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Effectiveness of Program Aid in Pakistan: A Triangular Conceptual Modeling Approach

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Abstract: Foreign aid has been an essential source of external financing for developing countries, with the belief that it can foster growth in recipient nations. Specifically, the type of aid known as Program Aid is particularly important because it provides the funds needed to implement a reform agenda in the target area or sector. However, the literature shows that the relationship between foreign aid and economic growth is complex, and empirical findings are inconclusive, necessitating further research in this area. In this context, the present study employed an innovative triangular conceptual modeling (TCM) approach to assess the effectiveness of program aid for Pakistan. The goal is to analyze effectiveness both directly, through the reform process, and indirectly, through financing development spending or fiscal deficit. Results show that program aid has a significantly positive impact on economic growth. However, this positive effect becomes negative once the effect of fiscal deficit is taken into account, suggesting that program aid is mainly used to finance fiscal deficits rather than to improve efficiency in the country. Additionally, the findings reveal that the indirect effect of program aid on economic growth is substantially larger than the direct effect. The greater indirect effects imply that the primary objective of program aid is to meet budgetary requirements or to finance the government's development spending.

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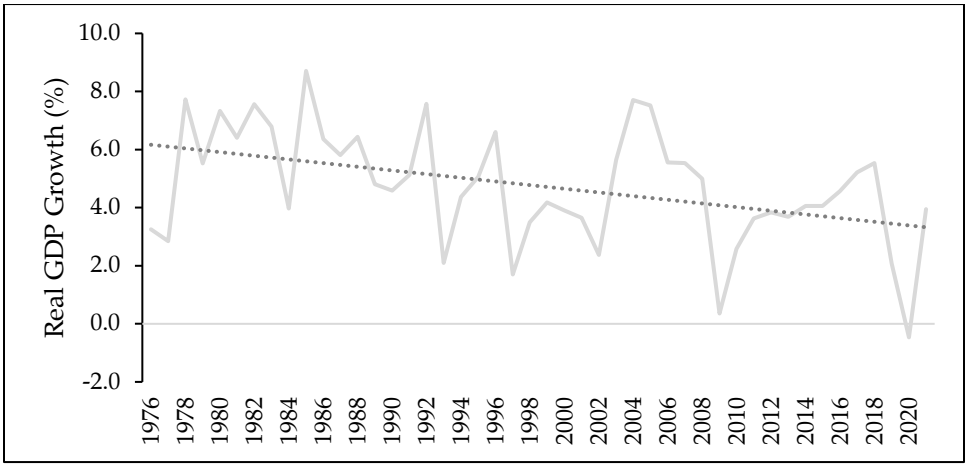
Introduction

Foreign aid has been a significant source of external financing for developing countries since the emergence of the two-gap model theory (Chenery & Strout, 1966). It helps fill both the foreign exchange gap and the savings-investments gap in these economies, making foreign aid essential for their growth, as stated by Dalgaard et al. (2004), Magesan (2015), and Arshad et al. (2023). However, Javid and Qayyum (2011), Ali (2013), and Kirikkaleli et al. (2021) challenge this view by providing evidence of developing countries that have failed to achieve sustainable growth despite receiving heavy inflows of foreign aid. Conversely, Burnside and Dollar (2004) and Rahnama et al. (2017) support the idea of a conditional aid-growth relationship.

Foreign aid is generally provided for two main purposes. First, to assist countries in social, economic, and infrastructure development, and second, to provide the required finances for implementing reform agendas. The second type of foreign aid is known as program aid. It helps recipient countries improve their efficiency and productivity by initiating essential reforms in specific sectors or areas. Notably, from September 2018 to December 2020, Pakistan began a reform process with financial support from the Asian Development Bank (ADB) to strengthen its trade, increase exports, enhance competitiveness in domestic industries, achieve macroeconomic stability, and promote economic growth (ADB, 2022). Similarly, between September 2016 and June 2018, Pakistan, with backing from the World Bank, carried out structural reforms in the financial sector to foster more inclusive economic growth (World Bank, 2019). Despite numerous reforms undertaken by Pakistan with assistance from its multilateral development partners over the past several decades, the country's economic growth remains volatile.

Figure 1: Trend of Economics Growth



Source: State Bank of Pakistan (2021).

This necessitates investigating the effectiveness of program aid, but the literature on this topic is limited. Therefore, this study employs an innovative triangular conceptual modeling (TCM) Approach) to estimate the direct, indirect, and total effects of program aid on economic growth. Under the TCM Approach, we argue that program aid can influence economic growth directly by implementing necessary structural, administrative, and policy reforms, which lead to increased efficiency and productivity, potentially boosting economic growth. Additionally, we suggest that program aid can indirectly affect economic growth by increasing the available finances for government development spending, which may result in higher economic growth. Another possible channel is that the proceeds from program aid can be used to finance the overall fiscal deficit, leading to greater consumption and economic growth. To the best of our knowledge, neither has this approach been used before nor has the explicit effect of program aid on economic been studied prior to this research.

The present study is organized as follows: Section 2 provides a detailed literature review relevant to the subject matter. Section 3 explores the trajectory of program aid in Pakistan, along with trends in fiscal deficit and development expenditure. Section 4 describes the TCM approach and the methodological framework used in this study. The findings from the analysis are presented in Section 5. Finally, the concluding section summarizes the study and offers policy recommendations.

Literature Review

The Keynesian theory states that developing countries can achieve high economic growth and lower poverty levels by encouraging financial investment. In this context, several development economists have argued that foreign aid helps poor countries close the saving-investment gap (Meier & Stiglitz, 2001; Mercieca, 2010; Tsikata & M., 1998). Therefore, it is inferred that foreign aid boosts investment by filling the saving-investment and foreign exchange gaps, thereby promoting greater economic growth and development in recipient countries.

Burnside & Dollar (2000) believe that the strength of aid impact depends on institutional qualities. Countries with good fiscal and monetary policies experience a strong positive effect of aid on economic growth, while this effect weakens for countries with poor policies. Clemens et al. (2004) found a very strong, positive, and significant relationship, with the inference that 'short-term' aid causes significant economic growth. They also concluded that aid causes growth regardless of changes in specifications and time. Similarly, Alemu & Lee (2015) found a positive relationship between foreign aid and economic growth in low-income African countries. Conversely, in middle-income African countries, factors like foreign direct investment (FDI) appear to have a greater effect on economic growth. Aslam & Samsudeen found a long-run relationship between foreign aid and economic growth in Sri Lanka.

In contrast, Murshed & KhanaumField (2014) conducted a theoretical analysis and argued that foreign aid is detrimental to economic growth and development. They argued that a high inflow of aid erodes institutional quality by encouraging extractive institutions, rent-seeking activities, and corruption. They further argued that aid mainly makes developing countries dependent. Similarly, Ekanayake & ChatrnaField (2010) found that for different income levels, foreign aid has a positive impact on economic growth.

Camara (2004) and Van de Walle (2005) conclude that the share of Program Aid has been increasing since the 1980s, with a decline in the share of Project Aid. This shift has occurred due to the direct channeling of program aid for debt relief and budgetary support, which promotes growth and development. However, to some extent, program aid can harm economic growth because corruption is widespread in recipient countries. Janjua et al. (2018) demonstrated that program aid has a negligible effect on economic growth, while project aid has a significant impact on growth.

The minimal effect of program aid results from weak political and economic institutions, corruption, and macroeconomic instability in recipient countries that undermine aid's effectiveness.

Rugare (2016) revealed that recipients of program aid have experienced the effective implementation of national policies, increased budgetary funds, better donor coordination, improved education and health facilities, and sustainable economic growth and development.

Hussen (2014) and Combes et al. (2016) observed that a high inflow of aid increases government expenditure while tax collection declines, which widens the gap between revenue and expenditure, leading to a high fiscal deficit. Meanwhile, Sugema and Chowdhury (2005) reveal that program aid contributes to increased government expenditure and a decrease in fiscal revenue, resulting in greater dependence on aid for the economy. A study conducted by Butt and Javid (2013) for Pakistan showed that both project and program aid inflows significantly reduce domestic revenue mobilization and hinder the expansion of the domestic tax base, resulting in a persistently significant fiscal deficit.

Feyzioglu et al. (1996) and Pronk (2003) concluded that any kind of foreign aid is detrimental to development in developing countries because such aid is used for consumption rather than investment, mainly due to ineffective political and economic policies. An increase in aid inflow does not lead to higher development expenditure; instead, it increases government spending. Similarly, Lohani (2005) revealed that aid, especially program aid, plays an important role in a developing country's development process. However, the positive impact of aid is highly dependent on factors like corruption, government policies, civil conflict, natural disasters, and political and economic stability.

Dalgaard & Hansen (2017) attempted to estimate the average rate of return on investments financed by aid. They found the gross rate of return on aid is around 20%. However, they are concerned that this result may vary across countries and over time, considering differences in the policy environment, geography, institutions, and other factors. Meanwhile, Arshad et al. (2023) found the average rate of return to foreign aid to be around 10-14% in various specifications for Pakistan.

The above discussion shows that the relationship between foreign aid and economic growth is complex, and the results from studies are mixed, requiring more research in this area. Therefore, this study aims to

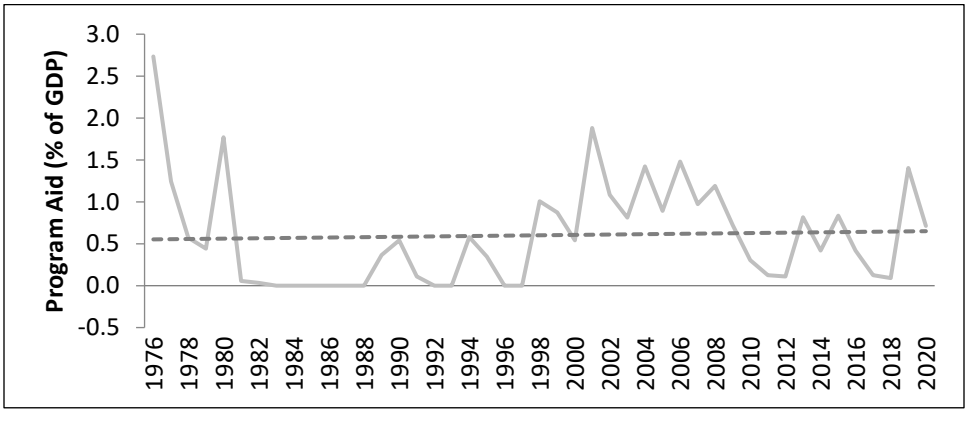
examine the effectiveness of program aid using a new TCM approach for Pakistan.

An Overview of Program Aid to Pakistan

Since gaining independence, Pakistan has consistently depended on different types of aid to support its economic development. This help comes in various forms, including project aid, program aid, and technical assistance, obtained from multiple sources.

Of particular interest in this analysis is program aid, which has played a significant role in fulfilling Pakistan's financing requirements. The flow of program aid from 1976 to 2021 shows significant fluctuations (see Figure 2). Initially, before the mid-1970s, program aid made up a large part of the financial support. However, there was a sharp decline between 1977 and 1979, which led to reduced aid disbursements from the international community, especially from the US.

Figure 2: Disbursement of Program Aid to Pakistan

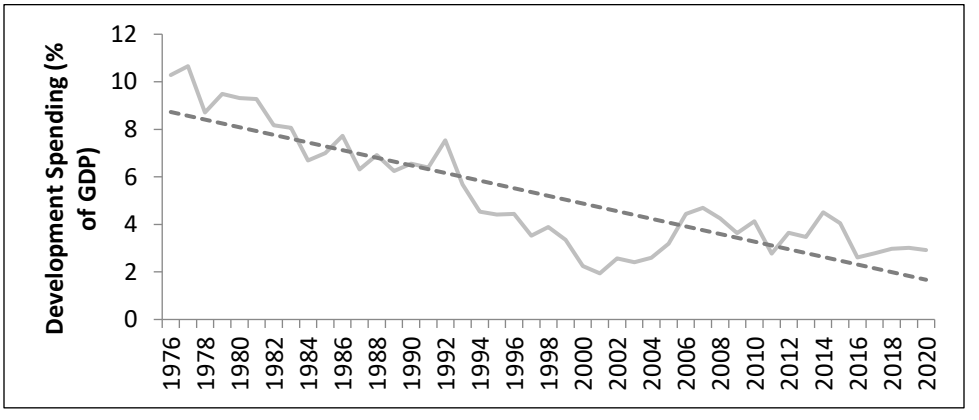


Data Source: State Bank of Pakistan.

The 1980s saw a resurgence in aid inflows, mainly due to Pakistan's role in the 'Afghan War.' This period experienced increased international support, reflecting the geopolitical dynamics of the time (Malik et al., 1994). After 1998, the trend of program aid was still influenced by global economic conditions. Notably, aid disbursements increased significantly after '9/11' when Pakistan joined the 'War against Terrorism.' This rise in aid remained fairly steady in the following years (Sarwar et al., 2015), highlighting how international events are linked to Pakistan's receipt of program aid.Figure 3 shows how development spending as a share of GDP

has changed over time. Development spending is an important part of economic policy, used to build social and physical infrastructure, reduce poverty, drive economic growth, and improve citizens' quality of life (Husnain et al., 2011).

Figure 3: Development Spending in Pakistan



Data Source: State Bank of Pakistan (2022).

In the context of Pakistan, however, the trend of development spending has shown a concerning decline over the years. Starting at around 10% of GDP in 1976, development spending steadily fell to just 3% of GDP by 2020. This ongoing downward trend has caused significant concern among economic and policy circles alike.

Several factors contribute to this decline. Among them are the consistently high levels of unproductive government expenditures, which divert resources away from development initiatives. Additionally, poor fiscal performance and the burden of overwhelming debt have further constrained the government's ability to allocate sufficient funds toward developmental efforts. These challenges, among others, have collectively led to a decline in development spending in Pakistan.

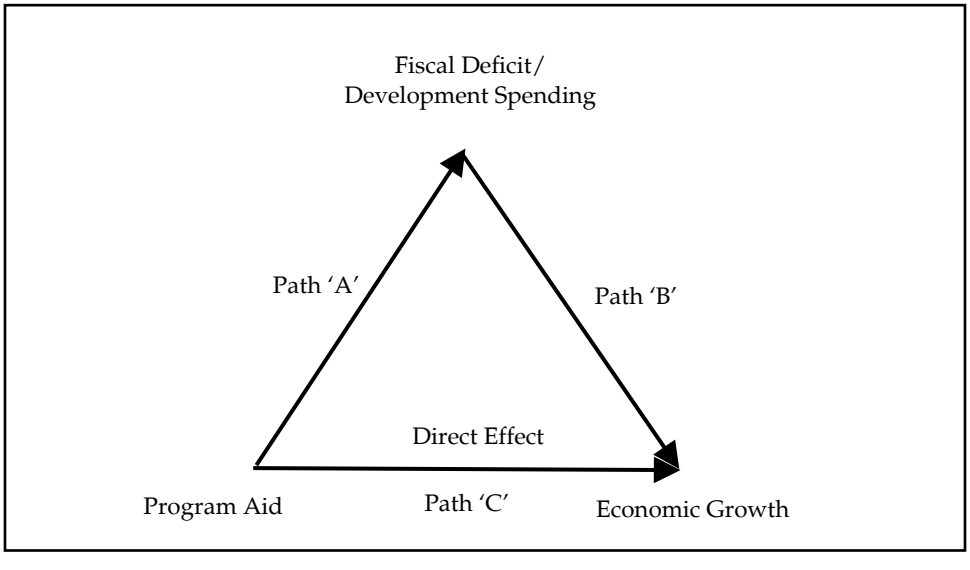
Theoretical Background

Estimating the impact of program aid on overall economic growth is challenging. Generally, the amount disbursed through program aid are not directly spent on implementing the agreed reforms; instead, they provide a cushion for the recipient government to finance its general government expenditures or reduce its fiscal deficit. The same applies to Pakistan. The committed amount under the program aid is disbursed by

the development partner directly into the Government of Pakistan's main account, called Account No. 1 (Non-Food), once the implementing agency completes the prior actions agreed upon with the development partners. We conceptualize that the disbursed funds support the recipient country in two ways. First, they help finance the country's overall fiscal deficit, or they can be used for development spending. Therefore, it is assumed that program aid can influence economic growth either directly, by aiding the reform process (improving efficiency and effectiveness), or indirectly, through financing development projects or reducing the fiscal deficit.

Under the TCM Approach, we argue that program aid can impact economic growth either directly or indirectly. With program aid, the recipient countries, supported by development partners, agree to implement specific structural, administrative, and policy reforms aimed at increasing sectoral efficiency and productivity. A successful reform process results in higher efficiency and productivity, which can ultimately positively influence economic growth. This relationship is understood as a direct effect of program aid on economic growth and is depicted as Path 'C' in Figure 4.

Figure 4: Triangular Conceptual Modelling Approach



Source: Authors' Work.

In addition to the direct effect mentioned earlier, we also argued that program aid influences economic growth indirectly by increasing the government's financial resources. As previously discussed, the proceeds

from program aid help the recipient government finance its overall fiscal deficit, which promotes higher consumption and economic growth. This relationship is understood as an indirect effect of program aid and is illustrated by Path 'A' and Path 'B' in Figure 4.

Another possible indirect linkage between program aid and economic aid is the availability of finances for development spending. It is argued that the proceeds from program aid can be used for the government's development expenditures. Higher disbursements through program aid lead to increased government spending on the country's socio-economic development, which could have a positive impact on economic growth. This indirect connection is also illustrated by Path 'A' and Path 'B' in Figure 4.

Thus, in brief, under the TCM approach, we conceptualized that program aid can affect economic growth directly by improving efficiency and productivity and/or indirectly through financing fiscal deficits and development spending.

Data and Methodology

The study sample period covers 1976-2021. The descriptive statistics and data sources for the variables used in the analysis are provided in Table 1.

Table 1: Details of Data

Variables	Description	Data Sources	No. of Obs.	Mean	Std. Dev.
Y (GDP growth rate)	GDP growth rate at constant prices	World Development Indicators	44	4.658	1.951
PA (Program Aid)	Program aid as Percentage of GDP	State Bank of Pakistan (SBP, 2022)	45	0.601	0.622
FD (Fiscal Deficit)	Fiscal Deficit as Percentage of GDP		45	6.378	1.810
DS (Development Spending**)**	Development Expenditure as Percentage of GDP		45	5.201	2.446
HC (Human Capital)	Human capital index	Penn World Table, version	45	1.542	0.217

Variables	Description	Data Sources	No. of Obs.	Mean	Std. Dev.
W (Labour Prooductivity)	Output per work (i.e. GDP divided by employed labor force)	10.0 (PWT, 2022)	45	2,427.9	1,362.2
TR (Total Revenue)	Total revenue relative to the GDP	State Bank of Pakistan (SBP, 2022)	45	12.004	1.791
Size (Size of Government)	Size of the government measured by total government spending relative to GDP		45	21.907	3.311
D^{IMF} (IMF program)	Dummy variable, having the value '1' if the country is in the IMF program and '0'otherwise	IMF website	45	0.556	0.503
Democ (Democracy)	Scale variable, ranging from '0' (no democracy) to '10' (full democracy)	Polity V dataset (Polity V, 2022)	45	4.000	3.606

Source: Authors'calculations.

Empirical Methodology

Considering the previously mentioned TCM approach, the direct, indirect, and total effects of program aid on economic growth are estimated using the following steps:

STEP 1: Estimating the direct impact of program aid (***PA***) on economic growth(***Y***).

$$Y_t = \alpha_0 + \alpha_1 \ln(PA)_t + \alpha_2 \ln(HC)_t + \alpha_3 \ln(W)_t + \alpha_4 Democ_t + \alpha_5 D_t^{IMF} + \mu_t \quad (1)$$

Estimating equation (1) helps to determine the significance of path 'C'. If the estimated coefficient of program aid ($i.e.'\hat{\alpha}_1'$) is significant, it indicates that program aid has a direct impact on economic growth.

STEP 2: Estimating the impact of program aid (***PA***) on the fiscal deficit (***FD***) and development spending (***DS***) separately.

$$\ln(FD)_t = \beta_0 + \beta_1 ln\,(PA)_t + \beta_2 \ln\,(Size)_t + \beta_3 \ln\,(TR)_t + \beta_4 Democ_t + \beta_5 D_t^{IMF} + \varepsilon_t \quad (2a)$$

$$ln(DS)_t = \beta_0 + \beta_1 ln(PA)_t + \beta_2 \ln\,(Size)_t + \beta_3 \ln\,(TR)_t + \beta_4 Democ_t + \beta_5 D_t^{IMF} + \varepsilon_t \quad (2b)$$

As discussed earlier, according to the TCM approach, program aid may indirectly impact economic growth by increasing the resources available for financing the overall government's fiscal deficit. Alternatively, the proceeds from program aid can be used to fund development spending. To better understand the impact, we estimate these effects separately (see equations 2a and 2b). According to the TCM approach, in this step, we estimate the impact of program aid on the fiscal deficit (i.e., equation 2a) using a set of control variables to assess the significance of path 'A' (see Figure 5). We repeat the process and estimate the impact of program aid on development spending (i.e., equation 2b) using the same control variables.

STEP 3: Estimating the impact of fiscal deficit ($\boldsymbol{FD}$)/government spending ($\boldsymbol{DS}$) on economic growth($\boldsymbol{Y}$)

$$Y_t = \gamma_0 + \gamma_1 \ln\,(FD)_t + \gamma_2 \ln\,(HC)_t + \gamma_3 \ln(W)_t + \gamma_4 Democ_t + \gamma_5 D_t^{IMF} + \vartheta_t \quad (3a)$$

$$Y_t = \gamma_0 + \gamma_1 \ln\,(DS)_t + \gamma_2 \ln\,(HC)_t + \gamma_3 \ln\,(W)_t + \gamma_4 Democ_t + \gamma_5 D_t^{IMF} + \vartheta_t \quad (3b)$$

We estimate equations (3a) and (3b) separately using the same control variables as in equation (1). Estimating these two equations allows us to check the significance of path 'B'.

STEP 4: Estimating the combined effect of program aid and fiscal deficit/development spending on economic growth.

$$Y_t = \varphi_0 + \varphi_1 \ln\,(PA)_t + \varphi_2 \ln\,(FD)_t + \varphi_3 \ln\,(HC)_t + \varphi_4 \ln\,(W)_t + \varphi_5 Democ_t + \varphi_6 D_t^{IMF} + \rho_t \quad (4a)$$

$$Y_t = \varphi_0 + \varphi_1 \ln\,(PA)_t + \varphi_2 \ln\,(DS)_t + \varphi_3 \ln\,(HC)_t + \varphi_4 \ln\,(W)_t + \varphi_5 Democ_t + \varphi_6 D_t^{IMF} + \rho_t \quad (4b)$$

We proceed to this step only if we find significant results of our interest variables in steps 1 to 3. More specifically, if α_1, β_1, and γ_1 are significant in equations (1), (2a & 2b), and (3a & 3b), which means program aid is directly as well as indirectly impacting economic growth through the

fiscal deficit and development spending (see **Figure**). In step 4, we estimated multiple equations by using program aid, the fiscal deficit, and development spending along with the same control variables used in equations (1) and (3a & 3b) to check for full or partial mediation effects. If **path 'B'** (i.e. β_1) is significant and φ_2 in equations (4a) and (4b) is also significant after controlling for the effect of program aid, the hypothesis of partial mediation is supported. Conversely, if **path 'B'** (i.e.β_1) is significant and φ_2 is insignificant, the hypothesis of full mediation is supported. Finally, if both $\beta_1 \& \varphi_2$ are insignificant and φ_1 is significant, it implies program aid is directly affecting economic growth, but not affecting economic growth indirectly through the fiscal deficit and development spending. We proceed to step 5 only if we find some evidence for the significance of **path 'A'** and **path 'B'**.

STEP 5: Estimating the indirect effect of program aid ($\boldsymbol{PA}$) on economic growth ($\boldsymbol{Y}$)

VanderWeele (2016) suggested that the indirect effect can be estimated by subtracting the zero-order coefficient of the desired variable from the partial regression coefficient. Thus, following the VanderWeele (2016) approach, the indirect effect of program aid on economic growth is estimated using the relevant coefficients $(i.e.'\hat{\alpha}_1' \& '\hat{\varphi}_1')$ obtained from equation (1) and equations (4a & 4b) respectively. Since we have two mediating variables (i.e., the fiscal deficit & development spending), the indirect effect is estimated separately by using the following relationship:

$$\hat{\theta}_{Indirect}^{FD} = \hat{\alpha}_1 - \hat{\varphi}_1^{FD} \tag{5a}$$

$$\hat{\theta}_{Indirect}^{DS} = \hat{\alpha}_1 - \hat{\varphi}_1^{DS} \tag{5b}$$

Intuitively, the indirect effect is the difference between the total effect and the direct effect. Where $\hat{\alpha}_1$ is the total effect estimated from equation (1) and $'\hat{\varphi}_1^{FD}' \& '\hat{\varphi}_1^{DS}'$ are the direct effects estimated from equations (4a) & (4b), respectively.

Estimated Results

Since we are using the time series for Pakistan, it is essential to check for the presence of unit roots in the data before estimating equations (1) to (4). For this purpose, the Augmented Dickey-Fuller (ADF) test is applied, and the results are reported in Table 2. We found sufficient evidence to reject the null hypothesis of 'the presence of a unit root in the

time series' in the first difference. Therefore, all our variables are stationary at first difference.

Table 2: Augmented Dicky Fuller Test for Unit Roots

Variable	No constant, no trend	Constant, no trend	Constant, trend
Y_t	-1.117***	-1.050***	-1.125***
	(0.155)	(0.154)	(0.157)
ΔPA_t	-1.225***	-1.25***	-1.336***
	(0.199)	(0.200)	(0.197)
ΔFD_t	-0.158***	-1.158**	-1.181**
	(0.152)	(0.154)	(0.156)
ΔDS_t	-1.103***	-1.132***	-1.140***
	(0.153)	(0.155)	(0.156)
ΔHC_t	-0.997***	-0.994***	-0.984***
	(0.195)	(0.197)	(0.199)
ΔW_t	-0.835***	-1.124***	-1.150***
	(0.155)	(0.158)	(0.162)
$\Delta Size_t$	-0.995***	-0.996***	-1.003***
	(0.154)	(0.156)	(0.158)
ΔTR_t	-1.124***	-1.124***	-1.124***
	(0.1533)	(0.1552)	(0.157)

Source: Authors'calculations.
*Values in () are standard errors. *** (p<0.01); **(p<0.05); *(p<0.1).*
If the *p*-value is less than 0.05, the variable is stationary. *Source: Authors' estimation using STATA, version 14*

We prefer to estimate equations (1) to (4) using the Ordinary Least Squares (OLS) method. However, endogeneity is expected in our models. To test for endogeneity, we employed the Durbin-Wu-Hausman Test, and the results are shown in Table 3. Since most variables in the models are endogenous, the OLS estimates are not valid. Therefore, following the advice of Hansen (1982) and Wooldridge (2001), we estimated equations (1) to (4) using the Generalized Method of Moments (GMM) technique. The main advantage of GMM is that it uses internal instruments and does not assume any specific data distribution (Ogaki, 1993; Wooldridge, 2010).

Table 3: Durbin-Wu-Hausman Test for Endogeneity

Variables	p-value	Interpretation
Dependent Variable: Y_t		
PA_t	0.3754	Exogenous
HC_t	0.0482	Endogenous
W_t	0.1520	Exogenous
$Democ_t$	0.7628	Exogenous
	Dependent Variable: FD_t	
PA_t	0.556	Exogenous

Variables	p-value	Interpretation
$Size_t$	0.000	Endogenous
TR_t	0.002	Endogenous
$Democ_t$	0.1303	Exogenous
	$Dependent\ Variable$: DS_t	
PA_t	0.7374	Exogenous
$Size_t$	0.0003	Endogenous
TR_t	0.0998	Exogenous
$Democ_t$	0.0682	Endogenous

Source: Authors'calculations.
Note: If the p-value is less than 0.05, the variable is endogenous, otherwise exogenous.

Program Aid to Finance Fiscal Deficit

As discussed above, the amount disbursed under the program aid can be used to finance the country's overall fiscal deficit. Using the TCM approach (see Figure 4), we estimate equations (1) to (4a) with the GMM estimation technique, and the results are shown in Table 4. The lower panel of Table 4 presents diagnostic tests for our estimated models.

Table 4: Empirical Results - Program Aid to Finance Fiscal Deficit

Variables	Y_t	FD_t	Y_t	Y_t
	$Eq.(1)$	$Eq.(2a)$	$Eq.(3a)$	$Eq.(4a)$
ΔPA	0.896**	-0.0499***	-	-0.568***
	(0.395)	(0.00975)		(0.218)
ΔFD	-	-	-3.058**	-4.026**
			(1.428)	(1.728)
ΔHC	294.4**	-	89.42***	-26.96
	(134.6)		(32.66)	(51.86)
ΔW	40.31*	-	13.65	14.35***
	(22.63)		(8.795)	(4.029)
$\Delta Size$	-	2.034**	-	-
		(0.888)		
ΔTR	-	-1.747***	-	-
		(0.368)		
$Democ_t$	0.823**	0.0132***	0.198***	0.202
	(0.320)	(0.00348)	(0.0615)	(0.195)
D_t^{IMF}	0.607	-0.191**	-0.714*	0.0387
	(0.630)	(0.0785)	(0.401)	(0.129)
Constant	-7.343**	0.0574*	-1.503***	-1.179
	(3.376)	(0.0322)	(0.562)	(1.161)
Diagnostics				
Jarque-Bera *(p-value)*	0.4962	0.9943	0.7925	0.5177
Breusch-Pagan-Godfrey*(p-value)*	0.1558	0.2000	0.4200	0.1477
Obs.	30	31	43	30

Source: Authors' estimation using STATA, version 14.
Note: Dependent variables are GDP growth in equations (1, 3a& 4a) and fiscal deficit in equation (2a). HAC standard errors are in parenthesis. All variables are in natural logarithm except the dummy variable (D_t^{IMF})**.**All equations are estimated by the GMM estimation technique.Jarque-Bera is a test for normality with $\mathbf{H_0}$**:** Series in normal. Breusch-Pagan-Godfrey is a test for heteroskedasticity with $\mathbf{H_0}$**:**Constant variance.*** (p<0.01); **(p<0.05); *(p<0.1).

Equation (1) of Table 4 estimates the direct effect of program aid on economic growth (i.e., Path 'C' of Figure 5). We observe a significant positive effect of program aid on economic growth, suggesting that program aid directly contributes to the country's economic growth of the country. However, when we control for the effect of the fiscal deficit from program aid (see Eq. 4a of Table 4), it remains significant, but the sign changes from positive to negative. The negative partial effect may indicate that the primary purpose of program aid is to finance the fiscal deficit; otherwise, it fails to bring the intended efficiency gains. Disbursement of program aid is often linked to conditionality, which could diminish political will and ownership of reform efforts (Hussain, 2003; Wilkes, 2001). As Janjua et al. (2018) note, program aid is most effective in a strong institutional environment, a sound & transparent governing system, and committed political will. This suggests that in Pakistan's case, these factors are weak. However, a systematic analysis is recommended for future research.

Equation 2a from Table 4 tests the importance of Path 'A' shown in Figure 4. We found a significant negative effect of program aid on the fiscal deficit, meaning that program aid helps countries to finance their fiscal deficit. In Pakistan's case, this isn't unexpected. As mentioned earlier, the funds from PA are directly deposited into Account No. 1 (Non-Food Account), which the government uses to finance both current and development expenditures.

Equation 3a in Table 4 confirms the importance of Path 'B' in Figure 5. However, the estimated coefficient of the fiscal deficit shows that it acts as a source of reducing economic growth in Pakistan. The economy has consistently experienced the twin deficit (i.e., fiscal and current account deficits) for many decades. These persistent deficits hinder growth through increased debt servicing, higher inflation, weak political will, and crowding out private sector borrowing. Our findings align with those of Fatima et al., Rana & Wahid (2017), and Tung (2018).

We also found a significant and positive impact of human capital on economic growth (see equations 1 & 3a of Table 4). Countries with a highly skilled and qualified labor force benefit from various opportunities to incorporate advanced technology into their products, which helps them stay competitive internationally and ultimately increases economic growth and development (Benhabib & Spiegel, 1994; Boztosun, et al., 2016; Siddiqui & Rehman, 2017). However, when we control the impact of the fiscal deficit in the growth equation, we do not find any significant effect of human capital on growth (see equation 4a of Table 4). This could suggest that, because of the persistent fiscal deficit, Pakistan's economy has limited resources to invest in human capital. Benhabib & Spiegel (1994), Devarajan, Swaroop & Zou (1996), and Quiggin (1999) also reported a negligible or negative impact of human capital on economic growth.

We found a positive impact of labor productivity on economic growth (see Equations 1 and 4a of Table 4). The positive and significant coefficient of labor productivity indicates that it promotes growth in Pakistan. This result aligns with various previous studies that have shown the positive link between productivity and growth (Arshad et al., 2023; Campbell, 2009; Kazuya, 2009; Wu, 2013).

The level of democracy also significantly and positively impacts economic growth (see equations 1, 2a, & 3a of Table 4). However, the democracy coefficient loses significance when we include both program aid and fiscal deficit in the same equation (see Equation 4a of Table 4). This lack of significance may indicate that once we control for foreign assistance and meet the financial needs of domestic stakeholders, democratic institutions do not influence the growth process. Similarly, we find no significant growth difference between periods with and without IMF programs. This finding aligns with Arshad et al. (2023).

Robustness Analysis: Program Aid to Finance Development Activities

As discussed earlier, the disbursements from the program aid can alternatively be used to finance the government's development spending. The estimated results of Path 'A', Path 'B', and Path 'C' in Figure 5 are shown in Table 5. Equation (1) estimates the direct impact of program aid on economic growth (i.e., Path 'C'), equations (2b) & (3b) estimate the indirect impact of program aid on economic growth through the mediation effect of development spending, namely the significance of Path 'A' & Path 'B' respectively, while equation (4b) estimates the combined effect of

program aid on economic growth. The lower panel of Table 5 reports the diagnostic tests of our estimations.

Table 5: Empirical Results - Program Aid to Finance Development Activities

Variables	Y_t	DS_t	Y_t	Y_t
	$Eq.(1)$	$Eq.(2b)$	$Eq.(3b)$	$Eq.(4b)$
ΔPA	0.896**	0.0327***	-	-0.361***
	(0.395)	(0.009)		(0.116)
ΔDS	-	-	-3.504***	-2.673**
			(1.254)	(1.156)
ΔHC	294.4**	-	-0.196	24.28***
	(134.6)		(15.22)	(6.569)
ΔW	40.31*	-	13.80*	0.112*
	(22.63)		(7.847)	(0.0580)
$\Delta Size$	-	0.499	-	-
		(0.328)		
ΔTR	-	-1.217**	-	-
		(0.616)		
$Democ_t$	0.823**	-0.0038**	0.0787**	-0.547**
	(0.320)	(0.002)	(0.0385)	(0.242)
D_t^{IMF}	0.607	-0.173***	0.157	-0.0838
	(0.630)	(0.0389)	(0.305)	(0.193)
Constant	-7.343**	0.109***	-0.832	1.475**
	(3.376)	(0.0227)	(0.510)	(0.740)
Diagnostics				
Jarque-Bera *(p-value)*	0.1558	0.4320	0.2177	0.0943
Breusch-Pagan-Godfrey *(p-value)*	0.4962	0.7033	0.6869	0.1065
Obs.	30	30	43	30

Source: Authors' calculations.

Table 5 confirms previous findings that program aid has a negative and significant impact on economic growth, once we control for development spendings in our growth equation (i.e., equation 4b in Table 5). Interestingly, in Pakistan's case, development spendings negatively influence economic growth. Higher development spending results in lower economic growth in Pakistan. This counterintuitive result may stem from the political nature of development. In Pakistan, development spending was mainly driven by political motives and faced many implementation challenges. Major issues included insufficient budget allocation, lack of dedicated project staff, and delays in land acquisition and contract awarding processes. As a result, projects suffered and experienced cost and time overruns.

The control variables in Table 5 mostly share similar signs with different levels of significance. For example, in a combined effect equation (see Equation 4b in Table 5), human capital becomes more significant, while labor productivity becomes less significant. Similarly, democracy contributes significantly and negatively to the growth process once we control for program aid and development spending (see Equation 4b in Table 5). This finding partially supports our previous argument that, in Pakistan, economic policies are mainly driven by political motives, which may cause macroeconomic imbalances and slow down growth. However, further research is necessary in this area. Consistent with earlier findings, we observe no growth difference under the IMF program.

Direct, Indirect, and Total Effect of Program Aid

Since we find the significance of Path 'A' and Path 'B' under both mediating variables (i.e., fiscal deficit and development spendings), we proceed further by following VanderWeele's approach and estimate the direct, indirect, and total effects of program aid using equations (5a & 5b). The estimated results are reported in Table 6.

Table 6: Direct, Indirect & Total Effects

Effect	Mediating Variables	
	'FD'	**'DS'**
Direct	-0.568	-0.361
Indirect	1.464	1.257
Total	0.896	0.896

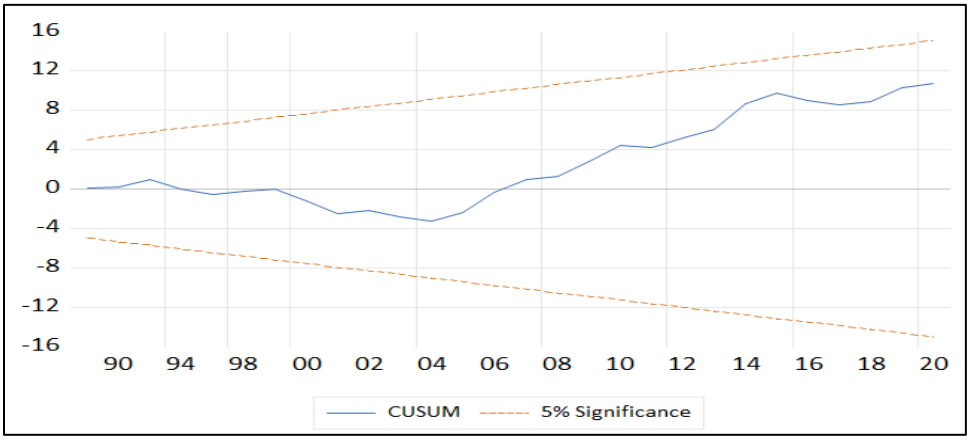
Source: Authors' calculations.
Note: Total effect refers to the coefficient associated with $'PA'(i.e.'\hat{\alpha}'_1)$ in Equation (1) and direct effects of $'PA'$ on $'Y'$ are the coefficients $(i.e.'\hat{\varphi}_1^{FD}{}'$ & $'\hat{\varphi}_1^{DS}{}')$ that are estimated from Equations (4a) & (4b) respectively.

Interestingly, the indirect effects of program aid on economic growth are much greater than the direct effects. Furthermore, the indirect effect of program aid on economic growth is relatively larger under fiscal deficits than under development spending. The larger indirect effects suggest that the main goal of program aid is to cover budget needs or finance the government's development expenditures. The negative direct effects may imply that, because of conditions tied to program aid, the reform process associated with it hinders economic growth in Pakistan.

The cumulative sum (CUSUM) graphs for the two mediating variables (i.e., fiscal deficit and development spending) are shown in

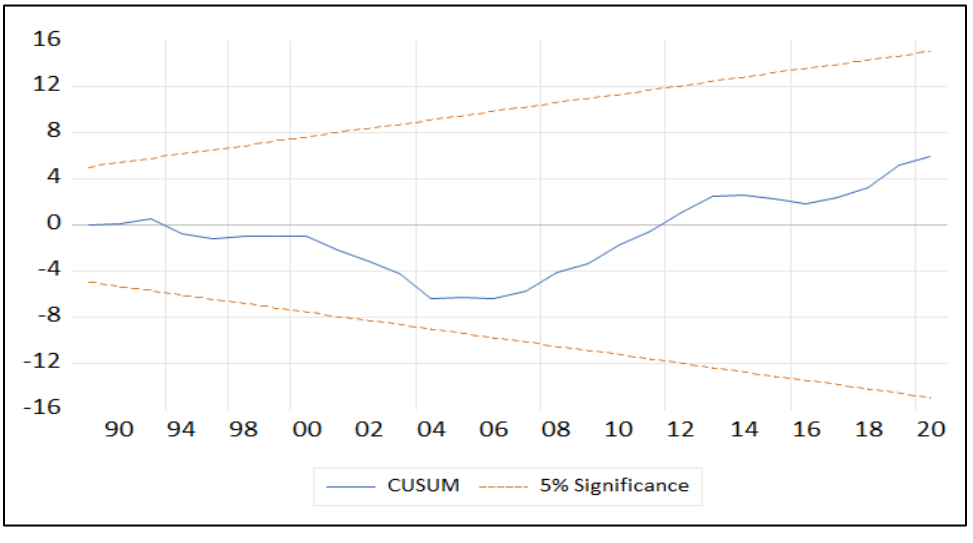
Figure 6 and Figure 7, respectively. The graphs suggest stability in the coefficients of our models.

Figure 3: CUSUM Graph; Model (A); Development Expenditure



Source: Authors' calculations.

Figure 4: CUSUM Graph; Model (B), Fiscal Deficit



Source: Authors' calculations.

Conclusion & Policy Recommendations

The study investigates the link between foreign aid and economic growth in Pakistan using a novel TCM approach. It emphasizes program aid and establishes both direct and indirect connections with economic

growth. The findings indicate that program aid significantly and positively influences economic growth when using the GMM estimation technique. However, this positive effect reverses and becomes negative once the impact of fiscal deficit is taken into account. This suggests that most of the program aid is used to fund fiscal deficits rather than improve efficiency in the country. Disbursement of program aid is often tied to conditionalities, which can diminish political will and ownership of reforms. The study also failed to find a significant impact of human capital, democratic institutions, and the IMF on economic growth. Nonetheless, labor productivity has a significantly positive effect on economic growth. Additionally, the study estimates the direct, indirect, and total effects of program aid, revealing that the indirect effect is much larger than the direct effect, highlighting the primary purpose of program aid.

Based on the findings, the study recommends that developing countries like Pakistan focus on implementing genuine structural, policy, and administrative reforms through program aid to promote sustainable economic growth. Proper use of aid, especially program aid, is critically important for the country. Additionally, resources should be allocated towards developing human capital and enhancing labor productivity. Furthermore, investing in technology and innovation will stimulate further progress and long-term growth. Similarly, strengthening trade relations and diversifying the economy can help build resilience against external shocks. In conclusion, Pakistan needs to adopt a multi-faceted strategy that will lead to sustainable, inclusive, and strong economic development.

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