CHARLES UNIVERSITY
FACULTY OF SOCIAL SCIENCES
Institute of Economic Studies

Impact of Trade Policies on Pakistan's Economy: A Sector-Level Analysis

Bachelor's thesis

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Study program: Economics and Finance

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Year of defense: 2024

Declaration of Authorship

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Prague, July 31, 2024

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Abstract

This thesis investigates the effect of trade policies on Pakistan's sector-level international trade. It also explores the consequences of the establishment of Export Processing Zones and Special Economic Zones for trade flows of Pakistan's largest economic sectors. The study uses panel data over the years 2003-2022 for Pakistan's 5 largest sectors: textiles, agriculture, metals, minerals and foodstuffs. To improve the identification of the effect of trade policies, the thesis constructs sector-level indicators of trade policy measures. Using a panel regression model with fixed effects, the thesis finds that tariffs remain the predominant trade policy instrument that influences international trade flows: higher domestic tariffs reduce imports and higher foreign tariffs decrease exports. The effect of foreign tariffs is much larger than the effect of domestic tariffs, which indicates that a global increase in tariffs would have negative consequences for Pakistan's balance of trade. The effect of non-tariff measures is found to be smaller in size. Additionally, the findings show that Export Processing Zones have been more effective than Special Economic Zones in boosting exports. The findings underscore the detrimental effects of rising protectionism on international trade and have implications for policy debates on trade policy in developing countries.

JEL Classification	C33, F13, F14
Keywords	International trade, trade policies, tariffs, non-tariff measures, Special Economic Zones, Export Processing Zones, Pakistan
Title	Impact of Trade Policies on Pakistan's Economy: A Sector-Level Analysis

Abstrakt

Diplomová práce zkoumá vliv obchodní politiky na mezinárodní obchod Pákistánu na úrovni jednotlivých ekonomických sektorů. Dále se zabývá důsledky zřizování tzv. Export Processing Zones a speciálních ekonomických zón pro mezinárodní obchodní toky největších ekonomických sektorů Pákistánu. Diplomová práce využívá panelová data za období 2003-2022 pro pět největších ekonomických sektorů Pákistánu: textilní sektor, zemědělství, hutnictví, težební sektor a potravinářství. Za účelem lepší identifikace dopadu obchodní politiky jsou v práci vytvořené indikátory pro různe typy obchodních politik na úrovni jednotlivých sektorů. Pomocí panelového regresního modelu s fixními efekty práce zjistila, že cla zůstávají nejdůležitejším nástrojem obchodní politiky, který má značný dopad na mezinárodní obchodní toky: vyšší domácí cla snižují dovoz a vyšší zahraniční cla snižují vývoz. Dopad zahraničních cel je přitom mnohem větší než dopad domácích cel, což naznačuje, že zvýšení cel na globální úrovní by mělo negativní důsledky pro obchodní bilanci Pákistánu. Efekt netarifních opatření se ukázal být menší. Kromě toho výsledky práce naznačují, že tzv. Export Processing Zones byly při stimulování exportu účinnější než speciální ekonomické zóny. Výsledky práce zdůrazňují potenciální škodlivé účinky rostoucího protekcionismu na mezinárodní obchod a mají tak implikace pro tvůrce hospodářské politiky v rozvojových zemích ohledne nastavení obchodní politiky.

Klasifikace JEL	C33, F13, F14
Klíèová slova	Klíčová slova: Mezinárodní obchod, obchodní politika, cla, netarifní opatření, speciální ekonomické zóny, Export Processing Zones, Pákistán
Název práce	Dopad opatření obchodní politiky na ekonomiku Pákistánu: Sektorová analýza

Acknowledgments

I would like to express my gratitude to my supervisor, Ing. Boris Fišera, for his invaluable guidance. His patience and feedback were very helpful in writing this thesis.

I would also like to thank my parents for their unwavering support throughout my academic journey. Without their support, this achievement would not have been possible. Thank you for always being there.

Typeset in LaTeXusing the IES Thesis Template.

Bibliographic Record

Khalid, Syed Zaki: *Impact of Trade Policies on Pakistan's Economy: A Sector-Level Analysis*. Bachelor's thesis. Charles University, Faculty of Social Sciences, Institute of Economic Studies, Prague. 2024, pages 69. Advisor: Ing. Boris Fišera

Contents

List of Tables

List of Figures

Acronyms

EPZ Export Processing Zone

FDI Foreign Direct Investment

FTA Free Trade Agreement

GVC Global Value Chain

ITT International Trade Theory

NTM Non-Tariff Measures

SEZ Special Economic Zone

WDI World Development Indicators

WITS World Integrated Trade Solutions

Chapter 1

Introduction

Protectionist policies have regained prominence in recent years as changes in global economic conditions have led to the reevaluation of trade policies. Countries are increasing tariff rates to protect domestic industries and restrict international trade. With this rise in protectionism, there is a need to reassess the impact of tariffs. Understanding the effects of trade policies is increasingly essential, especially for developing economies. Such countries tend to increase tariffs to protect domestic industries in the short-term; however, this can come at the cost of stifling innovation and growth in the long-term. The impact of protectionist policies can vary significantly across different sectors; thus, a sector-level analysis is important for understanding the nuanced effects of trade policies.

Over the last two decades, Pakistan has faced a widening trade deficit exacerbated by its poorly designed policies. Pakistan's trade, especially its exports, is predominantly concentrated in its five largest economic sectors: textiles, agriculture, metals, minerals and foodstuffs. These sectors shape Pakistan's economic landscape and are crucial for understanding the implications of trade policies.

The establishment of Special Economic Zones (SEZs) and Export Processing Zones (EPZs) has been a notable development in Pakistan's trade policy framework over the last 20 years. They aim to reduce dependence on imports and boost export flows. Not much research exists on the importance of economic zones for international trade. Existing research looks at international trade between Pakistan and its partners through gravity models and other approaches, and there remains a gap in understanding how economic zones function and the impact of these zones on trade flows.

There is an increasing tendency towards protectionist policies in international trade, which underlines the relevance of studying the effects of trade policies. This study aims to examine the impact of trade policies on Pakistan's international trade. The ongoing debates on protectionism are relevant to Pakistan and other developing economies in the region that face similar challenges. Thus, the findings of our study should also help draw meaningful policy implications outside of Pakistan that can guide future trade policy strategies. A sector-level analysis will enable us to identify the effects of international trade.

The developments in international trade theories over the last decade have questioned the effectiveness of tariffs as the guiding trade policy tool. This thesis aims to test the following hypotheses for Pakistan's largest economic sectors:

- **Hypothesis 1:** *Tariffs remain a significant trade policy instrument in guiding trade flows*
- **Hypothesis 2:** *Non-tariff measures (characterised by a trade-restrictiveness index) negatively impacts trade flows.*
- **Hypothesis 3:** *Economic zones positively affect trade flows.*

Hypotheses 1 and 2 should help to understand the effectiveness of tariff and non-tariff measures and strike a balance between them. Hypothesis 3 will examine whether economic zones significantly affect trade flows.

Section 2 begins by reviewing the history and current state of international trade theories. We lay the theoretical framework and review the related literature. Section 3 introduces the panel dataset and the variables we will use in the analysis. Section 4 describes the methodological framework outlining how the data will be utilised to study the impact of trade policies on Pakistan's economy. In section 5, we will present the results of the models and discuss them, followed by a robustness check. Finally, section 6 concludes this thesis by discussing some policy implications and suggestions for future research.

Chapter 2

Literature Review

The purpose of this literature review is to provide an overview of the current state of research on international trade theories and the determinants of international trade. This will help us to understand how theories have developed and what guides trade and industrial policies today. Moreover, it should help build the theoretical framework for our empirical analysis.

The review will discuss different aspects of international trade. The first subsection will focus on classical and modern international trade theories, and the second subsection will look at research that studies the determinants of international trade. Finally, the last subsection will review empirical evidence relevant to Pakistan and what affects trading patterns.

2.1 Review of International Trade Theories (ITTs)

International trade theories attempt to explain the patterns of international trade and its origins. ITTs help to understand the benefits of trade and how international trade can improve overall welfare. ITTs have developed over centuries with several paradigm shifts. For instance, the development of ITTs over time has led to a change from protectionist mercantilist policies to new trade theories such as the Heckscher-Ohlin (H-O) theory. ITTs help countries direct trade policies restricting/liberalising trade. International organisations such as the World Trade Organisation (WTO) have played a role in moving towards freer trade.

Mercantilism was one of the earliest ITTs, and it can be traced back to the 16th century in France and England. Mercantilist policies see international trade as a zero-sum game where wealth is accumulated in one country at the

expense of another. Thus, the goal is to maximise exports and limit imports. This is generally done through prohibitive tariffs, which make imports unaffordable and reduce reliance on imports. Rashid (1980) reviewed prominent writers such as John Locke and Bishop Berkley and their works on mercantilism. Locke wrote about bullionist theories. He believed that the wealth of a nation is defined through its holdings of precious metals such as gold and silver. Cantillon (1755), in his 'Essay on Economic Theory', recognised the role of trade but stressed the importance of not being over-reliant on foreign manufactures. Cantillon focussed on long-term prosperity by encouraging the development of manufacturing industries. Mercantilist theories started to die out in the 18th century with the works of Adam Smith and David Ricardo.

Adam Smith and David Ricardo revolutionised economic thought and ITTs by introducing concepts such as absolute and comparative advantage. This shifted the view of international trade being a zero-sum game to it being potentially beneficial in improving national welfare. They argued in favour of free trade and against protectionist policies. Their works helped to lay the foundations for modern ITTs.

Adam Smith introduced the concept of absolute advantage in Smith (1776) in his seminal work, "The Wealth of Nations". Absolute advantage posits that countries should produce what they are better at producing and import the remaining goods. His work also discusses the concept of division of labour, which helps maximise output by assigning workers to jobs they are best at. Countries can gain an advantage in trade by exporting goods that they are efficient in producing. His work marked the birth of modern economics, and the following ITTs have built upon these works.

Torrens (1826) laid the groundwork for comparative advantage through his discussions about the trade of corn and how countries should focus on producing goods with lower direct costs. Ricardo (1817) built upon Smith's and Torrens' ideas in "On the Principles of Political Economy and Taxation" by introducing comparative advantage. Ricardo believed that a country can still gain from trade even if it does not necessarily have an absolute advantage but can produce a good at a lower relative cost than another country. The ideas of Smith and Ricardo are built upon by other supply-side ITTs, such as the Heckscher-Ohlin theory. An example is presented in Table 2.1.

Note: The values represent each country's respective production possibilities.

If we calculate opportunity cost, then we find:

Table 2.1: Absolute and comparative advantage example

	Wheat	**Cloth**
Country A	20	15
Country B	10	10

- Country A: To produce 1 unit of wheat, it must give up 1.33 units of cloth. (To produce 1 unit of cloth, it must give up 0.75 units of wheat.)
- Country B: To produce 1 unit of wheat, it must give up 1 unit of cloth. (To produce 1 unit of wheat, it must give up 1 unit of cloth.)

Country A can produce more wheat and cloth than Country B, as it has an absolute advantage in both. However, Country B has a lower opportunity cost of producing cloth (1 compared to 1.33 for Country A), so Country B should focus on producing cloth. Alternatively, Country A has a lower opportunity cost of producing wheat, so it should maximise wheat production. The example shows that if both countries focus on producing goods in which they have a comparative advantage, then trade would give both countries access to both products.

Further work on opportunity costs was done by Austrian economists such as Friedrich von Wieser in Wieser et al. (1924), where he considered the value of the next best alternative, which is forgone. Such economic analyses helped provide a base for Swedish economists Eli Heckscher and Bertil Ohline to formulate the Heckscher-Ohlin theory in 1933. The Heckscher-Ohlin theory predicts a country's trade based on endowments of factors of production and dominates modern neoclassical economics and ITT. Leamer et al. (1995) describe the theory and investigate its practicality, finding that it accurately predicts U.S. trade patterns. The theory is that a country will export goods that are intensive in factors in which they are relatively abundant and import goods that are intensive in factors of production in which they are scarce.

Suppose there are:

- Two countries: A and B
- Two factors of production: K and L (capital and labour)
- Two goods: X which is capital-intensive and Y which is labour-intensive.

Country A is said to be capital-abundant relative to Country B if:

$$\frac{K_A}{L_A} > \frac{K_B}{L_B}$$

This inequality also implies:

$$\frac{L_A}{K_A} < \frac{L_B}{K_B}$$

This means that Country B is more labour-abundant than Country A.

According to the H-O theory, Country A should focus on the exports of X as it is capital-intensive, and Country B should focus on the exports of Y as it is labour-intensive. Both countries can increase welfare by trading and importing goods that are intensive in factors of production, which the country is relatively poor in.

The theory assumes zero transaction costs, perfect competition, and homogeneity of products and ignores economies of scale. The restrictive assumptions of the H-O theory are evaluated by Deardorff (1982). Krugman (1979) considered the effects of economies of scale and imperfectly competitive markets. Paul Krugman is credited with developing the New Trade Theory (NTT), which provides a more nuanced understanding of international trade. NTT shows how economies of scale reduce large, fixed costs associated with opening and running factories, which drives trade between similar countries. Bliss (1987) discusses the implications of NTT on economic policies and how it directs governments to promote industries to benefit from economies of scale: countries may consider placing restrictive trade policies to protect local industries to gain a competitive advantage however, NTT shows that reducing tariffs can increase productivity by pushing less productive firms from the market.

Trade liberalisation programmes look at removing tariffs, quotas, and other restrictions on international trade. With the emergence of modern ITTs and NTT identifying the benefits of international trade, there was a gradual shift from mercantilist policies towards trade liberalisation programmes starting in the 1960s. Modern ITTs suggest that free trade is advantageous and that countries can improve their welfare by producing only some goods. Beginning with the Great Depression, policymakers tended to implement more protectionist trade policies. In the decades after WWII, policymakers started with trade liberalisation programmes. Thirlwall (2000) discusses how trade liberalisation is rooted in the works of Adam Smith and David Ricardo, who promoted

free trade. One of the most prominent aspects of the trade liberalisation programmes of the 1960s was the reduction of tariffs. Reducing tariff rates helps to reduce markups on products, making them cheaper. International markets become more accessible, and the increased efficiency and competition should enhance national welfare.

Most ITTs are supply-side theories that consider differences in factor endowments and comparative advantages guiding trade between countries. However, Linder (1961) introduces the theory of overlapping demand, which says that countries with similar per capita incomes will consume similar quality products, which drives trade between these countries. It hypothesises that countries will produce goods which cater to domestic demand and export excess production to countries with similar preferences and per capita income levels. It is an important theory because it emphasises the role of consumer preferences in determining the volume of international trade.

The review of ITTs shows that international trade can be beneficial if countries specialise in the production of goods in which they have a comparative advantage. The H-O theory develops ITTs by explaining trade patterns based on factor endowments. The theory of overlapping demand provides another perspective by considering the role of consumer preferences in deciding what goods countries trade in. As ITTs shifted from considering international trade as a zero-sum game to a positive-sum game, the role of government in facilitating trade became increasingly important. Countries now seek to find the right combination of policies to maximise exports whilst not being overly dependent on imports.

2.2 Determinants of International Trade

Trade policies can significantly impact trade flows, so reviewing what and how they affect trade is essential. Trade policies are agreements or regulations which affect international trade. It can be divided into tariff and non-tariff measures. Tariffs are a duty that makes imported goods more expensive and thus less competitive. This can protect domestic markets from foreign competition. However, it can come at the cost of retaliation, where other countries also raise their tariffs, decreasing trade openness. Non-tariff measures (NTMs) are all policies other than duties that act as barriers to international trade. NTMs can help protect infant industries and ensure health and safety standards are met.

Goldberg and Pavcnik (2016) look at the importance of tariffs and NTMs in affecting international trade. They attribute the reduction in average applied tariff rates to the existence of global trade organisations such as the WTO. These reductions in average tariff rates have helped facilitate trade by reducing some of the costs of trading. They explore how NTMs have played a greater role in directing trade policies.

It is difficult to assess the impact of NTMs on trade, and several indices exist to attempt to identify how restrictive a country's trade policy is. Hoekman and Nicita (2011) use different trade restrictiveness indices such as OTRI[1] and TTRI[2] to compare the impact of NTMs on trade. They find that tariffs are still the most widely used trade policy instrument, especially in developing countries. However, their importance is declining. NTMs are also found to be a significant source for restricting trade, but the authors find that focusing on behind-the-border policies can have greater payoffs than reducing NTMs.

Modern ITTs emphasise the importance of factor endowments and comparative advantage in guiding trade patterns. Other factors also affect trade directly or indirectly through its relationship with comparative advantages, information asymmetries, uncertainties, etc. One such factor is the institutional environment. Belloc (2006) underscores the importance of institutions in shaping comparative advantages, which ultimately help countries benefit from trade. For these reasons, looking at the literature that discusses factors other than trade policies and how they affect international trade is also helpful.

The last two decades have seen the increasing importance of Special Economic Zones (SEZs). SEZs offer location-specific advantages such as tax incentives, superior infrastructure, and better regulatory environments. SEZs also help facilitate GVC participation by creating more robust backwards and forward linkages between industries, increasing international competitiveness. The use of a SEZ was first initiated in Ireland in the 1950s, since then they have become a tool to promote industrialisation and economic transformation through exports. SEZs operate under different names in different countries, such as free-trade zones, industrial parks, enterprise zones, etc. One such name is Export Processing Zones (EPZs). EPZs have export-oriented objectives for economic development. Some countries use the terms EPZ and SEZ interchangeably; however, SEZs have broader objectives to improve infrastructure

[1]Overall Trade Restrictiveness Index is a measure by the World Bank to assess a country's trade policies and openness to imports.

[2]The Tariff Trade Restrictiveness Index is a similar measure to OTRI, also compiled by the World Bank which measures a countries trade restrictiveness by looking at its tariffs.

and provide employment, whereas EPZs focus more on improving trade balance by boosting exports.

The following two subsections review the empirical literature that assesses the determinants of international trade. Subsection 2.2.1 examines the literature on how various trade policies and trade agreements affect international trade, and subsection 2.2.2 will focus on how other factors, such as the institutional environment, the rule of law, and exchange rates, affect international trade.

2.2.1 Trade Policies and International Trade

Shafaeddin (1995) looked at the impact of trade liberalisation programmes on exports in developing countries in the 1980s which significantly reduced average applied tariff rates. She found that it was unsuccessful in creating exports and that liberalisation of trade is not a guaranteed method for success. Instead, the volume of investment and availability of imports are pivotal to the success/failure of export growth. She also points towards the design of trade and industrial policy in determining international trade.

Caliendo and Parro (2015) find significant heterogeneity in import elasticities by studying tariff reductions associated with NAFTA. They find that tariff reductions can successfully increase world trade growth, especially in industries with high trade elasticities. Their research helps to explain why trade has expanded rapidly in recent years despite small reductions in tariff rates compared to 1960-1990. Yi (2003) challenged the view that growth in world trade is directly connected to tariff reductions. Yi looks at countries' global value chain (GVC) participation and recognises that tariff reductions can have non-linear effects on growth. He shows that tariffs have a greater impact on countries with higher GVC participation. For example, if a product has 5 stages of production and new tariffs affect 3 of these stages, then the effects of tariffs will be three-fold. Yi's findings show that tariffs are still relevant through their interaction with technology and increasing vertical specialisation.

Free trade agreements (FTAs) can be considered both tariff and non-tariff measures. This is because FTAs are bilateral or multilateral agreements that remove trade barriers to boost international trade amongst the members of the agreement. Studies examining trade policies under FTAs, such as Cheong et al. (2018), find that tariff cuts or preferential tariffs play a significant role in

increasing the trade intensity of already traded products and increasing trade opportunities for new products.

Organisations such as the WTO have initiatives to help facilitate international trade; one such initiative is the Aid for Trade scheme. Stiglitz and Charlton (2006) highlight the possible importance of Aid for Trade in not only increasing imports but also exports and creating jobs. Furthermore, Yang et al. (2023) find that Aid for Trade schemes[3] help to facilitate international trade by alleviating some of the supply-side obstacles which constrain international trade, such as a lack of infrastructure or shortages of skilled labour.

Foreign direct investment (FDI) is not typically a trade policy tool; it represents investment inflows into the country. Governments often provide financial incentives to lure FDI to improve economic development. However, FDI can also boost international trade by supporting exporting industries. The export-led growth theory postulates that countries can expand their real GDP by increasing their exports. Aizenman and Noy (2006) explore the relationship between FDI inflows and trade openness using panel data from 81 countries. They find a strong positive correlation with FDI inflows. They also note that the effect of FDI on trade is more potent in developing countries than in industrialised countries. Magalhães and Africano (2018) study the link between FDI (inward and outward) and trade flows (exports and imports) in the Portuguese economy. They find a strong complementary relationship between inward FDI stimulating imports and exports. They suggest that FDI stimulates trade flows by expanding inter-industry and intra-firm trade.

Zeng (2021) studies the impact of SEZs and notes that, in general, the results have been quite mixed; however, they have contributed to globalisation by complementing market forces and overcoming market failures such as lack of regulatory and business environments. This is done by creating clusters of interrelated industries, which attract FDI and generate employment. The author says that SEZs are not appropriate as standalone initiatives to boost trade but rather must be complemented with adequate infrastructure and a proper regulatory framework.

Narula and Zhan (2019) describe a well-designed zone as one that evolves with changing comparative advantages, the benefits of which leak beyond the zone's perimeter.

Madani (1999) reviews the role and impact of EPZs. She concludes that

[3]Aid for Trade is led by the WTO and is aimed at helping developing countries increase their participation in international trade.

EPZs are not the best policy choice because of their complex relationship with trade; the best would be the liberalisation of the economy. EPZs, if not used properly, can create distortionary effects in policy-making and have limited economic contributions.

Johansson and Nilsson (1997) find that an outward-oriented trade policy benefits export-creation by incentivising investment and opening domestic markets to other countries. Din (1994) shows how the use of EPZs can promote non-traditional exports and achieve industrialisation in the long-term. He also mentions how EPZs help form better linkages within the domestic economy by creating clusters.

EPZs and SEZs are strategic tools that aim to boost international trade by attracting FDI and creating exports. They provide a favourable business environment to encourage business establishment. The cluster of these zones attracts higher-quality capital and labour.

2.2.2 Other factors which affect Trade

Institutions facilitate long-distance exchange by reducing imperfect and asymmetric information, which can otherwise create multiple equilibria in trade. Levchenko (2007) analyses the link between institutional quality and international trade. He finds that poor institutional quality affects international trade by influencing comparative advantages. This is because countries that have better institutions specialise in industries that require strong institutional support, and this specialisation leads to gains from trade.

Yu et al. (2015) finds that formal institutions (which rely on the rule of law) and informal institutions (which rely on trust) can act as substitutes. A lack of well-developed legal institutions means there is a risk of default and expropriation. This makes traders reliant on informal institutions to assess future payoffs. They also show that when models incorporate heterogeneous goods, then importers also bear part of the risk.

Handley (2014) finds trade policy uncertainty delays the entry of exporters into new markets and makes them less responsive to tariff reductions. Policy instruments which eliminate uncertainty, such as binding commitments by the WTO, help eliminate uncertainty and increase entry.

Exchange rates can also play an important role in affecting trade flows. The link between exchange rates and trade is a complex one. The basic presumption is that an exchange rate appreciation (depreciation) makes exports more

expensive (cheap) and imports cheaper (more expensive). Moreover, exchange rate volatility can negatively impact trade flows by creating an uncertain economic environment. Auboin and Ruta (2013) find that the evidence does not support this claim entirely. Instead, it is conditional on several other factors, such as the fact that exporting firms are more sensitive than importing firms. Therefore, the sensitivity of the effect of exchange rate volatility is likely to be reduced if exporters rely on imported inputs. Nicita (2013) finds that the relationship between volatility and trade is likely driven by underlying long-term policy credibility rather than short-term fluctuations. She also finds that exchange rate misalignments can affect trade policies; for example, a country may try to compensate for its overvalued currency by using antidumping measures. Rodrik (2008) shows how an exchange rate misalignment in the form of an undervalued currency stimulates economic growth in developed countries.

In summary, the literature shows that both trade policies and institutional factors can affect international trade. Many other factors, such as historical linkages, geography, proximity to trading partners, and cultural closeness, can also affect trade. This means that policies must be carefully designed and coordinated with strong existing institutions to maximise trade benefits.

2.3 Trade in Pakistan

Now, we can narrow our focus by looking at trade within Pakistan to understand what guides policies and the regulatory and business environment in which exporters operate.

Pakistan's trade policies can be described as mercantilist as it has long employed the Import Substitution industrialisation (ISI) strategy. ISI is a type of mercantilist strategy which focuses on limiting imports and substituting them with domestic production with the long-term goal of achieving industrialisation. Pakistan has followed an ISI strategy by implementing high import tariffs and thus becoming less reliant on imports. However, as Karim (2014) points out, the ISI strategy has failed to increase national welfare. This is because domestic industries have struggled to be productive. With Pakistan's accession to the WTO in 1995, the government started implementing trade liberalisation programmes.

Pursell et al. (2011) shed light on the inefficient structure of Pakistan's trade policies. They discovered that the tariffs are complex due to numerous full and partial exceptions, resulting in a diverse range of tariffs. The inefficient

organisation of tariff schedules is partly due to the several instruments through which the government announces tariff changes, such as Statutory Regulatory Orders (SROs) and the National Tariff Commission (NTC). The authors find that tariffs are guided by a 'cascading principle[4].' They argued that protectionist policies reduce national welfare by restricting choices and inadvertently protecting uncompetitive industries. A review of the new National Tariff Policy of 2019-2024 shows that it maintains the cascading nature of tariffs.

Yeo and Deng (2019) did an essential piece of research by studying trade flows between Pakistan and its main trading partners using a gravity model. They look at factors such as cost of entry, distances between countries and populations, and how they affect trade flows with partners. They find a negative correlation between NTMs and imports and a positive correlation between NTMs and exports. This would indicate that NTMs successfully reduce trade deficits and make a country internationally competitive. Although its FTA agreement with China, the China-Pakistan Free Trade Agreement (CPFTA), was found to be statistically significant in increasing trade flows, the results are more inconclusive regarding the GCC[5] and SAFTA[6] countries.

Zakaria et al. (2014) analysed the effects of trade liberalisation on imports and exports in Pakistan and found that it has increased imports more than exports. The asymmetric effects imply that the institutional environment limits the impact of trade policies. Therefore, policymakers need to find a balance between the two.

Despite trade liberalisation programmes, Pakistan still retains its trade deficit. Furthermore, this trade deficit has widened in recent years due to several factors. Hassan et al. (2017) used an ARDL approach to analyse the factors that affect trade deficits in Pakistan, Bangladesh, and India. For Pakistan, they find that an increase in the money supply means consumers have a higher demand for imports, consequently widening the trade deficit. The other key finding of the study shows how a depreciation of the real effective exchange rate (REER) helps to decrease the trade deficit. Their findings are consistent with other studies done on trade deficits. The study concludes with

[4]This means that downstream, more processed products have systematically higher tariffs than upstream products such as raw materials. The cascading principle seeks to protect domestic industries by pricing foreign goods at higher levels.

[5]Gulf Cooperation Council which includes Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

[6]South Asian Free Trade Area which includes Pakistan, Sri Lanka, India, Bangladesh, Bhutan, Maldives, Nepal, and Afghanistan.

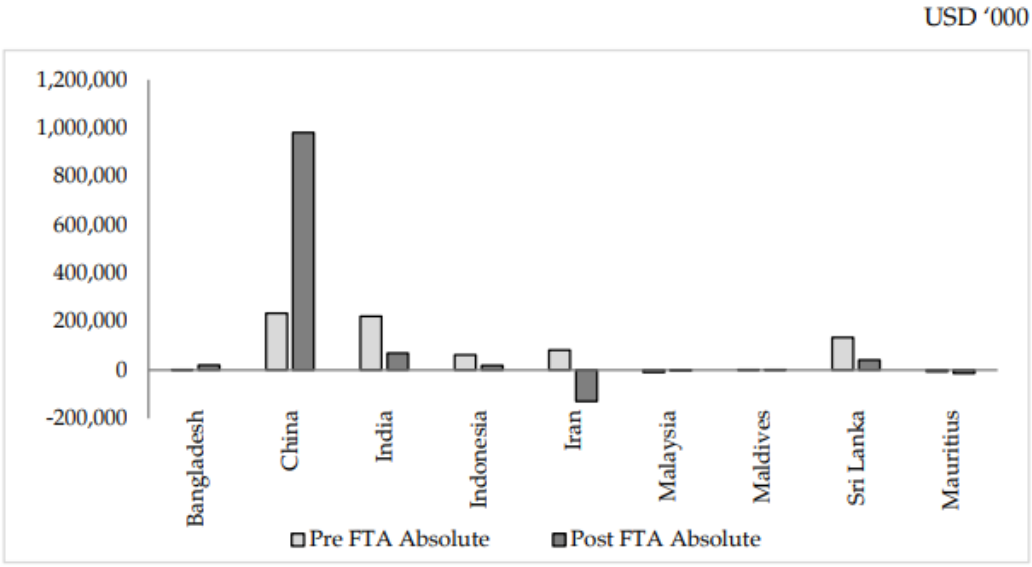
policy implications to help narrow these countries' trade deficits, which include controlling REER and the money supply.

2.3.1 Sector Trade in Pakistan

In this subsection, we review the literature that studies sector-level trade. This can help uncover heterogeneities in the different sectors and their responses to trade policies.

Pakistan is part of a regional trade agreement with South Asian countries called SAFTA and several bilateral trade agreements. A study looking at FTAs in Pakistan was done by Qureshi and Shah (2020), who used a difference-in-differences method by comparing pre- and post-FTA export levels. Of the 88 commodities they looked at, only 45 showed export creation, with 33 showing decreased net exports to FTA partners. Interestingly, the commodities which faced a post-FTA increase in exports are part of Pakistan's largest sectors. This includes textiles, agricultural products, minerals, and food exports. Figure 2.1 shows the percentage change in trade pre and post-FTA.

Figure 2.1: Net change in exports to FTA partners, 2007–16



Note: Figure 1 in 'Trade agreement and export creation' by Qureshi & Shah, 2020.

Pakistan's textile and clothing industry represents close to 50% of its exports. However, growth in this industry has stagnated. The sustainability and development of this sector are critical for the success of Pakistan's economy. Ahmed (2010) looked at the investment boom between 2003-07 and its

role in increasing growth rates. The investment boom is associated with the China-Pakistan Economic Corridor[7] (CPEC) initiative.

Chandio et al. (2019) analyse the impact of FDI on the economic performances of the agricultural sector and find a positive long-run impact, indicating its importance in boosting sector output in Pakistan. For FDI to positively impact the economy, there must be low barriers to investment. Pakistan aims to provide these through their economic zones.

Zahid et al. (2019) study the effectiveness of export subsidy schemes in increasing exports. Their results show that whilst FDI and exchange rate misalignments have statistically significant effects in creating exports, they find no conclusive evidence to suggest that export subsidies develop exports. A plausible reason is that subsidies take time to increase export flows. Nadeem and Kemal (2007) blame the failure of export subsidies on rent-seeking and procedural difficulties.

Pakistan passed the SEZ Act in 2012 to facilitate the establishment and operation of SEZs. 22 SEZs have been approved so far. The China-Pakistan Economic Corridor (CPEC) is an infrastructure project that aims to improve bilateral relations between Pakistan and China. Part of this commitment is the establishment of SEZs. There is an increased hope that the SEZs established as part of CPEC initiatives will yield better results to achieve economic prosperity. Pakistan Economic Survey (2021) outlines the goals of SEZs in Pakistan:

- Attract foreign direct investment.
- Generate employment.
- Encourage import substitution.
- Create cluster industries[8].

The success of SEZs lies in their ability to generate exports and employment and create linkages between the zones and the rest of the economy. Frick et al. (2019) analysed 22 SEZs in emerging countries, including three from Pakistan. They look at SEZ-related factors such as the incentives offered and the country's economic, political, and institutional factors. Unfortunately, the three SEZs from Pakistan are the only ones in the sample to experience absolute

[7]CPEC is an extensive infrastructure and economic development project which aims to improve connectivity and cooperation between China and Pakistan.

[8]Cluster industries are concentrations of related industries within regional areas that can support one another.

negative growth relative to national growth. Aslam et al. (2019) blame the poor governance and institutional environment. The importance of an excellent geographic location and environmental conditions to the success of SEZs in Pakistan is considered by Ahmed et al. (2020), who conclude that Allama Iqbal Industrial City in Faisalabad is the best SEZ due to its strong links to environmental resources.

Further research on how the establishment of the latest SEZs and EPZs impact Pakistan's sectors can help assess their success and provide a pathway for the future establishment of such zones.

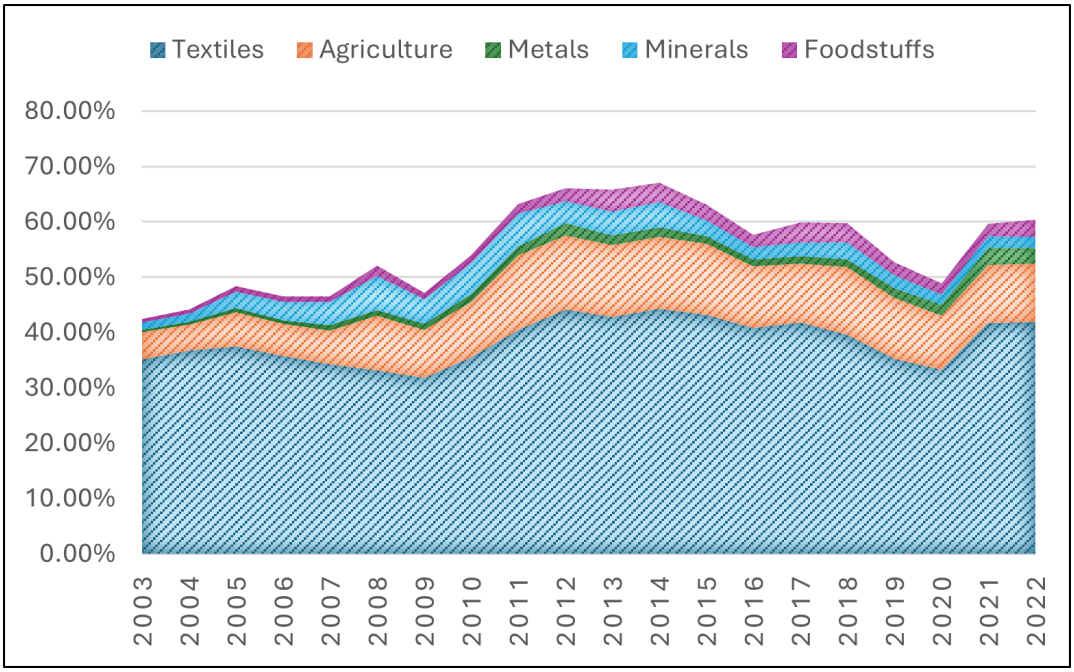
Section 2.1 helps to understand how ITTs have developed and moved towards removing trade restrictions. Through Smith and Ricardo's absolute and comparative advantage, international trade is now understood to be a positive sum game where countries can benefit from trading with each other. However, arguments remain for protectionist policies that aim to protect a country's infant and key industries against foreign competition. Section 2.2 explains how trade policies and institutional factors affect international trade. The emergence of economic zones in developing countries requires good governance and well-directed objectives to boost international trade. The last section sheds light on Pakistan's shift towards trade liberalisation programmes. However, the country still faces difficulties improving welfare due to its widening trade deficit and the asymmetric effects of policies on trade flows.

Chapter 3

Data

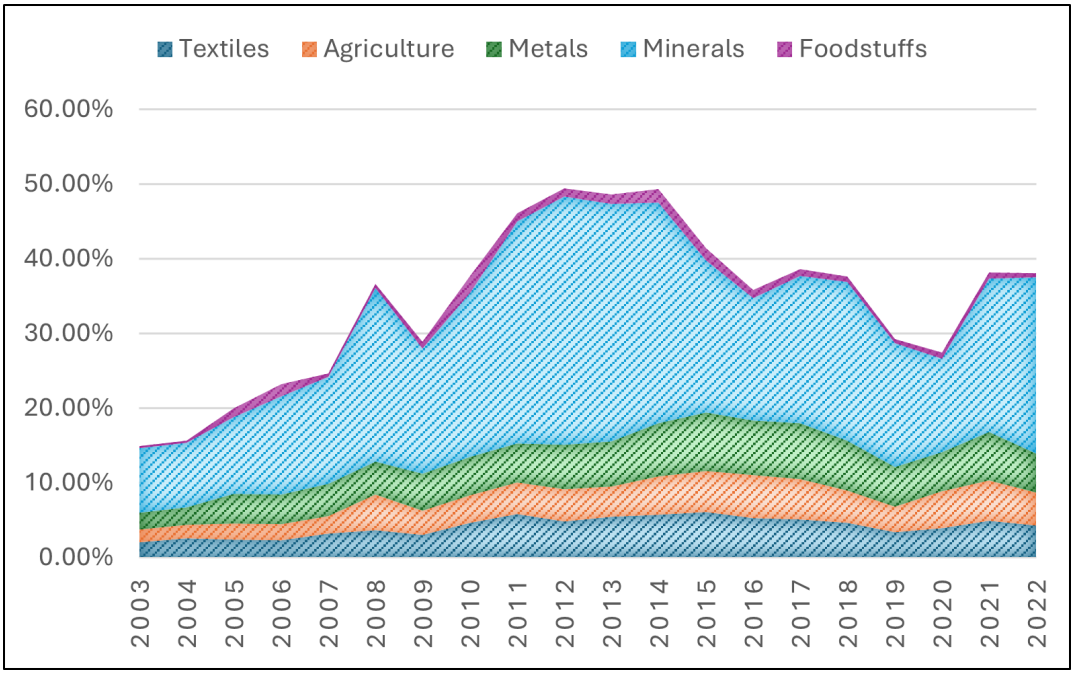
The data for this thesis is collected from various sources, including international organisations, government websites and independent think tanks. Data is collected for Pakistan's largest 5 economic sectors: Textiles, Agriculture, Metals, Minerals and Foodstuffs. Pakistan's trade, especially its exports, is concentrated within a few categories of goods, making it susceptible to adverse changes in trade policies. Figures 3.1 and 3.2 show how these 5 sectors capture around 60% of Pakistan's exports and just under 40% of its imports. Both imports and exports follow similar trends, with peaks in overall share between 2012-15.

Figure 3.1: Share of exports of Pakistan's 5 largest sectors.



Source: Own work based on the data from UN COMTRADE.

Figure 3.2: Share of imports of Pakistan's 5 largest sectors.



Source: Own work based on the data from UN COMTRADE.

Data is organised in a panel setting, otherwise known as longitudinal data. The data is available for 2003-2022, corresponding to the period for which data was collected. Tables A.1 and A.2 in the Appendix provide the description and sources for all the variables. Panel data increases our sample size and allows us to work with a greater variability of data, which should yield more robust results. It also allows us to measure the impact of sector-specific variables on sector-level exports. This will allow for a sector-level analysis of the effects of trade policies on Pakistan's largest sectors. There is a trade-off between sample size and the ability to conduct our analysis at the sector-level because a lack of data availability restricts us from collecting and calculating domestic and foreign-weighted tariff rates for a large number of sectors.

3.1 Description of Variables

3.1.1 Trade flows

Data on the imports and exports of the 5 sectors are collected from UN Comtrade, which offers detailed data regarding the trade flows of every product

classified by its HS code. HS codes, or Harmonised System codes[1], is a standardised way to classify products internationally traded using 6 digits. The first two digits represent the chapter, the next two are headings, and the last are subheadings. The five sectors are organised into HS codes based on statistics from the Pakistan Bureau of Statistics and UN data. They are grouped as follows:

- The textile sector is categorised within HS codes 50-63.
- The agricultural sector is categorised within HS codes 1-14.
- The metals sector is categorised within HS codes 25-27.
- The minerals sector is categorised within HS codes 72-83.
- The foodstuffs sector is categorised within HS codes 16-24.

The data on imports and exports for each sector is aggregated and combined into a panel setting. The three most important exports for each sector are used in Figures B.1 - B.5 in the Appendix to illustrate the trends in the sectors concerned (exports are plotted in millions of US$). It is interesting to note that whilst the sector output of the textile industry is increasing, the exports of cotton, which used to be the main component of the textile sector, have fallen significantly because of the closure of cotton mills and rising electricity prices. Furthermore, as seen in Figure B.3 in the Appendix, copper exports have risen drastically compared to other metal exports. Exports have gradually increased, with a sharper rise for most sectors in 2021 as the global economy continued to recover from the pandemic.

3.1.2 Tariffs

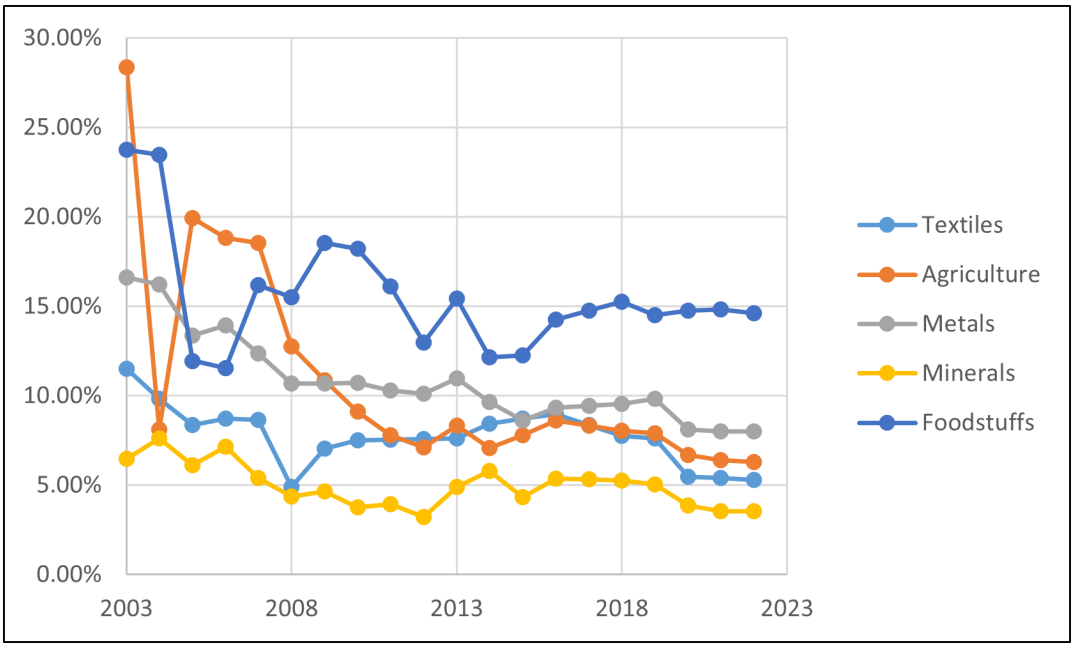
Pakistan's domestic sector average tariff rates[2] are collected for each sector. The highest tariff rates are for the textiles industry to protect domestic exporters from the competitive global textiles industry. The lowest tariff rates are on minerals because countries can rely on others to import mineral fuels to produce energy. Pakistan's three main export partners are the U.S., China, and Germany. To calculate sector-level tariffs faced by Pakistani exporters, we

[1]The HS system is organised into sections, chapters, headings, and subheadings. It helps to classify a specific good or a group of products.

[2]Domestic tariffs are the average of tariffs, weighted by their corresponding trade value for each sector applied by Pakistan

take the average tariffs applied by Pakistan's three main export partners and weight them according to their share of Pakistan's exports. Figures 3.1 and 3.2 show the domestic sector average tariff rates and the weighted sector average tariff rates of Pakistan's export partners between 2003-2022.

Figure 3.3: Domestic Sector Average Tariff Rates



Source: Own work based on the data from UN COMTRADE.

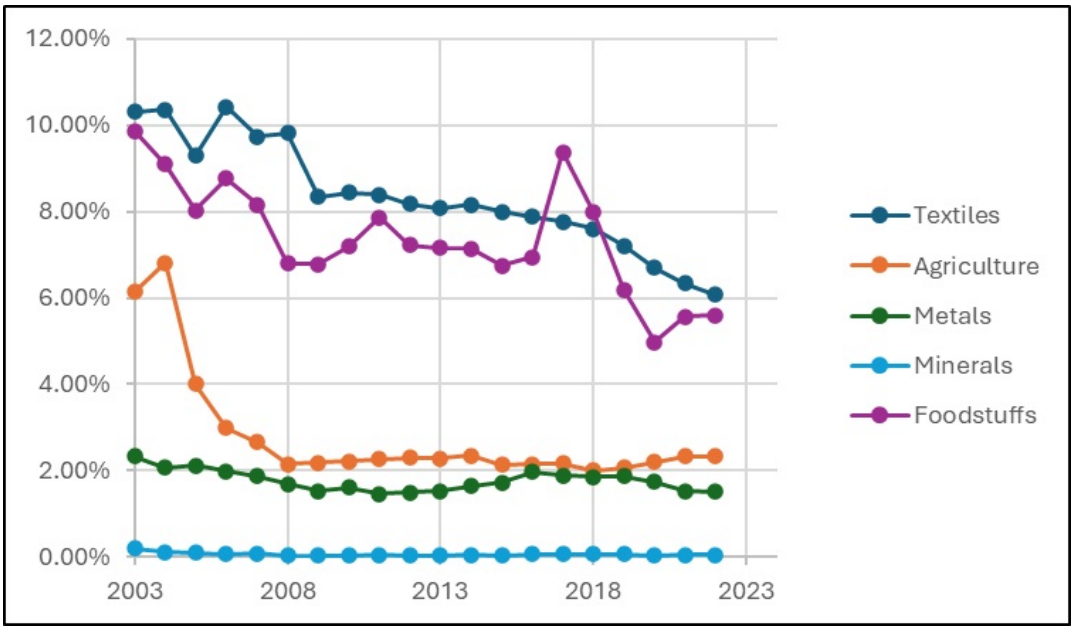
Pakistan's averaged applied tariff rates and weighted applied tariff rates of its partners have decreased since 2003. These two sets of tariff data will help determine how domestic and international tariffs affect imports and exports. Tariff data is sourced from the World Integrated Trade Solution (WITS) database.

3.1.3 Measure of Aggregate Trade Restrictiveness

The Measure of Aggregate Trade Restrictiveness (MATR) is a measure developed by the IMF which indicates how government policy restricts international trade. It covers the use of NTMs, such as administrative barriers or licensing requirements and foreign exchange controls. MATR is useful because it quantifies NTMs and explains how restrictive a government's trade policies are. Furceri et al. (2022) introduce MATR and how it is made up. They also provide empirical evidence of how changes in MATR affect GDP.

MATR is calculated at a country level and is the same for all 5 of Pakistan's economic sectors. We will also use foreign MATR to measure how the trade

Figure 3.4: Weighted Average Tariff rates of the US, China, and Germany



Source: Own work based on the data from UN COMTRADE.

restrictiveness of Pakistan's export partners affects trade flows. To calculate foreign MATR, we take the MATR of Pakistan's main export partners and weigh them according to their share of Pakistan's exports. Figure B.6 in the Appendix shows Pakistan's trade restrictiveness and the trade restrictiveness that Pakistan's export partners face. Pakistan's MATR is much higher than that of its partners. Both indices have been relatively stable, with a decrease since 2003.

3.1.4 Economic Zones

Data on economic zones (SEZs and EPZs) is collected from the Pakistan Board of Investment (BOI) and Export Processing Zones Authority (EPZA) websites. An economic zone can be dedicated to several sectors. Figure 3.4 categorises them by area according to the zone's primary activities. We can see the growth in both the number and area of economic zones since 2003.

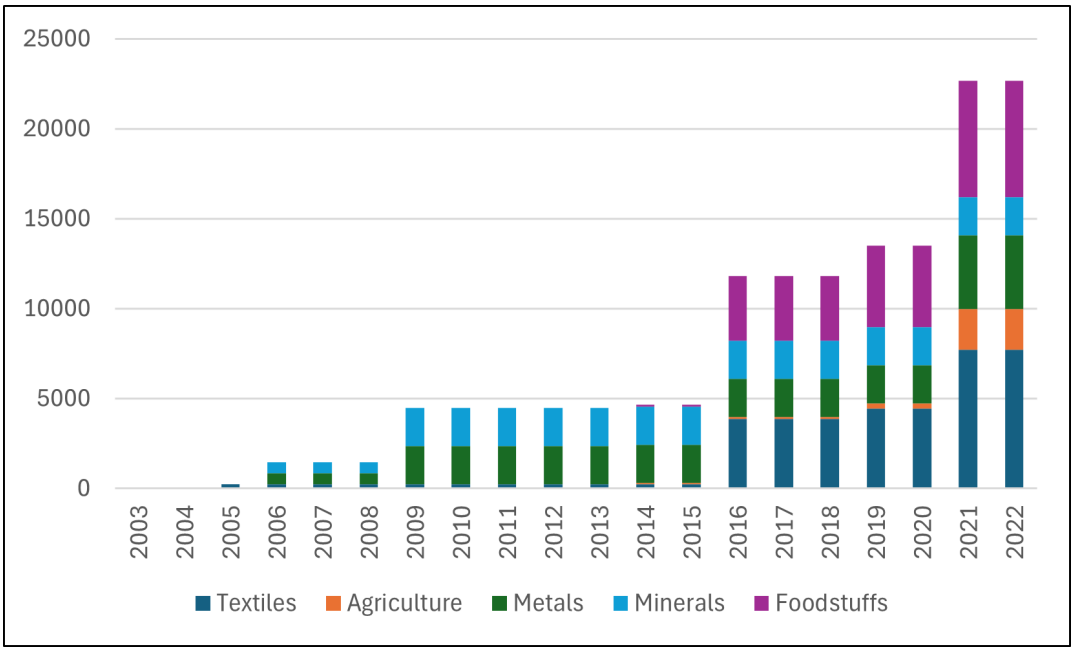
Using this data, the following variables are created:

- *SEZs*: Sum of the area of all special economic zones economic zones in a given year.
- EPZs: Sum of the area of all export processing zones in a given year.

- *Textiles*: Sum of the area of economic zones which fully (or partially) target the textiles sector.
- *Agriculture*: Sum of the area of economic zones which fully (or partially) target the agriculture sector.
- *Metals*: Sum of the area of economic zones which fully (or partially) target the metals sector.
- *Minerals*: Sum of the area of economic zones which fully (or partially) target the minerals sector.
- *Foodstuffs*: Sum of the area of economic zones which fully (or partially) target the foodstuffs sector.

Our dataset can lead to multicollinearity issues because of variables that vary little over time. The sector-specific variables are aggregated to create the *SEZs* and *EPZs* variables[3].

Figure 3.5: Area of Economic Zones (in acres)



Source: Own work based on the data from BOI and EPZA.

The SEZ Act of 2012 received significant amendments in 2016, after which progress is visible. The establishment of SEZs, which partially or fully focus on the production and trade of textiles and foodstuffs, grew substantially after

[3]Note that: $SEZs + EPZs = Textiles + Agriculture + Metals + Minerals + Foodstuffs$

2016. Data on economic zones will allow us to measure the impact of increasing zones on imports and exports of Pakistan's largest economic sectors.

3.1.5 Foreign Direct Investment

FDI figures on the textiles, agriculture, minerals, and metals industries are collected from the State Bank of Pakistan (SBP) in millions of $USD. For the foodstuffs industry, the United Nations Food and Agriculture Organization (FAO) offers data on FDI inflows to foodstuffs. FDI inflows help to capture the financial incentives and business environment. As discussed earlier, FDI can also have positive impacts on international trade. Figure B.7 in the Appendix shows how FDI inflows have varied from 2004-22.

3.1.6 Control Variables

Control variables are also included to help control for additional factors affecting international trade, as discussed in the literature review. The domestic GDP growth rate of Pakistan and the weighted foreign GDP growth rates of its partners are collected from the World Development Indicators (WDI) website. Annual % changes in the exchange rate are also calculated using data from the SBP and can help connect fluctuating trade flows to a weak Pakistani rupee. Figure B.8 in the Appendix shows the % changes in the Pakistani Rupee. The rule of law index is a measure by the World Bank and helps to capture the business environment. It indicates Pakistan's percentile ranking and is thus a relative measure. A higher value of this index means that Pakistan ranks at a higher percentile globally and indicates higher confidence in the country's institutions. We also take the sector share of GDP for each respective sector and lag it by 1 year to address any endogeneity issues.

3.2 Descriptive Statistics

3.2.1 Main Variables

Since 2003, the import and export flows in all five sectors of Pakistan's economy have increased. The minerals sector, which is Pakistan's largest, has experienced significant fluctuations. This sector's import values underscore Pakistan's reliance on foreign energy sources, with mineral imports rising from US$3 billion in 2003 to just under US$25 billion in 2022. On the export

side, textiles are Pakistan's largest export category and have shown substantial growth, especially in the past 3-4 years. The establishment of economic zones and the subsequent boom in 2016 have driven textile exports up more than two-fold, from US$8 billion in 2003 to US$18 billion in 2022. Additionally, metal exports have surged more than ten-fold, increasing from US$99 million to US$1.28 billion.

Table 3.1: Main Variables

Variable	*Obs.*	*Mean*	*Std. dev.*	*Min*	*Max*
Imports	100	$4285.66	$4853.08	$86.113	$24988.195
Exports	100	$3600.62	$4737.46	$99.573	$18612.600
Tariffs (domestic)	100	9.991%	4.841%	3.232%	28.373%
Tariffs (foreign-weighted)	100	3.909%	3.334%	0.020%	10.069%
FDI as a % of GDP	100	0.021%	0.045%	0.00005%	0.302%
MATR	20	15.7	0.905	14	18
Foreign-MATR	20	6.440	0.192	6.103	6.591

Note: Imports and Exports are expressed in millions of US

3.2.2 Economic Zones

Table 3.2 measures and displays the area of zones in thousands of acres. The textile industry has the most economic zones dedicated to it, followed by the foodstuffs sector.

Table 3.2: Economic zones

Variable	*Obs.*	*Mean*	*Std. dev.*	*Min*	*Max*
SEZs	100	0.768	0.177	0	7.498
EPZs	100	0.674	0.092	0	2.12
Textiles	100	0.387	1.387	0	7.736
Agriculture	100	0.0548	0.318	0	2.249
Metals	100	0.355	0.876	0	4.089
Minerals	100	0.315	0.739	0	2.12
Foodstuffs	100	0.330	1.241	0	6.474

3.2.3 Control Variables

Pakistan's GDP growth rate has fluctuated because it has had periods of recessions with subsequent high growth rates. Nevertheless, it has maintained a comparable average growth rate to its partners. Furthermore, the pandemic led to negative global growth rates in 2020. Pakistan only ranks in around the 23rd percentile globally regarding the rule of law index. This level of institutional quality is relatively low and can adversely affect trade. The Pakistani Rupee has depreciated significantly since 2003, which can make imports more expensive and exports cheaper.

Table 3.3: Control variables

Variable	*Obs.*	*Mean*	*Std. dev.*	*Min*	*Max*
GDP growth rate (Pakistan)	20	4.306%	2.146%	-1.274%	7.831%
Foreign weighted GDP growth rate	20	4.959%	1.974%	-0.551%	8.211%
Rule of law	20	23	3.012	17.308	28.436
Annual % changes in exchange rate	20	1.070%	0.926%	0.092%	3.155%
Sectoral share of GDP	100	10.111%	6.948%	2.38%	25.53%

Chapter 4

Methodology

This section outlines the methodological framework and the models used to investigate the impact of trade policies on Pakistan's economy at a sector level.

We will use a panel regression model as described in Hanck et al. (2021) and Wooldridge (2018). A panel regression model is chosen for its ability to control for any heterogeneity between sectors and control for unobservable variables. The models will have the following general structure:

$$Y_{i,t} = \alpha_i + \lambda_t + \beta X_{i,t} + \epsilon_{i,t} \tag{4.1}$$

$$i = 1, \ldots, n, \; t = 1, \ldots, T$$

Where:

- $Y_{i,t}$ = Dependent variable for sector i at time t.
- α_i = Entity-specific effects.
- λ_t = Time fixed effects.
- $X_{i,t}$ = Independent variables for sector i at time t.
- $\epsilon_{i,t}$ = Error term.

The fixed-effects (FE) estimator (also known as a 'within estimator') is a common approach in panel data analysis. It allows us to study the effect of trade policies on trade flows of several Pakistani sectors while controlling for any unobserved heterogeneity across the sectors. It helps to isolate the impact of trade policy variables on trade flows. An FE model allows us to focus on the relationship between trade flows and trade policies within each sector by isolating the impact of trade policy variables on sector-specific trade flows.

Furthermore, an FE model addresses the issue of a small dataset with 5 economic sectors. Robust (White) standard errors allow for heteroskedasticity and autocorrelation within panels or economic sectors but not across them. Driscoll and Kraay standard errors are a form of robust standard errors that also address cross-sectional dependence and serial correlation within panel data. If we find issues of serial correlation, they can provide a suitable method of estimating standard errors for panel datasets.

Sector-specific and time-fixed effects work by creating dummy variables for each sector and year, respectively. Since the data spans over 20 years, fixed effects, such as geographical and historical factors or fluctuations in global market trends, can affect trade flows; sector-specific and time-fixed effects capture these unobserved factors. Time-fixed effects control for factors that are constant across sectors but vary over time.

Our data spans 5 sectors (N=5) over 20 years (T=20). Such a dataset with 20 years would require 20 time dummies, which could mean a significant loss of degrees of freedom. This can create several issues, such as the inflation of standard errors, multicollinearity, and overfitting the model, making it difficult to make valid statistical inferences from the model. To overcome this issue, we manually created 4 dummies for 5-year intervals between 2003 and 2022.

We will estimate two models focusing on both the import and export flows of Pakistan's largest economic sectors. Given that Pakistan's trade policies aim to substitute imports for exports, we can study whether introducing economic zones has helped accomplish this goal. Furthermore, we can examine whether tariffs remain an important determinant of international trade flows. Import and export flows are transformed using logarithms, and our models take the following structure:

$$\log(\text{Exports}_{i,t}) = \alpha_i + \lambda_{k(t)} + \beta Trade_{i,t} + \gamma X_{i,t} + \epsilon_{i,t} \tag{4.2}$$

$$\log(\text{Imports}_{i,t}) = \alpha_i + \lambda_{k(t)} + \beta Trade_{i,t} + \gamma X_{i,t} + \epsilon_{i,t} \tag{4.3}$$

$$i = 1, \ldots, 5,\ t = 1, \ldots, 20$$

$$k(t) = \begin{cases} 1 & \text{if } t \in [2003, \ldots, 2007] \\ 2 & \text{if } t \in [2008, \ldots, 2012] \\ 3 & \text{if } t \in [2013, \ldots, 2017] \\ 4 & \text{if } t \in [2018, \ldots, 2022] \end{cases}$$

Where $Trade_{i,t}$ are the trade-policy related variables including:

- Domestic and foreign-weighted tariffs
- Domestic and foreign-weighted MATR
- FDI as a percentage of GDP
- Aggregate size of special economic zones (in thousands of acres) in a given year
- Aggregate size of export processing zones (in thousands of acres) in a given year
- Aggregate sizes of economic zones (in thousands of acres) devoted to the Textiles, Agriculture, Metals, Minerals and Foodstuffs sectors.

And $X_{i,t}$ are the control variables which include:

- Domestic GDP growth rate
- Foreign GDP growth rate
- Rule of law percentile ranking
- Annual % changes in the Pakistani Rupee
- Sector share of GDP

Table 4.1: Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Tariffs (domestic) (1)	1.00									
Tariffs (foreign) (2)	0.37	1.00								
MATR (domestic) (3)	0.30	0.11	1.00							
MATR (foreign) (4)	0.27	0.09	0.24	1.00						
FDI (5)	0.10	0.05	-0.03	0.00	1.00					
EPZs (6)	-0.44	-0.58	-0.22	-0.19	-0.30	1.00				
SEZs (7)	0.01	0.30	-0.13	-0.44	-0.02	-0.22	1.00			
Textiles (8)	-0.19	0.30	-0.07	-0.24	-0.06	-0.13	0.68	1.00		
Agriculture (9)	-0.12	-0.09	-0.11	-0.27	0.08	-0.13	0.11	-0.05	1.00	
Metals (10)	-0.04	-0.29	-0.15	-0.18	-0.17	0.61	-0.07	-0.11	-0.07	1.00
Minerals (11)	-0.49	-0.50	-0.13	-0.12	-0.18	0.64	-0.19	-0.12	-0.07	-0.17
Foodstuffs (12)	0.26	0.18	-0.06	-0.24	0.03	-0.20	0.63	-0.07	-0.05	-0.11
GDP growth (domestic) (13)	0.19	0.10	0.24	-0.08	-0.09	-0.17	0.03	0.01	0.06	-0.06
GDP growth (foreign) (14)	0.22	0.10	-0.06	0.32	-0.03	-0.19	-0.26	-0.15	-0.07	-0.11
Rule of law (15)	-0.23	-0.10	-0.25	-0.56	0.01	0.23	0.33	0.19	0.18	0.16
% Changes in PKR (16)	-0.26	-0.10	-0.10	-0.48	0.15	0.13	0.38	0.21	0.23	0.13
Sectoral share (17)	0.35	0.32	0.04	0.07	0.43	-0.71	0.06	0.01	0.23	-0.42

Table 4.2: Correlation matrix continued

	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Minerals (11)	1.00						
Foodstuffs (12)	-0.11	1.00					
GDP growth (domestic) (13)	-0.10	0.00	1.00				
GDP growth (foreign) (14)	-0.12	-0.17	0.53	1.00			
Rule of law (15)	0.14	0.19	-0.21	-0.16	1.00		
% Changes in PKR (16)	0.08	0.21	-0.36	-0.52	0.32	1.00	
Sectoral share (17)	-0.44	0.05	0.03	0.06	-0.06	-0.06	1.00

Since our dataset is small and some control variables vary across time and not across sectors, multicollinearity issues might arise. A correlation coefficient of > 0.75 can indicate multicollinearity issues in the model. To address such issues, we test the sensitivity of our results by reestimating the models by omitting highly correlated variables in a robustness check. Most of the correlation arises between the SEZ/EPZ variables and economic zones of the different sectors. The metals and minerals sectors are positively correlated with EPZs because export zones mainly concentrate on exporting metals and minerals goods. This also applies to the textiles and foodstuffs sectors, which are positively correlated with SEZs. There is also a negative correlation between sectoral share and EPZs. Therefore, these two variables are not used in the same model specification.

Chapter 5

Results and Discussion

In this section, we present the results of the import and export models in Tables 5.1 and 5.2. A discussion of the findings follows each table, analysing the direction and magnitude of the different variables. Tables 5.3 and 5.4 test both models for heteroskedasticity and serial correlation of standard errors. We also perform a robustness check using clustered standard errors to compare our results.

The results should provide an understanding of the impact of sector-level tariffs on Pakistan's largest sectors. These findings should help policymakers of developing economies to optimise trade policies and improve trade performances.

Table 5.1: Import model results

	Log(Imports)			
	(1)	(2)	(3)	(4)
Tariffs	-2.453***	-2.524***	-2.370***	-2.554***
	(0.659)	(0.559)	(0.607)	(0.503)
MATR	-0.080**	-0.066**	-0.070**	-0.070***
	(0.036)	(0.029)	(0.028)	(0.026)
FDI as % of GDP	57.753	46.462*		
	(44.264)	(25.017)		
SEZs	0.010	0.023**		
	(0.009)	(0.011)		
EPZs		0.167***		
		(0.033)		
Textiles			0.015	0.015
			(0.015)	(0.014)
Agriculture			-0.015	-0.014
			(0.021)	(0.018)
Metals			0.049**	0.049**
			(0.024)	(0.024)
Minerals			0.128***	0.137***
			(0.048)	(0.049)
Foodstuffs			0.004	0.005
			(0.017)	(0.017)
Rule of law	0.026***		0.021***	0.021***
	(0.010)		(0.008)	(0.007)
Domestic GDP	-0.359	0.286		0.313
growth	(0.532)	(0.637)		(0.476)
Exchange rate		3.931*	3.448	3.827
depreciation		(2.059)	(3.234)	(3.320)
Sector share of GDP	-0.026		-0.012	
	(0.017)		(0.015)	
Sector-specific FE's	Yes	Yes	Yes	Yes
5-Year time FE's	Yes	Yes	Yes	Yes
Observations	100	100	100	100
R2	0.7090	0.7120	0.7491	0.7484
Adjusted R2	0.6570	0.6605	0.6933	0.6925

Note: *** Significant at 1%, ** Significant at 5%, * Significant at 10%. Driscoll and Kraay standard errors in parenthesis.

From the import model results in Table 5.1, we observe that domestic tariffs significantly and negatively impact imports of the largest sectors. A 1% increase in domestic tariffs reduces imports by 2-3%. This result underscores the role of tariffs as a crucial tool in managing import levels.

Pakistan's aggregate trade restrictiveness also negatively influences import flows, as illustrated by a consistent negative coefficient across all model specifications. This finding suggests that Pakistan's non-tariff measures (NTMs) reduce import volumes by 0.06-0.08%. This indicates that stricter NTM's can lead to decreased import flows, highlighting their importance in trade policy.

Foreign direct investment as a % of GDP and Special Economic Zones show positive but inconclusive evidence as their coefficients only gain statistical significance once included in the same regression specification. Therefore, we will reexamine these variables in a couple of robustness checks.

The results for Export Processing Zones show a positive and statistically significant relationship with imports. A 1000-acre increase in EPZ area increases import flows by 0.167%. Specifications (3) and (4) indicate that the impact of EPZs on imports is primarily through the minerals sector and, to a lesser extent, the metals sector. While SEZs focus on all five sectors in the analysis, EPZs are more targeted towards the minerals and metals sectors. It is a surprising finding that while EPZs are aimed explicitly towards increasing exports, they also lead to increased imports. This finding could be because some industries may need to import so that they can export. Pakistan imports energy sources to increase domestic production.

The rule of law index positively impacts imports, suggesting that better institutional quality contributes to a more stable economic environment. A higher rule of law index can increase imports through two channels: 1) businesses can make better decisions and expand production. A study by Rasheed et al. (2023) finds that the rule of law index is significant in explaining GDP growth rates through better allocation of labour and capital. And 2) households reduce their savings and increase consumption, leading to higher imports.

Contrary to expectations, domestic GDP growth and the exchange rate do not significantly affect the import flows of Pakistan's largest sectors. This may be because Pakistan's imports are unaffected by external factors such as growth rates; however, growth rates are affected by internal factors such as electricity prices or economic instability. Exchange rate depreciation should make imports more expensive. However, the insignificant effect of exchange rate depreciation can imply the inelasticity of Pakistan's largest import sectors.

Table 5.2: Export model results

	Log(Exports)			
	(1)	(2)	(3)	(4)
Foreign-weighted	-8.342**	-7.843**	-8.173**	-6.841**
tariffs	(3.308)	(3.645)	(3.870)	(3.283)
Foreign-weighted	-0.053	-0.022	0.051	0.044
MATR	(0.083)	(0.077)	(0.084)	(0.092)
FDI as % of GDP	73.744	79.946		53.888
	(50.714)	(53.260)		(36.548)
SEZs		0.022		
		(0.014)		
EPZs	0.194***	0.213***		
	(0.054)	(0.045)		
Textiles			-0.037***	-0.034***
			(0.013)	(0.012)
Agriculture			0.015	-0.012
			(0.018)	(0.020)
Metals			0.271***	0.269***
			(0.040)	(0.039)
Minerals			0.104	0.092
			(0.063)	(0.072)
Foodstuffs			0.049*	0.047*
			(0.027)	(0.024)
Rule of law	0.005		0.005	
	(0.007)		(0.006)	
Foreign-weighted	1.535*	1.753**	1.177*	1.469**
GDP growth	(0.909)	(0.672)	(0.772)	(0.643)
Exchange rate	6.765***	6.170***	6.064***	5.302***
depreciation	(1.383)	(1.303)	(1.722)	(1.549)
Sector share of GDP				-0.044***
				(0.012)
Sector-specific FE's	Yes	Yes	Yes	Yes
5-Year time FE's	Yes	Yes	Yes	Yes
Observations	100	100	100	100
R2	0.5616	0.5701	0.7014	0.7283
Adjusted R2	0.4833	0.4934	0.6350	0.6638

Note: *** Significant at 1%, ** Significant at 5%, * Significant at 10%. Driscoll and Kraay standard errors in parenthesis.

The results from the export model show that foreign tariffs have a strong and negative effect on export flows. Since the majority of Pakistan's exports are concentrated in its largest sectors, foreign-weighted tariffs are crucial in guiding Pakistan's exports. This indicates that Pakistani exports are highly sensitive to external trade barriers. A 1% increase in foreign tariffs can reduce exports by approximately 8%. This is an important finding because it explains how the tariffs placed by Pakistan's partners impact its' exports. The effect of foreign tariffs on exports is much larger than that of domestic tariffs on imports, meaning that their exports can be more price sensitive, whilst imports are more inelastic because they are necessities. This is reflected in the fact that Pakistan's largest export, textiles, is also produced by other countries in the region, such as Bangladesh and India. Hence, it is relatively easy for other countries to purchase goods that Pakistan exports from other countries nearby.

A study by Gutiérrez Chacón and Machuca (2021) examines the effect of tariffs on Spanish exports and finds that a 1% increase in tariffs leads to a 1% decrease in exports. They also look at the impact of tariffs at the sector-level where the food and vehicles sectors have an effect of greater than 1%, and other sectors show a clear and negative impact on exports. A meta-analysis by Polák et al. (2020) finds the effect to be between -0.9% and -2% internationally.

Pakistan's export partners' non-tariff trade restrictions do not significantly affect export flows. NTMs placed on Pakistani exports by its partners primarily aim to ensure health and safety standards are met rather than to restrict trade. Consequently, Pakistani exporters are generally able to comply with these requirements.

In contrast, Pakistan's NTMs on its imports are very technical and structured in a complicated way, as seen from the UN TRAINS database. These measures make it difficult for Pakistani firms to import goods. The statistical significance of domestic MATR and the lack of significance for foreign MATR reflect the differing purposes of NTMs used by Pakistan and its trade partners. Pakistan employs NTMs to restrict imports; its partners use NTMs to ensure health and safety standards are met.

The results for FDI inflows are insignificant. Although the models suggest a positive relationship, which is in line with the study by Aizenman and Noy (2006), better data availability is needed to study the impact of FDI at a sector level rather than aggregate GDP, as discussed earlier.

Special Economic Zones are not statistically significant, which may be due to the lack of clearly defined objectives and targeted policies for SEZs. It could

also be that these economic zones are more helpful in driving domestic output rather than exports. However, the sample of SEZs from Pakistan used in Frick et al. (2019) shows that SEZs have not contributed to national growth. Conversely, Export Processing Zones are generally successful in generating export flows. EPZs have a comparable effect on imports and exports; however, the impact on the latter is more potent. A 1000-acre increase in EPZ area increases export flows by around 0.2%. Specifications (3) and (4) show that this could be through the metals and foodstuffs sectors, which exhibit positive results in increased export flows. The mixed results of SEZs and EPZs could partially result from unobserved spillovers such as rising electricity prices, adverse weather conditions and fluctuations in global demand patterns.

Additionally, exchange rate depreciation represents a weakening of the exchange rate, making imports more expensive and exports cheaper. While this boosts export flows in the short term, it is not sustainable in the long run. Afzal and Ahmad (2004) says that devaluation/depreciation of the Pakistani Rupee has not historically improved the trade balance in Pakistan because other factors, such as savings and investments, offset any potential increases in exports. They say that it should be accompanied by appropriate fiscal and monetary policies to help stabilise the economy.

Table 5.3: Import model diagnostics

Import model	(1)	(2)	(3)	(4)
Breusch-Pagan test statistic	33.379	36.453	38.838	36.585
Breusch-Pagan test p-value	0.000	0.000	0.000	0.000
Breusch-Pagan test decision	HetSk	HetSk	HetSk	HetSk
Wooldridge test Chi-Square statistic	42.188	47.294	47.536	49.58
Wooldridge test p-value	0.003	0.000	0.000	0.000
Wooldridge test decision	Serially correlated	Serially correlated	Serially correlated	Serially correlated

Note: Tests are done at 95% significance level. They are rejected if p-value<0.05. HomSk/HetSk short for homoskedastic and heteroskedastic.

Table 5.4: Export model diagnostics

Export model	(1)	(2)	(3)	(4)
Breusch-Pagan test statistic	45.163	44.791	46.04	60.919
Breusch-Pagan test p-value	0.000	0.000	0.000	0.000
Breusch-Pagan test decision	HetSk	HetSk	HetSk	HetSk
Wooldridge test Chi-Square statistic	66.003	65.219	46.12	43.368
Wooldridge test p-value	0.000	0.000	0.000	0.002
Wooldridge test decision	Serially correlated	Serially correlated	Serially correlated	Serially correlated

Note: Tests are done at 95% significance level. They are rejected if p-value<0.05. HomSk/HetSk short for homoskedastic and heteroskedastic.

Tables 5.3 and 5.4 show heteroskedasticity and a serial correlation of errors in both models. Thus, we address these issues by displaying the results in Tables 5.1 & 5.2 using Driscoll and Kraay standard errors as described in Hoechle (2007). Driscoll and Kraay standard errors are heteroskedasticity and autocorrelation-consistent (HAC) estimators. These standard errors can handle cross-sectional dependence, which can happen when clusters influence each other. Other standard errors, such as Newey-West, are also HAC but do not account for cross-sectional dependence, which can be an issue in panel datasets. Using Driscoll and Kraay standard errors ensures we can make valid statistical inferences from our panel regression models.

5.1 Robustness Check

As a robustness check, we employ clustered standard errors to adjust for the serial correlation of errors, as indicated in Tables 5.3 and 5.4. We then evaluate whether the results are comparable with Driscoll and Kraay's standard errors. These standard errors are used with caution because they do not account for cross-sectional dependence. Since the number of clusters and sample size is small, standard errors can be inflated in some areas, causing variables to lose statistical significance.

Table 5.5: Import model results (with clustered standard errors)

	Log(Imports)			
	(1)	(2)	(3)	(4)
Tariffs	-2.453	-2.524	-2.370	-2.554
	(1.791)	(1.713)	(1.965)	(1.637)
MATR	-0.080***	-0.066***	-0.070**	-0.070***
	(0.014)	(0.014)	(0.016)	(0.014)
FDI as % of GDP	57.753***	46.462**		
	(10.557)	(15.272)		
SEZs	0.010	0.023		
	(0.021)	(0.013)		
EPZs		0.167***		
		(0.027)		
Textiles			0.015	0.015
			(0.014)	(0.016)
Agriculture			-0.015	-0.014
			(0.024)	(0.043)
Metals			0.049*	0.049*
			(0.022)	(0.022)
Minerals			0.128*	0.137**
			(0.051)	(0.043)
Foodstuffs			0.004	0.005
			(0.017)	(0.019)
Rule of law	0.026**		0.021*	0.021*
	(0.007)		(0.010)	(0.009)
Domestic GDP	-0.359	0.286		0.313
growth	(0.417)	(0.884)		(0.667)
Exchange rate		3.931	3.448	3.827
depreciation		(4.072)	(3.232)	(3.614)
Sector share of GDP	-0.026		-0.012	
	(0.035)		(0.032)	
Sector-specific FE's	Yes	Yes	Yes	Yes
5-Year time FE's	Yes	Yes	Yes	Yes
Observations	100	100	100	100
R2	0.7090	0.7120	0.7491	0.7484
Adjusted R2	0.6570	0.6605	0.6933	0.6925

Note: *** Significant at 1%, ** Significant at 5%, * Significant at 10%. Clustered standard errors in parenthesis.

Table 5.6: Export model results (with clustered standard errors)

	Log(Exports)			
	(1)	(2)	(3)	(4)
Foreign-weighted	-8.342**	-7.843**	-8.173*	-6.841**
tariffs	(2.883)	(2.354)	(3.622)	(2.213)
Foreign-weighted	-0.053	-0.022	0.051	0.044
MATR	(0.159)	(0.918)	(0.091)	(0.100)
FDI as % of GDP	73.744	79.946		53.888
	(99.676)	(98.504)		(61.407)
SEZs		0.022		
		(0.020)		
EPZs	0.194**	0.213***		
	(0.065)	(0.055)		
Textiles			-0.037	-0.034
			(0.022)	(0.020)
Agriculture			0.015	-0.012
			(0.031)	(0.039)
Metals			0.271***	0.269***
			(0.036)	(0.033)
Minerals			0.104	0.092
			(0.052)	(0.052)
Foodstuffs			0.049*	0.047**
			(0.018)	(0.017)
Rule of law	0.005		0.005	
	(0.007)		(0.008)	
Foreign-weighted	1.535	1.753	1.177	1.469
GDP growth	(1.649)	(1.444)	(1.411)	(1.250)
Exchange rate	6.765*	6.170**	6.064**	5.302*
depreciation	(2.482)	(2.133)	(2.089)	(2.047)
Sector share of GDP				-0.044*
				(0.019)
Sector-specific FE's	Yes	Yes	Yes	Yes
5-Year time FE's	Yes	Yes	Yes	Yes
Observations	100	100	100	100
R2	0.5616	0.5701	0.7014	0.7283
Adjusted R2	0.4833	0.4934	0.6350	0.6638

Note: *** Significant at 1%, ** Significant at 5%, * Significant at 10%. Clustered standard errors in parenthesis.

The standard errors for domestic tariffs in Table 5.5 get inflated to the point where they lose statistical significance. This could be because clustered standard errors focus on within-cluster correlation. SEZs also lose significance, suggesting their impact on imports is not robust. The metals and minerals sectors retain their significance, as does the rule of law.

The robustness check for the export model yields similar results where foreign tariffs retain their statistical significance. SEZs remain insignificant, meaning they do not have a robust impact on imports or export flows.

Using clustered standard errors as a robustness check provides a more conservative assessment of the coefficients' statistical significance. The general patterns and conclusions drawn from the models remain intact.

Tables A.3 and A.4 in the appendix show the results for both models recalculated using White standard errors. The fact that domestic tariffs are significant without clustering in Tables 5.1 and A.1 suggests that they negatively affect imports. Otherwise, the results are similar to our baseline results and robustness check. Similarly, Tables A.5 and A.6 in the Appendix recalculate the results, including a dummy variable for Covid during 2020-2022. The Covid dummy helps to control for the pandemic, which affected international trade between 2020-2022. The results for the import model are very similar, and the Covid dummy did not significantly affect our results. Alternatively, the export model shows a negative and significant coefficient for the Covid dummy, implying that Covid had a negative impact on export flows.

Chapter 6

Conclusion

This thesis has studied the impact of trade policies on Pakistan's largest sectors to understand how different sectors respond to trade regulations. It has also highlighted the effectiveness of Special Economic Zones. This research is important because it should help understand the implications of trade policies at the sector-level in developing economies. It should also aid policymakers in creating sector-specific policies and directing policy decisions regarding the development and management of economic zones in Pakistan.

A review of the impact of trade policies on Pakistan's sector-level international trade reveals several critical insights and implications. It shows that tariffs have a significant and negative effect on imports and exports. The crucial finding here is that the impact of tariffs tends to be greater on exports than imports. This would suggest that Pakistan's import substitution policies are ineffective, and countries must find an alternative way to control a widening trade deficit. Furthermore, it also studies how economic zones have affected trade flows, which can help determine whether there is a scope to expand their implementation in the future.

Firstly, the results show how tariffs remain a relevant trade policy tool in Pakistan for both imports and exports. This is in line with Hoekman and Nicita's (2011) study about the importance of tariffs in developing countries. Whilst an increase in Pakistan's domestic tariffs by 1% might reduce imports by around 2-3%, foreign tariffs placed by the U.S., China and Germany on Pakistani exports have a much more significant effect of around 6-8%. These findings mean we fail to reject hypothesis 1, which posits that tariffs remain an essential trade policy instrument. Considering the increasingly protectionist trade environment, these findings underline the negative consequence of tar-

iffs for Pakistan's (and other comparable developing economies) international trade.

This finding, along with Caliendo and Parro's (2015) research indicating that tariff reductions have a greater impact in sectors with high trade elasticities, underscores the importance of reducing tariffs for sectors with high trade elasticities to try and reduce the trade deficit. It is essential to organise the structure of tariffs much more efficiently to avoid higher costs of production because of more expensive imported inputs.

Secondly, we also see that Pakistan's aggregate trade restrictiveness plays a role in restricting imports. Hence, we also fail to reject the second hypothesis, which posits that NTMs negatively impact trade flows. Increasing tariffs can lead to retaliation and initiate trade wars, meaning NTM's can be used to restrict trade. Although NTMs are found to have a marginal negative effect on trade, Pakistan can strategically impose NTMs, such as administrative barriers or technical requirements on imports, to help reduce its trade deficit. The effectiveness of NTMs could grow in an era of rising protectionist policies.

Furthermore, we can see some evidence that the use of economic zones increases trade flows. SEZs still require better-targeted sector-specific policies to increase trade flows. We cannot reject the third hypothesis because some evidence shows how economic zones, particularly EPZs, have increased trade in the metals and minerals sectors. SEZs that target the foodstuffs sector have also made limited progress. The success of EPZs can mean that Pakistan should expand these schemes to more sectors and create links within the economy. A more extensive network of EPZs can lead to higher exports.

The results for the export model also show how exchange rate depreciation has a positive effect on export flows. An exchange rate depreciation creates knock-on effects on the economy with changes in the allocation of economic resources. Hence, it is important not to rely solely on a weak exchange rate to improve the trade deficit but rather to create a better balance of macroeconomic policies to manage a weakening exchange rate.

The findings suggest that Pakistan should strive to negotiate lower tariffs with its trading partners to boost exports. This is particularly crucial given the increasingly protectionist policies internationally. Countries such as India, Bangladesh and Sri Lanka have a similar composition in trade to that of Pakistan, so engaging with these regional trade partners through trade agreements and economic cooperation can lead to sustained progress. This requires overcoming political barriers that have long existed since Pakistan gained inde-

pendence. Unfortunately, it is something that has held the country back from becoming one of the leading economies in South Asia.

Pakistan's largest trade agreement with China, the CPFTA, has increased economic cooperation with China. However, while its imports from China are valued at US$22 billion, its exports are only valued at US$3 billion, meaning a trade deficit of US$19 billion. Trade agreements must be structured to ensure they are mutually beneficial, preventing scenarios where China benefits much more by exporting cheap products to Pakistan.

This thesis has contributed to the research by studying sector-level tariffs and identifying their effects on international trade in developing economies. The findings are important outside of Pakistan in understanding trade dynamics at the sector-level. It has enriched the existing research by implementing economic zones into the analysis.

This study is limited by the availability and quality of data, which could otherwise allow for a more in-depth analysis of more sectors over an extended time period. Future research can focus on splitting the MATR variable by sector to study how each sector's individual trade restrictiveness impacts trade flows rather than Pakistan's overall trade restrictiveness.

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Appendix A

Tables

Table A.1: Description and Sources of Variables

Variable	**Description**	**Source**
Log(imports)	Logarithmic transformation of import flows of Pakistan's largest sectors	UN COMTRADE
Log(exports)	Logarithmic transformation of export flows of Pakistan's largest sectors	UN COMTRADE
Domestic tariffs	Average of effectively applied tariff rates imposed by Pakistan	WITS
Foreign tariffs	Average of effectively applied tariff rates of Pakistan's export partners, weighted according to the share of Pakistan's exports	WITS
Domestic MATR	Measure of Aggregate Trade Restrictiveness for Pakistan	IMF
Foreign MATR	Weighted Measure of Aggregate Trade Restriveness for Pakistan's export partners, weighted according to their share of Pakistan's exports	IMF
FDI as a % of GDP	Inflows of foreign direct investment for each sector divided by the GDP.	SBP, FAO and WDI
SEZ	Sum of the area of all special economic zones (in thousands of acres) in a given year.	SBP
EPZ	Sum of the area of all export processing zones (in thousands of acres) in a given year.	EPZA

Table A.2: Description and Sources of Variables continued

Variable	**Description**	**Source**
Textiles	Sum of the area of economic zones which fully (or partially) target the textiles sector.	SBP & EPZA
Agriculture	Sum of the area of economic zones which fully (or partially) target the agriculture sector	SBP & EPZA
Metals	Sum of the area of economic zones which fully (or partially) target the metals sector	SBP & EPZA
Minerals	Sum of the area of economic zones which fully (or partially) target the minerals sector.	SBP & EPZA
Foodstuffs	Sum of the area of economic zones which fully (or partially) target the foodstuffs sector.	SBP & EPZA
Domestic GDP growth rate	Measures the change in domestic GDP between two consecutive years.	SBP
Foreign GDP growth rate	Measures the change in foreign GDP growth rates between two consecutive years.	SBP
Rule of law index	Measure by the World Bank which captures consumer and business confidence.	World Governance Indicators
Exchange rate depreciation	Annual percentage changes in the Pakistani Rupee.	Own calculations using data from SBP
Sector share of GDP	The output of each sector divided by the domestic output as a percentage.	SBP
Covid dummy	Dummy variable which takes a value of 1 between the years 2020-2022 and 0 otherwise.	Own calculation

Table A.3: Import model results (with White standard errors)

	Log(Imports)			
	(1)	(2)	(3)	(4)
Tariffs	-2.453*	-2.524*	-2.370*	-2.554*
	(1.410)	(1.445)	(1.429)	(1.356)
MATR	-0.080***	-0.066***	-0.070***	-0.070***
	(0.012)	(0.012)	(0.013)	(0.012)
FDI as % of GDP	57.753***	46.462***		
	(8.902)	(12.879)		
SEZs	0.010	0.023*		
	(0.018)	(0.011)		
EPZs		0.167***		
		(0.023)		
Textiles			0.015	0.015
			(0.012)	(0.013)
Agriculture			-0.015	-0.014
			(0.020)	(0.036)
Metals			0.049***	0.049**
			(0.018)	(0.019)
Minerals			0.128***	0.137***
			(0.042)	(0.036)
Foodstuffs			0.004	0.005
			(0.014)	(0.016)
Rule of law	0.026***		0.021**	0.021***
	(0.026)		(0.008)	(0.008)
Domestic GDP	-0.359	0.286		0.313
growth	(0.351)	(0.746)		(0.553)
Exchange rate		3.931	3.448	3.827
depreciation		(3.434)	(2.678)	(3.000)
Sector share of GDP	-0.026		-0.012	
	(0.029)		(0.026)	
Sector-specific FE's	Yes	Yes	Yes	Yes
5-Year time FE's	Yes	Yes	Yes	Yes
Observations	100	100	100	100
R2	0.7090	0.7120	0.7491	0.7484
Adjusted R2	0.6570	0.6605	0.6933	0.6925

Note: *** Significant at 1%, ** Significant at 5%, * Significant at 10%. White standard errors in parenthesis.

Table A.4: Export model results (with White standard errors)

	Log(Exports)			
	(1)	(2)	(3)	(4)
Foreign-weighted	-8.342***	-7.843***	-8.173***	-6.841***
tariffs	(2.431)	(1.985)	(3.002)	(1.823)
Foreign-weighted	-0.053	-0.022	0.051	0.044
MATR	(0.134)	(0.166)	(0.076)	(0.082)
FDI as % of GDP	73.744	79.946		53.888
	(84.054)	(83.066)		(50.592)
SEZs		0.022		
		(0.017)		
EPZs	0.194***	0.213***		
	(0.055)	(0.046)		
Textiles			-0.037**	-0.034**
			(0.018)	(0.016)
Agriculture			0.015	-0.012
			(0.026)	(0.032)
Metals			0.271***	0.269***
			(0.030)	(0.028)
Minerals			0.104**	0.092**
			(0.043)	(0.042)
Foodstuffs			0.049***	0.047***
			(0.015)	(0.014)
Rule of law	0.005		0.005	
	(0.006)		(0.006)	
Foreign-weighted	1.535	1.753	1.177	1.469
GDP growth	(1.391)	(1.218)	(1.170)	(1.029)
Exchange rate	6.765***	6.170***	6.064***	5.302***
depreciation	(2.093)	(1.799)	(1.732)	(1.686)
Sector share of GDP				-0.044***
				(0.016)
Sector-specific FE's	Yes	Yes	Yes	Yes
5-Year time FE's	Yes	Yes	Yes	Yes
Observations	100	100	100	100
R2	0.5616	0.5701	0.7014	0.7283
Adjusted R2	0.4833	0.4934	0.6350	0.6638

Note: *** Significant at 1%, ** Significant at 5%, * Significant at 10%. White standard errors in parenthesis.

Table A.5: Import Model Results (with Covid Dummy)

	Log(Imports)			
	1	2	3	4
Tariffs	-2.466***	-2.530***	-2.317***	-2.506***
	(0.658)	(0.557)	(0.597)	(0.049)
MATR	-0.080**	-0.066**	-0.070**	-0.070***
	(0.036)	(0.029)	(0.027)	(0.025)
FDI as % of GDP	60.427	48.479		
	(46.472)	(27.375)		
SEZs	0.006	0.021		
	(0.016)	(0.016)		
EPZs		0.167***		
		(0.034)		
Textiles			0.020	0.020
			(0.016)	(0.016)
Agriculture			0.002	0.004
			(0.021)	(0.024)
Metals			0.054**	0.054**
			(0.026)	(0.026)
Minerals			0.132***	0.141***
			(0.047)	(0.047)
Foodstuffs			0.009	0.011
			(0.018)	(0.019)
Covid dummy	0.028	0.015	-0.049	-0.045
	(0.063)	(0.052)	(0.040)	(0.043)
Control variables	Yes	Yes	Yes	Yes
Sector-specific FE's	Yes	Yes	Yes	Yes
5-Year time FE's	Yes	Yes	Yes	Yes
Observations	100	100	100	100
R2	0.7099	0.7122	0.7514	0.7503
Adjusted R2	0.6539	0.6567	0.6924	0.6910

Note: *** Significant at 1%, ** Significant at 5%, * Significant at 10%. Driscoll and Kraay standard errors in parenthesis.

Table A.6: Export Model Results with (Covid Dummy)

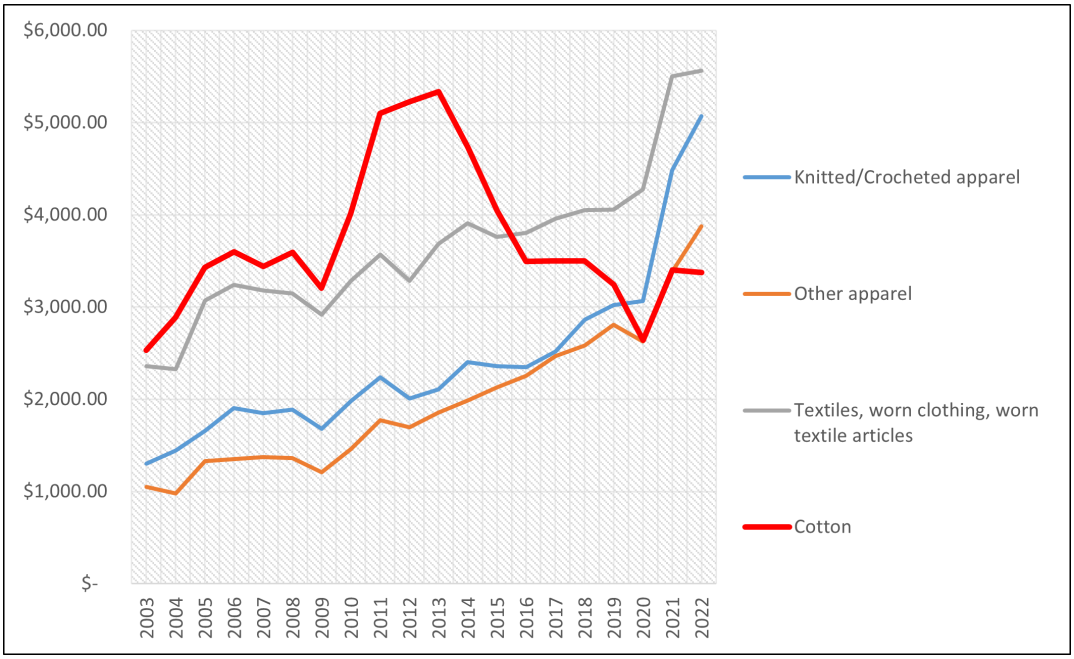
	Log(Exports)			
	1	2	3	4
Foreign-weighted	-8.343**	-7.706**	-7.976**	-6.781**
tariffs	(3.307)	(3.437)	(3.424)	(3.032)
Foreign-weighted	-0.055	-0.035	0.031	0.024
MATR	(0.083)	(0.075)	(0.063)	(0.069)
FDI as % of GDP	73.039	74.374		40.908
	(52.407)	(54.221)		(35.885)
SEZs		0.027		
		(0.015)		
EPZs	0.193***	0.212***		
	(0.054)	(0.046)		
Textiles			-0.024*	-0.023**
			(0.014)	(0.012)
Agriculture			0.065**	0.030*
			(0.025)	(0.016)
Metals			0.282***	0.280***
			(0.036)	(0.035)
Minerals			0.105*	0.096
			(0.061)	(0.096)
Foodstuffs			0.062***	0.058***
			(0.021)	(0.020)
Covid dummy	-0.005	-0.048*	-0.142***	-0.122***
	(0.019)	(0.028)	(0.048)	(0.042)
Control variables	Yes	Yes	Yes	Yes
Sector-specific FE's	Yes	Yes	Yes	Yes
5-Year time FE's	Yes	Yes	Yes	Yes
Observations	100	100	100	100
R2	0.5616	0.5726	0.7228	0.7438
Adjusted R2	0.4771	0.4902	0.6570	0.6790

Note: *** Significant at 1%, ** Significant at 5%, * Significant at 10%. Driscoll and Kraay standard errors in parenthesis.

Appendix B

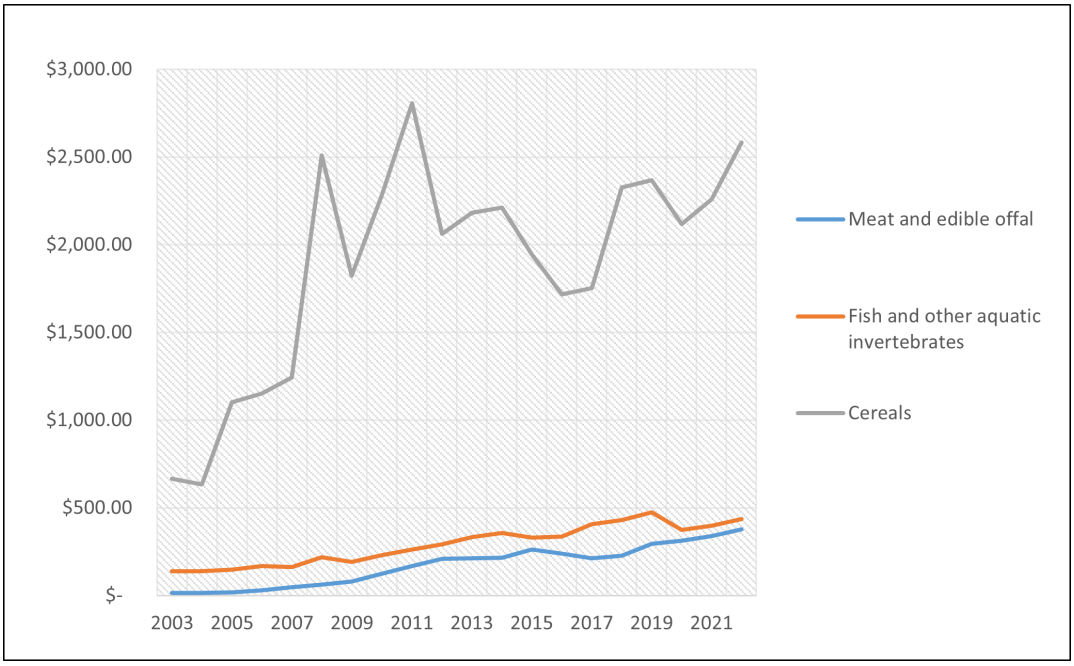
Figures

Figure B.1: Main Export Items in the Textiles Sector



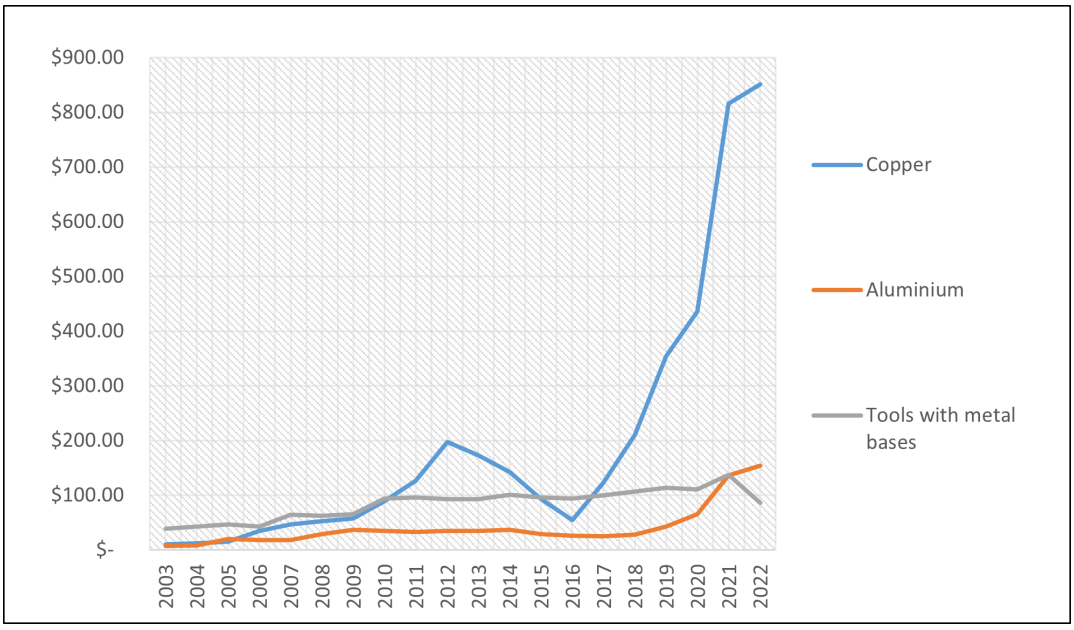
Source: Own work based on the data from UN COMTRADE.

Figure B.2: Main Export Items in the Agricultural Sector



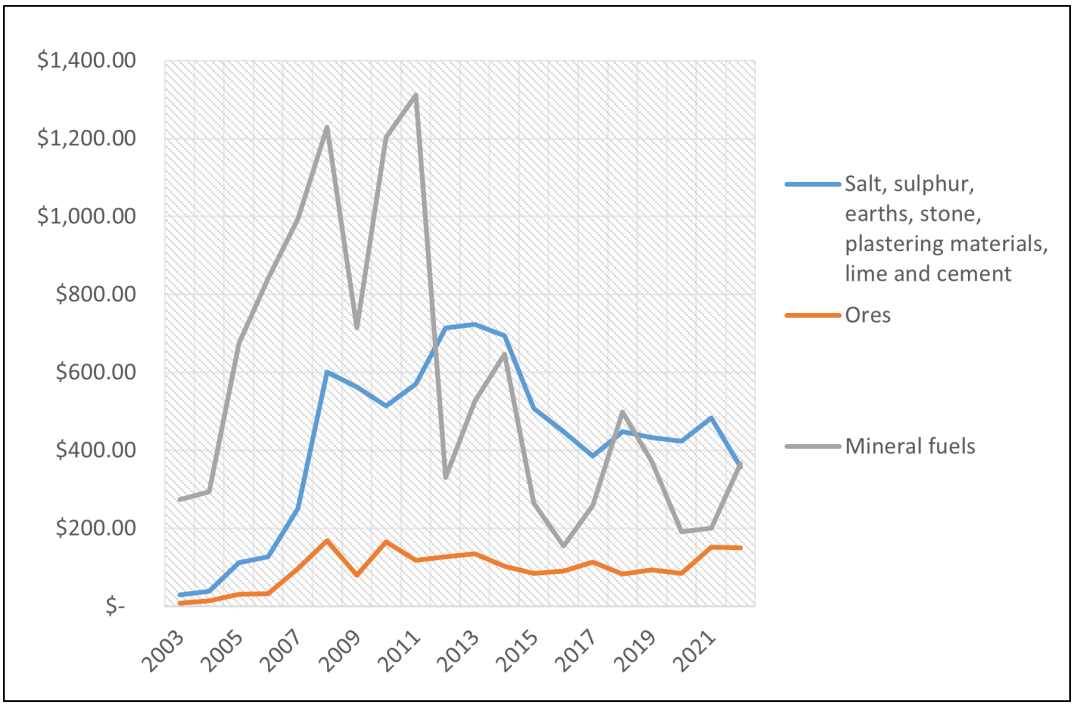
Source: Own work based on the data from UN COMTRADE.

Figure B.3: Main Export Items in the Metals Sector



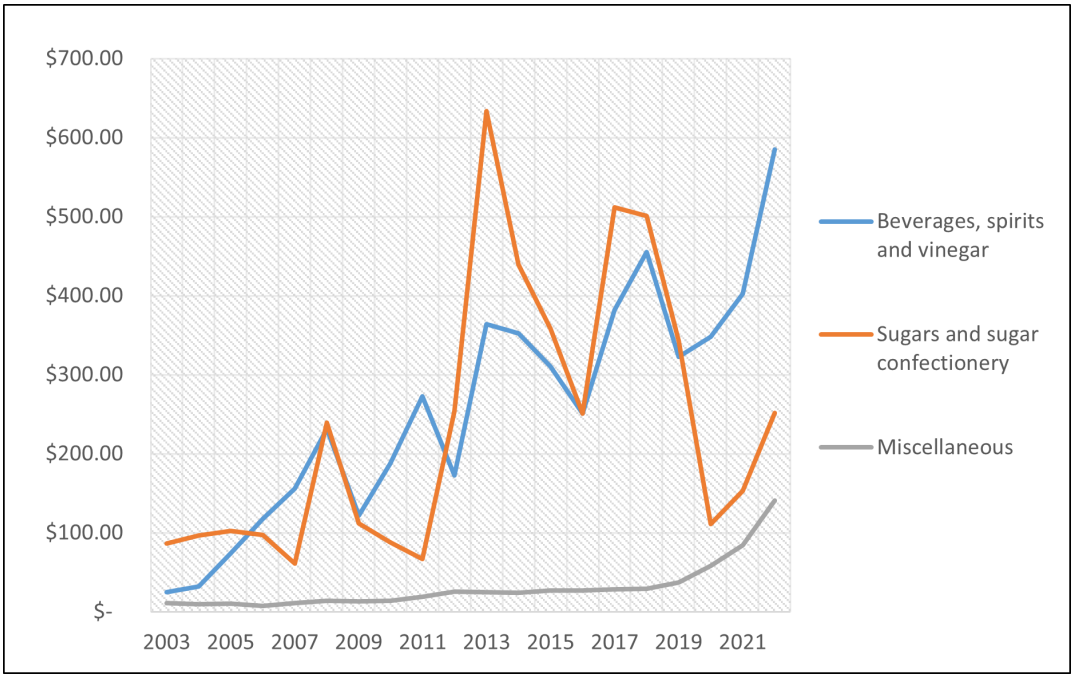
Source: Own work based on the data from UN COMTRADE.

Figure B.4: Main Export Items in the Minerals Sector



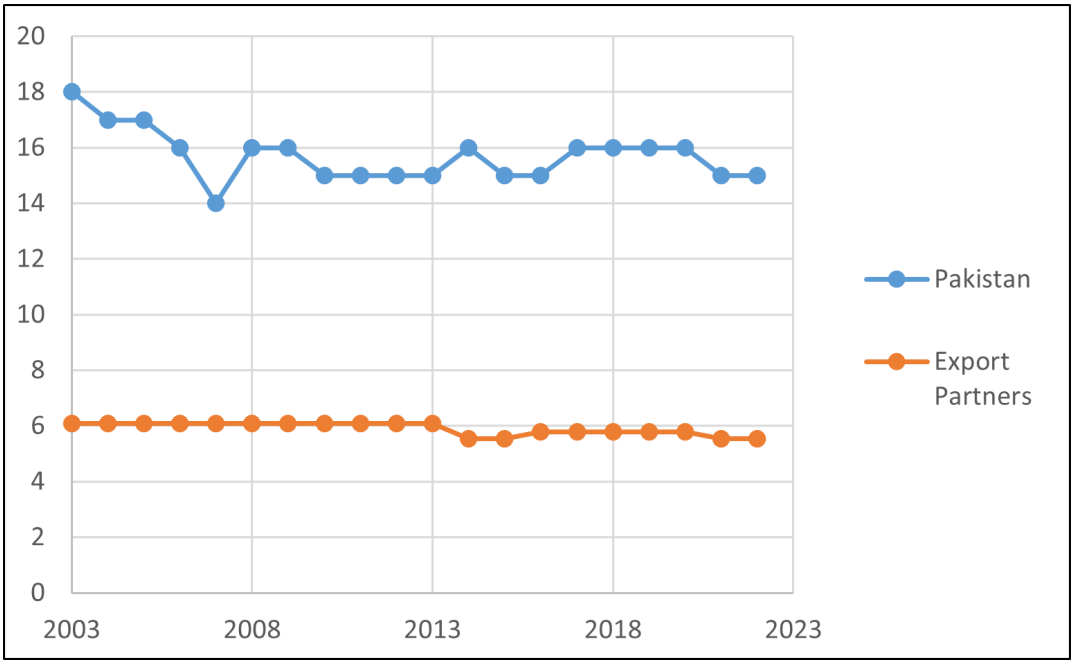
Source: Own work based on the data from UN COMTRADE.

Figure B.5: Main Export Items in the Foodstuffs Sector



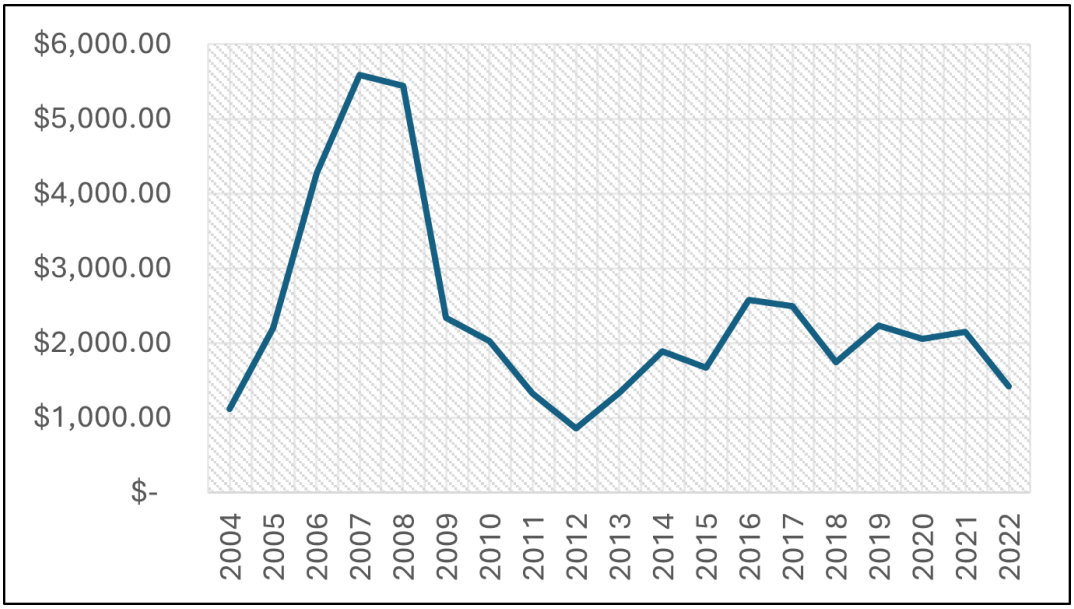
Source: Own work based on the data from UN COMTRADE.

Figure B.6: MATR of Pakistan and its Export Partners



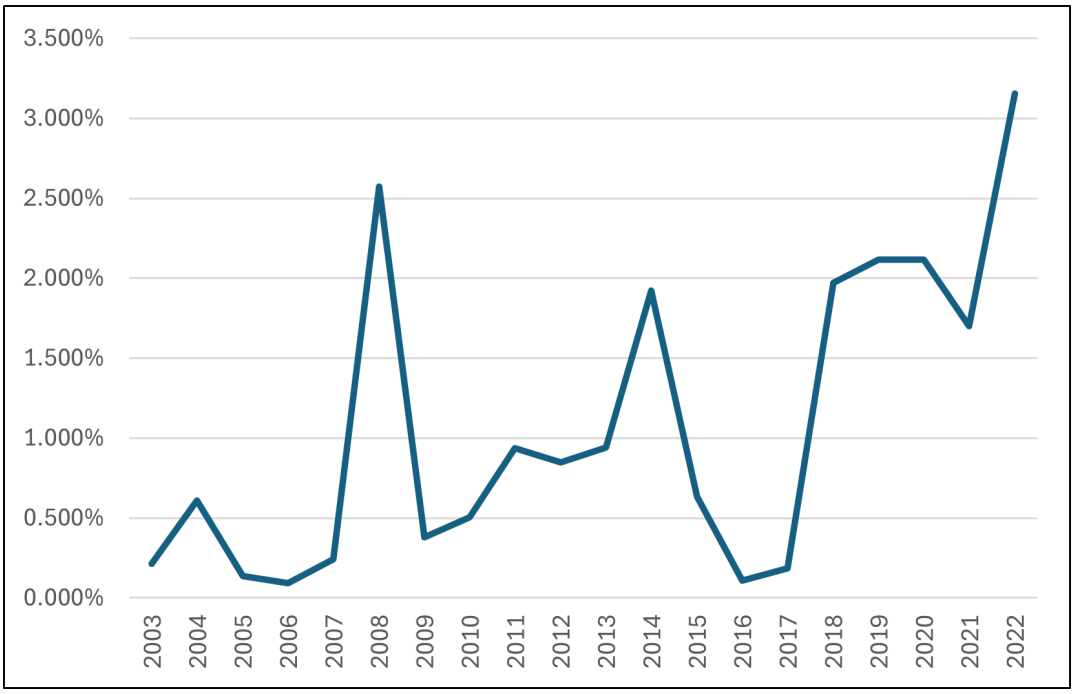
Source: Own work based on the data from IMF.

Figure B.7: Net inflows of Foreign Direct Investment (millions of US$)



Source: World Development Indicators.

Figure B.8: Annual % changes in the Pakistani Rupee



Source: Own calculations based on data from SBP.