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Revisiting Balance-of-Payments-Constrained Growth in Pakistan

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Abstract

The balance-of-payments (BOP)-constrained growth rate is the maximum gross domestic product (GDP) growth rate above which unsustainable current account deficits emerge, forcing policymakers to implement contractionary measures that ultimately reduce GDP growth. We estimate Pakistan's BOP-constrained annual growth rate to be 3.71 percent for the period 1996–2023, which is significantly lower than the estimate of 4.41 percent for the period 1980–2017. The BOP-constrained growth rate is most sensitive to changes in import income elasticity. If the import income elasticity value decreases from 1.47 to 1, the BOP-constrained growth rate increases from 3.71 percent to 5.45 percent. If remittance growth increases from 11.43 percent to 14 percent annually, the BOP-constrained growth rate increases from 3.71 percent to 4.09 percent. Similarly, if the real effective exchange rate (REER) grows at -1.5 percent annually instead of -0.83 percent, the BOP-constrained growth rate only increases to 4.02 percent. Finally, the impact of an increase in capital inflows from 13.18 percent to 15 percent annually only increases the BOP-constrained growth rate to 3.78 percent. Our analysis also reveals how Pakistan's low total factor productivity (TFP) growth has weakened export competitiveness while increasing import dependence, exacerbating these BOP constraints. A coherent and holistic strategy of structural reforms is essential to boost the BOP-constrained growth rate.

Introduction

Balance-of-payments (BOP)-constrained growth refers to the idea that a country cannot grow more than the rate consistent with the balance on its current account

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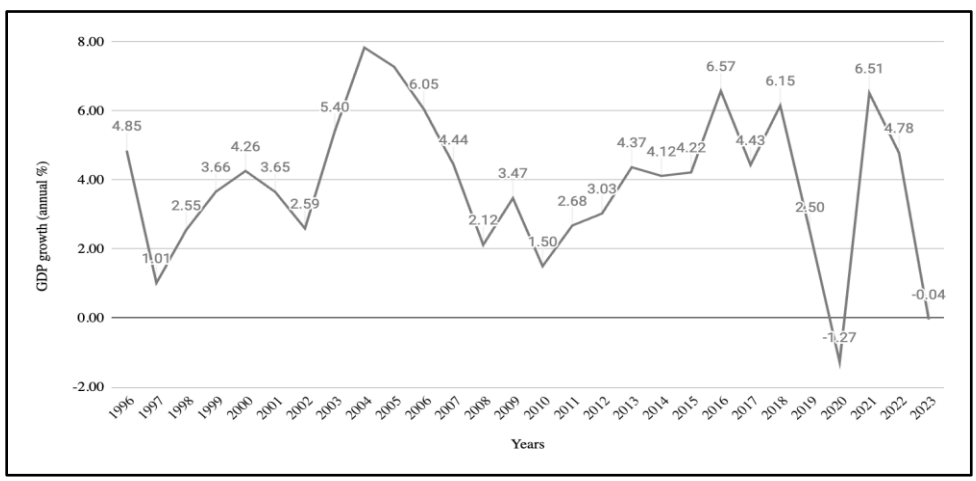
unless there are excessive and continuous external borrowings. Economic growth is limited by the country's ability to finance its current account deficits through external inflows, such as foreign exchange reserves, remittances, or foreign direct investment (FDI). In other words, an increase in the economic growth rate would lead to higher demand for imports, whereas export demand, determined by the overseas market, would remain largely unaffected. The resultant current account deficit must either be financed, which could lead to BOP difficulties, or must be quickly reduced. The former is not sustainable, so the economic growth rate must be reduced by implementing contractionary policies to do the latter.

To understand this in Pakistan's context, we must analyze its macroeconomic situation. Pakistan's gross domestic product (GDP) growth rate (Figure 1) has fluctuated considerably, averaging 3.69 percent over the 28 years from 1996 to 2023, reflecting both internal structural weaknesses and external shocks (World Bank, 2023; State Bank of Pakistan [SBP], 2023).

Figure 1: Pakistan's GDP growth rate (1996–2023)

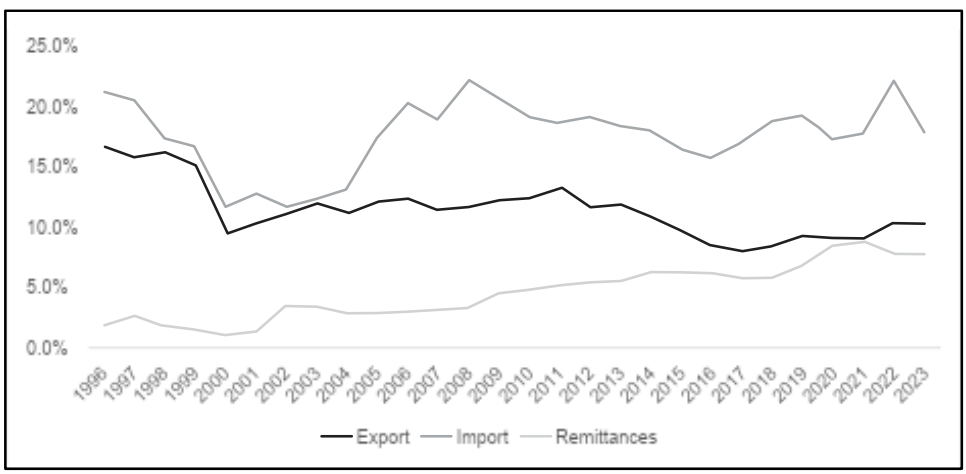


Source: Pakistan Bureau of Statistics.

On one hand, there are deep-seated issues, including political instability, a lack of effective economic reform implementation, and low investment. In fact, the investment climate deteriorated significantly over time, with fixed capital formation declining from 22 percent of GDP in the early 2000s to 15 percent in 2023. On the other hand, Pakistan's external sector tells an equally challenging story (Figure 2). Exports fell from 16 percent of GDP in 2003 to 10 percent in 2023, reflecting the country's inability to move up the value chain in its traditional textile

exports while simultaneously lacking diversification into new, high-value export sectors. Meanwhile, imports surged from 18 percent to 25 percent of GDP over the same period, driven largely by energy needs and growing consumer demand for imported goods. The resulting trade imbalance has been only partially offset by remittance inflows, which grew from 1.6 percent of GDP in 1996 to over 8 percent in 2023. This pattern of weak exports, growing import dependence, and insufficient remittances left Pakistan vulnerable to external shocks such as the COVID-19 pandemic and floods of 2022.

Figure 2: Exports, imports, and remittances as a percentage of GDP (1996–2023)



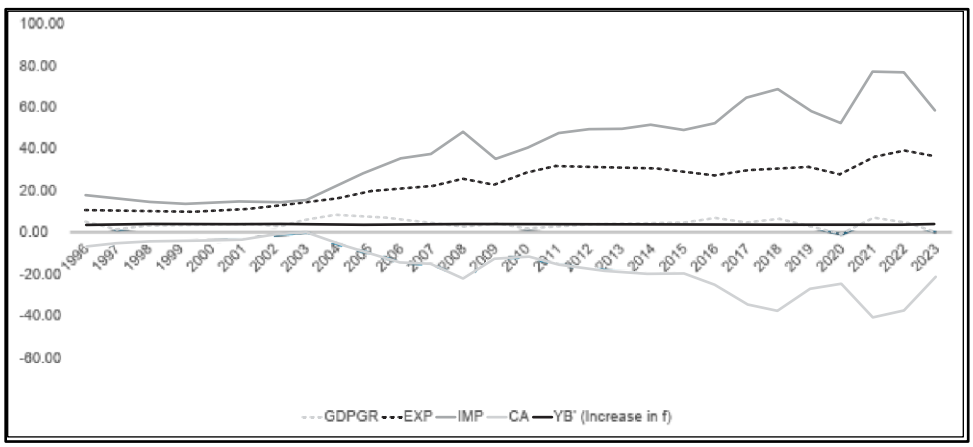
Source: Pakistan Bureau of Statistics.

Due particularly to the external sector's weakening situation, the BOP crisis recurred in Pakistan, forcing the government to enter into standby agreements with the International Monetary Fund (IMF) and seeking extended fund and credit facilities from the institution in various years. Fifteen such IMF arrangements have been made since 1988. Currently, Pakistan is once again engaged in a 37-month, USD 7 billion extended fund facility program that aims to implement structural reforms, including broadening the tax base, reducing energy subsidies, and improving governance in state-owned enterprises.

There is a tendency to blame various policymakers for this state of affairs. However, we feel doing so ignores the fact that the problem is not simply one of policymaking. Rather, the problem is a structural issue in the economy, which, if left unaddressed, will lead to a continuation of the BOP crisis cycle. There is a maximum BOP-constrained growth rate in Pakistan, given the structure of the

country's exports and imports. More specifically, Pakistan's narrow export base (concentrated in low-value-added textiles) combined with its relatively broad import base means that as the GDP growth rate exceeds a threshold value, imports rise to unsustainable levels while exports increase only marginally. This leads to a BOP crisis, which is addressed by the usual troika of policies: devaluation, monetary contraction, and fiscal contraction (Figure 3) instead of catering to the primary issues of low export growth and heavy reliance on imports.

Figure 3: Pakistan's macroeconomic situation (1996–2023)



Source: The SBP's easy data portal.

Previous estimates of Pakistan's BOP-constrained growth rate have been in the range of 4–5.5 percent (Felipe et al., 2009; Chaudhry & Andaman, 2019; Raza, 2021; Asian Development Bank, n.d.). However, we believe the BOP-constrained growth rate may have deteriorated over time because Pakistan's export growth has remained sluggish, constrained by limited diversification and low value-addition. The income elasticity of imports has remained high, as Pakistan relies heavily on imported energy, machinery, and intermediate goods. External financing options have become more restrictive due to high debt accumulation, lower FDI, and limited foreign exchange reserves. Political instability and inconsistent economic policies have further eroded investor confidence, exacerbating the constraints on growth (World Bank, 2023; IMF, 2023).

Therefore, in this paper, we reestimate Pakistan's BOP-constrained growth rate using the 28-year time frame from 1996 to 2023. We also analyze the BOP-constrained growth rate's sensitivity to some important macroeconomic variables, highlighting those to which it responds the most. This serves a dual purpose of

making a novel contribution to related economic literature and emphasizing the factors that could help increase the long-term growth rate the most.

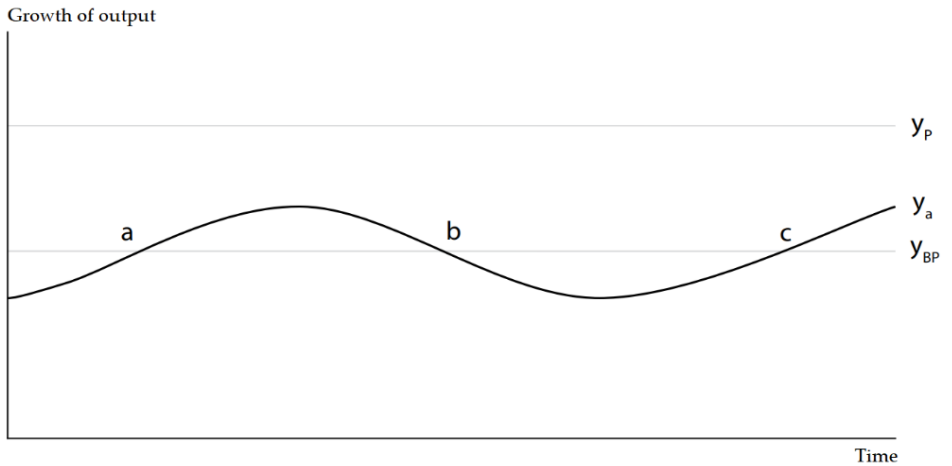
We begin with an explanation of our methodology, including export and import demand functions. This is followed by a discussion on the estimation of these functions. We then use these estimates to calculate Pakistan's BOP-constrained growth rate. The next section involves sensitivity analysis, highlighting crucial macroeconomic variables to which the growth rate responds the most. Finally, we present conclusions and policy recommendations.

Understanding BOP-Constrained Growth

As explained above, the basic assumption behind the BOP-constrained growth model is that a country cannot grow more than the rate consistent with the balance on its current account unless there are excessive and continuous external borrowings (Thirlwall, 1979). The current account deficit must be maintained by borrowing from abroad, which is not possible indefinitely. This is because the growth of financial inflows exceeding GDP growth would lead to a high foreign debt-to-GDP ratio over time and increase the risk of private and public default. If external financing is short-term, there would be a high danger of capital flight, leading to an exchange rate collapse. In turn, this would result in capital losses in terms of foreign currency and domestic liquidity problems.

Therefore, there is an economic growth rate that countries cannot exceed for any period as it would lead to BOP problems. This is the BOP equilibrium growth rate. If an increase in the economic growth rate leads to higher imports but export demand remains stagnant, the resultant current account deficit must quickly be reduced. This leads to policies of import demand contraction, which, in turn, reduce the economic growth rate. Felipe et al. (2009) state that a country is 'BOP-constrained' if its actual growth rate (yA) is such that the current account is in balance in the long run and yA is below the growth of productive potential (yP). This is termed the BOP equilibrium growth rate (yBP) (Figure 4).

Figure 4: BOP-constrained growth



Y_P = productive potential, Y_a = actual growth rate, Y_{BP} = BOP equilibrium growth rate
Source: J. Felipe, J. S. McCombie, & K. Naqvi. (2009). Is Pakistan's growth rate balance-of-payments constrained? Policies and implications for development and growth. *Oxford Development Studies*, *38*(4), 477–496.

The actual growth rate, yA, fluctuates around the BOP equilibrium growth rate, yBP. In an economic boom, when yA > yBP, there are short-term capital inflows to finance the current account deficit. Subsequently, since that is not sustainable due to exceeding debt levels, yA falls until it equals yBP. Alternatively, if yA < yBP, the country will have a current account surplus, leading to an accumulation of foreign exchange reserves almost indefinitely. This imparts a strong deflationary bias into the world economy (Felipe et al., 2009). Hence, the economic growth rate is constrained by the BOP growth rate.

The BOP-constrained growth model implies that if a country faces BOP problems, aggregate demand must be curtailed. This indicates lower employment, restricts capital accumulation, and reduces the country's export potential, further deepening the BOP crisis. However, fast export growth would lead to an appropriate amount of imports, encourage investment, and enable structural change that increases the export of high-value-added products. Hence, instead of relying on higher import growth or devaluation to increase aggregate demand and encounter a BOP crisis that eventually forces the growth rate to fall, policymakers must focus on other factors to avoid a BOP crisis and increase real economic growth sustainably. These include increasing high-value-added exports.

The theoretical model that derives the determinants of the BOP equilibrium growth rate follows Thirlwall and Hussain (1982). Equation 1 defines BOP.

$$P_d X + F = (P_f E)M \tag{1}$$

F is net capital inflows in the domestic currency, including the net change in foreign exchange reserves, $P_d X$ is exports measured in nominal domestic currency, and $(P_f E)M$ is imports in domestic currency. P_d and P_f are the domestic price of exports and foreign price of imports, respectively, and E is the nominal exchange rate (domestic price of foreign currency).

Export and import functions are shown in Equations 2 and 3, respectively.

$$X = AZ^{\varepsilon}\left(\frac{P_d}{P_f E}\right)^{\Psi} \tag{2}$$

$$M = BY^{\pi}\left(\frac{P_f E}{P_d}\right)^{\eta} \tag{3}$$

Z is world income (the income of major trading partners), ε is the world income elasticity of demand for the country's exports, Ψ (< 0) is the price elasticity of demand for exports, Y is domestic income, π is the domestic income elasticity of demand for imports, and η (< 0) is the price elasticity of demand for imports. A and B are constants.

The BOP equilibrium growth rate requires the growth of exports and net flows equal to that of imports. Expressing Equations 1, 2, and 3 in growth rates and substituting the export and import functions (in growth rates) into the BOP equation (also in growth rates) gives Equation 4 for output growth.

$$y = \frac{\theta_x \varepsilon z + (1 + \theta_x \Psi + \eta)(p_d - p_f - e) + \theta_F (f - p_d)}{\pi} \tag{4}$$

θ_X and θ_F are the share of exports and capital flows in total foreign earnings, respectively, or $\theta_X = (P_d X)/(P_d X + F)$ and $\theta_F = F/(P_d X + F)$, and $\theta_X + \theta_F = 1$. Lowercase letters show growth rates in the equations.

The BOP equilibrium growth rate equation depends on various assumptions. Many countries sustain current account deficits for many years because their capital inflows consist of FDI, which builds productive capacity, or they rely on foreign aid and remittances that can finance long-term deficits. If such long-term

financial flows (f_{LT}) are included, the BOP-constrained growth equation would be as shown in Equation 5.

$$y_{BP} = \frac{\theta_x \varepsilon z + (1+\theta_x \Psi + \eta)(p_d - p_f - e) + \theta_F (f_{LT} - p_d)}{\pi} \quad (5)$$

As opposed to Equation 4, Equation 5 includes both long-term capital flows, such as FDI, and short-term speculative capital flows. It excludes volatile short-term speculative capital flows.

If all the capital flows are short-term (f_{ST}), then for the foreign debt-to-GDP to stabilize at any given θ acceptable to the international financial markets, f_{ST} - p_d must equate to y. For this case, yBP is shown in Equation 6.

$$y_{BP} = \frac{\theta_x \varepsilon z + (1+\theta_x \Psi + \eta)(p_d - p_f - e)}{\pi - \theta_F} \quad (6)$$

The third possibility is that the current account is in equilibrium and the share of capital inflows in total overseas receipts is negligible. The BOP-constrained equilibrium growth rate for this case is shown in Equation 7.

$$y_{BP} = \frac{\theta_x \varepsilon z + (1+\theta_x \Psi + \eta)(p_d - p_f - e)}{\pi} \quad (7)$$

Another possibility is that if the growth of relative prices has little systematic effect on the growth of exports and imports and there are no net capital flows, the BOP equilibrium growth rate reduces to Thirlwall's law (Thirlwall, 1979), whereby the BOP growth rate is equal to the growth of world income multiplied by the ratio of the income elasticities of demand for exports and imports. This is shown in Equation 8.

$$y_{BP} = \frac{\varepsilon z}{\pi} = \frac{x}{\pi} \quad (8)$$

Felipe et al. (2009) modify the theoretical model discussed above to the specific case of Pakistan. This paper follows their estimation of an augmented BOP-constrained equilibrium growth rate. Before that is elaborated, it is important to distinguish between a 'strong test' and 'weak test' (Thirlwall, 1979). If the country is at or close to its BOP equilibrium growth rate, yBP should be a good predictor of the actual growth rate, yA. This is the weak test and can be calculated as yBP = x/π, where x is the actual export growth rate. The BOP-constrained growth rate for the strong test is yBP = $\varepsilon z/\pi$. It accounts for the estimated export growth rate based on the estimations of price and income elasticity of exports in the export

demand function. This paper uses both tests to analyze whether Pakistan's growth rate is BOP-constrained or not.

The equation for the augmented BOP growth rate is given in Equation 9. It includes the share of remittances, which is an important source of capital inflows in Pakistan.

$$y_{BP} = \frac{\theta_x x+\eta(REER)+ \theta_R(r-p_x)+\theta_F(f-p_x)+ (p_x-p_m)}{\pi} \quad (9)$$

In this equation, r is the growth of remittances, REER is the growth of the real effective exchange rate, and p_X and p_M are the rates of change of the export and import prices, and so ($p_X - p_M$) is the rate of change in the terms of trade. The θs are the shares of exports, unrequited transfers, and capital flows (including changes in reserves), and $\theta_X + \theta_R + \theta_F = 1$. It is a weak test because it is derived using the observed growth of exports directly rather than the weighted growth of the country's trading partners. The corresponding strong test equation of yBP is shown in Equation 10.

$$y_{BP}' = \frac{\theta_x \varepsilon z+(\eta+\theta_x \Psi)(REER)+ \theta_R(r-p_x)+\theta_F(f-p_x)+ (p_x-p_m)}{\pi} \quad (10)$$

In the augmented version of yBP, the REER is taken into account instead of relative prices of import and export growth to specify the growth of imports. This does not make any significant difference if the growth of domestic prices and those of Pakistan's trading partners (weighted by the trade shares) do not differ greatly from the growth of export and import prices in Pakistan (Felipe et al., 2009).

The import demand function is shown in Equation 11.

$$lnM = \alpha_0 + \beta_1 lnGDP_t + \beta_2 lnPPP_t \quad (11)$$

GDP represents Pakistan's annual current GDP in USD billion, while PPP is the annual purchasing power parity-adjusted exchange rate in PKR/USD. M is Pakistan's aggregate imports in USD billion. Data was taken for 28 calendar years from 1996 to 2023.

The export demand function has been estimated in a similar fashion and is shown in Equation 12.

$$lnX = \alpha_0 + \beta_1 lnFGDP_t + \beta_2 ln\ PPP \quad (12)$$

X is the volume of Pakistan's exports in USD billion, FGDP is foreign GDP calculated as the current GDP value of Pakistan's major trading partners in USD billion and weighted by their trade shares, and PPP is the purchasing power parity-adjusted exchange rate in PKR/USD. Again, data for 28 calendar years from 1996 to 2023 was used. We employed the autoregressive distributed lag model for Equation 11 and vector error correction model (VECM) technique for Equation 12.

Estimating Pakistan's Export Demand Function

As discussed earlier, the export function follows Equation 2:

$$X = AZ^{\varepsilon}(\frac{P_d}{P_f E})^{\Psi} \quad (2)$$

Z is world income (the GDP of major trading partners weighted by their trade shares), ε is world income elasticity of demand for the country's exports, Ψ (< 0) is the price elasticity of demand for exports, and A is a constant.

The export demand function was estimated using VECM specification for Equation 2 and is shown in Equation 12. The long-run cointegrating relationship is shown in Equation 13.

$$lnX = -4.96 + 1.08 lnFGDP_t - 0.15 ln\ PPP \quad (13)$$

Equation 13 indicates a significant positive relationship between Pakistan's exports and the GDP of its trading partners when adjusted for trade shares. Specifically, a 1-percent increase in the GDP of trading partners leads to an approximately 1.08-percent increase in Pakistan's exports. Conversely, the coefficient for the PPP-adjusted exchange rate is not statistically significant, although it has the expected sign. Also, the price elasticity of Pakistan's exports is quite inelastic, equaling only -0.15 percent. Furthermore, the VECM's error correction term, significant at 1 percent, shows a coefficient of -0.34. This indicates that about 34.3 percent of any deviation from the long-term equilibrium export level is corrected each period, underscoring a relatively rapid adjustment process (Table 1).

Table 1: Export demand function

Variable	Coefficient	Standard error
Foreign GDP	1.08***	0.128
PPP	-0.15	0.132
Constant	-4.96	-

PPP = purchasing power parity.
Source: Authors' calculations.

Estimating Pakistan's Import Demand Function

The import demand function is shown in Equation 3.

$$M = BY^{\pi}(\frac{P_f E}{P_d})^{\eta} \quad (3)$$

Y is domestic income, π is the domestic income elasticity of demand for imports, η (< 0) is the price elasticity of demand for imports, and B is a constant.

The import function was estimated using the autoregressive distributed lag model on Equation 3 and is shown in Equation 11. The long-run cointegrating relationship is shown in Equation 14.

$$lnM = -1.015 + 1.475lnGDP_t - 0.587lnPPP_t \quad (14)$$

The error correction term of -0.446 is statistically significant, indicating that about 44.6 percent of any deviation from the long-run equilibrium is corrected within one period. The long-run income elasticity of Pakistan's imports is 1.47 percent, which shows that a 1-percent increase in Pakistan's GDP leads to a 1.47-percent rise in import demand. This also aligns with an import-dependent economy like Pakistan's, where higher income drives demand for foreign goods. The PPP-adjusted exchange rate coefficient shows the long-run price elasticity of Pakistan's imports. A 1-percent increase in the price of imports reduces demand by just 0.58 percent (Table 2).

Table 2: Import demand function

Variable	Coefficient	Standard error
GDP	1.47*	0.36
PPP	-0.59	0.44
Constant	-1.015	0.29

Source: Authors' calculations.
GDP = gross domestic product, PPP = purchasing power parity.

Pakistan's BOP-Constrained Growth Rate (1996–2023)

Earlier, we derived the equation for augmented BOP growth rate, which was given in Equation 9.

$$y_{BP} = \frac{\theta_x x+\eta(REER)+ \theta_R(r-p_x)+\theta_F(f-p_x)+ (p_x-p_m)}{\pi} \quad (9)$$

Here, r is the growth of remittances, REER is the growth of the real effective exchange rate, and p_X and p_M are the rates of change of the export and import prices, so $(p_X - p_M)$ is the rate of change in the terms of trade. The θs are the shares of exports, unrequited transfers, and capital flows (including changes in reserves), and $\theta_X + \theta_R + \theta_F = 1$. It is a weak test because it is derived using the observed growth of exports directly rather than the weighted growth of the country's trading partners.

The corresponding strong test equation of yBP is shown in Equation 10.

$$y_{BP}' = \frac{\theta_x \varepsilon z+(\eta+\theta_x \Psi)(REER)+ \theta_R(r-p_x)+\theta_F(f-p_x)+ (p_x-p_m)}{\pi} \quad (10)$$

In the augmented version of yBP, the REER is taken into account instead of relative prices of import and export growth to specify the growth of imports. This does not make any significant difference if the growth of domestic prices and those of Pakistan's trading partners (weighted by the trade shares) do not differ greatly from the growth of export and import prices in Pakistan (Felipe et al., 2009).

Table 3 shows the growth rates of the various parameters of the BOP-constrained growth rate equation, as well as the BOP-constrained growth rate for 1996–2023. The BOP equilibrium growth rate for the period is 3.71 percent, and the actual growth rate is approximately the same (3.69 percent), which suggests that Pakistan has been growing at approximately the same level as its BOP equilibrium growth rate. This outcome further substantiates our concern that Pakistan's BOP-constrained growth rate has deteriorated over time due to a complex web of challenges that have trapped the country.

Another important point to note is that the sum of the import and export price elasticities is approximately 0.74, which implies that the Marshall-Lerner conditions are not satisfied. The Marshall-Lerner conditions imply that a change in the exchange rate would have little impact on the BOP in the short run if the elasticities sum to less than one (in absolute value terms). Though there is a

possibility that the import and export demand functions could suffer from issues of omitted variables and measurement errors, the estimates of these functions cast doubt on using the exchange rate as the only tool for handling Pakistan's BOP problem.

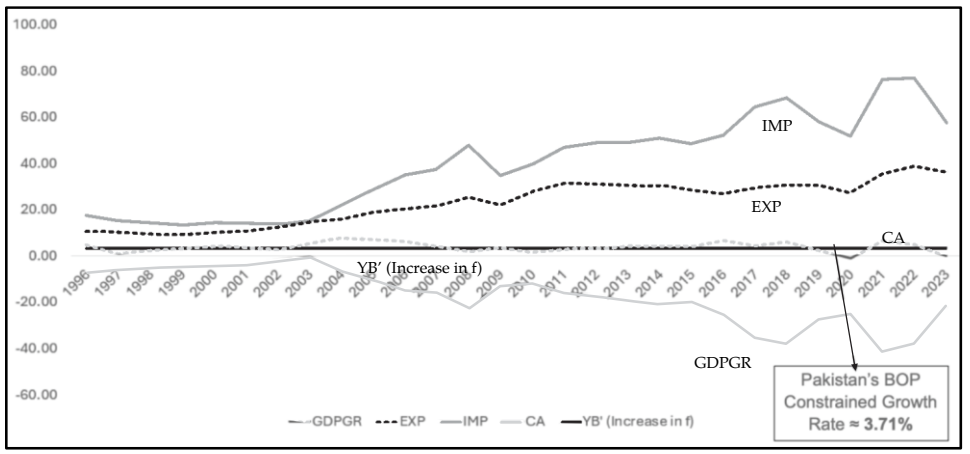
We illustrate the BOP-constrained growth rate by reproducing Figure 3 (Figure 5). Here, we see that there is a consistent tendency for imports to rise far more than exports when the GDP growth rate exceeds 3.7 percent, which, in turn, leads to a significant deterioration of the current account.

Table 3: Pakistan's BOP-constrained growth rate (1996–2023)

	Growth rates (p.a.)
GDP growth	3.69%
Weighted growth of trading partners	4.58%
Growth of exports	4.50%
Growth of real remittances	11.43%
Growth of terms of trade	-2.34%
Rate of change of the REER	-0.83%
Capital inflow	13.18%
Import income elasticity	1.4700
Import price elasticity	-0.5800
Export income elasticity	1.0800
Export price elasticity	-0.1500
Θx (average export share in foreign currency receipts)	0.6763
Θr (average remittance share in foreign currency receipts)	0.2170
Θf	0.1066
yBP	3.45%
y′BP	3.71%
π for which yA = yBP	1.3746
π for which y′A = y′BP	1.4797

π = income elasticity of imports.
Source: Authors' calculations.

Figure 5: Pakistan's BOP-constrained growth rate

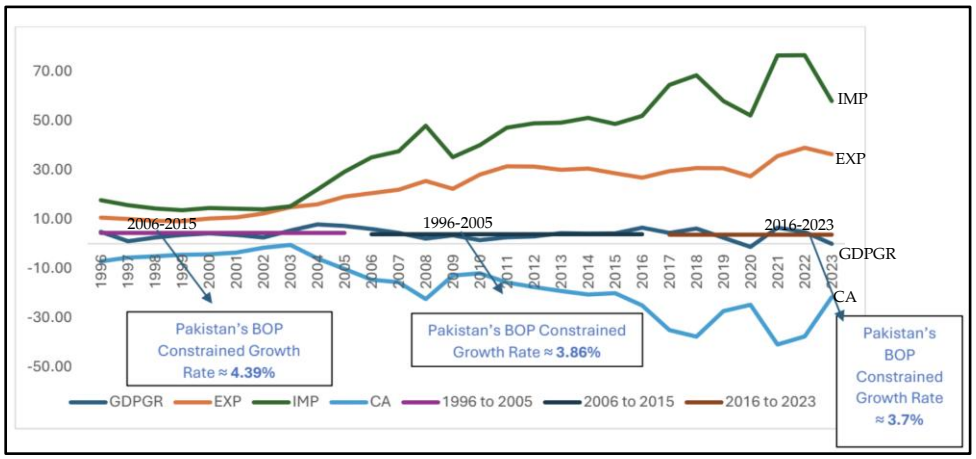


Source: Authors' calculations and the SBP's easy data portal.

BOP-Constrained Growth Rates Over the Last Three Decades (1996–2023)

As part of our extended analysis, we also analyze and calculate Pakistan's BOP-constrained growth rate for three distinct periods within the time frame of 1996–2023. The first period is 1996–2005 (ten years), the second is 2006–2015 (ten years), and the third is 2016–2023 (eight years). In this way, we analyze the extent to which the BOP-constrained growth rate changed over time. As expected, the decade-wise analysis reveals a clear downward trend from 1996 to 2023 (Figure 6). The economy achieved its highest performance with y'BP averaging 4.39 percent during the first decade (1996–2005). This period was marked by capital inflows, investment, and a competitive exchange rate. The following decade, however, saw a pronounced slowdown in the BOP-constrained growth rate to 3.86 percent. Factors such as the 2008 global financial crisis, depreciating exchange rate, and growing import dependency gradually weakened the economy. The most recent period (2016–2023) experienced a further decline to 3.7 percent, which indicated worsening structural issues in addition to the COVID-19 pandemic and resulting trade disruptions. While external factors contributed to this progressive deterioration, domestic policy measures and structural issues played an equally critical role in shaping these patterns. It is, therefore, important to emphasize that the consistent downward movement in the BOP-constrained growth rate underscores the urgent need for policies related to higher export diversification, lower import dependency, and increasing capital inflows.

Figure 6: BOP-constrained growth rates over the last three decades (1996–2023)



Source: Authors' calculations and the SBP's easy data portal.

Simulations Based on Import and Export Demand Functions

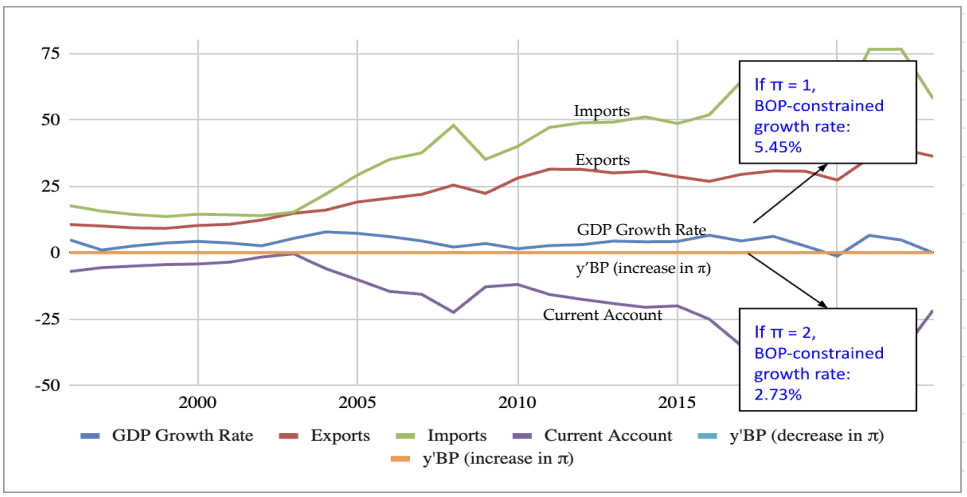
A prime objective was to estimate the elasticity of the BOP-constrained growth rate (y'BP) with respect to key macroeconomic variables to identify those to which y'BP is most responsive, so that policymakers can focus on them to help increase y'BP in the future. In particular, we examine how variations in the annual growth rates of key macroeconomic variables—remittances (r), REER, and capital inflows (f)—and changes in the value of import income elasticity (π) affect y'BP. With this sensitivity analysis, we assess the responsiveness of y'BP to changes in these variables, providing insights for policymakers on how to enhance external stability and long-term economic growth. Each macroeconomic variable is shown in a scenario below.

Scenario 1: Changes in the Value of Import Income Elasticity (π)

Import income elasticity (π) measures how responsive imports are to changes in domestic GDP. A lower elasticity implies that imports grow more slowly than GDP, easing external constraints. The π in the baseline scenario in Table 3 is 1.47. When it is reduced to 1, y'BP surges to 5.45 percent, indicating that reducing import dependency drastically improves the BOP-constrained growth rate. Conversely, increasing π to 2 plunges y'BP to 2.73 percent, highlighting how high import reliance severely restricts growth potential (Figure 7). This suggests that structural policies aimed at lowering import dependency, such as promoting

domestic production and diversifying exports, can have a significant positive impact on BOP-constrained growth.

Figure 7: Changes in the value of import income elasticity (π)

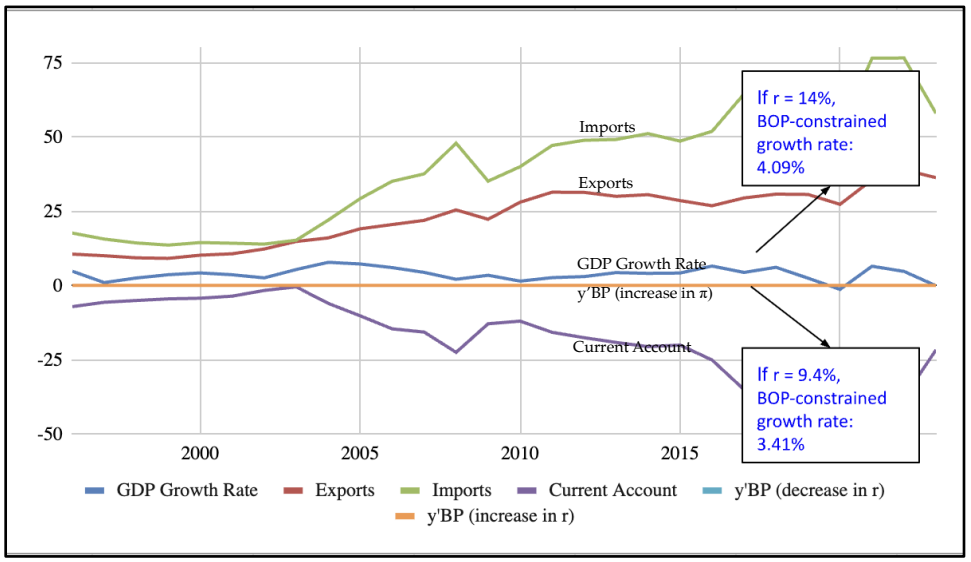


Source: Authors' calculations and the SBP's easy data portal.

Scenario 2: Changes in the Annual Growth Rate of Remittances (r)

In Table 3, the annual growth rate of remittances is 11.43 percent, contributing to a baseline y'BP of 3.71 percent. When the annual growth rate of remittances is reduced to 9.4 percent, the BOP-constrained growth rate declines to 3.41 percent, reflecting a 0.3-percentage point drop. Conversely, an increase in the annual growth rate of remittances to 14 percent raises y'BP to 4.09 percent, which is an improvement of 0.38 percentage points from the baseline scenario (Figure 8). This demonstrates that higher remittance inflows enhance the BOP-constrained growth rate moderately by supplementing foreign exchange reserves and easing external financing constraints.

Figure 8: Changes in the annual growth rate of remittances (r)

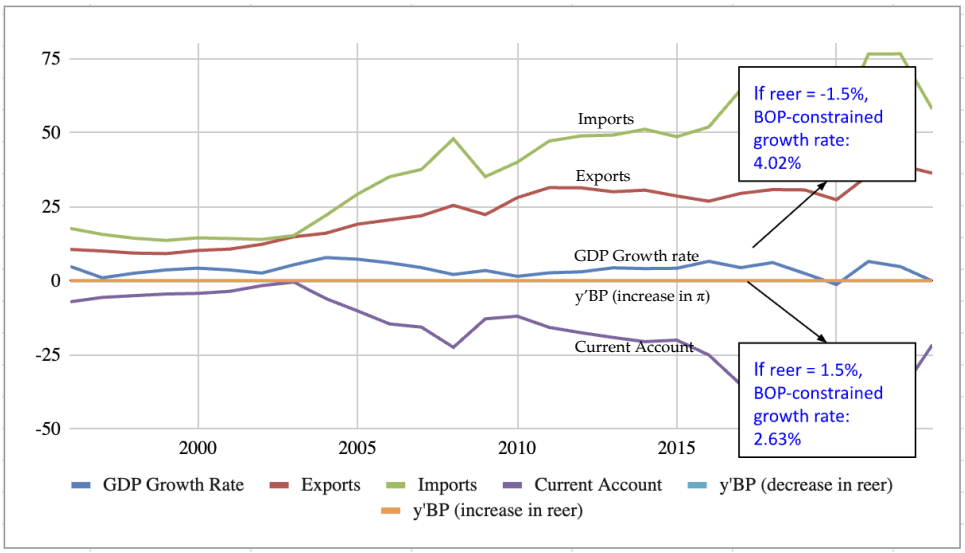


Source: Authors' calculations and the SBP's easy data portal.

Scenario 3: Changes in the Annual Growth Rate of REER

The REER in the baseline scenario in Table 3 shows an annual growth rate of -0.83 percent. A higher depreciation, whereby REER increases at an annual growth rate of -1.5 percent, increases y'BP to 4.02 percent, whereas an appreciation of similar proportion, i.e., a REER annual growth rate of 1.5 percent, reduces y'BP to 2.63 percent (Figure 9). While this shows that a depreciated exchange rate boosts BOP-constrained growth, the increase is moderate and less than the ones shown in scenarios 1 and 2. Furthermore, our analysis is based on the *ceteris paribus* assumption where, in reality, depreciation may contribute to expensive imports, raising import expenditures and debt servicing costs and creating external imbalances. Therefore, exchange rate policy should not keep devaluing the currency and should instead strike a balance between enhancing export competitiveness and maintaining macroeconomic stability.

Figure 9: Changes in the annual growth rate of the REER

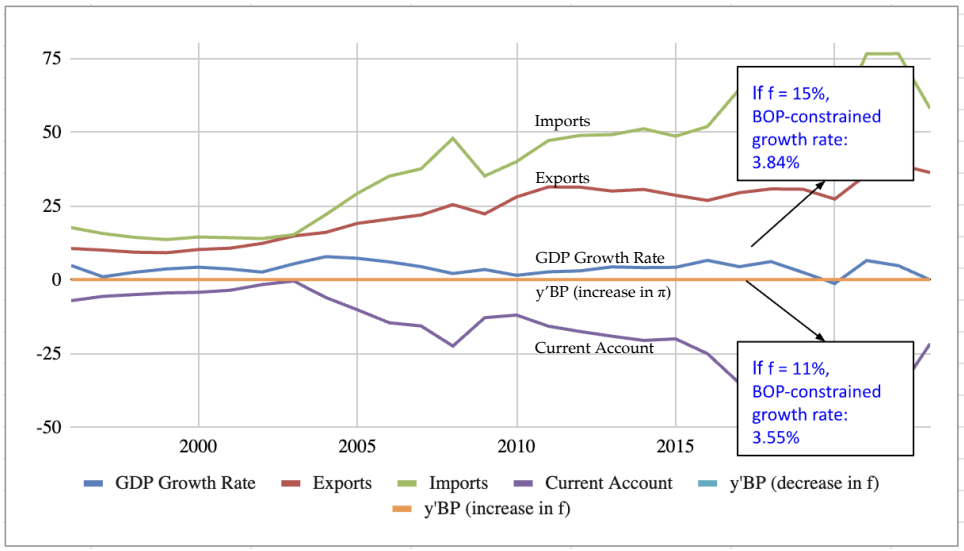


Source: Authors' calculations and the SBP's easy data portal.

Scenario 4: Changes in the Annual Growth Rate of Capital Inflows (f)

Capital inflows (f) supplement domestic savings and help finance investment. The annual growth rate from 1996 to 2023 is 13.18 percent, supporting a y'BP of 3.71 percent in the baseline scenario. When capital inflows' annual growth rate decreases to 11 percent, y'BP drops slightly to 3.55 percent, while an increase to 15 percent raises it to 3.84 percent (Figure 10). This indicates that higher capital inflows provide a modest boost to BOP growth, but the effect is less pronounced than all the scenarios above.

Figure 10: Changes in the annual growth rate of capital inflows (f)



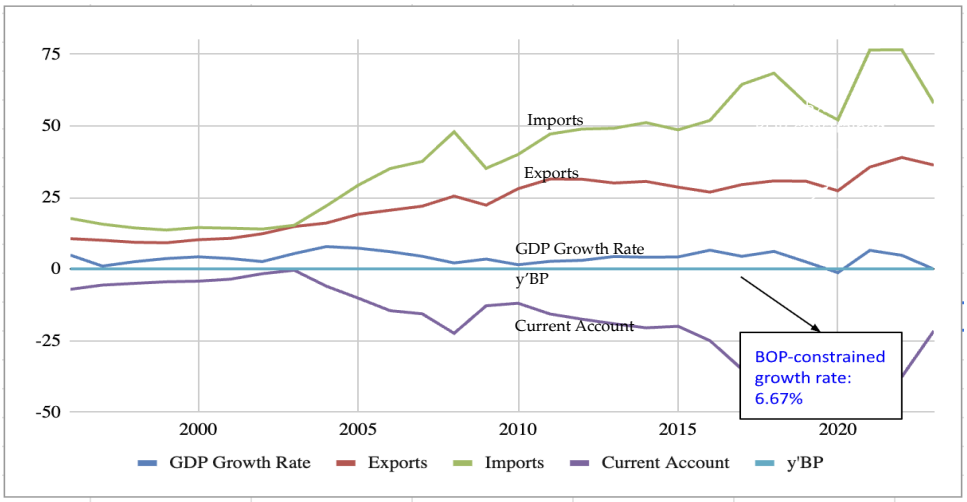
Source: Authors' calculations and the SBP's easy data portal.

Scenario 5: Combined Impact of Scenarios 1–4 on y'BP

This scenario examines the impact of simultaneously implementing the most favorable changes across all key variables—remittances, REER, import income elasticity, and capital inflows—on the BOP-constrained growth rate. Building on the individual analyses, where remittances (r) grow at 14 percent per annum, the REER depreciates by 1.5 percent per annum, import elasticity (π) is reduced to 1, and capital inflows grow at 15 percent annually, the combined effect of these adjustments drives y'BP to 6.67 percent (Figure 11). This result underscores how structural reforms focusing on lowering import dependency and enhanced capital and financial inflows can work together with the policy of currency depreciation to significantly boost the BOP-constrained growth rate. The findings provide a strategic roadmap for policymakers seeking to strengthen long-term growth while maintaining macroeconomic stability.[4]

[4] Partial derivatives of variables with respect to y'BP based on Equation 10 are shown in Appendix A.

Figure 11: Combined impact of scenarios 1–4 on y'BP



Note: In scenario 1, the import income elasticity (π) is reduced to 1. In scenario 2, remittances (r) grow at 14 percent per annum. In scenario 3, REER depreciates by 1.5 percent per annum. In scenario 4, capital inflows (f) grow at 15 percent per annum.
Source: Authors' calculations and SBP (2025).

It is important to note that while the analysis that estimates the impact of the annual export growth rate on y'BP is missing, export growth is inherent in scenarios 1 and 3. A reduction of import dependency and depreciation of exchange rate alone, without export growth and diversification, are not meaningful or even sustainable in the long run. Felipe et al. (2009) state that focusing on export growth leads to numerous benefits. It increases the scale of production, leading to economies of scale; it leads to higher competition, which compels local producers to develop skills and innovate to gain higher market share; it enables local investors to employ the latest technologies; and it increases the growth of essential imports. An additional benefit of export growth in the BOP-constrained model is that it relaxes the BOP growth constraint. It reduces the gap between yBP and yP and allows yA to get closer to the potential growth rate (Figure 4). This is because higher export growth can employ underutilized resources in the economy, leading to a sustained increase in the investment rate, capital accumulation, and aggregate demand. Thus, export growth and diversification are crucial macroeconomic variables that can enhance the long-term BOP-constrained growth rate.

Digging Down Into the Elasticity of Imports by Category

We observed earlier that the BOP-constrained growth rate is most sensitive to changes in import income elasticity. However, we cannot state which specific import categories or sectors contribute to higher import income elasticity in Pakistan. These sectors would require policymakers' focus to help reduce import dependency and increase the long-term growth rate. To analyze this, we consider the annual imports in Pakistan's broad economic categories (BECs) and run individual time-series regressions for each one to estimate import demand functions, category-wise import income elasticities, and import price elasticities.

The BEC classification system was developed by the United Nations to categorize traded goods by their primary end use. It groups imports and exports into broad categories like food and beverages, fuels and lubricants, transport equipment, capital goods, and intermediate goods. There are seven BECs in Rev4. Therefore, we run seven regressions to estimate elasticities, employing an import demand function similar to Equation 11. However, the dependent variable in this case is annual imports in USD in each category. The independent variables remain the same. A VECM was used to run the time-series analyses.

Of the seven BEC-based dependent variables, we found cointegration in three, indicating that there is a long-run equilibrium relationship between these import categories and macroeconomic variables (Table 4). We observe that import income elasticity for the fuels and lubricants category (BEC 3) is significant and has a high magnitude. A 1-percent increase in domestic GDP increases fuel and lubricant imports by 3.6 percent. In addition, a 1-percent increase in domestic GDP significantly increases food and beverage (BEC 1) imports by 2.65 percent. These two categories contribute the most to high import income elasticity in Pakistan, leading to external imbalances and constraining the BOP growth rate. We discuss crucial policy implications in the last section.

Table 4: Individual import demand functions of BECs

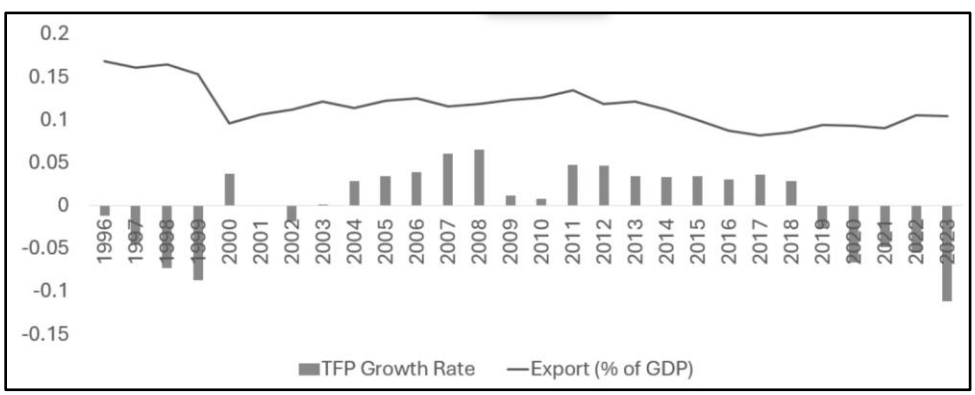
BEC import category	Import income elasticity	Import price elasticity
Fuels and lubricants	3.60***	-2.28***
Food and beverages	2.65***	-1.19***
Transport equipment	1.21***	-0.235

Source: Authors' calculations and the United Nations Comtrade database.

Total Factor Productivity and the BOP-Constrained Growth Rate

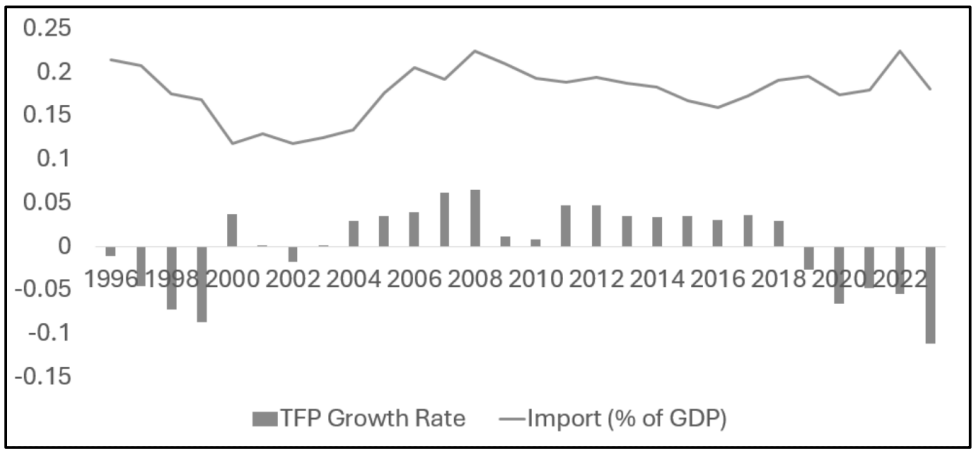
In Pakistan, the total factor productivity (TFP) growth rate, which captures the efficiency of inputs (labor and capital) in generating output, fluctuated over our 28-year time frame, due to structural inefficiencies and external shocks. The trends in Figures 12–14 show that TFP growth from 1990 to 1999 was predominantly negative, ranging from -1 percent in 1996 to -8.7 percent in 1999. This period was marked by economic instability, low investment, and weak governance, which hindered TFP growth. The period from 2000 to 2010 showed a mixed trend, with TFP growth turning positive in most years. It peaked at 6.5 percent in 2008, reflecting the benefits of economic reforms, increased remittances, and higher capital inflows during the 2000s. However, the global financial crisis of 2008–2009 led to a sharp decline in TFP growth, which dropped to 1.2 percent in 2009. From 2011 to 2018, TFP growth remained positive but relatively low, averaging around 3.5 percent. This period was characterized by moderate economic growth, but structural bottlenecks, such as energy shortages and low investments in technology, limited the gains. The years 2019 to 2023 saw a sharp decline in TFP growth, which turned negative again. The COVID-19 pandemic caused a significant drop in productivity, and TFP growth reached -6.6 percent. TFP growth erosion was further exacerbated by political instability and external debt pressures. By 2023, it had plummeted to -11.1 percent, the lowest in the dataset.

Figure 12: TFP growth and exports as a percentage of GDP (1996–2023)



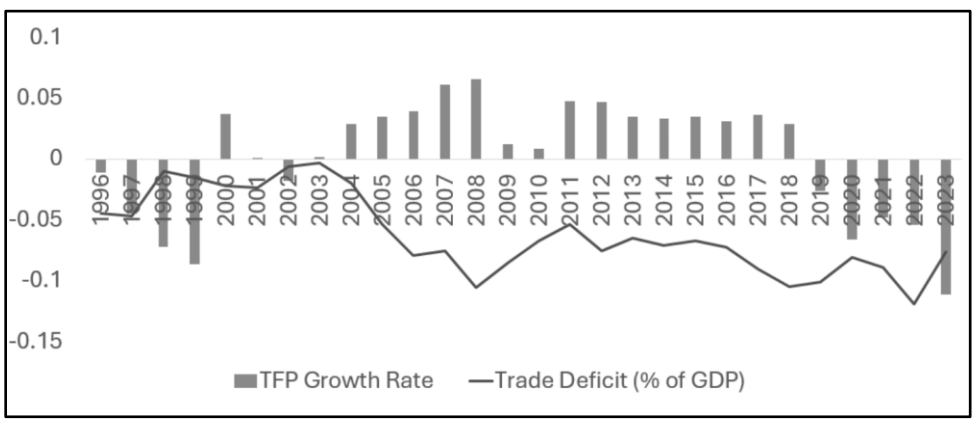
Source: Authors' calculations and the SBP's easy data portal.

Figure 13: TFP growth and imports as a percentage of GDP (1996–2023)



Source: Authors' calculations and the SBP's easy data portal.

Figure 14: TFP growth and the trade deficit as a percentage of GDP (1996–2023)



Source: Authors' calculations and the SBP's easy data portal.

The uneven TFP growth trend significantly hindered Pakistan's export competitiveness. A lack of export diversification meant that Pakistani exports remained concentrated in low-value-added sectors such as textiles. The lack of innovation and technological advancement, coupled with weak infrastructure, limited the country's ability to move up the value chain and compete with more dynamic economies in Asia, such as Bangladesh and Vietnam (World Bank, 2022).

On the other hand, due to low domestic productivity, reliance on imports for capital goods and intermediate products also increased. Pakistan has been

importing a significant portion of its capital goods, energy, and raw materials, which has further widened the trade deficit and hurt BOP sustainability. Therefore, another major obstacle to sustainable economic development is Pakistan's low TFP growth over time.

Conclusions and Policy Implications for raising the BOP-Constrained Growth Rate

This paper revisits the BOP-constrained growth rate framework to evaluate the sustainable long-term growth capacity of Pakistan's economy over the period 1996–2023. While previous estimates show that Pakistan's BOP-constrained growth rate has ranged from 4 percent to 5.5 percent, we believe the BOP-constrained growth rate may have fallen over time due to low-value-added and less sophisticated exports, high import dependency, and low productivity growth. Our analysis for 1996–2023 shows that Pakistan's estimated BOP-constrained growth rate stands at 3.71 percent, closely matching the actual average growth rate of 3.69 percent. If Pakistan's growth rate exceeds 3.71 percent, imports may rise to unsustainable levels while exports may only increase marginally, potentially leading to BOP crises. First, this finding suggests that Pakistan's economic growth has been externally constrained, confirming the central premise of the BOP-constrained growth model. Second, as we had expected, it also shows that the growth rate declined over time. In fact, our decade-wise analysis reveals a progressive deterioration in the BOP-constrained growth rate from 4.39 percent in 1996–2005 to 3.89 percent in 2006–2015 to 3.7 percent in 2016–2023.

Our analysis suggests that the decline in Pakistan's BOP-constrained growth rate is driven foremostly by high import income elasticity. Dependence on imported goods is particularly high in sectors related to fuels/lubricants and food/beverages, where the import income elasticity is estimated at 3.6 percent and 2.65 percent, respectively. This shows that imports in these sectors increase significantly as domestic GDP increases. Moreover, export diversification and value addition remain weak, with Pakistan's exports largely concentrated in low-value-added textiles, limiting the potential for dynamic export growth. Exchange rate depreciation has not proven to be helpful as depreciation without export diversification led to higher import expenditures, further widening the trade deficit. In addition, investment levels have remained low and the impact of remittances has been moderate as they have only partially eased external constraints. Pakistan's low TFP growth compounds the issue. It hampers export

competitiveness and increases reliance on the import of capital and intermediate goods.

Our sensitivity analysis shows that the BOP-constrained growth rate is most responsive to changes in the value of import income elasticity, followed by changes in the annual growth rate of remittances, annual growth rate of the REER, and finally, the annual growth rate of capital inflows. When we incorporate the following favorable changes in these macroeconomic variables simultaneously and simulate the scenario, the growth ceiling increases from 3.71 percent to 6.67 percent, showcasing the potential for significantly higher sustainable growth through coordinated policy reforms.

1. Reducing import income elasticity from 1.47 to 1.
2. Increasing the annual growth rate of remittances from 11.43 percent to 14 percent annually.
3. Growing the REER at -1.5 percent annually instead of -0.83 percent.
4. Increasing the annual growth rate of capital inflows from 13.18 percent to 15 percent annually.

Based on our findings, high import income elasticity (π) emerges as the most significant factor contributing to Pakistan's low BOP-constrained growth rate. This leads to an important policy implication: policymakers should move beyond the conventional policy mix of currency depreciation and fiscal and monetary tightening to raise the BOP-constrained growth rate. We recommend a comprehensive, four-pronged strategy that prioritizes: (1) reducing import dependency to lower import income elasticity; (2) promoting sustained growth in remittances; (3) enhancing capital inflows; and (4) the implementation of prudent, calibrated currency depreciation. Achieving meaningful progress in these areas will require targeted policy reforms and the establishment of realistic, evidence-based goals. The remainder of this section provides a detailed discussion of each of these components.

As it is essential to unlock Pakistan's long-term growth potential while maintaining external sustainability, the following coordinated policy actions, based on the four-pronged policy above, are highly recommended. Policymakers should revamp trade and industrial policy to reduce import dependency, particularly in the fuels/lubricants and food/beverages sectors. First, they should

promote investment in renewable energy sources (like solar energy), increase local agro-processing industries, and expand food storage infrastructures. Second, policies should focus on enhancing export generation and diversification. The promotion of high-value-added, more complex exports beyond textiles, such as IT and pharmaceuticals, is crucial for sustainable increases in economic growth. Also, the government should support firms and companies that are keen to upgrade and develop their technology and skills.

Significant investment in Pakistan is required to decrease reliance on excessive borrowing and expand the industrial base to produce higher-complexity products. Therefore, a key recommendation is encouraging FDI in export-oriented and productivity-enhancing sectors. Improving the business climate and strengthening financial supervision to ensure that inflows are channeled into productive investments should be prioritized. Furthermore, growth in remittances should be encouraged by providing overseas Pakistanis with cost-effective money transfer channels. Policymakers can also increase remittances by offering tax or other incentives for inflows that are directed toward investment in education or entrepreneurship.

It is important to realize that reliance on devaluation as a BOP correction tool could be inflationary and lead to higher debt burdens (if liabilities are dollar-denominated) and capital flight. Without coupling it with export diversification policies, depreciation will not benefit a wide range of industries/sectors—only a few commodity exporters. This is not beneficial in the long term. Exchange rate management must ensure sustainable export-led growth without causing macroeconomic disruptions. Finally, the government should prioritize investment in human capital, research and development, and digital infrastructure to improve TFP growth.

Pakistan's growth constraints are fundamentally internal structural issues. Recurrent BOP crises are symptoms of deep-seated inefficiencies in the economy's export and import structure. A coordinated approach, where policies complement each other, is required, as a single policy cannot address BOP constraints. Vietnam, for instance, combined export-oriented industrialization with careful exchange rate management, boosting manufacturing exports while maintaining external stability (World Bank, n.d.). Bangladesh leveraged remittance inflows and garment exports to strengthen its external balance (IMF, 2025). In Pakistan's case, based on our analysis, the most impactful reforms involve reducing import

dependency, increasing export diversification to high-value-added sectors, enhancing remittances in a productive manner, maintaining a competitive yet stable exchange rate, prioritizing sustainable capital inflows, especially in export-oriented sectors, and increasing TFP growth.

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Appendix A: Partial Derivatives

Partial derivatives:

1. With respect to ε:

$$\frac{\partial y'_{BP}}{\partial \varepsilon} = \frac{\theta_x z}{\pi}$$

2. With respect to z:

$$\frac{\partial y'_{BP}}{\partial z} = \frac{\varepsilon \theta_x}{\pi}$$

3. With respect to η:

$$\frac{\partial y'_{BP}}{\partial \eta} = \frac{reer}{\pi}$$

4. With respect to Ψ:

$$\frac{\partial y'_{BP}}{\partial \psi} = \frac{reer\theta_x}{\pi}$$

5. With respect to REER:

$$\frac{\partial y'_{BP}}{\partial reer} = \frac{\eta + \psi\theta_x}{\pi}$$

6. With respect to r:

$$\frac{\partial y'_{BP}}{\partial r} = \frac{\theta_R}{\pi}$$

7. With respect to (px−pm):

$$\frac{\partial y'_{BP}}{\partial (p_x - p_m)} = \frac{1}{\pi}$$

8. With respect to π:

$$\frac{\partial y'_{BP}}{\partial \pi} = \frac{-(\theta_x \varepsilon z + (\eta + \theta_x \psi)(reer) + \theta_R(r - p_x) + \theta_F(f - p_x) + (p_x - p_m))}{\pi^2} - \frac{y\prime bp}{\pi}$$

9. With respect to f:

$$\frac{\partial y'_{BP}}{\partial f} = \frac{\theta_F}{\pi}$$

Appendix B: Tables for Scenarios 1–5

Scenario 1

Income elasticity of demand for imports (π)	BOP-constrained growth rate
1.47 (baseline)	3.71%
1.0 (reduced)	5.45%
2.0 (increased)	2.73%

Scenario 2

Annual remittance growth rate	BOP-constrained growth rate
11.43% (baseline)	3.71%
9.40% (reduced)	3.41%
14.00% (increased)	4.07%

Scenario 3

Annual change in REER	BOP-constrained growth rate
–0.83% (baseline)	3.71%
1.50% (appreciation)	2.63%
–1.50% (depreciation)	4.02%

Scenario 4

Annual growth in capital inflows	BOP-constrained growth rate
13.18% (baseline)	3.71%
11% (reduced)	3.55%
15% (increased)	3.84%

Scenario 5

Baseline growth rate: 3.71 percent

Potential growth rate: 6.67 percent

Variable	Remittance growth	REER growth	Import elasticity (π)	Capital inflows growth
Baseline	11.43%	-0.83%	1.47	13.18%
Modified	14%	-1.50%	1	15%