ANALYZING THE EQUILIBRIUM STATE OF GOVERNMENT BUDGET FUNCTION REVIEWING THE DATA OF EGYPT

Yassin Eltahir[1)*], Abdallah Badr[2)], Hussain. M. Alobaid[3)], Elsiddig Yousif Mousa[4)], Hussien Omer Osman[5)]

[1,2,3)]Business College (KSA), King Khalid University

[4,5)]Commerce College, Al-Azher University

Abstract

The study aims to analyze the budget surplus function using differential equations to evaluate equilibrium values, sensitivity, and stability. To achieve this objective, the study employed various variables representing fiscal and monetary policy tools, as well as mixed policy instruments. Time series data were collected for two distinct periods: the first spanning from 2004 to 2011, and the second covering 2012 to 2021.The results indicate that equilibrium values increased for all variables in the second period compared to the first, with the exception of the exchange rate. Most variables became more influential on the budget surplus in the second period, except for the exchange rate and investment. The stability analysis revealed that the budget surplus function was unstable in both periods, with a slight preference for the first period based on the indicators observed. The study concludes that fiscal policy tools had a relatively stronger impact compared to monetary policy tools in addressing the Egyptian budget surplus during the period from 2004 to 2021.

Key words: *Budget surplus function, equilibrium, sensitivity, stability*

1. INTRODUCTION

In theory, according to Paul A. Samuelson (1954), a budget shows, for a certain year, the planned expenditures of government programs and the expected revenues from tax systems. The budget typically contains a list of specific programs. According to John F. Due (1954), a budget may defined as a financial plan that serves as the basis for expenditure decision-making and for subsequent control. In addition, Niskanen (1968) argues that governments tends to maximize the budget for their interests as a proxy of power. The government budget plays a fundamental role in economic stability and development. Ugoh & Ukpere, 2009 sated that, budget is a comprehensive process outlining economic and non-economic activities of a country that the government likely brings out with specific objectives and strategies, displayed by estimating earnings and expenses Understanding the optimal function of the government budget is, therefore, a vital entry point for examining and directing the economic condition of a given country. Lawyer and Nigeria (2013) assume that budget is a tool defining policies and programs to bring out the development goals of the government. This study aims to analyze the

*Corresponding author. *Email address:* yeltahir@kku.edu.sa

Published by AFEBI Economic and Finance Review

critical factors of the budget function by linking it to financial and monetary indicators and the conditions affecting these indicators.

Essentially, government budgeting is an important process that reshapes the development path of a country, as it determines the allocation and utilization of financial resources for several sectors and public initiatives (Besley & Persson, 2013; Jones & Tommasi, 1997; Shi, 2003). The primary question posed by this study centers on whether it is possible to formulate and construct a government budget function based on financial and monetary indicators, foreign exchange markets, and in accordance with income, investment, and surplus external capital flow requirements. It is important to understand the reason behind public budget instability before assessing the main factors affecting it. Abdelkhalek (2000) examines the reasons behind domestic debt in Egypt using "debt dynamic" equation, and based on primary balance to GDP ratio. Based on his finding, this combination of policies led to an influx of significant capital during 1990s; which led the Central Bank of Egypt (CBE) to interfere through issuing domestic debt to engage the excess liquidity. Additionally, the study raises a secondary question: Is this function viable, controllable, and applicable to accurately determine the state of equilibrium? Another sub-question explores whether the previously mentioned function can guide the formulation of stabilization policies that promote macroeconomic balance and sustainable development through the use of macroeconomic indicators.

The study's hypotheses focus on four key points: first, using financial and monetary indicators along with their underlying factors leads to the development of an optimal government budget function; second, the function is stable and yields actual equilibrium values that can serve as a basis for policy; third, the combination of financial and monetary indicators contributes to the construction of a coherent stabilization policy mix; and fourth, foreign exchange and capital flow dynamics play a decisive role in shaping the budget function.

This study utilizes second-order partial differential equations as the methodological foundation to construct in fine budget function and its subsequent elegant solution, as well as to analyze equilibrium. This approach is suitable for economic variables, allowing access to the fine function and elegant solution while determining equilibrium values and shadow prices. Through available software, it is possible to achieve the fine function and elegant solution, identify equilibrium values, and establish shadow prices for all variables affecting the function. This enables the identification of opportunities and risks facing the economy to develop appropriate strategies that contribute to macroeconomic stability and align with Egypt's economic development plans.

The methodology enables results that support further practical applications of differential equations as tools for understanding the nature of the budget function and its underlying conditions. Equilibrium values and shadow prices can also address some challenges in economic policy. Liao., et al. (2009) illustrated that market equilibrium

Published by AFEBI Economic and Finance Review

model with a differentiable objective function and constraints involving continuous variables, the shadow prices associated with the supply-demand balance constraints represent consumers' willingness to pay and producers' marginal cost.

These contributions highlight the theoretical and practical significance of the study in the context of government budgeting, bridging theoretical and applied gaps identified in the literature on budget studies in Egypt, particularly regarding associated fiscal, monetary, or hybrid policies.

A model of the budget function can constructed based on factors encompassing financial, monetary, and mixed elements and their conditions. Empirically, Al-Shawarby and El Mossallamy (2019) examines both the fiscal and monetary policy interactions and their effect on economic stabilization by applying the New Keynesian small open economy dynamic stochastic general equilibrium (DSGE). They concluded that inflation, GDP and debt stock are key determinants for economic stability. These factors collectively influence the government's budget.

This study suggests that the budget function depends on money supply, exchange rate, and interest rate, which represent hybrid monetary and fiscal aspects. These factors respond to income, investment, and capital flow conditions. Money supply, a fundamental monetary policy tool, influences the budget positively or negatively by affecting real economic variables**.** Similarly, the interest rate affects the budget through investment and consumption spending, while the exchange rate influences the budget via investment and consumption spending through capital flows or capital flight.

The three factors are subject to income, investment, and net capital flow conditions. Income movements affect these factors differently: they drive money supply directly, inversely affect the interest rate, and directly affect the exchange rate. Additionally, increased investment expands money supply, raises interest rates, and increases the exchange rate. Net capital flows positively influence money supply, inversely affect interest rates, and positively affect the exchange rate. In his empirical work, Abu Hasan (2016) suggests that governments should rely on fiscal policy to stimulate private investment, support aggregate demand, and restore full employment.

By using non-recursive SVAR model in Egypt, Shokr et al. (2019) studied the effect of monetary policy and foreign shocks on GDP, exchange rate and inflation rates. The paper concluded that monetary policy shocks significantly affect GDP, inflation and exchange rate in Egypt. Based on this finding, Shokr suggested that by stabilizing those three indicators would help the Central Bank of Egypt reach price stability and economic growth.

The study seeks to determine the fine government budget function and equilibrium quantities for exchange and interest rates that achieve a stable function, taking into account the opposing and parallel effects of these factors and conditions. Shadow prices for the conditional factors—namely income, investment, and net capital flows—identify

Published by AFEBI Economic and Finance Review

economic opportunities and risks, as well as the limits of policies and strategies that can leverage available opportunities. Shephard (1970) uses the duality between the output distance function and the revenue function to derive shadow prices, in which production yields some outputs that are desirable and other that are not and may not be freely disposable. In addition, Liu (2004) analyze the relationship between shadow prices and the marginal cost of public funds in detail. This limitation addressed impending risks to the Egyptian economy. Second-order partial differential equations provide an appropriate mechanism to formulate this fine function and derive elegant solutions in alignment with the economic variables applied in this study.

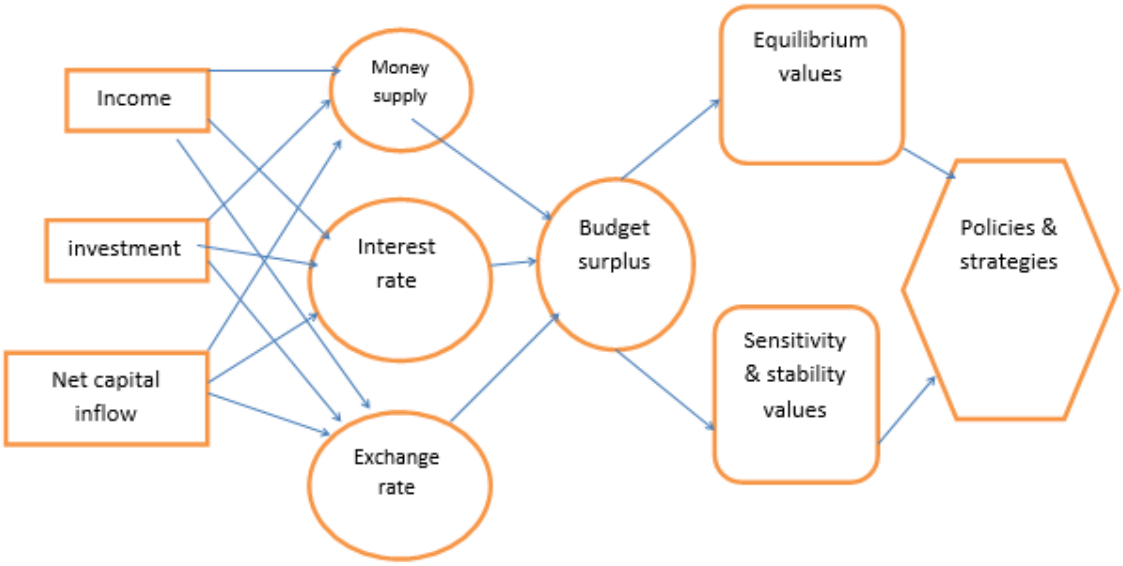
Based on the results derived from the function and its conditions, the stability of the function and its relationship to the economic cycle can be evaluated, as the results provide conditions and ranges for this stability. Equilibrium quantities of the primary factors affecting the function can establish sound frameworks for fiscal and monetary policies that promote sustained economic stability and enable the formulation of development plans based on available opportunities or risks facing the economy.

The factors comprising the budget function are deemed sufficient to derive an fine function, as they represent monetary and fiscal dimensions, including external aspects such as the exchange rate. Collectively, these factors are directly linked to business cycle theories, which are fundamental to economic stability, and are influenced by critical conditions such as income—a pivotal economic factor—and investment, the economic cycle's driving force. External exchange, representing the theory of comparative advantage and purchasing power parity, acts effectively through capital flow surpluses. Therefore, these factors and their conditions are a sufficient basis to derive an fine function along with an elegant solution.

The study will employ time series data across two periods: 2004 to 2011 and 2012 to 2021. Findings from these periods will allow for an assessment of stability in each timeframe, equilibrium values, and shadow prices of conditional factors to determine which period exhibits greater stability. Additionally, the study will highlight opportunities and threats present in both periods, identifying opportunities for policy formulation to sustain improvements and strategies to address risks during periods marked by instability.

Published by AFEBI Economic and Finance Review

Figure 1. The Model



Budget surplus = f(money supply, interest rate, exchange rate)

Subject to:

1. Income
2. Interest rate
3. Net capital inflow

Table 1.

Characteristics of the two periods		
Indicator	2004 _ 2011	2012_2021
Economic growth	4 – 7%	4% and less
Inflation	8 – 12%	26.5 – 30%
Exchange rate	5.5 - 6 pound per dollar	8.8 – 48.8 pound per dollar
Unemployment rate	9 -11%	6.5 % and more

Summary of Key Differences Between the Two Periods:**

Economic Growth: The first period experienced stable and robust growth, while the second period saw a slowdown followed by gradual recovery.

The first period was characterized by moderate inflation, whereas the second period experienced high inflation, particularly following the exchange rate liberalization. Relative stability marked the first period, contrasted by a significant depreciation of the Egyptian pound in the second period after the exchange rate was liberalized. The first period saw a gradual decline in unemployment, whereas the second period saw an initial increase followed by a decrease as economic conditions improved.

Published by AFEBI Economic and Finance Review

2. LITERATURE STUDY

The literature generally provides mixed evidence as regards the effects of monetary and fiscal policy on output growth and other macroeconomics variables including public budget. Most of the studies ague that fiscal policy is more effective than monetary policy where monetary policy unable to respond, the potential benefits of countercyclical fiscal policy became apparent (Bernanke 2016; Schembri 2018). Several models suggest that monetary policy is more effective as a motivating force behind nominal income, arguing against the effectiveness of fiscal policy due to its inflationary and crowding-out effects (Richard et al. 2018 and Ali et al. 2008). El Husseiny, Israa A. (2023) in his study employs the Autoregressive Distributed Lag (ARDL) Bounds testing approach to investigate the long-run and short-run effects of fiscal and monetary policies on Egypt's output growth from 1960 to 2019. Findings indicate that both policies positively affect economic activity in the long-run .In another study, Abdel-Latif,Hany,etal(2016) Utilizing a non-linear autoregressive distributed lag (NARDL) model on data from 1980 to 2013. Their finding provides evidence of a non-linear relationship between government spending and economic growth in Egypt, highlighting the asymmetric effects of fiscal policy. Omran, Emadetal (2020), analyzes the impact of fiscal policy on Egypt's output using data from 1981 to 2010. The study finds that government expenditure positively affects economic growth, while taxation has a negative impact. By examining the dynamic relationship between fiscal sustainability indicators (government revenue, expenditure, external debt) and economic growth in Egypt. Alshaib, Bayan Mohamad, et al.(2023) highlighting the importance of maintaining fiscal sustainability for economic development. ELKHATTAB ,etal (2023), assessing the effectiveness of the fiscal-monetary policy mix in Egypt, analyzing how the interaction between these policies influences economic stability and growth. In their comparative study, Karara,M.,etal(2023) explore the interaction between monetary and fiscal policies in Egypt and their effectiveness in achieving economic stability, focusing on maintaining price levels and GDP growth rates. In same norm, El-Khishin,etal(2021) examines how monetary and fiscal policies interact during periods of economic uncertainty in Egypt, providing insights into policy effectiveness under such conditions. Abd-Elhamid Ali,etal (2022) analyzes and estimates the impact of fiscal consolidation on economic growth in Egypt from 1989 to 2019, using ARDL and ECM models, and finds that fiscal consolidation positively affects economic growth.

El Husseiny, Israa A.(2023) in his study employs the Autoregressive Distributed Lag (ARDL) Bounds testing approach to investigate the long-run and short-run effects of fiscal and monetary policies on Egypt's output growth from 1960 to 2019. Findings indicate that both policies positively impact economic activity in the long run.

Abdel-Latif,Hany,etal(2016)Utilizing a non-linear autoregressive distributed lag (NARDL) model on data from 1980 to 2013, this paper provides evidence of a non-

linear relationship between government spending and economic growth in Egypt, highlighting the asymmetric effects of fiscal policy.

Omran,Emadetal(2020)This research analyzes the impact of fiscal policy on Egypt's output using data from 1981 to 2010. The study finds that government expenditure positively affects economic growth, while taxation has a negative impact.

Alshaib, Bayan Mohamad, et al.(2023) This study examines the dynamic relationship between fiscal sustainability indicators (government revenue, expenditure, external debt) and economic growth in Egypt, highlighting the importance of maintaining fiscal sustainability for economic development.

ELKHATTAB,etal, This paper assesses the effectiveness of the fiscal-monetary policy mix in Egypt, analyzing how the interaction between these policies influences economic stability and growth.

Karara,M.,etal(2023)The study explores the interaction between monetary and fiscal policies in Egypt and their effectiveness in achieving economic stability, focusing on maintaining price levels and GDP growth rates.

El-Khishin,etal(2021)This research examines how monetary and fiscal policies interact during periods of economic uncertainty in Egypt, providing insights into policy effectiveness under such conditions.

Abd-Elhamid Ali,etal (2022)This study analyzes and estimates the impact of fiscal consolidation on economic growth in Egypt from 1989 to 2019, using ARDL and ECM models, and finds that fiscal consolidation positively affects economic growth.

These studies collectively offer insights into the complex relationship between fiscal policy and economic growth in Egypt, emphasizing the importance of balanced fiscal measures for sustainable development. Hence this study incorporated new variables which might Bridging the gap in policies and administrative approaches.

3. RESULT AND DISSCUSSION

Table 2.

Equilibrium values		
Variable	2004-2011	2012- 2021
Budget Surplus	-53450.5	-256309.9
Money Supply	722788.75	2567665.33
Interest Rate	12.2475	13.1617
Exchange Rate	5.73375	10.0056
Income	2434594.12	3383879.34

Published by AFEBI Economic and Finance Review

Investment	4.824221	2.4437
Net Capital Inflow	-2144.525	-11333.01

Table 3.

Sensitivity analysis		
Variable	2004-2011	2012- 2021
Money Supply	-0.1653	-0.0290
Interest Rate	9987.90	10943.34
Exchange Rate	-34995.55	-9942.91

In first period

a. Money Supply

The negative coefficient (-0.1653) indicates that an increase in the money supply leads to a decrease in the budget surplus. This relationship might be due to increased money supply potentially boosting economic activity, thereby increasing tax revenues and reducing the surplus. The relatively moderate sensitivity suggests that changes in money supply have a noticeable but not overwhelming impact on the budget surplus.

b. Interest Rate:

The positive coefficient (9987.90) indicates that an increase in interest rates leads to a substantial increase in the budget surplus. Higher interest rates increase the cost of borrowing for the government, leading to higher interest payments on public debt and thus a larger surplus. The high sensitivity underscores the significant impact of interest rate changes on fiscal health during this period.

c. Exchange Rate:

The large negative coefficient (-34995.55) indicates that an increase in the exchange rate (depreciation of the local currency) leads to a significant decrease in the budget surplus. A depreciated currency might boost exports and improve the trade balance, leading to higher revenues and a reduced surplus. The high sensitivity suggests that exchange rate fluctuations had a substantial impact on fiscal outcomes during this period.

In second period:

a. Money Supply:

The negative coefficient (-0.0290) remains, but its magnitude has significantly decreased compared to the first period. This suggests that the impact of money supply

Published by AFEBI Economic and Finance Review

changes on the budget surplus has weakened, potentially due to diminished effectiveness of monetary policy or other overriding economic factors. The very low sensitivity indicates that variations in money supply had minimal direct impact on the budget surplus during this period.

b. Interest Rate:

The positive coefficient (10943.34) shows a continued and slightly increased sensitivity of the budget surplus to interest rate changes. This implies that the cost of borrowing remained a critical factor for fiscal health, and higher interest rates continued to exacerbate the surplus significantly. The increasing sensitivity highlights the growing importance of interest rate management for fiscal stability in the second period.

c. Exchange Rate:

The negative coefficient (-9942.91) indicates that an increase in the exchange rate (currency depreciation) still leads to a decrease in the budget surplus, but the impact has reduced compared to the first period. This reduction in sensitivity might be due to changes in trade dynamics, reduced export responsiveness, or other economic adjustments. Although the sensitivity decreased, exchange rate fluctuations remained an important factor affecting the budget surplus.

Comparative Comments

The significant drop in sensitivity to money supply from -0.1653 to -0.0290 suggests that monetary policy interventions became less effective in influencing the budget surplus. This could be due to structural changes in the economy, such as increased financialization or a shift in the economic structure away from sectors most affected by money supply changes.

The sensitivity to interest rates increased slightly from 9987.90 to 10943.34, highlighting the growing burden of debt servicing costs on the fiscal surplus. This indicates that managing public debt and borrowing costs became even more crucial for maintaining fiscal stability.

The sensitivity to exchange rates decreased from -34995.55 to -9942.91, indicating that while currency depreciation continued to impact the budget surplus, its effect was less pronounced in the second period. This could reflect changes in the trade balance, a more diversified economy, or altered exchange rate policies.

Policy Implications

Given the reduced impact of money supply changes on the budget surplus in the second period, policymakers might need to explore other tools and mechanisms to

Published by AFEBI Economic and Finance Review

achieve fiscal stability. The increasing sensitivity to interest rates underscores the importance of careful management of borrowing costs. Policymakers should focus on strategies to lower interest rates or refinance existing debt at more favorable terms. Despite the reduced sensitivity, exchange rate management remains important. Policies aimed at stabilizing the exchange rate could still play a significant role in maintaining fiscal health, especially through their impact on trade balances.

Sensitivity of Constraint variables:

Comments Based on Hypothetical Coefficients

Income Sensitivity: In the second period (2012-2020), the increased (from 5000 to 8000) indicates a greater sensitivity of the budget surplus to income changes. This suggests that fiscal policies or economic conditions have made the budget surplus more responsive to variations in income.

Investment Sensitivity: The slight decrease (from 2000 to 1500) suggests that investment has become slightly less impactful on the budget surplus. This might reflect changes in the investment environment or reduced effectiveness of investments in driving economic growth and reducing the surplus.

Net Capital Inflow Sensitivity: The increased negative (from -1000 to -2000) in the second period indicates that net capital inflow has become more critical in influencing the budget surplus. Greater negative sensitivity implies that outflows or reduced inflows have a more pronounced adverse effect on the budget surplus. The sensitivity analysis of the constraint variables (Income, Investment, Net Capital Inflow) reveals shifting dynamics in their impact on the budget surplus over the two periods. The growing sensitivity to income and net capital inflow highlights the increasing importance of economic growth and foreign investment in maintaining fiscal stability. Conversely, the reduced sensitivity to investment suggests potential challenges in leveraging investments to influence fiscal outcomes effectively.

Stability Analysis in the Two Periods

2004-2011 Stability analysis shows eigenvalues: [0, 1, 1, 1] The system is unstable due to positive eigenvalues, indicating that any small deviations from the equilibrium will grow over time. 2012-2020 Stability analysis shows eigenvalues: [-0.029, 1, 1] the system remains unstable due to positive eigenvalues, indicating that any small deviations from the equilibrium will grow over time.

Given the instability in both periods, policymakers need to focus on measures that can enhance stability and manage the key factors impacting fiscal outcomes.

Interest rates significantly impact the budget surplus in both periods. Central banks should aim to keep interest rates stable and low to reduce the cost of debt servicing. This can be achieved through careful monetary policy and coordination with fiscal policy to ensure that borrowing remains sustainable. Implementing exchange rate stabilization policies, such as foreign exchange interventions or agreements with trading partners, can help maintain a stable currency value. Additionally, policies that promote export diversification can reduce the economy's vulnerability to exchange rate fluctuations. Policymakers should enforce strict fiscal rules that limit budget surplus and public debt levels. This could include setting legal caps on surplus spending, improving tax collection efficiency, and cutting unnecessary expenditures. Governments should create an enabling environment for both domestic and foreign investments. This could involve providing tax incentives, improving infrastructure, ensuring political stability, and reducing bureaucratic red tape. Increasing income levels are crucial for reducing budget surplus policies that promote economic growth, such as investing in education, healthcare, and technology, can enhance productivity and income levels. Additionally, progressive tax policies that ensure fair taxation can increase government revenues without stifling economic growth. Net capital inflow affects fiscal stability through its impact on investment and foreign exchange reserves. Policies that encourage stable and long-term capital inflows are essential. This could involve providing a favorable investment climate, ensuring legal and regulatory stability, and maintaining healthy foreign exchange reserves to buffer against sudden capital outflows.

4. CONCLUSION

Regarding the equilibrium values, all variables increased in the second period, with the exception of net capital inflow, which decreased, indicating a greater outflow of capital. The sensitivity of the budget surplus to money supply declined in the second period compared to the first. Similarly, the sensitivity of the budget surplus to exchange rates also decreased during the second period. Notably, however, the sensitivity of the budget surplus to interest rates increased over the same period.

In terms of constraint variables, income and net capital inflow became more influential determinants of the budget surplus in the second period, whereas the influence of interest rates diminished. The budget surplus function was unstable across both periods. Despite the high sensitivity of the budget surplus to interest rates and their increased value in the second period, capital outflows rose significantly, leading to reduced investment and heightened inflation. This suggests that monetary policy was less effective than fiscal policy in managing Egypt’s budget surplus. This conclusion is supported by the observed movements in income, exchange rates, and investment, providing an essential lesson from the Egyptian economy's performance.

Published by AFEBI Economic and Finance Review

Overall, while neither period exhibited a stable budget surplus, the indicators from the first period, combined with the results obtained, suggest that it may be more favorable compared to the second period.

Reference

Abd-Elhamid Ali, H., & Abo Elmagd Mohamed, H. (2022). Estimating the Impact of Fiscal Consolidation on Economic Growth in Egypt. The Scientific Journal for Research in Commercial Studies , 36(4), 213-234.

AbdelKhalek, Gouda. (2000). "Domestic Public Debt Accumulation in Egypt: Magnitude, Structure and Consequences". In Abdel-Khalek, Gouda and Karima Korayem (eds.) Fiscal Policy Measures in Egypt: Public Debt and Food Subsidy. Cairo Papers in Social Science, Volume 23, Number 1, Cairo: AUC Press.

Abdel-Latif, Hany, and Tapas Mishra. "Asymmetric growth impact of fiscal policy: Evidence from Egypt." Available at SSRN 3091610 (2016)

Abed, G. T., & Davoodi, H. R. (2003). *Challenges of Growth and Globalization in the Middle East and North Africa*. International Monetary Fund.

Abu Hasan Md, Islam MdA, Abul Hasnat Md, Abdul Wadud Md (2016) The relative efectiveness of monetary and fscal policies on economic growth in Bangladesh. Economics 5(1):1–7. https://doi.org/10.11648/j.eco.20160501.11

Ahmad, E., & Brosio, G. (2009). *Does decentralization enhance service delivery and poverty reduction?* Edward Elgar Publishing.

Alesina, A., & Perotti, R. (1995). *Fiscal Expansions and Adjustments in OECD Economies*. Economic Policy, 10(21), 205-248.

Ali S, Irum S, Ali A (2008) Whether fscal stance or monetary policy is efective for economic growth in case of South Asian countries? Pak Dev Rev 47(4):791–799. https://doi.org/10.3054/v47i4IIpp.791-799

Alshaib, Bayan Mohamad, et al. "Fiscal Sustainability and Its Implications for Economic Growth in Egypt: An Empirical Analysis." SAGE Open 13.4 (2023): 21582440231215983

Al-Shawarby S., El Mossallamy M. (2019). Monetary-fiscal policies interactions and optimal rules in Egypt. Review of Economics and Political Science, 4(2), 138-157. DOI 10.1108/REPS-03- 2019-0033.

Arezki, R., & Gylfason, T. (2011). *Resource Rents, Democracy, Corruption, and Conflict: Evidence from Sub-Saharan Africa*. Journal of African Economies, 20(4), 578-606.

Aschauer, D. A. (1989). *Does public capital crowd out private capital?*. Journal of Monetary Economics, 24(2), 171-188.

Balassone, F., & Franco, D. (2000). *Public Investment, the Stability Pact and the Golden Rule*. Fiscal Studies, 21(2), 207-229.

Barro, R. J. (1990). *Government spending in a simple model of endogenous growth*. Journal of Political Economy, 98(5), S103-S125.

Published by AFEBI Economic and Finance Review

Bernanke, B. (2016). "Monetary Policy in the Future." In Progress and Confusion: The State of Macroeconomic Policy, edited by O. Blanchard, R. Rajan, K. Rogoff and L. H. Summers, 129–134. Cambridge, MA: The MIT Press.

Besley, T., & Persson, T. (2013). Pillars of prosperity: The political economics of development clusters. Princeton University Press.

Bird, R. M., & Zolt, E. M. (2005). *Redistribution via taxation: The limited role of the personal income tax in developing countries*. UCLA Law Review, 52(6), 1627-1695.

Central Agency for Public Mobilization and Statistics (CAPMAS). (2022). *Statistical data and economic reports*. Retrieved from https://www.capmas.gov.eg

Central Bank of Egypt. (2022). *Economic indicators and reports*. Retrieved from https://www.cbe.org.eg

El Husseiny, Israa A. "The relative effectiveness of fiscal and monetary policies in promoting Egypt's output growth: an empirical investigation using an ARDL approach." Journal of Economic Structures 12.1 (2023): 4.

EL KHATTAB, Y., EL YAMANI, R., & HEFNAOUI, A (2023) . Assessing The Fiscal-Monetary Policy Mix Effectiveness: Evidence from Morocco, Egypt and Saudi Arabia, ERF 29th Annual Conference

El-Khishin, S., & Kassab, D. (2021, October). Monetary-Fiscal Policy Interactions During Uncertainty Shocks: Evidence from Egypt. Economic Research Forum (ERF).

Elmendorf, D. W., & Mankiw, N. G. (1999). *Government debt*. In J. B. Taylor & M. Woodford (Eds.), *Handbook of Macroeconomics* (Vol. 1, pp. 1615-1669). Elsevier.

IMF. (2018). *Fiscal Transparency Handbook*. International Monetary Fund.

IMF. (2022). *World Economic Outlook Database: Egypt Economic Indicators*. Retrieved from https://www.imf.org

John F. Due. Homewood (1954). Government Finance: An Economic Analysis. , Canadian Journal of Economics and Political Science. 21(3):399-400. doi:10.2307/138225.

Jones, M. A., & Tommasi, M. (1997). Politics: An Introduction to Modern Democratic Government. University of Michigan Press.

Karara, M., Fayed, M., El Mossallamy, M., & Aly, H. (2023). Interaction between Monetary and Fiscal Policies: Evidence from Egypt. Topics in Middle Eastern & North African Economies: Proceedings of the Middle East Economic Association, 25(1).

Keen, M., & Mansour, M. (2010). *Revenue Mobilization in Sub-Saharan Africa: Challenges from Globalization*. Development Policy Review, 28(5), 553-571.

Lawyer, C.O., Nigeria, P.H. (2013), "Budget preparation and implementation in the Nigerian public sector", Research Journal of finance and accounting, Vol. 4, No. 16, pp. 50-54.

Published by AFEBI Economic and Finance Review

Liao, Chao-Ning, H. Önal and Ming-Hsiang Chen. 2009. Average shadow price and equilibrium price - A case study of tradable pollution permit markets. European Journal of Operational Research, 196:1207-1213.

Liu, L. (2004). The marginal cost of funds and the shadow prices of public sector inputs and outputs. *International Tax and Public Finance*, 11(1):17–29.

Ndanshau, M. O. (2012). Budget deficits, money supply and inflation in Tanzania: A multivariate granger causality test, 19672010. University of Dar es Salaam working paper(04/12).

Omran, Emad Attia Mohamed, and Yuriy Bilan. "The impact of fiscal policy on the unemployment rate in Egypt." Montenegrin Journal of Economics (2020).

Rahman MdH (2005). Relative efectiveness of monetary and fscal policies on output growth in Bangladesh: a VAR approach. Policy Analysis Unit (PAU), Working Paper No. 0601, Research Department, Bangladesh Bank, Head Ofce, Dhaka, Bangladesh.

Richard K, Muriu P, Maturu B (2018) Relative efectiveness of monetary and fscal policies on output stabilization in devel oping countries: evidence from Rwanda. Int J Econ Financ 10(1):220–232. https://doi.org/10.5539/ijef.v10n1p220

Samuelson. P. A (1954). The Pure Theory of Public Expenditure. The Review of Economics and Statistics, Vol. 36, No. 4. (Nov., 1954), pp. 387-389.

Schembri, L. (2018). "Anchoring Expectations: Canada's Approach to Price Stability." Remarks at the Manitoba Association for Business Economists, Winnipeg, Manitoba, February 15.

Shephard, R. W. (1970), Theory of Cost and Production Functions, Princeton University Press.

Shi, M. (2003). Budget systems and expenditure outcomes: Do institutions matter? International Review of Administrative Sciences, 69(3), 363-378.

Shokr. M. A, Zulkefly. A, Shah Zaidi M., (2019). "Monetary policy and macroeconomic responses: non-recursive SVAR study of Egypt," Journal of Financial Economic Policy, Emerald Group Publishing Limited, vol. 11(3), pages 319-337, January.

Ugoh, S.C., Ukpere, W.I. (2009), "Problems and prospects of budgeting and budget implementation in Local Government System in Nigeria", African Journal of Business Management, Vol. 3, No. 12, pp. 836-846.

World Bank. (2003). *Better governance for development in the Middle East and North Africa: