WORKING PAPER / 2025.13

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## The case of Pakistan

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**ISSN 2294-8643**

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December 2025

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# AID HETEROGENEITY AND FISCAL RESPONSE: THE CASE OF PAKISTAN

**By**

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**Abstract**

The paper explores the effect of both temporary and permanent components of foreign aid grants and loans on Pakistan's fiscal response over the period 1973 to 2020. It shows that temporary loans cause larger fiscal adjustments than grants, by boosting revenue and public investment while decreasing government consumption and domestic borrowing, with no effect on debt servicing. Conversely, temporary grants trigger revenue-based fiscal adjustments by raising revenue and debt service without affecting domestic borrowing or government investment, while lowering at the same time current expenses. Additionally, permanent loans lead to increased domestic borrowing without impacting revenue, along with higher current expenses and debt service, and reduced public investment. Permanent grants also lead to increased domestic borrowing due to lower revenues and a larger government. These findings highlight important policy suggestions for aid donors regarding the aid design for highly indebted aid recipient countries, advocating for grants over loans and initiating debt relief programs to prevent aid fungibility into debt servicing. The findings emanating from the paper seem also to suggest that donors should provide temporary aid for fiscal adjustments and permanent grants for investments. In contrast, expenditure-based fiscal adjustments should be conditioned on permanent loans that finance the government's current spending in recipient governments.

**Keywords:** Foreign aid, aid heterogeneity, temporary aid, permanent aid, fiscal response

**JEL classification:** F35, O11, O23

## 1. Introduction and Background

Foreign aid has been the subject of intense debate for many years, with often extreme views regarding its effectiveness, particularly regarding how the a priori benefits of various aid programs may contribute (or not) to the economic development of aid-recipient countries. Earlier evaluations of foreign aid effectiveness (e.g., Cassen 1986; Mosley 1987; Riddell 1987; World Bank 1998) dominated the research and policy landscape for many years, yet they failed to provide conclusive evidence for several reasons. These included limitations in the quality and availability of aid data, insufficient attention to aid heterogeneity, inadequate consideration of aid volatility and unpredictability, and various econometric shortcomings. Over the past two decades, however, a new wave of aid-effectiveness research has emerged, offering more robust, methodologically pluralistic, and persuasive evidence on the conditions under which aid influences development outcomes. This body of work is complemented by several more comprehensive assessments (see Sachs 2005; Easterly 2006, 2007; Riddell 2007; Lahiri 2007; Collier 2007; Guillaumont and Chauvet 2001; Moyo 2008; Doucouliagos and Paldam 2009; Mavrotas 2010, 2015; Banerjee and Duflo 2011; Ramalingam 2013, among others), which provide detailed overviews and critical discussions of ongoing debates surrounding aid effectiveness.

One of the key criticisms of the ‘aid–growth’ literature in particular is that it fails to recognize explicitly that aid is given primarily to governments in aid-recipient countries, and hence any impact of aid on the macroeconomy will depend on government behaviour, i.e. how fiscal decisions on taxation and expenditure are effected by the presence of aid. This is exactly what motivates the so-called ‘fiscal response’ literature that is modelling how the impact of aid is mediated by public sector behaviour[1].

The first significant exploration of the nexus between foreign aid and fiscal sector behavior in the presence of aid can be traced back to Heller's seminal paper (see Heller 1975), which provided a comprehensive theoretical framework for analyzing foreign aid and the fiscal behavior of aid recipient countries. Following this seminal paper, other early fiscal response studies include Gang and Khan (1991), Khan and Hoshino (1992), and Otim (1996). In recent years the literature has blossomed with contributions by Franco-Rodriguez et al. (1998), Franco-Rodriguez (2000),

[1] The term is attributed to White (1992).

Mavrotas (2002a, 2005), Gupta et al. (2004), Mavrotas and Ouattara (2006a, 2006b), Ouattara (2006a, 2006b), and Mavrotas and Ouattara (2007). The analysis of fiscal response is also critical, as it helps to illuminate one of the many "black boxes" within the broader aid–growth nexus. As early as Griffin (1970), it was argued that foreign aid may exert negative effects on recipient economies because governments often allocate aid resources toward expanded public consumption rather than channelling them into developmental public investment. This concern was later advanced by Boone (1996), who by drawing on a cross-sectional analysis of 96 countries within the framework of a Cass–Ramsey–Koopmans type model, concluded that the bulk of aid is effectively consumed rather than invested, despite the well-established now methodological limitations of his approach. More precisely, Boone (1996) concluded that the marginal propensity to consume from permanent transfers is one, and that the marginal propensity to invest from transfers is zero, and that the above marginal propensities do not vary with income per capita.

Another limitation of the earlier studies of the aid effectiveness literature is the neglect of the aid heterogeneity nature of aid thus causing bias to the empirical results reported on the effectiveness of aid. Three points are particularly relevant here. First, different categories of aid operate through distinct channels—and often with varying lag structures—within recipient economies, thereby generating heterogeneous macroeconomic effects. Second, country-specific conditions, such as the degree of aid coordination or institutional capacity, further shape the effectiveness of different aid components. These contextual differences imply that the ceteris paribus assumptions underlying much of the econometric work on aid may not hold. Third, and perhaps most importantly, within an endogenous fiscal response framework, if governments assign different utility values to different types of aid, the use of an aggregate aid measure inevitably introduces aggregation bias into empirical estimates and the conclusions drawn from them (Mavrotas 2002a, 2002b, 2005). Given these considerations, the central premise of the aid heterogeneity approach—and hence the rationale for disaggregating aid in empirical analyses—is that reliance on a single, aggregated aid variable, a common practice in the aid-effectiveness literature, fails to capture the underlying diversity of aid flows. This omission leads to aggregation bias, thereby compromising the reliability of empirical findings (see Cassen 1994; Mavrotas 2002a, 2002b, 2009 for further discussion). The persistent neglect of aid disaggregation in much of the extensive aid-effectiveness literature motivated the development of the model proposed by Mavrotas (2002a). Using time-series data for Kenya and India, the author provides robust empirical evidence underscoring the importance of distinguishing among different aid categories in order to derive meaningful conclusions about aid's impact on the fiscal sector. It is notable that over the past two decades, the aid heterogeneity approach has gained considerable momentum, reflected in an expanding body of research. Notable contributions include Mavrotas (2005), Ouattara (2006a, 2006b), Mavrotas and Ouattara (2006a, 2006b, 2007), Mavrotas and Nunnenkamp (2007), Fielding and Mavrotas (2008), and Clemens et al. (2012). See also the special issue of the *Review of World Economics (Weltwirtschaftliches Archiv)* published in December 2007 (Mavrotas and Nunnenkamp 2007), which features several important papers in this research area.

It is also important to mention here that a notable exception to the general neglect of the disaggregation of aid in the first generation of empirical studies on aid effectiveness is the study by Levy (1987) (although in the context of a different aid disaggregation, that is between 'anticipated' and 'unanticipated' aid), which provides a strong indication that if we consider the macroeconomic impact of aid in a disaggregated framework, the standard conclusions of most of the existing studies could be altered dramatically. In Levy's study, the reported estimates, from the estimation of a consumption function for 39 countries over the period 1970–80, indicate different tendencies of anticipated (mainly project aid) and unanticipated aid (food aid, relief aid, and so on): unanticipated aid is fully consumed but more than 40 per cent of anticipated assistance is invested, thus contributing significantly to the growth process in recipient countries (Levy, 1987).

Franco-Rodriguez (1998), in the context of a fiscal response model, examines aggregated-level data on aid to Pakistan from 1954 to 1995 and found that foreign aid is diverted from investment to consumption in the public sector. Another more recent study on Pakistan (see Syed and Mukhtar 2021) concluded that aid grants are primarily allocated to non-development spending and that loans used for public-sector investments. Both components of foreign aid negatively affect domestic resource mobilization according to the authors, thus suggesting that foreign aid is a leading cause of Pakistan's low tax base. Tax revenue has a favourable impact on current and development expenditures and on socioeconomic expenditures. The authors also found that aid grants are a significant source of funding for socioeconomic and community services, and that the inverse correlation between tax receipts and domestic borrowings suggests that Pakistan's low tax-to-GDP ratio is the primary driver of the country's sharply rising domestic debt. Finally, they conclude that most domestic borrowing is allocated to current and social expenses, indicating a less effective use of the growing amount of domestic debt and interest payments in the country.

By combining the fiscal response literature and the aid heterogeneity approach, Mavrotas (2005) used disaggregated aid data for Uganda from 1980 to 1999 and a revised model of fiscal response where foreign aid is endogenous, to conclude that 60% of tax revenue is allocated to government consumption and that 50% of borrowing is also used for government consumption. The study also showed that 55.7% and 56.4% of the project and program aid respectively are directed towards consumption, whereas food aid appeared to be fully consumed (and as expected).

Mavrotas and Ouattara (2006a) use disaggregated aid data for the Côte d'Ivoire from 1975 to 1999 and conclude that 72% of its tax and non-tax revenues are used to finance consumption, that foreign aid is spent entirely on consumption, and that 89% of its borrowing is allocated to consumption at the aggregate aid level. Similarly, the portion of the tax and non-tax revenues, borrowing, and aid spent on the investment are 28, 11, and 0, respectively. However, the aid-disaggregated findings indicate that 50% of the tax is directed to consumption, and 52% of the borrowing is allocated to government consumption. The program and project aid proportions are 42% and 33%, respectively, with 33% directed towards consumption.

In the context of the fiscal response and debt service nexus, McGillivray and Ouattara (2005) studied the impact of aid and debt servicing on Côte d'Ivoire's government fiscal behaviour, concluding that a significant portion of its foreign aid is used to pay debt service, but that this does not reduce the debt stock or increase tax revenue. They also found that most of the borrowing is used to finance consumption and investment. This observation that new aid may be merely used to keep recipient countries current on paying their existing (also aid) loans, sometimes denoted as 'defensive aid', can then lead donors to provide large-scale debt relief, such as in the comprehensive HIPC and MDRI debt relief initiatives, in an attempt to stop this defensive aiding behaviour and restore aid selectivity; in fact, Claessens et al. (2009) find evidence of a decline in such defensive lending due to the HIPC initiative, with bilateral donor aid becoming more responsive to recipient countries' policy and institutional quality and less to high debts. Moreover, to the extent that debt relief is granted on (bilateral and multilateral) aid loans, such donor actions on debt relief become an additional type of aid intervention in itself, and, in line with the aid heterogeneity assumption, may lead to (distinct) fiscal response effects, hence deserving a separate analysis. In this respect, Cassimon and Van Campenhout (2007) showed for a set of 28 HIPC countries, HIPC debt relief broadly showed the expected fiscal response effects, in the sense of increased government recurrent primary spending, domestic revenues as well as public investment; Cassimon & Van Campenhout (2008) and Cassimon et al. (2015) broadly confirmed these results for African HIPCs for a more disaggregated set of aid components and a longer time horizon, albeit Cassimon et al. (2015) failed to find a positive effect of MDRI debt relief on public investment.

Finally, only a few studies have examined aid heterogeneity based on the permanent and transitory effectiveness of foreign aid. Chatterjee and Turnovsky (2005) examine the mechanisms by which foreign aid influences macroeconomic performance and found that the permanence or temporality of aid flows is a critical factor in determining the long-term impact of aid on capital accumulation and growth. Furthermore, Carter (2017) has argued that if aid components are not distinguished between permanent and temporary, aid's effects on investment, consumption, and output may be misinterpreted. Because recipient governments manage most aid inflows, the macroeconomic impact of foreign aid depends on their responses. Therefore, it would be more comprehensive to analyze the aid-recipient government's behavior toward temporary and permanent components of foreign aid to help us understand how foreign aid of different frequencies affects investment, revenue, consumption, and borrowing in an aid-recipient country. More recently, Abdelwahed (2023) in the context of the fiscal response literature, examined the fiscal sector responses of 28 Sub-Saharan African aid-recipient countries to both permanent and temporary components of foreign aid (grants), thus combining elements of both aid heterogeneity and fiscal response in the analysis. She concludes that permanent aid increases public investment only, whereas temporary aid brings fiscal adjustments, such as increases in government revenue, recurrent expenditure and decreases in domestic debt.

Against this background, the present paper contributes to the fiscal response literature by examining the fiscal response to both temporary and permanent components of foreign aid loans and grants in the case of Pakistan from 1973 to 2020. We found that temporary loans cause larger fiscal adjustments than grants, by boosting revenue and public investment while decreasing government consumption and domestic borrowing, with no effect on debt servicing. Conversely, temporary grants trigger revenue-based fiscal adjustments by raising revenue and debt service without affecting domestic borrowing or government investment, while lowering at the same time current expenses. Additionally, permanent loans lead to increased domestic borrowing without impacting revenue, along with higher current expenses and debt service, and reduced public investment. Permanent grants also lead to increased domestic borrowing due to lower revenues and a larger government. These findings highlight important policy suggestions for aid donors regarding the aid design for highly indebted aid recipient countries, advocating for grants over loans and initiating debt relief programs to prevent aid fungibility into debt servicing. The findings emanating from the paper seem also to suggest that donors should provide temporary aid for fiscal adjustments and permanent grants for investments. In contrast, expenditure-based fiscal adjustments should be conditioned on permanent loans that finance the government's current spending in recipient governments.

The remainder of the paper is structured as follows. Section 2 outlines the empirical model and discusses the empirical methodology employed in the paper and section 3 provides a discussion of data issues. Section 3 presents and analyses the empirical results; and the final section offers concluding remarks.

## 2. Empirical Methodology

Bulir and Hamann (2008) and Celasun and Walliser (2008) state that foreign aid is often unpredictable for aid-recipient countries due to discrepancies between aid commitments and actual donor disbursement volumes. Variations also arise from differences between donor development agencies and aid recipient countries for several reasons, leading to a mismatch between the aid disbursement and commitment amounts. The second contributing factor is excessive administration, which impedes the aid processes on the bureaucratic side (Bulir & Hamann, 2008). Furthermore, Eifert and Gelb (2008) and Hudson (2013) assert that donors should incorporate sound policy conditions into aid commitments. Thus, aid should be disbursed upon implementing the policies outlined in the aid commitment. Eifert and Gelb (2008) also state that 4% of the aid commitments are not disbursed due to political problems on the donor's side. In the case of Pakistan, US aid inflows in particular are also allocated on the basis of political interests as various studies seem to suggest (see Abbas, Syed and Campbell 2024; Epstein and Kronstadt, 2011; and Zaidi 2011, for further details).

The effects of the permanent and temporary components of foreign grants and loans on Pakistan's fiscal decisions are examined using a Vector Autoregression (VAR) Model.

$$X_t = \alpha_0 + \beta_1 X_t + \mathrm{u}_t \quad (1)$$

In the first specification case, $X_{it}$the vector comprised foreign aid, government borrowing, government revenue including taxes and non-taxes, debt servicing, and public investment.

In alternative specification case, the temporary and permanent components of the foreign grants and loans $(FGL)$ are decomposed by the CF filter distinctly: government borrowing $(GB)$, government revenue, including taxes and nontaxes $(GR)$, debt servicing $(DS)$, and public investment $(CA)$.

The budget equation of the government follows as:

$$CA + DS + CE = GR + GB + FGL \quad (2)$$

The foreign grants and loans $(FGL)$ are split into their temporary and permanent components and treated as explanatory variables. The dependent variables are government borrowing $(GB)$, revenue $(GR)$, current expenditure$(CE)$, debt servicing $(DS)$, and public investment $(CA)$. All variables are normalized as percentages of GDP.

It is important to stress here that Pakistan's fiscal reports do not distinguish between foreign aid and other forms of assistance, thus failing to differentiate between permanent and temporary aid. In view of this problem, we have followed Abdelwahed (2023) and Jones and Tarp (2016) regarding their data-driven approach, using time-series filters to separate permanent and temporary trends in foreign grants and loans. The trend component of the aid series is characterized by low frequency due to the shocks, but it does not disappear quickly and persists over a long time horizon; thus, we refer to this aid series as permanent aid. The deviation around the trend component of the aid series is high-frequency due to shocks and disappears quickly; thus, we refer to this aid series as temporary or transitory aid. The permanent and temporary components of grants and loans are separated using the Ravn-Uhlig rule, with a smoothing parameter of 6.25 for annual data and the

HP filter. Therefore, we have chosen the minimum stochastic cyclic period of 2 years and the maximum period of more than 8 years when extracting permanent and temporary grants and loans using the CF and BK filters.

Second, the Phillips-Perron and Augmented Dickey-Fuller tests are employed to check the stationarity of the fiscal variables. Many variables, such as domestic borrowing, public investment, and the temporary components of grants and loans, are stationary at the level; the permanent component of grants and loans, revenue, and current and debt servicing expenditures become stationary at the first difference.[2] According to Sims et al. (1990), many macroeconomic variables are interdependent and exhibit less exogeneity among themselves. In addition, the criticism of unit root tests is that they accept the unit root as a biased estimator. Thus, failing to reject the false null hypothesis of a unit root and achieving stationarity could lead to incorrect estimators due to data differentiation. The attainment of stationarity of the permanent component of aid (loans and grants) through differentiation thus causes the loss of low-frequency observations, as we need to estimate responses to temporary aid shocks differently from those to permanent aid shocks. Therefore, the VAR model is chosen for the disaggregated components of foreign aid.

Third, we used three popular information criteria in order to select the appropriate lag structure: the Akaike information criterion (AIC), the Schwarz information criterion (SIC), and the Hannan-Quinn information criterion (HQ). As the information criteria suggested, two lags were optimal.[3]

Fourth, the purpose of generating the impulse response function is to explain how fiscal variables such as government revenue, capital expenditure, debt servicing, and current expenditure respond to shocks to aid, while holding other shocks constant, thereby isolating the effect of shocks to one variable in the system. The restrictions are to be imposed on the system so that the residuals can be orthogonal. For identification of the impulse response function, the lower-triangular Cholesky decomposition imposes the ordering of the recursive residuals in a way that shocks of the variables

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[2] Due to econometric issues, the ARDL Model fails to comply with the fiscal response model as we consider aid as a whole, and then a multicollinearity problem may arise. In the case of the ARDL short-run parameters, attaining the stationarity of the permanent component of aid (loans and grants) through its differentiation thus causes the loss of the low-frequency observations as we need to estimate the responses from temporary aid shocks to permanent aid shocks differently. The unit root tests and ARDL model results are available by the authors upon request.

[3] The lag selection criteria results of the baseline and robustness results are available by the authors upon request.

come first to affect the system's other variables contemporaneously. In contrast, earlier variables with a lag are affected by the shocks to the later variables. The order of entering variables for foreign grants is as follows: permanent grants, temporary grants, government taxes, current expenditure, investment, domestic financing, and debt servicing. A similar order of variables was followed with grant components replaced by loan components. In this model, we must identify which other fiscal variables contemporaneously affect the temporary and permanent components of grants and loans. Notably, we focus on the responses of the fiscal variables to foreign aid shocks in line with the fiscal response literature. After placing the permanent and temporary aid, the variable order does not influence the impulse responses (Christiano et al., 1999). Moreover, the relative ordering of temporary and permanent aid does not affect the results in the Cholesky decomposition.

Finally, the stability of the VAR model's estimated coefficients is also tested. The modulus of each estimated eigenvalue in the estimated model is computed. This is done to verify that all moduli are strictly smaller than one, which guarantees that the VAR is invertible into a Vector Moving Average process (Abrigo and Love, 2016).

## 3. Data Issues

### *Foreign Aid*

Aid disbursement data have been collected from the State Bank of Pakistan and the OECD DAC for the period 1973 to 2022 on foreign grants and loans, but the data from both sources do not reconcile.[4] The State Bank of Pakistan has data on project and non-project aid from 1960 to 2022, but program aid for Pakistan is available from the OECD DAC for 1995 to 2022. Therefore, we need a long time series to conduct a sensitivity analysis of results using grants vs. loans. The Pakistan Economic Affairs Division records foreign loans, but the OECD DAC reports net foreign loans. Pakistan's official data includes market-based loans from 2013 to 2020. The country records foreign loans as gross loans and records interest and principal payments separately.[5] Therefore, the

[4] The foreign aid grants recorded in the Pakistan official data are smaller than OECD DAC aid data because Pakistan reflects the grants and loans directly considered in its budget.

[5] The Pakistan Economic Survey recorded only the public and publicly guaranteed external debt (official creditors) and its principal and interest payments. However, the reporting of external debt from private creditors started only in 2013. The terms and conditions associated with the foreign loans' interest rate and maturity period are also explained

OECD DAC excluded borrowing from private creditors who are not members. First, loans from private creditors are subtracted. The second reason for the difference between foreign loan data from OECD DAC and Pakistan's official sources is that OECD DAC reports foreign loans as net foreign loans (by subtracting the principal amount repayments from the foreign loans). The principal payments are deducted from foreign loan inflows to normalize the data in line with OECD DAC standards and obtain the net foreign loan.

***Government Fiscal Variables***

Fiscal operations data, including government revenue, current expenditures, capital expenditures, debt service, and budget deficits, are collected from the State Bank of Pakistan and the Pakistan Economic Survey for the period 1973 to 2020. Fiscal operation data for Pakistan is unavailable under the IMF's Head of Government Finance Statistics (GFS) and the World Bank's World Development Indicators (WDI) for disaggregated budgetary data.[6] The debt servicing on Pakistan's external debt is available in the Country Debt Table of the Global Development Finance (GDF). However, no international database records the country's domestic debt or its servicing. Therefore, we had to rely on Pakistan's official sources for these variables.

## 4. Empirical Results and Discussion

### i. Baseline Results

The size of the orthogonalized shocks is 1% of GDP; the impulse response functions can be interpreted as the impact of increases or decreases in loans and grants as a percentage of GDP. The dotted lines in the figures show the estimated upper and lower standard errors computed through Monte Carlo simulations.

**a) Fiscal Responses to Foreign Loans**

in the Pakistan Economic Survey. Furthermore, the segregated components with respect to interest and principal amount are recorded based on each creditor category.

[6] According to Prichard (2016), GFS comprises 65% of the country's government finance yearly statistics, particularly observations missing between 1990 and 2010.

The left panel shows the fiscal responses to total loans; the middle panel shows the responses to temporary loans; and the right panel shows the responses to permanent loans. The responses of fiscal variables to temporary and permanent loans differ, and failing to distinguish between them could have led to biased results.

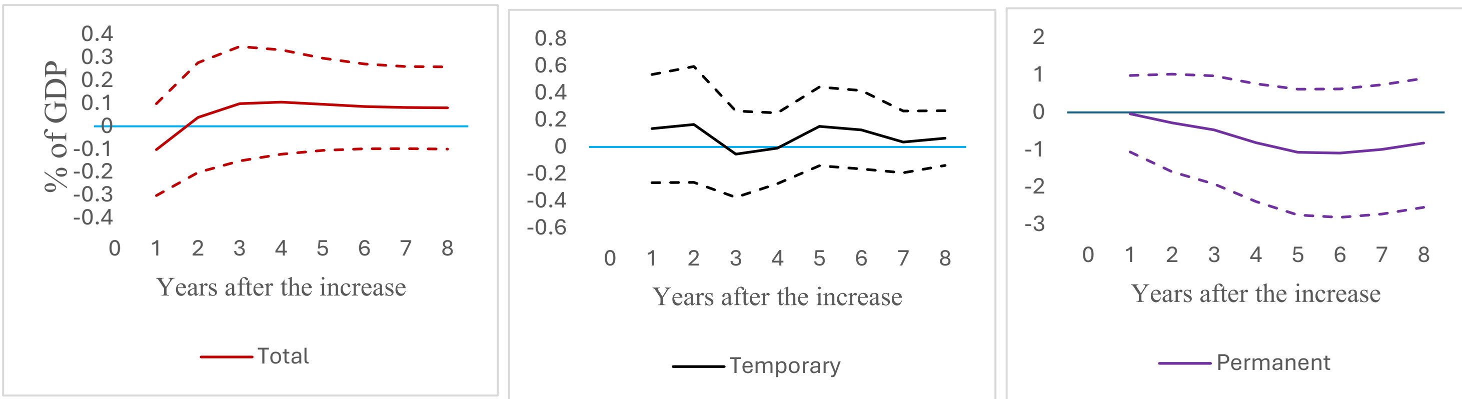


**Figure 1. Response of Government Revenue to Foreign Loans**

The 1% shock in temporary loans is associated with a 0.13% increase in government revenue, which is short-lived and decays to zero in the 3rd year. The finding is in line with Abdelwahed (2023), who states that fiscal adjustment temporarily increases tax and nontax revenue. The shock of permanent loans does not affect taxes or non-revenue. Similar findings have been confirmed in a study by Feeny (2007).

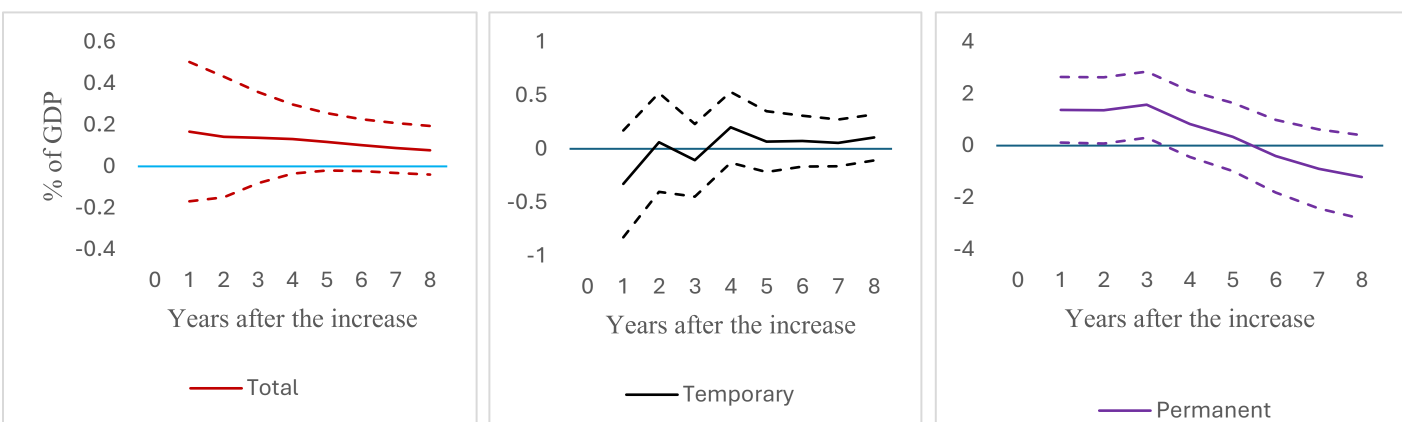


**Figure 2. Response of Domestic Borrowing to Foreign Loans**

The 1% shock to temporary loans leads to a 0.32% decrease in domestic debt issuance, and the shock disappears the following year. The findings match again Abdelwahed's (2023) findings which show that fiscal adjustment reduces domestic borrowing. The shock of 1% in permanent loans to the size of the GDP leads to an increase of 1.37% in domestic debt issuance. The estimated standard errors for foreign loans are not distinguishable from zero in the 4th year. The findings align with Feeny (2007) and McGillivray and Ouattara (2003), who stated that a reduction in government revenue leads to an increase in domestic borrowing.

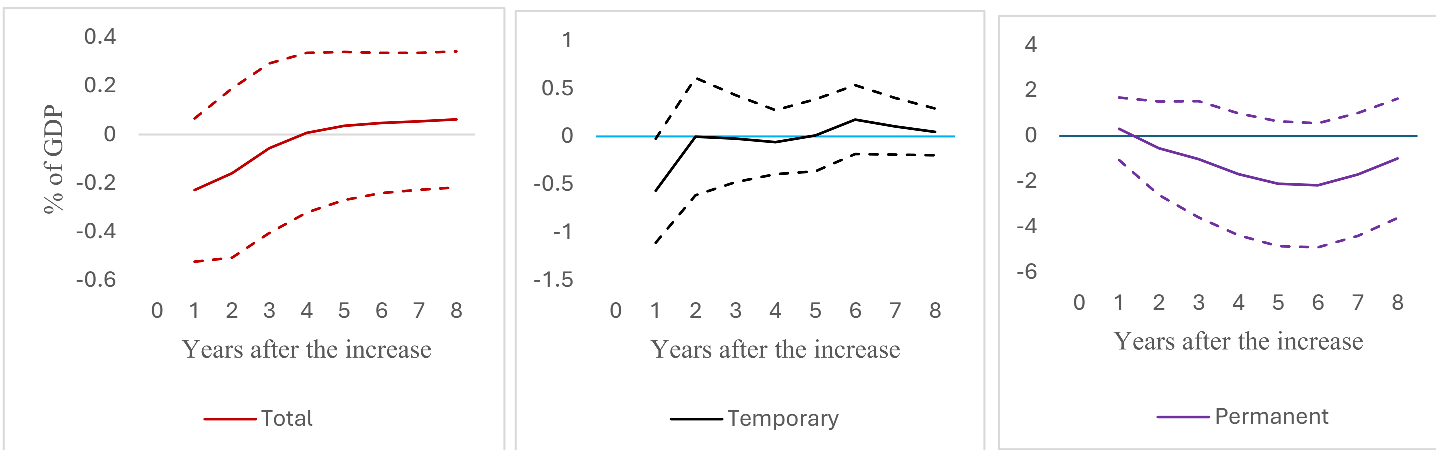


**Figure 3. Response of Government Current Expenditure to Foreign Loans**

The 1% shock in temporary loans leads to a 0.56% decrease in government recurrent spending, and the shock disappears in the following year. Similarly, a 1% shock in permanent loans causes a 0.31% decrease in the government's current spending, and the shock disappears in the 2nd year. This finding aligns with Feeny (2007) and Iqbal (1997), who state that foreign loans are associated with conditions for investing in the project. However, these funds are spent on the government's current expenditures

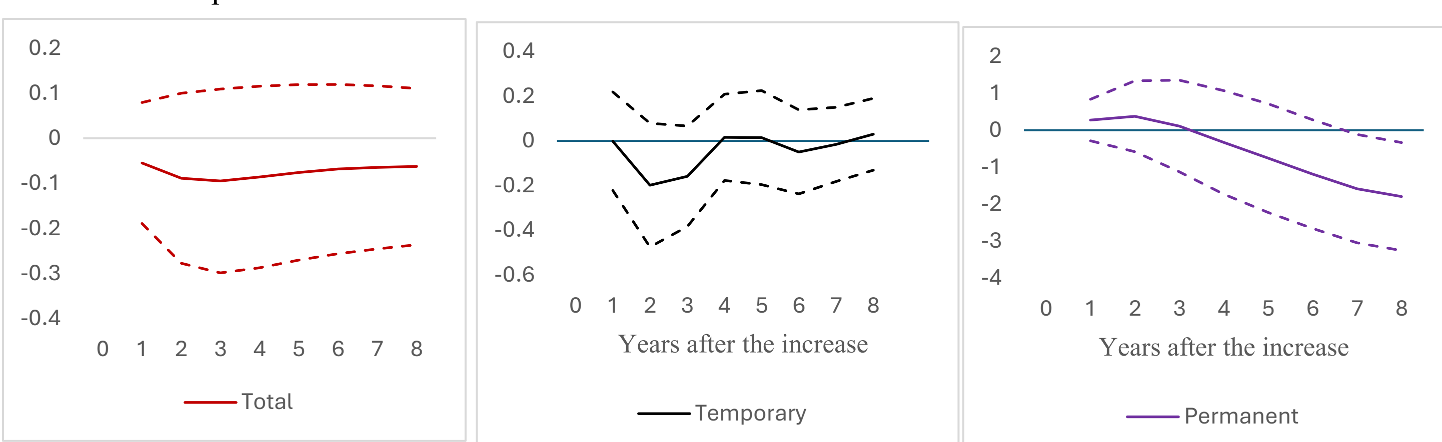

**Figure 4. Response to Debt Servicing Payment to Foreign Loans**

Temporary loans do not affect debt service payments. Nonetheless, the 1% shock in permanent loans is associated with a 0.27% increase in debt service payments. The persistent shock decreases contemporaneously, then decays to zero in the fourth year. Permanent grants are used for government investment, whereas permanent loans are used for government current expenditures, such as debt service payments. McGillivary and Ouattara (2003) and Pack and Pack (1993) found that foreign aid is diverted for debt servicing payments

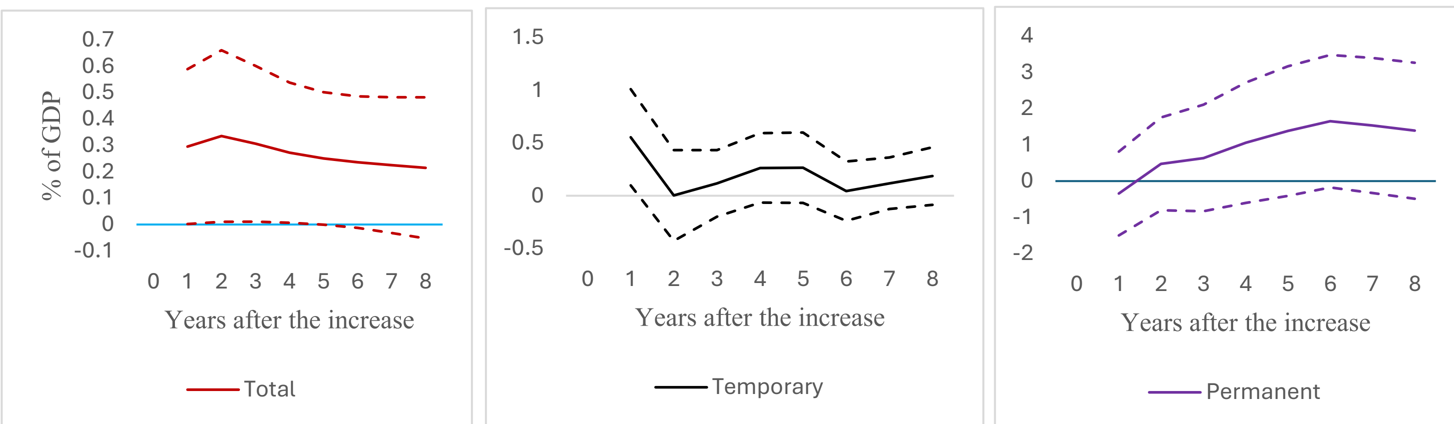


**Figure 5. Response of Public Investment to Foreign Loans**

The 1% shock in temporary loans is associated with a 0.55% increase in government capital spending, and the shock disappears the following year. The finding is akin to Abdelwahed (2023), Carter (2017), Chatterjee, and Turnovsky (2005), who find that a shock to temporary aid positively affects growth in the short run. Nevertheless, the 1% shock in permanent loans GDP causes a 0.34% decrease in government investment, which sharply disappears in the 2$^{nd}$ year. Feeny (2007) states that foreign loans are associated with conditions for investing in the project, but these funds are spent on the government's current expenditures. In addition, foreign loans negatively impact economic growth in the long run via investment channels (Morrissey et al., 2006)

## b) Fiscal Responses to Foreign Grants

The left panel shows the fiscal responses to total grants; the middle panel, to temporary grants; and the right panel, to permanent grants.

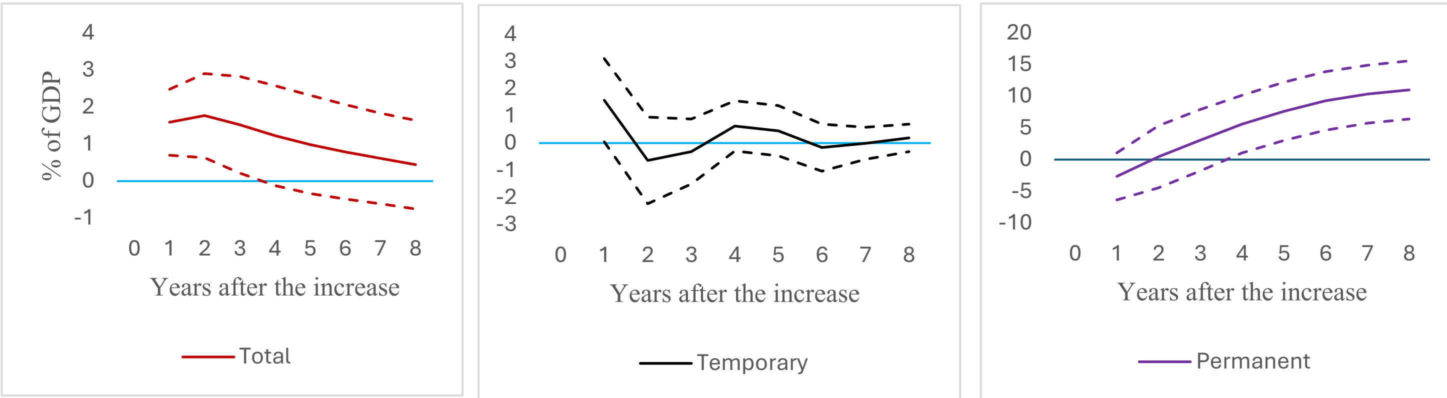


**Figure 6. Response of Government Revenue to Foreign Grants**

The 1% shock in temporary grants is associated with an increase in government revenue to 1.57% of GDP, which is short-lived and vanishes in the 2nd year. This finding is in line with Abdelwahe(2023). The temporary grants bring fiscal adjustments and motivate efforts to increase tax collection. Unlikely: the 1% shock to permanent grants reduces government revenue by 2.64% and disappears in the 2nd year. Finally, it converges towards zero in the 3rd year. The findings align with Abdelwahed (2023), who stated that foreign grants decrease revenue-to-GDP ratios.

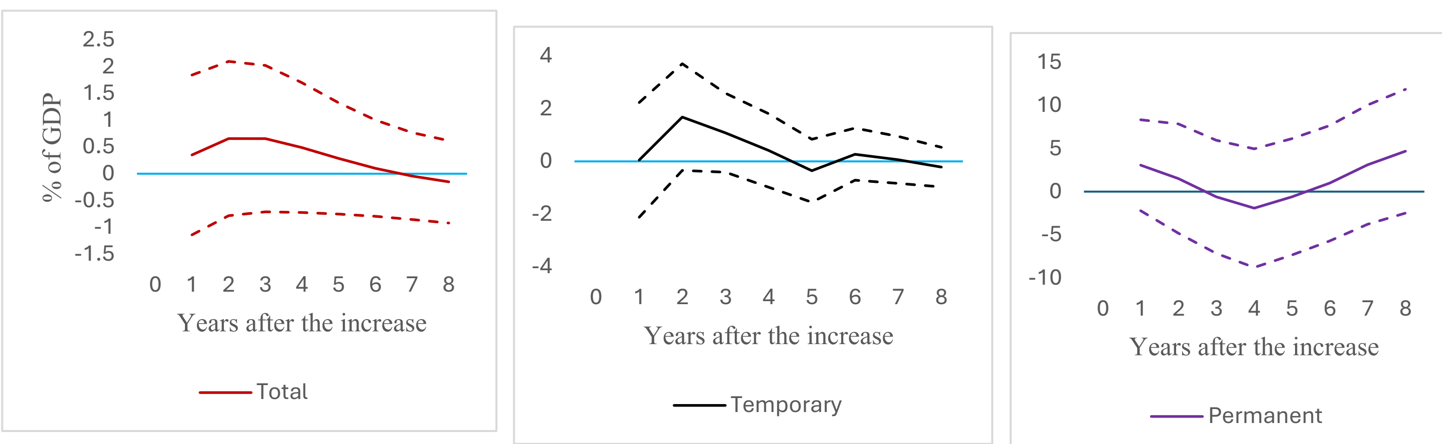


**Figure 7. Response of Domestic Borrowing to Foreign Grants**

The shock in temporary grants does not affect domestic debt issuance because government expenditures are met with increasing tax revenue in the short term. Furthermore, the shock to permanent grants is 1% of GDP, leading to a 3.06% increase in domestic debt issuance and convergence to zero in the third year. The findings are again consistent with Abdelwahed's (2021) and Abdelwahed's (2023) view that permanent aid is less than government expenditures. Therefore, domestic borrowing is required to fill the budget deficit.

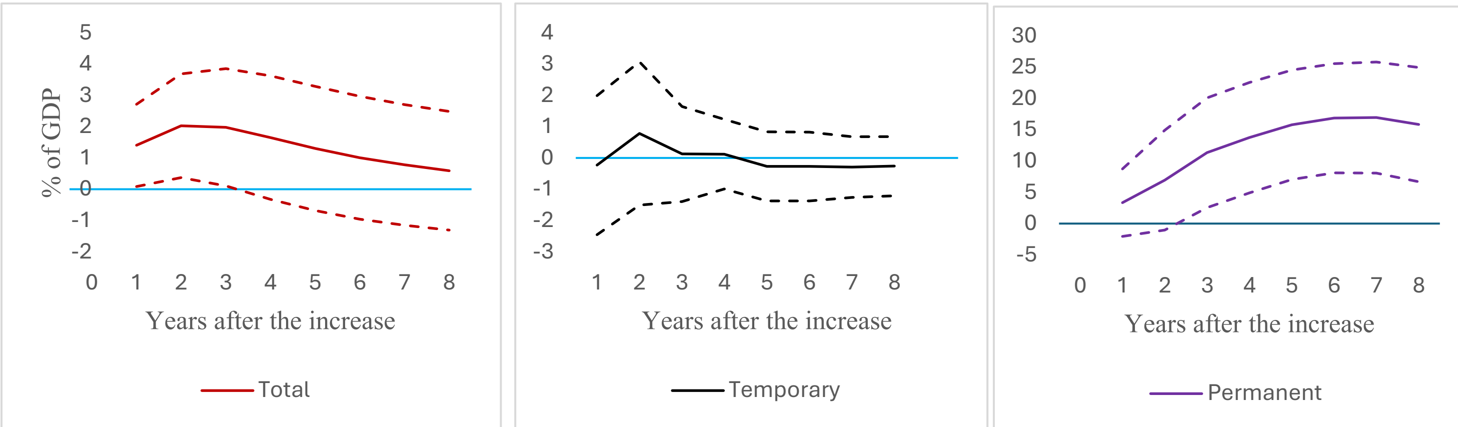


**Figure 8. Response of Government Current Expenditure to Foreign Grants**

The 1% shock in temporary grants is associated with a decrease in government expenditures equal to 0.23% of GDP, which is short-lived and disappears in the 2nd year. The 1% shock in permanent grants increases government expenditures by 3.33%. Government revenue responds positively to foreign grants, but the estimated standard errors are close to zero in subsequent years. The findings align with Iqbal (1997), Franco-Rodriguez et al. (1998), Mavrotas and Ouattara (2007), Abdelwahed (2021) and Abdelwahed (2023).

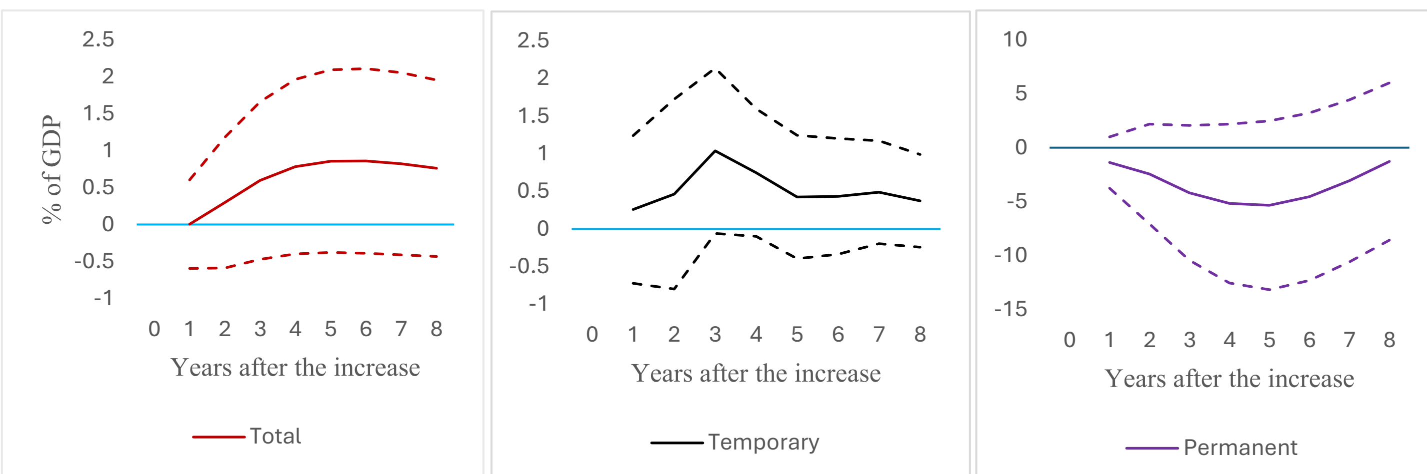


**Figure 9. Response of Debt Servicing to Foreign Grants**

The 1% shock in temporary grants is associated with an increase in debt servicing payments to a GDP size of 0.25%, which remains positive and persistent until the 8$^{th}$ year. An increase in debt service payments offsets the decrease in current expenditure. It shows that the current expenditures are interdependent substitutes. A similar substitution between non-development and development expenditures was observed by Iqbal (1997). Nonetheless, the 1% shock in permanent grants reduces debt servicing payments by 1.37% of GDP. The debt servicing persists positively but decreases contemporaneously in response to foreign grants. The finding is also in line with McGillivary and Ouattara (2003) and Pack and Pack (1993). It indicates temporary aid fungibility, in which aid funds are diverted to debt service payments, thereby increasing the public debt burden. Permanent loans are used for debt service payments rather than permanent grants.

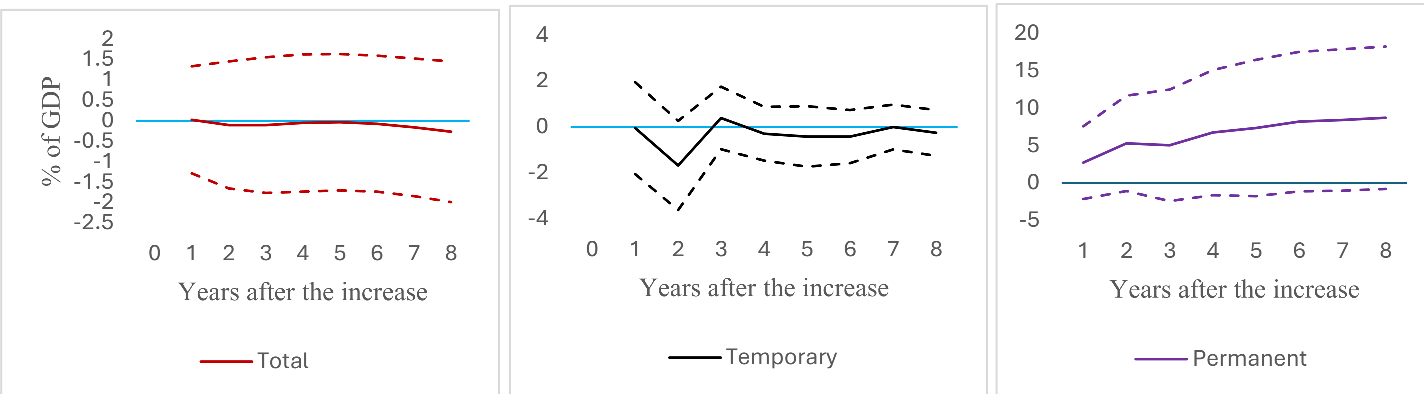


**Figure 10. Response of Public Investment to Foreign Grants**

Public investment does not respond to the shock of temporary grants. This finding is supported by Boone (1996) and Iqbal (1997) in Pakistan. The 1% shock in foreign grants increases public investment by 2.71% of GDP. The response of government revenue persists positively and contemporaneously with foreign grants. The findings are aligned with the findings of Mavrotas and Ouattara (2007), Chatterjee et al. (2012), Marc (2017), Abdelwahed (2021) and Abdelwahed (2023). Investment projects are bound to long-term aid; therefore, public investment increases.

### ii. Results Discussion

First, we have clearly observed that the fiscal variables respond differently to both temporary and permanent foreign grants. Similarly, the budgetary variables respond differently to foreign loans and their decomposed components, such as temporary and permanent loans. Thus, failing to distinguish between types (e.g., financing choices— grants and loans) and the frequencies of both foreign aid components can lead to incorrect estimates due to shocks.

Temporary loans and grants facilitate specific fiscal adjustments, as both increase government revenue while simultaneously decreasing current government expenditures. Specifically, temporary loans reduce domestic borrowing; however, temporary grants do not significantly influence domestic borrowing levels. Furthermore, while temporary loans promote government investment, temporary grants do not alter government investment patterns. Notably, temporary grants increase debt service payments, whereas temporary loans do not. In the context of temporary grants, the decrease in the magnitude of the government's current expenditures is nearly offset by the increase in debt service payments, suggesting that current expenditures serve as a substitute for debt service payments. Similarly, temporary loans prompt a substitution of government current expenditures with capital expenditures. As noted by Abdelwahed (2023), temporary grants instigate fiscal adjustment; however, temporary loans resemble them.

Permanent loans do not impact government revenue, while permanent grants reduce it. As a result, both permanent loans and grants contribute to a rise in domestic borrowing. The pattern of low revenue collection combined with high domestic borrowing indicates that the government is offsetting its limited tax revenue by increasing its reliance on domestic borrowing. Additionally, permanent loans and grants increase current expenditures. On the other hand, while debt servicing costs rise with foreign loans, foreign grants help reduce them. This indicates that aid fungibility, especially regarding debt service on foreign loans, is supported by grants (McGillivray & Ouattara, 2003). Ultimately, while permanent grants promote increased capital expenditures, permanent loans tend to reduce public investment. This implies that permanent grants are intended to boost public investment while substituting for debt servicing costs. Foreign loans further elevate current government expenditures at the expense of capital spending (Feeny, 2007; Iqbal, 1997).

We have also tested the robustness of our results in four different ways. First, the data's robustness is checked by comparing Pakistan's official foreign aid data with OECD DAC aid data. Second we have tested the robustness of the filter, by using alternative business cycle filters like the HP Filter and the BK Filter, as compared to the CF filter used in the baseline results reported above. Third, robustness is also enhanced by adding a controlling variable, as baseline results are presented without one. Finally, the robustness of the results is assessed using various lag lengths (1-4). The robustness results are presented in detail in the Appendix at the end of the paper.

## 5. Concluding Remarks

The existing literature regarding the fiscal response of an aid-recipient government in the presence of foreign aid examines various modalities, including grants versus loans and project-based versus non-project aid. This paper contributes to the fiscal response literature by analysing the fiscal response to both temporary and permanent components of foreign loans and grants, and to the differences between these modalities in the context of Pakistan. We have argued that the failure to differentiate between the temporary and permanent components of foreign loans and grants may have resulted in biased outcomes and incorrect policy implications. Data on fiscal variables from Pakistan are used to investigate the responses of the temporary and permanent components of foreign aid grants and loans over the period 1973 to 2020. Temporary loans necessitate greater fiscal adjustments than grants, as evidenced by increased tax revenue and public investment; however, they also lead to reduced government consumption and domestic borrowing. Conversely, permanent loans are associated with higher domestic borrowing and increased government current expenditures. Finally, we found that permanent grants correlate with expanded domestic borrowing, augmented public investment, and a larger government size.

The policy implications yield positive outcomes when aid donors and recipient countries endeavour to implement fiscal adjustments, such as reducing domestic borrowing. Temporary grants and loans must be allocated to those recipient countries facing unsustainable fiscal situations. Aid donors ought to provide these conditional grants and loans to recipient countries on the condition that they increase their tax and non-tax revenues while simultaneously reducing domestic borrowing. Nevertheless, temporary loans are deemed more efficacious for fiscal adjustment than temporary grants. Aid packages and programs should be strategically designed for nations with low growth rates. Permanent grants increase public investment in the economic and social sectors, thereby facilitating capital accumulation and job creation. Conversely, permanent loans increase current expenditures and debt service obligations. Consequently, foreign aid donors should initiate debt relief efforts for heavily indebted recipient countries, offering conditional loans to reduce recipient countries' current expenditures and mitigate the risk of aid fungibility. Another promising area for future research may involve examining project and non-project foreign aid, along with the distinction between categorizing temporary vis-a-vis permanent to assess fiscal responses of the aid-recipient country, and incorporating changes in political regimes, along with governance indicators, democratic measures, and public sector management.

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# APPENDIX

## A.1. Robustness Related to Using Alternative Data Sources

Figure A.1.1 depicts the responses of the budgetary variables, which are highly robust to the use of temporary loan data from both sources.

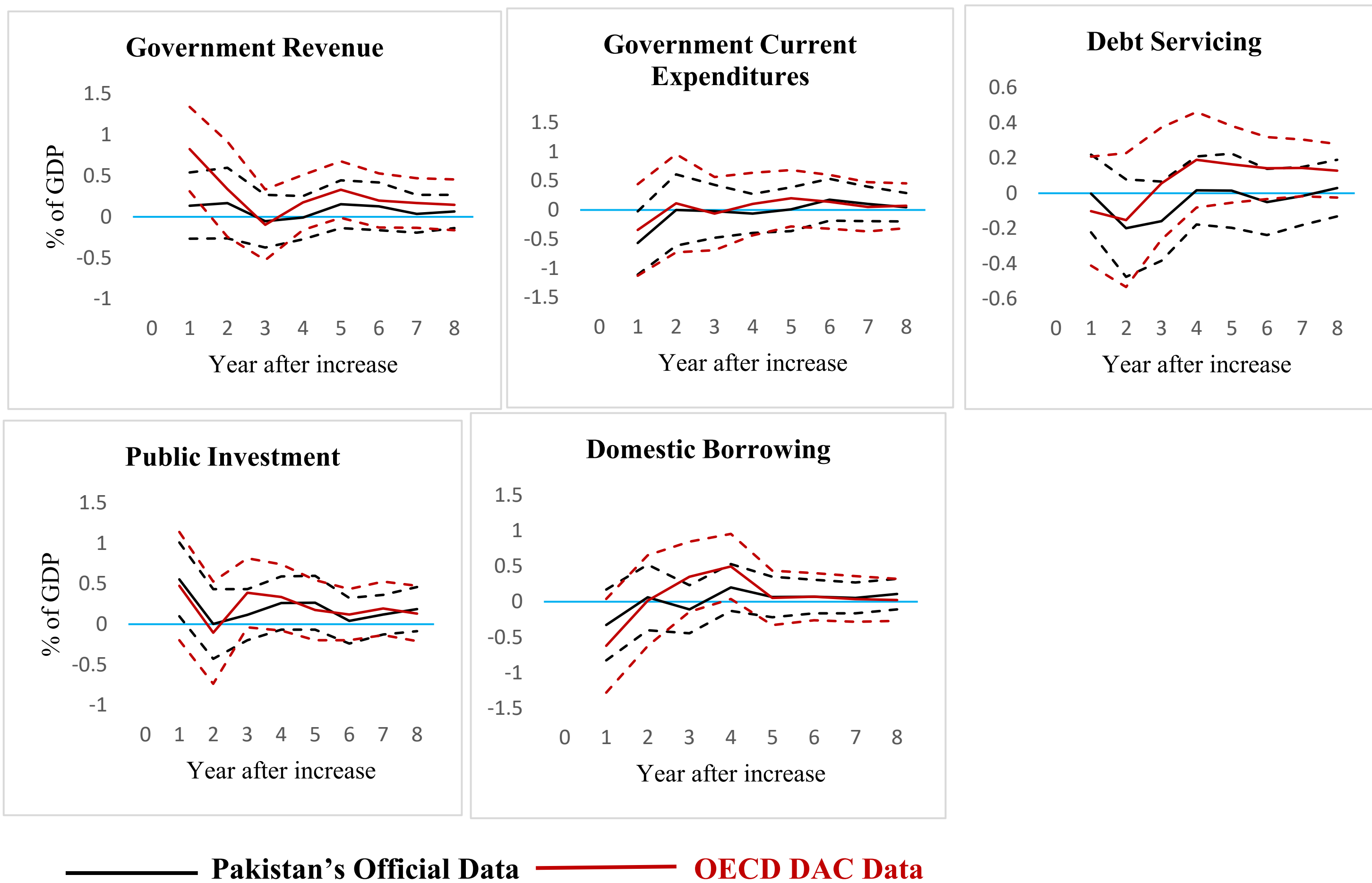



**Figure A.1.1. Responses of the Fiscal Variables to Temporary Loans**

Figure A.1.2. The results of both data sources are highly robust regarding the direction and magnitude of domestic borrowing and debt servicing. Government Revenue, Current Expenditures, and public investment are also partially robust. During the first year, government revenue did not respond to permanent loan data from Pakistan's official data, but did respond positively to permanent loan data from OECD DAC data. Based on Pakistan's official data, the government's current expenses respond positively to foreign permanent loans, whereas public investment responds negatively. However, the response reverses in OECD DAC data.

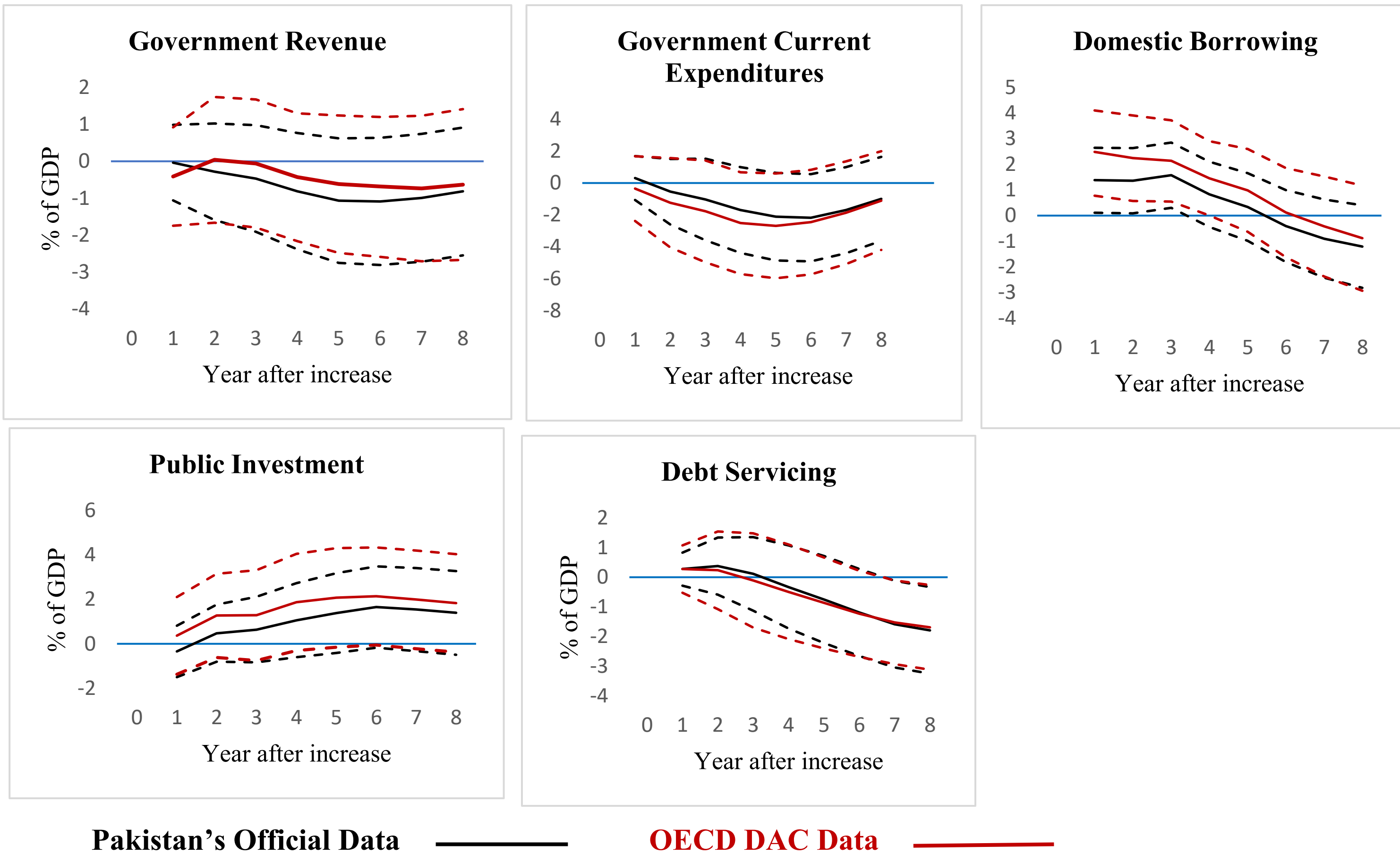
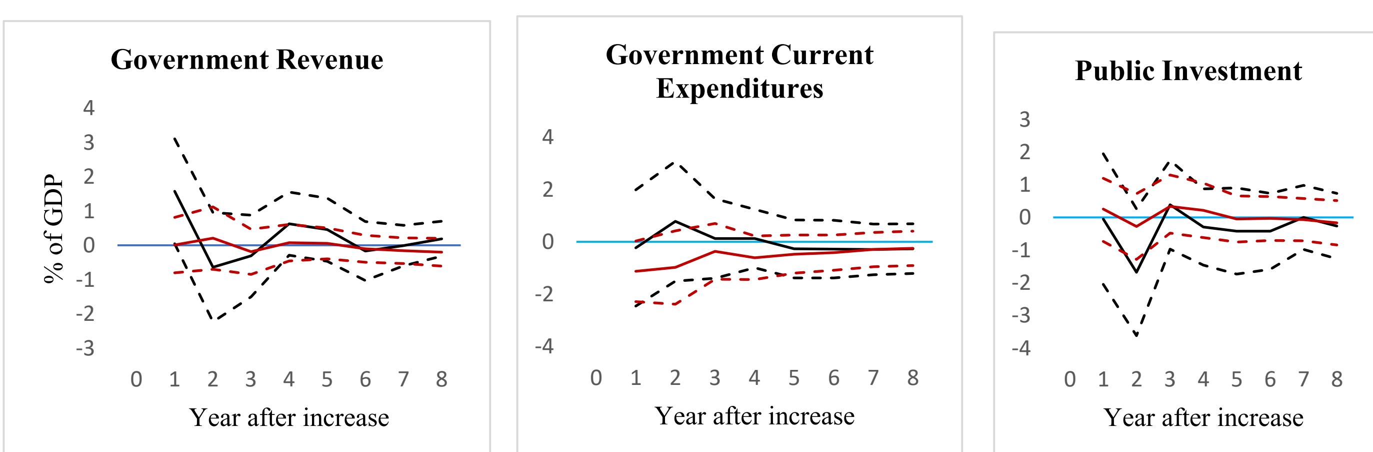
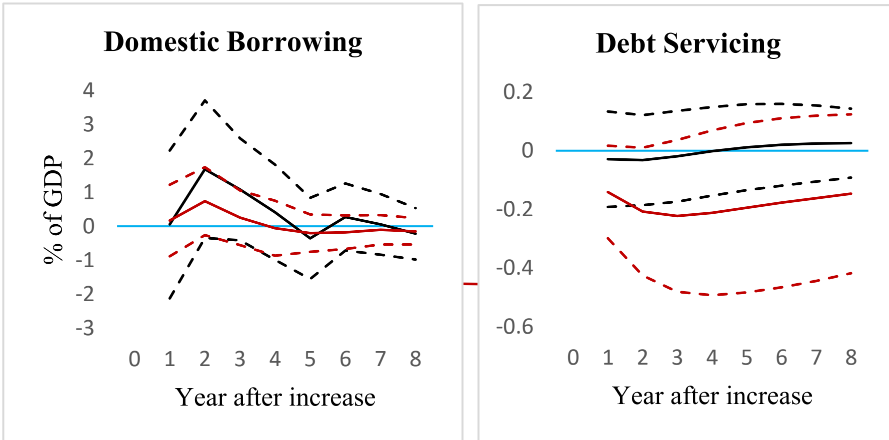



**Figure A.1.2. Response of Budgetary Variables to Permanent Loans**

Figure A.1.3. depicts the responses of the budgetary variables, which are highly robust to the use of foreign grant data from both sources, except for government revenue. Government revenue does respond to temporary grants, according to OECD DAC Data. The response of public investment to temporary grants, based on OECD DAC Data, is positive in Pakistan's official data sources.

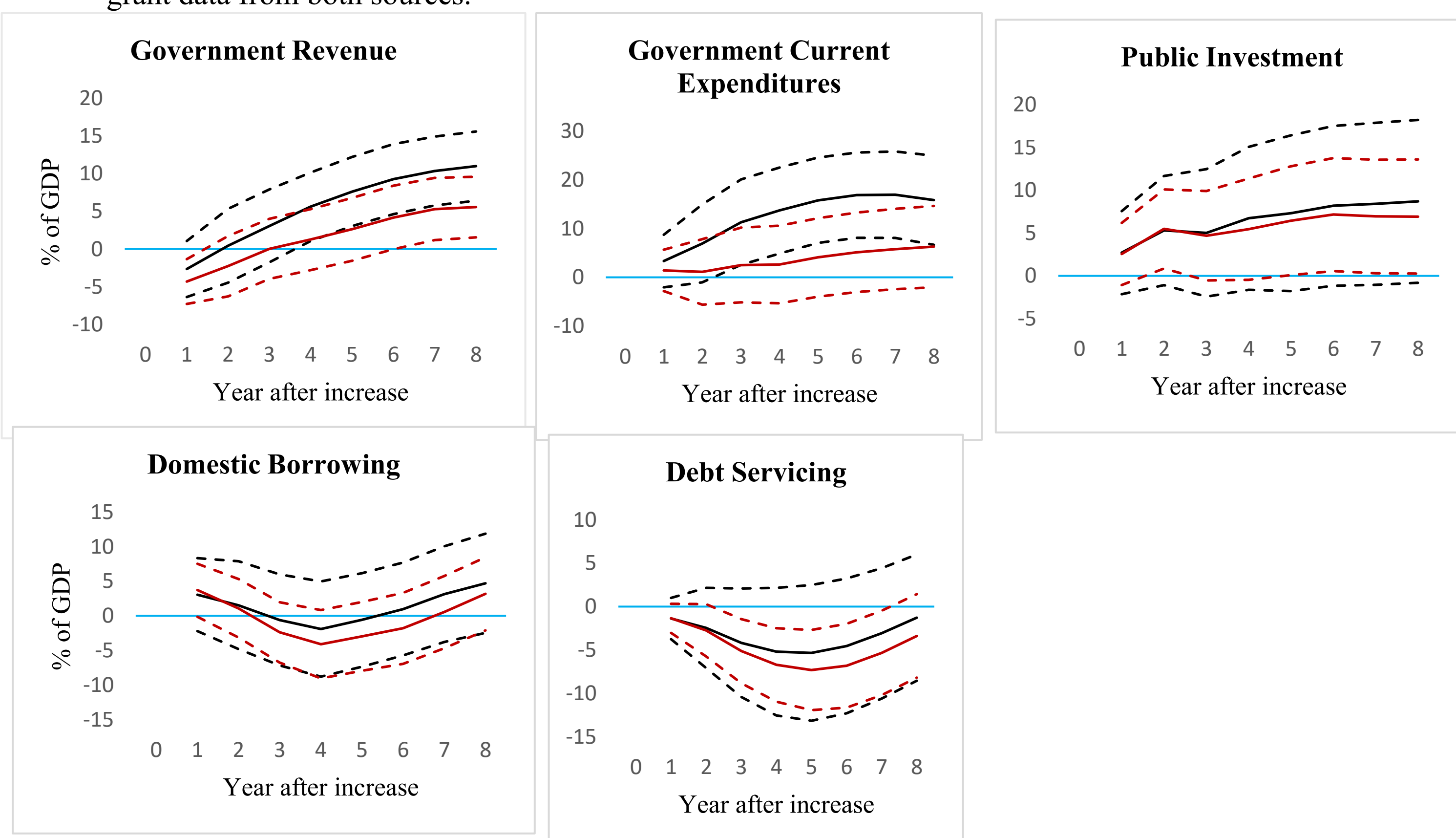





**Pakistan's Official Data** ——— **OECD DAC Data** ———

**Figure A.1.3. Response of Budgetary Variables to Temporary Grants**

Figure A.14 depicts the responses of the budgetary variables, which are highly robust to using grant data from both sources.




——— **Pakistan's Official Data** ——— **OECD DAC Data**

**Figure A.1.4. Response of Budgetary Variables to Permanent Grants**

### A.2. Robustness Related to Using Alternative Filters

The responses of the fiscal variables to the temporary and permanent components of net foreign loans are decomposed using CF, BK, and HP filters to assess robustness. The BK filter, for instance, is excluded from the disaggregated component of foreign loans to avoid spurious responses from the BK filter, as it does not meet the VAR stability conditions. The responses of the budgetary variables are quite robust in the short and long run in terms of direction but differ in magnitude. The brown line represents the response of the CF Filter; the black line represents the response of the HP Filter; the dark blue line represents the response of the BK Filter; and the dotted lines indicate the upper and lower standard errors of the IRF of a particular filter.

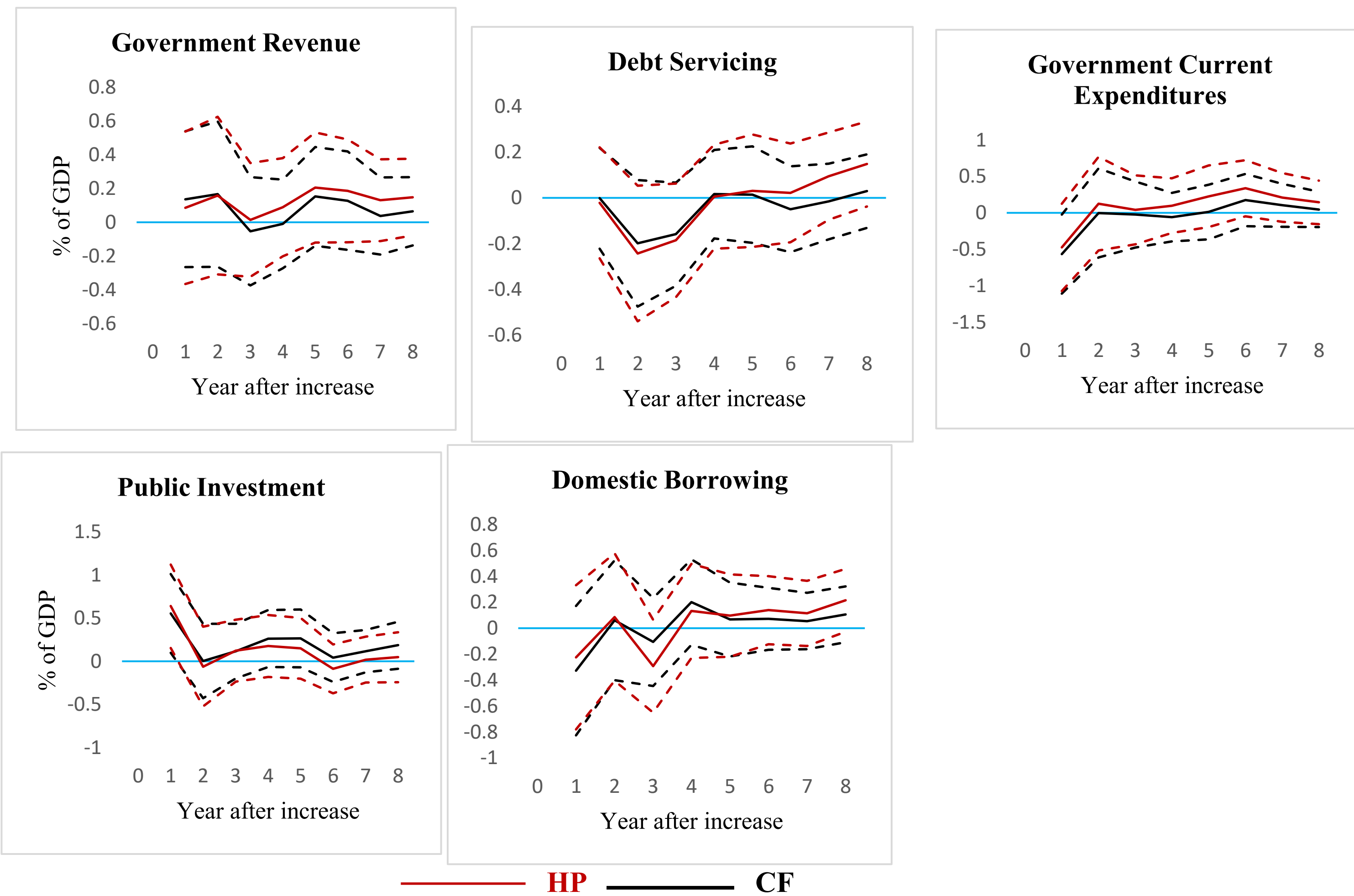



**Figure A.2.1. Fiscal Variables' Responses to Temporary Net Foreign Loans**

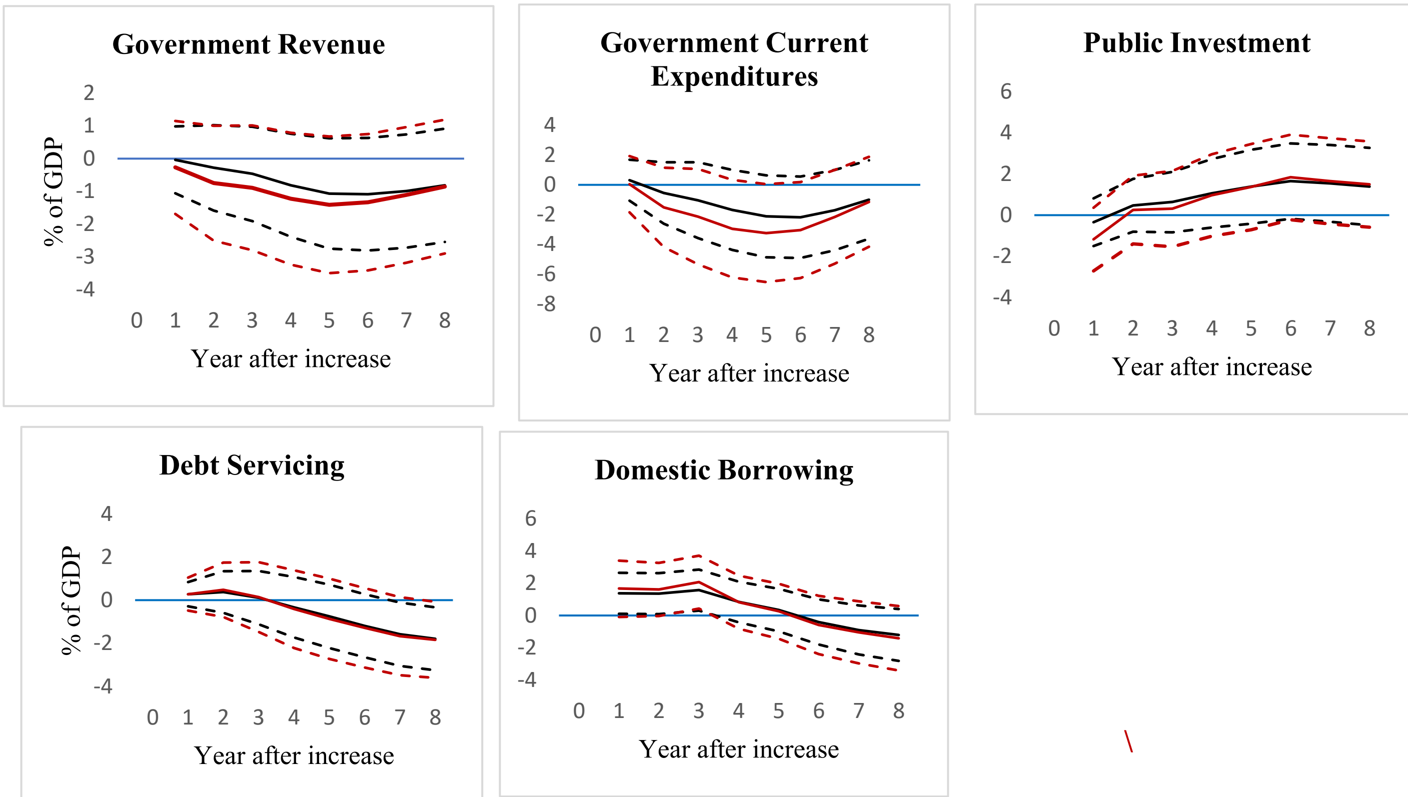



**Figure. A.2.2. Fiscal Variables' Responses to Permanent Net Foreign Loans**

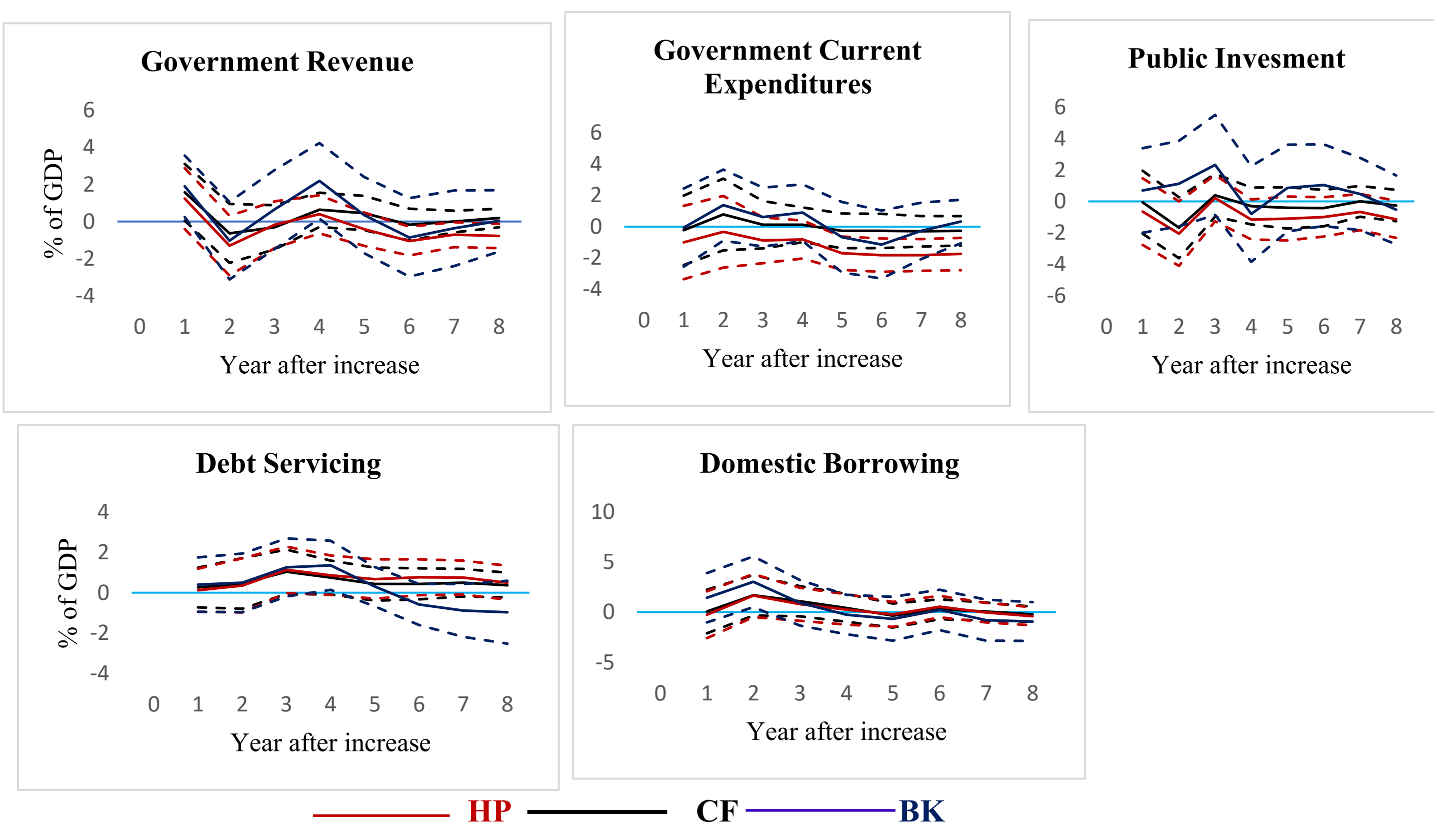


**Figure. A.2.3. Fiscal Variables' Responses to Temporary Grants**

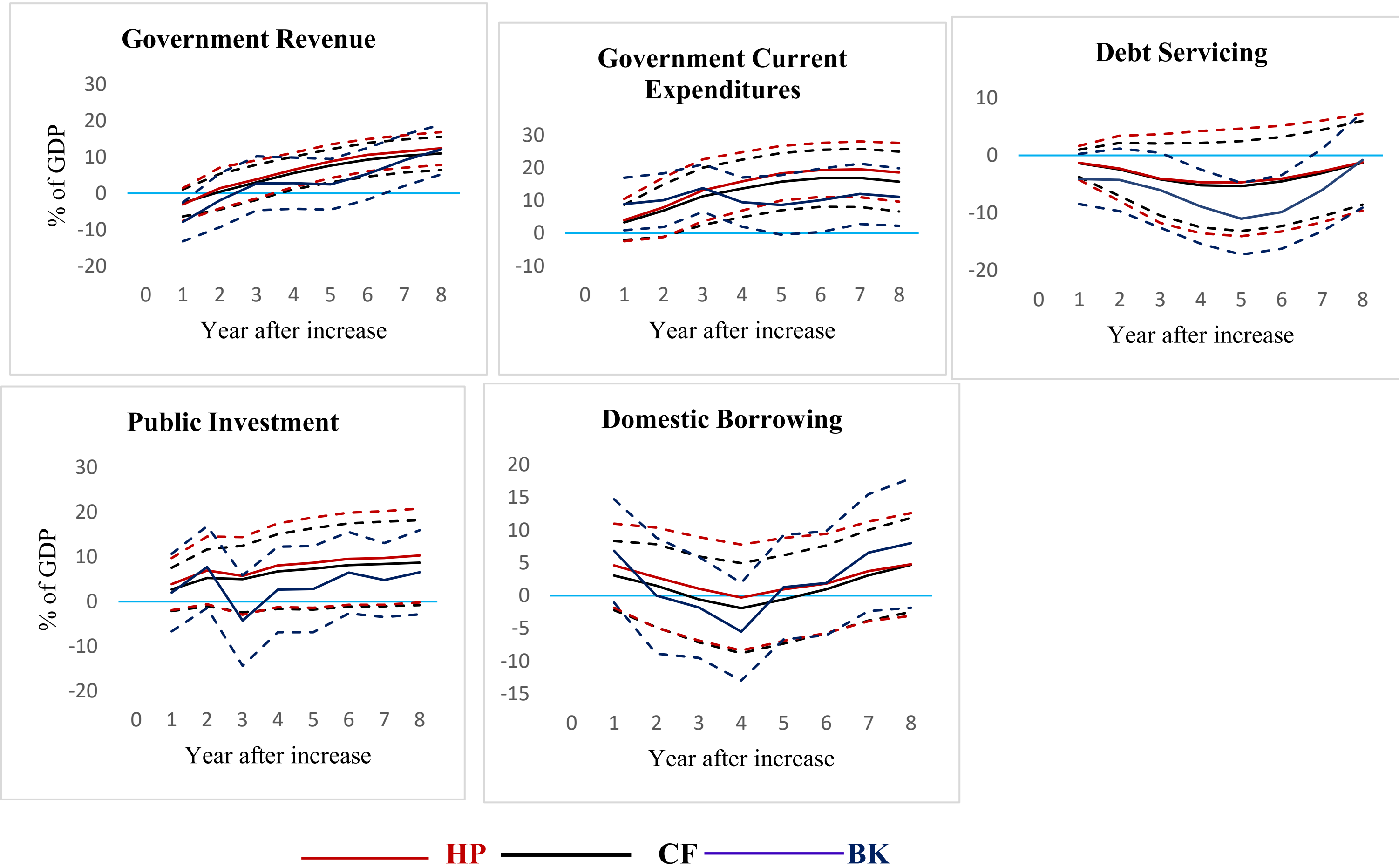
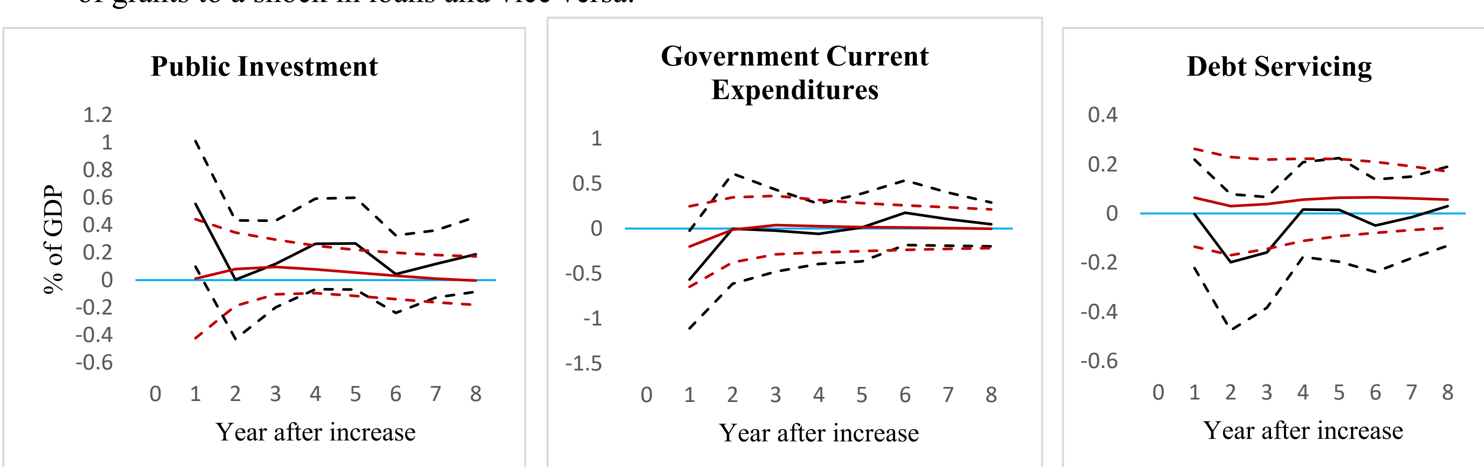



**Figure. A.2.4. Fiscal Variables' Responses to Permanent Grants**

### A.3. Robustness Related to Adding a Controlling Variable

The baseline foreign loans equation is re-estimated by adding foreign grants to check the response of grants to a shock in loans and vice versa.



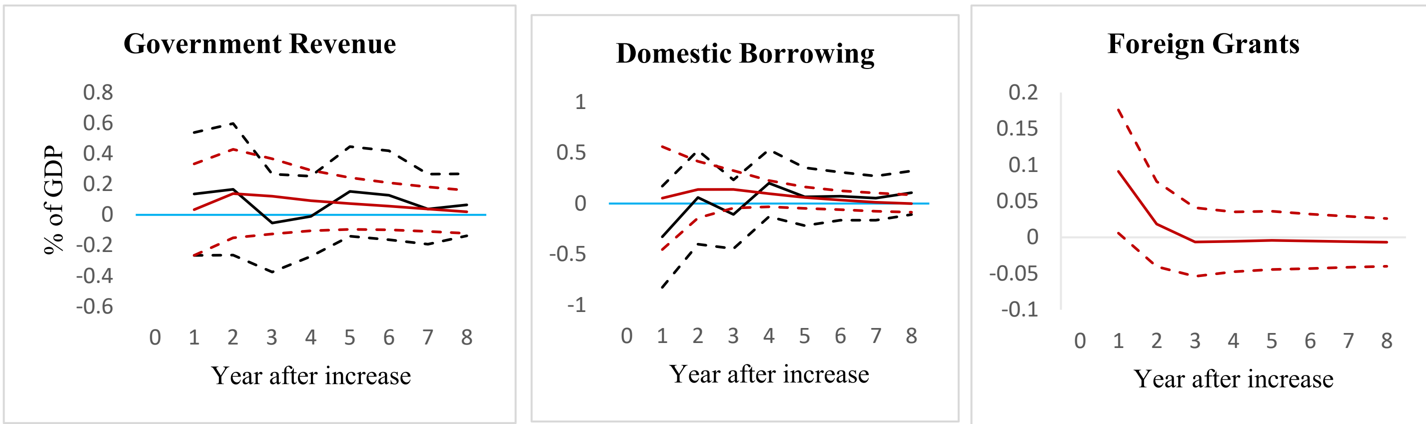



**Figure A.3.1. Responses of the Fiscal Variables to the Temporary Loans**

The shock in the temporary loans affects the foreign grants inflow, which is insignificant.

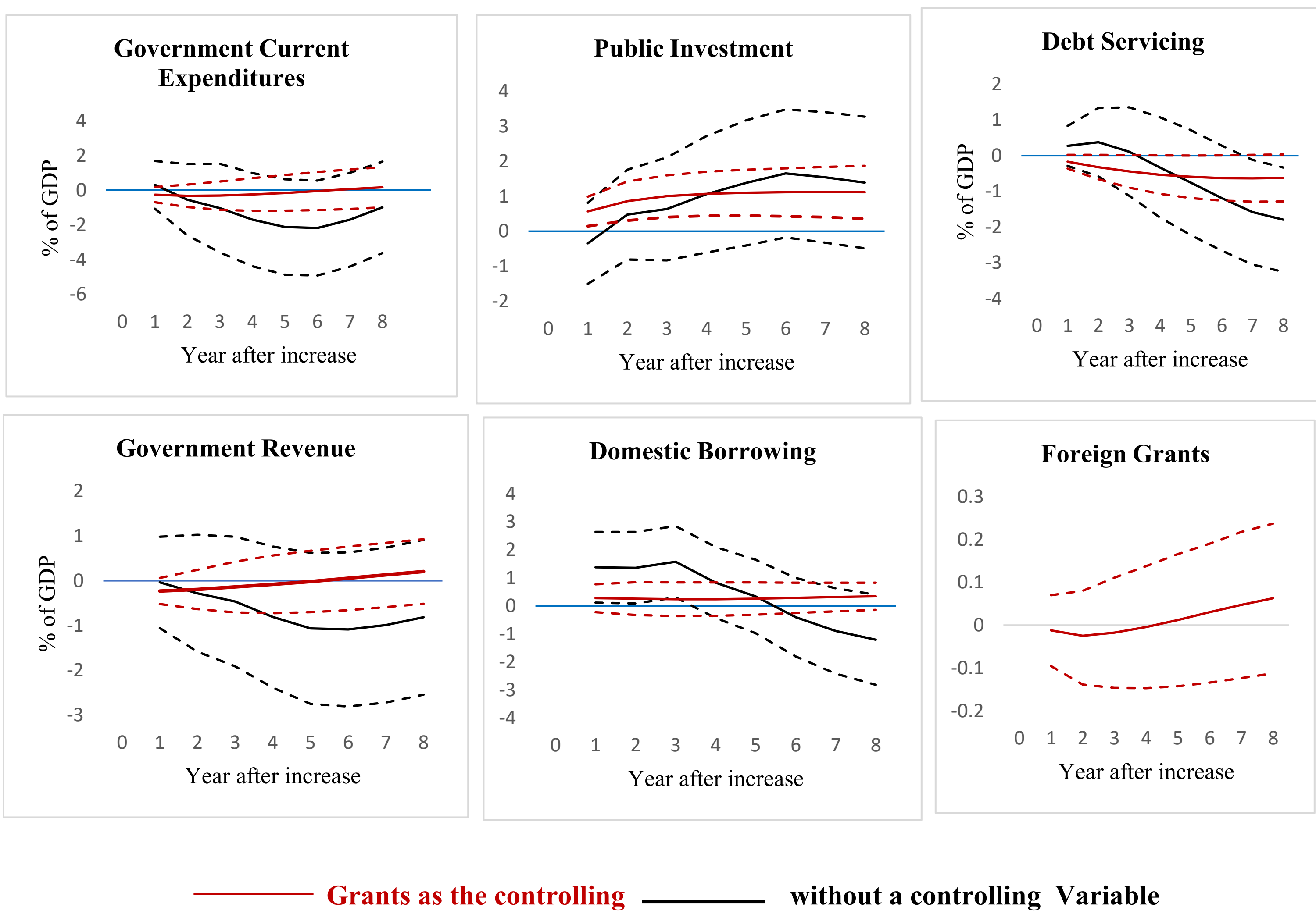



**Figure A.3.2. Responses of the Fiscal Variables to the Permanent Loans**

The shock in the Permanent loans affects the foreign grants inflow, which is negligible.

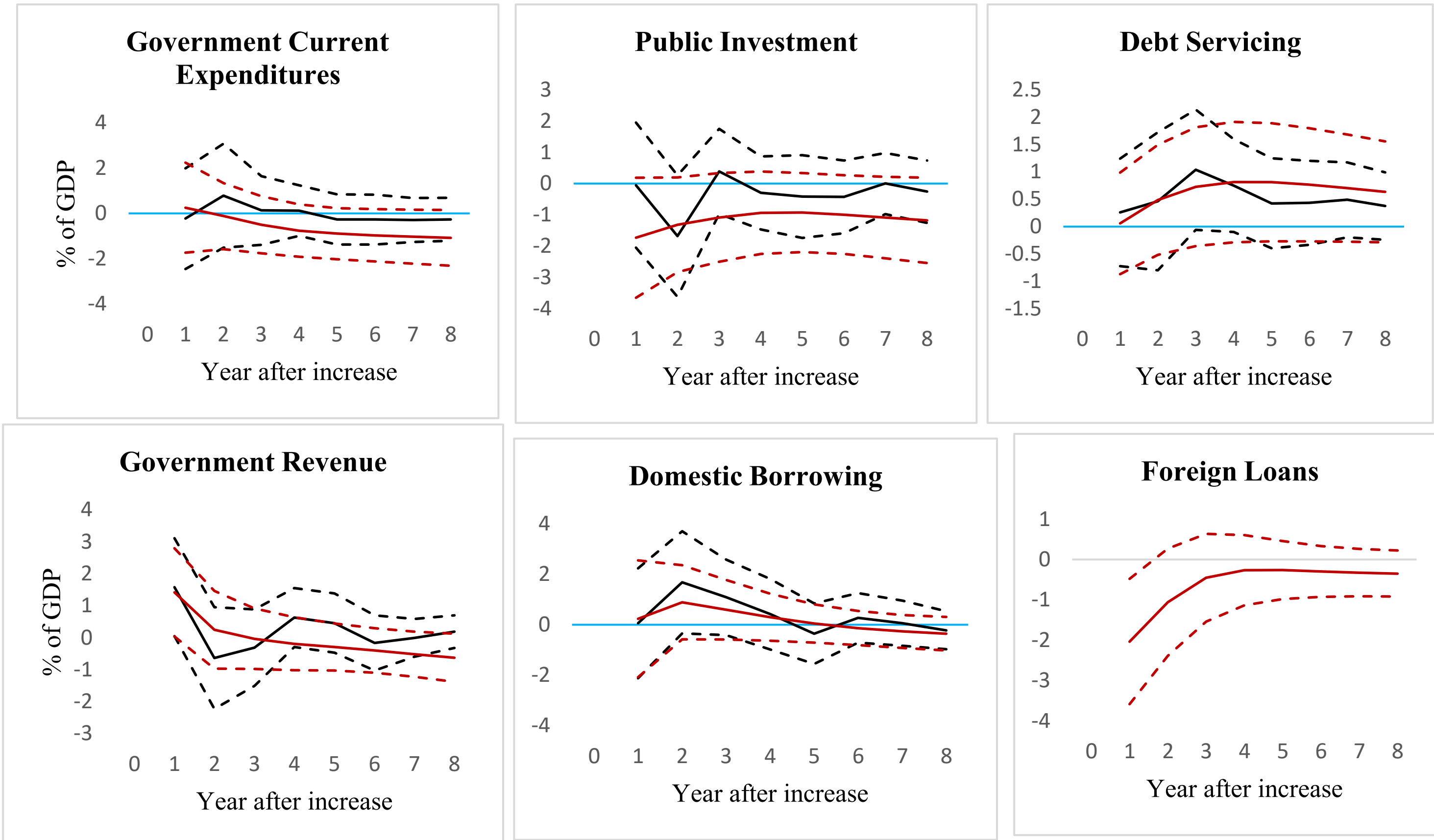
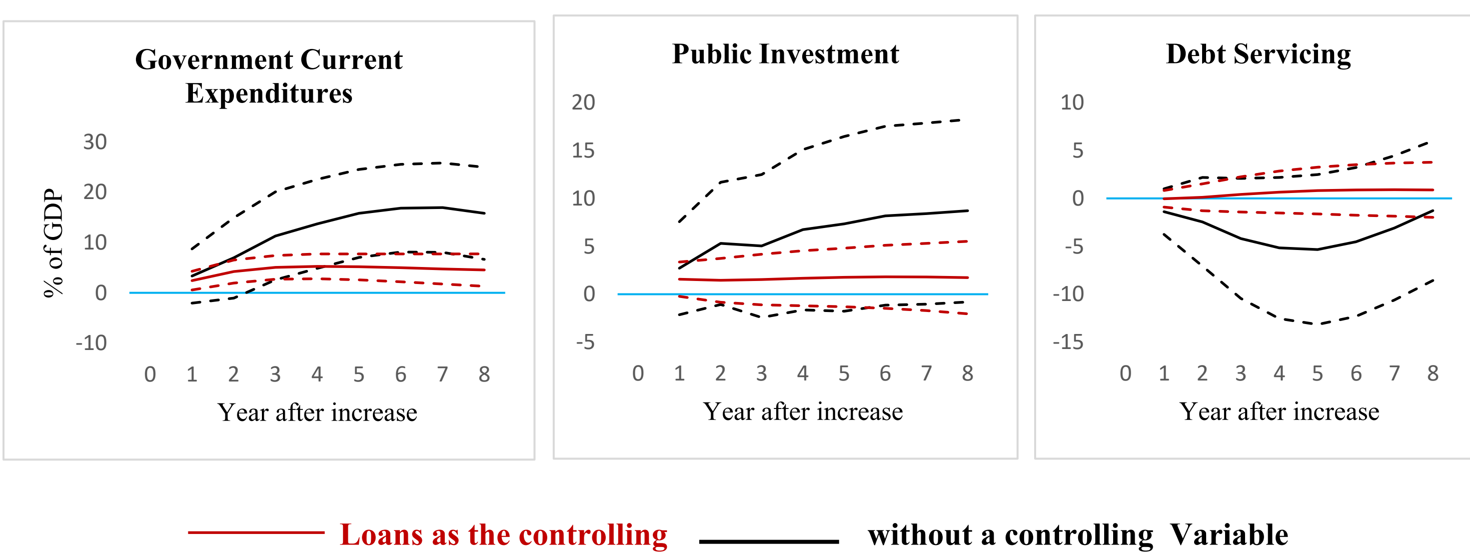



**Figure A.3.3. Responses of Fiscal Variables to Foreign Grants**

Foreign loans decreased to 2.03% of the GDP due to a 1% shock in permanent grants, which increased the size of the GDP. The increase in government revenue and domestic borrowing is approximately equal to the decrease in foreign loans. This indicates that Pakistan is substituting external borrowing with domestic resources like government revenues and domestic borrowing.



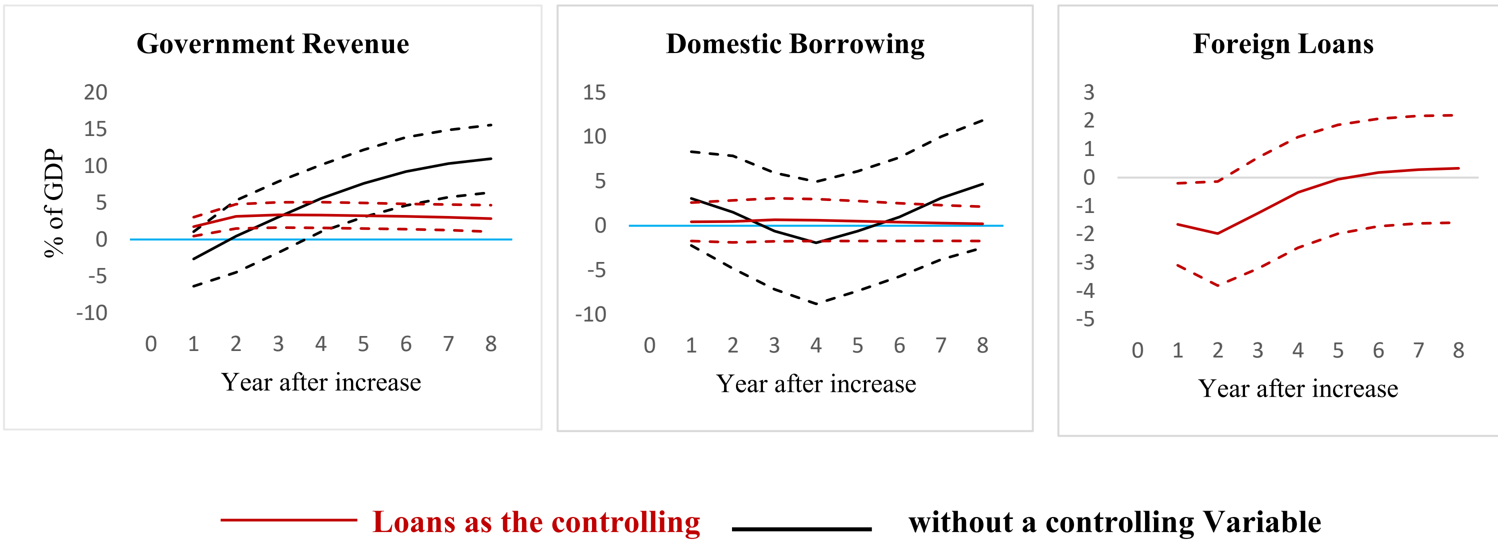
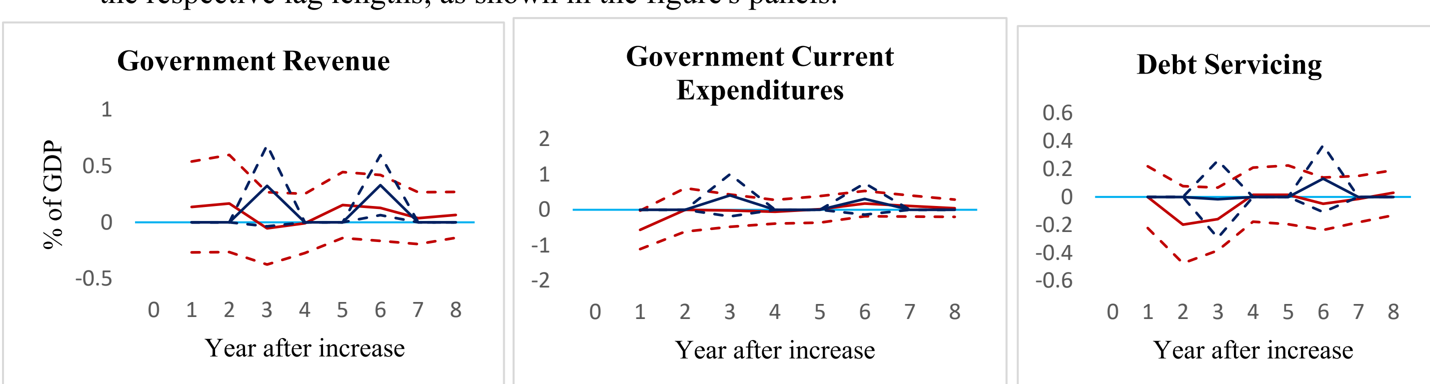



**Figure A.3.4. Responses of Fiscal Variables to Foreign Grants**

Foreign loans decreased to 1.64% of GDP following a 1% shock to permanent grants. The increase in government revenue and domestic borrowing is approximately equal to the decrease in foreign loans. This indicates that Pakistan is substituting external borrowing with domestic resources, such as government revenues and domestic borrowing.

**A.4. Robustness Related to Using Different Lag Lengths**

We experimented by increasing the lag length from lag 1 to lag 3 to capture the dynamics of responses at different lags. At lag three, it responds only in the 3rd and 6th years and is nonresponsive at the 4th lag. The budgetary variables' responses to the disaggregated components of foreign loans and grants are robust up to the 2nd lag.[7] The brown and blue lines show the responses of budgetary variables at lags 2nd and 3rd; the dotted lines show the standard errors for the respective lag lengths, as shown in the figure's panels.




[7] This finding is in line with Hudson's (2013) assertion that the aid commitments are to be fulfilled on average within 2 years.

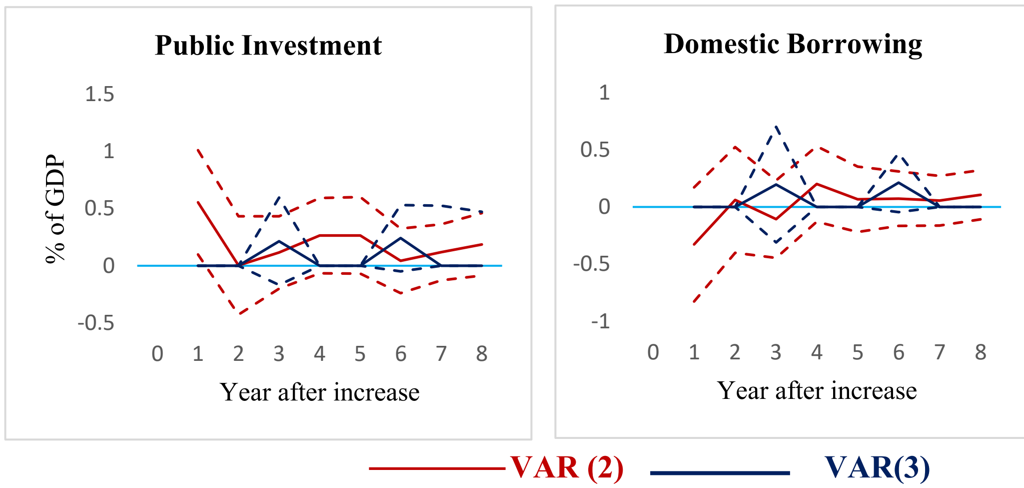



**Figure A.4.1. Fiscal Variables' Responses to Temporary Loans**

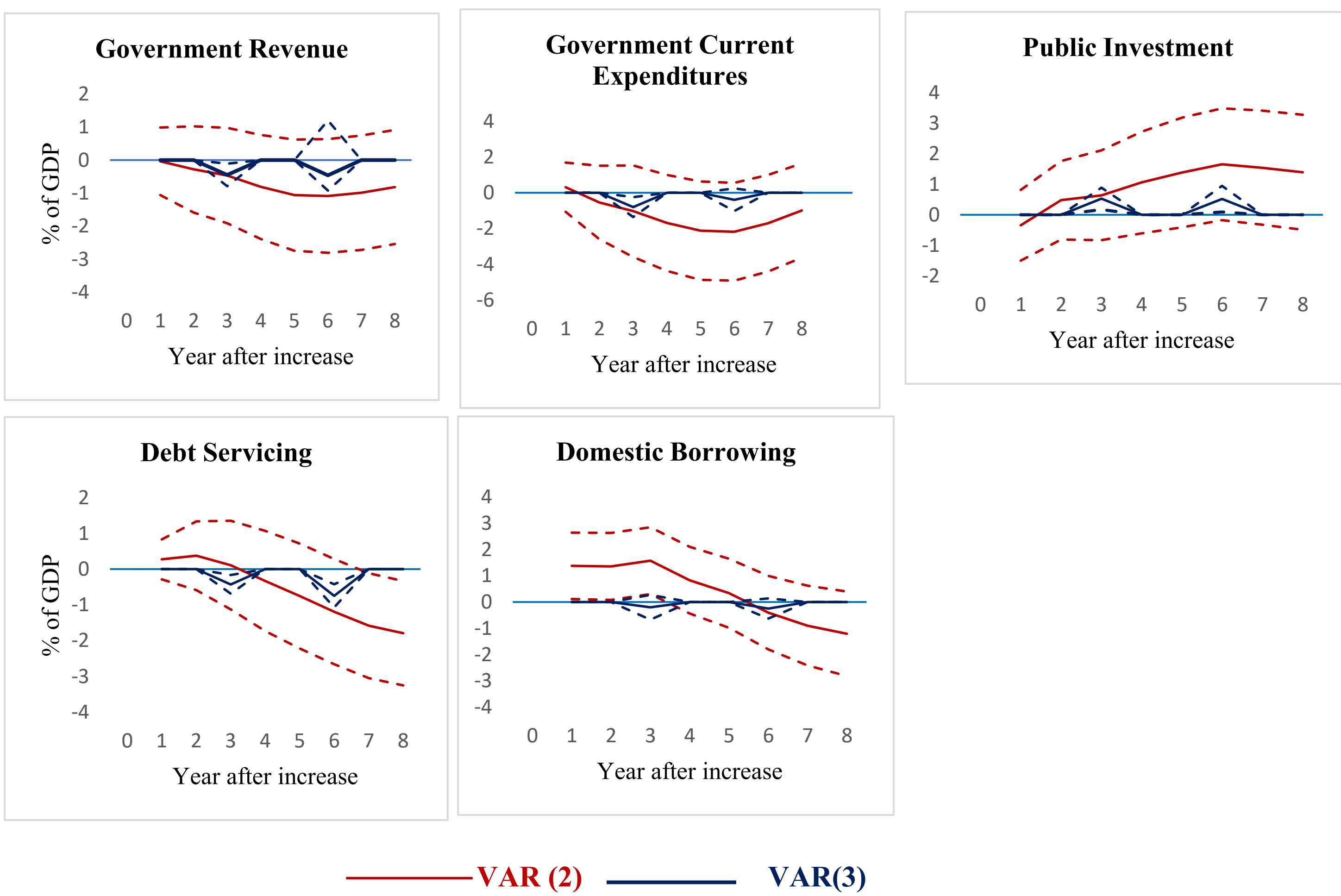



**Figure A. 4.2. Fiscal Variables' Responses to Permanent Loans**

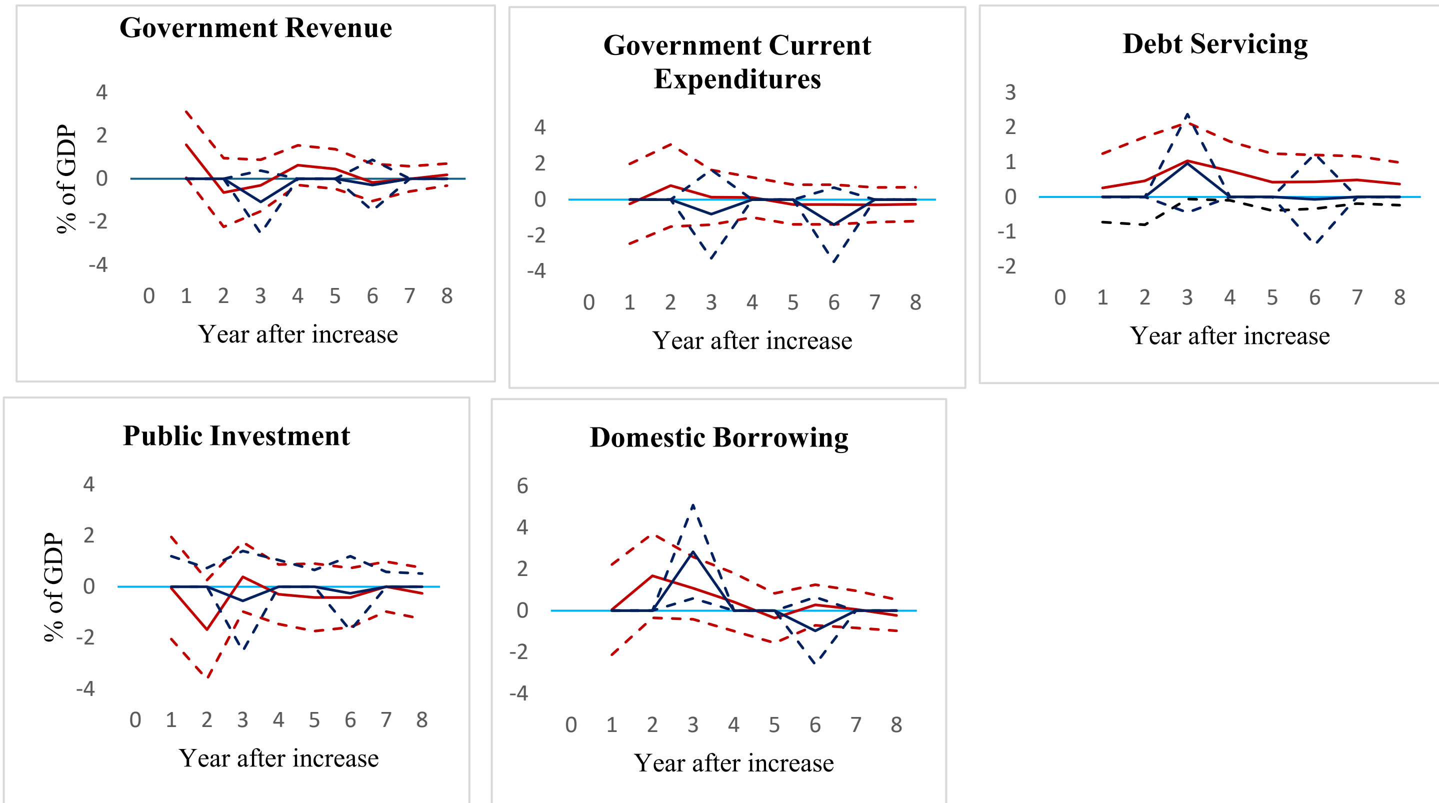
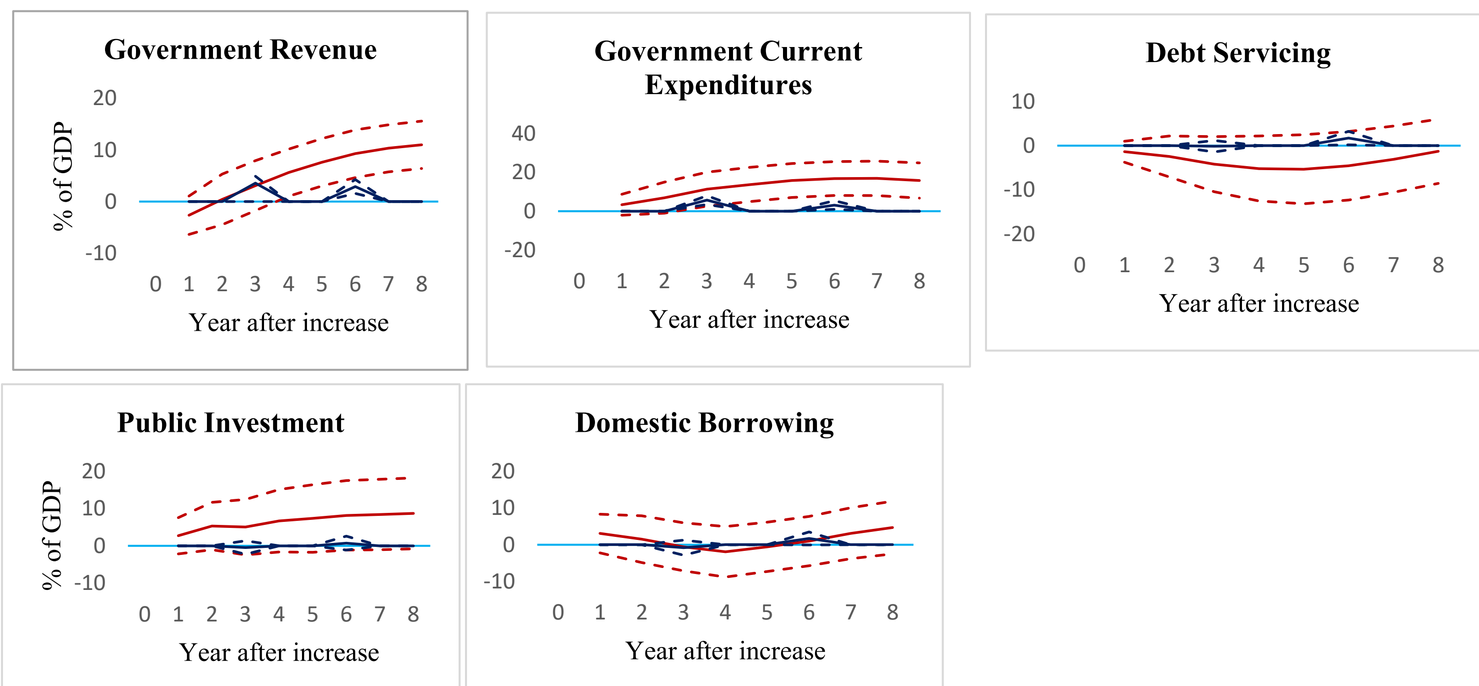



**Figure A.4.3. Fiscal Variables' Responses to Temporary Grants**




**A.4.4. Fiscal Variables' Responses to Permanent Grants**

**VAR (2)** **VAR(3)**

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