

The Impact of Fiscal Policy on Private Consumption in Egypt

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Abstract:

The Egyptian economy has been passing through several political and social incidents that necessitate choosing the appropriate fiscal and monetary policies. These economic fluctuations can be partially explained by the high share of private consumption from GDP. Thus, the impact of fiscal policy depends on how consumers respond to government actions. The study in hand applied the Generalized Method of Moments (GMM) to test the impact of fiscal policy indicators, namely public expenditure, government consumption, spending on health, spending on education, spending on social protection, revenues from direct taxation and revenues from indirect taxation on private consumption, proxied by per-capita private consumption in Egypt over the period from 1975 to 2022. The study reached three basic results: government expenditure has a negative effect on private consumption; per-capita national income is the most impactful variable on fiscal policy; during normal economic conditions, there is a positive relation between taxation and government consumption, whereas, during huge economic changes, the relation turns negative.

Keywords: private consumption, fiscal policy, taxation, government expenditure, GGM.

1. Introduction: The Evolution of Fiscal Policy in Egypt:

The impact of fiscal policy has been controversial. On one hand, according to the neoclassical theory, the effect of taxes is negative on private demand and, hence, on aggregate output because the fiscal multiplier is less than one. On the other hand, the Keynesian theory predicts that fiscal policy can positively affect consumption decisions if the positive effect on real wages and, thus, on-demand outweighs the negative effect of taxes. These demand-side models predict that the fiscal multiplier is higher than one. (Tagkalakis, 2008; Correa et al., 2014)

The effect of fiscal policy on the economy depends on the consumers' response to government actions. If consumers follow the Ricardian equivalence, they will predict government policies and reduce private consumption. However, if they don't, public expenditures financed with debt do not affect private consumption; thus, the expansionary fiscal policy will be more effective. (Correa et al., 2014)

Concerning Egypt, the economy passed through many political and social events that altered the fiscal and monetary policies adopted by the government. During the 1950s, the large role for government led the economic development for years until the two wars with Israel, in 1967 and 1973 which led to closing of the Suez Canal, collapsing in oil prices and reducing Egyptian migration to neighboring countries. Altogether led to

the slow growth of the public sector and raised government deficits and international debts. (Pfeifer, 2012)

To solve these economic problems, President Anwar al-Sadat opened the economy to foreign capital by passing Law 43 in 1974, which provided attractive advantages to investors, such as protection from nationalization and exemptions from taxes. This led to increasing foreign direct investments, revenues from the Suez Canal, tourism, and remittances from Egyptians working abroad. However, despite the economic growth of real GDP during the first half of the 1980s and the rapid growth in private investments, the imports of consumer goods increased because the growing investment was not employed to satisfy the domestic markets, and as a result, public debts accumulated and trade deficits increased. These all led to the launching of the Economic Reform Program in 1991 to guide the Egyptian economy through three stages. (Panizza, 2001)

The first stage (1991-1998) involved structural adjustments through trade and financial market liberalization, privatization, and facilitating small investments. However, several shocks faced the country during the second half of the 90s; for instance, the terrorist incidents in 1997 in Luxor declined tourism revenues massively, the reduction in world oil prices led to a reduction in revenues from oil exports and the East-Asian financial crisis increased capital flight from Egypt. Under fixed

exchange rate system, the capital and current accounts deficits reduced the foreign reserves. (Botros, 2007)

The second stage (1998-2004) involved institutional reforms through launching intellectual property rights, mortgage finance and securitization, privatization of state-owned banks, the abundance of the fixed exchange rate and the adoption of floating exchange rate system in 2003, export promotion and tourism development. (Dobronogov & Iqbal, 2006; Botros, 2007)

The third wave involved policies to liberalize the economy through restructuring the tax system. For instance, the income tax law of 2005 reduced personal and corporate income taxes, the real estate tax law of 2008 encouraged a transparent environment for the real estate sector. Adding to all this, the continuous improvement in the administration and the automation of government receipts and tax collection. Besides, the third phase included public sector reform through the elimination of subsidies and introducing a public-private partnership (PPP) policy and program in 2006. (Emam, 2012)

However, these market-oriented policies allowed the economy to grow with an average annual GDP growth reaching 6.4% during the period 2004-2008 and become one of the leading economies of Africa and the Middle East. This rapid growth of GDP was attributed to the increase in domestic demand and

private consumption, which constitutes more than 70 % of GDP. (Fikri & Hassan, 2012)

The revolution of 2011 had several implications on the fiscal balance. For instance, the sharp decline in the non-tax revenues against the increase in grants and tax revenues (MoF Financial Monthly Bulletin, 2012) and the 15% increase in pensions and wages authorized by the government in In March to absorb the public anger. This made the government to apply a contractionary fiscal policy and to pass a law in January 2012 to cut public spending by an amount of EGP14.3 billion through reducing subsidies, salaries and employee' benefits. (Emam, 2012)

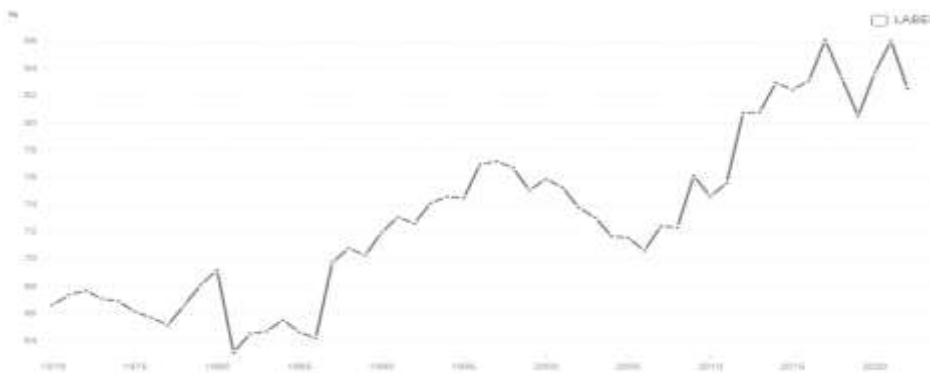
To eliminate the increasing fiscal deficit, the government relied on internal sources of funds and issued T-bills denominated in US dollar and two-year government debt papers together with the financial support from Arab countries and international institutions.

After the second revolution of 2013, Egypt's domestic and external debts reached 23.4% and 25.7% of GDP, respectively, whereas total budget revenue increased by 15.4% against 24.9% increase in total budget spending. The government undertook several fiscal reforms to generate more revenues via widening the tax base by depending on VAT (Value Added Tax), implementing a new property tax, and modifying income tax law. And to rationalize spending. Through improving the efficiency of public investments

and public debt management, introducing a new cash management system, strengthening internal auditing, and reviewing public procurement law to rationalize energy subsidies.

This generally observed unsustainable economic growth is attributed mainly to the high share of private consumption that constituted an average of 73% of GDP over the study period (1970-2022) as shown in fig.(1), reaching its maximum level to 86% in 2021 and consequently, the dependence on consumer's spending activity rather than capital formulation and investment (Ministry of Investment 2009 and MoF Monthly 2012). (Kandil, 2011)

Figure (1)



Households and NPISHs final consumption expenditure (% of GDP)
World Bank national accounts data, and OECD National Accounts data files.

The purpose of this paper is thus two folds. Firstly to investigate the impact of fiscal policy indicators on the private consumption in Egypt over the study period 1975-2022.

Secondly, to determine the main socio-economic variables that shape the fiscal policy in the country.

2. Fiscal Policy and Private Consumption:

2.1 Theoretical Background:

Private consumption can be defined as the market value of all products (including durable products and services) purchased by households. Many economic theories tried to explain the main determinants of private consumption expenditure and its impact on overall economic performance. (Ali, 2023)

According to the Absolute income theory introduced by John Maynard Keynes (1936); current private consumption depends on current disposable income according to the rate of marginal propensity to consume which is positive and less than one. Accordingly, fiscal policy directly impacts aggregate demand and is the primary policy tool for government intervention in the economy through altering taxation or government expenditure. Tax policy is much more effective in mobilizing resources needed to finance public spending, achieve equal income distribution and foster aggregate demand. On the contrary, monetary policy, according to Keynes has no direct impact on private consumption. (Fernandez-Corugedo, 2004; Philip, Filho & Henrique, 2018)

The permanent income hypothesis presented by Milton Friedman (1957) assumes that private consumption depends on permanent income which is defined as the long-term average income that the consumer is expected to receive over his lifetime. According to Friedman's theory, the relation between permanent income and permanent consumption depends on three main variables: (1) the interest rate of borrowing and lending; (2) the ratio of property and non-property income (defined by Friedman as nonhuman wealth); and (3) factors affecting consumers' tastes and preferences. Consequently, economic policies that result in increased income will not necessarily lead to increased consumer spending. (Friedman, 1957)

The Life cycle hypothesis introduced by Franco Modigliani (1954) and inspired by Irving Fisher (1930) and Keynes (1936) assumed that changes in life-time income (average income over the life span) lead to proportional changes in private consumption (after setting several assumptions about consumers' preferences and tastes). Besides, according to Modigliani and Brumberg (1980), the saving ratio is pro-cyclical and changes over consumers' life-cycle to smooth consumption. (Deaton, 2005)

Concerning the fiscal policy, Modigliani argued that government expenditures financed via public borrowing will create a deficit paid by future generations; whereas expenditures

financed through taxes will be paid by current generations. Therefore, fiscal policy should always be considered a national burden, leading to private investment crowding out.

This life-cycle hypothesis is very close to the permanent income hypothesis offered by Milton Friedman. However, the length of the planning period differs. According to Friedman, this period is infinite (life-time), whereas Modigliani-Brumberg's planning period is limited and specific. (Jappelli, 2005)

In the 1974, Robert Barro introduced the term “Ricardian equivalence” relative to David Ricardo. According to Ricardo, financing government expenditure via either taxation or public borrowing will yield similar macroeconomic effects under his assumptions of markets’ rigidity, liquidity constraints and individuals’ rational expectations. Rational individuals will expect that the current public borrowing made by the government will be redeemed in the future through raising future taxes. To be able to pay these taxes, they have to save through buying the governments’ bonds. Eventually, interest rates, private investment and gross demand will remain unchanged. (Tsoulfidis, 2008; Correa et al., 2014)

Accordingly, only unanticipated fiscal changes can be effective. Besides, Fiscal shocks will have greater effect on private consumption during recessions than during expansion phases of the business cycle. The effect will even be larger in less

financially-developed countries because individuals will face credit constraints and fiscal policy changes will be translated directly into consumption changes. (Tagkalakis, 2008)

2.2 Empirical Studies:

Empirically, many researches have been undertaken to investigate and analyze the macroeconomic effects of fiscal changes either by taxation and/or government expenditure on economic growth channeled through the policy implications on private consumption and investment over the business cycle fluctuations in developing and/or developed countries.

For instance, in 2007, Alfredo Schclarek compared the impacts of fiscal policy on private consumption in 19 industrialized countries against 21 developing countries from 1970-2000. His study finds that using government expenditure as a fiscal policy tool affects both countries, which reflects that the initial country's conditions don't affect the outcome of fiscal spending. However, government spending has a larger effect on private consumption in developing countries than in industrial countries, which can be attributed to the credit constraints in developing countries. Concerning taxation, the study finds that taxes have an insignificant effect on private consumption in industrial countries, unlike its significant effect in developing countries. Besides, the study denied the hypothesis of a more

effective expansionary fiscal policy than a contractionary one. (Schclarek, 2007)

Likely, in 2008, Athanasios Tagkalakis examined the impact of changes in fiscal policy on private consumption during the economic fluctuations of the business cycle for 19 OECD countries over the period: 1970–2002. The results reveal the great effect of fiscal policy on private consumption specifically in countries suffering from developing or underdeveloped consumer credit market and during periods of economic downturn. This is explained by the finding that during recessions, consumers facing imperfect credit markets that bind their borrowing and lending actions tend to spend the extra income gained from fiscal expansion on consumer goods. (Tag kalakis, 2008)

In 2021, Oluwaseyi Adedayo Adelowokan examined the effect of both fiscal policy and private consumption on economic growth within the Economic Community of West African States (ECOWAS) over the period from 1988 to 2017. The study concluded that the expansionary fiscal policy applied by Nigeria through increasing government spending lead to an inverse significant effect on economic growth, whereas, capital expenditure has a positive significant effect. Besides, the study found that unexpectedly policies followed by the government to increase private consumption inversely affected economic growth

which explains why raising taxes in ECOWAS countries boost economic growth over the long term. (Adelowokan, 2021)

The study made by Gabriel Temesgen Woldu in 2023 to investigate the impact of fiscal policy on private consumption and private investment through estimating the value of fiscal multiplier in 18 Sub-Saharan African countries over the period 2000–2018. The study finds that fiscal multipliers are more significant during economic recessions than during expansions, which explains the more substantial effects of expansionary fiscal policies on both consumption and investment than contractionary policies. Besides, the study finds that fiscal policy via government expenditure basically affect households and financially constrained investors. These findings follow the predictions of the Keynesian views. (Woldu, 2023)

3. Econometric model and data:

3.1 The system of endogenous equations

The study applied a simultaneous equations framework using Generalized Method of Moments (GMM) to investigate the impact of fiscal policy indicators on private consumption in Egypt over the period from 1975 to 2022. GMM models have become a widely used tool in econometrics for analyzing time series data. They provide a flexible framework for estimating parameters in economic models and addressing endogeneity issues. The introduction of GMM techniques can be attributed to several

influential papers in the field. One of the seminal works is the paper by Hansen (1982), which laid the foundation for GMM estimation and introduced the Hansen's J statistic for testing overidentification which provided a rigorous framework for estimating dynamic economic models using moments-based methods.

Following Giavazzi and Pagano (1996), it is possible to separate the effects of fiscal policy during normal times and during periods of large structural changes. In addition to that, the problem of joint endogeneity of real per-capita private consumption and fiscal policy will not be addressed through the estimation of instrumental variables in a single equation. Instead, the determinants of fiscal policy are explicitly modeled through the estimation of a system of endogenous equations.

The basic specification of the system is

$$y_t = \alpha_0 + \mathbf{X}_t \boldsymbol{\alpha}_1 + \alpha_2 g_t + \alpha_3 g_t d_t + \alpha_4 g_{t-1} + \alpha_5 g_{t-1} d_t + \varepsilon_t \dots\dots\dots (1)$$

$$g_t = \beta_0 + \mathbf{W}_t \boldsymbol{\beta}_1 + \beta_2 y_t + \omega_t \dots\dots\dots (2)$$

where y is per-capita private consumption; g is a fiscal policy variable; \mathbf{x} and \mathbf{w} are sets of controls that might have some elements in common; d is a dummy variable that equals one during episodes of sizeable fiscal change and zero otherwise; α s and β s are parameters to be estimated; ε and ω are random disturbances, and t denotes a generic year.

The variance–covariance residuals’ matrix of allows for heteroskedasticity, contemporaneous correlation of the residuals across equations and non-zero correlation between some of the regressors and the error term in each equation. Under those assumptions, GMM provides robust estimation of the parameters of the model, without requiring information of the exact distribution of the disturbances. The list of instruments for the identification of the GMM estimator includes the controls in \mathbf{x} and \mathbf{w} , the lagged values of the fiscal policy variables.

To assess the validity of this choice of instruments, the test of overidentifying restrictions (Newey and West, 1987) is performed for each set of estimates. The p-value associated with the test is reported at the bottom of each table. The null of the test states that overidentifying restrictions are correct. Therefore, a p-value above 0.1 can then be taken as evidence in support of the choice of instruments.

3.2 Data sources and variables definitions

The sample for the estimation used data from Egypt on the period 1975–2022. Real per-capita private consumption is a proxy for private consumption, the dependent variable in equation (1).

The indicators of fiscal policy are total public expenditure, government consumption, spending on health, spending on education,

spending on social protection, revenues from direct taxation, and revenues from indirect taxation. The list of controls includes per-capita national income, growth rate of population, percentage of the population aged above 65 (elderly). These are all taken from the World Development Indicators of the World Bank.

The last issue concerns the definition of the dummy variable. The dummy is supposed to pick episodes of sizeable fiscal contractions or expansions. Therefore, it must be defined in terms of a given change in the primary balance. In line with Purfield (2003) and Tavares (2004), the dummy takes value 1 in year t if the change in primary balance in that year is at least $\pm 1.5\%$ of GDP.

Table (1): variables definition and data sources

Variable	Description
CP	Per-capita Private Consumption
EXPG	Public Expenditure
CG	Government Consumption
EXPH	Spending on Health
EXPEDU	Spending on Education
EXPP	Spending on Social Protection
REVDT	Revenues from Direct Taxation
REVIDT	Revenues from Indirect Taxation
Income	Per-capita national income
Pop	Population growth
Eld	Older population (% total pop)

Source: by the author

4. Empirical Results

Tables (2) & (3) report the results of estimating the basic system specification for fiscal policy and per-capita private consumption. The top part of the table shows the estimated coefficients of Eq. (1), with the annual change in per-capita private consumption (CP) as the dependent variable and government expenditure (EXPG) or consumption (CG) among the set of regressors. The bottom part of the table shows the coefficients of Eq. (2), with fiscal policy as the dependent variable and per-capita private consumption among the set of regressors.

Table (2): Statistical results

GMM model: Fiscal policy and per-capita private consumption – basic specification				
Eq. (1): Dependent variable is CP				
Variable	Coefficient	Standard Error	z-Statistic	p-value
CP (-1)	-44.98***	13.98	-3.22	0.001
EXPG	63.84***	4.94	12.91	0.000
EXPG (-1)	46.80***	2.00	23.38	0.000
D*EXPG	53.11***	10.11	5.25	0.000
D*EXPG (-1)	53.22***	10.13	5.25	0.000
EXPH	1.42	1.44	0.99	0.321
EXPEDU	-3.02**	1.27	-2.37	0.018
EXPP	3.68***	0.96	3.84	0.000
Eq. (2): Dependent variable is EXPG				
Income	1.02***	0.32	3.19	0.003
Income (-1)	0.69**	0.32	2.16	0.036
Eld	0.35**	0.16	2.12	0.04
Pop	0.19	0.12	1.58	0.122
<i>J</i> -stat = 6.349 (<i>p</i> -value) = 0.2737				

Source: Stata 14

Notes: *, **, *** mean the rejection of null hypothesis at the 10%, 5% and 1% level of significance, respectively. The p-value of the J-statistics refers to the null hypothesis of correct overidentifying restrictions. Estimation is by GMM.

Table (3): Statistical results

GMM model: Fiscal policy and per-capita private consumption – basic specification				
Eq. (1): Dependent variable is DCP				
Variable	Coefficient	Standard Error	z-Statistic	p-value
CP (-1)	-30.85 ^{***}	8.13	-3.79	0.000
CG	-6.09	5.05	-1.20	0.229
CG (-1)	16.81 ^{***}	5.24	3.20	0.001
D*CG	2.66	14.29	0.19	0.852
D*CG (-1)	2.86	14.31	0.20	0.851
EXPH	3.98 ^{**}	1.86	2.14	0.032
EXPEDU	-4.83 ^{***}	1.41	-3.44	0.001
EXPP	1.72 ^{**}	0.85	2.01	0.044
Eq. (2): Dependent variable is CG				
Income	0.911 ^{***}	0.25	3.60	0.001
Income (-1)	0.63 ^{**}	0.26	2.45	0.019
Eld	0.42 ^{***}	0.13	3.20	0.003
Pop	0.04	0.10	0.41	0.685
<i>J</i> -stat = 3.86 (<i>p</i> -value) = 0.5696				

Source: Stata 14

Notes: *, **, *** mean the rejection of null hypothesis at the 10%, 5% and 1% level of significance, respectively. The *p*-value of the *J*-statistics refers to the null hypothesis of correct overidentifying restrictions. Estimation is by GMM.

The result from this set of estimates is that government expenditure in Egypt has Keynesian effects in times of both normal and large fiscal changes (as shown by the positive estimated coefficients on fiscal variables and on the interactive term in the first equation). A second interesting result is that the lagged value of per-capita consumption (CP(-1)) always has a

negative coefficient, thus suggesting some form of conditional convergence of private consumption.

Concerning the key variables affecting the fiscal policy in the second equation, per-capita national income is found to be the most potent variable. Additionally, population growth and the percentage of elderly in the total population also contribute significantly to the determination of fiscal policy.

J-stat refers to the Hansen's J statistic, which is a test for overidentification in the GMM model. The Hansen's J test assesses the validity of the instruments used in the model by examining whether the instruments are exogenous and uncorrelated with the error term. In this case, the p-values are greater than the significance level 0.1. Therefore, the study fails to reject the null hypothesis. This suggests that there is no significant evidence of overidentification in the GMM model. In other words, the instruments used in the model are valid and appropriately address the endogeneity of the variables.

Tables (4) and (5) show the estimation results for an extension of the specified system. The system now allows for changes in direct and indirect taxation, respectively, in addition to changes in government consumption, to affect per-capita private consumption.

Table (4): Statistical results

GMM model: Fiscal policy and per-capita private consumption – Extended model				
Eq. (1): Dependent variable is DCP				
Variable	Coefficient	Standard Error	z-Statistic	p-value
CP (-1)	-58.57 ^{***}	19.14	-3.06	0.002
CG	-4.70 ^{***}	10.51	-0.45	0.000
CG (-1)	27.78	5.36	5.18	0.654
RDT	-4.73	3.41	-1.39	0.165
RDT(-1)	3.99	2.74	1.46	0.145
D*CG	59.50 ^{***}	1.88	31.63	0.000
D*CG (-1)	-62.66	1.10	-56.72	0.000
D*RDT	23.53	14.56	1.62	0.106
D*RDT(-1)	-20.36	12.85	-1.58	0.113
EXPH	2.97	2.90	1.02	0.307
EXPEDU	-13.46 [*]	6.91	-1.95	0.052
EXPP	3.71	3.35	1.11	0.269
Eq. (2): Dependent variable is CG				
Income	0.28 ^{**}	0.14	2.07	0.045
Income (-1)	0.46 ^{***}	0.12	3.73	0.001
Eld	0.39 ^{***}	0.06	6.08	0.000
Pop	-0.03	0.05	-0.79	0.436
RDT	0.09	0.07	1.20	0.237
RDT(-1)	0.05	0.06	0.76	0.454
D*RDT	0.21 [*]	0.11	1.99	0.054
D*RDT(-1)	-0.20 [*]	0.13	-1.99	0.054
<i>J</i> -stat = 5.5338 (<i>p</i> -value) = 0.3543				

Source: Stata 14

Notes: *, **, *** mean the rejection of null hypothesis at the 10%, 5% and 1% level of significance, respectively. The p-value of the J-statistics refers to the null hypothesis of correct overidentifying restrictions. Estimation is by GMM

Table (5): Statistical results

GMM model: Fiscal policy and per-capita private consumption – Extended model				
Eq. (1): Dependent variable is DCP				
Variable	Coefficient	Standard Error	z-Statistic	p-value
CP (-1)	-34.95***	8.36	-4.18	0.000
CG	-0.81	6.58	-0.12	0.902
CG (-1)	14.31**	5.07	2.82	0.005
RIDT	-2.48	1.82	-1.36	0.175
RIDT(-1)	1.98	1.51	1.31	0.190
D*CG	-0.63	0.455	-1.40	0.162
D*CG (-1)	0.31	0.53	0.57	0.566
D*RIDT	-4.54	3.65	-1.24	0.213
D*RIDT(-1)	-4.21**	1.99	2.21	0.027
EXPH	-7.19***	2.72	-2.64	0.008
EXPEDU	1.73	1.37	1.27	0.205
EXPP	-0.80	6.58	-0.12	0.902
Eq. (2): Dependent variable is CG				
Income	0.21**	0.09	2.09	0.043
Income (-1)	0.08***	0.09	0.86	0.396
Eld	0.29***	0.04	5.93	0.000
Pop	-0.08	0.03	-2.42	0.021
RIDT	0.05	0.06	0.82	0.415
RIDT(-1)	0.15**	0.06	2.33	0.025
D*RIDT	-0.04*	0.09	-0.47	0.644
D*RIDT(-1)	-0.42*	0.13	-0.78	0.541
<i>J</i> -stat = 4.120 (<i>p</i> -value) = 0.3900				

Source: Stata 14

Notes: *, **, *** mean the rejection of null hypothesis at the 10%, 5% and 1% level of significance, respectively. The p-value of the J-statistics refers to the null hypothesis of correct overidentifying restrictions. Estimation is by GMM

Results in the above tables (4&5) show that in normal times, taxes and government consumption tend to move together (as they have positive coefficients as shown in the bottom parts of the two tables). Outside normal times, however, the relationship is reversed: higher taxation is associated with lower consumption and vice versa (seen from the negative coefficients of the interaction terms).

5. Conclusion:

The economy of Egypt has passed through many political and social events since the 1950s that have changed the fiscal policies adopted by the government. The effect of these policies depends on the response of consumers to government actions, as private consumption constitutes more than 80% of the GDP. Thus, this paper's main goal is to investigate fiscal policy's impact on private consumption using the Generalized Method of Moments (GMM) in Egypt from 1975 to 2022.

The study finds a significant negative relation between private consumption proxied by per capita consumption and government expenditure. This implies that increasing government spending crowds out private consumption in Egypt. Besides, the study realized that several variables determine the fiscal policy in Egypt; per-capita national income is the most influential, which implies a two-way relationship between fiscal

policy and economic growth. Population demographic dynamics also affect Egypt's fiscal policy.

The study also concluded that the state of the Egyptian economy and the consequent chosen strength of the fiscal policy could lead to different policy implications. For instance, during the study period 1975-2022, in normal economic times, both taxation and government consumption move simultaneously. Meanwhile, during times of structural economic changes, an inverse relationship is found between taxation and government consumption.

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