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Can Fiscal Policy Stabilise Ghana's Economy? Evidence from Government Spending and Tax Multipliers

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Abstract

This study assesses the effectiveness of discretionary fiscal policy in stabilising Ghana's economy, using 164 quarterly observations over the period 1980–2020 to estimate a structural vector autoregression (SVAR) model that serves as the fiscal block of a larger macroeconometric system. All data were obtained from official sources. An increase in government spending produces an initial output multiplier of 0.30, reaches a peak of 0.45 in the second year and has a cumulative multiplier of 1.10 after four years. Likewise, a reduction in net taxes generates an initial multiplier of 0.25, a third-year peak of 0.35 and a fourth-year cumulative multiplier of 0.90. However, spending increases and tax cuts raise inflation by 0.5 and 0.3 percentage points, respectively. In addition, an increase in the budget deficit raises reserve-money growth and inflation, reflecting interaction between the fiscal authority and the central bank. Therefore, fiscal policy can help stabilise output, but its effectiveness depends on the type of government spending, how it is financed, the available fiscal space and the degree of monetary accommodation. Productive government spending, revenue mobilisation and credible fiscal institutions are needed to achieve sustainable growth while maintaining price stability and containing public debt risks.

Keywords: *Fiscal Policy, Government-Spending Multiplier, Tax Multiplier, Macroeconomic Stabilisation, Fiscal Shocks, Ghana*

1.0 Background to the Study

Recent research views fiscal policy as a state-contingent stabilisation tool rather than a one-size-fits-all multiplier applicable to every country and period. Rafique et al. (2024) found that fiscal interventions in developing economies are typically more effective during economic downturns; however, the relative strength of spending, investment and taxation varies with an economy's income level and the policies being implemented. Similarly, for Sub-Saharan Africa, Abdel-Latif et al. (2026) have demonstrated that both the time and type of fiscal consolidation determine its impact on economic growth. Spending reductions result in substantially greater economic contraction than do increases in taxes. Therefore, assessing the effectiveness of fiscal stabilisation should involve evaluating the magnitude of the fiscal action, the persistence of its effects and the macroeconomic costs at which those effects are achieved.

Fiscal shock transmission may be highly uncertain in low-income and small open economies. Daffeh et al. (2024) report significant heterogeneity in government-consumption multipliers across 20 low-income Sub-Saharan African countries, contradicting the idea that fiscal stimulus is uniformly weak in the region. Regarding informality, Bondzie et al. (2026) demonstrated that the larger the informal economy, the weaker the conventional transmission of expansionary fiscal policy. The quality of public investment also matters: Ardanaz et al. (2025) found that fiscal multipliers in emerging markets are significantly higher where public-investment efficiency is high, implying that a country's capacity to select and implement projects can be as important as the size of the budgetary impulse in determining fiscal effectiveness.

Ghana provides an especially useful example because repeated fiscal activism has coincided with high deficits, increasing debt service costs, expenditure inflexibility and pressure from foreign currency fluctuations. The World Bank (2025) states that the recent debt crisis was caused primarily by weak expenditure control, underperformance in tax collection and high interest costs. The International Monetary Fund (2025) reported that the subsequent adjustment program helped the country restore a primary surplus and move towards debt sustainability. The Ministry of Finance, Ghana (2025) stated that its recovery strategy would focus on commitment control, domestic revenue mobilisation, reducing wasteful expenditure and expenditure rationalisation. Therefore, despite significant financing and institutional constraints, fiscal policy remains essential to recovery.

1.1 Statement of the Problem

The central empirical question is thus not whether government expenditure or taxes affect economic activity, but by how much, for how long and under what circumstances their effects can be regarded as stabilising. Abdel-Latif et al. (2026) indicate that fiscal contraction in Sub-Saharan Africa reduces output more strongly during downswings and when adjustments are made via cuts in spending. Rafique et al. (2024) found similar results using a broad panel of developing countries and indicated that multipliers vary depending on the stage of the business cycle and the type of policy instrument used. Ardanaz et al. (2025) further illustrated that inefficient use of public resources can dissipate the potential growth effects of increased government spending. Thus, an accurate assessment must consider output, price stability, financing and persistence in addition to considering the multiplier in isolation.

More recent Ghana-specific evidence has contributed to this debate. Using local projections for 2006Q1–2025Q4, Luciani and Asamoah (2026) estimated a one-year consumption-based government-spending multiplier of 0.89 and a two-year multiplier of 0.84, and found that domestically financed public investment generates larger delayed impacts on the economy. Kwakye (2025) uses a doctoral model to address a complementary question over a longer

period of time (1980Q1–2020Q4) by comparing the responses of government-spending and net-tax shocks and by estimating their implications for inflation, reserve money and financing deficits. Read together with regional evidence from Bondzie et al. (2026), these studies suggest that Ghana's fiscal multipliers are influenced not only by which instrument is utilized, but also by informality, finance and the domestic content of expenditure.

1.2 Purpose and Contribution of the Study

This study makes four contributions. First, it calculates separate multipliers for initial impact, peak impact and total cumulative impact for government spending and for net tax reductions. Second, it examines the inflationary effects of both instruments, allowing a broader judgement about the quality of stabilisation. Third, it traces the responses of reserve-money growth, inflation and real GDP to a deficit shock, thereby connecting multiplier estimation to interactions between monetary and fiscal policies. Finally, it situates Ghana's estimates in relation to other recent research on expenditure composition, informality and fiscal consolidation in developing countries and specifically in Sub-Saharan African countries (Abdel-Latif et al., 2026; Bondzie et al., 2026; Luciani & Asamoah, 2026).

1.3 Ghana's Fiscal Policy Context

African countries such as Ghana are characterised by large-scale public expenditure aimed at long-term economic development. These expenditures often lead to recurrent revenue shortfalls and periodic debt burdens, and Ghana's fiscal regime has been characterised by persistent revenue shortfalls alongside development-oriented expenditure. According to Kwakye (2025), average government expenditure was 22.55% of gross domestic product (GDP), the average net taxes were 13.12% of GDP and the average budget deficit was 6.35% of GDP. The average public debt-to-GDP ratio was approximately 64.91% (Kwakye, 2025). Therefore, there is evidence that suggests Ghana's fiscal regime has been characterized by a recurring financing gap rather than sufficient buffers for countercyclical policy.

The mechanism used to finance large development-oriented expenditure can also affect stabilisation. For example, heavy reliance on foreign-currency-denominated debt to finance development projects could raise interest rates if investor confidence weakens or perceived repayment risks increase. Furthermore, monetary support may delay the emergence of the costs of increased government spending by converting part of the deficit into money supply growth. Sargent and Wallace (1981) demonstrated that unsustainable fiscal policies ultimately require monetary accommodation, which generates inflationary pressure. Similarly, Leeper (1991) explained that an active fiscal regime can constrain the price-stability role of monetary policy.

In addition, recent program documentation by both the IMF (2025) and the Government of Ghana (Ministry of Finance, Ghana, 2025) explicitly link fiscal slippage, monetary financing and debt sustainability to the success of stabilisation programmes.

Finally, another important factor in determining the effectiveness of fiscal policy is the quality of expenditure composition and execution. Luciani and Asamoah (2026) found that consumption multipliers associated with government purchases were quite strong in the short run and weakly negative thereafter. In contrast, they reported that domestically financed capital investments yielded larger delayed multipliers than did externally financed investments. Using data from several developing economies, Ardanaz et al. (2025) showed that public-investment multipliers are significantly higher when implemented efficiently. Together, these findings suggest that an equivalent increase in headline expenditure can produce substantially different output impacts depending on project characteristics, including procurement practices, import content and the credibility of the financing plan.

Distinguishing between stabilisation and general fiscal expansion is therefore crucial in the current post-crisis environment. Ghana's authorities are committed to achieving a primary surplus, strengthening commitment controls and continuing debt restructuring under their current program (International Monetary Fund, 2025; Ministry of Finance, Ghana, 2025). The World Bank (2025) further recommended stronger expenditure and debt regulations, better functioning revenue institutions and more efficient independent fiscal oversight. Accordingly, estimated multipliers should be interpreted as historical transmission parameters that inform instrument choice rather than as an unconditional argument for additional deficit spending.

2.0 Literature Review

2.1 Keynesian Demand Transmission and the Fiscal Multiplier

The Keynesian framework explains how fiscal policy influences overall economic activity through aggregate demand. According to Keynes (1936), government expenditure has a direct effect on aggregate demand because it constitutes an increase in total spending. Tax cuts also stimulate consumption, but their effect is indirect because it depends on households' and firms' decisions to spend the additional disposable income. During downturns or crises, the likelihood that individuals will spend this additional income on goods and services may decrease.

Empirical studies on developing countries provide substantial support for this view, but they indicate that the fiscal instrument producing the largest multiplier depends on whether the country's economy is currently experiencing a recession versus an expansion. For example, Rafique et al. (2024) found that fiscal balance, public investments, and changes in tax rates can create vastly different multiplier effects depending upon whether the country is in a recession or not. Abdel-Latif et al. (2026) also reported larger output effects for spending-based consolidations than for tax-based consolidations in sub-Saharan Africa. The value of the multiplier therefore reflects both the initial fiscal stimulus and subsequent leakages through saving, taxation, imports and central bank interest-rate responses.

Recent research has extended multiplier theory beyond the basic aggregate-demand model to incorporate expectations, unemployment and surplus labour, borrowing costs and the quality of spending. Daffeh et al. (2024) demonstrated that government-consumption multipliers vary significantly among low-income African economies, rather than being expected to converge toward a single multi-regional estimate. Ardanaz et al. (2025) indicated that public investment efficiency is a primary factor determining both the magnitude and duration of output multipliers. Finally, Rafique et al. (2024) found that fiscal effects tend to be greater in recessions than in booms.

2.2 Ricardian Equivalence, Crowding Out and Open-Economy Leakages

Ricardian equivalence questions the assumption that deficit financed tax cuts generate a net increase in wealth. Forward-looking households may forgo additional consumption if they expect future taxes to rise to service the debt incurred to finance the tax cut. Although the proposition rests on restrictive conditions, recent assessments of Ghana's fiscal position continue to emphasise expectations of future adjustment. The World Bank (2025) ties fiscal credibility to expenditure control and revenue collection. The International Monetary Fund (2025) views adherence to the planned primary balance path as critical to establishing confidence in debt sustainability. Thus, expectations about how an intervention will be financed could alter private-sector behaviour before future taxes are levied.

Crowding out and external leakages also constrain the size of the multiplier. Government borrowing domestically may crowd out private sector borrowing in the financial markets; while import-intensive expenditure causes part of the stimulus to leak into foreign economies. Abdel-

Latif et al. (2026) demonstrate that fiscal actions in Sub-Saharan African countries affect imports, the current account balance and the real effective exchange rate. Because multiplier estimates cannot be separated from external transmission, the effectiveness of fiscal stabilisation depends on both the method of financing and the composition of expenditure. Given Ghana's large trade exposure, significant debt obligations and limited domestic capital markets, domestic content and financing are key considerations in designing fiscal stabilisation programmes.

2.3 Fiscal Dominance and the Price Level

Fiscal dominance occurs when monetary policy is restricted by the need for government financing or by the impact of public debt on financial stability. Sargent and Wallace (1981) demonstrate that tight money cannot permanently control inflation if persistent deficits ultimately require money creation. Leeper (1991) developed a formal model of active and passive monetary–fiscal regimes, while Woodford (2001) explained how the price level can adjust to align nominal public liabilities with expected future primary surpluses. As such, these models imply that the inflationary effect of fiscal policy depends not only on the current deficit but also on whether credible future fiscal adjustment is expected.

The framework offers another way of interpreting a positive fiscal multiplier: an initial output gain may coexist with delayed increases in liquidity, inflation and foreign-exchange pressure if expenditure is weakly financed. Abdel-Latif et al. (2026) found that consolidation has measurable output costs in Sub-Saharan Africa particularly during downturns, whereas the International Monetary Fund (2025) showed that Ghana's current recovery depends equally on sustained fiscal discipline and limiting slippages in the policy mix. Similarly, the World Bank (2025) argued that spending efficiency and stronger fiscal institutions are required to convert public spending into long term progress without recreating debt vulnerability.

2.4 Empirical Evidence from Developing and Sub-Saharan African Economies

Identifying fiscal shocks empirically is complicated because policymakers respond endogenously to the business cycle and because fiscal measures may be anticipated before implementation. Blanchard and Perotti (2002) address this problem by combining institutional information with timing restrictions to separate automatic fiscal responses from discretionary innovations, while Jordà (2005) uses local projections to generate horizon-specific impulse responses. Sims (1980) and Lütkepohl (2005) have demonstrated the ability of vector autoregression (VAR) models to measure dynamic interactions among macroeconomic variables. However, concerns remain over model specification, lag selection and sample-size limitations, all of which can affect inference. These approaches are therefore complementary rather than equivalent: structural VARs impose a tight model structure, whereas local projections offer greater flexibility at the cost of statistical efficiency.

Recent research indicates that fiscal multipliers in developing and African economies are sizeable but highly variable. Daffeh et al. (2024) present estimates of the impact of government consumption on each of twenty low-income economies located in sub-Saharan Africa, and reject the notion that fiscal stimulus is uniformly effective across countries. Rafique et al. (2024) found that multipliers ranged from 0.16 to 2.10 during periods of recession in a panel of developing countries, where persistence was influenced by type of instrument used and level of income. Abdel-Latif et al. (2026), employing a narrative identification technique, determined that a fiscal consolidation equaling one percent of GDP reduced regional output by approximately 0.54 percent after two years, with expenditure-based consolidation significantly more costly than tax-based consolidation.

In many African countries, informality represents an additional constraint on the transmission mechanism. Bondzie et al. (2026) found that fiscal shocks increase official-sector output, but this positive effect weakens as informality increases. They also identified an informal-economy threshold of 41.5 percent of GDP, below which government expenditure has a larger multiplier effect. Likewise, Daffeh et al. (2024) observed substantial cross-country variation in low-income African economies. Furthermore, the World Bank (2025) identified weak tax coverage and inadequate administrative capacity as major impediments to the operation of Ghana's fiscal system. It is therefore possible that informal producers respond to government intervention outside the scope of official GDP statistics. Additionally, a narrow tax base reduces automatic stabilization mechanisms and complicates the targeting of government programs.

3.0 Research Methodology

3.1 Research Design and Data

The study adopts a longitudinal design based on secondary data from a large macroeconomic database. Creswell and Creswell (2023) describe quantitative designs as suitable for testing hypotheses and theoretical connections between variables, by applying statistical modeling methods to measured values. Saunders et al. (2023) also indicate that longitudinal studies allow researchers to assess changes over time, as well as patterns of stability or instability in the relationships we identify; while Hair et al. (2019) emphasise that the types of multivariate techniques applied will depend upon both the objectives of the researcher and the characteristics of the data. The estimation sample consists of 164 quarterly observations spanning 1980 Q1 to 2020 Q4 (Kwakye, 2025).

Data collected for this study were compiled from a variety of sources including the Bank of Ghana, Ghana Statistical Service, Ministry of Finance, International Monetary Fund's (IMF) International Financial Statistics (IFS), World Bank's World Development Indicators (WDI) and publications of the Institute of Statistical, Social and Economic Research (ISER). Secondary data are recommended by Saunders et al. (2023) when researchers need to consider historical periods beyond the time frame feasible to collect via primary methods. Hair et al. (2019) emphasise the importance of consistent variable measurement and data review, while Hamilton (1994) demonstrates that changes in definitions, missing values, and revisions to time series data can influence macroeconomic time series statistical inference.

3.2 Variable Transformations and Preliminary Testing

Nominal level variables were transformed into natural logarithms. Inflation and growth rates were computed as log differences where applicable, while interest rates and the deficit ratio enter in levels. Quarterly real and fiscal data were seasonally adjusted, and the Hodrick–Prescott filter was used in the broader model to extract cyclical components (Enders, 2015; Hodrick & Prescott, 1997). Hamilton (1994) and Lütkepohl (2005) caution that filtering and transformation choices may affect estimated dynamics, particularly at the sample end points. Therefore, the replication archive will include the transformed series and document the sensitivity of the results to alternative output-gap measures.

The stationarity of the data was examined using the augmented Dickey–Fuller (ADF) test. Dickey and Fuller (1979) demonstrated that standard inference is invalid when a series contains a unit root. Enders (2015) advises either transforming the series or employing cointegration techniques, depending on whether the variables exhibit stochastic trends. Correlations and variance inflation factors were also examined. Hair et al. (2019) recommend using correlations and variance inflation factors as useful preliminary diagnostic tools. However, Lütkepohl (2005) emphasises that collinearity diagnostics cannot replace theoretical justification for identification in multivariate time-series models. The policy rate and call money rate variables

are stationary in levels, whereas most other price, output, fiscal, monetary and external variables required a transformation.

3.3 Structural VAR and Fiscal-Shock Identification

The fiscal block is identified using a structural vector autoregression (SVAR) based on the institutional timing procedure proposed by Blanchard and Perotti (2002). Sims (1980) provides the foundation for such models, while Lütkepohl (2005) formally describes how to estimate them, test their stability and perform impulse-response analysis. Let x_t contain government expenditure, net taxes, real output, inflation and selected financial variables. The reduced-form system is written as:

$$x_t = c + A_1 x_{t-1} + \cdots + A_p x_{t-p} + u_t, \qquad \mathrm{E}(u_t u_t') = \Sigma_u \quad (1)$$

The reduced-form innovations u_t are linear combinations of structural shocks ε_t. A contemporaneous matrix B maps the shocks into observed innovations:

$$B u_t = \varepsilon_t, \qquad \mathrm{E}(\varepsilon_t \varepsilon_t') = I \quad (2)$$

Identification relies on the assumption that discretionary government spending cannot respond within the same quarter to unanticipated changes in output and prices. Administrative processes such as budgeting, procurement, and execution are subject to time-delays. Net taxes, by contrast, respond almost instantaneously through automatic elasticities. Output and prices can also be expected to respond quickly to fiscal innovations. Blanchard and Perotti (2002) used the institutionally imposed lags to identify the effects of discretionary fiscal policy, and Lütkepohl (2005) has shown how contemporaneous restrictions allow researchers to recover structural innovations from reduced-form residuals. The broader system, which includes monetary and external blocks, allows fiscal innovations to influence reserve money, interest rates, and the exchange rate (Kwakye, 2025; Sims, 1980).

Lag lengths of one to five quarters were tested using information criteria and system stability checks. As Sims (1980) and Lütkepohl (2005) point out, there is always a trade-off in choosing lag structure, since additional lags improve residual fit but can result in over parameterisation in small samples.

Impulse-response functions trace the dynamic impact of a one-unit structural fiscal shock, while cumulative multipliers measure the total output response scaled by the cumulative fiscal impulse. Jordà (2005) presents an alternative approach to estimating impulse responses based on local projections and this represents a useful robustness check for future replications. For government spending, the horizon-*h* multiplier can be represented as:

$$M_G(h) = \frac{\sum_{j=0}^{h} \Delta Y_{t+j}}{\sum_{j=0}^{h} \Delta G_{t+j}} \quad (3)$$

The reported tax figures refer to a reduction in net taxes. A positive value therefore denotes the output gain generated by a one-unit tax reduction; the conventional multiplier for an increase in taxes has the opposite sign. Blanchard and Perotti (2002) and Batini et al. (2014) stress that the sign, normalisation and scaling of fiscal innovations must be stated explicitly, while Lütkepohl (2005) notes that cumulative responses require internally consistent units. This convention prevents the positive 0.25 and 0.35 estimates from being misread as evidence that a tax increase raises output.

3.4 Inference, Model Fit and Reproducibility

Statistical significance was assessed using the p-values reported in the doctoral study, while the strength of a fiscal policy's effect on output was evaluated in terms of its magnitude, timing

and persistence. The fiscal block has an RMSE of 0.84 percent and *an* R^2 of 0.55, indicating moderate explanatory power within the larger macroeconometric model. Hair et al. (2019) note that fit measures do not establish causality. Saunders et al. (2023) also emphasis that inferences must take account of the research design and measurement tools used. Lütkepohl (2005) further highlights three issues in applying VAR methods: model stability, adequate residual analysis and sensitivity to identifying assumptions.

4.0 Findings and Discussion

4.1 Macroeconomic Conditions and Model Fit

The descriptive statistics indicate that Ghana's economy operated under chronic fiscal imbalance. Government expenditure averaged 22.55% of GDP over the period, far exceeding average net tax collections of 13.12% of GDP and resulting in an average budget balance of −6.35% of GDP. Public debt averaged approximately 64.9% of GDP, and inflation averaged 21.05%. These statistics suggest that fiscal expansion has often occurred without sufficient revenue or low-cost financing, increasing the likelihood that growth is accompanied by rising debt burdens or inflationary pressures. The correlation coefficient of 0.50 between the deficit and the level of public debt supports this interpretation. However, correlation does not reveal the direction or timing of causality between these variables.

Table 1: Macroeconometric Model Overview and Fit

Model block	Principal endogenous variables	In-sample RMSE	R^2 (%)
Real / IS curve	Output gap, real interest rate, REER	0.95%	62
Price / Phillips curve	CPI inflation	0.71 pp	69
Monetary-policy block	Call-money rate, M2, term spread	1.10 pp	58
Fiscal block	Government spending, net taxes	0.84%	55
External sector	REER, commodity-price index	1.25%	51

4.2 Government-Spending Multiplier

Beyond the accounting relationship in which higher spending directly raises GDP, this study finds evidence of a lasting positive effect of additional government spending on output. A spending shock equivalent to 1% of GDP raises real output by 0.30% on impact. The multiplier rises to a peak of 0.45 in the second year and remains statistically significant over years 0–4. Therefore, the findings provide evidence of a sustained expansionary effect. However, because both the immediate and peak multipliers were less than 1.00, these findings are consistent with leakages in the form of imports, savings, taxes and financial crowding-out.

Because the cumulative multiplier exceeds 1.00, output gains persist beyond the time frame of the initial fiscal stimulus. The short-horizon multiplier is lower than the one-year consumption multiplier of 0.89 reported by Luciani and Asamoah (2026). Given that Daffeh et al. (2024) find considerable variation in multipliers across low-income African countries and Ardanaz et al. (2025) find that expenditure efficiency affects the persistence of output responses, differences in sample periods, fiscal-variable definitions, financing methods and shock identification are likely to explain differences in estimates.

Although spending-induced output gains benefit employment and production, they come at a cost. Government spending raises inflation by a peak of 0.50 percentage points in year three. The fact that the inflationary response occurs after output begins to rise suggests that demand pressures and financing constraints build up in an economy after the initial fiscal impulse has provided support to activity. This timing is also consistent with a fiscal policy shock that provides early support to activity but later faces constraints based upon either capacity limitations or price increases for imported inputs. If fiscal interventions are financed through money creation rather than revenue or borrowing serviceable from future revenues, the inflationary effect will be exacerbated (Sargent & Wallace, 1981; Woodford, 2001).

4.3 Net-Tax Reduction Multiplier

A net-tax cut generates an initial output multiplier of 0.25, which rises to 0.35 by year three, and a four-year cumulative multiplier of 0.90. Although its p-value of 0.06 indicates weaker statistical significance than the spending shock at the conventional 5% level, the result suggests that tax relief could support output where households and firms face liquidity constraints. However, part of the additional income from tax relief is likely to be saved, used to repay debt or spent on imported goods.

The smaller tax multiplier relative to the spending multiplier is consistent with the Keynesian prediction that government spending directly affects demand while tax relief affects demand indirectly through consumer and business decisions (Batini et al., 2014 Keynes, 1936). It is also consistent with recent evidence from Abdel-Latif et al. (2026) that spending-based fiscal measures have a greater impact on output than tax-based measures. A smaller tax multiplier does not preclude the use of tax measures to support investment, job creation or liquidity-constrained households, nor does it determine their implementation lags; however, it implies that such benefits must be assessed separately from the output effect.

The peak inflationary response to a net-tax reduction is approximately 0.3 percentage points in year three, compared with 0.5 percentage points for a spending shock. This difference has two possible interpretations. First, the increase in aggregate demand is larger after a spending shock, whereas a net-tax shock involves greater savings leakage. Second, tax relief may be less likely to generate an inflationary stimulus when prices and public debt levels are high and may therefore provide a stabilisation tool with fewer inflationary side effects under such conditions (International Monetary Fund, 2025; World Bank, 2025).

Table 2: Reported Fiscal-Policy Stabilisation Multipliers

Fiscal shock	Initial	Peak	4-year cumulative	p-value	Significant duration	Peak inflation
Government-spending increase	0.30	0.45 (year 2)	1.10	0.02	Years 0–4	+0.50 pp (year 3)
Net-tax reduction	0.25	0.35 (year 3)	0.90	0.06	Years 0–3	+0.30 pp (year 3)

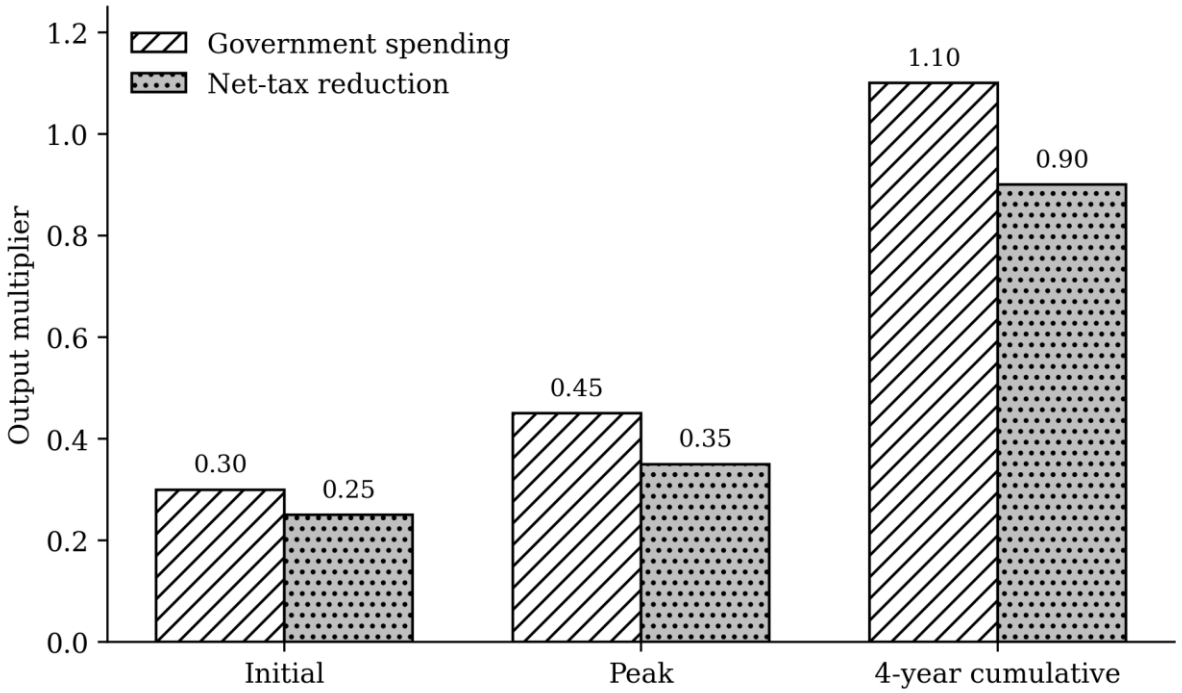


Figure 1: Initial, Peak and Cumulative Output Multipliers

4.4 Deficit Financing, Reserve Money and Macroeconomic Responses

The deficit shock findings demonstrate why a positive multiplier is insufficient to guarantee macroeconomic stability. An increase in the deficit equivalent to 1 percent of GDP raises reserve-money growth by 1.40 percentage points on impact, rising to 1.90 percentage points in the second quarter. The response has a half-life of three quarters and a long-run effect of 0.60 percentage points. Overall, these responses are consistent with monetary accommodation, liquidity effects and balance-sheet interactions through which government financing influences the money stock. Price responses occur later. Inflation rises by 0.05 percentage points on impact, peaks at 0.38 percentage points in the fourth quarter, has a half-life of six quarters and settles at a long-run increase of 0.20 percentage points. This delay explains why expansionary fiscal policies can be perceived as being successful for some period before their complete price level costs become apparent. These results support the fiscal dominance hypothesis (Leeper, 1991; Sargent & Wallace, 1981) that persistent budget deficits can jeopardize a central bank's ability to control prices, even when the central bank attempts to sterilize liquidity.

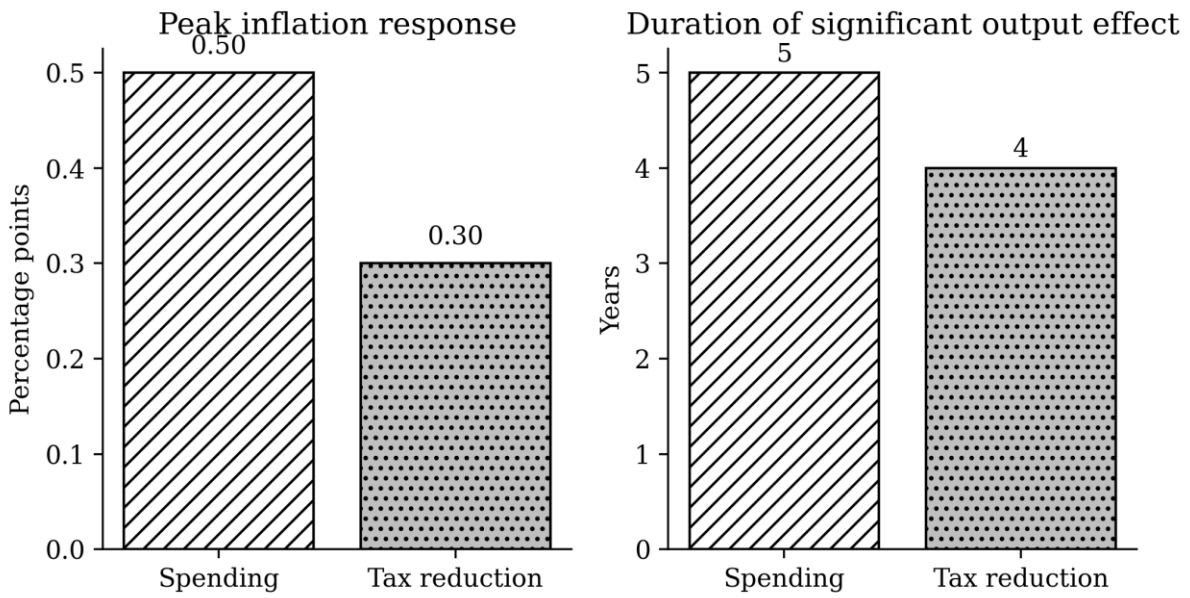


Figure 2: Inflation cost and Persistence of Fiscal Interventions

Output rises by 0.08 percentage points on impact, peaks at 0.27 percentage points in the third quarter, has a half-life of five quarters and yields a long-run gain of 0.12 percentage points. Output therefore responds faster than prices but fades, whereas part of the nominal response persists. Deficit-financed expansions thus have favourable short-run effects on activity, but the output–inflation trade-off deteriorates over time. These conclusions are supported by recent studies using data from Sub Saharan Africa demonstrating that fiscal actions have significant real effects whose persistence depends on financing conditions and institutional characteristics (Abdel-Latif et al., 2026; Daffeh et al., 2024).

Table 6: Responses to a Deficit Shock Equal to 1% of GDP

Variable	Impact (Q0)	Peak response	Half-life (quarters)	Long-run effect
Reserve-money growth	+1.40 pp	+1.90 pp (Q2)	3	+0.60 pp
CPI inflation	+0.05 pp	+0.38 pp (Q4)	6	+0.20 pp
Real GDP	+0.08 pp	+0.27 pp (Q3)	5	+0.12 pp

4.5 Comparative Assessment of the Two Instruments

Government spending outperforms net-tax reductions on all three output measures (initial, peak and cumulative). The cumulative spending multiplier is 0.20 higher than the net-tax multiplier and is statistically more robust. Therefore, where demand must be boosted urgently and implementation capacity is sufficient, government spending is the more effective instrument. However, spending also generates the larger increase in inflation and creates procurement, import and financing pressures. Thus, the choice of instrument depends on both the output benefit and the inflation cost associated with each option, as well as the likelihood of long-term fiscal commitment and the degree of administrative precision.

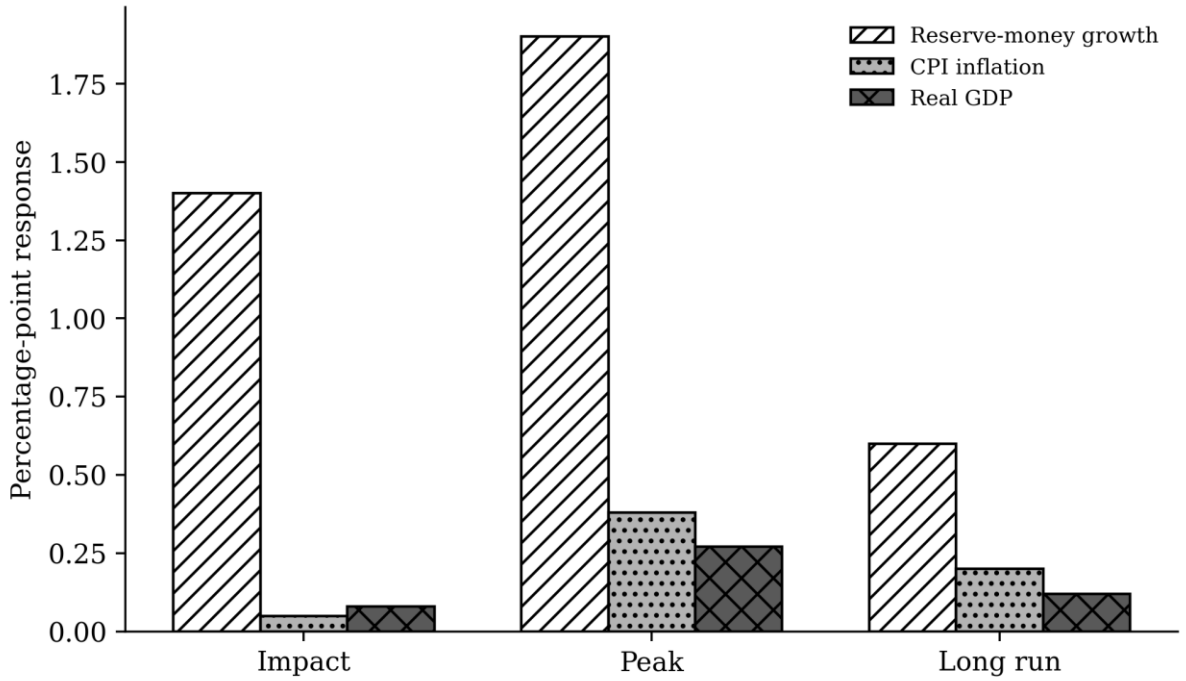


Figure 3: Impact, Peak and Long-Run Responses to a Deficit Shock

Beyond the relative effectiveness of spending and taxation, these results suggest that financing is another important policy variable. While the spending multiplier reflects the macroeconomic response to a structural expansion of government expenditures, the deficit shock results reflect the potential impact on the economy resulting from deterioration of the fiscal position and corresponding increases in reserve money. Luciani and Asamoah (2026), who found that financing sources affect the magnitude of Ghana's public-investment multiplier, and Ardanaz et al. (2025), who demonstrated that effective investment management enhances the growth effect of public capital in emerging economies, together suggest that the financing and management of a programme influence its macroeconomic effects.

4.6 Discussion of Findings

The main finding of the study is clear but conditional: fiscal policy can contribute to stabilising economic activity in Ghana, subject to considerable qualifications. Both increased public spending and reduced taxes generate output gains, although the gain from spending is larger and longer-lasting. This evidence is consistent with the Keynesian mechanism of demand transmission. However, initial multipliers below 1 indicate a significant loss of the income generating potential of a fiscal stimulus through leakages, as described by Keynes (1936) and Daffeh et al. (2024).

The cumulative spending multiplier of 1.10 suggests that a short-term fiscal impulse can generate further increases in GDP over time. These findings align with those documented by Daffeh et al. (2024) regarding the existence of positive albeit highly heterogeneous government consumption multipliers in low-income Sub-Saharan African countries. Moreover, Rafique et al. (2024) have identified larger output gains resulting from fiscal stimuli in developing economies when they occur during recessionary phases.

The findings also shed light on the comparative effectiveness of fiscal instruments. In particular, spending was the most effective fiscal instrument for increasing GDP while tax reductions were associated with a smaller increase in inflation. Rafique et al. (2024) have demonstrated that the relative effectiveness of tax versus expenditure based fiscal instruments

varies depending on the phase of the business cycle. Abdel-Latif et al. (2026) have shown that spending-based fiscal adjustments in Sub-Saharan Africa result in greater output losses than tax-based adjustments. Therefore, the findings support choosing fiscal instruments according to the policy objective, financing requirements and the state of the economy.

The results also highlight the need to consider expenditure composition, because an aggregate spending shock combines public consumption and public investment and does not reveal which component drives the cumulative increase. Luciani & Asamoah (Luciani & Asamoah, 2026) demonstrate that consumption and domestically financed investment in Ghana exhibit different multiplier profiles. Moreover, Ardanaz et al. (2025) show that improvements in public-investment efficiency significantly enhance the size of multipliers in emerging markets. Disaggregating expenditure by economic function is therefore critical before developing project-specific recommendations.

Fiscal dominance is the primary constraint on translating the multiplier into a stabilisation tool. The peak reserve-money response of 1.90 percentage points exceeds the corresponding output response. Moreover, inflation peaks one quarter after output and remains elevated for longer. This implies that financing-related effects gradually offset part of the initial real stimulus. Thus, Sargent & Wallace's (Sargent & Wallace, 1981) "unpleasant arithmetic" and Leeper's (1991) analysis of policy regimes provide a coherent explanation: when there exists no credible commitment to stabilize debt through fiscal policy, then monetary policy can ultimately ratify the fiscal impulse. Although Kwakye (2025) and the International Monetary Fund (2025) do not establish that all past deficits were monetised, they show a statistically significant relationship between deficits and monetary expansion.

Informality and import dependency are plausible explanations for the relatively modest multipliers. Bondzie et al. (2026) find that informality reduces the growth response to fiscal expansion and that spending is more effective below a threshold level of informality. Similarly, Daffeh et al. (2024) document substantial cross-country differences among low-income economies in Africa. Finally, the World Bank (2025) reports that poor revenue collection and inefficient use of government funds represent persistent weaknesses in Ghana. Hence, part of the activity response may leak abroad or occur outside officially measured GDP.

The current fiscal environment also changes how these results should be interpreted. Ghana's programme commitments require it to maintain a primary surplus, contain government spending and continue debt restructuring. According to the International Monetary Fund (2025), fiscal discipline has improved, but sustaining these improvements is essential. Similarly, the Ministry of Finance, Ghana (2025) emphasises controlling commitments and increasing domestic revenue, while the World Bank (2025) notes that improving fiscal stability requires stronger fiscal rules and more efficient spending. Therefore, the historical finding that higher spending raises output does not justify abandoning fiscal consolidation when the country is highly indebted.

Methodologically, the structural VAR is a logical approach to modelling interacting shocks; however, its estimates are vulnerable to identification assumptions and structural breaks. In particular, Blanchard–Perotti timing restrictions rely on two assumptions: first, that discretionary fiscal policy does not respond to output within the quarter; and second, that the automatic elasticity of taxes with respect to output is reasonably calibrated. Both assumptions require justification. Sims (1980) emphasised that dynamic inference can be sensitive to system specification. Jordà (2005) provided an alternative method for calculating horizon specific response functions through local projections. Accordingly, future work should test alternative

orderings, report confidence intervals, analyse subsamples and compare high-debt with low-debt regimes.

A further limitation is that the sample ends in 2020; the estimated relationships therefore exclude the 2022 inflation shock, domestic and external debt restructuring, the subsequent fiscal programme and the evolving fiscal-rules framework. Luciani and Asamoah (2026) partly address this by extending their analysis to 2025, although their study uses different fiscal measures and methods. Updating the model would be useful because the post-crisis structure of the economy has likely altered fiscal elasticities; financial crowding out; and monetary accommodation. Until the model is updated, the estimated multipliers should be interpreted as historical evidence rather than forecasting what would happen if a new fiscal intervention were introduced in 2026.

5.0 Conclusion

Based on the government-spending, net-tax and deficit-shock estimates, the study draws several conclusions regarding the use of fiscal policy to stabilise Ghana's economy. Both fiscal instruments stimulate output: government spending has an initial multiplier of 0.30, a peak of 0.45 in the second year and a four-year cumulative multiplier of 1.10. The net-tax stimulus follows a similar pattern but with smaller magnitudes (0.25, 0.35 and 0.90, respectively). Thus, while both fiscal instruments generate positive effects on output, government spending has larger magnitudes and is more statistically reliable. These stabilisation benefits, however, come at a cost. The deficit-shock analysis suggests that the stimulative effect of deficits may ultimately be offset by higher inflation. Specifically, a deficit increase equivalent to 1% of Gross Domestic Product (GDP) will raise reserve money growth by 1.40 percentage points on impact and by 1.90 percentage points at its peak. Output rises initially and peaks in the third quarter, whereas inflation peaks in the fourth quarter and remains elevated for longer. Therefore, while deficit financing can help stabilise economic activity, it can simultaneously generate price pressures that reduce the effectiveness of monetary policy and undermine confidence in fiscal responsibility.

6.0 Recommendations

Five key policy recommendations emerge from these findings. First, countercyclical interventions should be explicit, short-term and narrowly focused. Second, countercyclical funds should be directed towards projects with high domestic content and clear productivity gains rather than recurrent outlays with little domestic content. Third, tax support should target liquidity-constrained households, employment and investment rather than broad tax cuts that weaken revenue collection. Fourth, fiscal rules should combine an operational deficit or expenditure limit with a public debt target, escape clauses for extraordinary circumstances and independent monitoring institutions. Fifth, monetary financing should be strictly limited, and fiscal and monetary authorities should regularly exchange information on cash flows and funding needs.

For future research, the most important priorities are replication and updating. The original dataset and Python code should be archived on an accessible platform, the structural identification matrix should be documented, and uncertainty bounds around each estimate should be reported. The sample should also be extended to assess whether fiscal multipliers vary with the inflation-targeting regime, recessionary conditions, debt levels and the periods before and after debt restructuring. Such research would enable Ghana to move from relying on average historical multipliers to a state-contingent fiscal framework that promotes sustainable development while avoiding recurrent cycles of excessive debt accumulation and inflation.

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