13*(1), 218–229. https://doi.org/10.15294/jejak.v13i1.21943

Al-Demerdash, H. M., & Hani Muhammad. (2023). Testing the Armey Curve hypothesis of the relationship between government spending and output: an applied study of the Egyptian economy in the period 1960-2021. Journal of Financial and Business Research, 24(2), 22-54.

Chauer, D. A. (1989). Does public capital crowd out private capital? Journal of monetary economics, 24(2), 171-188

Altunc, O. F., & Aydın, C. (2013). The relationship between optimal size of government and economic growth: Empirical evidence from Turkey, Romania and Bulgaria. Procedia-Social and Behavioral Sciences, 92, 66-75.

Asimakopoulos, S., & Karavias, Y. (2016). The impact of government size on economic growth: A threshold analysis. Economics Letters, 139, 65-68.

Armey, R. 1995. The freedom revolution. Washington, DC: Rognery Publishing Co.

Barro J. R. 1990. Government spending in a simple model of endogenous growth. The journal of political economy, 98(5): 103-125.

Cullison, W. (1993). Public investment and economic growth. FRB Richmond Economic Quarterly, 79(4), 19-33

Devarajan, S., Swaroop, V., & Zou, H. F. (1996). The composition of public expenditure and economic growth. Journal of monetary economics, 37(2), 313-344.

Erden, L., & Holcombe, R. G. (2005). The effects of public investment on private investment in developing economies. Public finance review, 33(5), 575-602.

Felice, G. (2016). Size and composition of public investment, sectoral composition and growth. European Journal of Political Economy, 44, 136-158.

Gemmell, N., Kneller, R., & Sanz, I. (2016). Does the composition of government expenditure matter for long-run GDP levels? Oxford Bulletin of economics and statistics, 78(4), 522-547.

Hajamini, M., & Falahi, M. A. (2014, October 7). The nonlinear impact of government consumption expenditure on economic growth: Evidence from low and low-middle income countries. *Cogent Economics & Finance*, *2*(1), 948122. https://doi.org/10.1080/23322039.2014.948122

Hall, S. G., & Ahmad, M. (2014). Revisiting the institutions–growth nexus in developing countries: The new evidence. New Zealand Economic Papers, 48(3), 301-312.

Holtz-Eakin, D., & Schwartz, A. E. (1995). Infrastructure in a structural model of economic growth. Regional Science and Urban Economics, 25(2), 131-151

Kutasi, G., & Marton, D. (2020, November 20). The long-term impact of public expenditures on GDP-growth. *Society and Economy*, *42*(4), 403–419. https://doi.org/10.1556/204.2020.00018

Keynes, J.M. (1936), The General Theory of Employment, Interest and Money, Harcourt, Brace and Company, New York.

Mohammad Abd Al Kareem. (2024). Estimating the optimal size of government spending in Egypt using an expanded distributed gap autoregressive model. Arab Economic Research, 33(1), 40-72.

Manamperi, N. (2016). Does military expenditure hinder economic growth? Evidence from Greece and Turkey. Journal of Policy Modeling, 38(6), 1171-1193.

Nouira, R., & Kouni, M. (2021). Optimal government size and economic growth in developing and MENA countries: A dynamic panel threshold analysis. Middle East Development Journal, 13(1), 59-77.

Ocheni, S. I. (2018). Empirical examination of the effects of government spending on the GDP growth rates of Nigeria. Indian Journal of Commerce and Management Studies, 9(3), 26-31.

Tatom, J. A. (1991). Public capital and private sector performance. Review, 73.

Viet Hong Anh, N., & Thi Kim Oanh, T. (2023). Role of institution quality in the impact of government expenditure on economic development: a case study in Vietnamese provinces. Macroeconomics and Finance in Emerging Market Economies, 16(3), 409-427.