TRADE LIBERALIZATION, NATIONAL TARIFF POLICY (2025-30) & ITS IMPLICATIONS

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Executive Summary

This policy brief presents a detailed analysis of Pakistan's trade dynamics, examining the historical evolution of tariff liberalization since the 1990s and forecasting the macroeconomic impacts of the proposed National Tariff Policy (NTP) 2025-30. The brief highlights that while Pakistan has made significant strides in reducing simple average tariffs—from over 50% in 1995 to approximately 11% by 2023-24—and in streamlining its tariff structure from 10 slabs in 1993 to just 4 by 2018, these liberalization efforts have not yielded the expected export growth. Instead, the continuous reduction of trade barriers, without adequate strengthening of domestic industrial capacity, has contributed to persistent structural trade imbalances.

Over the past two decades, Pakistan's trade deficit has significantly widened. The export structure remains heavily concentrated in low-productivity sectors, while imports reflect an increasing dependency on external energy and technology. The share of mineral fuels in imports has risen from 24% in 2003 to 32% in 2024, and the machinery share has increased from 5% to 11% over the same period.

Our analysis further reveals that prior policies, which aimed to restructure trade by reducing average tariffs and simplifying slab structures, have not achieved the anticipated outcomes. Although some policies produced marginal gains, these were often offset by inconsistent policy formulation and lack of coherent implementation.

Looking ahead, the NTP 2025-30 aims to reduce the simple average tariff to 9.70% by the terminal year of 2029-30. However, based on a dynamic macroeconomic framework, this document cautions that further tariff reductions, without parallel efforts to diversify exports and bolster industrial support, could destabilize Pakistan’s external sector. In such a scenario, the trade deficit could swell to approximately USD 61 billion by 2030—far exceeding the USD 50 billion baseline—while real GDP growth could decelerate, and the exchange rate could come under severe depreciation pressure, potentially approaching PKR 380/USD.

The proposed National Tariff Policy 2025-30 appears to follow the ‘neoliberal orthodoxy,’ which is increasingly seen as outdated in today’s rapidly changing geo-economic environment. In this era of increasing protectionism, preferential trade access through custom unions of regional free trade regimes increase exports in Pakistan. We need enhanced market access through effective trade diplomacy and governance. If not implemented with careful recalibration, the proposed tariff policy could undermine the recent gains in external sector stability, including the current account surplus achieved just last year.

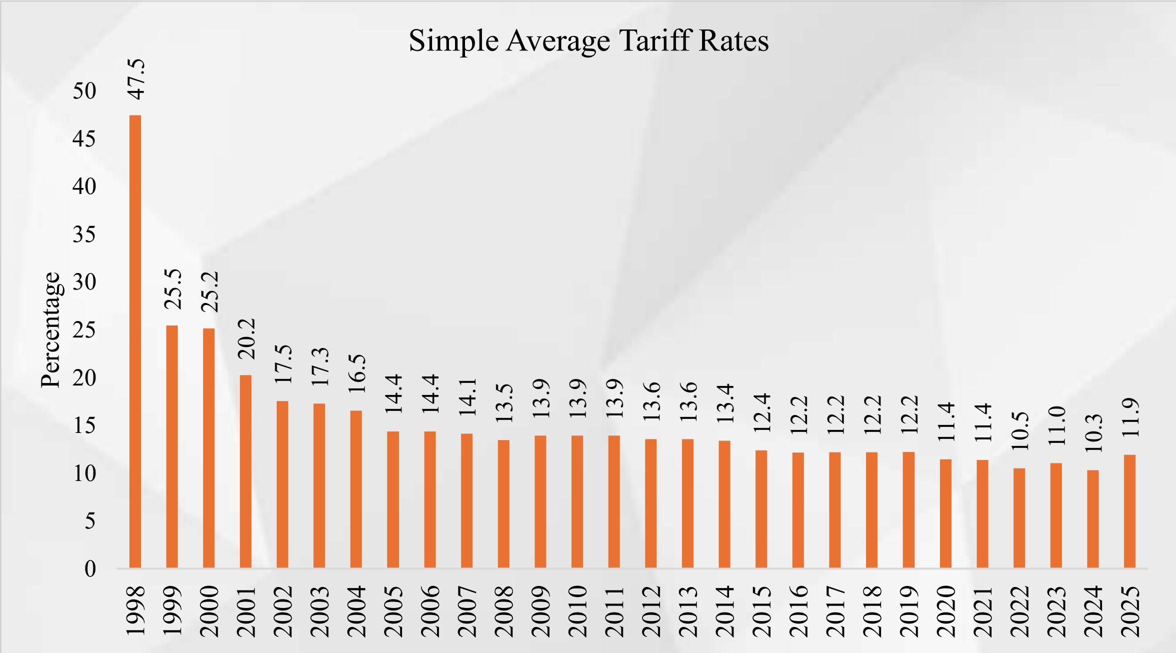
Policy Recommendations

- **Re-Sequence Tariff Cuts:** In the first two years of NTP 2025-30, limit tariff reductions to raw materials, intermediate goods, and capital machinery used by export sectors, since these inputs are more likely to strengthen production than widen pure consumption imports.
- **Introduce Export-Performance Triggers:** Make the next round of consumer-goods tariff cuts conditional on transparent export-performance triggers. At a minimum, government should require improvement in non-textile export share, higher domestic value addition in exports, and a better import-coverage ratio before proceeding with further liberalization of finished goods.
- **Implement a Tariff Corridor Model:** Replace blanket tariff cuts with a defined tariff corridor, publishing any shifts to lower slabs through the annual budget after thorough stakeholder consultations with a three-year forward schedule. This approach provides predictability, reduces uncertainty caused by frequent discretionary changes, and offers firms the time needed to adjust their sourcing, investment, and pricing decisions effectively. Additionally, it creates room for negotiation and reciprocal trade deals with other nations, which is increasingly important in a "geo-economic" world where market access is no longer granted freely.
- **Shift Revenue Collection Focus**: Move away from using tariffs as a tool for short-term revenue generation and focus instead on improving domestic tax administration, enforcing proper valuation, and enhancing sales/income tax collection.
- **Publish an Annual NTP Scorecard:** The National Tariff Commission, Ministry of Commerce, FBR/Customs, and Ministry of Finance should jointly publish an annual NTP scorecard. This scorecard should assess import and export growth, share of non-textile exports, customs revenue performance, the use of duty-free lines, and whether safeguard triggers have been breached. Transparent reporting will allow for early adjustments to the policy and prevent the entrenchment of trade imbalances before they destabilize the economy.
- **Enhance Productivity and Competitiveness:** Tariff rationalization will only yield long-term gains if accompanied by structural reforms that raise total factor productivity. This includes investing in infrastructure, human capital development, and technology adoption to make domestic industries globally competitive rather than reliant on tariff protection.
- **Market Access through Trade Agreement:** Given the limited market access Pakistan currently has compared to its regional competitors, the government should liberalize tariffs by negotiating and signing more free trade agreements. These agreements would provide Pakistani exporters with the leverage to access global markets while shielding domestic industries from excessive competition through tariffs.

1. Historical Overview of the Tariff Rationalization and Trade Dynamics

Historically, Pakistan's tariff system was highly protectionist, with rates up to 120% in the 1980s and multiple overlapping tax systems. Pakistan started to liberalize its economy back in 1990s by lowering tariffs and limiting trade barriers to strengthen its export base and narrow down its trade deficit. In 1998, simple average tariff rate stood at 47% but was rationalized by bringing rates down significantly. The decline in tariff rates from 1998- 2005 was significantly faster, indicating quick shift toward liberalization, compared to post 2005 period when tariff rationalization was slower (Fig.1).

Figure 1: Historical Tariff Trend (Liberalization Period)



Source: WITS

Not only the tariff rates were brought down significantly, but the imposed tariff slab[1] structure, used to classify imported goods, was also reduced from 10 tariff slabs to just 6 slabs by 2015 and 4 slabs by 2018 indicating a shift towards a simpler, more uniform, and more transparent tariff system. The objective was, however, to reduce tariff dispersion - the difference between the highest and lowest tariff rates across sectors. The tariff lines in the lowest slabs increased from 0% (1993) to 3% (2018) with the aim to improve the global terms of trade. For the period 2019-24[2], the tariff rates for four slabs were: 3%, 11%, 16%, and 20%. The bar graph below (Fig.2) presents the historical number of slabs, maximum tariff rate, and lowest tariff slab (in percentage) for Pakistan.

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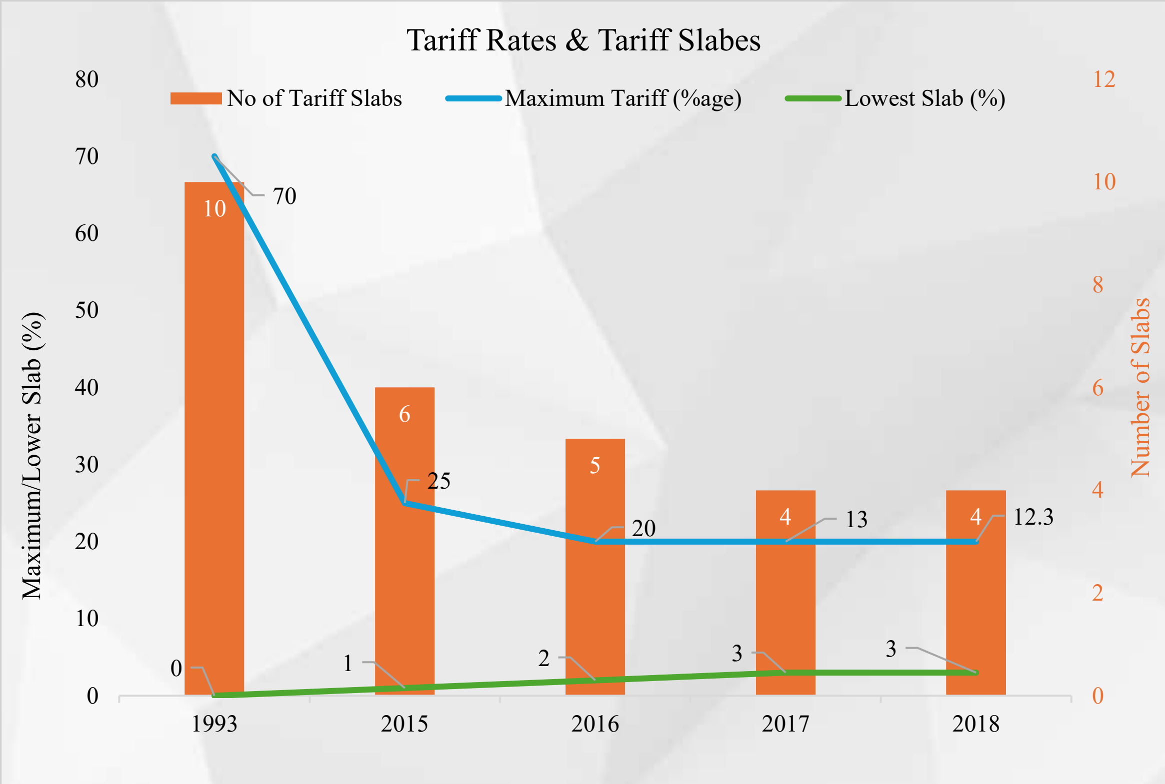
[1] Tariff Slabs are group of tariff rates that a country applies on different product categories. Pakistan had 10 tariff slabs in the 1990s with tariffs ranging from a minimum of 0% to as high as 120%. Usually, raw materials and intermediate products fall under low tariff slab while final products and luxury goods fall under high tariff bands.

[2] National Tariff Policy 2019-24, Ministry of Commerce

Figure 2: Historical Changes in Tariff Slabs



Source: WITS

As shown in (Fig.2), there were 10 tariff slabs with a maximum tariff rate of 70% (applied on 3 slabs) in 1993. The number of slabs were decreased to 6 in 2015, 5 in 2016, and 4 in 2017 with maximum tariff rates of 25%, 20% and 20% respectively. The same data showing decline in the number of tariff slabs as well as maximum tariff rates is presented in a tabulated form in table 1.

Table 1: Evolution of the Tariff structure over the years in Pakistan

Fiscal Year (FY)	No. of Slabs	Floor (Min)	Ceiling (Max)
2012-13	8 to 7	%	35% to 30%
2014-15	7 to 6	0% to 1%	30% to 25%
2015-16	6 to 5	2%	25% to 20%
2016-17	4 to 5	3%	20%
2019-20	4 to 5	0%	20%

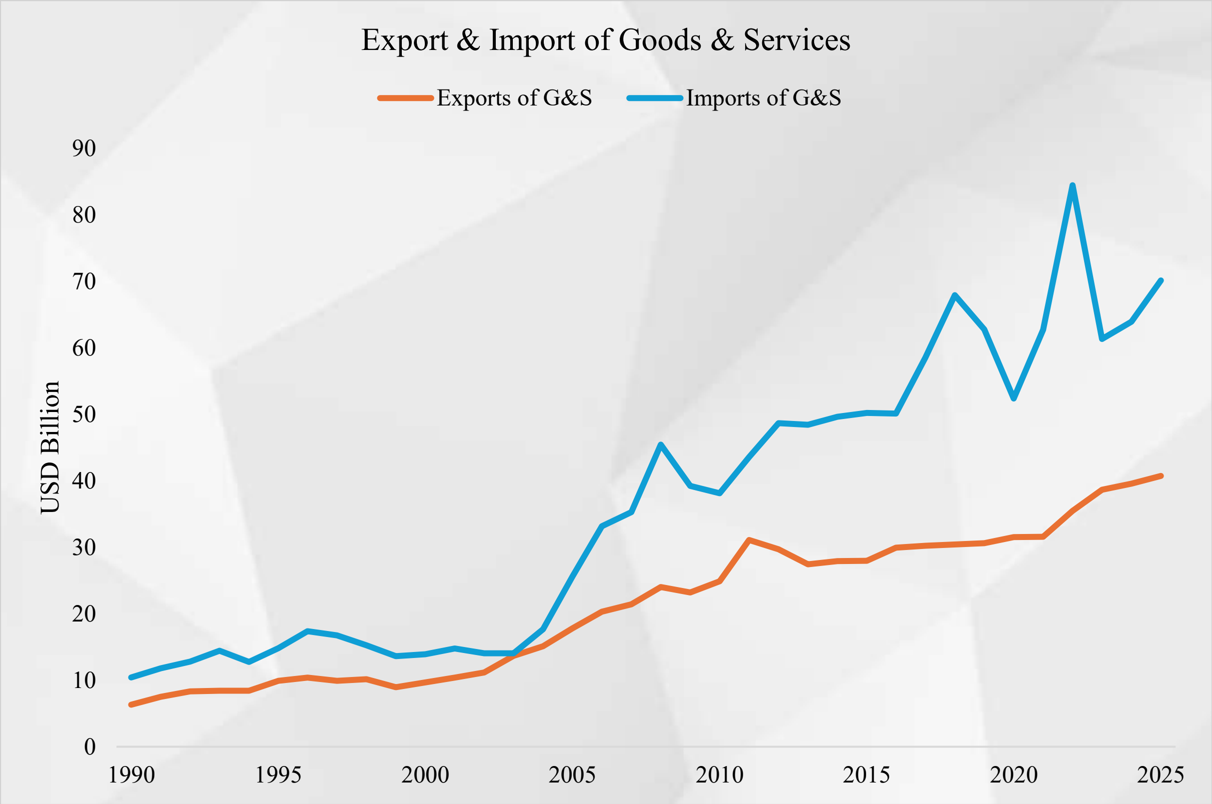
Source: FBR and Customs Reports (Various Issues).

However, this liberalization through tariff rationalization policies, aimed at promoting export competitiveness, efficiency in domestic industries, and effectively integrating Pakistan in the global trading system did not produce expected outcomes. Data shows that the overall impact of the tariff reforms (1995- 2024) on boosting exports and improving terms of trade was not consistent resulting in increased imports but not commensurate increase in exports as evident from (Fig.3).

Exports and imports growth clearly show the ineffectiveness of any meaningful change in our external sector dynamics that can be attributed to tariff rationalization policies. Export growth (Fig. 3) mostly remained stagnant from 1990 to 2000 picking up some momentum during 2000 to 2010 and then remained flat for the next two decade showing a slow but insignificant increase.

On the other hand, imports grew sharply since 2000. Imports have then followed a fast trajectory relative to exports since 2003 (Fig. 3).

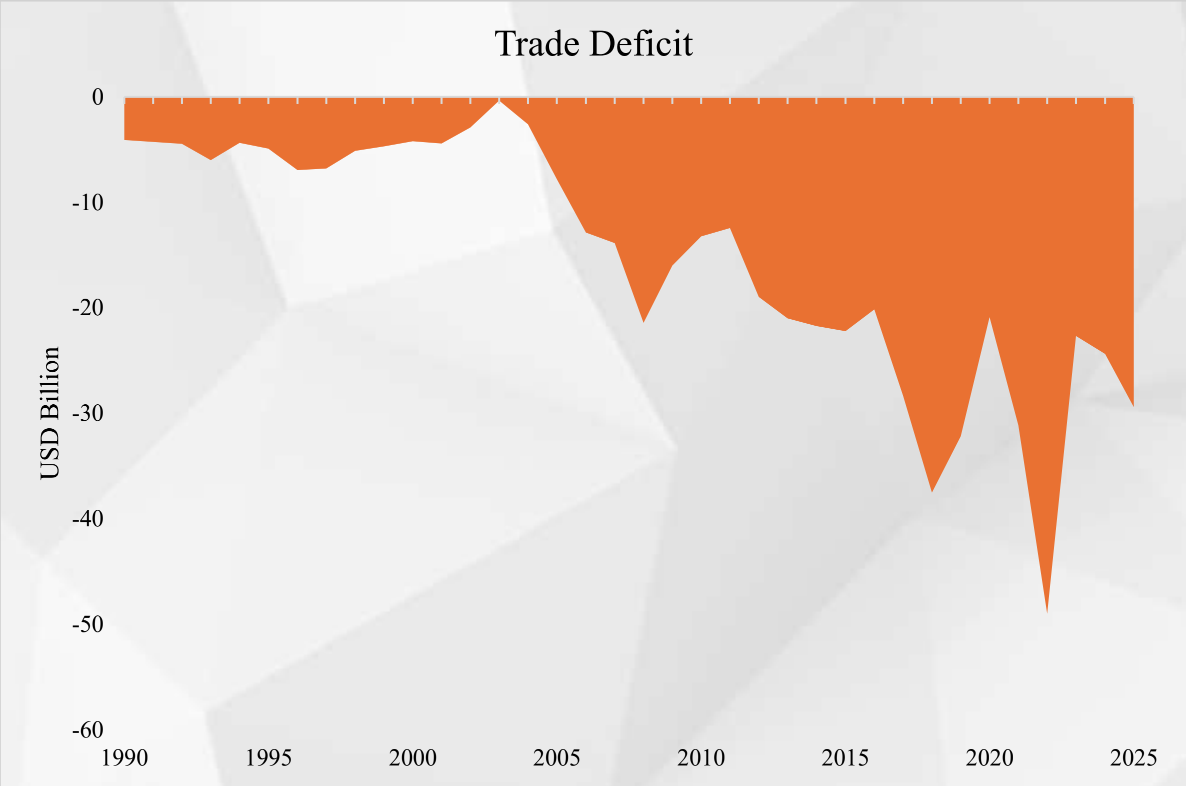
Figure 3: Trends of Export and Imports since Tariff Rationalization



State Bank of Pakistan

Due to this, Pakistan's trade balance remained continuously in deficit and has widened over the years reaching $30 Billion in 2025 (Fig.4). Pakistan was having the largest deficit of around $49 Billion in 2021-22 that has narrowed down to around $30Bn by 2025.

Figure 4: Pakistan's Trade Balance (USD)

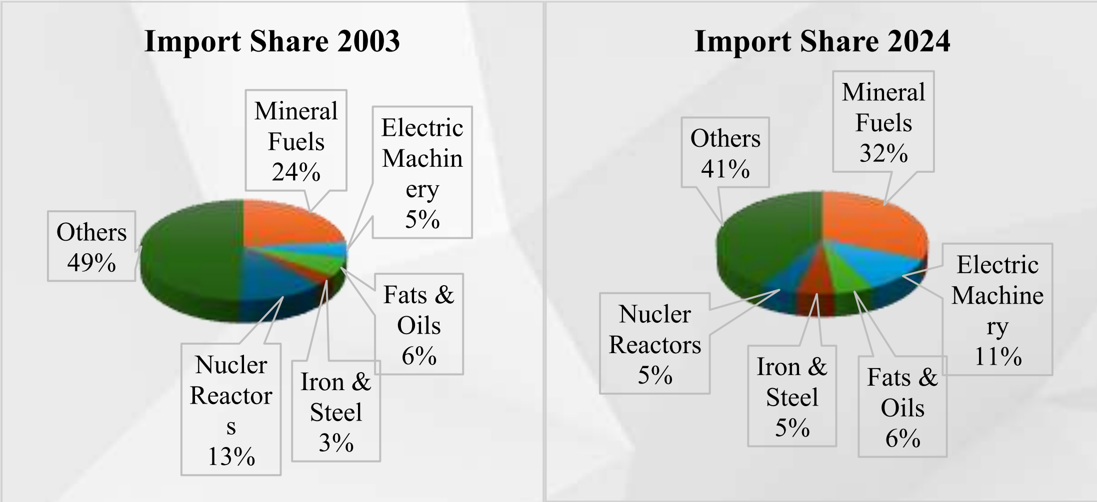


State Bank of Pakistan

Despite successive tariff rationalization initiatives, Pakistan's trade structure has exhibited limited structural transformation. Pakistan's import structure over the last two decades shows a deepening reliance on external energy and technology. The share of mineral fuels (HS-Code at 2-digits in terms of value) increased from 24% in 2003 to 32% in 2024, while electrical machinery imports more than doubled from 5% to 11%. Rather than signaling diversification, these shifts reflect intensified dependence on high-value intermediate goods that Pakistan does not produce domestically. At the same time, the decline in nuclear reactors and mechanical parts imports (13% to 5%) appears to be driven more by fiscal constraints than genuine industrial upgrading, indicating limited progress in developing a domestic production base.

The pie charts (Fig.5 & Fig.6) compare Pakistan's import and export composition in 2003 and 2024 respectively.

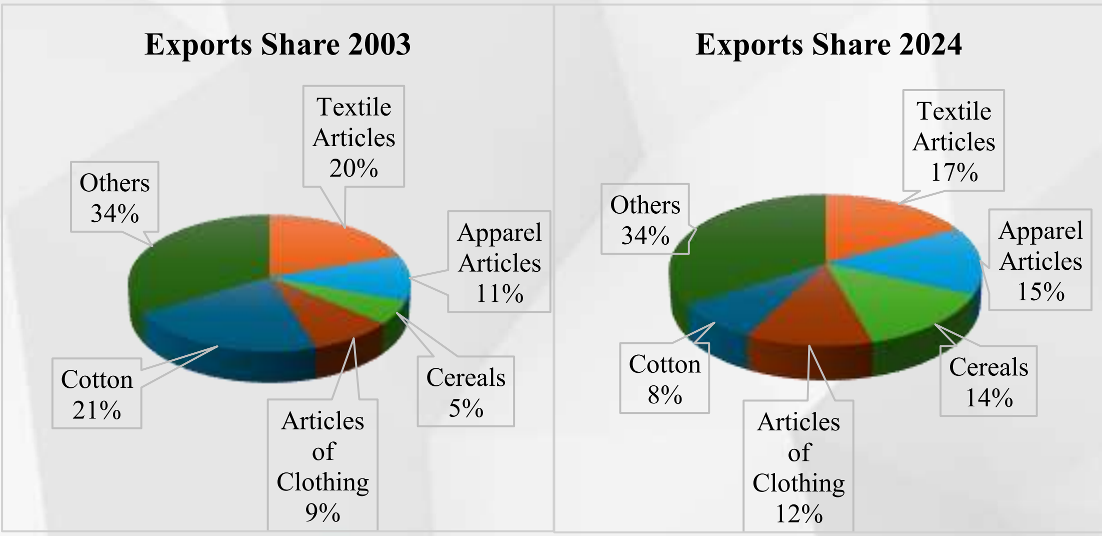
Figure 5: Import Composition Comparison 2003 VS 2024



Source: Authors' compilation using data from COMTRADE

On the export side, the data reveal that Pakistan remains locked into a narrow set of low-value sectors. Textile-related categories consistently account for more than 40% of exports, showing little movement up the value chain. Cotton's decline from 21% to 8% stems not from diversification but from domestic shortages that have weakened the textile ecosystem. Meanwhile, cereals have risen to 14%, but this reflects expansion in low-value products rather than export sophistication. The near-constant 34% share of "other" exports underscores the absence of new export sectors emerging over the last twenty years.

Figure 6: Export Composition Comparison 2003 VS 2024

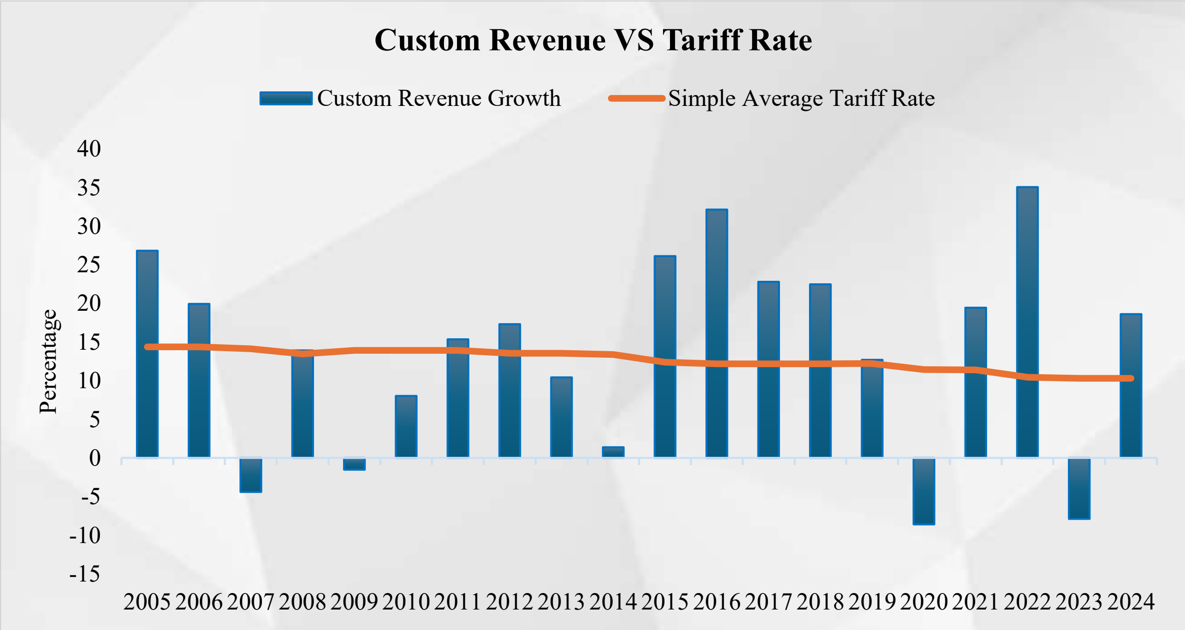


Source: Authors' compilation using data from COMTRADE

2. Imports and Custom Revenue:

In Pakistan, import tariffs have traditionally been considered an important source of revenue. Due to significant reliance of the government on indirect taxes (such as sales tax and customs) than direct tax such as income tax, customs revenue has always been a crucial fiscal tool for generating revenue. However, contrary to this common belief, our analysis of the relationship between tariff rates and customs revenue shows a weak relationship between the two. For simple average tariffs ranging between 14.4% to 10.3%, customs revenue growth ranged from -9% to 35%. (Fig.7).

Figure 7: Linkage between Custom Revenue Growth and Tariff Rate



Source: WITS & FBR

The wide variation in custom revenues show that tariffs are not the main driver of revenue performance. A high variation in custom revenues for relatively consistent tariff rates shows:

a) Changes in the volume of imports,
b) Exchange rate movements,
c) Valuation and compliance efforts, and

The wide variation in revenue growth at similar tariff rates also suggests that broader policy and economic shocks matter more than tariff adjustments.

We now present the overview of the major tariff policy reforms that have taken place since 2000 in Pakistan.

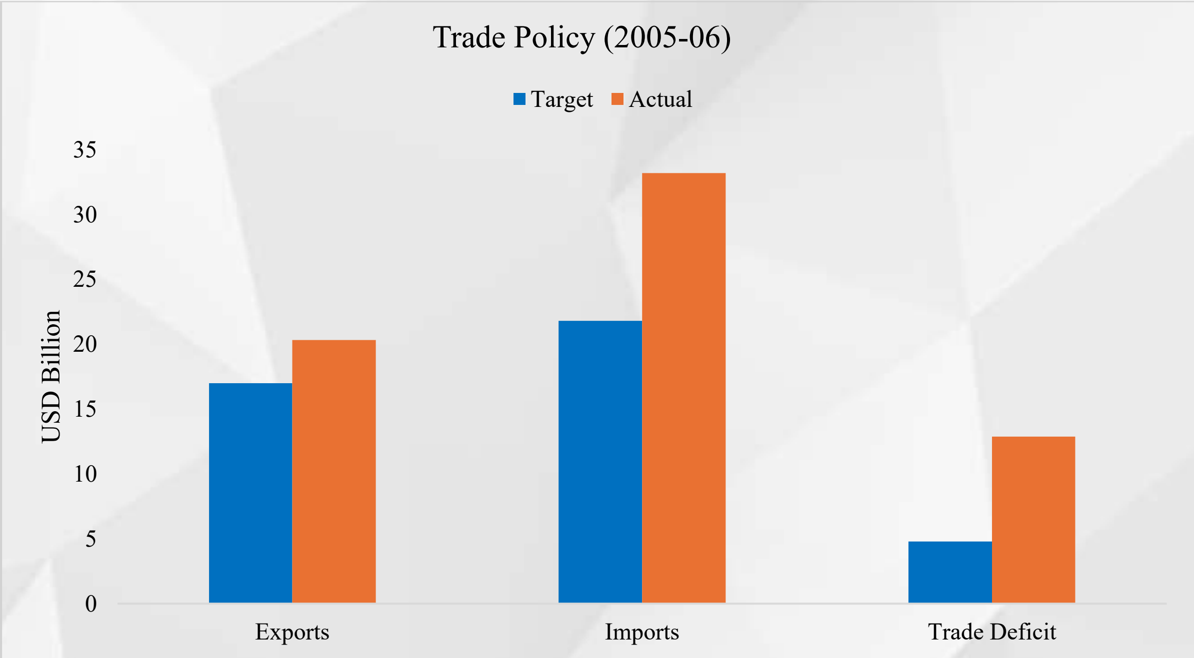
3. Tariff Policy Reforms

3.1. Tariff and Trade Policy 2005-2010

Under Pakistan's Trade Policy 2005-06, the government committed to an export-led growth strategy, targeting US$17.0 billion in exports for FY 2005-06. Imports were projected to decrease to approximately US$21.79 billion, from roughly USD 25.5 billion in 2005. The trade deficit was thus expected to be around USD 4.79 billion, down from about USD 8 billion in the previous year.

Figure 8 shows the outcomes of policy measures taken in 2005-06. Though exports were able to achieve the target and reached USD 20 Billion for a target of USD 17 Billion, however, imports surpassed the target significantly. Imports increased to USD 33 Billion for a target of roughly USD 22 Billion, thus significantly burdening the trade balance. Trade deficit widened to approximately USD 13 billion.

Figure 8: Pakistan Tariff Policy 2005-06



Source: World Bank, PBS

The tariff measures for the period 2009-2010 have mixed impact. In this period, though the addition of new slabs complicated the procedure, however, the introduction of 0% tariff slab favored import of several products with 0% tariff. The tariff lines in the 0% tariff slab reached 3% of total tariff lines in 2018.

Table 2: Tariff Policy Comparison 2002-03 and 2009-10

Items	2002-03	2009-10
Total tariff bands	4	9
Tariff bands	5% - 25%	0% - 50%

Source: (Pursella, Khan, & Gulzar, 2011)

During the period from 2005 to 2008 the weighted mean tariff was significantly brought down to 9.5%, indicating preferential or trade-weighted liberalization for traded partners and key inputs. The simple average tariff, however, did not show any significant change. Nevertheless, implementation challenges remained high, tariff dispersion, large statutory maxima for some lines, and dependence on SRO exemptions limited the uniformity of these structural reforms. The distributional effects of the reforms of 2005-2008 on industry and consumers were mixed.

3.2. Tariff Policies 2011-14

Following the 2013 IMF consultations, Pakistan moved to simplify its complex tariff system by phasing out SRO-based exemptions and reducing tariff slabs to create a more transparent and predictable regime. Between 2011 and 2014, average tariffs fell from about 18–19% to single digits for many items, reflecting continued liberalization.

However, from 2013 to 2018, rising imports and stagnant exports showed that tariff reforms improved openness but failed to enhance export growth or narrow the trade deficit. The trend of trade deficit clearly demonstrates this. Between 2011 and 2022 the trade deficit widened by roughly 3.5 times (from USD 12.5 billion to around USD 45 billion) as shown in Fig.4.

3.3. National Tariff Policy 2019-24

For the first time in 2018, Pakistan introduced its Draft National Tariff Policy to replace the ad-hoc, SRO-driven regime with rules-based, transparent tariff framework under the proposed National Tariff Board. The policy sought to simplify slabs, reduce effective protection, and expand duty-free access for industrial inputs, aligning tariffs with export-led growth goals.

While trade-weighted tariffs fell and duty-free imports rose sharply, statutory maxima and SRO dependence persisted, making implementation gradual rather than transformational. The 2018 Draft NTP marked a major institutional shift toward a predictable, rules-based tariff system. It achieved measurable tariff reductions and broader duty-free access, but full rationalization remained limited by legacy SROs, tariff peaks, and revenue pressures.

The Table 3 summarizes the detailed indicators, policy targets, and outcomes which describe the limited success of NTP 2019-24.

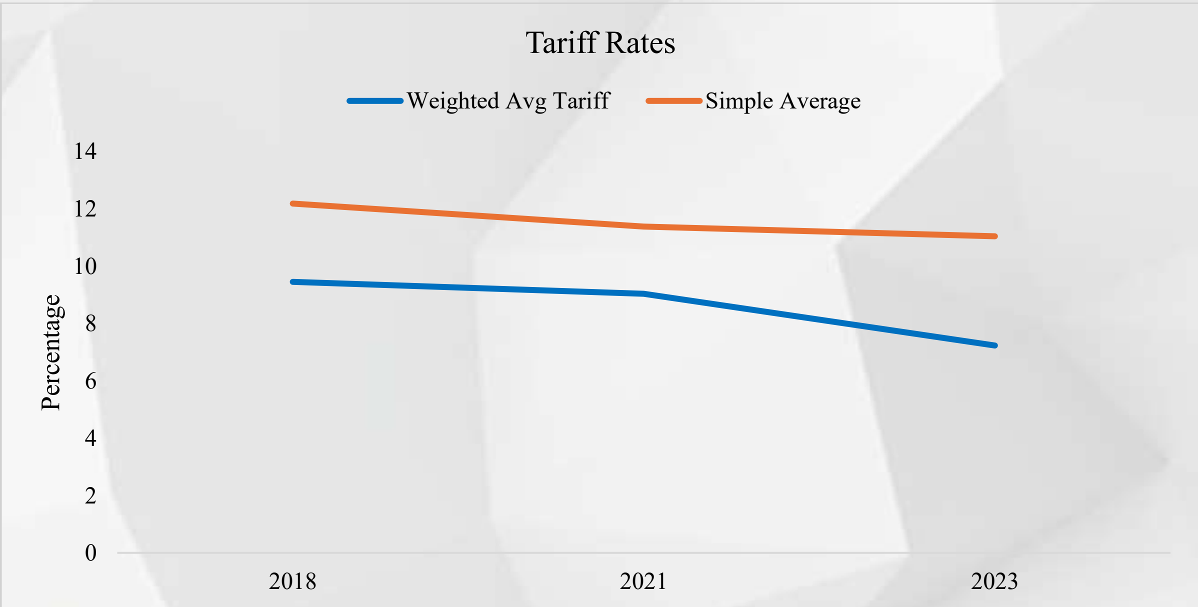
Table 3: Targets and Achievements of NTP 2019-24

Indicator	Policy Target	Outcomes
Tariff slabs	Simplify to 4–5 slabs (e.g., 0–5–10–15–20%)	Gradual rationalization; 4-slab goal partially implemented.
Trade-weighted tariff	Move toward single digits	Fell from ~9.45% (2018) → ~8.67% (2020); target broadly met.
Simple average tariff	Gradual reduction, lower dispersion	Declined modestly: 12.6% (2018) → 11.7% (2020).
Duty-free imports / lines	Expand input access for exporters	Rose sharply: 3.1% (2018) → 22.1% (2020).
Maximum statutory tariff	Reduce peaks gradually	Remained very high (≈1,500%+); little short-term change.
SRO rationalization	Shift to rule-based system under NTB	Some consolidation achieved; SRO use persisted.
Fiscal impact	Revenue-neutral liberalization	Continued reliance on Regulatory Duties (RDs/ACDs).

Duty free imports sharply increased from 3.1% in 2018 to 22.1% in 2020 as policy aimed at expanding input access for exporters. During this period, import value and volume both decreased while exports remained nearly stagnant thus reducing the trade balance.

During the period 2019-24, the overall effective applied simple average tariff rate declined to 11.04 % by 2023 and 10.3% by 2024 (Fig. 9). In the period FY21 to FY24 (which includes period of NTP 2019-24), stable trade weighted average tariffs supported export growth, increasing exports by an average of 2.6% annually. Thus, NTP 2019-24 paved the way for a slow but steady increase in exports.

Figure 9: Tariff Rates (2018-23)



Source: WITS

We now discuss the proposed tariff structural change described in the newly formulated NTP 2025-2030. Using a macro modelling framework we will project the possible impacts of the policy on key external indicators in order to derive important policy lessons from the proposed NTP tariff structure and its overall impact upon economy.

3.4. National Tariff Policy 2025- 2030

The new policy is an outward looking, export-led growth policy that aims to rationalize tariffs and simplify the complex concessionary regime to provide a conducive environment for industrial growth and exports. The NTP 2025-30 sets a target of achieving a simple average tariff of 9.70% by the terminal year 2029-30. This corresponds to a more than 7.8% decline in the first two years and a 3-5% annual decrease in subsequent years. The table below (Table.4) presents the path of average tariff reduction over the period 2025-30.

Table 4: National Tariff Plan (2025-30)

Type of Duty	Current Simple Average Tariff*	Year I	Year II	Year III	Year IV	Year V
CD (Customs Duty)	11.93	11.18	11	10.5	10	9.7
ACD (Additional Customs Duty)	3.66	1.76	1	0.5	0	0
RD (Regulatory Duty)	4.6	2.71	1	0.5	0.25	0
Overall	20.19	15.65	13	11.5	10.25	9.7

Source: National Tariff Plan (2025-30) MOP&D

4. Projected Impact of National Tariff Policy (2025-30)

We forecasted the impact of tariff reduction and rationalization, as proposed in the NTP 2025-2030, on different macro variables using a dynamic macro framework model[3]. We forecasted two scenarios over the period of policy i.e. 2026-2030.

1. ***Baseline Case*** – assuming no major policy change in the tariff structure and simple average tariff remains at the 2025 level.

2. ***Policy Scenario*** – assuming government rationalize tariffs over the next five years in accordance with National Tariff Policy 2025-30 (Table. 4).

4.1. Real GDP Growth

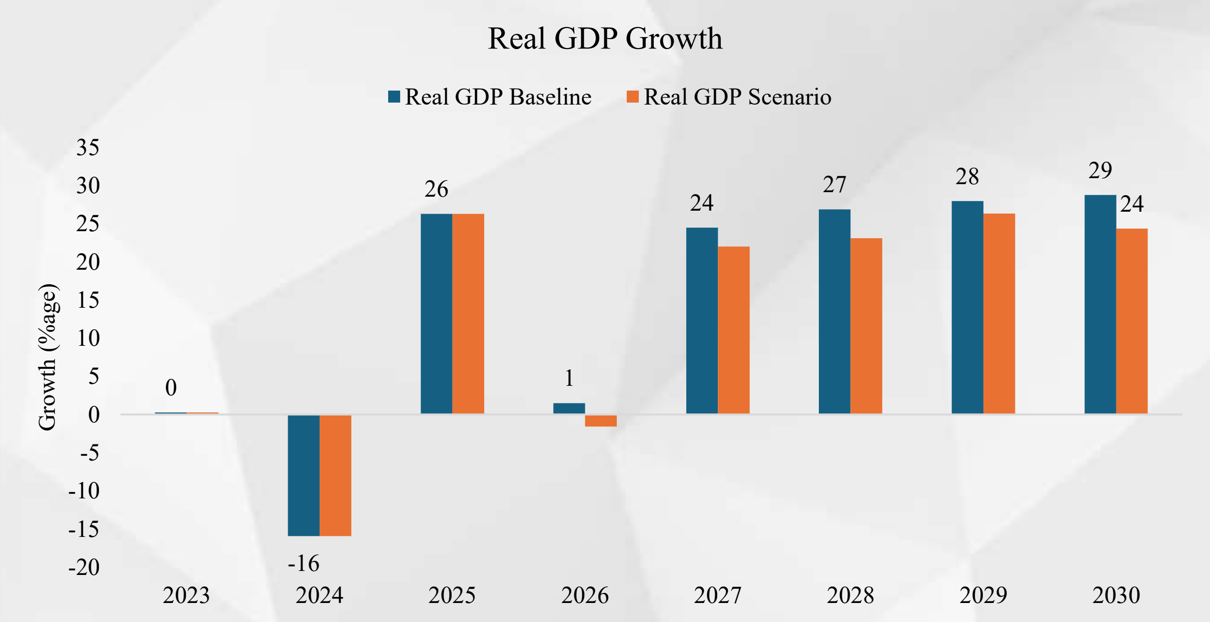
The bar graph below (Fig.10) shows the projected impact of tariff reduction on the real GDP growth for both the baseline and Scenario. The growth in real GDP is projected to be lower in the scenario analysis compared to baseline scenario owing to the probability of declining demand for domestic goods and slowdown in private investment due to increased consumption of imported goods.

[3] The description of the model is given in the appendix.

The projected slowdown in real GDP growth under the proposed tariff rationalization mainly reflects a shift in demand toward cheaper imported goods. As tariffs fall, imports become more attractive, and consumers and firms may reduce their purchases of locally produced goods. This can lower output in domestic industries, especially those that were previously protected. At the same time, local firms facing stronger foreign competition may delay or reduce investment due to lower expected profits and higher uncertainty.

In addition, higher imports without a matching increase in exports can widen the trade deficit, which reduces the contribution of net exports to GDP.

Figure 10: NTP Impact on Real GDP Growth (%age)



Source: Authors' Projections

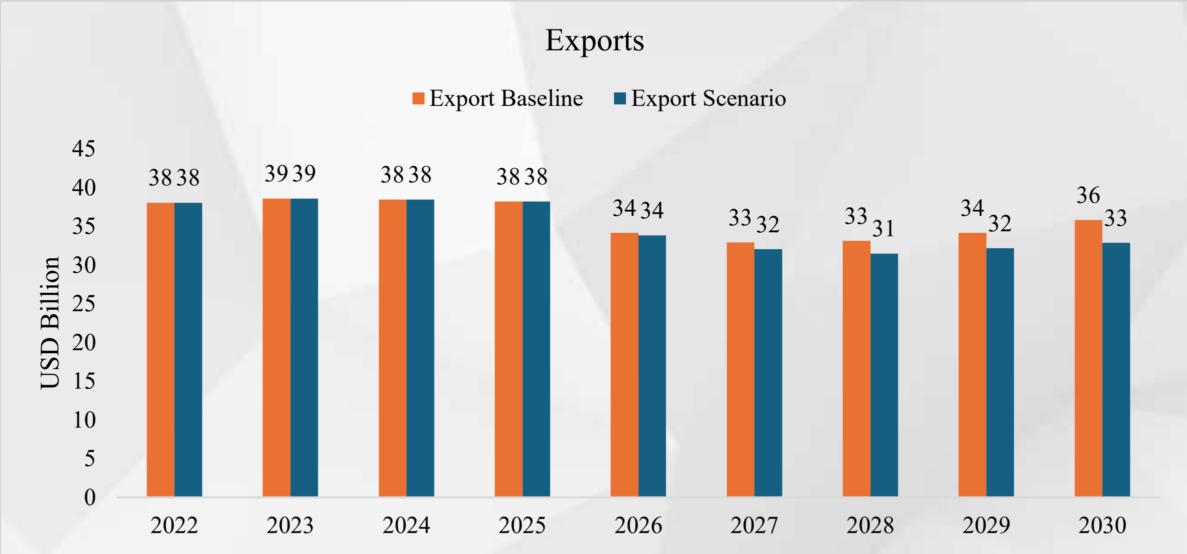
4.2. Trade Dynamics

4.2.1. Exports

The model projects a modest decline in exports under the tariff rationalization scenario compared to the baseline (Fig.11). While lower tariffs can reduce input costs, the expected gains to export competitiveness appear limited in the absence of broader structural improvements. In particular, the narrow export base and existing supply-side constraints mean that exporters may not be able to scale up production or diversify into new markets in response to the policy change.

At the same time, shift in the domestic demand away from locally produced goods, will make firms to scale back production. As a result, the anticipated increase in imports is not offset by a corresponding rise in exports, contributing to weaker overall trade performance during the adjustment period.

Figure 11: Impact of NTP on Exports of Goods & Services

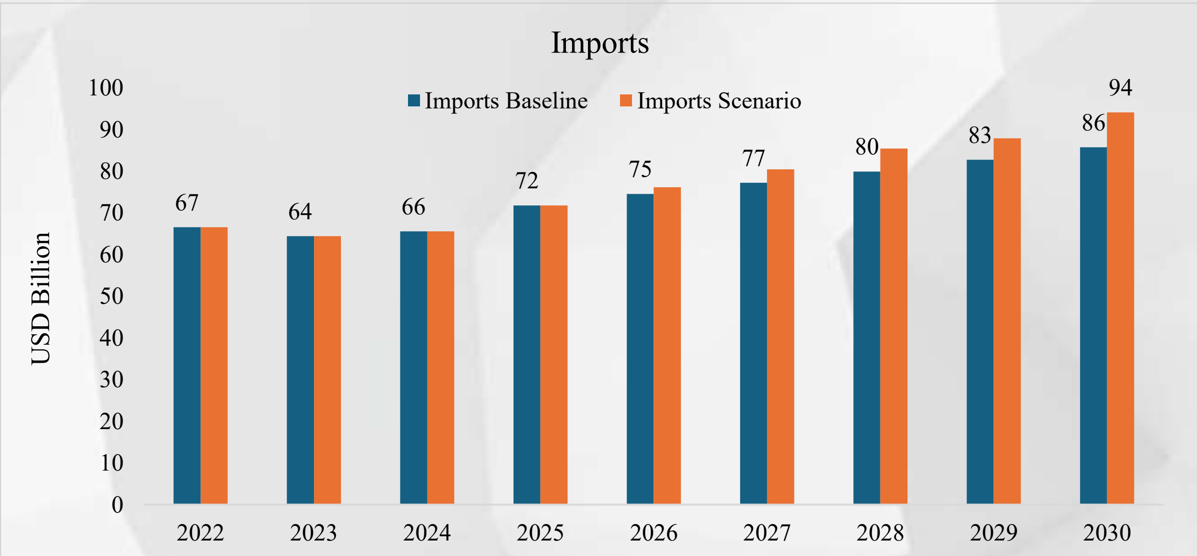


Source: Authors' Projections

4.2.2. Imports

In the NTP 2025-30 scenario, our model forecasts that imports will exceed $94-95 billion by 2030, a significant increase from the $70 billion projected for 2025. This rise of approximately 36% in imports is expected to have serious ramifications for Pakistan's exchange rate and its already strained foreign exchange reserves, as shown in Fig. 12. The projected surge in imports will place additional pressure on the country's external sector, potentially exacerbating the existing challenges faced by the foreign exchange reserves. Consequently, in line with this sharp increase in imports, our model predicts that the exchange rate will escalate to approximately 380 PKR per USD by 2030, further deepening the strain on Pakistan's economic stability.

Figure 12: Impact of NTP on Imports of Goods & Services



Source: Authors' Projections (2026-30)

4.2.3. Trade Deficit

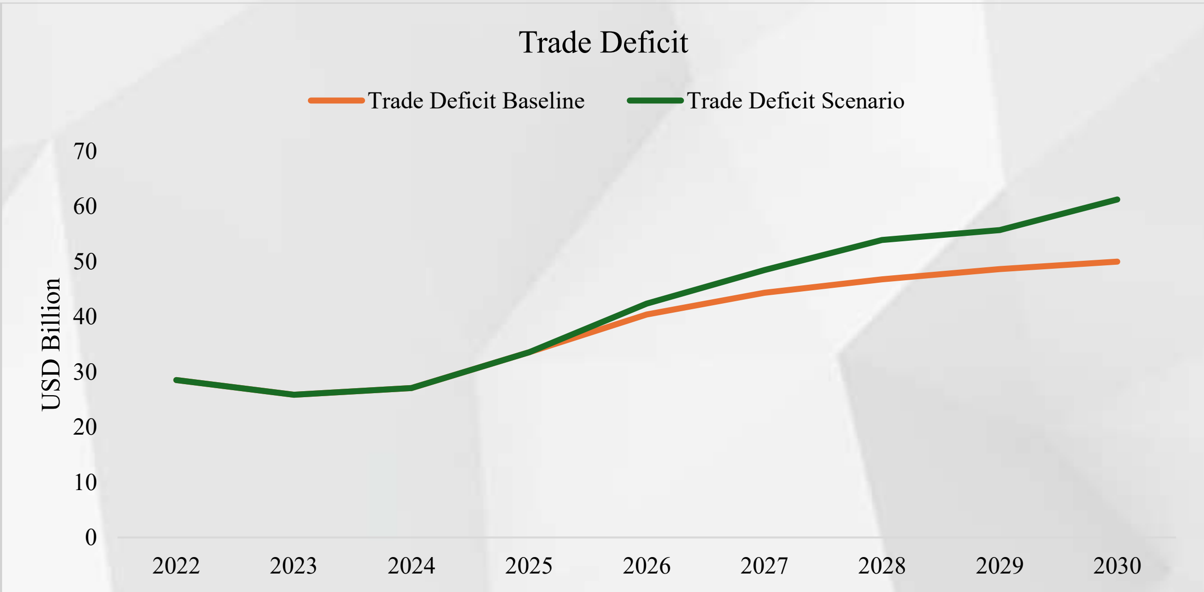
As a result of the increased imports and stagnant exports, our model projects a significant widening of the trade deficit in the NTP-scenario compared to the baseline scenario. This projected increase in the trade deficit is highlighted in the table (Table 5) and illustrated in the line graph (Fig. 14) below. The model underscores the negative impact of the current trade dynamics, where the growth in imports continues to outpace the growth of exports, leading to an unsustainable trade imbalance. This scenario signals potential long-term challenges for Pakistan's external sector and requires urgent policy interventions to address the underlying structural issues contributing to this widening gap.

Table 5: Projected Impact of NTP 2025-30 on Trade Balance (USD Billion)

Year	Trade Deficit without NTP Baseline	Trade Deficit After NTP (Scenario)
2022	-29	-29
2023	-26	-26
2024	-27	-27
2025	-34	-34
2026	-40	-42
2027	-44	-48
2028	-47	-54
2029	-49	-56
2030	-50	-61

Source: Authors' Projections

Figure 13: Trade Deficit Baseline VS Scenario



Source: Authors' Projections

5. Model Results

The table below reports projections for selected indicators for the period 2026–2030, based on the baseline and alternative scenarios discussed in Section 4.

Table 6: Forecasts of Economic Indicators under Baseline and Scenario

	Exports of G&S		Imports of G&S		Trade Balance		Real GDP Growth	
Year	Baseline	Scenario	Baseline	Scenario	Baseline	Scenario	Baseline	Scenario
2026	34.2	33.8	74.5	76.1	-40.4	-42.3	1.5%	-1.6%
2027	32.9	32.0	77.2	80.5	-44.3	-48.4	24.5%	22.0%
2028	33.1	31.5	79.9	85.4	-46.8	-53.9	26.9%	23.1%
2029	34.2	32.2	82.7	87.8	-48.6	-55.7	28.0%	26.3%
2030	35.8	32.9	85.8	94.1	-50.0	-61.2	28.8%	24.3%

Source: Authors' Projections

6. Implications of NPT 2025-30

Below we present some important implications of tariff reduction under national tariff policy scenario.

6.1. Trade Deficit Expansion:

Under tariff rationalization, the trade deficit is projected to reach USD 61 billion, compared with USD 50 billion under the baseline - an increase of over USD 11 billion.

The trade gap is expected to accelerate beyond 2027 and continue rising beyond the 2026–2030 projection period.

6.2. Risk to Economic Growth and Stability:

Persistent trade deficits are strongly correlated with **negative real GDP growth**, indicating that widening external imbalances could **undermine growth targets**.

Evidence suggests that both the **size and duration** of the deficit have a significant **negative impact on economic performance**[4].

6.3. Implications for Domestic Demand and Consumption:

Since a trade deficit also means more money is flowing out of the country than coming in for goods and services, which can lead to lower demand for domestic products and slower

[4] Deimante Blavasciunaite, Lina Garsviene, and Kristina Matuzeviciute: Trade balance effects on economic growth: evidence from European Union countries.

growth[5]. In the absence of export diversification and structural support policies, tariff reductions may weaken consumption and GDP growth.

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[5] FED Notes: Trade-offs of Higher U.S. Tariffs: GDP, Revenues, and the Trade Deficit

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Technical Appendix

Data

Data for this study were obtained from multiple credible sources, including the World Bank, International Monetary Fund, State Bank of Pakistan, and Pakistan Bureau of Statistics. The analysis is based on time-series data spanning the period from 1990 to 2025.

Methodology

The analysis is based on a macro-econometric model comprising of 11 behavioral equations and 6 identities based on the methodology proposed by Nadeem et al. (2016). A similar macro model is also followed by Hassan & Shehzad, (2011) but their approach is limited to monetary aspects. Our model is specified as a simultaneous equation system, where key macroeconomic relationships are jointly determined through a set of behavioral and identity equations estimated using the best specified set of variables. Each component equation is then tested for unit root, serial correlation, stability and forecast performance (particularly MAPE and Theill inequality) using EViews program. The model is then estimated for the forecast performance on full data from 1990 – 2025 and then calibrated to estimate baseline and scenario cases for the period 2026-2030. Overall our model well captures the interlinkages between the real, external, monetary, and fiscal sectors of the economy.

The model then generates forward projections for key macroeconomic indicators, including real GDP growth, inflation, trade flows, and investment. By comparing outcomes under the policy scenario against the baseline, the framework quantifies the marginal impact of tariff reduction on the economy. This approach allows for a structured assessment of both direct and indirect effects thereby providing a coherent basis for policy evaluation and decision-making.

Behavioral Equation

1. $\boldsymbol{Consumption} = Nominal\ GDP + Consumption(t-1) + Money\ Demand\ M2(t-1) + Real\ Interest\ Rate$
2. $\boldsymbol{Private\ Investment} = Nominal\ GDP(t-1) + Government\ Investment + Private\ Investment(t-1) + Real\ Interest\ Rate$
3. $\boldsymbol{Exports} = Trade - to - CPIN\ Ratio + US\ Nominal\ GDP + Exchange\ Rate + Exports(t-1)$
4. $\boldsymbol{Imports} = Average\ Tariff\ Rate + Exchange\ Rate + Nominal\ GDP + Imports(t-1) + Credit\ to\ Private\ Sector$
5. $\boldsymbol{Money\ Demand\ (M1)} = Overnight\ Interest\ Rate + Nominal\ GDP + M1(t-1) + CPI\ National(t-1)$
6. $\boldsymbol{Money\ Multiplier\ (M1)} = Excess\ Reserves\ to\ M1\ Ratio + Cash\ Reserve\ Requirement + Currency\ to\ Demand\ Deposit\ Ratio + Money\ Multiplier\ M1(t-1)$
7. $\boldsymbol{Overnight\ Interest\ Rate} = Reserve\ Money + interest\ rate + interest(-1)$
8. $\boldsymbol{Weighted\ Average\ Lending\ Rate} = Overnight\ Interest\ Rate + Weighted\ Average\ Lending\ Rate(t-1)$
9. $\boldsymbol{CPI\ Food} = Real\ GDP + CPI\ Food(t-1) + Wheat\ Support\ Price + Real\ GDP(t-1)$
10. $\boldsymbol{CPI\ Non - Food} = Reserve\ Money + Reserve\ Money(t-1) + Reserve\ Money(t-2) + Exchange\ Rate + Real\ GDP + Overnight\ Interest\ Rate + Brent\ Crude\ Oil\ Price$
11. $\boldsymbol{GDP\ Deflator} = Exchange\ Rate + Unit\ Value\ of\ Imports + Overnight\ Interest\ Rate + GDP\ Deflator(t-1) + Wage$

Identities

$$\boldsymbol{GDP} = Nominal\ Consumption + Trade\ Balance + Total\ Investment$$

$$\boldsymbol{Total\ Investment} = Private\ Investment + Government\ Investment$$

$$\boldsymbol{Trade\ Balance} = Export - Import$$

$$\boldsymbol{Real\ GDP} = Nominal\ GDP/GDP\ Deflator$$

$$\boldsymbol{Inflation} = a * CPI\ Food + b * CPI\ Non\ Food$$

$$\boldsymbol{M1} = mt * Reserve\ Money$$

Policy Variables

Category	Policy Variable	Use in Scenario / Shock Design
Trade Policy	Average Tariff Rate	Core policy shock (tariff rationalization path)
Monetary Policy	Policy / Overnight Interest Rate	Tightening or easing scenarios
	Cash Reserve Requirement (CRR)	Liquidity control shock
Fiscal Policy	Government Investment / Development Spending	Expansionary or contractionary fiscal stance
	Wheat Support Price	Administered price shock (important for inflation)
Credit Policy	Credit to Private Sector (policy-influenced)	Credit expansion or squeeze scenario
Exchange Rate Policy	Exchange Rate (managed/assumed path)	External competitiveness / import shock
External / Global Factors	Brent Crude Oil Price World Price of Domestic Product US Nominal GDP	Imported inflation / cost shock Terms of trade shock External demand shock

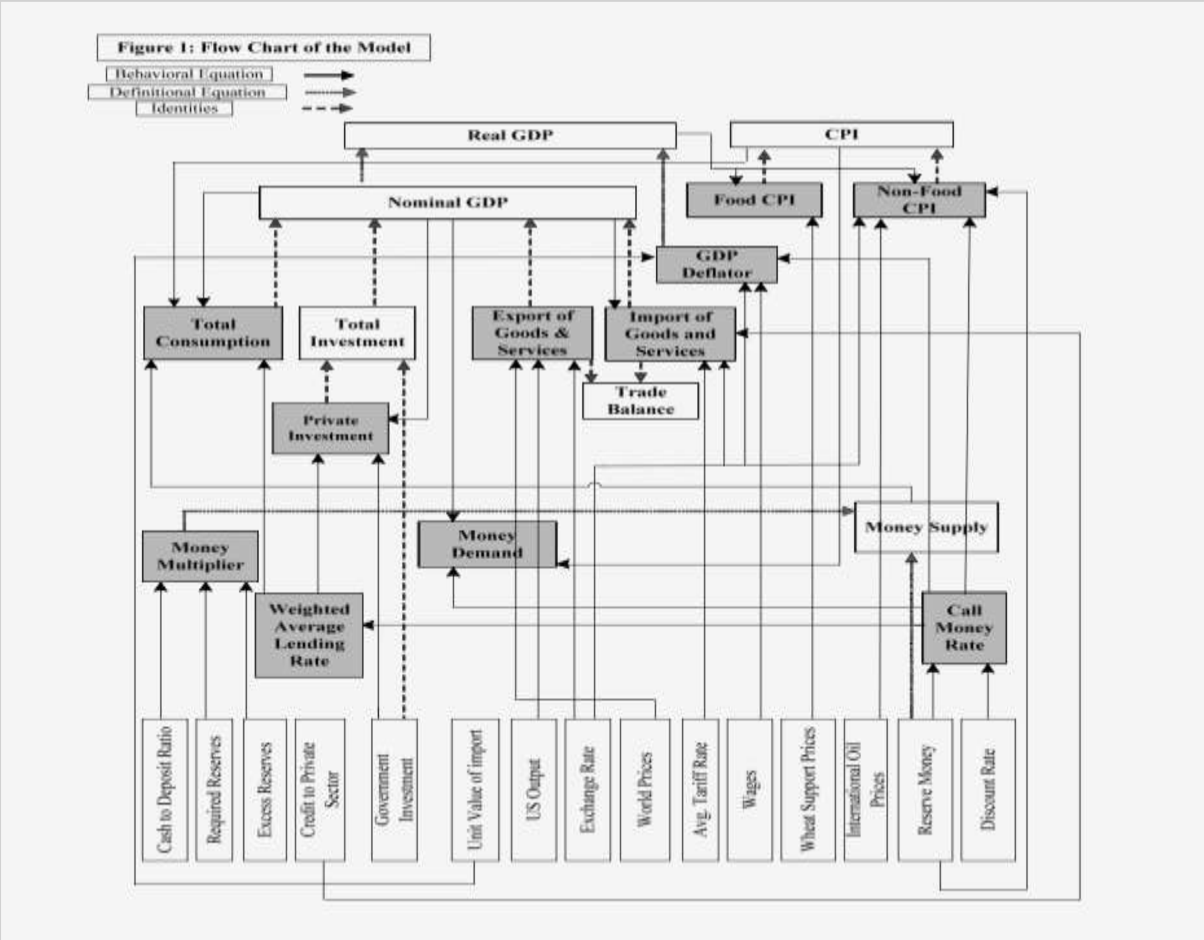
Exogenous Assumptions

These are not directly controlled but are fed into the model as external scenarios:

- Oil price shocks
- Global demand (e.g., US GDP)
- World prices / terms of trade
- Exchange rate path (if modeled exogenously)

Model Linkage Flowchart

Figure: The Flow Chart of the Macro Model Equations and Linkages



Source: Nadeem Hanif et al., SBP (2016)