PAKISTAN'S AGGREGATE AND SECTORAL TRADE COSTS ESTIMATIONS: EVALUATING TRADE POLICIES AND INSTITUTIONAL QUALITY

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by

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LIST OF ABBREVIATIONS

ADB	Asian Development Bank
AFTA	The ASEAN Free Trade Area
ARDL	Autoregressive Distributed Lag Model
BRI	Belt and Road Initiative
CD	Cultural Distance
CEPII	Centre d'études prospectives et d'informations internationales
CRI	Climate Change
CO^2	Carbon Dioxide Emissions
CU	Custom Unions
ECO	Economic Cooperation Organization
EIA	Economic Integration Agreement
EPU	Economic Policy Uncertainty
FDI	Foreign Direct Investment
FTA	Free Trade Agreement
FY	Financial Year
GARCH	Generalized Autoregressive Conditional Heteroskedastic
GDP	Gross Domestic Product
GEI	Governance Environment Index
HDFE	High-Dimensional Fixed Effects
ICT	Information Communication Technologies
IMF	International Monetary Fund
InstD	Institutional distance
NAFTA	North American Free Trade Agreement
NTMs	Non-Tariff Measures

OECD	Organization of Economic Cooperation and Development
OTRI	Overall Trade Restrictiveness Index
PCFTA	Pakistan China Free Trade Agreement
PKR	Pakistan Rupee
PMFTA	Pakistan Malaysia Free Trade Agreement
PPML	Poisson Pseudo-Maximum Likelihood
PSA	Partial Scope Agreement
PTA	Preferential Trade Agreement
PTN	Protocol on Trade Negotiations
RTA	Regional Trade Agreement
RTA-IS	Regional Trade Agreements Information System
SAFTA	South Asian Free Trade Agreement
SAPTA	South Asian Preferential Trade Arrangement
SITC	Standard International Trade Classification
SPS	Sanitary and Phytosanitary Measures
STRI	Services Trade Restrictiveness Index
TA	Trade Agreement
TBT	Technical Barriers to Trade
TRAINS	Trade Analysis Information System
TRIs	Trade Restrictiveness Index
TTRI	Tariffs Trade Restrictiveness Index
UAE	United Arab Emirates
UK	United Kingdom
UNCTAD	United Nations Conference on Trade and Development
UNSTATS	United Nations National Accounts Database
US	United States of America
Vol	Exchange Rate Volatility

WGI	Worldwide Governance Indicators
WITS	World Integrated Trade Solutions
WTO	World Trade Organization

ANGGARAN KOS PERDAGANGAN AGREGAT DAN SEKTORAL PAKISTAN: MENILAI POLISI PERDAGANGAN DAN KUALITI INSTITUSI

ABSTRAK

Tesis ini mengkaji kos perdagangan di Pakistan, dengan memberi tumpuan kepada asimetri sektor dan rakan kongsi tertentu untuk mendedahkan kesannya terhadap prestasi perdagangan Pakistan. Kajian ini juga menilai impak dasar perdagangan utama, termasuk tarif yang dikenakan, halangan bukan tarif dan perjanjian perdagangan; serta faktor institusi termasuk perubahan iklim, ketidakpastian dasar ekonomi, turun naik kadar pertukaran, jarak institusi, dan jarak budaya terhadap kos perdagangan arah merentasi sektor. Walaupun terdapat metodologi canggih dan data perdagangan yang tersedia, literatur kekurangan pandangan menyeluruh mengenai kos perdagangan arah Pakistan. Oleh itu, anggaran yang teliti adalah penting untuk menentukan sejauh mana kos-kos ini dan memahami faktor-faktor asas yang mendorong kos perdagangan ini. Tesis ini menggunakan metodologi dua langkah. Dalam langkah pertama, digunakan model perdagangan graviti generik oleh Egger et al. (2021) untuk menganggarkan kos perdagangan arah merentasi 32 sektor barang dan perkhidmatan dengan 62 rakan perdagangan. Pada langkah kedua, kos perdagangan arah ini diregresi terhadap dasar perdagangan dan faktor institusi merentasi enam model (tiga untuk barangan dan tiga untuk perkhidmatan). Analisis ini menggunakan penganggar Poisson Pseudo Maximum Likelihood dengan kesan tetap berdimensi tinggi untuk mengambil kira kesan tetap khusus pasangan, sektor, dan masa serta untuk menangani isu seperti heteroskedastik. Analisis langkah pertama menunjukkan kos perdagangan yang tinggi dan stabil di

Pakistan, dengan kos eksport melebihi kos import. Kos perdagangan adalah lebih rendah dengan rakan kongsi serantau seperti Sri Lanka dan Maldives tetapi lebih tinggi dengan rakan kongsi utama seperti UK dan AS. Secara purata, perkhidmatan menghadapi kos perdagangan tertinggi, diikuti oleh pertanian dan pembuatan. Dalam sektor barang, kos perdagangan lebih tinggi untuk tekstil dan mineral, manakala lebih rendah untuk mesin dan pembuatan lain. Dalam sektor perkhidmatan, perdagangan borong dan pengangkutan menghadapi kos yang lebih rendah, manakala hartanah dan kesihatan menanggung kos yang lebih tinggi. Secara keseluruhan, Pakistan menghadapi kos perdagangan yang konsisten tinggi, dengan variasi yang ketara di antara sektor dan rakan dagang. Anggaran peringkat kedua menunjukkan kesan yang signifikan daripada dasar perdagangan dan faktor institusi terhadap kos perdagangan. Secara khusus, tarif yang dikenakan dan halangan bukan tarif meningkatkan kos perdagangan, manakala perjanjian perdagangan, terutamanya perjanjian perdagangan bebas, mengurangkannya. Antara faktor institusi, perubahan iklim, ketidakpastian dasar ekonomi, dan jarak institusi semuanya meningkatkan kos perdagangan, manakala turun naik kadar pertukaran memberi kesan positif kepada kos import tetapi mengurangkan kos eksport. Jarak budaya, bagaimanapun, mempunyai kesan yang agak tidak signifikan. Dalam dasar perdagangan, impaknya lebih tinggi untuk perjanjian perdagangan manakala dalam faktor institusi, impaknya lebih tinggi untuk jarak institusi terhadap kos perdagangan. Kajian ini menawarkan beberapa implikasi dasar utama. Untuk mengoptimumkan aliran perdagangan, Pakistan harus secara strategik mengalihkan perdagangannya dari negara-negara berkos tinggi ke negara-negara berkos rendah, mengutamakan perdagangan serantau melalui rangka kerja seperti SAARC dan SCO, serta mengejar perjanjian perdagangan serantau yang baharu. Pembuat dasar harus menyasarkan kos eksport yang tinggi dengan rakan

kongsi utama, seperti AS dan UK, melalui rundingan perdagangan yang fokus dan peningkatan daya saing eksport. Selain itu, menurunkan kos perdagangan berkaitan iklim adalah penting, memerlukan penambahbaikan infrastruktur dan kepelbagaian ke dalam sektor yang tahan iklim. Akhirnya, pembaharuan institusi boleh mengurangkan halangan birokrasi dan mewujudkan persekitaran perdagangan yang lebih baik. Walaupun tertumpu pada Pakistan, rangka kerja ini boleh diperluaskan kepada negara-negara membangun lain yang menghadapi ketidakseimbangan perdagangan.

PAKISTAN'S AGGREGATE AND SECTORAL TRADE COSTS ESTIMATIONS: EVALUATING TRADE POLICIES AND INSTITUTIONAL QUALITY

ABSTRACT

This thesis examines trade costs in Pakistan, focusing on sectoral and partner-specific asymmetries to reveal their impact on Pakistan's trade performance. It also assesses the impact of key trade policies, including applied tariffs, non-tariff barriers and trade agreements; and institutional factors including climate change, economic policy uncertainty, exchange rate volatility, institutional distance, and cultural distance on directional trade costs across sectors. Despite advanced methodologies and available trade data, the literature lacks comprehensive insights into Pakistan's directional trade costs. Therefore, rigorous estimations are essential to determine the extent of these costs and understand the underlying factors driving these trade costs. This thesis employs a two-step methodology. In the first step, it applies the generic gravity trade model by Egger et al. (2021) to estimate directional trade costs across 32 goods and services sectors with 62 trade partners. In the second stage, these directional trade costs are regressed against trade policies and institutional factors across six models (three for goods and three for services). This analysis uses a Poisson Pseudo Maximum Likelihood estimator with high-dimensional fixed effects to account for pair-specific, sector, and time fixed effects and to address issues like heteroskedasticity. The first-stage analysis reveals high and steady trade costs in Pakistan, with export costs exceeding import costs. Trade costs are relatively lower with regional partners like Sri Lanka and Maldives but higher with major partners such as the UK and US. On average, services face the highest trade costs, followed by

agriculture and manufacturing. In the goods sector, trade costs are higher for textiles and minerals, while lower for machinery and other manufacturing. In the services sector, wholesale trade, and transport faces lower costs, whereas real estate and health incur higher costs. Overall, Pakistan faces consistently high trade costs, with significant variation across sectors and trade partners. The second-stage estimation reveals a significant impact of trade policies and institutional factors on trade costs. Specifically, applied tariffs and non-tariff barriers increase trade costs, while trade agreements, particularly free trade agreements, reduce them. Among institutional factors, climate change, economic policy uncertainty, and institutional distance all raise trade costs, whereas exchange rate volatility positively impacts import costs but reduces export costs. Cultural distance, however, has a largely insignificant effect. In trade policies the impacts are higher for trade agreements while in institutional factors impacts are higher for institutional distance on trade costs. The study offers key policy implications. To optimize trade flows, Pakistan should strategically redirect its trade from high-cost to low-cost countries, prioritize regional trade through frameworks like SAARC and SCO, as well as pursue new regional trade agreements. Policymakers should target high export costs with major partners, such as the US and UK, through focused trade negotiations and enhanced export competitiveness. Moreover, lowering climate-related trade costs is essential, requiring infrastructure improvements and diversification into climate-resilient sectors. Finally, institutional reforms can reduce bureaucratic hurdles and create a more favorable trade environment. Although focused on Pakistan, this framework can extend to other developing countries facing trade imbalances.

CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter outlines the thesis introduction, which begins with the background of the study, followed by trade development in Pakistan. The trade development section provides an overview of Pakistan's trade policy variables and institutional factors. In section three, the research problem is discussed, followed by research questions and objectives to address the underlined problem. The following sections provide definitions of the key terms, significance of the study, and organization of the remaining chapters.

1.2 Background of the Study

Protectionism could make the world less resilient, unequal, and conflict-prone (Goldberg & Reed, 2023). Since the collapse of Bretton Woods, there has been no strong evidence of a retreat from globalization, but international trade and the multilateral system that underpinned globalization have been under attack, and their future depends on policy choices. In recent years, policymakers in some of the world's largest economies have made choices to halt international trade and integration and embrace protectionist and nationalist policies in several instances (Goldberg & Reed, 2023). International trade and the multilateral system are struggling with growing trade restrictions and interventions in the form of industrial policies, subsidies, export controls, and import controls.

Export controls generally aim to punish rivals, ensure domestic supply, and manage trade imbalances, and historical instances reflect the varied objectives behind

their implementation. Examples include countries restricting the export of agricultural products in response to commodity price hikes during 2007-11, which led to food insecurity. China, facing domestic price pressure, has restricted the export of raw materials and other critical inputs. In 2021, India banned the export of Covid-19 vaccines amid a surge in domestic infections, whereas in 2022, Russia weaponized the export of natural gas to exert politico-economic pressure on Europe. The United States and other industrialized economies have restricted the export of high-tech products in the name of national security. Importantly, Bown (2023) argues that the WTO rules limiting the national use of export restrictions are relatively weak. Import controls, driven by national security and environmental concerns, further raise questions about the WTO's capacity to influence both national and multilateral trade policies.

In light of these developments, the multilateral trade system is struggling with an array of challenges related to trade restrictions. These restrictions range from tariff and non-tariff measures to export and import controls. The inclusion of environmental clauses in future trade agreements further complicates the landscape. Another dimension that contributes to this struggle is regulatory and institutional incompatibility, which hinders the smooth functioning of the multilateral trade system. These challenges collectively pose significant hurdles to international trade and demand careful consideration and strategic solutions to sustain a multilateral trade system.

Trade has always been viewed as an important driver of growth. The benefits of an open, rule-based, and multilateral system extend beyond lower tariffs and other trade barriers. Rules reduce uncertainty and encourage much-needed investments in developing economies. They help countries to discipline their domestic protectionist

lobbies. Against this backdrop, recent trade tensions are of concern, particularly in developing economies that have not yet realized the benefits of globalization.

Developing economies must help navigate the growing number of sanctions and export controls (Bown, 2023). Simultaneously, concerns exist that environmental provisions can counter the core objective of PTAs, resulting in a reduction in trade flows (Brandi et al., 2020). Furthermore, research has shown that environmental provisions in PTAs and other non-trade issues are partly motivated by protectionist interests (Lechner, 2016). Despite a global trend indicating a decline in trade costs, empirical evidence indicates that this decline is significantly low in developing countries (Arvis et al. 2013, 2016, Noureen & Mahmood, 2022). The continuation of high trade costs in developing countries is primarily driven by non-tariff barriers, rather than tariff barriers (Peci & Sanjuán, 2020; Macedo et al., 2020). Trade costs in developing countries such as Pakistan are higher than those in the rest of the world. Trade costs related to tariffs are falling, whereas trade costs associated with non-tariff barriers are rising compared to the rest of the world (Noureen & Mahmood, 2022). Among others, rising trade costs are the major factors that make developing countries such as Pakistan's exports uncompetitive in the world market.

Trade is central to economic expansion and ending global poverty. Countries open to international trade tend to benefit from technology spillovers, supply chain integration, and productivity enhancement. Open trade also benefits low-income households by allowing the import of affordable goods and services. According to the World Bank (2020a), international trade as a share of world GDP has increased progressively from 25% in 1960 to 58.2% in 2019[1]. Trade expansion was mainly due

[1] Pakistan trade to GDP ratio only increased from 20.4% in 1960 to 30.4% in 2021.

to trade cost reduction[2] in conjunction with the formation of trade unions (e.g., the European Union) and free trade agreements (e.g., NAFTA and AFTA)[3] across the globe. Anderson and Van Wincoop (2004) show that trade costs between the US and Mexico declined by 40% between 1970 and 2000. This decline in international trade costs can be attributed to a reduction in applied tariffs, transportation costs, and improvements in communication technologies. Since the 1960s, global tariffs have decreased substantially, as have international transportation costs. These two phenomena are thought to have contributed to the increase in world trade.

However, not all countries experienced the same growth in international trade. For instance, Pakistan has reported stagnant but imbalanced trade over the past few decades (see Figure 1.1). Among other emerging nations, the tariff and non-tariff practices in Pakistan remain high. The trade protection score accelerated from approximately 18% in 2003 to 68% in 2015 (Aleem & Faizi, 2021), and the World Bank ranked Pakistan as the 7th most restricted country in the world (World Bank, 2020b). Moreover, the recent rise in trade deficits and the potential increase in trade costs pose a serious threat to Pakistan's economy. In the last two decades, Pakistan's trade deficit to GDP ratio has oscillated between 2 and 10 per cent, whereas the trade deficit has increased substantially, both in absolute terms and as a percentage of the

[2] Trade costs include policy barriers (tariffs and non-tariff barriers), transportation costs (freight and time costs) as well as communication costs, information costs, enforcement costs, exchange rate costs, legal and regulatory costs and local distribution costs.

[3] North American Free Trade Agreement (NAFTA) was established among Canada, Mexico, and the United States on January 1, 1994. The ASEAN Free Trade Area (AFTA) was signed among Southeast Asia nations on January 28, 1992. The South Asian Free Trade Area (SAFTA) is an agreement reached on January 6, 2004, among Afghanistan, Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan and Sri Lanka.

GDP. On the other hand, Pakistan's GDP contracted in 2018/19. Hence, Pakistan's economy faces serious challenges in terms of external trade and economic growth. Similarly, Shah, Hasnat, and Sarath (2020) argued that Pakistan's economy has been struggling on the external front and that imports and trade deficits have increased, whereas exports have not shown any improvements. To improve its performance on the external front, Pakistan needs to revisit its trade cost dynamics, which are expected to be deteriorating its trade flows.

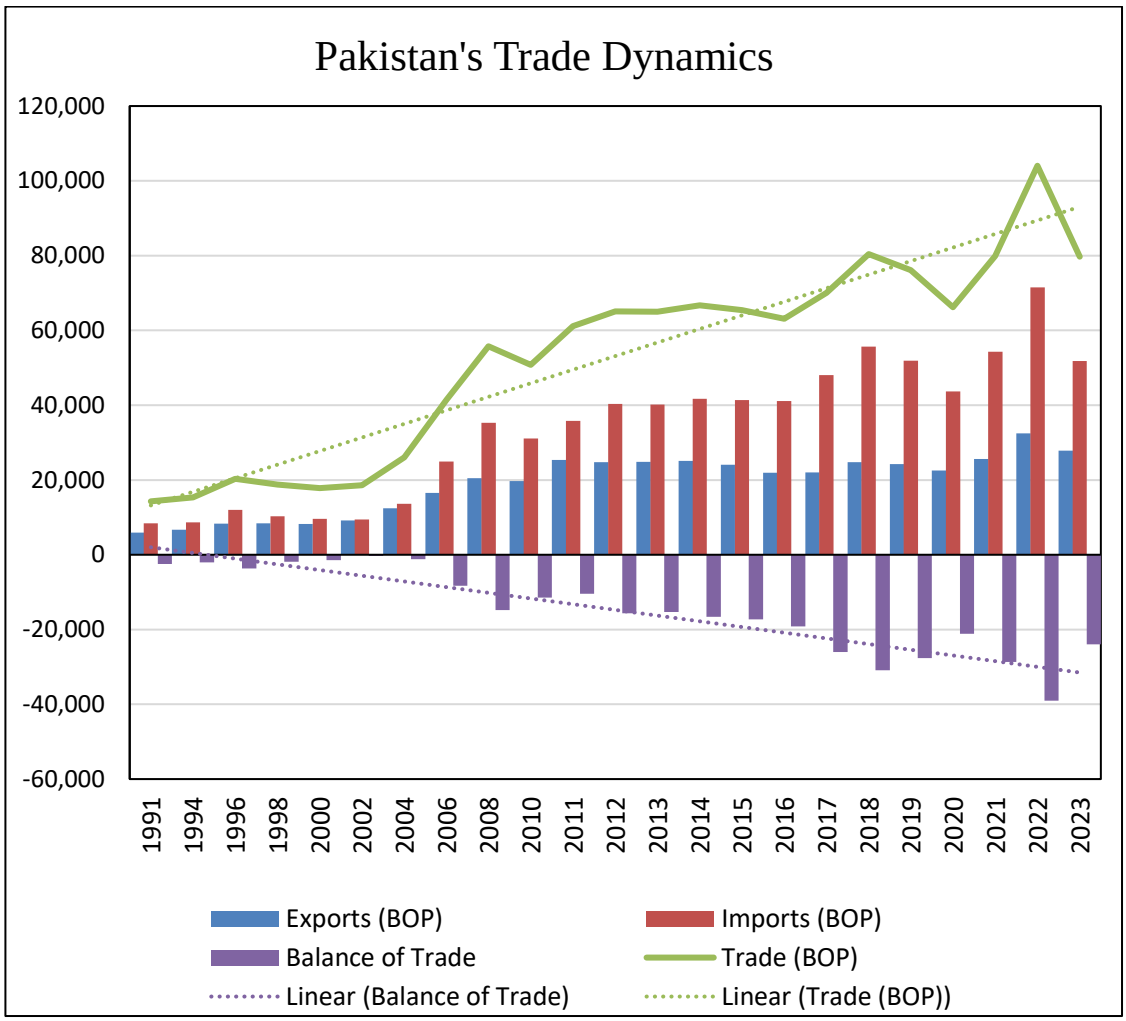

Figure 1.1 Pakistan's Trade Dynamics (Millions of US$)

Source: State Bank of Pakistan-Economic Data

Since the various reforms that took place in 1991 and the joining of WTO (World Trade Organization) in 1995, Pakistan recorded a significant increase in trade

flows. As indicated by a spike in Pakistan trade flows over the two subsequent decades, from $14.28 billion in 1991 to $61.16 billion in 2011 (refer to Table 1.1), an increase of almost 4.28 times. However, over the last decade, the rate of growth in trade flows has significantly diminished to 8.20%, from $61.16 billion in 2011 to $66.18 billion in 2020. This increase in trade flow is dominated by the growth in imports (a 21.92% increase from 2011 to 2020) rather than exports (an 12.57% decline in exports from 2011 to 2020). Alarmingly, the increase in imports and decline in exports accelerated Pakistan's trade deficit from $10.42 billion in 2011 to $21.10 billion in 2020.

Table 1.1 Pakistan's Trade Dynamics (Millions of US$)

Year	Exports (BOP)	Exports Growth Rate (YOY)	Imports (BOP)	Imports Growth Rate (YOY)	Trade (BOP)	Trade Growth Rate (YOY)	Balance of Trade
1980	2,341	42.4	4,857	27.3	7,197	31.8	-2,516
1981	2,799	19.6	5,563	14.6	8,362	16.2	-2,765
1982	2,316	-17.2	5,771	3.7	8,087	-3.3	-3,455
1983	2,627	13.4	5,618	-2.7	8,244	1.9	-2,991
1984	2,665	1.5	5,990	6.6	8,656	5.0	-3,325
1985	2,458	-7.8	6,017	0.4	8,475	-2.1	-3,559
1986	2,943	19.7	6,000	-0.3	8,943	5.5	-3,057
1987	3,488	18.5	5,793	-3.5	9,281	3.8	-2,305
1988	4,361	25.0	6,917	19.4	11,279	21.5	-2,556
1989	4,628	6.1	7,201	4.1	11,829	4.9	-2,573
1990	4,924	6.4	7,414	3.0	12,338	4.3	-2,490
1991	5,894	19.7	8,387	13.1	14,281	15.8	-2,493
1992	6,761	14.7	9,000	7.3	15,761	10.4	-2,238
1993	6,782	0.3	10,049	11.7	16,830	6.8	-3,267
1994	6,684	-1.4	8,691	-13.5	15,375	-8.6	-2,007
1995	7,776	16.3	10,298	18.5	18,075	17.6	-2,522
1996	8,311	6.9	12,015	16.7	20,326	12.5	-3,704
1997	8,096	-2.6	11,236	-6.5	19,332	-4.9	-3,140
1998	8,434	4.2	10,301	-8.3	18,735	-3.1	-1,867
1999	7,528	-10.7	9,613	-6.7	17,141	-8.5	-2,085
2000	8,191	8.8	9,602	-0.1	17,793	3.8	-1,411
2001	8,934	9.1	10,202	6.2	19,136	7.5	-1,268
2002	9,140	2.3	9,434	-7.5	18,574	-2.9	-294
2003	10,889	19.1	11,333	20.1	22,222	19.6	-444
2004	12,396	13.8	13,604	20.0	26,000	17.0	-1,208
2005	14,481	16.8	18,996	39.64	33,477	28.80	-4,515
2006	16,572	14.4	24,893	31.0	41,465	23.9	-8,321
2007	17,301	4.4	26,873	8.0	44,175	6.5	-9,572
2008	20,448	18.2	35,283	31.3	55,730	26.2	-14,835
2009	19,125	-6.5	31,667	-10.2	50,792	-8.9	-12,542

Table 1.1 (Continued)

Year	Exports (BOP)	Exports Growth Rate (YOY)	Imports (BOP)	Imports Growth Rate (YOY)	Trade (BOP)	Trade Growth Rate (YOY)	Balance of Trade
2010	19,680	2.9	31,133	-1.7	50,813	0.0	-11,453
2011	25,369	28.9	35,796	15.0	61,164	20.4	-10,427
2012	24,718	-2.6	40,370	12.8	65,088	6.4	-15,651
2013	24,802	0.3	40,157	-0.5	64,959	-0.2	-15,355
2014	25,078	1.1	41,668	3.8	66,746	2.8	-16,590
2015	24,090	-3.9	41,357	-0.7	65,447	-1.9	-17,267
2016	21,972	-8.8	41,118	-0.6	63,090	-3.6	-19,146
2017	22,003	0.1	48,001	16.7	70,004	11.0	-25,998
2018	24,768	12.6	55,671	16.0	80,439	14.9	-30,903
2019	24,257	-2.1	51,869	-6.8	76,126	-5.4	-27,612
2020	22,536	-7.1	43,645	-15.9	66,181	-13.1	-21,109
2021	25,639	13.8	54,273	24.4	79,912	20.7	-28,634
2022	32,493	26.7	71,543	31.8	104,036	30.2	-39,050
2023	27,879	-14.2	51,834	-27.5	79,713	-23.4	-23,955

Source: State Bank of Pakistan-Economic Data

At a more disaggregate level, Figure 1.2 illustrates the export trends of Pakistan's three largest industries from 2004 to 2020. The figure reveals a decline in the last decade (2011-2020) across all three major sectors: vegetable products (-9.9%), mineral products (-35.3%), and textiles and textile articles (-10.3%). The overall reduction in total exports during this period (2011-2020) amounted to 12.57%, a consequence of an increase in trade costs over the same timeframe. Moreover, Table 1.2 further emphasizes Pakistan's dependence on a limited number of trade partners, with China accounting for 23.87% of imports and the United States representing 18.26% of exports in 2020. Pakistan’s top five import and export partners accounted for 48.54% of imports and 44.23% of exports, respectively, underscoring its reliance on a few key partners. These developments underscore the fact that, relative to the size of its economy, Pakistan maintains a notably low trade balance marked by a substantial trade deficit. This imbalance is primarily attributed to a significant surge in imports coupled with stagnation in exports, a trend that has persisted over the past decades.

This study posits that the underwhelming trade performance in Pakistan can be attributed to the country elevated trade costs in international trade.

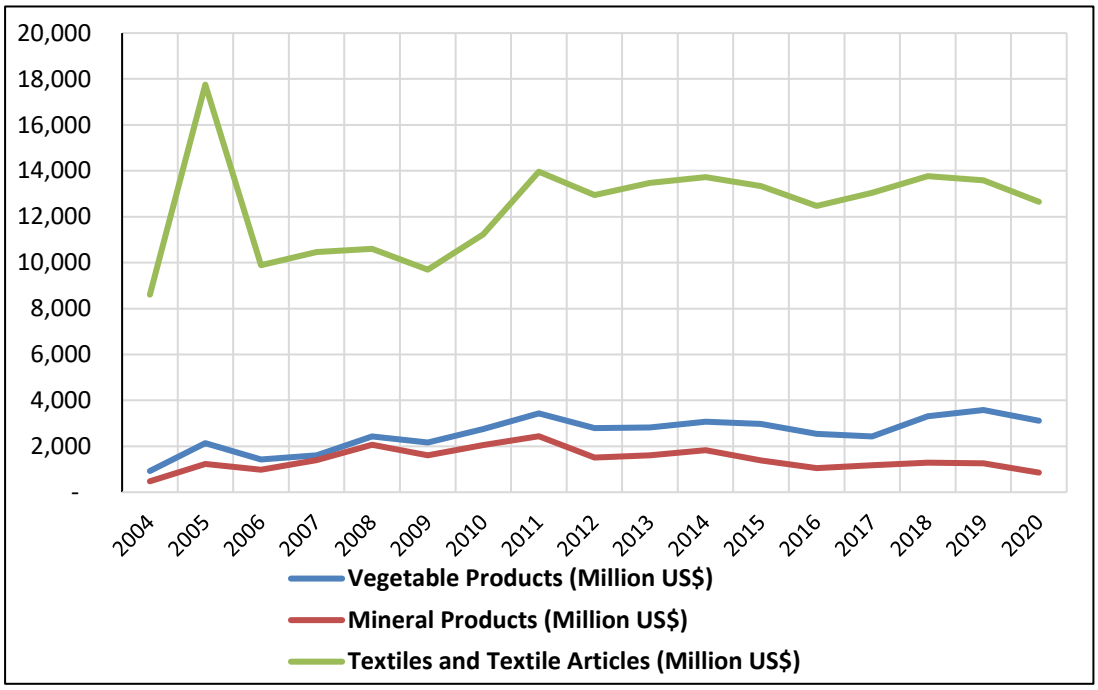

Figure 1.2 Pakistan Sectoral Exports (2005-2020)

Source: State Bank of Pakistan-Economic Data

Table 1.2 Pakistan Exports and Imports in 2020 (Millions of US$)

S. No.	Countries	Imports	% Share	Countries	Exports	% Share
1	China	10,419	23.87%	United States	4,114	18.26%
2	UAE	4,291	9.83%	United Kingdom	1,732	7.68%
3	Singapore	2,631	6.03%	China	1,565	6.95%
4	United States	2,269	5.20%	Germany	1,380	6.12%
5	Saudi Arabia	1,577	3.61%	UAE	1,176	5.22%
6	Qatar	1,119	2.56%	Netherlands	1,005	4.46%
7	Kuwait	1,051	2.41%	Afghanistan	797	3.54%
8	Malaysia	1,044	2.39%	Spain	788	3.50%
9	Indonesia	1,032	2.37%	Italy	720	3.20%
10	South Korea	987	2.26%	Bangladesh	600	2.66%
	Rest of the world	17,225	39.47%	Rest of the World	8,658	38.42%
	Total Imports	43,645	100.00%	Total Exports	22,536	100.00%

Source: State Bank of Pakistan (SBP)-Economic Data. UAE=United Arab Emirates

Trade costs are defined as all costs incurred on a good to reach final consumers other than the marginal cost incurred to produce the product itself. These include

various factors, such as transportation, policy-related costs (including tariffs and non-tariffs), distribution costs at both wholesale and retail levels, contract enforcement, legal and regulatory considerations, information-related expenses, and currency involvement costs (Anderson and Van Wincoop, 2004). The accurate trade costs measurement is at the heart of any trade cost and trade policy analysis (Egger et al., 2021). In international trade, trade cost matters because of its potential to affect a product's comparative advantage, and therefore, influences the decision of final consumers in the international market.

The seminal work by Anderson and Van Wincoop (2004) revealed that trade costs in industrialized economies amounted to a striking 170% of tax equivalents. This figure is derived from a breakdown that identifies 55% as the cost of local distribution, and the remaining 74% as international trade costs[4]. They did a breakdown of this trade cost between different components, with 41% border-related trade barriers, 21% transportation costs, and 55% wholesale and retail distribution costs. Arvis et al. (2013) extended the examination to 178 developing and developed countries, spanning the years 1980 to 2003, focusing on the manufacturing and agriculture sectors. They observed a 15% decline in trade costs for high-income countries and a 5% decline for low-income countries in the manufacturing sector. They concluded that trade costs in poor countries significantly exceed those in rich countries, and trade costs are higher in the agricultural sector than in the manufacturing sector. A subsequent study by Arvis et al. (2016) echoed this trend, indicating a general decline in trade costs, albeit successfully achieved only by upper-middle-income countries. In contrast, low-

[4] Total trade cost calculated by Anderson and Van Wincoop (2004) for industrialized countries was 170% over the period from 1970 to 2000, where 55% was local distribution cost and 74% international trade cost: (1.7 = (1.55*1.74)-1).

income and sub-Saharan African countries grappled with persistently high trade costs. Hence, trade costs are higher, especially in less developed countries.

Trade costs in developing countries are substantial not only because of the higher tariff and non-tariff measures (NTMs), but also because of poor infrastructure, weak institutions, and dysfunctional logistics and transportation. These trade costs are found to be economically sensible magnitudes and patterns across regions, countries, and commodities, suggesting interesting hypotheses for a wide understanding. Given Pakistan's positioning as a low- and middle-income country, empirical studies by Aleem and Faizi (2021) and Noureen and Mahmood (2022) suggest anticipation of high trade costs, aligning with broader trends observed in comparable economies. Consequently, it is important to undertake rigorous estimations and investigations of trade costs in Pakistan. These trade cost estimations are vital for determining the extent of these costs and identifying the underlying factors that contribute to these high trade costs.

Trade cost dynamics play a crucial role in international trade literature for several reasons. First, trade costs are significant because they are substantial; as noted earlier, they can amount to the equivalent of a 170% tax for industrialized economies. Second, trade costs have profound welfare implications, as they directly impact consumer purchasing power across the globe, influencing living standards and overall quality of life. Anderson and Van Wincoop (2001) emphasize that policy-related trade costs can exceed 10% of a country's national income, underscoring their economic significance. Finally, trade costs are vital because they are closely linked to economic policy, shaping a nation’s trade competitiveness and influencing global economic relations.

In addition to the aforementioned factors, trade costs are often attributed to the underlying cause of various macroeconomic puzzles, including the distance puzzle, as highlighted by Obstfeld and Rogoff (2000). Amidst the rapid integration of the world economy and the increasing pace of globalization, Aris et al. (2013) highlighted that trade costs are key determinants of world trade, investment, and the geographical distribution of world production. Moreover, trade costs hold significant implications for trade policies and competitiveness, serving as crucial indicators of a country's capacity to engage in regional and global value chains. Ma and Assche (2011) argued that upstream and downstream trade costs are key drivers of China's export-processing trade, which is now a major contributor to regional and global value chains. Thus, properly estimating these trade costs is vital for understanding their dynamics and offering potential policy implications.

The structural gravity model has become a cornerstone in estimating international trade costs due to its intuitive appeal, strong theoretical foundation, and ability to predict trade patterns. Influential early models by Eaton and Kortum (2002) and Anderson and van Wincoop (2003, 2004) significantly shaped this field, with Anderson and van Wincoop (2004) offering one of the most cited analyses of variable trade costs. Their model relied on observable factors like language barriers, distance, and institutional quality to estimate trade costs, an approach that is often piecemeal as it captures only some aspects of trade costs. While widely used, this "bottom-up" methodology has two key drawbacks: it doesn't provide a comprehensive measure of trade costs between two countries (often termed "iceberg trade costs") and is susceptible to omitted variable bias due to unobserved factors not being included in the estimation. Other efforts, such as trade restrictiveness indices, attempt to aggregate trade policy measures but still rely on available data, limiting their scope. These

indices such as the TTRI, OTRI, and STRI often omit significant factors like legal systems and cultural heritage, which are critical in many trade relationships.

To address these limitations, a different stream of research has focused on the "top-down" or "indirect" approach, which measures trade costs by analyzing trade patterns rather than individual trade policy measures. This method, used by Novy (2013) and Arvis et al. (2013, 2016), offers an all-encompassing view of trade costs but also comes with limitations, such as relying on symmetrized data and lacking sector-specific elasticities. Egger et al. (2021), in a more recent study, introduced a novel approach to defining trade costs, encompassing the standard iceberg trade cost component, along with tariffs and fixed costs, thereby addressing both the variable and fixed cost elements of total trade costs. Egger et al. (2021) [henceforth ELNY] expands upon the most recent findings in structural gravity literature and enhances Anderson and van Wincoop (2004) initial trade costs analysis in a number of ways. This approach follows a hybrid procedure that combines calibration and calculation approaches for trade cost estimation utilizing a gravity model with sufficient dummies and appropriate constraints. Notably, ELNY offers sector-specific elasticities, which are crucial in deriving more realistic sectoral trade costs compared to previous studies using uniform elasticities for all sectors. At the same time, this approach enables the decomposition of trade costs into different components (e.g., exporters and importers) as well as the aggregation of trade costs (e.g., total trade costs). This model stands out for its key feature of directional trade costs, allowing for the estimation of the influence of country-level trade policies and institutional factors on trade costs. This capability facilitates the identification of country-level factors that contribute to the estimated trade costs.

The present study utilizes the ELNY new generic gravity trade model to estimate directional trade costs for Pakistan with 62 trade partners across 32 goods and services sectors. For this purpose, the study utilizes the Asian Development Bank's multiregional input-output (ADB-MRIO) tables, focusing on intersectoral trade and production data for the years 2000 and 2007–2021. Trade costs were calculated at the source sector level for each of the 32 goods and services sectors and presented as part of the first-stage estimation. In the second stage, these trade costs were aggregated at the total, export, and import levels for goods and services sectors. While estimating trade costs is important, the study also focuses on identifying the factors driving these costs, which has key policy implications for improving trade performance. To achieve this, the study progresses to the second stage, wherein the estimated trade costs from the first step serve as the dependent variables. Here, various trade policies, including applied tariffs, non-tariff measures, and trade agreements, are assessed, alongside institutional factors such as climate risk, economic policy uncertainty, exchange rate volatility, institutional distance, and cultural distance. In addition, the study controls for a range of standard gravity covariates and factor endowments in the estimation process.

As previously highlighted, the second stage involves assessing the impact of trade policies and institutional factors on the estimated trade costs. Trade policy factors are broadly categorized as tariffs, non-tariffs, and trade agreements. Interestingly, policymakers have not fully grasped the trade costs arising from trade policy barriers, as noted by Alvi et al. (2021). Despite longstanding discussions on the significance of tariffs as instruments to regulate international trade, their relative importance has diminished over time. The process of globalization and regionalization is credited with the reduction of tariffs, but these tariffs are still high in some low- and middle-income

countries, such as Pakistan (see Hoekman & Nicita, 2011). In the context of Pakistan, Aleem and Faizi (2021) argued that tariffs are among the highest in the world and need reduction to enhance the country's competitiveness in the international market. Therefore, this study investigates the effects of applied tariffs on Pakistan's directional trade costs in goods and services sectors.

A declining tariff is one facet of trade policy, and non-tariff measures (NTMs) have emerged as a crucial facet of contemporary trade policy. NTMs have gained prominence in recent years, as they influence an increasing number of international trade flows. The use of NTMs has surged globally, both in terms of coverage and adoption (World Bank and IMF, 2008), and has increasingly contributed to higher trade costs (UNCTAD, 2019). NTMs are at the core of trade policies (Peci & Sanjuán, 2020) and are shaping an increasing number of international trade flows (Macedo et al., 2020). In the country of concern, Pakistan, the incidence and intensity of core NTMs accelerated particularly after 2003. As indicated by the overall restrictiveness score, comprising tariffs and NTM accelerated to 68 per cent in 2015 from 18 per cent in 2003. Aleem and Faizi (2021) showed that the average tariffs in Pakistan have diminished to 12.7 per cent; however, non-tariff measures have increased to 55 per cent. Hence, core NTMs dominate the overall trade restrictiveness in Pakistan. This observation aligns with the findings of Hoekman and Nicita (2011), who demonstrate that non-tariff measures constitute the primary contributors to trade costs, particularly in low-income countries, such as Pakistan. Therefore, this study investigates the role of NTMs in Pakistan's directional trade costs in goods and services sectors.

Trade agreements, on the other hand, such as free and preferential trade agreements that deepen integration have been used as countermeasures to reduce non-tariff and other trade barriers (Novy, 2013; Arvis et al., 2016; World Bank, 2021).

Specifically, bilateral trade agreements can offer concessions on both tariff and non-tariff aspects, thus benefiting importers and exporters on both sides. The literature emphasizes the tangible reduction in trade costs resulting from such agreements, as indicated by studies such as Disdier and Head (2008), Berthelon and Freund (2008), and Head and Mayer (2013). Noteworthy examples include Novy's (2013) findings, highlighting substantial declines in U.S. trade costs with Mexico (66%) and Canada (50%), resulting from the North American Free Trade Agreement (NAFTA). Arvis et al. (2016) argue that regional trade agreements in low-income countries contribute significantly to lowering trade costs. Pomfret and Sourdin (2009) further support this notion by reporting that the integration of East Asian economies resulted in reduced trade costs. Therefore, it is evident that trade agreements serve as vital policy instruments to mitigate trade costs. Hence, effective trade policy formulation and implementation are crucial for addressing elevated trade costs in Pakistan.

Beyond trade policy considerations, institutional factors wield substantial influence over international trade costs. The intricacies of international trade encompass contractual agreements between parties hailing from different countries, navigating distinct languages, encountering varied institutional frameworks, and engaging in different currencies. Moreover, the geographical separation of contracting parties introduces an additional layer of complexity, and the decision-making process surrounding export or import transactions is further complicated by various uncertainties. Generally, the process of moving goods from one location to another is time consuming, introducing uncertainties regarding the preservation of both the quality and quantity of shipped goods upon arrival. The temporal aspect is of particular significance, given that, in international transactions, the timing of the contract often differs from the time of payment. For instance, an exporter dispatches goods

anticipating that the importer will initiate payment upon receipt. Consequently, the exporter assumes upfront costs associated with goods, transactions, and transportation, thereby exposing themselves to a certain level of risk contingent upon the importer fulfilling the payment obligation. Thus, it is appropriate to state that the resources and uncertainties involved in negotiating and enforcing contracts incur considerable transaction costs. In return, these transaction costs are a considerable part of bilateral trade costs. Since countries differ in terms of contract enforcement and have different institutional structures, transaction costs are expected to vary between trading partners. Hence, institutional quality is important for international trade.

The importance of institutional factors has long been discussed in trade literature. Among these, governance quality, legal and political stability, economic policy, and exchange rates are of key importance. As Hyun (2018) advocated, countries with higher institutional quality export more than those with weak institutions. He highlights that institutional quality can be a source of comparative advantage in specifying trade patterns. Hou, Wang and Xue (2021) highlighted that good institutional quality significantly reduces the total trade cost and trade cost of manufactured and agricultural products. Further, they show that the reduction in trade costs varies across the various components of trade costs, country pairs, and time horizons.

Institutional variables are of utmost importance in developing countries such as Pakistan, where the quality of institutions is not established to support the movement of goods across borders. Levchenko (2007) highlighted that, among other things, less-developed countries are less likely to gain well from international trade, and factor prices may diverge as a result of external trade. Further, he showed that institutional differences are key determinants of cross-border trade. Moreover, Hou, Wang and Xue

(2021) claim that traditional factors such as tariffs and transportation costs are not sufficient to explain the total trade costs, therefore, the institutional factors are significant contributors to trade costs. Hence, there is no doubt that the institutional environment has the potential to influence trade costs, and subsequently trade flows. Therefore, the current study examines the effect of institutional factors, namely institutional distance, economic policy uncertainty, climatic variability, exchange rate volatility, and cultural distance, on Pakistan's directional trade costs in goods and services sectors.

1.3 Trade Developments in Pakistan

This section provides a brief overview of Pakistan's position regarding its trade policies and institutional factors.

1.3.1 Trade Policy Factors

Trade policy factors are broadly divided into three main components: tariffs, non-tariffs, and trade agreements. Although many factors contribute to the overall trade costs, the protectionist trade policy has long been credited with Pakistan's weak performance on the external front. Pakistan's high tariffs reflect this protectionist trade policy. As indicated in Figure 1.3, the average tariff in Pakistan was 12.19% in 2019, which is one of the highest in the world[5]. Globally, tariff rates are generally 5 percent on average, with a tendency towards reduction (Santeramo et al., 2023). Aleem and Faizi (2021) reported that the average tariffs in Pakistan are two times higher than the world average and approximately three times higher than those in East Asia and the

[5] Further, according to world bank overall trade and restrictiveness index (OTRI) Pakistan ranked 7th most protectionist country in the world (World Bank, 2020b)

Pacific region. The figure provides a comparison of Pakistan's average tariffs with those of regional competitors (such as India, Bangladesh, and Vietnam), showing the high tariffs in Pakistan compared to regional competitors. Therefore, this study estimates the effect of applied tariffs on Pakistan's directional trade costs in goods and services sectors.

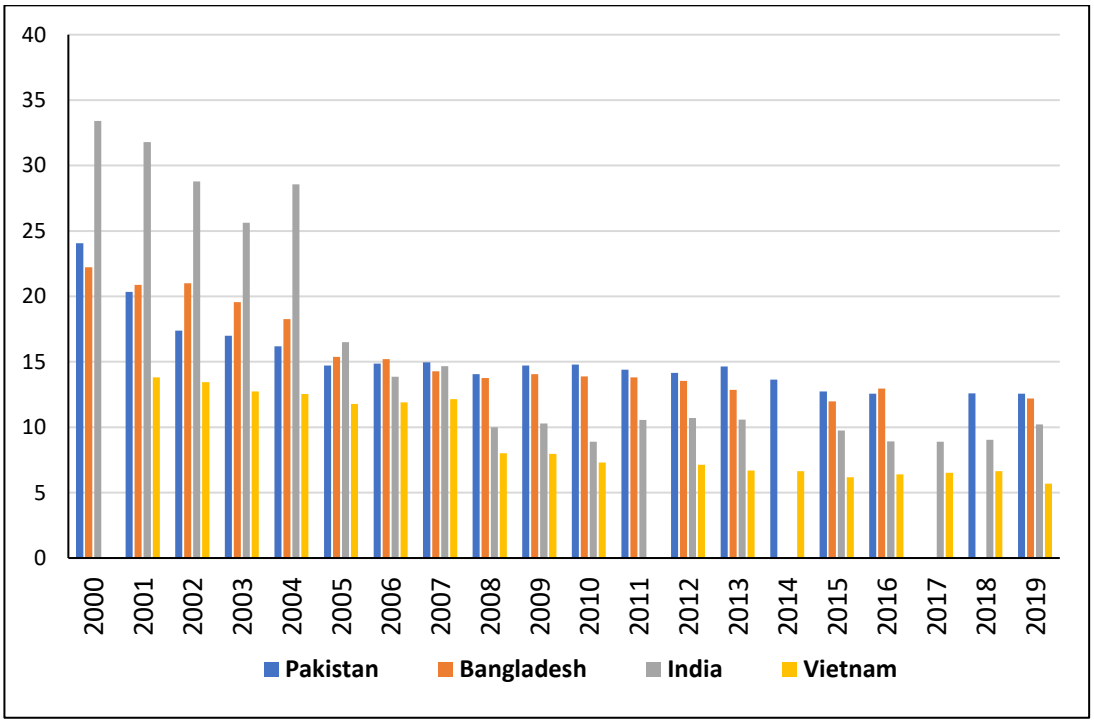

Figure 1.3 Average Tariffs-All Products (2000-2019)

Source: World Bank (accessed 10th July 2021) [6]

Apart from tariffs, NTMs are also of significant importance in trade cost discussions, because they might also be used to restrain international trade. Fernandes et al. (2015) showed that NTMs can be used to protect the domestic market. In Pakistan, overall protection, including NTMs, was mitigated through various reforms,

[6] World Bank (accessed 10th July 2021). URL: *https://data.worldbank.org/indicator/TM.TAX.MRCH.SM.AR.ZS?locations=PK*

particularly in 2007. However, after the adverse shocks of the 2008 financial crisis, several protectionist measures were taken to secure the domestic economy, most of which were in the form of NTMs. Niu et al. (2018) also show an increase in the number of NTMs after the 2008 financial crisis.

Tariff rates are generally 5 percent on average, with a tendency towards reduction (Santeramo et al., 2023). However, it is coupled with the growing number of behind border measures (UNCTAD-WB, 2018), such as technical and non-technical measures reported to the WTO SPS and TBT agreements (de Melo & Nicita, 2018). These measures are applied to domestically produced or imported products to achieve trade and non-trade policy objectives (Hoekman and Nicita, 2018; Ferrari et al., 2021; Borchert et al., 2021).

In Pakistan, the overall trade protection score accelerated to 68 per cent in 2015 from approximately 18 per cent in 2003, where the average tariffs were reduced to 12.7 per cent, and the tariff equivalents of NTMs contributed the remaining 55 per cent. This overall trade protection in Pakistan is primarily dominated by core NTMs (Aleem and Faizi, 2021). They report that the average tariff equivalents of NTMs increased from 1 per cent in 2003 to 55 per cent in 2015. Further, they showed that this increase in NTMs is far greater than that of regional competitors, such as Bangladesh and India. Table 1.3 shows that in Pakistan, both the number of NTMs and their product coverage have increased significantly in recent years. Hence, once trade costs are estimated, this study examines the effect of NTMs on Pakistan's directional trade costs in goods and services sectors.

Table 1.3 Number of New (Core) NTMs and Coverage in Pakistan (1967-2015)

Year	Number of New (Core) NTMs	Coverage
1967	17	1875
1973	4	36
1976	1	46
1979	1	23
1980	0	1680
1986	0	150
1991	0	41
1997	1	134
2003	1	1680
2005	0	2
2006	0	5
2013	**16**	**10953**
2014	1	1144
2015	0	437
Total	**42**	**18206**

Source: Aleem and Faizi (2021)

Regional trade agreements (RTAs), which began in the 1990s and continued in 2000, have witnessed unprecedented growth over the last three decades. As of April 2021, the WTO has received 546 RTA notifications[7], of which 346 are in force. The growth of these RTAs from 1992 to 2021 is illustrated in Figure 1.4. Among the regionally enforced RTAs shown in Figure 1.5, Europe (150) had the highest number of RTAs, followed by East Asia (101). In contrast, the Caribbean region has the lowest number of enforced RTAs (11). The second region with the lowest number of RTAs in force (24) is West Asia (also known as South Asia, including Pakistan).[8] This indicates that South Asia is one of the least economically integrated regions in the world (Ahmed et al., 2010), and this low economic integration leads to lower gains from trade. For instance, Anderson and Yotov (2016) advocated that regional trade integration enhanced the efficiency of every manufacturing sector and overall global

[7] These 546 RTAs notifications counting services and goods trade, and accession separately.
[8] Countries in West Asia are Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka.

efficiency, which provided significant benefits for regionally integrated partners and inflicted small losses in some countries that were not integrated, such as Pakistan.

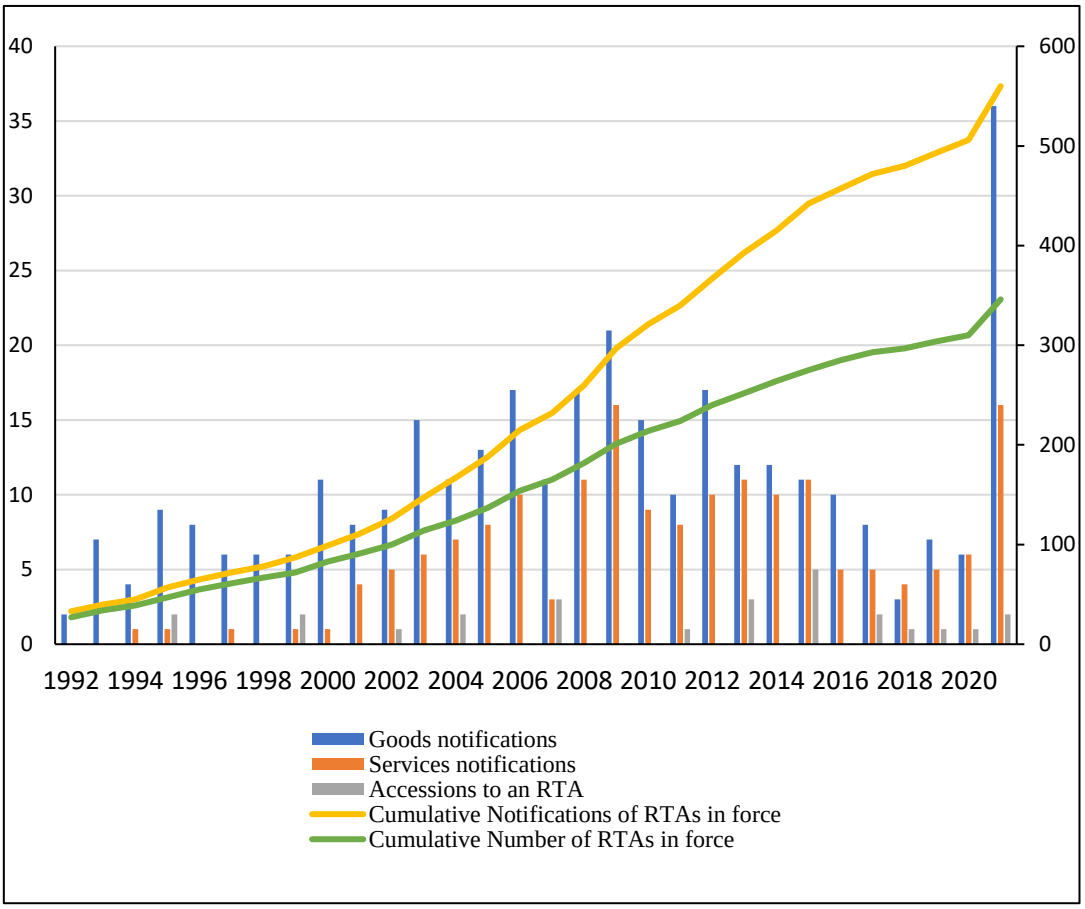

Figure 1.4 Trade Agreements in Force (1992-2021)

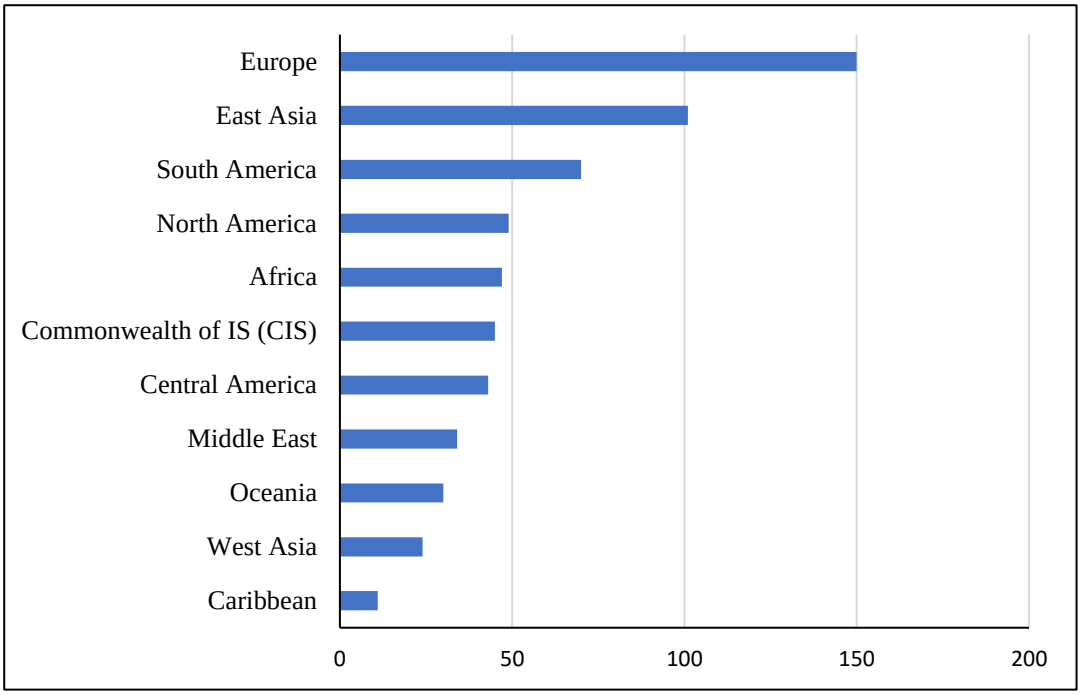

Figure 1.5 Regional Trade Agreements in Force (until April 2021)[9]

Source: WTO, Regional Trade Agreements Information System (RTA-IS)

Despite plenty of benefits associated with multilateral and bilateral economic integration, the country of concern, Pakistan is one of the least integrated countries in the world. As of April 2021, Pakistan has only 10 regional trade agreements in force, one of the lowest RTAs of a country; thus, it could be one of the countries that inflicted losses due to the least economic integration (See Anderson & Yotov, 2016). Table 1.4 shows that Pakistan enforced RTA with partner countries for both goods and services. Thus far, Pakistan has had three bilateral enforced Goods FTA's with China, Malaysia, and Sri Lanka, and one multilateral free trade agreement, SAFTA, with regional South Asian economies. Unfortunately, Pakistan does not have such trade agreements with major trading partners (except China) such as the United States, Germany, and the United Kingdom. Furthermore, as indicated in Table 1.4, Pakistan also has two service

[9] Source: WTO, Regional Trade Agreements Information System (RTA-IS), extracted on 17/04/2021.

FTAs and four Partial Scope Agreements (PSA). After all, Pakistan does not have any PSA with large trading partners.

Table 1.4 Pakistan's Regional Trade Agreements (RTAs) in Force

S.no.	RTA Name	Scope	Coverage	Entry into Force	Signatories
1	Economic Cooperation Organization (ECO)	PSA	Goods	17-Feb-1992	Iran; Pakistan; Turkey
2	Global System of Trade Preferences among Developing Countries	PSA	Goods	19-Apr-1989	Note[10]
3	Pakistan-Indonesia	PSA	Goods	1-Sept-2013	Indonesia; Pakistan
4	Pakistan-Mauritius	PSA	Goods	30-Nov-2007	Mauritius; Pakistan
5	Pakistan-China	FTA & EIA	Goods & Services	Good-01-Jul-07 Service-10-Oct-09	China; Pakistan
6	Pakistan-Malaysia	FTA & EIA	Goods & Services	1-Jan-2008	Malaysia; Pakistan
7	Pakistan-Sri Lanka	FTA	Goods	12-Jun-2005	Pakistan; Sri Lanka
8	Protocol on Trade Negotiations (PTN)	PSA	Goods	11-Feb-1973	Note[11]
9	South Asian Free Trade Agreement (SAFTA)	FTA	Goods	1-Jan-2006	Note[12]
10	South Asian Preferential Trade Arrangement (SAPTA)	PTA	Goods	7-Dec-1995	Note[13]

Source: Regional Trade Agreements, World Trade Organization[14]

1.3.2 Institutional Factors

In this thesis, institutional distance, cultural distance, climate change, economic policy uncertainty, and exchange rate volatility are grouped as institutional

[10]Algeria; Argentina; Bangladesh; Benin; Bolivia, Pluri-national State of; Brazil; Cameroon; Chile; Colombia; Cuba; Ecuador; Egypt; Ghana; Guinea; Guyana; India; Indonesia; Iran; Iraq; Korea, Democratic People's Republic of; Korea, Republic of; Libya; Malaysia; Mexico; Morocco; Mozambique; Myanmar; Nicaragua; Nigeria; Pakistan; Peru; Philippines; Singapore; Sri Lanka; Sudan; Tanzania; Thailand; Trinidad and Tobago; Tunisia; Venezuela, Bolivarian Republic of; Viet Nam; Zimbabwe.

[11]Bangladesh; Brazil; Chile; Egypt; Israel; Korea, Republic of; Mexico; Pakistan; Paraguay; Peru; Philippines; Serbia; Tunisia; Turkey; Uruguay

[12] Afghanistan; Bangladesh; Bhutan; India; Maldives; Nepal; Pakistan; Sri Lanka

[13] Bangladesh; Bhutan; India; Maldives; Nepal; Pakistan; Sri Lanka

[14] https://rtais.wto.org/UI/PublicSearchByMemberResult.aspx?membercode=586

factors to assess their impact on Pakistan's directional trade costs across both goods and services sectors. To begin with the discussion of these factors. Pakistan's low institutional quality is widely recognized, with past studies indicating significant challenges in governance that affect the country's economic performance. Pakistan faces significant political instability, widespread corruption, and weak governance mechanisms, all of which contribute to its poor institutional environment (Shah, Ahmad, & Ahmed, 2016).

According to Table 1.5, Pakistan's overall governance quality score is -0.99, on a scale ranging from -2.5 (weak) to 2.5 (strong), and the country ranks below 30% on all governance quality parameters. In the country, regulatory quality is the most stable governance dimension, while the political system is the least stable. Figure 1.6 tracks Pakistan's governance quality from 1996 to 2019, showing that the country's institutional quality has deteriorated, with its governance score declining from -0.78 in 1996 to -0.99 in 2019, although it did show slight improvement from a low of -1.18 in 2011. In light of this, Shah et al. (2016) highlight that Pakistan's institutional quality remains significantly lower than in other developing countries. Past studies such as those by Shah et al. (2016) and Asif & Majid (2018) have linked weak institutional quality to lower foreign direct investment (FDI), while Godil et al. (2020) found a negative relationship between institutional quality and carbon emissions in Pakistan. However, no study has examined how these institutional dimensions are relevant in trade costs discussions, particularly institutional distance which is the degree of institutional incompatibility between trading partners.