

Balancing Trade and Competition in Pakistan

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High tariff rates have increased the overall cost of production in Pakistan, and the domestic prices of many products have become much higher than the international market prices. Reducing import tariffs will reduce not only the domestic prices but will also increase the export competitiveness of the country because many imported products are complementary intermediate inputs in various exporting industries. Further, it will allow the country to take advantage of the augmented technology in the new imported products, which will help add new products to its export portfolio. Hence, we eliminate the import tariffs of the 10 major import items of Pakistan such as cooking oil from Indonesia; textiles, chemicals, basic metals, machinery, and electrical equipment from China; mining, coke and petroleum from the United Arab Emirates; and mining coke and chemicals from the Kingdom of Saudi Arabia. Our simulation results show that eliminating the import tariff reduces domestic production in most of these sectors. Among them, however, the mining, textile, and chemical industries still grow moderately. On the other hand, domestic production of all other sectors increases moderately indicating that access to more economic intermediate inputs allows these industries to contribute to economic growth, and the overall GDP increases by around 0.5 Percent in the country. The overall trade balance of the country improves by around US\$ 338.14 million where exports of electrical equipment, mining, and machinery sectors increase by 13.5 Percent, 12.5 Percent, and 10.06 Percent, respectively.

JEL Classification: C67, C68, F1, L5

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1. INTRODUCTION

Pakistan faces a complex economic challenge characterised by dwindling foreign exchange reserves, a widening trade deficit, and protectionist policies aimed at shielding domestic industries. While protectionist measures like import bans and high tariffs are often implemented to support domestic industries, this paper demonstrates that such policies may be counterproductive to economic growth and competitiveness. As Najib (2022) documents, import bans often prove ineffective, leading to increased smuggling and reduced customs revenue. Similarly, trade restrictions through import tariffs can have unintended negative consequences. Shapiro (2021) illustrates how these restrictions inflate domestic prices, ultimately undermining export competitiveness and exacerbating trade balance issues.

This study is fundamentally grounded in the theory of the effective rate of protection (ERP), pioneered by Johnson (1965) and Balassa (1965). The ERP theory provides a crucial framework for understanding how tariff structures affect the entire production process, not just final goods. As Johnson (1965) demonstrates, the effective rate of protection measures the percentage increase in value added per unit in an economic activity that is made possible by the tariff structure relative to the situation in free trade. Balassa (1965) further elaborates that when import tariffs are imposed on intermediate inputs, they adversely affect domestic industries.

This theoretical framework is particularly relevant to Pakistan's current situation, where import tariffs are heavily imposed on raw materials and intermediate inputs for domestic industries. The ERP theory suggests that such a tariff structure is

counterproductive: while nominal tariffs might appear to protect domestic industries, the effective rate of protection can be negative when input tariffs are high relative to output tariffs. This creates what Johnson terms a “negative value-added at world prices,” effectively reducing the international competitiveness of domestic industries rather than enhancing it.

Building on the ERP theoretical framework, this study addresses a critical gap in the literature regarding the impact of trade liberalisation on Pakistan’s economic performance. While previous studies have examined various aspects of Pakistan’s trade policy, few have provided a comprehensive analysis of how reduced import tariffs could affect both sector-specific outcomes and broader economic indicators. The primary objective of this research is to quantify the economic impacts of trade liberalisation through targeted reduction of import tariffs on key sectors. Specifically, this study aims to:

1. Evaluate the sector-specific effects of import tariff elimination on domestic production, prices, and trade flows.
2. Assess the implications for government revenue and overall economic welfare.
3. Analyse the redistribution of factors of production across sectors.
4. Develop policy recommendations for a phased approach to trade liberalisation.

The problem of stagnant exports is particularly acute in Pakistan’s case, with the country heavily dependent on textiles and a narrow range of export markets. This concentration mirrors Chile’s historical dependence on copper exports, as documented by Lebdioui (2019). However, Chile’s successful diversification through trade liberalisation (1973-1990) provides valuable lessons for Pakistan’s current situation.

Drawing from the ERP theory, our analysis shows that Pakistan’s current tariff structure, which heavily taxes intermediate inputs, creates a cascade of inefficiencies throughout the production chain. As Balassa’s work suggests, this not only increases production costs but also distorts resource allocation, leading to reduced international competitiveness. This paper demonstrates how reforming this structure through targeted liberalisation can enhance both productive efficiency and export competitiveness.¹

Our analysis focuses on Pakistan’s major trading partners, including China, United Arab Emirates, USA, Indonesia, and Saudi Arabia, examining ten key import categories including cooking oil, textiles, chemicals, basic metals, machinery, and electrical equipment. The study employs a multi-regional computable general equilibrium (CGE) model using the latest available data from the Global Trade Analysis Project (GTAP) version 11 database, covering 65 sectors across 151 countries/regions.

The study’s methodological contribution lies in its innovative application of a multi-regional CGE model to Pakistan’s specific context. Unlike previous research that often relies on partial equilibrium analysis or simplified general equilibrium models, this study employs a sophisticated modeling framework that captures both direct and indirect effects of trade policy changes across multiple sectors and regions. This approach allows for a more nuanced understanding of the complex interactions between trade policy, domestic production, factor markets, and overall economic performance.

The problem of stagnant exports is particularly acute in Pakistan’s case, with the country heavily dependent on textiles and a narrow range of export markets including Germany, USA, UK, and China (Zeshan, 2022c). This concentration mirrors Chile’s historical dependence on copper exports, as documented by Lebdioui (2019). However,

¹ The welfare impact of import tariffs operates through both production and consumption channels. While our analysis has focused primarily on production distortions, the consumption distortion effects in Pakistan are substantial. The combined production and consumption effects suggest that the total welfare gains from tariff elimination would be significantly larger than our initial estimates based on production effects alone.

Chile's successful diversification through trade liberalisation (1973-1990) provides valuable lessons for Pakistan's current situation.

International trade can serve as a crucial mechanism for bridging productivity gaps between nations, Van Ark, et al. (2008) find that trade enables Europe to adopt advanced technologies from the U.S. due to increased exposure to innovative goods and services. By importing high-tech products, European firms gain access to new technologies and best practices, improving their productivity over time. Ethier's (1982) seminal work demonstrates how imports can drive long-run prosperity by enhancing firm productivity through access to diverse intermediate goods. Furthermore, as Krugman (1979) argues, the imperfect substitutability of imported and domestic inputs creates productivity-enhancing synergies.

This paper's key proposition is that trade liberalisation through reduced import tariffs can provide Pakistan access to affordable intermediate goods, final products, and capital equipment. The current high import tariffs (approximately 12 percent) distort market incentives (Asif, et al. 2022), diverting resources from competitive export sectors to less efficient domestic industries. By analysing China's experience, where lower import tariffs and import promotion led to increased innovation and competitiveness (Tian & Yu, 2019), this study provides valuable insights for Pakistan's trade policy reform.

The remainder of this paper is organised as follows: Section 2 reviews mainstream literature whereas Section 3 examines the structure and sources of imports in Pakistan. Section 4 presents the modeling framework, while Section 5 details the simulation design and database. Section 6 discusses the simulation results, Section 7 provides a discussion on potential pitfalls, and finally, Section 8 concludes the study and suggests key policy implications.

2. LITERATURE REVIEW

This section reviews overall trade performance to provide a comprehensive perspective on the state of trade competitiveness in Pakistan.

(i) Structural Challenges to Trade Competitiveness

Infrastructure and Logistics

Pakistan's infrastructure deficiencies significantly hinder its trade competitiveness. Key metrics related to ports, transportation, and energy highlight these challenges.

- **Port Efficiency:** Karachi Port handles 90 percent of Pakistan's trade, have an average turnaround time is more than double compared to ports like Singapore and Hong Kong (Afzal & Zohaib, 2023). This inefficiency contributes to high logistical costs compared to competitors.
- **Road Transport:** Pakistan's road transport network is severely underdeveloped. Only 10 percent of national roads are in good condition, and 30 percent of freight movements are delayed due to poor infrastructure (Javid, 2019). This increases the cost of goods sold and reduces Pakistan's competitiveness in global markets, particularly for industries relying on timely delivery, such as automobiles and electronics.
- **Energy Shortages:** Pakistan faces an energy shortfall of 5,000-7,000 MW annually (Salik, 2023), particularly in peak summer months. Energy costs for businesses are 20-30 percent higher than in neighboring countries like India and Bangladesh, making exports less competitive, particularly for energy-intensive sectors like textiles and manufacturing.

(ii) Regulatory Environment and Trade Policy

The lack of policy consistency and bureaucratic inefficiencies further undermine trade competitiveness in Pakistan.

- **Ease of Doing Business:** Pakistan ranks 108th out of 190 countries in the World Bank's Ease of Doing Business Index.² This indicates significant inefficiencies in starting a business, dealing with construction permits, and enforcing contracts. For comparison, India ranks 63rd, while Bangladesh is 168th.
- **Customs and Tariffs:** The average time for customs clearance in Pakistan is 7-10 days, compared to 1-2 days in Singapore.³ Similarly, tariff rates on industrial goods are higher, averaging 15-20 percent, compared to 8-10 percent in regional competitors, which raises the cost of exports and limits market access.
- **Trade Policy Stability:** Pakistan's trade policies are subject to frequent changes, which create uncertainty for businesses. For example, in 2023, the Federal Board of Revenue (FBR) implemented multiple changes to tax structures affecting import duties, adding complexity for exporters and discouraging long-term planning. In contrast, India's more stable trade policies provide a more predictable business environment for international investors.

(iii) Global Market Competition

Pakistan faces fierce competition from regional economies in key export sectors, such as:

- **Textile Export Competitiveness:** Pakistan is a major player in textiles, but it is losing market share to countries such as Bangladesh and Vietnam that have made more significant advancements in textile manufacturing, particularly in value-added products (Frederick, et al. 2019).
- **Agricultural Exports:** In rice exports, Pakistan faces strong competition from India, which dominates the global market compared to Pakistan. Similarly, Thailand's processed food sector is growing at a faster pace compared to Pakistan.⁴
- **IT Export Competitiveness:** Pakistan's IT sector represents a very small portion of the global IT outsourcing market, compared to India and the Philippines. Additionally, India's IT services export revenue is 62 times larger than Pakistan's, which reflects the difference in scale and global reach between the two countries' digital economies.⁵

(iv) Strategic Opportunities for Enhancing Competitiveness

Diversification of Exports

- **Export Diversification Index (EDI):** Pakistan's low EDI score indicates a highly concentrated export base in textiles, agriculture, and raw materials. This concentration is more pronounced compared to regional peers like India and Vietnam, suggesting that diversification into higher-value products such as

² <https://invest.gov.pk/eodb>

³ <https://www.fidi.org/sites/default/files/public/2021-03/PAKISTAN%20Import%20-%20FIDI%20Customs%20Guide%202021.pdf>

⁴ <https://www.gcci.org.pk/data/Pakistan/42.pdf>

⁵ <https://economictimes.indiatimes.com/tech/technology/indias-software-exports-grow-12-2-to-193-billion-in-2022-2023-esc-report/articleshow/106870608.cms?from=mdr>,
<https://profit.pakistantoday.com.pk/2024/07/19/pakistans-it-exports-surge-by-24-to-reach-us3-2-billion-in-fy24/>

pharmaceuticals, processed foods, and engineering goods could substantially improve global competitiveness (Mahmood & Ahmed, 2017).

Regional Trade Integration

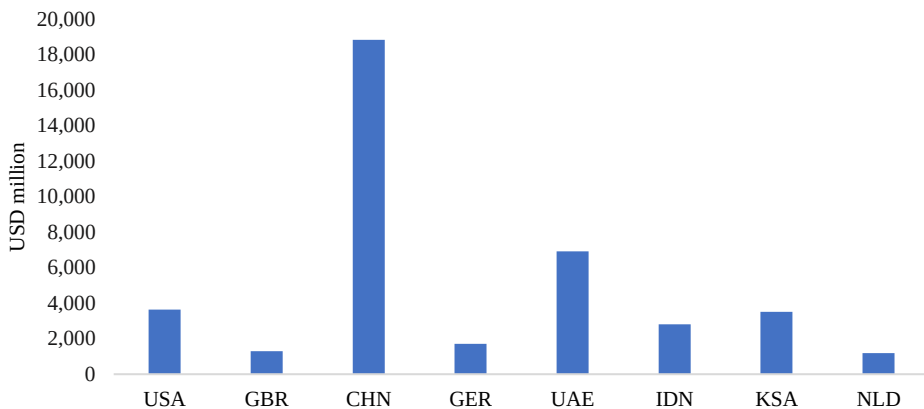
- **Regional Trade Contribution:** Pakistan's regional trade within the South Asian Association for Regional Cooperation (SAARC) region remains limited. Pakistan's share in regional exports is quite low compared to India (Bishwakarma & Hu, 2022). Enhancing regional trade agreements could increase regional trade and open access to more markets.

Pakistan's trade competitiveness is influenced by several factors, including export growth rates, sector productivity, infrastructure quality, and market dynamics (Zeshan, et al. 2024; Zeshan, 2024, 2023a, 2023b, 2021). While some sectors like textiles, agriculture, and IT show promise, Pakistan's overall trade performance is hindered by structural inefficiencies, regulatory challenges, and regional competition. By addressing these gaps and focusing on diversification, innovation, and regional trade integration, Pakistan could enhance its position in global markets and ensure long-term economic growth.

3. STRUCTURE AND SOURCES OF IMPORTS IN PAKISTAN

Based on the scale of imports, they can be categorised into three groups of source countries. Group one constitutes China and the United Arab Emirates (UAE). Pakistan relies heavily on imports from China, which are more than 47 percent (around 19 billion) of its total imports from its major trading partners, whereas total imports from UAE are around 7 billion (Fig. 1). The second group constitutes the USA, Indonesia (IDN), and the Kingdom of Saudi Arabia (KSA), and imports from these countries range from 2.8 to 3.7 billion. The third group comprises the United Kingdom, Germany, and the Netherlands (NLD), and imports from these countries range from 1.2 to 1.7 billion.

Fig. 1. Overall Imports of Pakistan



Source: Own calculations, GTAP DB 11.

Pakistan imports a wide range of products from its importing partners. In group 1, it imports electrical equipment, basic metals, machinery, chemicals, and textile products from China whereas coke refined petroleum products and mining products are the key imports from the United Arab Emirates (Table 1). In group 2, agriculture, services, and

transport products are the key imports from the USA; cooking oil is the main product from Indonesia whereas mining and chemical products are the key imports from the Kingdom of Saudi Arabia. In group 3, important import items are basic metals from the United Kingdom; machinery from Germany; and coke and refined petroleum products from the Netherlands.

Table 1

Breakdown of Imports in Pakistan (USD Million)

	USA	GBR	CHN	GER	UAE	IDN	KSA	NLD
Agri	885	10	311	6	17	153	4	9
Mining	16	2	11	3	2,101	203	1,871	3
OilFats	56	0	1	0	4	1,729	4	0
ProFood	94	34	114	25	33	32	5	52
Sugar	9	1	8	3	19	0	0	2
BevTob	9	1	4	5	18	1	0	1
Textile	36	95	2,153	20	21	123	6	2
Leather	1	2	245	4	3	2	8	0
Wood	15	1	61	27	0	0	0	0
Paper	53	14	269	35	23	117	12	5
CokePetrol	24	1	50	5	3,175	0	388	758
Chemical	199	139	2,325	301	362	105	1,154	58
Rubber	24	12	708	25	21	60	9	4
NonmetalMin	7	2	483	11	28	3	1	0
BasicMetal	437	391	3,072	116	642	11	19	40
Machinery	225	71	2,545	362	71	11	0	21
Electrical	227	87	4,567	238	201	17	0	26
Transport	486	66	1,068	123	93	200	23	29
Manufacture	38	16	557	73	31	31	0	22
Services	807	344	276	332	55	13	2	154
Total	3,648	1,289	18,829	1,714	6,919	2,812	3,506	1,184

Source: Own calculations, GTAP DB 11.

4. MODELING FRAMEWORK

The present study uses a multi-sector, multi-regional global computable general equilibrium (CGE) framework. It is a system of non-linear equations followed by constrained optimisation behaviours of different economic agents including consumers, producers, importers, exporters, savers, investors, and the government. This framework combines economic theory with non-linear programming and employs a global dataset on general equilibrium theory rooted in Corong, et al. (2017). Previous notable CGE models developed for different policy objectives in Pakistan are Ahmed (2013), Khan, et al. (2018); Zeshan (2022a, 2021, 2019a); Zeshan & Shakeel (2020), and Zeshan & Ko (2017, 2016).

The following Equations (1-2) explicitly represent how import tariffs along with other factors affect domestic market prices and how they are linked with the tax payment system in the current CGE framework:

$$\text{Domestic market price } (i,r,s) = f[tm(i,s), tms(i,r,s), pcif(i,r,s)] \quad \dots \quad \dots \quad \dots \quad (1)$$

Where,

i,r,s - represents commodities, and both r and s indicate countries;

$tm(i,s)$ - source generated change in tax on imports of i into s ;

$tms(i,r,s)$ - source specific change in tax on imports of i from r into s ;
 $pcif(i,r,s)$ - cost, insurance, freight (CIF)based world price of commodity i supplied from r to s ;

$$\text{Import tax payments}(i,s,r) = f[VIMS(i,s,r), tm(i,r), tms(i,s,r), MTAX(i,s,r), pcif(i,s,r), qxs(i,s,r)] \quad \dots \quad \dots \quad \dots \quad (2)$$

Where,

$VIMS(i,s,r)$ - imports of i from s to r valued at domestic mkt prices;
 $MTAX(i,s,r)$ - tax on imports of good i from source s in destination r ;
 $pcif(i,s,r)$ - CIF world price of commodity i supplied from s to r ;
 $qxs(i,s,r)$ - imports of commodity i from s to region r ;

5. SIMULATION DESIGN AND DATABASE

We believe that high tariff rates have increased the overall cost of production in Pakistan, and the domestic prices of many products have become much higher than the international market prices. Reducing import tariffs will reduce not only the domestic prices but will also increase the export competitiveness of the country because many imported products are complementary intermediate inputs in the exporting industries. Further, it will allow the country to take advantage of the augmented technology in the newly imported products, which will help add new products to its export portfolio. Hence, we eliminate the import tariffs of the 10 major import items of Pakistan such as cooking oil from Indonesia; textiles, chemicals, basic metals, machinery, and electrical equipment from China; mining, coke, and petroleum from the United Arab Emirates; and mining and chemicals from Kingdom of Saudi Arabia (see Table 1).

This analysis uses a multi-regional social accounting matrix including the most recent Pakistan input-output table in the Global Trade Analysis Framework (GTAP) database version 11 (Zeshan, 2022a).⁶ This database comprises 65 sectors and 151 countries/regions. For the sake of convenience, the 65 sectors are aggregated into 20 sectors, and the major trading partners of Pakistan are separated from the 151 countries such as the United States (USA), United Kingdom (GBR), China (CHN), Germany (GER), United Arab Emirates (UAE), Indonesia (IDN), Kingdom of Saudi Arabia (KSA), and Netherlands (NLS). A complete sectorial aggregation scheme is provided in the Appendix. The simulation results of the global CGE modeling framework are discussed in the next section.

6. SIMULATION RESULTS.

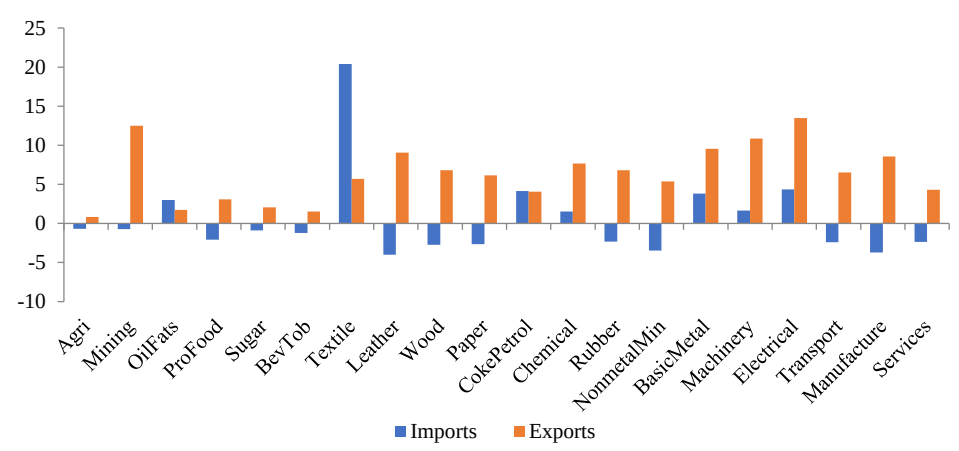
The simulation results show that imports have increased in almost all the sectors where import tariff rates are eliminated. It increases the most in the textile sector by around 20.4 percent whereas it grows from around 4.3 percent to 1.6 percent in all other sectors where tariffs are eliminated (Fig. 2). However, imports decline in all other sectors where tariff rates are not changed. On the other hand, exports of all the sectors increased where the electrical equipment, mining, and machinery sectors are the fastest growing industries and their exports increased by 13.5 percent, 12.5 percent, and 10.06 percent, respectively.

It is interesting to note that the growth rates of exports are higher than imports in most of the sectors where import tariff rates are eliminated such as electrical equipment, machinery, basic metals, chemicals, and mining. The textile sector is the backbone of Pakistan's exports, and the growth in its imports is much larger than its exports. There are

⁶ A history of the Pakistan input-output tables can be traced in Zeshan & Nasir (2019).

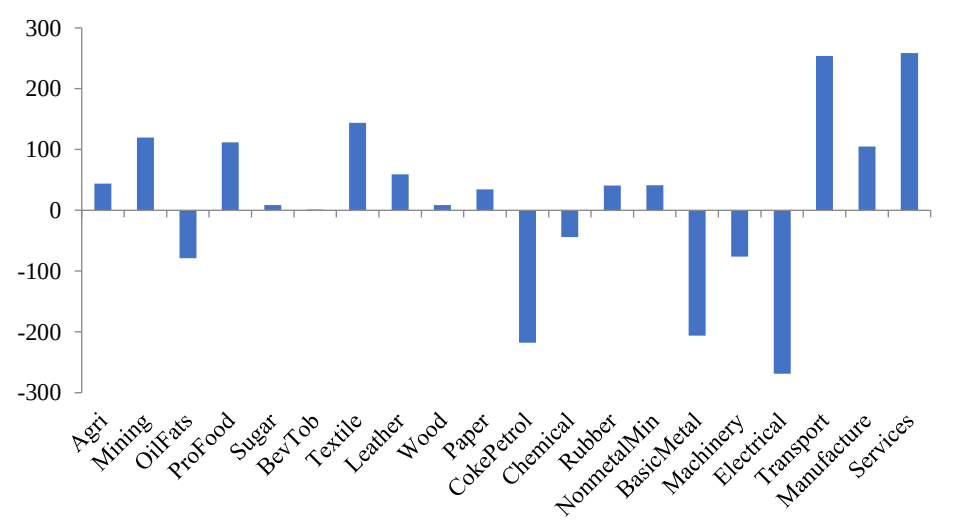
two important points to consider here. First, its value-added has reduced over time, and the industry needs a major overhaul to increase its productivity (Zeshan, 2022c). We believe new technology augmented intermediate inputs through reduced tariff rates provide a revival of value-addition in this industry. Second, the change in the trade balance in the textile sector is still positive (increases by USD 143.7 million, Fig. 3). The overall trade balance of the country increases by around 338.14 million, which indicates that the advantages of reducing trade barriers are far more than their disadvantages.

Fig. 2. Overall Trade Performance in Pakistan (% Change)



Source: Own calculations.

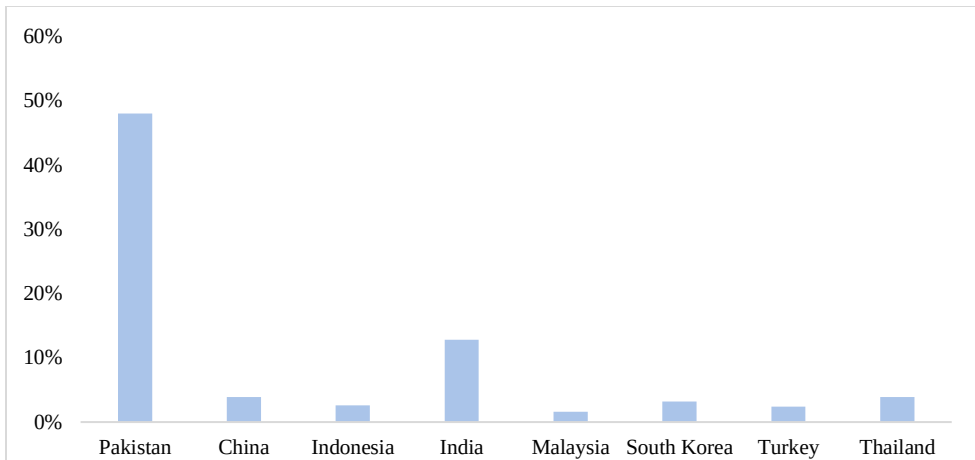
Fig. 3. Trade balance in Pakistan (Change in USD Million)



Source: Own calculations

Generally, the government is reluctant to reduce the import tariffs because it believes that the lower revenues from the import tariffs will enlarge its fiscal deficit. The Strategic Trade Policy Framework (2019) states that import tariffs contribute around 50 percent to the total tax revenues in Pakistan (see Fig. 4). However, the simulation results show that reducing trade barriers (import tariff) expands the trade activity in Pakistan, adding an additional 101 million to the overall tax revenues.

Fig. 4. Share of Tariffs in Tax Revenues (%)



Strategic Trade Policy Framework (2019)

Our simulation results examine the impact of eliminating import tariffs across key industrial sectors: mining, coke and petroleum, cooking oil, textiles, chemicals, basic metals, machinery, and electrical equipment. This liberalisation fundamentally alters the price dynamics between domestic and imported products, leading to significant shifts in consumption patterns. The results reveal a clear substitution effect across sectors, with domestic demand reallocating toward more competitively priced imports. The most pronounced shift occurs in the cooking oil sector, where household demand for domestic products declines by 15.5 percent, accompanied by a parallel reduction in government consumption of 13.6 percent. This substantial decrease likely reflects the sector's high initial protection rates and the availability of cost-competitive imports from major producers like Indonesia.

Similarly, significant reductions in domestic demand are observed in the basic metals and electrical equipment sectors. These sectors, characterised by high input costs under the previous tariff regime, experience demand shifts as consumers gain access to more affordable imported alternatives. This pattern aligns with the theory of the effective rate of protection, as the removal of input tariffs makes imported finished products more competitive relative to domestically produced goods.

The textile sector presents a particularly interesting case, showing the highest increase in import demand among all liberalised sectors. This surge in textile imports, despite Pakistan's traditional strength in textile manufacturing, suggests that domestic producers may have been constrained by high input costs under the previous tariff regime. The coke and petroleum sector also experience a notable increase in import demand, reflecting the improved access to international supply chains. These demand shifts

underscore the complex interplay between tariff reduction, price competitiveness, and consumer behavior in an increasingly integrated market environment (Table 2).

Table 2

Change in Demand for Domestic and Imported Products (% Change)

	HHD-D	HHD-M	GOVD-D	GOVD-M
Agri	-0.1	-0.7	-1.0	-1.6
Mining	0.0	0.2	0.0	0.2
OilFats	-15.5	2.8	-13.6	4.7
ProFood	0.1	-2.2	0.0	-2.2
Sugar	0.1	-1.3	0.1	-1.3
BevTob	0.1	-1.3	0.1	-1.4
Textile	-2.4	21.7	-2.1	22.0
Leather	1.0	-4.4	2.9	-2.5
Wood	1.2	-3.4	1.8	-2.8
Paper	0.8	-3.2	0.1	-3.9
CokePetrol	-3.1	4.2	0.1	7.4
Chemical	-0.3	1.1	-0.6	0.7
Rubber	1.8	-2.8	2.1	-2.4
NonmetalMin	0.6	-3.8	0.8	-3.6
BasicMetal	-4.6	3.2	-4.8	3.1
Machinery	-2.7	1.0	-2.0	1.8
Electrical	-9.6	2.3	-7.5	4.3
Transport	0.3	-3.6	0.6	-3.3
Manufacture	0.8	-4.4	2.1	-3.1
Services	0.3	-2.6	0.3	-2.6

Source: Own calculations.

Previously, in the presence of high import tariff rates, firms in Pakistan had to use expensive domestic inputs to run their production operations. However, now the firms have access to cheaper imports globally after the elimination of import tariffs. This reduces the firm demand for domestic products where the import tariffs are removed, and the firms increase their demand for imported intermediate inputs (Table 3 - Table 4). The average demand for domestic cooking oil in domestic firms is reduced the most by more than 10 percent followed by electrical equipment and basic metals where the demand for domestic products is reduced by 8.4 percent and 5.7 percent, respectively. On the other hand, the average demand for imported textile products in domestic firms increases the most by more than 20.8 percent, followed by cooking oil and electrical equipment.

Table 3
Demand for Domestic Products in the Domestic Industry (% Change).

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 Agri	0.4	0.4	-11.6	0.4	1.4	0.4	0.7	3.4	2.2	1.6	-2.5	0.7	2.4	1.1	-2.2	-1.5	-5.8	0.9	2.3	0.6
2 Mining	0.4	0.3	-12.2	0.2	1.2	0.1	0.6	3.3	1.9	1.4	-2.7	0.5	2.2	0.9	-2.5	-1.7	-6.0	0.7	2.2	0.4
3 OilFats	-17.2	-8.3	-25.0	-10.9	-15.2	-4.9	-7.0	-12.4	-6.3	-7.2	-20.7	-7.9	-14.8	-6.8	-9.8	-8.0	-12.9	-6.3	-4.8	-8.5
4 ProFood	0.6	0.4	-11.9	0.4	2.5	0.4	0.6	3.3	2.2	1.6	-2.1	0.7	2.5	1.1	-2.4	-1.5	-5.8	0.8	2.3	0.6
5 Sugar	1.2	0.6	-11.7	0.8	1.4	0.4	0.8	4.4	2.3	1.7	-2.0	0.8	2.4	1.2	-2.3	-1.4	-5.7	1.0	2.4	0.8
6 BevTob	0.4	0.4	-11.9	0.4	1.4	0.4	0.6	3.3	2.2	1.6	-2.5	0.7	2.5	1.1	-2.4	-1.5	-5.8	0.8	2.3	0.6
7 Textile	-3.1	-2.4	-15.2	-2.5	-2.5	-2.3	-4.8	-2.5	-0.4	-1.0	-5.0	-1.8	-0.6	-1.4	-4.9	-3.5	-7.6	-1.6	-0.7	-2.1
8 Leather	0.9	4.3	-10.1	1.3	4.2	3.5	3.1	4.1	2.6	2.0	-1.8	2.7	4.6	1.5	-2.0	-1.1	-5.5	1.3	5.4	1.3
9 Wood	2.9	4.5	-11.0	1.3	2.4	1.3	1.5	4.8	3.1	2.4	-1.9	1.5	3.2	2.0	-0.3	-0.2	-4.4	4.1	3.4	1.6
10 Paper	2.9	1.2	-9.5	2.7	3.0	2.7	1.4	6.1	2.8	2.3	-0.5	1.3	4.5	1.8	-0.7	0.5	-4.7	1.5	3.0	1.4
11 CokePetrol	-4.6	-3.7	-16.2	-3.4	-3.6	-3.4	-4.8	-0.3	-1.6	-2.1	-6.5	-3.1	-1.2	-2.7	-7.5	-4.5	-9.4	-2.9	-1.3	-3.1
12 Chemical	-0.2	-0.6	-13.1	-0.6	0.6	-0.5	-0.2	2.7	1.5	0.8	-3.1	0.0	1.7	0.5	-2.9	-1.9	-6.4	0.3	1.8	0.1
13 Rubber	3.1	3.2	-9.6	2.3	3.1	2.0	2.8	5.0	3.5	3.1	1.3	2.3	3.8	2.9	-1.0	0.0	-4.4	3.7	4.1	2.3
14 NonmetalMin	0.9	0.9	-11.4	0.9	1.9	0.8	1.0	3.7	2.6	2.0	0.9	1.2	2.9	1.6	-2.0	-1.2	-5.3	1.3	2.7	1.0
15 BasicMetal	-6.6	-5.5	-17.7	-5.0	-4.1	-4.9	-4.0	-3.7	-3.1	-4.8	-8.8	-4.1	-3.5	-4.1	-6.8	-5.6	-10.2	-4.1	-3.3	-4.4
16 Machinery	-3.3	-3.3	-15.1	-2.7	-1.9	-2.4	-2.7	-0.4	-1.5	-1.9	-6.0	-1.9	-0.2	-1.7	-4.9	-4.3	-8.6	-2.3	-1.2	-2.2
17 Electrical	-9.7	-11.3	-20.5	-7.4	-7.6	-6.6	-4.8	-3.3	-8.6	-9.0	-14.1	-5.6	-4.0	-4.6	-8.6	-7.7	-13.4	-6.0	-7.7	-7.6
18 Transport	0.9	0.5	-11.6	0.7	1.9	0.6	1.3	3.3	2.4	1.6	-2.6	0.8	2.6	1.2	-2.0	-0.2	-4.5	2.0	2.3	0.8
19 Manufacture	1.7	0.9	-11.2	1.0	2.6	1.2	2.2	5.4	3.0	2.4	-1.5	1.2	2.9	1.7	-1.8	-1.1	-5.1	1.7	2.9	1.2
20 Services	0.4	0.5	-11.9	0.4	1.4	0.4	0.6	3.5	2.1	1.6	-2.5	0.7	2.5	1.1	-2.4	-1.5	-5.8	0.8	2.3	0.7

Source: Own calculations.

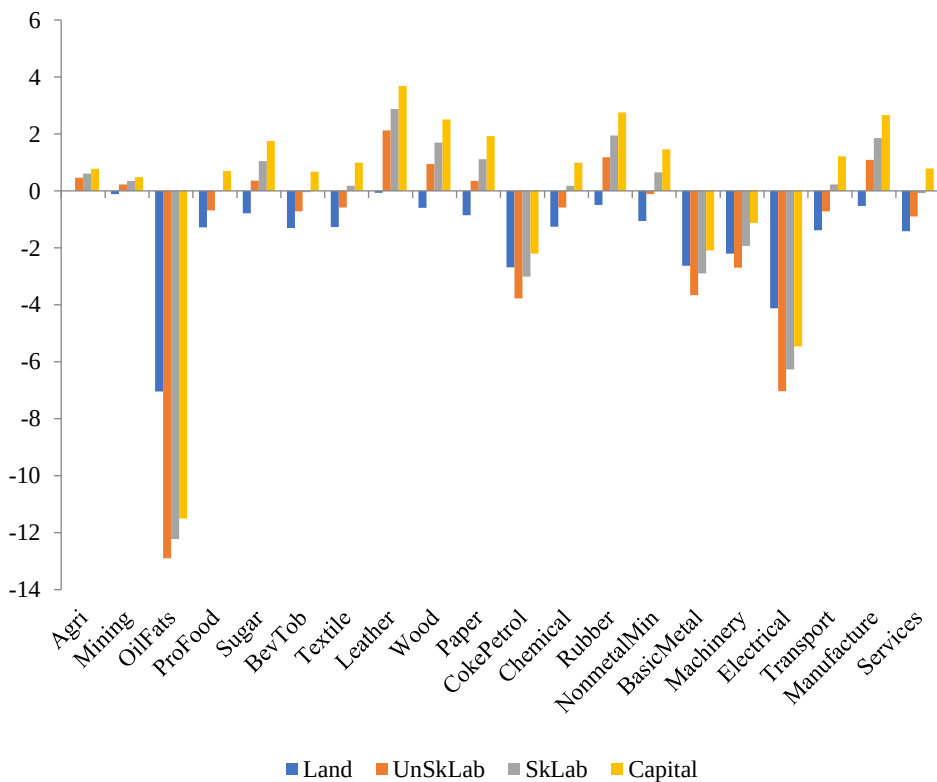
Table 4
Demand for Imported Products in the Domestic Industry (% change).

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 Agri	-0.2	-0.2	-12.3	-0.2	0.8	-0.2	0.0	2.7	1.6	1.0	-3.1	0.0	1.8	0.5	-2.8	-2.1	-6.4	0.2	1.7	-0.1
2 Mining	0.6	0.5	-11.9	0.4	1.4	0.4	0.8	3.5	2.1	1.6	-2.5	0.7	2.4	1.2	-2.3	-1.5	-5.8	0.9	2.4	0.6
3 OilFats	1.1	9.9	-6.7	7.3	3.1	13.3	11.2	5.8	11.9	11.0	-2.5	10.3	3.4	11.4	8.4	10.3	5.3	11.9	13.4	9.8
4 ProFood	-1.6	-1.8	-14.1	-1.8	0.3	-1.8	-1.6	1.1	0.0	-0.6	-4.3	-1.6	0.3	-1.1	-4.6	-3.7	-8.0	-1.4	0.1	-1.6
5 Sugar	-0.2	-0.8	-13.1	-0.7	0.0	-1.1	-0.6	3.0	0.9	0.3	-3.4	-0.6	1.0	-0.2	-3.7	-2.8	-7.1	-0.5	1.0	-0.7
6 BevTob	-1.0	-1.1	-13.4	-1.1	0.0	-1.1	-0.8	1.9	0.7	0.1	-4.0	-0.8	1.0	-0.3	-3.9	-2.9	-7.3	-0.6	0.8	-0.9
7 Textile	20.9	21.7	8.9	21.6	21.6	21.8	19.2	21.5	23.6	23.0	19.1	22.3	23.5	22.7	19.2	20.5	16.4	22.5	23.3	22.0
8 Leather	-4.5	-1.1	-15.5	-4.2	-1.2	-1.9	-2.3	-1.3	-2.9	-3.5	-7.2	-2.7	-0.8	-3.9	-7.5	-6.5	-10.9	-4.1	0.0	-4.1
9 Wood	-1.7	-0.1	-15.6	-3.3	-2.1	-3.3	-3.1	0.2	-1.5	-2.2	-6.5	-3.1	-1.3	-2.6	-4.8	-4.8	-9.0	-0.4	-1.2	-3.0
10 Paper	-1.1	-2.9	-13.5	-1.4	-1.1	-1.3	-2.7	2.1	-1.2	-1.8	-4.6	-2.7	0.4	-2.3	-4.8	-3.6	-8.8	-2.6	-1.1	-2.7
11 CokePetrol	2.7	3.6	-8.9	3.9	3.7	3.9	2.5	7.0	5.7	5.2	0.8	4.3	6.1	4.6	-0.2	2.8	-2.1	4.4	6.0	4.2
12 Chemical	1.1	0.8	-11.7	0.8	2.0	0.9	1.2	4.1	2.9	2.2	-1.8	1.4	3.1	1.9	-1.5	-0.5	-5.0	1.7	3.2	1.5
13 Rubber	-1.5	-1.3	-14.2	-2.2	-1.4	-2.5	-1.7	0.5	-1.0	-1.5	-3.2	-2.2	-0.7	-1.7	-5.5	-4.5	-8.9	-0.8	-0.4	-2.3
14 NonmetalMin	-3.5	-3.4	-15.7	-3.5	-2.4	-3.5	-3.3	-0.6	-1.8	-2.4	-3.5	-3.2	-1.4	-2.8	-6.4	-5.5	-9.7	-3.1	-1.7	-3.4
15 BasicMetal	1.3	2.3	-9.8	2.8	3.7	2.9	3.9	4.2	4.8	3.1	-1.0	3.7	4.4	3.7	1.0	2.3	-2.3	3.7	4.6	3.5
16 Machinery	0.4	0.5	-11.4	1.0	1.8	1.3	1.0	3.3	2.2	1.8	-2.3	1.8	3.5	2.0	-1.2	-0.6	-4.9	1.4	2.5	1.5
17 Electrical	2.2	0.6	-8.6	4.5	4.3	5.3	7.1	8.6	3.3	2.9	-2.3	6.2	7.8	7.2	3.3	4.2	-1.5	5.8	4.2	4.2
18 Transport	-3.0	-3.5	-15.6	-3.2	-2.0	-3.4	-2.6	-0.6	-1.5	-2.3	-6.5	-3.2	-1.3	-2.7	-5.9	-4.1	-8.4	-2.0	-1.6	-3.1
19 Manufacture	-3.5	-4.3	-16.4	-4.2	-2.6	-4.0	-3.0	0.2	-2.2	-2.8	-6.7	-4.0	-2.3	-3.5	-7.0	-6.3	-10.3	-3.5	-2.3	-4.0
20 Services	-2.5	-2.5	-14.8	-2.5	-1.5	-2.5	-2.3	0.6	-0.8	-1.4	-5.4	-2.3	-0.5	-1.8	-5.4	-4.4	-8.7	-2.1	-0.6	-2.3

Source: Own calculations.

The factors of production relocate due to the structural changes in the economy caused by the elimination of import tariffs. It has a strong impact on the coke petroleum, and cooking oil sectors; a moderate impact on the basic metals, machinery, and electrical equipment, and a very small impact on the mining and textile sectors. After eliminating the import tariffs, the demand for land reduces in most of the sectors, and it reduces the most in the cooking oil and electrical sectors by 7.0 percent, and 4.2 percent, respectively (Fig. 5). The input demand for factors of production falls because of the lower sale of domestic output, the consumers prefer imports more compared to the domestic output. Further, the demand for capital stock, skilled and unskilled labor reduces mainly in the cooking oil and electrical equipment sectors. On the other hand, the demand for various factors of production increases largely in the leather, rubber, and manufacturing sectors.

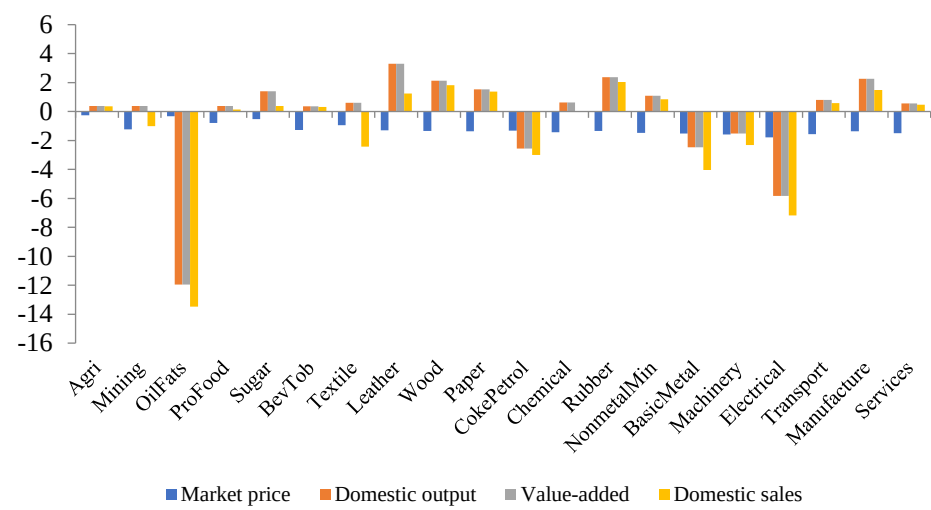
Fig. 5. Demand for Factors of Production by Sectors (% Change)



Source: Own calculations.

After eliminating the tariff protection for domestic firms, the domestic production of most of these firms reduces except for mining, textile, and chemical industries which grew slightly by 0.4 percent, 0.6 percent, and 0.6 percent, respectively, translating directly into the value-addition of these firms (Fig. 6). However, a moderate increase in the domestic production of all other industries indicates that these industries have access to better and more economic intermediate inputs in the production process. Although the domestic sales of many local industries are now subject to the elimination of tariffs, but the domestic sales of other industries rise. Overall, the gross domestic product (GDP) increases by 0.5 percent in Pakistan.

Fig. 6. Prices and Production in Pakistan (% Change)



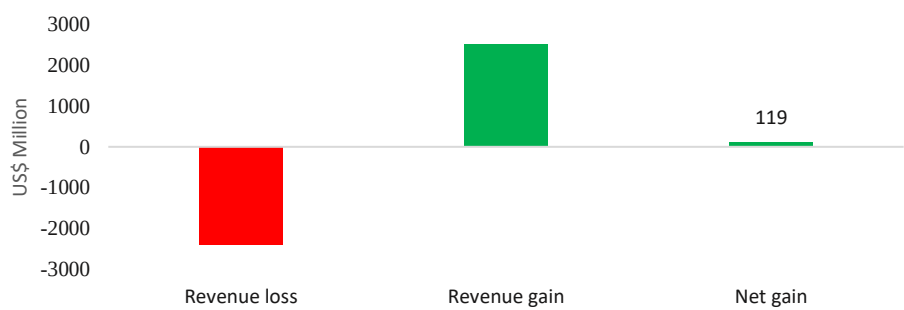
Source: Own calculations.

On the other hand, market prices of all the products reduce in Pakistan due to a sustained supply of cheaper domestic and imported products. It reduces the most in the electrical equipment industry and machinery by 1.7 percent and 1.5 percent, respectively (Fig. 6). The higher income effect of the reduced market prices and the substitution effect of the flexible import policy both provide consumers with better options with the given income level, increasing the overall welfare level by 214 million in the country.

Revenue Gains

Our simulation results show that the monetary benefits of eliminating import tariffs are higher than the revenue loss. The overall trade balance of the country improves by around US\$ 338.14 million where exports of electrical equipment, mining, and machinery sectors increase by 13.5 percent, 12.5 percent, and 10.06 percent, respectively (Fig. 2). Overall, the country gains revenue gain of around US\$ 119 million with the existing tax structure after eliminating the import tariffs (Fig. 7).

Fig. 7. Change in Tax Revenues



Source: Author's calculations.

Hence, this study suggests a phased and coordinated approach as a way forward:

- **Phase-out approach:** This is a three-phase scenario. In the first phase, reduce import tariffs on the most protected intermediate industries until their tariff rates reach the average tariff rate (around 12 percent at present), which will boost producer welfare.
- In the second phase, achieve a uniform import tariff rate of 12 percent by reducing tariffs on all other industries facing higher tariff rates, which will increase consumer welfare.
- In the third phase, uniformly eliminate tariffs on all industries. It is believed that the higher economic activity will boost revenues in the long run and there will be a net gain in tax revenues.
- **Comprehensive policy overhaul:** Simultaneously, embark on a comprehensive policy overhaul. Streamline non-tariff barriers (bureaucratic processes), enhance trade facilitation mechanisms, and fortify institutional frameworks to attract investments and amplify competitiveness.

Non-Tariff Measures (NTMs) in Pakistan: A Sector-by-Sector Analysis

This section examines the application of non-tariff measures (NTMs) across various sectors in Pakistan's trade regime. NTMs are essentially policy tools, distinct from traditional customs tariffs, that can influence international trade in goods. They can impact trade volumes, product prices, or both, and manifest in various forms, such as technical regulations, sanitary and phytosanitary measures (SPS), and other trade-related policies. Table 3 plays a crucial role in comprehending the extent of NTMs in Pakistan. It presents four key metrics:

- **NTM Coverage Ratio:** This metric indicates the percentage of products within a specific sector that are subject to at least one NTM.
- **NTM Frequency Ratio:** This reflects the average number of NTMs applied to individual products within a sector.
- **Number of Affected Products:** This provides the raw count of products impacted by NTMs within a particular sector.
- **Trade Value Affected by NTMs:** This metric reveals the total trade value (in monetary terms) associated with products restricted by NTMs in a specific sector.

Sector-Specific Analysis of NTMs

By analysing the data, we can identify sectors with significant NTM presence.

- **Animal Sector:** This sector stands out with the highest NTM coverage ratio (100 percent) and frequency ratio, implying stringent measures likely aimed at safeguarding animal health and food safety. However, the trade value impacted by NTMs in this sector remains relatively low.
- **Fuels Sector:** Here, we observe a high NTM coverage ratio (86.16 percent), but a low NTM frequency ratio (8.11 percent). This suggests that while most fuel products face NTMs, the number of measures per product is limited. Interestingly, the trade value affected by NTMs in this sector is quite substantial.
- **Other Sectors with High NTM Coverage:** Sectors like Hides and Skins (65.53 percent), Transportation (54.44 percent), and Footwear (38.64 percent) also exhibit high NTM coverage ratios, indicating a significant presence of NTMs in these areas.

- **The Vegetable Sector:** This sector presents a unique case. Despite a moderate NTM coverage ratio (34.06 percent), it boasts a high NTM frequency ratio (48.34 percent). This implies that vegetable products are subject to a multitude of NTMs, potentially impacting trade flows.
- **“All Import Products”:** Notably, Table 5 also includes data for “All Import Products.” This reveals that a significant portion (33.12 percent) of all imported products encounter NTMs, with an average of 15.24 NTMs applied per product (as indicated by the NTM frequency ratio). This data underscores the pervasive nature of NTMs across various sectors in Pakistan’s import regime.

Table 3

Pakistan Non-Tariff Measure by Sector

Sector	NTM Coverage Ratio	NTM Frequency Ratio	NTM Affected Product Count	NTM Affected Trade (US\$)
Animal	100	100	147	252,681.58
Fuels	86.16	8.11	3	10,310,686.69
Hides and Skins	65.53	57.63	34	79,065.79
Transportation	54.44	25.41	31	1,691,447.97
Footwear	38.64	31.91	15	39,795.18
Vegetable	34.06	48.34	146	1,733,983.86
All Import Products	33.12	15.24	721	16,196,818.69
Chemicals	25.75	15.29	111	1,471,589.49
Miscellaneous	15.79	15.8	55	188,928.47
Stone and Glass	14.73	17.24	30	66,410.26
Wood	10.26	6.76	15	103,602.34
Food Products	4.17	23.53	44	35,450.47
Mach and Elec	1.9	0.65	5	173,191.19
Textiles and Clothing	1.05	8.77	67	32,497.84
Plastic or Rubber	0.54	3.33	7	13,474.84
Metals	0.1	2.04	11	4,012.71

Source: WITS⁷.

7. A DISCUSSION ON POTENTIAL AND PITFALLS

This discussion aims to expand on the key points raised in the paper, exploring the potential benefits and potential drawbacks of a more open trade regime.

1. Comparative Analysis with Existing Literature

Trade Balance and Export Performance

Our finding that trade liberalisation improves the overall trade balance by US\$ 338.14 million aligns with several empirical studies. For instance, Topalova and Khandelwal (2011) found that India’s trade liberalisation in the 1990s led to productivity improvements and enhanced export competitiveness. Similarly, our results showing increased exports in electrical equipment (13.5 percent), mining (12.5 percent), and machinery (10.06 percent) sectors mirror the experience of Malaysia, where Mahadevan

⁷ <https://wits.worldbank.org/tariff/non-tariff-measures/en/country/PAK#>

(2002) documented export growth of 12-15 percent in similar sectors following tariff reductions.

However, our findings diverge from Ahmed, et al. (2013), who found initial trade balance deterioration in Pakistan's previous liberalisation attempts. This difference can be attributed to our proposed phased approach and targeted tariff elimination strategy, which allows for better industrial adaptation.

Sectoral Production Changes

The observed decline in domestic production in several sectors requires careful consideration. Similar patterns were documented by Winters, et al. (2004), who found that sectors with previously high protection experienced a significant decline in production following liberalisation. However, they also noted that these sectors showed improved productivity and competitiveness within a few years. This supports our finding of potential long-term benefits despite short-term adjustments.

Revenue Impact

Our simulation shows a net revenue gain of US\$ 119 million, contradicting concerns about revenue losses from tariff elimination. This aligns with Baunsgaard & Keen's (2010) cross-country analysis of 117 countries, which found that countries implementing phased trade liberalisation typically offset initial tariff revenue losses through increased trade volume and broader tax base expansion.

2. Technological Enhancement Analysis

Sector-specific Technological Improvements

The impact of technology transfer through imports varies significantly across sectors:

Manufacturing Sector:

- Access to advanced machinery and equipment increased productivity significantly based on similar experiences in Vietnam (Chau, et al. 2020).
- Potential automation improvement reduces production costs significantly.
- Quality control systems integration reduces defect rates greatly.

Agriculture-related Industries:

- Modern food processing technology significantly reduces waste (Kroyer, 1995).
- Improved storage and preservation techniques could extend product shelf life by 30-40 percent (Labuza & Breene, 1989).
- Enhanced quality control systems increase export market access (Jaffee & Masakure, 2005).

3. Mitigation Strategies for Affected Sectors

Short-term Support Measures

(a) Targeted Financial Assistance:

- Direct support for technology upgrading (supported by Kim, et al.'s (2016) findings in South Korea).

- Working capital support during the transition period.
- Export development funds.

(b) Skills Development Programmes:

- Worker retraining programmes.
- Technical assistance for production process optimisation.
- Management capacity building.

Medium-term Structural Adjustments

(a) Industrial Restructuring:

- Cluster development initiatives.
- Supply chain integration support.
- Research and development incentives.

(b) Market Development:

- Export market development assistance.
- Quality certification support.
- International marketing support.

Long-term Strategic Initiatives

(a) Innovation Support:

- Technology acquisition support.
- Industry-academia collaboration.
- Innovation grants and tax incentives.

(b) Institutional Strengthening:

- Regulatory framework modernisation.
- Quality infrastructure development.
- Trade facilitation improvements.

4. Sector-specific Impact Analysis and Recommendations

Textile Sector

Despite showing a 20.4 percent increase in imports, our results indicate a positive trade balance impact of US\$ 143.7 million. This aligns with Gereffi, et al. (2010) findings in Bangladesh, where increased access to imported inputs led to export quality improvements and market expansion. Recommended interventions include:

- Technology upgrading support for automation and quality control.
- Worker skills development programmes.
- Market diversification assistance.

Basic Metals and Machinery

The observed production decline in these sectors (4-6 percent) requires targeted interventions:

- Support for energy efficiency improvements.
- Technology upgrading assistance.
- Supply chain integration support.
- Export market development assistance.

Chemical Industry

The moderate growth in chemical sector exports (3.2 percent) suggests potential for further improvement through:

- Research and development support.
- Quality infrastructure development.
- Environmental compliance assistance.
- International certification support.

5. Policy Implementation Framework

Phased Approach Implementation Drawing from successful experiences in Chile and Malaysia, we recommend:

Phase 1 (Years 1-2):

- Tariff reduction on intermediate goods.
- Introduction of adjustment assistance programmes.
- Implementation of worker training programmes.

Phase 2 (Years 3-4):

- Further tariff reductions.
- Scale-up of successful support programmes.
- Introduction of innovation support measures.

Phase 3 (Years 5-6):

- Complete tariff elimination.
- Transition to sustainable competitiveness programmes.
- Focus on export market development.

Monitoring and Evaluation Framework

Implementation success should be measured through:

- Regular impact assessments.
- Sector-specific performance indicators.
- Adjustment program effectiveness evaluation.
- Cost-benefit analysis of support measures.

8. CONCLUSION

The import substitution policy was in fashion till the 1950s worldwide, but it was abandoned by many countries in the late 1960s. The supporters of the import substitution policy claim that developing countries must reduce the dependence on the imports of manufacturing commodities to support the domestic manufacturing sectors, which ultimately was supposed to decrease the dependence on foreign exchange reserves for imports. Sooner, it was realised by many developing countries that the chances of sustainable economic growth were very slim through this policy.

The inward-looking import substitution policies had high economic costs, therefore, the world opted for export-led growth policies. This shift in the global trade regime was more obvious in the late 1960s, and many countries enjoyed sustained economic prosperity. Notable examples are the four Asian Tigers such as Singapore, Hong Kong, Taiwan, and

South Korea. These countries realised the potential of unlimited international trading markets and started to link domestic prices with international prices.

Similarly, the manufacturing sector in Pakistan has been heavily protected since independence through various trade barriers. The countries initiated a more liberalised trade regime in the 1980s, but it was unable to link domestic prices with the international market over a long period. As a result, the domestic industry has large distortions in production emerging from the high import tariff rates at the moment. The distortions from the protectionist policy make factors of production shift from the competitive exporting industries to the protected and incompetent domestic industry.

On the other hand, domestic industry in Pakistan is unable to substitute for imports, which is obvious from the persistently large trade deficits. Further, the protectionist trade policy encourages smuggling, loss of customs duties, export distortions, stagnant exports, the narrow scale of export items, and no incentive towards research and development in the domestic industry.

We believe that diversification of export products and markets can be achieved through a more liberalised trade regime, by reducing tariff and non-tariff barriers. New imported inputs provide easy access to new technologies, and a suitable combination of domestic and imported inputs, making a way towards new export products. Moreover, new imported inputs allow firms to take advantage of the embodied technology in the imported capital goods as well as cheaper and better intermediate inputs.

Our simulation results show that eliminating the import tariff on the top ten importing products reduces domestic production in most of these sectors. Among them, however, mining, textile, and chemical industries still grow moderately. On the other hand, domestic production of all other sectors increases moderately where tariff rates are not changed. It indicates that access to more economic intermediate inputs allows these industries to contribute to economic prosperity in the country. Overall, the GDP increases by 0.5 percent in Pakistan if we reduce the import tariffs of the top ten importing products.

The results also show that the monetary benefits of eliminating import tariffs are higher than the revenue loss. The overall trade balance of the country improves by around US\$ 338.14 million where exports of electrical equipment, mining, and machinery sectors increase by 13.5 percent, 12.5 percent, and 10.06 percent, respectively. Overall, the country gains a revenue gain of around US\$ 119 million with the existing tax structure after eliminating the import tariffs.

APPENDIX**A 1 Aggregated Set of Countries**

1	PAK	Pakistan
2	USA	United States
3	GBR	United Kingdom
4	CHN	China
5	GER	Germany
6	UAE	United Arab Emirates
7	IDN	Indonesia
8	KSA	Kingdom of Saudi Arabia
9	NLD	Netherlands
10	ROW	Rest of the World

A 2 Aggregated Set of Sectors

1	Agri	Agriculture
2	Mining	Mining
3	ProFood	Processed food
4	OilFats	Cooking oil
5	Sugar	Sugar
6	BevTob	Beverage and tobacco
7	Textile	Textile
8	Leather	Leather
9	Wood	Wood
10	Paper	Paper
11	CokePetrol	Coke and petroleum
12	Chemical	Chemicals
13	Rubber	Rubber
14	NonmetalMin	Non-metallic minerals
15	BasicMetal	Basic metals
16	Electrical	Electrical equipment
17	Machinery	Machinery
18	Transport	Transport
19	Manufacture	Manufacturing industry
20	Services	Services

A 3 Disaggregated Set of Sountries

No.	Short Description	Long Description
1	ROW	Australia
2	ROW	New Zealand
3	ROW	Rest of Oceania
4	CHN	China
5	CHN	China, Hong Kong Special Admi
6	ROW	Japan
7	ROW	Republic of Korea
8	ROW	Mongolia

Continued –

9	ROW	Taiwan, China
10	ROW	Rest of East Asia
11	ROW	Brunei Darussalam
12	ROW	Cambodia
13	IDN	Indonesia
14	ROW	Lao People's Democratic Republ
15	ROW	Malaysia
16	ROW	Philippines
17	ROW	Singapore
18	ROW	Thailand
19	ROW	Viet Nam
20	ROW	Rest of Southeast Asia
21	ROW	Bangladesh
22	ROW	India
23	ROW	Nepal
24	PAK	Pakistan
25	ROW	Sri Lanka
26	ROW	Rest of South Asia
27	ROW	Canada
28	USA	United States of America
29	ROW	Mexico
30	ROW	Rest of North America
31	ROW	Argentina
32	ROW	Bolivia (Plurinational State o
33	ROW	Brazil
34	ROW	Chile
35	ROW	Colombia
36	ROW	Ecuador
37	ROW	Paraguay
38	ROW	Peru
39	ROW	Uruguay
40	ROW	Venezuela (Bolivarian Republic
41	ROW	Rest of South America
42	ROW	Costa Rica
43	ROW	Guatemala
44	ROW	Honduras
45	ROW	Nicaragua
46	ROW	Panama
47	ROW	El Salvador
48	ROW	Rest of Central America
49	ROW	Dominican Republic
50	ROW	Jamaica
51	ROW	Puerto Rico
52	ROW	Trinidad and Tobago
53	ROW	Caribbean
54	ROW	Austria
55	ROW	Belgium
56	ROW	Bulgaria
57	ROW	Croatia

Continued –

58	ROW	Cyprus
59	ROW	Czechia
60	ROW	Denmark
61	ROW	Estonia
62	ROW	Finland
63	ROW	France
64	GER	Germany
65	ROW	Greece
66	ROW	Hungary
67	ROW	Ireland
68	ROW	Italy
69	ROW	Latvia
70	ROW	Lithuania
71	ROW	Luxembourg
72	ROW	Malta
73	NLD	Netherlands
74	ROW	Poland
75	ROW	Portugal
76	ROW	Romania
77	ROW	Slovakia
78	ROW	Slovenia
79	ROW	Spain
80	ROW	Sweden
81	GBR	United Kingdom of Great Britan
82	ROW	Switzerland
83	ROW	Norway
84	ROW	Rest of EFTA
85	ROW	Serbia
86	ROW	Albania
87	ROW	Belarus
88	ROW	Russian Federation
89	ROW	Ukraine
90	ROW	Rest of Eastern Europe
91	ROW	Rest of Europe
92	ROW	Kazakhstan
93	ROW	Kyrgyzstan
94	ROW	Tajikistan
95	ROW	Rest of Former Soviet Union
96	ROW	Armenia
97	ROW	Azerbaijan
98	ROW	Georgia
99	ROW	Bahrain
100	ROW	Iran (Islamic Republic of)
101	ROW	Iraq
102	ROW	Israel
103	ROW	Jordan
104	ROW	Kuwait
105	ROW	Lebanon
106	ROW	Oman

Continued –

107	ROW	State of Palestine
108	ROW	Qatar
109	KSA	Saudi Arabia
110	ROW	Syrian Arab Republic
111	ROW	Turkey
112	UAE	United Arab Emirates
113	ROW	Rest of Western Asia
114	ROW	Egypt
115	ROW	Morocco
116	ROW	Tunisia
117	ROW	Rest of North Africa
118	ROW	Benin
119	ROW	Burkina Faso
120	ROW	Cameroon
121	ROW	Cote d'Ivoire
122	ROW	Ghana
123	ROW	Guinea
124	ROW	Nigeria
125	ROW	Senegal
126	ROW	Togo
127	ROW	Rest of Western Africa
128	ROW	Chad
129	ROW	Congo
130	ROW	Gabon
131	ROW	Central Africa
132	ROW	South Central Africa
133	ROW	Ethiopia
134	ROW	Kenya
135	ROW	Madagascar
136	ROW	Malawi
137	ROW	Mauritius
138	ROW	Mozambique
139	ROW	Rwanda
140	ROW	Sudan
141	ROW	United Republic of Tanzania
142	ROW	Uganda
143	ROW	Zambia
144	ROW	Zimbabwe
145	ROW	Comoros
146	ROW	Rest of Eastern Africa
147	ROW	Botswana
148	ROW	Namibia
149	ROW	South Africa
150	ROW	Rest of South African Customs
151	ROW	Rest of the World

A 4 Disaggregated Set of Sectors

No.	Short Description	Long Description
1	Agri	Paddy rice
2	Agri	Wheat
3	Agri	Cereal grains nec
4	Agri	Vegetables, fruit, nuts
5	Agri	Oil seeds
6	Agri	Sugar cane, sugar beet
7	Agri	Plant-based fibers
8	Agri	Crops nec
9	Agri	Bovine cattle, sheep and goats, horses
10	Agri	Animal products nec
11	Agri	Raw milk
12	Agri	Wool, silk-worm cocoons
13	Agri	Forestry
14	Agri	Fishing
15	Mining	Coal
16	Mining	Oil
17	Mining	Gas
18	Mining	Other Extraction (formerly omn Minerals nec)
19	ProFood	Bovine meat products
20	ProFood	Meat products nec
21	OilFats	Vegetable oils and fats
22	ProFood	Dairy products
23	ProFood	Processed rice
24	Sugar	Sugar
25	ProFood	Food products nec
26	BevTob	Beverages and tobacco products
27	Textile	Textiles
28	Textile	Wearing apparel
29	Leather	Leather products
30	Wood	Wood products
31	Paper	Paper products, publishing
32	CokePetrol	Petroleum, coal products
33	Chemical	Chemical products
34	Chemical	Basic pharmaceutical products
35	Rubber	Rubber and plastic products
36	NonmetalMin	Mineral products nec
37	BasicMetal	Ferrous metals
38	BasicMetal	Metals nec
39	BasicMetal	Metal products
40	Electrical	Computer, electronic and optical products
41	Electrical	Electrical equipment
42	Machinery	Machinery and equipment nec
43	Transport	Motor vehicles and parts
44	Transport	Transport equipment nec
45	Manufacture	Manufactures nec
46	Services	Electricity

Continued—

47	Services	Gas manufacture, distribution
48	Services	Water
49	Services	Construction
50	Services	Trade
51	Services	Accommodation, Food and service activities
52	Transport	Transport nec
53	Transport	Water transport
54	Transport	Air transport
55	Services	Warehousing and support activities
56	Services	Communication
57	Services	Financial services nec
58	Services	Insurance (formerly isr)
59	Services	Real estate activities
60	Services	Business services nec
61	Services	Recreational and other services
62	Services	Public Administration and defense
63	Services	Education
64	Services	Human health and social work activities
65	Services	Dwellings

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