NATIONAL BANK OF KAZAKHSTAN

Empirical assessment of budget multipliers for current and capital expenditures in Kazakhstan

Monetary Policy Department
Economic research №2026-3

Bukenov Amantay

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February 2026

NBRK – WP – 2026 – 3

ISSN: 2789–150X

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Bukenov A.E.[1]

Abstract

This paper evaluates the impact of government spending on Kazakhstan's economic activity. Government expenditures are divided into current and capital expenditures in order to identify differences in their macroeconomic impact. To identify fiscal shocks, the Blanchard-Perotti (2002) method is used within the framework of the structural VAR model, after which the impulse responses are estimated using the local projection method. Cumulative fiscal multipliers are calculated based on the values obtained. The results show that current expenditures have a faster but limited effect on output, while capital expenditures generate a higher multiplier effect, reaching a maximum in the medium term. The conclusions of the study emphasize the expediency of shifting fiscal policy towards increasing the share of capital expenditures as a key tool for long-term economic growth in a commodity-based economy.

Keywords: fiscal policy, fiscal multiplier, current and capital government expenditures, economic growth, Kazakhstan.
JEL–classification: *C32, E62, H50, O40.*

[1] Bukenov A.E. – Chief Specialist-Analyst, Macroeconomic Research and Forecasting Division, Monetary Policy Department, National Bank of the Republic of Kazakhstan
E–mail: amantay.bukenov@nationalbank.kz

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Introduction

Fiscal policy is currently one of the main instruments of state regulation of economic activity, implemented through cumulative changes in tax rates, expenditures, rules and laws. These measures have an impact on aggregate demand, investment activity, and employment levels. The assessment of the effectiveness of such measures is based on the fiscal multiplier indicator, which reflects the amount of real GDP growth in response to a single change in government spending/revenue.

The fiscal multiplier is not a fixed value, its value depends on the macroeconomic situation and the structural characteristics of the economy. The response of output to fiscal impulses varies over time, and an increase in government spending does not guarantee an expansion of production. If current macro conditions are ignored, fiscal stimulus can be counterproductive: it can lead to higher prices, displace private investment, and weaken long-term growth. This makes it necessary to identify those regimes and factors in which government spending provides the greatest stimulating effect. According to Batini et al. (2014), the openness of the economy, the rigidity of the labor market, the size of automatic stabilizers, the exchange rate regime, debt levels, government spending management, tax administration, the business cycle and the synergy between fiscal and monetary policy affect the response of the economy to fiscal shocks.

In countries with high commodity dependence, a significant part of budget revenues is generated through the export of natural resources, which makes state finances sensitive to fluctuations in world prices. Most often, in such countries, stabilization is carried out through transfers to the budget from Sovereign Wealth Funds created to accumulate excess commodity revenues. These funds perform the function of intertemporal redistribution of resources: they accumulate surpluses in favorable years and provide transfers to the budget in case of adverse external shocks, mitigating the decline in income. However, the existence of such stabilization mechanisms does not always ensure the countercyclical nature of fiscal policy.

For most developing resource-based economies, fiscal policy tends to be procyclical. Government expenditures increase during periods of high commodity prices or when the economy operates above its potential, and decline during downturns. This dynamic is largely driven by institutional factors, such as the absence or weak enforcement of fiscal rules, political incentives to expand public programs in favorable years, reliance on transfer revenues, and weak automatic stabilizers (e.g., progressive income taxation and unemployment benefits). Governments often prioritize rapid economic growth and infrastructure development; however, they tend to underestimate the long-term risks of procyclicality, which amplify macroeconomic instability and increase vulnerability to external shocks.

In this context, the multiplier assessment helps theoretically and practically to form a sustainable economic policy. The correct interpretation of this parameter is important for the formation of a rational budget policy that avoids inefficient use of public resources, excessive inflationary pressure and unjustified growth of public debt.

This study aims to determine how government spending affects the economy of Kazakhstan, where the expenditure side of the budget is divided into current and capital components in order to identify their different impacts. The structure of the work includes a literature review, an analysis of Kazakhstan's fiscal policy, a description of the data used, methodology, results and conclusions.

Literature review

The study of fiscal multipliers builds on a number of works that have laid the framework for modern analysis. One of the key studies is by Blanchard and Perotti (2002), who applied a structural VAR (SVAR) approach using institutional information on the behavioral responses of taxes and spending. This approach allowed them to separate automatic stabilizers from "pure" fiscal shocks and to analyze the output response to changes in fiscal policy.

Auerbach & Gorodnichenko (2012) introduced the concept of state-dependent multipliers. Using the local projections method developed by Jorda (2005), they found that the effectiveness of fiscal policy partially depends on the business cycle. Fiscal multipliers are more effective in stimulating GDP during recessions, whereas their impact is lower during periods of economic expansion. Identification of fiscal shocks was done using forecast errors of government spending growth by professional market participants.

According to Ilzetzki, Mendoza & Végh (2013), the effectiveness of government spending depends on the structural characteristics of a given country. They noted that the size of the fiscal multiplier is influenced by a country's overall development (developed or developing), the exchange rate regime (fixed or floating), and the degree of economic openness. Another critical factor is the fiscal position or the level of public debt. Additionally, Huidrom et al. (2020) showed that the fiscal position can influence multipliers through two channels. Following the principle of Ricardian equivalence, households reduce consumption in anticipation of future budget adjustments when fiscal stimulus is introduced under high debt. Moreover, if the government attempts to stimulate the economy under high debt, it may trigger investor distrust, raise interest rates and risk premiums, increase borrowing costs for everyone, and ultimately weaken private demand.

During the 2008-2009 crisis, central banks in advanced economies lowered interest rates to near-zero levels. Since traditional monetary policy tools became ineffective, unconventional measures were implemented, including quantitative

easing, purchases of troubled assets, and other liquidity-support and financial-stabilization mechanisms. Additionally, to support demand, authorities had to resort to large-scale fiscal stimulus. As noted by Ramey (2019), this period saw a renaissance in research on the effects of fiscal policy. Christiano, Eichenbaum & Rebelo (2011) point out that in the absence of crowding-out effects through higher interest rates, government spending can have a more substantial impact on aggregate demand and output during near-zero interest rate periods. These findings emphasize the role of monetary policy features in shaping the economy's response to fiscal changes.

Ramey & Zubairy (2018) used a narrative approach to identify fiscal shocks, based on news about future increases in military and political spending. This method assumes that information about upcoming fiscal changes emerges in advance and influences household and firm behavior. The approach builds on earlier work by Ramey & Shapiro (1998) and Ramey (2011), which showed that expectations of future government purchases, especially related to defense, can serve as "pure" exogenous shocks. Incorporating these news indicators allowed the authors to isolate the unexpected component of fiscal policy, independent of endogenous macroeconomic variables.

Modern literature on fiscal multipliers has evolved from basic debates over the very existence of significant fiscal effects to analyses of the conditions determining their magnitude and dynamics. Estimates have shifted from static to dynamic approaches. Research has gradually formed the understanding that government spending multipliers are conditional and vary depending on the phase of the business cycle, spending composition, debt level, monetary policy regime, degree of economic openness, institutional quality, and so on. Together, these estimates have shaped the general view of countercyclical fiscal policy, as these factors determine the resilience and transmission mechanisms of fiscal impact.

In Kazakhstan, various studies have already been conducted to estimate multipliers. For instance, in the work of Rysbayeva and Khanet (2024), based on recursive identification methods, Blanchard-Perotti and sign restrictions within structural VAR models, cumulative multipliers were estimated in the range of 0.15-0.97 in the first year and 0.43-1.61 by the fourth year following a fiscal shock. Additionally, Bekishev et al. (2023) showed that during a recession, the budgetary multiplier amounts to 0.44.

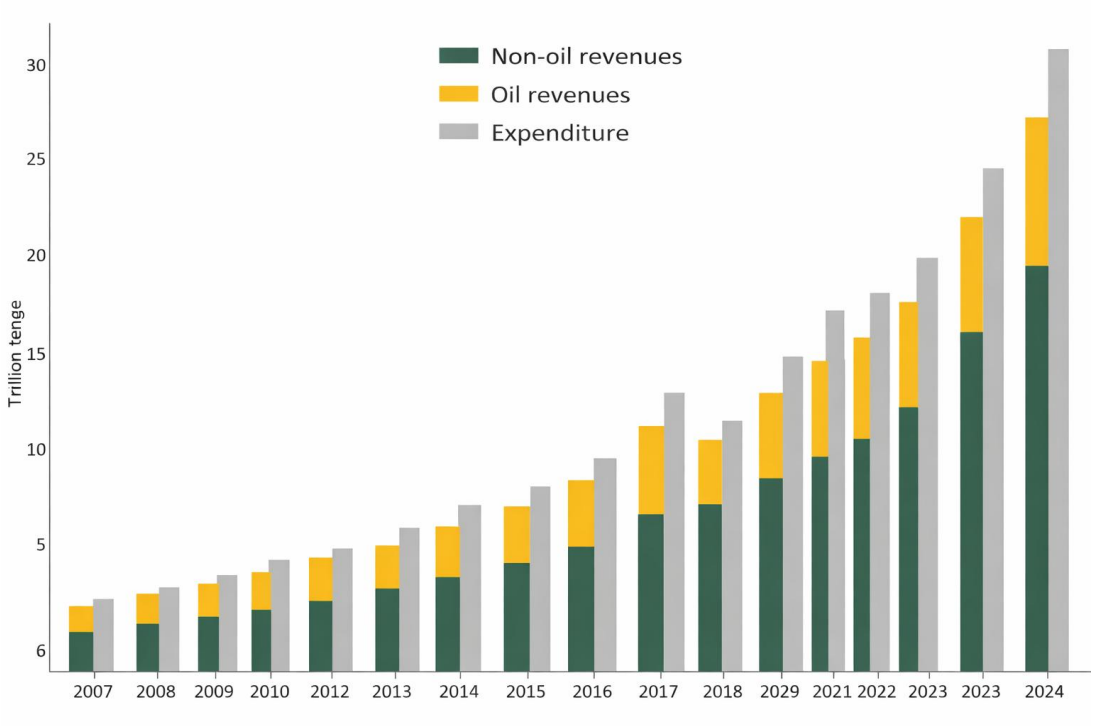
Fiscal policy in Kazakhstan

The development of fiscal policy in the Republic of Kazakhstan since the 2000s has been characterized by a steady increase in government expenditures and the persistence of a high structural dependence on oil revenues. Despite the establishment of the National Fund of the Republic of Kazakhstan (NFRK) in the early 2000s as a key mechanism for stabilization and savings, the budgetary system

continues to face a structural imbalance between fiscal needs and the capacity of the non-oil sector to generate sufficient budget revenues.

An analysis of the budget balance shows that non-oil revenues (excluding transfers from the NFRK and export customs duties) are consistently insufficient to cover government obligations (see Chart 1). This gap is financed through transfers from the National Fund, which has effectively transformed from a savings instrument into the primary source of budget deficit financing.

Chart 1. Components of the State Budget of the Republic of Kazakhstan



Source: MF RK, NBK computations

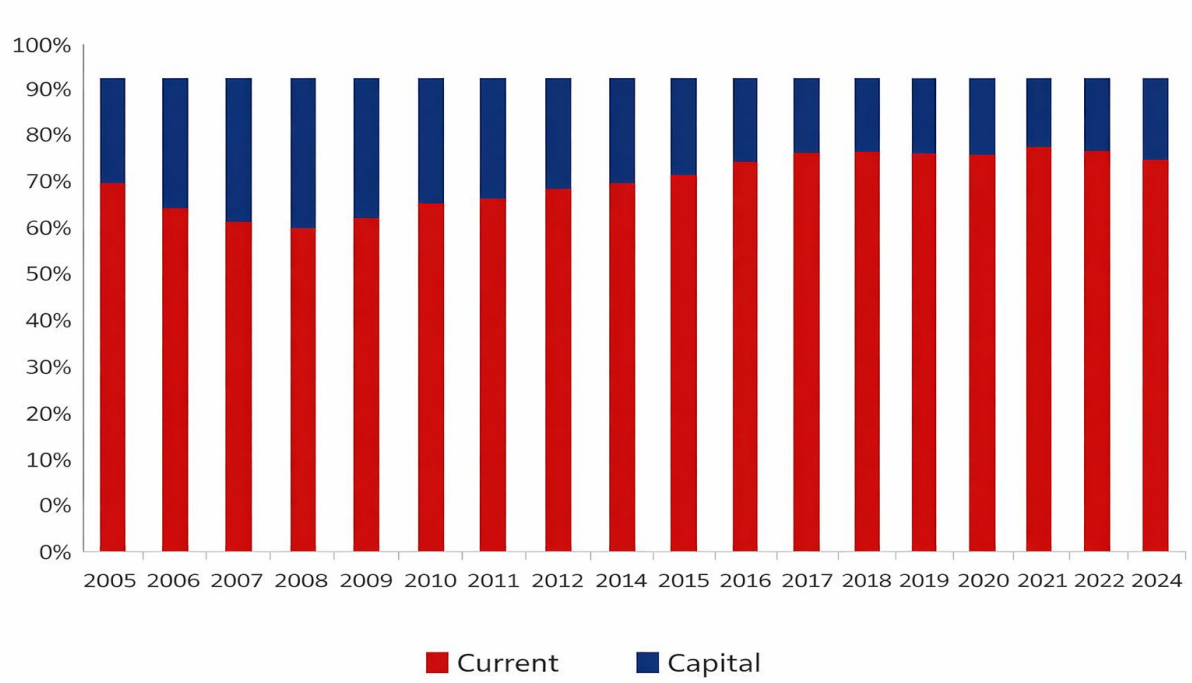
The role of transfers increased particularly during periods of major shocks, such as the global financial crisis of 2008-2009, the anti-crisis measures in the banking sector in 2017, and the 2020 pandemic. However, even after the crisis phases ended, transfer volumes did not return to lower levels, entrenching their use as a permanent element of fiscal regulation. This dependence heightens the budget's sensitivity to fluctuations in oil revenues and reduces the ability of the NFRK to fulfill its long-term savings function.

Nominal budget expenditure growth over the period under review has most often been in double digits (see Chart 1), reflecting the expanding role of the state in the economy. However, this growth has not been accompanied by a comparable improvement in the quality of economic development or a broadening of non-oil revenues. The oil and gas sector continues to occupy a dominant position in the economic structure, accounting for 16.3% of GDP in 2024 and more than half of total exports (with oil extraction alone representing 52.5%). In addition, labor productivity growth has lagged behind GDP growth, indicating a predominantly

extensive pattern of economic expansion. This trend has led to a widening structural gap between revenues and expenditures, which has become entrenched in recent years.

The composition of public expenditures also creates key challenges for fiscal sustainability. Throughout the period under review, current expenditures have consistently dominated the budget structure, accounting for a substantial share of total spending (an average of 80% over 2005-2024) (see Chart 2). The share of capital expenditures (development spending and infrastructure investment) remains comparatively lower. Limited capital investment constrains the potential for future economic growth. The high share of social transfers and operational expenditures makes the budget rigid and complicates fiscal consolidation during periods of declining revenues. In such circumstances, the government is compelled either to increase borrowing or to place additional pressure on the National Fund.

Chart 2. Structure of Government Expenses.



Source: MF RK, NBK computations

Overall, Kazakhstan's fiscal policy is at a stage where overcoming the chronic non-oil deficit, increasing the flexibility of the expenditure side, and limiting dependence on oil transfers are becoming key conditions for ensuring long-term macroeconomic stability and reducing budget vulnerability to external shocks. The budget rules introduced in 2023 are intended to reduce the budget's dependence on transfers and limit expenditure growth. At the same time, starting from 2026, it is planned to implement a fiscal reform; however, its expected effect may be weakened by the expansion of quasi-fiscal stimulus. Currently, financing of the economy through quasi-fiscal institutions has reached a historic high; in 2025, total financing

of the economy (excluding mortgage programs) by “Baiterek” NIH” JSC amounted to approximately 8 trillion tenge, which significantly exceeds the values of previous years (4.2 trillion in 2024). This situation may lead to the accumulation of hidden liabilities and support pro-inflationary pressure in the economy. Under these conditions, the success of fiscal policy will depend on the state's ability to increase the share of sustainable revenues, minimize the pro-cyclical expansion of state and quasi-state expenditures, and change the expenditure structure in favor of more investment-oriented and less consumption-oriented items.

Data

The data used for calculating the expenditure multiplier covers the period from 2005Q1 to 2024Q4. The starting point of the sample is determined by the availability of quarterly data on GDP and budget indicators, as well as the need to ensure a sufficient time series length for conducting SVAR estimation. The period since 2005 also allows for accounting for the impact of structural changes in the economy, including global price shocks and the transition to inflation targeting. The variables used include government budget expenditures (current or capital), non-oil GDP (GDP excluding the mining sector), the real effective exchange rate (REER), inflation, and the base rate. The set of variables follows empirical literature on fiscal multipliers for small open economies, where monetary, price, and external shocks influence output dynamics.

Government expenditures were divided into current and capital, as these categories have different economic natures and affect aggregate demand differently. Current expenditures create a stimulus through wages and the procurement of goods and services, while capital expenditures create a more long-term effect through investment, increasing production capacities and potential output. Furthermore, capital expenditures are generally more discrete and subject to active government decisions, whereas a portion of current expenditures is determined by obligations and automatic mechanisms. Debt servicing, as well as transfers to the population and subsidies, were excluded from current expenditures because these items are redistributive in nature, exert an indirect influence on economic growth, and relate to automatic stabilization mechanisms. Capital expenditures include the acquisition of fixed assets, capital repair expenses, and development programs. Indicators are presented in real terms using appropriate deflators. For capital expenses, the gross fixed capital formation deflator in the GDP structure (by the expenditure method) was applied, while current expenditures were deflated by inflation.

Variables requiring seasonal adjustment were deseasonalized using the X12-ARIMA method.

Data on government expenditures were obtained from the statistics of the Ministry of Finance of the Republic of Kazakhstan; information on inflation and non-oil GDP was taken from materials of the Bureau of National Statistics of the

Republic of Kazakhstan. Base rate and real effective exchange rate (REER) indicators were used according to data from the National Bank of Kazakhstan.

Government expenditures and output are normalized to potential non-oil GDP in levels, estimated using the Hodrick-Prescott filter (λ = 1600). The base rate is accounted for through the TONIA indicator and included in the model in difference form. REER is presented as a percentage change, and inflation as a quarterly growth rate relative to the previous quarter.

Unit root analysis of the indicators showed the stationarity of almost all variables. Unit root tests for current government expenditures yielded mixed results in ADF/PP/KPSS tests. However, the test, which allows for an endogenous structural break, rejected the null hypothesis of a unit root at the 1% significance level, indicating the stationarity of the series with a structural break in 2016Q1. Consequently, the series can be classified as I(0) with one structural shift, and a corresponding dummy variable was included in the model specification for current expenses. This period corresponds to the country's transition to inflation targeting.

Methodology

At the initial stage, it is necessary to identify "pure" fiscal shocks in order to isolate them from the influence of other macroeconomic variables. The literature identifies three main approaches for such identification:

1. Narrative approach: using news about future defense spending and political changes (Ramey & Shapiro, 1998; Ramey & Zubairy, 2014; Romer & Romer, 2010).
2. Forecast error approach: based on forecast errors of fiscal components by professional market participants (Auerbach & Gorodnichenko, 2012).
3. SVAR-based identification methods.

Due to the lack of data for the first two approaches, this study applies the third approach. Shock identification follows Blanchard-Perotti (2002). The Blanchard-Perotti identification assumes that discretionary fiscal policy does not react to changes in economic activity within a single quarter, and the elasticities of fiscal parameters with respect to GDP are set exogenously based on external information.

For structural government spending shocks, this restriction is equivalent to recursive identification (Cholesky decomposition), where government expenditures are ordered first in the vector of variables and are therefore the most exogenous within the quarter.

The reduced-form vector autoregression (VAR) can be written as:

$$X_t = D(L)X_{t-1} + u_t,$$

where X_t is the vector of endogenous variables, including government expenditures, non-oil GDP, percent change in REER, inflation, and change in the policy interest rate; $D(L)$ is the lag polynomial; u_t are the residuals. The lag length

was determined as 1 for current expenditures and 3 for capital expenditures using the Schwarz and Akaike information criteria. A test for characteristic roots confirmed the stability of the VAR specification.

In the next step, the Blanchard–Perotti restrictions are imposed on the residuals u_t to obtain structural fiscal shocks. Once structural expenditure shocks are identified, impulse responses are estimated using the local projections method described by Jorda (2005). One advantage of this method is that it does not impose restrictions on the shape of the impulse response function. Impulse responses are estimated over a 12-quarter horizon, capturing both short- and medium-term effects, consistent with the forecasting horizon of macroeconomic variables used by the National Bank of Kazakhstan.

For each time horizon *h*, a separate regression is estimated in the linear form:

$$x_{t+h} = \alpha_h + \psi_h(L)z_{t-1} + \beta_h shock_t + \varepsilon_{t+h}$$

where x_t is GDP or government expenditure, z_t are control variables, $\psi_h(L)$ is a lag polynomial, $shock_t$ is the identified fiscal shock, β_h is the response of variable *x* at period *t+h* to the shock at period *t*, ε are residuals, *h* is the impulse response horizon. Control variables include GDP, government expenditures, inflation, change in the policy interest rate, and the real effective exchange rate (REER). Newey-West standard errors are used to account for potential autocorrelation and heteroskedasticity.

The above equation is estimated separately for GDP and government expenditures. The estimated β_h coefficients are then summed over each horizon to calculate the cumulative multiplier using the formula:

$$m = \frac{\sum_{j=0}^{h} \beta_j^{GDP}}{\sum_{j=0}^{h} \beta_j^{G}}$$

where $\sum_{j=0}^{h} \beta_j^{GDP}$ is the sum of coefficients from the GDP equation and $\sum_{j=0}^{h} \beta_j^{G}$ is the sum of coefficients from the government expenditure equation.

The cumulative multiplier is used because it allows estimating the total contribution of one tenge of government spending to the dynamics of the economy over a given time horizon, accounting for intermediate effects and time lags.

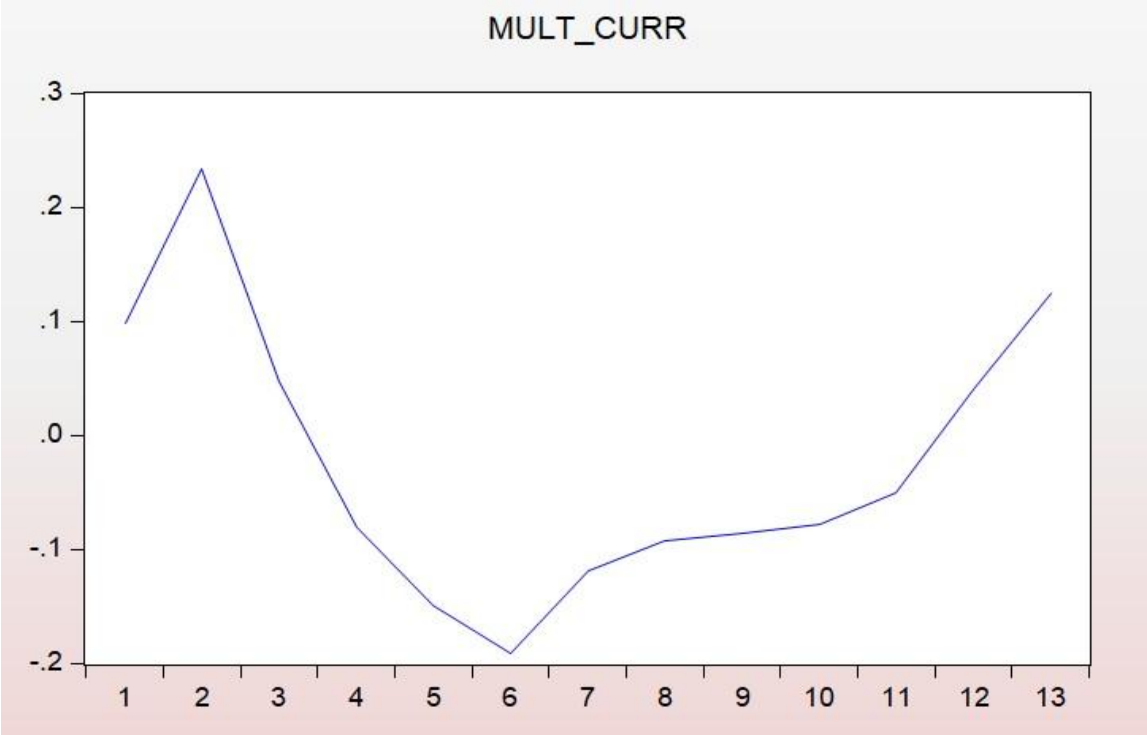
Results and conclusion

The estimated cumulative effects of fiscal shocks reveal differences in the impact dynamics of current and capital expenditures on GDP.

Current government expenditures have an immediate positive effect on economic activity, stimulating aggregate demand in the short term. At the moment of the shock (t = 0), the multiplier is 0.1, reaching a local peak of 0.23 in the first quarter after the shock (Chart 3). Following this initial increase, there is a period of moderate weakening, during which the impact of expenditures on GDP is offset by crowding-out effects on private consumption, import leakages, and, partially, monetary policy responses.

In the second year, the effect of current expenditures reverses. This dynamic may reflect the economy's adjustment to tighter monetary conditions in response to the initial fiscal shock, as well as the gradual spending of funds that had been held in household savings. Over the longer term, the effect of current expenditures becomes positive again, reaching 0.12 by the third year, indicating a persistent, though limited, impact on economic activity.

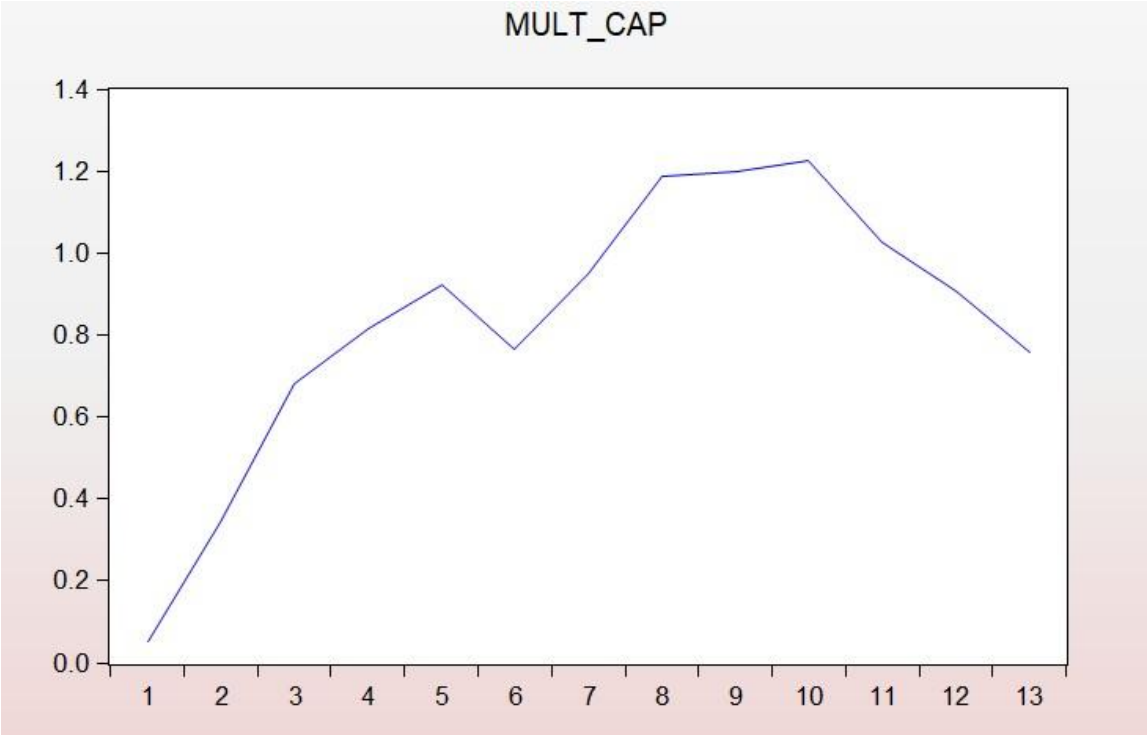
Chart 3. Fiscal multiplier of current expenditures (period 1 corresponds to t = 0)



At the same time, the impact of **capital** government expenditures on economic activity develops differently from current expenditures, which generate a short-term and more volatile response. At the moment of the shock, capital investments have a limited initial effect (0.05 at t = 0), but their impact gradually increases as investment projects are implemented and brought into operation, expanding productive capacity (Chart 4).

The maximum output effect is reached after two years, when the cumulative multiplier attains a value of 1.2. After reaching this peak, the effect gradually diminishes, but remains persistently positive, reaching 0.76 by the end of the third year. This indicates that the impact of capital expenditures is not limited to short-term stimulation of aggregate demand but has a structural effect on the economy, supporting its dynamics over several years.

Chart 4. Fiscal multiplier of capital expenditures (period 1 corresponds to t = 0)



The results emphasize the importance of capital expenditures as a key instrument of fiscal policy in ensuring sustainable economic growth. Capital spending has a higher multiplier effect, significantly exceeding the impact of current expenditures. Their greater effectiveness suggests that public investment can act as a catalyst for the private sector, particularly when directed at removing infrastructure constraints and creating conditions for aggregate factor productivity growth. According to Francois et al. (2024), government capital expenditures can complement private investment. In countries with imperfect capital markets, public capital spending can serve as an effective tool to address underinvestment caused by market distortions.

At the same time, it should be noted that public investment cannot fully replace private investment, as the latter plays a more active role in sustaining economic growth, improving resource allocation efficiency, and fostering innovation. Furthermore, when used inefficiently or excessively, public capital expenditures can crowd out private investment (IMF, 2026). Thus, the effectiveness of government capital spending is determined more by its quality and targeted focus than by its quantitative scale.

The estimates obtained indicate the need to increase the share of capital expenditures, as they provide a sustained contribution to economic growth. Gradually reducing low-productivity current expenditures in favor of infrastructure and investment projects can enhance the overall efficiency of budget resource use and strengthen the economy's long-term potential.

Current expenditures can play a role as a short-term stabilization tool during economic downturns; however, their stimulative effect is temporary and diminishes over time. This implies the need for a balanced approach in using current expenditures for countercyclical stimulus, in order to avoid excessive liquidity and subsequent pro-inflationary pressures.

It is important to note the limitations associated with the quality of available public finance data. Attempts to estimate the multiplier depending on the phase of the economic cycle using this approach proved unstable: the resulting values were economically implausible, reflecting the relatively short length of the time series after disaggregation. In addition, confidence intervals of impulse responses indicate the marginal statistical uncertainty of estimates in the context of a limited time series. Such limitations are characteristic of developing economies, where institutional features of the budget process contribute to these data constraints, requiring caution in interpreting the results (Ilzetzki, Mendoza & Végh, 2013).

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Appendix

Chart 5. Cumulative impulse responses to a capital expenditure shock with 90% confidence intervals (1000 bootstrap repetitions)

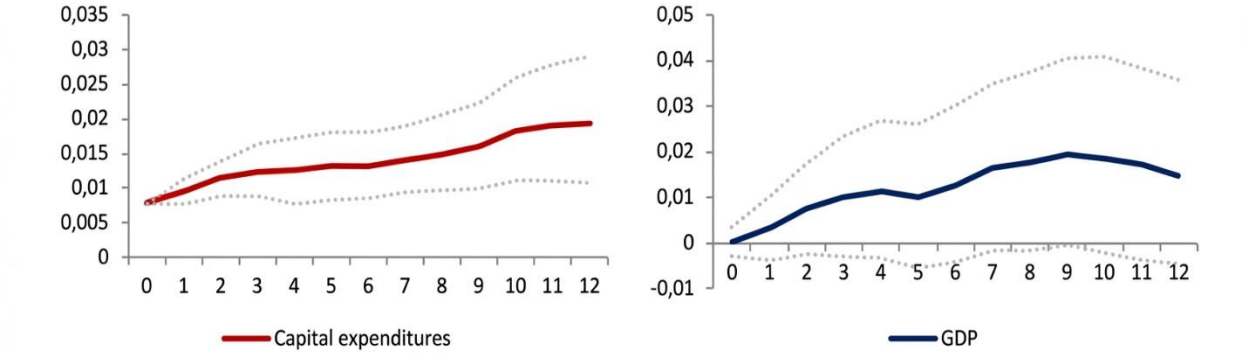

Chart 6. Cumulative impulse responses to a current expenditure shock with 90% confidence intervals (1000 bootstrap repetitions)