

# Free Trade Agreements: A Welfare Analysis for Pakistan



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# **Free Trade Agreements: A Welfare Analysis for Pakistan**

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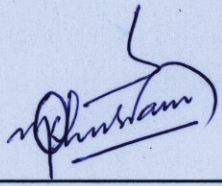
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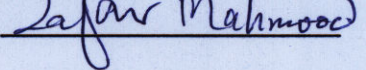
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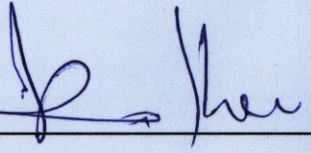
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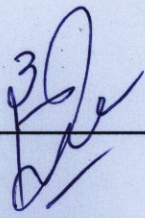
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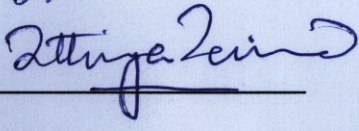
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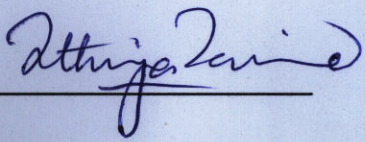
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## **DECLARATION**

I, Khurram Shahzad, hereby declare that this thesis entitled ‘Free Trade Agreements: A Welfare Analysis for Pakistan, neither as a whole nor as a part thereof, has been copied out from any source. I further declare that I have carried out this research by myself, except where otherwise indicated, quoted and cited, and this is my own work completed under the supervision of my supervisors. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma in Pakistan Institute of Development Economics, Islamabad or in any other institution.

*Khurram Shahzad*

TO MY PARENTS...!!!!

## **ABSTRACT**

The welfare gains that may be derived from free trade agreements (FTAs) include enhanced trade volumes, improved terms of trade and economies of scale that eventually benefit the consumers and the producers of the countries that are parties to such agreements. The net welfare gains from FTAs depend on the amount of trade creation (welfare gains) and the trade diversion (welfare loss). Our study analyses the welfare implications of bilateral FTAs of Pakistan with three countries, namely, Sri Lanka (PSFTA), China (PCFTA) and Malaysia (PMFTA). We extend the welfare analysis to the manufacturing and agriculture sectors to obtain meaningful evidence with regards to sector level welfare. The evidence on sector and industry level analysis is intended to guide and aid the formulation of trade policy, which may ensure net welfare gains for the country as we undertake and sign the FTAs.

The execution of the agenda entails a series of objectives that involves the use of an array of methodologies and estimation techniques. These include the application of the Gravity model, the Viner model and the Lloyd and Maclaren model, to study the welfare gains of the FTAs, based on trade creation and trade diversion; and also to calculate the welfare changes of trading agreements based on the prices and quantities of products, respectively. The empirical model of Magee (2016) has been used to quantify trade creation and diversion from the sectoral (manufacturing and agricultural) and industry level trade.

The evidence from Poisson Pseudo Maximum Likelihood method suggests the existence of net welfare gains from all the FTAs undertaken since the signing of PCFTA, causing significant trade creation from the manufacturing sector worth USD 76.84 million. However, trade creation from PSFTA is worth USD 0.15 million only. PMFTA has produced negative trade creation, amounting to USD 0.56 million. PCFTA has made a positive change in trade of 793 product groups and an adverse change in trade of 240 product groups all because of the agreement. PMFTA has caused a positive change in the trade of 131 product groups and an adverse change in the trade of 117 product groups. The negative change outweighs the positive change resulting in an adverse net change. Despite the improved terms of trade with Malaysia, Pakistan saw an adverse net change in trade volume. Overall, Pakistan gains from these FTAs, as none of the FTAs caused a welfare loss since we did not find any trade diversion. Findings are robust at the sectoral, industry and product level.

The estimates from the counterfactual analysis, based on the Lloyd and Maclaren model, confirm that trade volume would be lower, and terms of trade would be unfavourable in the absence of the FTAs. The results are robust in all three FTAs. Based on the product group level analysis, we conclude that the countries with a high concentration of exports and imports do not gain much from the FTAs. It is necessary for Pakistan to diversify trade to reap the fruits of the FTAs fully. We find that the consumers in Pakistan gain from these FTAs because of the reduction in the prices of several import products after the preclusion of tariff; and so, the import demand for the products available in the particular FTA is enhanced.

The consumer gains from PSFTA and PMFTA are not that significant. The producers, however, are worse off due to the high competition because of the trade liberalisation brought about by the FTAs. The availability of a variety of goods available at cheaper rates causes lower local production. However, we conclude that overall the producers have gained from these FTAs. The estimates show that the FTAs have increased Pakistan's industry-level imports by USD 52.97 million, meaning there has been trade creation. The Chinese and Malaysian FTAs account for trade creation worth USD 27.69 million and USD 24.73 million, respectively. Out of the three PSFTA has not shown an impressive trade performance. The exports to Sri Lanka have increased sluggishly, and at the same time, the imports have decreased. Alarming, the FTA partner countries do not import from Pakistan in proportion to their expanding economic abilities.

Our study contributes to the literature multi-fold. It is a novel study, as it assesses the welfare implications of Pakistan's FTAs, using trade data from aggregated to product level. Further, we use the empirical model of Magee (2016), developed very recently, to calculate trade creation and trade diversion as introduced by Viner (1950). We also use the most recent historical data for estimations. It is so far the most extensive dataset used for welfare analysis in Pakistan. We not only make conclusions based on aggregate data, but also quantify the trade volume and terms of trade gain using counterfactual analysis. We also augment the Magee (2016) model by incorporating individual dummies for each of the FTA and by working out the model for sectoral level trade. We use Poisson Pseudo Maximum Likelihood Method to solve issues of heteroskedasticity, zero trade values and log-linearity of the gravity equation, which is still unattended by Ordinary Least Squares. Importantly, we control the estimates for macroeconomic and structural changes going beyond the simple gravity equation. Overall, our study uses efficient analytical frameworks and estimation techniques to gauge the welfare implications and to better analyse the agreements, in the context of the product groups, industry and sectoral level trade.

Finally, based on the findings of our study, we recommend different policy measures to increase the welfare gains from these agreements. We recommend re-negotiating the currently active FTAs to address the concerns of producers and other stakeholders. The FTAs increase consumer surplus on the cost of a reduction in producer surplus, hence, trade policy needs to focus on increasing the producer surplus. There is a dire need to grant tariff concession from either side on the top trading products, along with high trade potential products. The re-negotiation of the FTAs requires us to focus on an export promotion policy that would convince the FTA partners to enhance their imports from Pakistan. The excessive cost of doing business and the payment of high taxes need to be eroded to encourage the local producer and the business community to take part in export promotion activities. The exports from Pakistan need diversification from a few products to a wide range of products along with an active search for different markets. As required of the concerned departments, they should launch an awareness campaign for the producers to inform them about the concessions these agreements offer them.

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# CHAPTER NO 1

## INTRODUCTION

### 1.1 Background of the Study

Free trade agreements (hereafter FTAs) ease trade by lowering tariff and other restrictions and cause sharing of technological development. FTAs may bring welfare gains or losses to the parties concerned. However, the sustainability and success of trade agreements depend on the net welfare gains derived from them (Whalley 1998).<sup>1</sup> The welfare gains of free trade agreements<sup>2</sup> may include enhanced trade volumes, improved terms of trade and economies of scale. These gains are characterised by, but not limited to, a reduction in prices,<sup>3</sup> higher availability of a variety of goods for consumers and greater accessibility to markets for producers to optimise their profits (Plummer, Cheong, & Hamanaka, 2010).

The FTAs affect the consumers, producers as well as governments of the respective partners. The consumers always gain from them as markets have more goods available for them at lesser rates. It is the producers who face more competition because of the reduction in tariff. However, they have more market accessibility owing to the removal of protection and the availability of cheaper inputs from trading partner. This interdependence may eventually lead to efficient specialisation in the production of specific products, which would lead to lower costs and eventually benefit all parties

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<sup>1</sup> The sustainability is also conditional to the strategic and political harmony and the distribution of gains from trade.

<sup>2</sup> “When a group of countries decides zero tariffs for mutual trade and the countries of the group set their own different tariffs for the rest of the world, it is termed as free trade area”. (Robert C Feenstra, 2003; Molle, 2006 and Panagariya, 2000)

<sup>3</sup> FTAs increase the number of competitors because they cause lowering equilibrium prices (Feenstra, 2015).

concerned; as the consumer, when given the option, will consume products from the country that has a comparative advantage.

Due to the increased demand for a specific product, the producing country will produce more of it as compared to other products paving the way for specialisation in that commodity. Further, the free trades in the product may open avenues for trade in services, ensuring more productive use of human capital. Free trade may also enhance the sharing of technological developments and the exchange of ideas.

The net gains<sup>4</sup> for the partner countries from the FTAs may vary, depending on the magnitude of trade creation and trade diversion. It is worth mentioning that net welfare gains associated with trade agreements may not necessarily guarantee gains for all segments of the society. An agreement inclined in favour of the producers may still produce net positive gains even if the consumers are worse off.

Along with other factors, the net long-run gains depend on the size and production structure of the economy as that decide the nature of specialisation and the sustainability of trade with partners and trade shares. Also, the distribution of these net gains is crucial as the distribution of gains to compensate for the losses of a segment of society may still create a win-win situation wherein all countries concerned would be better-off.

Further, the outcome for consumers depends on the nature of the post-agreement trade, primarily on the nature of imports. The gains for consumers also depend on to what extent the trade agreements advance the trade as a share of the actual total market demand. A considerable fall in the price is expected only if the trade agreement brings the imports as per its demand. In bilateral agreements, this also depends on the size of the trading partner.

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<sup>4</sup> Negative net gains reflect losses.

Viner was the first person who introduced the welfare implications (regarding gains and losses) of the FTAs. The welfare implications of the FTAs were always considered positive before Viner presented his model in 1950, in which he introduced the possibility of trade creation and trade diversion with regards to welfare gains and losses from the FTAs, respectively. Viner's trade creation and trade diversion are the decisive indicators<sup>5</sup> of whether some trade agreements enhance or reduce welfare<sup>6</sup> for the countries concerned. Trade creation shows welfare gains while trade diversion suggests welfare losses (Viner, 1950). Trade creating trade agreements are welfare improving while the trade diverting trade agreements are welfare deteriorating (Cheong & Wong, 2009). Price and cost differentials cause consumer surplus and show improvement in welfare. However, some economists are of the view that the trade diversion is not every time welfare deteriorating (Krishna, 1998). Both depend on tariff reductions to and from the FTA and non-FTA partners, the comparative advantage of the products and the economic sizes of the countries involved.

## 1.2 The Context of the Study

Pakistan, following a global trend, has signed eight trade agreements including both bilateral and regional trade agreements (hereafter RTAs). Out of the eight agreements, Pakistan has three bilateral FTAs and one RTA, which is the South Asian Free Trade

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<sup>5</sup> Both indicators are based on *ex-post* data and we used both indicators. These indicators can also be used in computational general equilibrium models, which are based on *ex-ant* analysis. (Ahmed, Ahmed, & Sohail, 2010) is an attempt to find out trade creation from Pakistan-Sri Lanka free trade agreements.

<sup>6</sup> (Plummer, Cheong, & Hamanaka, 2010) explains the association of trade creation and trade diversion with positive and negative welfare effects. It also explains that when trade creation exceeds trade diversion, it shows positive welfare effects and negative welfare effects exist when trade diversion exceeds trade creation. Another indication of negative welfare is the reduction in total imports while the rise in total imports is an indication of positive welfare.

Agreement (SAFTA).<sup>7</sup> The focus of this study is the net welfare gains for Pakistan, with regards to its bilateral free trade agreements only.

Pakistan has signed FTAs with three countries including Sri Lanka, China, and Malaysia.<sup>8</sup> There have been many studies that have ventured to examine the impact that the FTAs have had on the economy of Pakistan. The focal point of these studies has been to gauge the bilateral trade potential of the FTAs rather than the gains or losses derived from them<sup>9</sup>. Importantly, all the studies concentrate on the analyses based on the trade indicators and trade complementarities, with the single objective of looking for trade potentials.

Also, the studies stay confined to analyse the aggregated trade, overlooking the possible sectoral, industrial and product level impacts of the FTAs. Any disaggregated analyses up to the sector and the industry level is missing, which is needed for an understanding and creation of sound trade policy. Further, the studies conducted so far use the data up to 2010, which provide analyses on the few years post-FTA data. The data available now is for the year 2015, and almost 8 to 10 years have passed since the FTAs were signed. The study at hand attempts to fill these gaps left out by the previous studies.

Abeyratne (2012), Ahmed *et al.* (2010) and Nufile *et al.* (2013) analyse the FTA between Pakistan and Sri Lanka (hereafter PSFTA). Shabir & Kazmi (2007), Din *et al.* (2009) and Sahoo (2012) covered the analysis of FTA between Pakistan and China. Paracha and Manzoor (2011), as well as Mubashir and Quddus (2012), study the Pakistan-Malaysia FTA (hereafter PMFTA).

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<sup>7</sup>[www.commerce.gov.pk](http://www.commerce.gov.pk), details on other trade agreements of Pakistan are in appendix 1.

<sup>8</sup>Our study covers Pakistan's bilateral free trade agreements only and does not cover Pakistan's regional trade agreement; SAFTA.

<sup>9</sup> List of the studies follows in next Paragraphs.



All these studies mentioned above concentrate on analysis based on trade indicators, trade complementarities and trade potentials. These studies do not take into consideration the welfare implications of these agreements for the economy, and for its different sectors, that is, the manufacturing and the agriculture sectors. This study aims to fill that void.

### **1.3 The Objectives of the Study**

Our research looks to analyse the welfare implications of the bilateral FTAs signed by Pakistan. We have extended the analysis and taken into consideration the manufacturing and agricultural sectors to measure sectoral level welfare gains<sup>10</sup>. These would give some considerable evidence. Through this study, we intend to guide the formulation of evidence-based trade agreements policy that may ensure that the FTA's we undertake in turn provide net welfare gains for the country. The objectives of our study are to:

1. Measure the welfare impact of Free Trade Agreements<sup>11</sup> of Pakistan. This objective would enable us to assess whether the signing of FTAs has resulted in welfare gain or loss for Pakistan. Further, this objective would quantify trade creation and diversion for assessment of welfare gains or losses.
2. Perform the disaggregated analysis of bilateral FTAs for the manufacturing and agricultural sectors of Pakistan. The disaggregated analysis would study the impact of these FTAs on manufacturing and agriculture sectors of Pakistan, as

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<sup>10</sup> We used both import and export data for two models; one in aggregate gravity equation and the other one in Lloyd and Maclaren model. For the trade creation and trade diversion for sectors and industry level trade, we used only import data because we followed Magee (2016) which only takes care of the imports.

<sup>11</sup> PCFTA, PMFTA and PSFTA

both the sectors may contribute differently in fetching the welfare gains from FTAs.

3. Study the impact of bilateral FTAs<sup>12</sup> on the trade profile of Pakistan, i.e. product level analysis. This objective would list out the set of products showing higher net welfare gains.
4. Draw lessons to help the government in designing/formulating an efficient trade policy which may ensure net welfare gains from FTAs.

#### **1.4 Contribution and Significance of the Study**

The study contributes to the stock of knowledge by focusing on the welfare implications of the bilateral FTAs of Pakistan. It adds to the literature manifold in the following ways.

Firstly, going beyond trade connotations, we quantify the net welfare gain<sup>13</sup> from bilateral trade. By doing so, we capture the developmental effects of any such agreement which shall guide the relevant authorities to reconsider and, improve the existing FTAs, while also providing thinking ground for any new agreements. Secondly, we provide insights into the manufacturing and agricultural sectors with a focus on the welfare implications from these sectors for the country, which shall serve as a systematic analysis of the agreements in the development of these sectors.

Thirdly, by going further into industry and product level details of the welfare implications, we provide an understanding of the industries and products responsible for the net welfare gains. These can serve as a further guide to re-negotiate the FTAs in our favour. Fourthly, in an *ex-post* mode, we use historical data to draw an inference about

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<sup>12</sup> PCFTA, PMFTA and PSFTA

<sup>13</sup> Vinerian trade creation and trade diversion are about imports so while quantifying both trade creation and trade diversion, we used imports data of sectors and industry level. The export data is covered in Gravity equation and Lloyd and Maclaren Model.

the welfare gains of the FTAs, as contrary to the simulation-based methods. By doing so, we improve on two fronts - our findings are more relevant to the real world and up to date. Fifthly, we cover the imports as well as the exports of the agreements, rather than concentrating on imports alone. We conclude the net welfare based on the prices and quantities of both imports and exports. For industry and sectoral welfare analysis, we use the Viner model while the Lloyd & MacLaren model is used to perform analysis of products<sup>14</sup>. The Lloyd & MacLaren model includes the prices and quantities of imports and exports, which other models do not.

Sixthly, we contribute to empirics on FTAs by extending the application of Magee (2016) to sectoral analysis using HS 4-digit level data. Magee (2016) uses the model for industry-level trade under RTAs only. Lastly, to perform welfare analysis up to the sectoral, industrial and product level, our study uses extensive datasets, which covers 4-digit products of ISIC Rev.3 for manufacturing and agriculture sectors. Further, we use HS- 4-digit and 6-digit datasets for product groups and industries.

We cover Pakistan's bilateral FTAs only and do not include Pakistan's regional trade agreement - SAFTA. The focus is on the net welfare gains of the bilateral free trade agreements, while the impact of trade restrictions, non-tariff measures, and government policies on the bilateral free trade agreements are beyond the scope of our study given the nature of the inquiry, as they need a different analytical framework altogether. Also, the required data, for example on non-tariff barriers, is more of a qualitative nature, while the study at hand is quantitative in every sense.

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<sup>14</sup>The details on these models and potential strengths thereof are provided in the methodology section

## **1.5 Organization of the Thesis**

The rest of the thesis is structured as such that Chapter 2 takes stock of extant literature on regional trade agreements. The chapter also reviews studies on the FTAs of Pakistan, followed by a discussion on the research gap from these studies along with a critical appraisal of the studies. Chapter 3 reviews the regional trade agreements in general, and in the context of Pakistan, specifically. This chapter also highlights the changes in exports, imports, and the balance of trade from the FTAs and further, discusses the top traded products under these FTAs. Chapter 4 sketches a detailed discussion of the analytical frameworks, empirical models, and estimation techniques. This chapter presents all the models used, along with their theoretical underpinnings and empirical choices. The empirical literature on the models and methods is deliberately presented in this chapter rather than as a part of the review of literature in Chapter 2. Chapter 5 shows the results of analysis and discusses the major findings. Chapter 6 lays out the conclusion and draws policy lessons.

## **CHAPTER NO 2**

### **REVIEW OF LITERATURE**

#### **2.1 Introduction**

This chapter reviews the studies on regional trade agreements, their welfare impact in the context of present research and the empirical studies of the FTAs of Pakistan. Section 2.1 of this chapter briefly presents the distinct types of trade agreements, while Section 2.2 reviews different studies on welfare analysis of regional trade agreements. Sections 2.3 and 2.4 are reviews of empirical studies of the Pakistan-Sri Lanka free trade agreement (PSFTA) and the Pakistan-China free trade agreement (PCFTA), respectively. Section 2.5 is an overview of the research done on Pakistan-Malaysia free trade agreements (PMFTA). The last section consists of a critical appraisal of the studies reviewed and finds the research gap based on these studies.

#### **2.2 A Brief Analysis of the Types of Regional Trade Agreements**

Governments form a regional trade agreement based on several factors, including higher market accessibility, strategic alliances, good trading relations and security arrangements.<sup>15</sup> Six essential conditions provide the basis for regional trade agreements. These conditions are (i) reciprocity among countries; (ii) the most favoured nation principle of equality of treatment in order to promote economic growth and development; (iii) tariff bargaining procedure and terms of trade; (iv) delegation of authority by the country's representatives; (v) acceptance and consideration of private interests, and (vi) formulation of proposals on the basis of expert research analysis (Grady, 1940).

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<sup>15</sup>Whalley (1998) gives reasons of formation of regional trading agreements.

A pair of countries form FTA's on the basis of the following factors: (1) geographical proximity;(2) remoteness of these neighbouring countries from the rest of the world; (3) similarity of these countries in their economics sizes; (4) higher difference in their capital-labor ratios and (5) a smaller share of their capital-labour ratio as compared to the world's capital-labour ratio (Baier & Bergstrand, 2004).

Moreover, regional trade agreements help reduce tariffs. Preferential trade agreements (PTA) offer discounts by lowering tariff rates up to some positive value in comparison with MFN tariff rates. However, tariff rates are reduced to zero over time in FTAs,(Plummer *et al.*, 2010). Tariff reduction enhances the incentives to form PTAs, (Freund, 2000). Medrano (1999) explains that PTAs increase the tariffs when the trading partnership evolves through the customs union<sup>16</sup> mechanism.

FTA is beneficial for a multilateral trading system in world trade only when the government makes decisions for the improvement in welfare (Ornelas, 2005)<sup>17</sup>. In developed countries, FTAs can increase bilateral trade through vertical specialisation. The formation of an FTA with developing countries is difficult because of market imperfections, which include transparency issues with government procurement, contract bidding and buying processes. These underlying problems for bilateral free trade agreements with developing countries can be mitigated through the elimination of abuses, eradication of rampant corruption and the rent-seeking behaviour of dominant firms in the industry (Leung, 2016).

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<sup>16</sup>Custom union defines an arrangement by which the imposition of duty among members on imports of goods and services is zero and imposes a common external tariff.

<sup>17</sup> Using oligopolistic-political-economy model; where external tariffs and the formation of FTA are determined endogenously.

The inter- and intra-regional nature of PTAs enhances the possibility of receiving benefits by lowering income inequality with trading partners. Customs Unions are intra-regional agreements that ensure benefits from tariff coordination (Lake & Yildiz, 2016). Countries that are similar in market size and that trade with each other can keep FTAs<sup>18</sup>. Also, countries which differ in marginal production cost can also form an FTA (Chen & Joshi, 2010). Under an FTA, trade increases as a result of income growth (Baier & Bergstrand, 2001) but the converse is not valid (Hur & Park, 2012).<sup>19</sup>

Reduction in tariffs increases free trade in bilateral and multilateral agreements (Kawabata, 2015)<sup>20</sup>. For the member countries of the Association of Southeast Asian Nations (ASEAN) free trade region, the elimination of tariff significantly promotes trade with much larger import elasticity of tariff reduction than of exports (Okabe & Urata, 2014). Evidence from the investigation into world trade suggests that tariff reduction causes trade growth (Baier & Bergstrand, 2001).

Through FTA, tariff in a member country reduces unambiguously; but a non-member country's tariff may increase, which may also increase the welfare of the non-member country because the formation of FTA may not be Pareto-improving (Kawabata, Yanase, & Kurata, 2010). Tariff reduction needs to avoid trade diversion by the creation of a trade bloc. However, the non-cooperative behaviour of the different blocs can lead to a rise in external tariff, which may further cause a reduction in global welfare. (Krugman, 1989).

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<sup>18</sup>According to international trade theory.

<sup>19</sup>Non-parametric panel regression results providing an insignificant effects on aggregate growth within bilateral FTA.

<sup>20</sup>Kawabata (2015) is a study on the endogenous formation of free trade agreements making (FTAs) in a symmetric three-country model.

### 2.3 Welfare Analysis of Free Trade Agreements

The welfare analysis of FTAs is popular with the Viner (1950) model of trade creation, and trade diversion and these two concepts gauge the welfare of an FTA. Trade creation is a sign of welfare gains and trade diversion is of welfare losses. RTAs, in general, create trade among members of bloc countries and divert trade from non-trading bloc countries (Park & Park, 2011). However, some economists<sup>21</sup> are of the view that trade diversion does not always cause welfare reduction (Karishna, 1998 and Wonnacott, 1996).

Economic geography, revenue from trade taxes, inter- and intra-industry trade forces all determine the welfare effects of trade liberalisation (Baunsgaard & Keen, 2010). According to Chang & Xiao (2015), world welfare gained through trade would be enhanced when (1) market size differential between asymmetric members does not become too large, and (2) rules of origin (ROO) are less restrictive under a three-country model of oligopoly. Economic integration does not provide welfare to the countries with large income disparities, especially for a rich country. Nevertheless, a fall in trade cost raises the welfare of the citizens of the developing country (Wu & Lin, 2013).

Krugman (1989)<sup>22</sup> is of the view that bilateralism is not so beneficial for the welfare of the world, but it is useful for the welfare of the member countries of one bloc. World welfare will be most substantial if different blocs of member countries converge to form one bloc turning the world in one bloc and if only free trade exists in that one bloc. However, it is unlikely that the world as a whole would converge to form one block in

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<sup>21</sup> For customs union, Lipsey (1957) develops model of three countries and finds that trade diversion can be welfare increasing.

<sup>22</sup> Krugman (1989) develop a stylized model for analysing the impact of FTAs on welfare of the world. Trade blocs are modelled for their share, tariff, number of blocs and with the world trade.



this way because custom unions consist of different countries for which collaboration would be difficult.

Custom unions provide a Pareto-superior mechanism, which produces more welfare as compared to PTAs (Kose & Riezman, 2000). PTAs do not yield proper insights to maintain a stable trade volume under tariff reductions (Krueger, 1997). Pareto optimal trading systems explain why it is necessary to tax those countries which have gained much from PTAs (Grafe & Mauleon, 2000).

We can decompose the welfare effects of FTAs and CU into volume-of-trade effects and terms-of-trade effects. The effects of volume-of-trade explain why there are more welfare gains for the member and non-member countries of both FTA and CU. The effects of terms-of-trade explain why there are more welfare gains for member countries of CU (Kose & Riezman, 2000).<sup>23</sup>

In a three-country model, the external tariffs are exogenous to maximise national welfare and tariffs, and welfare varies along with the transition path of internal liberalisation. Applying the “Kemp-Wan” methodology, the adoption of internal free trade improves the welfare of the member countries as well as the welfare of the rest of the world (Bond *et al.*, 2004). The internal welfare of a country depends on tariffs.

However, foreign markets strongly depend on the foreign tariff, and hence, these markets influence the overall welfare of the trading partners. Partial agreements among the countries give foundation to the coalition among them, and they set the tariff lower than the international market without cooperating with one another. Outsider countries

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<sup>23</sup>A work on a multi-country pure exchange economy general equilibrium model to analyse the effects of PTAs on welfare, tariffs, prices, and volume of trade.

take advantage of this situation and earn more profit because of the free rider problem (Macho-Stadler *et al.*, 1998).

Economists are of the view that free trade enhances the net welfare gains of a country<sup>24</sup>. However, it is also true in some cases that distributional implications (trade liberalisation, globalisation and domestic policies) can increase the political viability of free trade. FTAs are an endogenous policy variable that explains the welfare impact of trade. The welfare impact of FTAs can be determined by predicting the relative strength of trade creation, the economic size of trading partners, the capital-labour ratio in proportion to the rest of the world and trade diversion (Baier & Bergstrand, 2004). Economists always look to discover whether FTAs increase the members' international trade, however, empirical studies of international trade do not provide sufficient evidence for an affirmative answer to this question (Baier & Bergstrand, 2007).

The dynamic trade adjustments to the implementation of FTAs yield more welfare in comparison with the effects of immediate trade liberalisation (Jung, 2012). The argument of trade creation is not always valid for the formation of FTA. Trade diversion in inter-industry trade can cause an increase in welfare if trade diversion is small (Cheong & Wong, 2009).

Industrial concentration can change the cost of import and export and can cause a spill-over effect in countries having an FTA. Consequently, the welfare of trading countries can be improved by determining the spatial distribution of economic activities (González-Valet *al.*, 2009). FTAs are Pareto-improvement but not Pareto-optimal because some FTAs create trade without diverting it from non-FTA partners therefore,

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<sup>24</sup> The free trade agreements cause trade creation that increases the consumer surplus because of lower prices and more availability of products. The consumer surplus outweighs the producer loss and hence result in net welfare gain. (Plummer *et al.*, 2010)

non-member countries become more wealthy as a result of a reduction in tariffs by FTA member countries (Yi, 2000).

Exports respond positively to the formation of PTAs and also create large margins between the trading partners. PTAs cause net inflows of foreign direct investment due to the enhanced market size for PTA partners (Foster, Poeschl, & Stehrer, 2011). These agreements provide an extended export market for countries that have a better industrial sector (Cheong, Kwak, & Tang, 2015).

Some trade agreements perform very well by having a more significant impact on trade and causing trade creation for the countries involved. For instance, trade creation is the fruit of various agreements such as (ASEAN)<sup>25</sup>, Continental Free trade area, the European Union (EU), the Great Arab free trade area, Australian and New Zealand Economic Relations (CER). However, Asian Pacific Economic Cooperation (APEC), the Southern Cone Common Market (MERCOSUR) and North American Free Trade Association (NAFTA),<sup>26</sup> (Jugurnath, Stewart, & Brooks, 2007), (İncekara & Ustaoglu, 2012) and (Mevel, deAlba, & Oulmane, 2016) cause trade diversion.

Some of the FTAs overlap with other countries maintaining the “hub-and-spoke system,” and these FTAs have an additional positive effect on trade for the countries involved (Hur, Alba, & Park, 2010).

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<sup>25</sup> Feltenstein & Plassmann (2008) also find that the ASEANS member countries gain welfare from the agreement.

<sup>26</sup> Expanding intra-bloc trade at the expense of trade with other countries

## 2.4 Empirical Evidence on Pakistan-Sri Lanka Free Trade Agreement

Several studies analyse the trade potential<sup>27</sup> of RTAs for Pakistan.<sup>28</sup> Some of such studies we cite in this section.

Under PSFTA, Pakistan enjoys favourable terms of trade through increased trade flows, while Sri Lanka has lost competitive advantage in some areas, for instance, 3% decline in tea export. PSFTA has not yet been optimally utilised, although it provides greater accessibility to the markets (De Mel, 2008)<sup>29</sup>. However, Pakistan has also gained a comparative edge in textile, tourism and education (Ahmed *et al.*, 2010). Seventy percent of PSFTA has been utilised according to a survey of firms<sup>30</sup> which were aware of PSFTA (De Mel *et al.*, 2011)<sup>31</sup>.

Sri Lankan trade and trade deficit have both increased with India as compared to Pakistan. Sri Lanka engages in more growing and diversified trade with India but has neither expanded nor diversified so much with Pakistan (Abeyratne, 2012).<sup>32</sup> PSFTA can help to explore new markets for both countries as there is enormous potential for bilateral trade though little has been utilised so far (Nufile *et al.*, 2013).<sup>33</sup> Even after signing the FTA, both countries still have a small share in exports and imports from their trade partner. In contrast to Pakistan, Sri Lanka has particularly good trade relations with India and China. One can notice that the studies cited here ignore the welfare

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<sup>27</sup> Studies specific to welfare analysis of Pakistan's FTAs are rare.

<sup>28</sup> See (Athukorala, 2012), (Nufile *et al.* 2013), (Miankhel *et al.* 2009)

<sup>29</sup>The study gives situation analysis based on simple descriptive for two FTAs: one Pakistan-Sri Lanka free trade agreement and India-Sri Lanka free trade agreement.

<sup>30</sup>The survey enquired into the perception of the firms regarding PSFTA.

<sup>31</sup>Their study is based on FTAs of Sri Lanka with Pakistan and India.

<sup>32</sup> The pre-FTAs and post-FTAs, Inside-FTAs and Outside-FTAs analysis of the trade profiles were made.

<sup>33</sup>A study based on gravity equation using traditional variables of the equation along with trade openness and exchange rate. Per capita income and intra-regional trade are influential on the bilateral trade, but trade openness and exchange rate are negatively influencing the bilateral trade.

implications of PSFTA and instead concentrate more on the trade potentials and the use of this agreement.

## **2.5 Empirical Evidence on Pakistan-China Free Trade Agreement**

What follows is an overview of several studies focusing on the trade relations of Pakistan with China. Pakistan's FTA with China poses many potential threats to the economy of Pakistan. These threats are due to the negligible share that Pakistan has in China's balance of trade. However, Pakistan's share of export to China was around 15% until the mid-90's (Shabir & Kazmi 2007). China is due to receive more benefits from the FTA with Pakistan ((Din, Ghani, Qadir, & others, 2009). China has improved its trade performance as a result of PCFTA. However, Pakistan has not improved notably, (Miankhel *et al.*, 2009). PCFTA results in higher demand for Chinese exports and creates some negative externalities on Indian trade with Pakistan (Sahoo, 2012).

The empirical studies reviewed on PCFTA intend to find out trade potentials by using various trade indices for only four years post-FTA data, confirming an excellent need for analysis based on the latest data. A study focusing on the welfare analysis of PCFTA is also due. To respond to this lack of analysis, the research at hand focuses on the measurement of trade creation and trade diversion of PCFTA by using enough data at the highly disaggregated level, i.e. sectoral, to industry product level.

## **2.6 Empirical Evidence on Pakistan-Malaysia Free Trade Agreement**

There are a few studies on the Pakistan-Malaysia free trade agreement, even though this is a comprehensive free trade agreement for 'Closer Economic Partnership' with Malaysia. One study is by Paracha and Manzoor (2011) conducted by the Pakistan Institute of Trade and Development (PITAD). Another study conducted by the same

institute<sup>34</sup> on the global system of Trade Preferences and developing countries includes analysis of Pakistan and Malaysian trade relations.

Paracha and Manzoor (2011)<sup>35</sup> briefly discuss the trade statistics and tariff profiles of Pakistan and Malaysia under MFN status (2005), EHP status (2006) and under FTA (2007)<sup>36</sup>. Pakistan expects lower benefits from this FTA because the complementarity of Pakistani exports with Malaysian imports is low. However, on the contrary, there is a high complementarity of Malaysian exports about Pakistani imports.

Like different studies on PCFTA, Pakistan Business Council also conducted a research study on the Malaysia Pakistan Closer Economic Partnership Agreement (MPCEPA)<sup>37</sup>. This research found that Pakistan's top potential for trade lay in agricultural commodities. The research also found that Pakistan did not have 100% concession on 71 products out of the top 100 products.

Malaysia is ambitious to be self-sufficient in the production of rice by 2020, which would have a negative impact on rice exports of Pakistan. Interestingly, Malaysia did not grant any concession to Pakistan for rice but granted more concessions to China and India. The research found that Pakistan faced competition in Malaysian markets and failed in utilising the commodities that had 100% tariff concession and a comparative advantage such as in raw cotton. Finally, Malaysia imposed comparatively higher tariff rates on Pakistan. The studies cited above do not account for the welfare gains from PMFTA but concentrate on the bilateral trade potentials of PMFTA.

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<sup>34</sup>From PITAD

<sup>35</sup> <http://www.pitad.org.pk/Publications/3-Evaluation%20of%20Pak-Malaysia%20FTA.pdf>

<sup>36</sup>This research uses a set of various indices such as utilization rate, revealed comparative advantage, trade complementarity index and Grubel Lloyd Index.

<sup>37</sup><http://pbc.org.pk/wp-content/uploads/2015/08/An-Assessment-of-the-Malaysia-Pakistan-Free-Trade-Agreement.pdf>

## **2.7 A Critical Appraisal of the Review of Literature**

One can undoubtedly find that studies specific to Pakistan do not tabulate the welfare gains (losses) of the FTAs of Pakistan. Welfare implications are crucial for the sustainability of a trade agreement and also for the trade-induced development of countries. The studies only focus on trade performance and potentials of the agreements. Most of the work is based on trade indicators, for instance, utilisation rate, intra-industry trade, complementarity index and comparative advantage analysis. The earlier studies use data up to 2010 and do not provide an updated analysis of the FTAs. The extended sets of data can provide useful insights into these agreements for further possible negotiations based on trade performance. The models and techniques used in earlier studies do not quantify the welfare implications in monetary terms. The recently available empirical models to quantify the welfare implications. Responding to the research gaps, we work out the welfare implications of the FTAs by employing the latest empirical model and utilising extended and disaggregated data sets.

## CHAPTER NO 3

### AN OVERVIEW OF REGIONAL TRADE AGREEMENTS OF PAKISTAN

#### 3.1 Introduction

Before we present the models and methods used in our study, we lay out an overview of the trade agreements of Pakistan. The chapter goes through different sections, starting from Pakistan's Regional Trade Agreements in section 3.1. Section 3.2 presents free trade agreements of Pakistan, while section 3.3 covers tariff concession plans of these FTAs. Trade performance of Pakistan and FTA member countries is presented in section 3.4. The major imports and exports of the FTAs of Pakistan with Sri Lanka, China and Malaysia are reported in section 3.5.

#### 3.2 Pakistan's Regional Trade Agreements<sup>38</sup>

Pakistan has signed various regional trade agreements<sup>39</sup> including preferential trade agreements and free trade agreements, both bilateral and multilateral in composition. While, Pakistan has already ended negotiations of some of the FTAs, it is signing various other free trade agreements<sup>40</sup>. The existing trade agreements are with Malaysia, China, Sri Lanka, Iran, Mauritius, Indonesia, and SAARC countries. Pakistan has preferential trade agreements with Iran, Mauritius, and Indonesia while there is a Transit Trade Agreement with Afghanistan.

The database of regional agreements of World Trade Organization (WTO)<sup>41</sup> highlights some more agreements to which Pakistan is a party, in addition to the ones documented

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<sup>38</sup> We present canonical definitions of different trade agreements along with a conceptual framework for regional integration in Appendix A.

<sup>39</sup> Ministry of Commerce, [http://www.commerce.gov.pk/?page\\_id=9](http://www.commerce.gov.pk/?page_id=9)

<sup>40</sup> Other than Sri Lanka, China and Malaysia

<sup>41</sup> World Trade Organization, <http://rtais.wto.org/UI/PublicSearchByMemberResult.aspx?MemberCode=586&lang=1&redirect=1>



by the Ministry of Commerce, Government of Pakistan, which include Economic Cooperation Organization (ECO), Global System of Trade Preferences among Developing Countries (GSTP) and Protocol on Trade Negotiations (PTN). Following the list of Pakistan's free trade agreements of Asian Regional Integration Centre (ARIC)<sup>42</sup>, negotiations for more bilateral trade agreements are in progress with Bangladesh, the Gulf, Morocco, Singapore, Thailand, and Turkey.

Pakistan signed some of the agreements but not notified to the WTO so far. These agreements are with (1) the Organization of the Islamic Conference (OIC), (2) PTA with a group of Eight Developing Countries, (3) PTA with MERCOSUR and (4) Pakistan-US Trade and Investment Framework Agreement.<sup>43</sup> However, our focus is on the already signed and in-effect bilateral FTAs of Pakistan, which are with Sri Lanka, China and Malaysia. The following sections present the details and performances of the bilateral FTAs of Pakistan<sup>44</sup>.

### **3.3 Pakistan's Free Trade Agreements**

Here, we discuss briefly the effective FTAs of Pakistan in the context of their history, tariff concessions, trade performance and major exports and imports. Pakistan-Sri Lankan FTA is effective since June 12, 2005, although it was signed in July 2002. It is the oldest FTA of Pakistan with any country. Both countries grant complete concessions on their major exports to one another.

With China, Pakistan signed a free trade agreement in goods and investment on 24<sup>th</sup> November, 2006, and it is operational since 1<sup>st</sup> July, 2007. This FTA was the outcome of successful negotiations after the implementation of Early Harvest Program

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<sup>42</sup><https://aric.adb.org/fta-country>

<sup>43</sup><https://aric.adb.org/fta-country>

<sup>44</sup> PSFTA, PCFTA and PMFTA

(EHP) with China, which was signed on 5<sup>th</sup> April 2005 and implemented on 1<sup>st</sup> January 2006 for the next two years. Pakistan's FTA with China turned out to be a comprehensive FTA on 21<sup>st</sup> February 2009 by signing the FTA in services. However, Pakistan's economic relations with China are traced back to the 1950's. Akhtar (n.d.) quotes different factors for the closer integration between Pakistan and China in early times such as the Sino-Indian hostility, the disappointment of Pakistan with its Western allies, India's refusal to Pakistan for joint defence of the sub-continent, and the US-India cooperation against China. The first formal relation with China started in January 1963 with the first trade agreement being signed between the two countries and when both countries granted the status of the 'Most Favoured Nation' to each other. Later on, the Pakistan-China Joint Committee on the Economy, Trade and Technology was constituted in 1982 (Shabir and Kazmi, 2007).

With Malaysia, Pakistan has a comprehensive free trade agreement, formally known as the Malaysia-Pakistan Closer Economic Partnership Agreement (MPCEPA), implemented since 2008. This comprehensive agreement includes trade in goods and services, investment, and economic co-operation. Pakistan concluded its FTA with Malaysia in 2007 and from the very beginning gave it the status of Most Favoured Nation applying the MFN tariff on January 1<sup>st</sup>, 2005, followed by later signing an Early Harvest Program on 1<sup>st</sup> October 2005 which was operational with effect from 1<sup>st</sup> January 2006.<sup>45</sup>

### **3.4 Tariff Concessions**

Pakistan has favoured Sri Lanka with 206 products with immediate 100% tariff concessions with the implementation of PSFTA. The products include fish, vegetables,

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<sup>45</sup>Paracha and Manzoor (2011)

nuts, fruit, spices, rubber; while Sri Lanka has bestowed Pakistan the duty-free market access for 102 products. The products include dates, oranges, apples, fresh fruits, and sanitary wares<sup>46</sup>.

**Table 1: Tariff Removals in PSFTA**

<b>Tariff Reduction</b>	<b>Pakistan</b>	<b>Sri Lanka</b>
<b>100% immediate concession</b>	206 products	102 products
<b>No Concession (Negative List)</b>	540 products	697 products
<b>Tariff Rate Quota</b>	26 products <sup>47</sup>	02 products
<b>Margin of Preference, 20% of Applied MFN rate</b>	05 products	Nil
<b>Tariff Phasing Out Schedule</b>	03 years	05 years

Source: Ministry of Commerce, Government of Pakistan

Table 1 gives the details of tariff removal. There are 540 product lines on the negative list, which do not receive any concession when imported from Sri Lanka, while there are 697 products on the negative list for being exported to Sri Lanka<sup>48, 49</sup> but these products reduced to 607 by 2013<sup>50</sup>.

Under the PCFTA, Pakistan could get market access with zero duty on various products such as industrial alcohol, cotton fabrics, bed-linen and other home textiles, marble and other tiles, leather articles, sports goods, mangoes, citrus fruit and other fruits and vegetables, iron and steel products and engineering goods. The tariff would be reduced by 50% on fish, dairy sectors, frozen orange juice, plastic products, rubber products, leather products, knitwear, and woven garments. Pakistan allowed China to have market access for machinery, organic, and inorganic chemicals, fruits and vegetables,

<sup>46</sup>[http://www.commerce.gov.pk/?page\\_id=215](http://www.commerce.gov.pk/?page_id=215)

<sup>47</sup> This includes Tea, Articles of apparel knitted or crocheted, articles of apparel non-knitted or crocheted

<sup>48</sup> Ministry of Commerce, Govt. Of Pakistan, [www.commerce.gov.pk](http://www.commerce.gov.pk)

<sup>49</sup> Products are at HS six-digit level

<sup>50</sup> Pakistan Business Council Study on PSFTA

medicaments and other raw materials for various industries including engineering sector, intermediary goods for engineering sectors.<sup>51</sup>

The tariff reduction modalities as per the free trade agreement of Pakistan and China can be broken down in two phases. Phase I started at once with the PCFTA coming into effect, while the negotiations on Phase II are in process<sup>52</sup>. China offered tariff reduction to Pakistan on 7550 commodities at 8-digit. There were 35.5% of commodities from which tariff was eliminated within three years of the implementation of Phase I of this FTA. There were 8% tariff lines with a reduction on Margin of Preference of 50% in five years and 7% tariff lines with a reduction on Margin of Preference of 20% in five years, while 15% tariff lines did not receive any concession. The agreement decided on 0-5% concession on 34.5% tariff lines.

Pakistan dropped the tariff on 2423 tariff lines 35.6% of the tariff lines at 8-digit to China, and the tariff cut is due within three years. There were 19.9% tariff lines awarded 0-5% reduction in tariff. Fifteen percent of tariff lines did not receive any concession. Tariff lines that receive a reduction in Margin of Preference of 50% and 20% were 2% and 26.1%, respectively. Right after the termination of Phase I, Phase II<sup>53</sup> will carry out discussion and negotiations on awarding the concession to not less than 90% of the commodities.

Pakistan-Malaysia free trade agreement decided trade liberalisation to be progressive. Pakistan was to reduce 43.2% tariff on imports from Malaysia by 2012. On the other hand, Malaysia was to reduce 78% tariff on imports from Pakistan. Most favoured nation tariff rate served as the base rate for reduction and elimination of tariff. Some tracks were specified for the elimination of tariffs. One was Fast Track (“FT”), the

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<sup>51</sup>Ministry of Commerce, Govt. Of Pakistan [www.commerce.gov.pk](http://www.commerce.gov.pk)

<sup>52</sup> Eight rounds of negotiations are over on Phase II of PCFTA, however, the first seven do not turn out to be effective. The eight one is expected to be effective.

<sup>53</sup>Phase II of negotiations is still in progress.

second was Normal Track (“NT”) and the third was Sensitivity Track (“ST”). In addition to different tracks for a reduction and elimination of tariffs, margin of Preference (MoP) tracks are also a part of the agreement. There are two MoP’s: MoP Track 1 and Track 2<sup>54</sup>.

Pakistan-China Free Trade agreement has a broader scope as it includes more of the tariff lines in concession coverage in comparison with PSFTA and PMFTA. PCFTA is also the more utilised FTA among the other two.

### **3.5 Trade Performance**

The current section throws light on the trade performance of Pakistan with FTA partners from 2003 to 2016. Table 2 presents the trade data of Pakistan with FTA partners along with trade shares and trade balances.

The exports of Pakistan to Sri Lanka amounting to only USD 83.5 million in 2003, continued to increase since the implementation of PSFTA. The exports reached their highest volume amounting to USD 347.7 million in 2011. Nonetheless, after 2011, the exports started declining and fell to USD 237 million in 2016. The share of exports to Sri Lanka was 0.70 percent of Pakistan’s total exports in 2003 and reached its highest to 1.37 percent in 2011. However, the share again decreased to 1.16 percent in 2016. In 2011, Sri Lanka imposed ‘Special Commodity Levy’ on ‘Imported Agricultural Products’, against the spirit of PSFTA despite the FTA.

The Special Commodity Levy caused cancellation of orders placed to Pakistani exporters by Sri Lankan importers. Resultantly, the exports to Sri Lanka declined. Pakistan’s exports to the world were highest in 2011 but started to decline from 2012 onwards with a slight increase in 2013. The decline was because the world economy

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<sup>54</sup> The schedules as per the agreements are presented in appendix.

faced sluggish growth in the result of a double-dip recession of developed countries and further led global trading activity to show the notable decline in 2012 as compared to 2011 that caused a decline in demand for Pakistan's exports to USA and EU.<sup>55</sup>

Pakistan's imports from Sri Lanka increased since 2003, though they fluctuated from USD 43.25 million in 2003 to USD 63.52 million in 2013, reaching the highest of USD 83.41 million in 2012. However, imports from Sri Lanka recovered to USD 75.82 million in 2016. The share of Pakistan's imports from Sri Lanka remained incredibly low throughout the duration, and continuously declined from 0.33 percent in 2003 to 0.16 percent in 2016. Even the implementation of PSFTA did not improve the share of imports to Pakistan<sup>56</sup>. Trade balance of Pakistan with Sri Lanka remained in surplus since 2003. The trade surplus increased to USD 286.5 million, its highest value was in 2011 but again declined to USD 161.18 million in 2016.

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<sup>55</sup> Economic Survey of Pakistan, 2012-2013

<sup>56</sup> Although the import volume in absolute terms increased.

**Table 2: Trade Statistics of Pakistan with FTA Partners**

Year	Pakistan & Sri Lanka					Pakistan & China					Pakistan & Malaysia					Pakistan & the World		
	X	Spe	M	Spm	X-M	X	Spe	M	Spm	X-M	X	Spe	M	Spm	X-M	X	M	X-M
2003	84	0.7	43	0.33	40	260	2.18	957	7.34	-697	94	0.79	601	4.61	-507	11,930	13,049	-1,119
2004	135	1	46	0.25	89	301	2.25	1,489	8.29	-1,188	66	0.49	634	3.53	-568	13,379	17,949	-4,570
2005	154	0.95	59	0.24	95	436	2.71	2,349	9.36	-1,913	67	0.42	731	2.91	-665	16,050	25,097	-9,047
2006	178	1.04	71	0.24	107	507	2.99	2,915	9.77	-2,408	61	0.36	766	2.57	-705	16,933	29,826	-12,893
2007	209	1.16	60	0.18	149	614	3.44	4,164	12.78	-3,550	81	0.46	1,158	3.55	-1,076	17,838	32,594	-14,756
2008	217	1.06	66	0.16	150	727	3.58	4,738	11.19	-4,011	138	0.68	1,694	4	-1,556	20,279	42,327	-22,048
2009	217	1.23	56	0.18	161	998	5.68	3,780	11.97	-2,782	158	0.9	1,608	5.09	-1,450	17,555	31,584	-14,029
2010	284	1.32	53	0.14	231	1,436	6.71	5,248	13.98	-3,812	146	0.68	2,055	5.47	-1,909	21,413	37,537	-16,124
2011	348	1.37	61	0.14	287	1,679	6.62	6,471	14.85	-4,792	243	0.96	2,728	6.26	-2,485	25,344	43,578	-18,234
2012	301	1.22	83	0.19	217	2,620	10.64	6,688	15.26	-4,068	233	0.95	2,132	4.87	-1,899	24,614	43,813	-19,199
2013	316	1.26	64	0.15	253	2,652	10.56	6,626	15.14	-3,974	204	0.81	1,920	4.39	-1,715	25,121	43,775	-18,654
2014	266	1.08	63	0.13	203	2,253	9.11	9,588	20.17	-7,335	234	0.95	1,280	2.69	-1,046	24,722	47,545	-22,823
2015	260	1.18	72	0.16	188	1,935	8.76	11,019	25.05	-9,084	186	0.84	911	2.07	-725	22,089	43,990	-21,901
2016	237	1.16	76	0.16	161	1,574	7.73	13,651	29.17	-12,077	151	0.74	942	2.01	-791	20,355	46,798	-26,443

Source: World Integrated Trade Solutions (WITS)

Values of Imports, Exports and Trade deficit are in a million US dollars.

**M:** Imports

**X:** Exports

**Spm:** Share in Pakistan's Imports

**Spe:** Share in Pakistan's Exports

**X – M:** trade deficit

Pakistan's exports to China were worth USD 260 million, 2.18 percent of Pakistan's total exports to the world. Pakistan's export to China increased because of PCFTA, and the highest level of export volume to China was USD 2652 million in 2013. The exports increased steeply from 2007 to 2013, however declined after 2014.

Pakistan's imports from China were USD 957 million in 2003, and it was 7.34 percent of Pakistan's total imports from the world. The imports from China have been increasing since 2003 without any fluctuation. Pakistan has highest imports from China in 2016 ever, recorded at 29.17 percent of Pakistan's total imports from the world. The increase in imports stayed a bit flat till 2013, however, after 2014 imports from China have seen a very steep rise as the import volume and share of imports from China doubled in 2016 from its volume in 2013.

The trade deficit has also been increasing since 2003, and it was USD 697 million in 2003, but it has widened over the course of time and reached its ever-greatest level of USD 12.07 billion in 2016, four times the level in 2003. Pakistan's imports from China are eight times higher than Pakistan's exports to China in 2016. Pakistan's imports rose about 14 times than its level in 2003, while Pakistan's exports increased about six times than its level in 2003. One plausible explanation can be the machinery and other imports related to China Pakistan Economic Corridor-the CPEC.

In 2003, the exports to Malaysia were USD 93.96 million out of Pakistan's USD 11930 million worth of exports to the world i.e. 0.79 percent of Pakistan's exports to the world. The exports to Malaysia from Pakistan declined from 2004 to 2006, but from 2008 onward Pakistan's exports started increasing and reached the highest volume in 2011 amounting to USD 243 million. Unfortunately, Pakistan's exports to Malaysia declined since 2012 and reached even lower than the volume in 2009, i.e. USD 151 million in 2016.



Pakistan's imports from Malaysia continuously increased from 2003 with a sluggish rate. The import volume from Malaysia was worth USD 601 million in 2003 with 4.61 percent share in total imports of Pakistan. PMFTA increased the import volume more than four times that of 2003. Pakistan's imports from Malaysia reached their highest volume, USD 2728 million, in 2011 and started declining after 2011. The decline in palm oil imports from Malaysia majorly caused the decline in overall imports from Malaysia. The import of palm from Indonesia displaced the imports of palm oil from Malaysia. From the highest volume of palm oil import, it declined to pre-PMFTA volume, and the import of palm oil increased from Indonesia because of PTA with Indonesia. Indonesia offered the palm oil at lower prices in comparison with Malaysia. In 2016 the import volume was just USD 942 million. The share of the imports from Malaysia in total Pakistani imports reached its maximum in 2011, but this share decreased to its lowest level of 2.01 in 2016 since 2003.

Pakistan's trade balance with Malaysia has been negative since 2003, rising to its highest level, USD 2485million in 2011, but declining afterwards to USD 791 million, in 2016. The decline in imports from Malaysia caused this decline, not the increase in export from Pakistan to Malaysia.

### **3.6 Major Imports and Exports**

To better understand if there is any change in the structure of exports and imports of Pakistan to and from the FTA partners, we present the trade values of major exports and major imports along with their ranking among the rest of the exports and imports in Tables 3 and 4.

Cotton is the 4<sup>th</sup> most exported product of Pakistan to the world, and it comes at the top in the list of export product to Sri Lanka and China from Pakistan. The worth of cotton

exports to Sri Lanka and China is USD 90 million and USD 1262 million, respectively. Salt and Sulphur is the second most exported product to Sri Lanka while these products are on fifth and ninth number on the list of major export products to China and Malaysia, respectively. The third most exported product range to Sri Lanka is of pharmaceutical products, worth USD 22 million. The third most exported product chapter (HS 22) to China holds beverages and spirits while the same chapter comes on 10<sup>th</sup> number in the list of products exported to Malaysia.

Pakistan exports Cereals (HS 10) worth USD 15 million to Sri Lanka. The exports of cereals to China is worth USD 167 million and to Malaysia is worth USD 73 million. On the ranking, cereals exports are at 1<sup>st</sup> number among exports to Malaysia.

The other exports to Sri Lanka, China, and Malaysia, include products such as textile articles, salt, sulphur, stone plaster, beverages, spirits, and vinegar, edible vegetables and certain roots and tubers. Because of the FTAs, the composition of the exports did not change markedly. The FTAs could not bring the product diversification in exports. Pakistan exports raw material and agricultural products to these countries, which have a meager contribution to the export bill. Pakistani exporters have been facing tariff restrictions by Sri Lanka on the top exported commodities to the latter.

**Table 3: Pakistan's Major Exports to the FTA Partners**

Pakistan's Top 10 Exports to Sri Lanka					Pakistan's Top 10 Exports to China					Pakistan's Top 10 Exports to Malaysia							
Code	Product Label	Exports				Code	Product Label	Exports				Code	Product Label	Exports			
		2015	Rank	2003	Rank			2015	Rank	2003	Rank			2015	Rank	2003	Rank
<b>52</b>	Cotton	90	1	39	1	<b>52</b>	Cotton	1,262	1	169	1	<b>10</b>	Cereals	73	1	17	1
<b>25</b>	Salt, Sulphur...	31	2	0	42	<b>10</b>	Cereals	167	2	0	31	<b>7</b>	Edible vegetables...	17	2	2	8
<b>30</b>	Pharmaceutical products	22	3	4	4	<b>22</b>	Beverages, spirits...	88	3	0	61	<b>63</b>	Other made textile ....	17	3	15	3
<b>7</b>	Edible vegetables...	21	4	5	3	<b>26</b>	Ores, slag...	71	4	5	6	<b>52</b>	Cotton	13	4	15	2
<b>10</b>	Cereals	15	5	3	6	<b>25</b>	Salt, Sulphur...	48	5	2	8	<b>3</b>	Fish, crustaceans...	12	5	7	6
<b>73</b>	Articles of iron or steel	14	6	3	8	<b>3</b>	Fish, crustaceans...	46	6	20	3	<b>62</b>	Articles of apparel not knit	9	6	3	7
<b>63</b>	Other made textile...	10	7	4	5	<b>41</b>	Raw hides, skins...	42	7	15	4	<b>61</b>	Articles of apparel... knit	8	7	0	16
<b>22</b>	Beverages, spirits...	10	8	0	74	<b>74</b>	Copper...	28	8	0	85	<b>88</b>	Aircraft...	5	8	0	50
<b>39</b>	Plastics...	7	9	3	7	<b>8</b>	Edible fruit...	27	9	0	27	<b>25</b>	Salt, Sulphur...	3	9	0	36
<b>60</b>	Knitted... fabric	6	10	1	18	<b>63</b>	Other made textile...	27	10	1	15	<b>22</b>	Beverages, spirits...	3	10	0	68

Source: World Integrated Trade Solutions (WITS)  
Codes are the product codes at HS 2-digit.  
Values of Exports are in million US dollars.

Pakistani exporters must pay equivalent ad valorem tariff to Sri Lanka such as 6.9 percent on cereals, 12.3 percent on sugar and sugar confectionery, 14.9 percent on edible vegetables, certain roots and tubers, 2.3 percent on articles of iron and steel, 4.5 percent on fish, crustaceans, molluscs, aquatic invertebrates, 2.3 percent on plastic and articles thereof and 81.5 percent on beverages, spirits, and vinegar. Pakistan receives a higher concession than India along with higher potential in 11 products at HS-6 digit, but Pakistan has utilised this advantage so far. There are around 32 products at HS-6 digit having higher trade potentials in context of export to Sri Lanka however, these products do not receive any tariff concession from Sri Lanka.

Pakistan faces high tariff rates on her top export products to China. The exports to China decreased in 2011 and 2013 because of the imposition of a tariff on Pakistan in comparison with ASEAN. So, ASEAN exports to China increased because of the availability of products at cheaper rates precluding tariffs. We can see high tariff rates on Pakistan's top export products. Tariff on cotton under HS-8 digit varies from 0% (HS 520812) to 20% while ASEAN, New Zealand and Iceland enjoy 100% concession on these products. China has imposed 65 % tariff on 'rice other varieties' and 'broken rice' under HS-8 digit. On the other side, ASEAN countries face only a 20% tariff on 'Rice other varieties'.

Among ores, slag and ash, Pakistan must pay 4% tariff on slag, dross, scaling, and other waste from manufacturing of iron and steel while ASEAN enjoys 100% concession. China imposed 8 percent tariff on frozen fish, excluding fish fillets (Under HS-8 digit, 03033900) while ASEAN countries avail 100% concession, awarded by China. Out of products under chapter 41 HS codes, Pakistani exporters pay 5 % and 9.8 % duty on prepared leather sheep/lamb (41120000) and leather prep. After tan goat (41131000) however, ASEAN countries do not pay any tariff. Pakistani exporter is charged 24.2%

tariff on exporting fruit, dried, other than that (08134030) to China; on the other hand, exporters from New Zealand and ASEAN do not pay any tariff to China. Top potential exporting products to China are cotton, rice, fish, and leather but these products do not have tariff concession. Contrary to the spirit of the free trade agreement, 65% tariff is imposed on rice.

Table 4 shows major imports of Pakistan from FTA partner countries. Pakistan's top import from Sri Lanka is coffee, worth USD 19 million followed by vegetable products, worth of USD 17 million. Wood and articles of wood, edible fruit, nuts, peel of citrus fruit and melon, rubber, and articles thereof and oilseeds have been the major imports from Sri Lanka since 2003. The range of import products from Sri Lanka is concentrated in agricultural and edible products. Only a few of the products could make their position with little worth in the top imports list from Sri Lanka since the implementation of PSFTA.

The major imports from China include electric and electronic equipment, machinery, nuclear reactor and boilers, iron and steel, organic chemicals, manmade filaments, fertilisers, articles of iron and plastics and articles thereof. The topmost imported products are electric and electronic equipment worth of USD 2566 million in 2015 followed by machinery worth USD 1666 million. Pakistan imports mix-products from China because the top imports include final industrial products as well as agricultural products, however the dominant share is of industrial products. The primary contribution of industrial products is causing an increase in the import bill of Pakistan from China. There is not a noticeable change in the list of top imports from China since 2003.

**Table 4: Pakistan's Major Imports from FTA Partners**

Pakistan's Top 10 Imports from Sri Lanka						Pakistan's Top 10 Imports from China						Pakistan's Top 10 Imports from Malaysia					
Code	Product label	Imports				Code	Product label	Import				Code	Product label	Imports			
		2015	Rank	2003	Rank			2015	Rank	2003	Rank			2015	Rank	2003	Rank
9	Coffee...	19	1	7	3	85	Electrical ...	2,566	1	122	2	15	Animal, vegetable...	295	1	427	1
14	Veg. plaiting	17	2	6	4	84	Machinery ...	1,666	2	174	1	27	Mineral fuels...	111	2	1	24
44	Wood and...	9	3	1	7	72	Iron and steel	1,015	3	29	9	84	Machinery ...	61	3	22	4
8	Edible fruit...	7	4	3	5	29	Organic chemicals	570	4	64	3	88	Aircraft...	51	4	0	92
40	Rubber ...	6	5	10	2	54	Manmade filaments	510	5	22	14	54	Manmade filaments	43	5	9	9
89	Ships...	3	6	0	92	31	Fertilizers	503	6	6	26	29	Organic chemicals	43	6	27	2
12	Oil seed...	2	7	12	1	73	Articles of iron...	413	7	30	8	39	Plastics...	39	7	17	6
53	Vegetabl e...	1	8	1	10	39	Plastics...	351	8	20	15	44	Wood and...	35	8	11	8
62	Articles Apparel.	1	9	0	33	55	Manmade staple.	307	9	3	34	38	Misc. chemical...	31	9	25	3
47	Pulp of wood...	1	10	0	70	87	Vehicles ...	255	10	34	6	23	Residues, wastes...	26	10	0	55

Source: World Integrated Trade Solutions (WITS)  
Codes are the product codes at HS 2-digit.  
Values of Imports are in a million US dollars.

The top imports from Malaysia include animal, vegetable fats and oils. The worth of these top import products was USD 295 million in 2015. The other major imports from Malaysia include mineral fuels, oils and distillation products, machinery, aircraft and spacecraft, manmade filaments, organic chemicals, plastics and wood articles. The range of import products from Malaysia resembles that of China. The major imports from Malaysia include agricultural and industrial products. Since 2003, three product chapters appeared on the 'top' products list.

Sri Lankan top export products to Pakistan face reciprocity in the context of tariff imposition and payment to Pakistan. What Sri Lanka pays on the various products is as follows: 3.4 percent on coffee, tea mate and spices; 5.5 percent on rubber and articles thereof; 17.1 percent on vegetable plaiting materials; vegetable products; 6.4 percent on edible fruit, nuts, peel of citrus fruit, melons; 4.4 percent on wood and articles of wood, wood charcoal; 1 percent on edible vegetables and certain roots and tubers; 5.6 percent on vegetable textile fibres, paper yarn woven fabric; 22.7 percent on articles of apparel, accessories, not knit or crochet; and 0.8 percent on pulp of wood, fibrous cellulosic material, waste etc. There are many commodities on the Sri Lankan side as well, which do not receive any tariff concession, though Sri Lanka has revealed comparative advantage in those products.

In contrast to China, Pakistan offers more attractive and beneficial tariff concessions to China in the context of coverage and variety of products. China uses 57% of the FTA coverage while Pakistan uses only 5% of the FTA coverage. As compared to 2006, China is now Pakistan's top import destination. PCFTA has a substantial negative impact on the domestic industry as the imports from China have displaced domestic production.

Pakistan's top imports from China have been facing tariff imposition even after the implementation of PCFTA. Chinese exporters have to pay a tariff on the products such as 5% on transmission apparatus (852520), 2% on parts of air conditioning machines (841590), 10% on tiles, cubes, and sim n.e.s<sup>57</sup>, glazed ceramics (690890), 6.4% on air conditioning machines window or wall types (841510) and 10.5% on textile spinning machines (844520).

High trade potential commodities face high tariff restrictions under PCFTA. Pakistan has high indicative trade potentials along with high tariff imposition in 16 commodities at HS-6 digit. Out of the products with high trade potentials, only 2 get the benefit of zero tariffs while 11 of them are not the part of PCFTA. There are 12 products in which Pakistan holds high revealed comparative advantage and higher trade potentials, but these products face higher tariff rates. Simultaneously, ASEAN countries do not face the same tariff restrictions as Pakistan faces.

While analysing Pakistan's imports from Malaysia, we have seen again that all top imports to Pakistan pay the tariff. Malaysian exporters pay tariff as follows: 8% on animal, vegetable fats and oils, cleavage products etc, 7% on machines, nuclear reactors, boilers etc, 6 % on mineral fuels, oils and distillation products, 12% on manmade filaments, 3% on organic chemicals, 11% on plastics and articles thereof, 7% on wood and articles of wood, wood charcoal and 7% on miscellaneous chemical products. Pakistan Business Council reported an assessment of the Malaysia-Pakistan FTA in 2015. The assessment figured out around 16 untapped markets at HS-6 digit with higher trade potentials, and some of them enjoy up to 100% concession as well while on some products tariff is imposed.

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<sup>57</sup>N.e.s means "No elsewhere specified"



While renegotiating PCFTA in Phase II, it is necessary to keep following points as agenda to improve the gains from trade for both the countries. The countries need to bestow one another the concession on the commodities which are top trading products for both the countries. The countries should consider granting concessions on the products of high trade potentials. China needs to give concession to Pakistan in various products, specifically in the products which are in competition with ASEAN or other countries so that Pakistan does not face competition because of the cheaper rates.

From the statistics of Tables 3 and 4, we can evaluate all the three FTAs and their impact on the economies involved. We deduce that Pakistan, Sri Lanka, and Malaysia have not been using FTAs optimally to reap the fruits of these FTAs. The bilateral trade is prey to the high concentration of few products. The countries have signed the agreements but have not included the products of high trade potential in their positive offer lists and have not given concession on top trading goods. Out of the three, PCFTA is more active on the economy of Pakistan in both directions. PCFTA has caused an increase in consumer surplus because it has offered a diversity of products at cheaper rates in comparison with domestic prices. However, PCFTA has disturbed local producers extensively because the imports from China displace the local production.

In this chapter, we have reviewed the three free trade agreements under study in the context of their trade performance, tariff concessions and major trading products. We find that all the FTAs are not successful in ensuring the diversification of trade products for Pakistan. Pakistan, even after the implementation of these FTAs, imports the same mix of products. This chapter would be helpful for interpreting the empirical results and their comparisons with the actual trade volumes and top exports and import products.

## CHAPTER NO 4

### THEORETICAL MODEL, ANALYTICAL FRAMEWORK AND ESTIMATION METHODOLOGY

#### 4.1 Introduction

To achieve the objectives, we use a series of multiple models and estimation techniques, that include the Gravity model, the Viner Model and the Lloyd and Maclaren Model. The gravity model is a remarkably successful empirical method (Anderson 1979) used in international economics for post-agreement analysis. The Viner Model was the first effort to gauge the welfare impact of trade agreements using the concepts of trade creation and trade diversion. The Lloyd and MacLaren Model is a suitable model to calculate welfare changes of trade agreements based on prices and quantities of products. Moreover, the disaggregated gravity model decomposes the impact of these trade agreements on the manufacturing and agriculture sectors. What follows are details of methods and techniques used in the analyses along with their theoretical underpinnings. For the sake of clarity, the methods and models adopted in this research for our three objectives, are presented below.

#### 4.2 Impact of FTAs on Aggregate Trade

We use the gravity model<sup>58</sup> to study the impact of bilateral FTAs on the aggregate trade of Pakistan.<sup>59</sup>The following section holds the analytical framework and estimation method of the gravity model.

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<sup>58</sup> Gravity model is the base model for disaggregated gravity model and Magee (2016). The empirical model of Magee (2016) has been used to estimate Vinerian trade creation and trade diversion. So, the detailed theoretical and estimation description is presented in this section.

<sup>59</sup>one objective of our study.

#### 4.2.1 A Description of the Gravity Model

The gravity equation in physics explains the *Law of Gravitational Force*. In 1962, Tinbergen first changed the physics' gravity equation, and since then this modified form has been used in international economics. Gravity specification of international trade is a "good fit for most data sets of regional and international trade flows" (Helpman, Melitz, & Rubinstein, 2008). Ravenstein (1889) used the gravity equation for labour migration patterns before Tinbergen (1962). Since Tinbergen's work, the gravity equation is used successfully to analyse bilateral trade flows between different countries. The gravity equation is sometimes referred to as a "workhorse for analysis of bilateral trade" by Head & Mayer (2013), "example of Social Physics" by Krugman (1997) and "Murky Analogy with Newtonian Physics" (Head & Mayer, 2013).

The equation is derived from Newton's Law of the gravitational force between two objects:

$$GF_{ij} = \frac{M_i M_j}{D_{ij}} \quad i \neq j$$

where  $M_i$ ,  $M_j$  and  $D_{ij}$  are the mass of object  $i$ , the mass of object  $j$ th and the distance between both masses, respectively.

Tinbergen (1962) used Newton's Equation as:

$$E_{ij} = \frac{Y_i Y_j}{D_{ij}}$$

where  $Y_i$  and  $Y_j$  are the GDPs of two countries  $i$  and  $j$ , positively related with trade flows and  $D_{ij}$  is the distance between the countries negatively related with trade flows and  $E_{ij}$  stands for trade flows from country  $i$  to country  $j$ . Trade flows depend on the GDP's of the countries  $i$  and  $j$  and the distance between them. There are various alternative

specifications of this equation found in the literature. The next section gives the theoretical foundations of gravity equation.

#### **4.2.2 Gravity Model: Theoretical Foundations of Gravity Equation**

Anderson (2010) claims gravity equation as an “Intellectual Orphan” because Tinbergen (1962) did not provide any theoretical underpinnings for the gravity equation. His successors provided the theoretical underpinnings of the gravity equation. Linnemann (1966) attempted to provide the theoretical base to the gravity model which was later accompanied by the work of Aitken (1973) and that of Geraci & Prewo (1977)<sup>60</sup>. Anderson (1979) was credited with providing a formal<sup>61</sup> theoretical support to the gravity equation for the first time. Head & Mayer (2013) state that “Anderson (1979) did not penetrate the consciousness of trade economists.” Leamer & Levinsohn (1995) state that “an attempt to give a theoretical foundation by Anderson is formally fruitful but seems too complex to be part of our everyday toolkit.”

Bergstrand (1985) and Bergstrand (1989)<sup>62</sup> made the second attempt to work out theoretical underpinnings of the gravity equation<sup>63</sup>. Deardorff (1998) is considered as a third attempt to give theoretical support to the gravity equation under impeded trade. This attempt was in the settings of the HO model based on the framework quite similar to that of Anderson (1979). Eaton & Kortum (2002) was<sup>64</sup> the fourth attempt to give

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<sup>60</sup> All these works are based on a partial equilibrium model.

<sup>61</sup>Deardorff (1998) considered former attempts to give theoretical justification to gravity equation as not-formal.

<sup>62</sup>This version of gravity equation caters inter-industry, intra industry trade, populations and incomes of the importer and exporters. This work is based on a general equilibrium model of two factors of production.

<sup>63</sup> This work is based on a general equilibrium model of single factor of production

<sup>64</sup>The study was not a direct attempt for the theoretical support to gravity equation rather the results of this work have supported gravity type trade flows in their Ricardian model with geographical barriers.

another<sup>65</sup> theoretical justification to the gravity equation. The fifth attempt is credited to Helpman et al. (2008); the study based on the international trade model with heterogeneous firms.

The gravity equation can be derived from different models of complete specialisation to monopolistic competition and remains “consistent with a broad category of models” (Haveman & Hummels 1998). “The equation has ....gone from embarrassing poverty of theoretical foundations to an embarrassment of riches!” (Frankel, Stein, & Wei, 1997). Feenstra (2003) was the first to include the gravity equation together with its theoretical justifications in a textbook.

The international trade economists included the gravity equation as a core element of international trade theory in three steps (Head & Mayer, 2013). ‘Admission’ (1995) was the first step, including the studies of Leamer & Levinsohn (1995)<sup>66</sup>, Krugman (1995) and McCallum (1995)<sup>67</sup>. The second step was ‘multilateral resistance/fixed effects revolution’<sup>68</sup> (2002-2004), involving the critical studies of Eaton & Kortum (2002)<sup>69</sup> and Anderson & Van Wincoop (2003a)<sup>70</sup>. However, Feenstra, (2004) and Redding & Venables (2004) advocated the use of importer and exporter fixed effects to capture the multilateral resistance and remoteness instead of using multilateral resistance terms and the remoteness index. The third pivotal year for research on gravity equations was 2008, introducing ‘Convergence’. The third step includes the research work of Chaney (2008),

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<sup>65</sup> I write ‘another’ because initially many attempts have been made to derive gravity equation from some theoretical model so Eaton and Kortum (2002) is not the first attempt. See others Anderson (1979), Bergstrand (1985, 1989) and Deardorff (1998)

<sup>66</sup> Accepted the significance of proximity in gravity equation.

<sup>67</sup> Krugman (1995)’s work is on remoteness and McCallum (1995) works on border effect for Canada-US data.

<sup>68</sup> A criticism on using distance to capture proximity because only distance doesn’t entertain other dyad effects.

<sup>69</sup> The study is based on Ricardian model with geographical barriers.

<sup>70</sup> Multilateral resistance remoteness index replaces a proximity variable.

Helpman et al. (2008) and Melitz & Ottaviano (2008), who researched heterogeneous firms with the determinants of bilateral trade flows.

Given the brief background on the gravity model and its theoretical foundations, we can now continue to the estimation method adopted to achieve the first objective.

### 4.2.3 Gravity Model: Model Specifications and Estimation Techniques

#### 4.2.3.1 Gravity Model Specifications

The general specification for the gravity model is as follows:

$$\ln E_{ij} = \alpha + \beta_1 \ln Y_i + \beta_2 \ln Y_j + \beta_3 \ln D_{ij} + \mu_{ij}$$

Where  $\ln E_{ij}$ , the log of exports from i to j is,  $\ln Y_i$  is the log of GDP of ith country,  $\ln Y_j$  is the log of GDP of jth country<sup>71</sup>, the  $\ln D_{ij}$  is the log of distance from the centre of ith country to the centre of the jth country. Many of the specifications<sup>72</sup> of the gravity equation often include dyad<sup>73</sup> variables and dyad effects such as proximity, common border, common language, cultural effect, effects of bilateral agreements, trade openness, exchange rate and the population. Some specifications include multilateral trade resistance (MTR) for partner countries and dummies for trade creation and trade diversion. Based on the objectives of the study at hand, we prefer using specification from Plummer *et al.* (2012) of the gravity<sup>74</sup> equation:

$$\ln E_{pj} = \alpha + \beta_1 \ln Y_p + \beta_2 \ln Y_j + \beta_3 \ln D_{pj} + B_{pj} + O_{pj} + \mu_{pj}$$

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<sup>71</sup> GDPs of both importing and exporting countries added to take care of the Macroeconomic effects of both countries. Magee (2016) includes the GDP of exporting country and then year dummies to capture the year wise Macroeconomics effects on the imports.

<sup>72</sup> A detailed description on various specifications of gravity equation can be found in (Head & Mayer, 2013)

<sup>73</sup> Dyad effects include effects of both the importers and exporters such as border effects, common language and common culture (Magee 2016).

<sup>74</sup> We can not use Magee (2016) here because this gravity equation is based on aggregated imports and exports while the Magee (2016) deals with disaggregated data and also with industry level tariff rates.

Where  $E_{pj}$  is the trade<sup>75</sup> between Pakistan and jth country,  $Y_p$  is the GDP of Pakistan,  $Y_j$  is the GDP of jth country,  $D_{pj}$  is the distance between the centres of Pakistan and jth country.  $B_{pj}$  and  $O_{pj}$  are dummies to capture trade creation and trade diversion<sup>76</sup>. This specification is often preferred as it augments Viner's trade creation and trade diversion effects (Plummer *et al.*, 2010).

A single dummy for RTA or FTA can capture the sum of trade creation and trade diversion (Aitken, 1973) from the regional trade agreement(s) however; this dummy cannot figure out the shares of trade creation and trade diversion for Intra and extra-block from that sum. In contrast to using a single dummy, Frankel *et al.*, (1997), Frankel & Wei (1998) and Soloaga & Winters (2001) introduce a set of dummy variables that includes dummies for Intra and extra-block and isolates trade creation and trade diversion for a regional trade agreement.

Bacchetta *et al.* (2012) present the gravity equation with a set of two dummy variables. Separately, the two dummies are used to weigh trade creation and trade diversion of an FTA. The robust and positive dummies result in trade creation. In contrast, both significant dummies with positive and negative signs for first and second dummies respectively confirm trade diversion.

#### **4.2.3.2 Gravity Model: The Variables**

We use the traditional variables of the gravity model which are trade flows, importer and exporter GDPs and the distance between the countries. Along with the traditional

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<sup>75</sup> In this specification, the trade takes into account imports to Pakistan and exports from Pakistan. Magee (2016) quantified Viner's trade creation and trade diversion for industry level imports. These both concepts are related to the imports so our study does not count exports for Magee specification.

<sup>76</sup> Endoh (1999) has used same kind of dummies for trade creation and trade diversion. One dummy variable is used for exports for a member country excluding the exports from regional agreements being studied whereas the second dummy variable has been included for intra-institutional trade for the regional agreements.

variables of gravity, we include RTA and FTA dummies to decide about trade creation and trade diversion.

#### **4.2.3.3 Econometric Techniques and Related Issues**

Traditionally, the gravity equation is estimated using ordinary least squares (OLS) of the log-linearised equation. One can retrieve limited information from the estimation of the gravity equation using OLS because of its inconsistency (Egger, 2004). In the succeeding section, we discuss the issues related to estimation and the econometric techniques.

#### **4.2.3.4 Fixed Effects Specification Versus Random Effects Specification**

Many econometricians and trade economists advocate the use of both fixed and random effects to estimate the gravity equation. Fixed effects vary in their nature such as local effects, importer specific, exporter specific and time specific effects (Mátyás, 1997 and Magee, 2016). Side by side these effects capture the omitted variables such as specific to import, export or time, tariff policy on imports or exports, the size of the country, access to cross the border infrastructure networks, geographical and historical determinants.<sup>77</sup> Fixed effects also cover the effects limited to a specific region (Egger, 2000).

Moreover, fixed effects are observable and consistent even in the presence of endogeneity or some errors in variables, and we can estimate when the sample includes some countries. These effects do not remain parsimonious for a dataset of many countries, however, random effects work better in such cases. The gravity model estimated without fixed effects lead to a wrong inference. (Mátyás 1997).

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<sup>77</sup> These variables are not random in their nature; hence, they are estimated with fixed effects (Egger 2000)



Although random effects are non-observable, still the estimation of the gravity equation using these effects is workable for data from many countries. Before estimating random effects, a test of homogeneity of the data is necessary, and these effects are only consistent if their error terms are normally distributed and independent of one another.

There could be a relationship between unobservable individual effects and explanatory variable(s) by estimating the gravity model with random effects, resulting in inconsistent estimates (Egger, 2002). Similarly, random effects yield limited value and biased estimates if we estimate gravity equation using generalised least squares (GLS). (Egger, 2004). Therefore, we also use fixed effects for estimation of various models in our study.

The succeeding section discusses some issues in the gravity equation along with the way to solve these issues.

#### **4.2.3.5 Issues in Gravity Modeling and Poisson Pseudo Maximum Likelihood Method: A Solution**

Numerous problems in the gravity modelling were discussed in the literature such as in Head & Mayer (2013) and Bacchetta et al. (2012). These issues include zero trade flow, remoteness and multilateral resistance term, dyad effects, zero trade, heterogeneity, endogeneity, FTA dummy variable and gravity's error from the estimation of the log-gravity model. Usually, trade data have zero values, and the researchers estimate the gravity equation in log-linear form. So, taking the log of the data results in a drop of many observations from the dataset because of the log of zero values. Zero trade flows also lead to endogeneity and selection bias (Bacchetta et al., 2012). This problem persists in disaggregated and commodity level data of trade.

Another problem in the gravity equation appears because of the reliance on distance for proximity. As a solution, Anderson & Van Wincoop (2003a) introduce average trade

barriers while Baldwin & Taglioni (2006) introduce time-varying country dummies as proxies for remoteness and multilateral resistance instead of distance. However, Magee (2016) proves that the fixed effects rule out the requirement for an exclusive multilateral resistance term by capturing effects specific to exporter-year, importer year and dyad account.<sup>78</sup>

Silva & Tenreyro (2006) used, for the first time, the Poisson Pseudo Maximum Likelihood method (hereafter PPML) to estimate the gravity equation. The method is capable of tackling the issues faced in estimating the gravity equation. Silva & Tenreyro articulate that PPML can estimate the data having some zero values of the dependent variable. They estimate the gravity equation using OLS and PPML and find that OLS exaggerates the estimates of GDP, geographical distance, and colonial ties. They find, in brief, that the inconsistent OLS estimates may lead to misleading interpretations and wrong policy implications.

Furthermore, PPML takes care of heteroskedasticity and zero trade values but cannot be used for bias and standard errors (Martínez-Zarzoso, 2013). PPML also provides robust estimates of the gravity model in the presence of different patterns of heteroskedasticity and measurement error (Fally, 2015). PPML estimates the gravity equation using importer and exporter fixed effects, take account of the constraints imposed by Anderson & Van Wincoop (2003b) and remove the need for a multilateral resistance (Fally, 2015).

PPML can cope with different gravity modelling issues and biases such as elasticity bias, zero trade values, exaggerated estimated parameters and multilateral resistance

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<sup>78</sup> PPML Method deals with multilateral trade resistance with fixed effects. See section 4.2.3. for discussion on using Poisson Pseudo Maximum Likelihood method for estimation

term. Because of its properties and advantages, PPML<sup>79</sup> can be used to estimate the gravity model, the disaggregated gravity model and the empirical model introduced by Magee (2016) for trade creation and trade diversion.

### 4.3 Sectoral Level Welfare Analysis of FTAs

We examine the impact of FTAs on the manufacturing and agricultural sectors of Pakistan for better policy formulations and recommendations. Numerous studies use the gravity model for disaggregated data. The never ending list includes Pelzman (1977), Feenstra *et al.* (2001), Anderson & Van Wincoop (2004), Jayasinghe & Sarker (2008) and Anderson, (2011).

Pelzman (1977) works out trade creation and trade diversion for disaggregated data.<sup>80</sup> Feenstra *et al.* (2001) evaluate the validity of different theories behind the gravity equation employing five-digit SITC level data. Anderson & Van Wincoop (2004) suggest disaggregated gravity as the way to mitigate the upward bias of trade costs caused by trade barriers based on aggregated data. Jayasinghe & Sarker (2008) use the gravity model to study the impact of regional trade agreements of six agri-food products.

According to Anderson (2011):

*“Thus far, the treatment of trade flows has been of a generic good that most of the literature has implemented as an aggregate: the value of aggregate bilateral trade in goods for example. However, the model applies more naturally to disaggregated goods (and factors) because the frictions to be analysed below are likely to differ markedly by product characteristics.”*

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<sup>79</sup> Same has been used by Westerlund & Wilhelmsson (2006), Westerlund & Wilhelmsson (2011), (C. S. P. Magee, 2016) for estimating a specific version of Gravity model with zero trade values in the data.

<sup>80</sup> The data set includes 37 commodities.

The studies quoted above deal with various datasets of commodities. However, we will analyse the impact of bilateral free trade agreements on the manufacturing and agricultural sectors of Pakistan.<sup>81</sup>

#### **4.3.1 Disaggregated Gravity Model: The Estimation Methodology**

To estimate, the disaggregated gravity equation for the manufacturing and agricultural sectors of Pakistan, we have utilised the empirical model of Magee (2016),<sup>82</sup> which employs the import<sup>83</sup> values of the manufacturing and agricultural sectors, their preferential tariff rates, MFN tariff rates and a log of exporter GDPs.

#### **4.4 Industry Level Welfare Analysis<sup>84</sup> of FTAs**

The Viner model is a pioneer in gauging losses and gains from any FTA. The terms ‘*trade creation*’ and ‘*trade diversion*’ were first coined in the work of (Viner, 1950). Trade creation is a flow of efficient imports from the FTA partner country, which replaces domestically produced inefficient goods. Trade diversion replaces efficient imports from a non-FTA member country with inefficient imports from an FTA partner country.

##### **4.4.1 Viner Model: The Analytical Framework**

The Viner model has three countries based analytical framework. The notation used for these three countries is as follows: “home”<sup>85</sup> refers to the domestic country, “partner”

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<sup>81</sup> The construction of data for manufacturing and agriculture sectors is presented in section 3.5.2.

<sup>82</sup> The detail description and estimation of Magee (2016) are documented in section 4.4.3.

<sup>83</sup> As we use Magee (2016) for quantifying trade creation and trade diversion for the sectors so we only use imports data not the exports data. We use Gravity equation and Lloyd and MacLaren Model to analyse the implications of FTAs for exports.

<sup>84</sup> Determination of the welfare gains (losses) is objective of our study, objective 3. To achieve this objective, we use Viner Model and Lloyd & MacLaren Model.

<sup>85</sup> Home country is assumed to be small so as she does not have power to affect international prices. Home country imposes tariff to all countries before signing FTA.

refers to FTA member countries, and “outsiders”<sup>86</sup> refers to non-FTA member countries. Consumer surplus, producer surplus and loss in tariff revenue are vital concepts in this framework, and they are figured out by comparing pre-FTA and post-FTA situations.

The welfare of any country is composed of consumer surplus, producer surplus and government revenue. The net welfare of the country from an FTA exists when consumer surplus and producer surplus are higher than the loss in tariff revenue and vice versa. The model implies that the net welfare of any FTA is ambiguous for home and partner. The welfare effects of any FTA are judged by comparing Trade creation and trade diversion after signing the FTA (Plummer *et al.*, (2010).

#### **4.4.2 Viner Model: The Estimation Methodology**

Numerous studies use different methods to measure trade creation and trade diversion for calculating the welfare gains (losses). The first method<sup>87</sup> extrapolates trade for some specific trade area and performs counter-factual analysis on that extrapolation. The method is deficient in separating the trade creating and trade-diverting effects. Balassa (1967) quotes Waelbroeck (1964),<sup>88</sup> who uses estimates of the gravity equation to extrapolate the world trade and then compares it with the actual trade. Balassa (1967) suggests measures for trade creation and trade diversion based on *ex-post* income elasticities for intra-area and extra-area.

Balassa (1974) extends his previous study with more data and calculates the trade creation and the trade diversion for the European Common Market. Pelzman (1977) uses hypothetical and actual trade flows at aggregated and disaggregated levels. C. S. Magee

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<sup>86</sup> The outsider is assumed to have more efficient production as compared to home and partner countries. The price from outsider countries is lower than the price in home and partner country.

<sup>87</sup>This method concludes qualitatively about trade creation and trade diversion but does not provide exact measure of both.

<sup>88</sup> The study could not be retrieved from digital resources as this article is in French so here by quoted with reference of (Balassa, 1967)

(2008) makes a counterfactual study based on the triple indexed gravity equation with time and country-specific fixed effects.

Some of the studies such as Haveman & Hummels (1998) and Endoh (1999) include dummy variables in the gravity model to conclude trade creation and trade diversion. Coulibaly (2004), Kwentua (2006), Jugurnath, Stewart, & Brooks (2007) and Eicher, Henn, & Papageorgiou (2012) use RTA dummies. Muhammad & Yücer (2010) use PPML to estimate the gravity equation with dummies for trade creation and trade diversion for the Western hemisphere. Zidi & Dhifallah (2013) investigate trade creation and trade diversion for Tunisia and the EU based on the gravity equation by including three dummies.

The signs of the estimated parameter of percentage changes in imports about change in tariff can determine trade creation and trade diversion (Clausing, 2001). Bilateral error terms obtained from the estimates<sup>89</sup> of two pairs: firstly, importer and member-exporter and secondly, importer and non-member-exporter can also be used to figure out trade creation and trade diversion (Kandogan, 2005).

Projection based methods like the one from Pelzman (1977) cannot be used for disaggregated data<sup>90</sup> and cannot cope with zeros in the trade data. In the opinion of many researchers, zeros show no trade, so we cannot just drop them. The projection-based studies estimate separate equations for all the disaggregated data by using a system of equations. However, since the commodities are in thousands, to estimate the HS 6-digit data, we need to estimate thousands of equations. It does not seem plausible to do this kind of estimation.<sup>91</sup>

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<sup>89</sup>Gravity equation estimations

<sup>90</sup> Disaggregated data used are ISIC Rev. 3 and HS 6-digit data

<sup>91</sup>So, Magee (2016) is quite useful in the estimation of highly disaggregated data.

Clausing (2001) discusses some problems that exist in the dummy variable approach based on the gravity equation. Firstly, the dummy variable may capture the effects of trade liberalisation. The regional agreement dummy may be more substantial and significant after or before the agreement. This is possible because of the historical background of member countries. Secondly, these analyses cannot segregate the magnitudes of trade creation and trade diversion. Thirdly, the study of product and industry level are difficult to conduct. To solve these issues, we apply the model by Magee (2016).

#### 4.4.3 Magee Model

Christopher Magee does rigorous working on calculating trade creation and trade diversion from the gravity equation. His research on trade creation and trade diversion include Magee (2004; 2008 and (2016). Magee (2004) and (2008) estimate trade creation and trade diversion for the ISIC 4-digit data. However, both research works ignore the tariff rates which are crucial in any such kind of model. The inclusion of tariff rates to estimate trade creation and trade diversion gives a right picture.

Magee (2016) uses an empirical model to calculate trade creation and trade diversion from industry-level data.<sup>92</sup> Given the superiority of Magee (2016) in measuring welfare gains or losses by calculating trade creation and trade diversion for the FTAs, we have opted for it for the empirical undertakings. The process starts with the estimation of the following variant (Eq. 1) of the gravity equation:

$$m_{jkt} = e^{(\beta_0j + \beta_0t + \beta_1\tau_{jkt} + \beta_2\tau p_{jkt} + \beta_3RTA_{jt} + \beta_4\ln(GDP_{jt}))} + u_{jkt} \quad 1$$

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<sup>92</sup>HS-6-digit data

In this equation,  $m_{jkt}$  measures imports to Pakistan from country  $j$  in industry  $k$  at time  $t$ .  $\beta_{0j}$  captures exporter fixed effects and these effects could include time constant dyad effects between Pakistan and country  $j$ . These effects may include a log of distance, common language, and a common border.  $\beta_{0t}$  captures time fixed effects and it includes Pakistan's economic ability.  $\tau_{jkt}$  measures the tariff<sup>93</sup> that an exporter must pay to export any commodity into Pakistan.  $\tau p_{jkt}$  is the measure of tariff preferences that country  $j$ 's exporter receives while shipping goods of industry  $k$  to Pakistan. This is tariff preference is since non-FTA countries receive most favoured nation tariff.<sup>94</sup> Tariff preference ( $\tau p_{jkt}$ ) is defined as the difference between most favoured nation tariff and the tariff that country  $j$ 's exporters pay to Pakistan. Mathematically it is defined as:

$$\tau p_{jkt} = \tau_{MFNkt} - \tau_{jkt}$$

The positive value of  $\tau p_{jkt}$  means that the exporting country pays a lower tariff as compared to the other countries for industry  $k$ . A positive number for  $\tau p_{jkt}$  also measures trade diversion because Pakistan is importing more from the country with tariff preferences than from countries that do not have tariff preferences. The estimated coefficient of  $\tau_{jkt}$  allows us to measure trade creation.  $RTA_{jt}$  is a dummy variable to capture regional trade agreements.<sup>95</sup>

The value of a dummy is equal to one (1) if Pakistan has a regional agreement with any of the exporter country and otherwise it is zero (0). To estimate this model for Pakistan's

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<sup>93</sup>Bilateral tariff rates are important in specifying the model due to their significance for trade values, their omission in gravity equation cannot resolve the distance puzzle between the trading partners (Hayakawa, 2013).

<sup>94</sup> MFN tariff is applied on rest of the WTO member countries except those who have some agreement with Pakistan.

<sup>95</sup> In the original paper of Magee (2016) only RTA has been considered but we use four more such kind of dummies; one dummy is for all FTAs whereas rest of the three dummies are to separately capture the effects of Pakistan's three bilateral FTAs with China, Sri Lanka and Malaysia.



FTAs with China, Sri Lanka, and Malaysia, one dummy for  $FTA_{jt}$  is also included.  $FTA_{jt}$  is 1 for these three countries at time  $t$  when these FTAs were signed and otherwise it is 0. Magee (2016) states that the positive estimated coefficient of  $RTA_{jt}$  captures the general equilibrium effects of RTA. Similarly, FTA dummies cover the general equilibrium effects of these FTAs instead of the effects of tariff rates and tariff preferences. Log of  $GDP_{jt}$  of country  $j$  captures the effects of economic size of country  $j$ .

Countries involved in a regional trade agreement may have unobserved and dyad ties along with apparent relationships. So, to capture all the dyad and unobserved historical effects, each exporter-year fixed effect can be included in the model as it is in the second equation below:

$$m_{jkt} = e^{(\beta_{0jt} + \beta_1 \tau_{jkt} + \beta_2 \tau p_{jkt})} + u_{jkt} \quad 2$$

In this equation  $\beta_{0jt}$  captures Pakistan-exporter specific fixed effects such as distance, size and historical relationships, exchange rates, common borders, common culture, and language.  $\beta_{0jt}$  also rules out the need of a dummy variable to capture the general equilibrium effects of RTA. Another equation is required to examine the trade deal's general equilibrium effects. The equation is as follows:

$$m_{jkt} = e^{(\beta_{0jk} + \beta' X + \beta_1 \tau_{jkt} + \beta_2 \tau p_{jkt} + \beta_3 RTA_{jt})} + u_{jkt} \quad 3$$

$\beta_{0jk}$  captures time constant exporter  $j$  and industry  $k$  fixed effects but these effects can be unobserved. Magee (2016) estimates three models say Model 1, Model 2, and Model 3. Model 1 estimates fixed effects for each exporting country. Model 2 estimates

exporter year fixed effects and Model 3 captures exporter-industry fixed effects. So, the study estimates three types of fixed effects as discussed in the above three equations.

Further, Magee (2016) uses the estimated parameters from the above equations to measure trade creation and trade diversion. Equation 4 gives percentage change in imports if there is not any regional trade agreement and the tariffs are equal to MFN rates.

$$\frac{\hat{m}_{noRTA,jkt} - m_{jkt}}{m_{jkt}} = e^{\hat{\beta}_1(\tau p_{jkt})} * e^{-\hat{\beta}_2(\tau p_{jkt})} - 1 \quad 4$$

Equation 5 gives predicted levels of trade in the absence of a regional trade agreement<sup>96</sup> as below:

$$\hat{m}_{noRTA,jkt} = m_{jkt} \left( e^{\hat{\beta}_1(\tau p_{jkt})} * e^{-\hat{\beta}_2(\tau p_{jkt})} \right) \quad 5$$

$$m_{jkt} - \hat{m}_{noRTA,jkt} = m_{jkt} \left( 1 - e^{\hat{\beta}_1(\tau p_{jkt})} * e^{-\hat{\beta}_2(\tau p_{jkt})} \right) \quad 6$$

Equation 6 gives the estimated impact of agreement equals zero (0) in one industry if FTA member countries do not export any goods to Pakistan after enforcing the agreements. This equation captures two effects: one is the trade creation effect, and the other one is trade diversion.  $\hat{\beta}_1$  takes trade creation into account.  $\hat{\beta}_2$  captures trade diversion means that tariff preferences cause more imports from FTA partner countries and less from non-FTA partner countries. Equations 7 and 8 measures the trade creation and trade diversion of the trade agreements, respectively.

$$m_{jkt} - \hat{m}_{noTC,jkt} = m_{jkt} \left( 1 - e^{\hat{\beta}_1(\tau p_{jkt})} \right) \quad 7$$

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<sup>96</sup> In estimations, along with estimated coefficient of RTA, estimated coefficients of FTAs have been used in all equations.

$$m_{jkt} - \hat{m}_{no\ TD,jkt} = m_{jkt} \left(1 - e^{-\hat{\beta}_2(\tau p_{jkt})}\right) \quad 8$$

These two effects cannot be added up for a total impact in equation 6. The reason is that the non-linearity of equation 6 adds up the two to make a total impact. Both equation 7 and equation 8 are scaled down to equation 9 and equation 10.

$$TC_{jkt} = m_{jkt} (1 - e^{\hat{\beta}_1(\tau p_{jkt})}) \frac{1 - e^{(\hat{\beta}_1 - \hat{\beta}_2)(\tau p_{jkt})}}{1 - e^{\hat{\beta}_1(\tau p_{jkt})} + 1 - e^{-\hat{\beta}_2(\tau p_{jkt})}} \quad 9$$

$$TD_{jkt} = m_{jkt} (1 - e^{-\hat{\beta}_2(\tau p_{jkt})}) \frac{1 - e^{(\hat{\beta}_1 - \hat{\beta}_2)(\tau p_{jkt})}}{1 - e^{\hat{\beta}_1(\tau p_{jkt})} + 1 - e^{-\hat{\beta}_2(\tau p_{jkt})}} \quad 10$$

Aligning with Magee's empirical model, we estimate three different fixed effects such as exporter fixed effects, exporter-year fixed effects and exporter-industry fixed effects. Magee (2016) is estimated using Poisson Pseudo Maximum Likelihood method. Exporter fixed effects include Pakistan-exporter dyad effects such as bilateral distance, common language, sharing borders and other relations that do not change over time. Exporter year fixed effects include effects of the exporter's GDP and Pakistan-exporter dyad effects, including distance, size, historical relationships and the real exchange rate and capture factors specific to the importer year (Magee, 2016).

Exporter-industry fixed effects are used to capture the unobserved variables, which affect exporter  $j$ 's exports to Pakistan for industry  $k$ . The unobserved variables include the comparative advantage an exporting country has in industry  $k$ . Magee has also worked out an empirical model to calculate trade creations and trade diversions caused by some regional trade agreement.

## 4.5 Product Level Welfare Analysis of FTAs

Lloyd & MacLaren (2004) devise a model of welfare changes resulting from regional trade agreements<sup>97</sup> based on traditional trade theory and trade expenditure function. The traditional trade theory assumes constant returns to scale, perfect competition in the markets and a fixed number of goods. One advantage of the Lloyd and MacLaren model is that it considers both the price effects and the quantity effects from a change in the trade of any commodity by considering import volume, import quantities, export volume and export quantities.

### 4.5.1 Lloyd and MacLaren Model: The Analytical Framework

In this model, the two countries are involved; one is the home country and the second is the partner country.  $Pd$  and  $Pp$  represent domestic prices and the partner country's prices respectively, which are vectors of commodities.  $d$  and  $p$  in subscript denote the home country and the partner country, respectively.<sup>98</sup> The difference in  $(Pd - Pp)$  is because of taxes and subsidies. Let  $m$  be a vector of the economy's trade volumes.  $m_i$  denotes the trade volume of commodity  $i$ . If  $m_i > 0$ , the concerned country has net imports of commodity  $i$  and if  $m_i < 0$ , the country has net exports in commodity  $i$ . The government's net trade tax is defined as the multiplication of the country's trade volume by the price differential  $(Pd - Pp)m$ . Now it is possible to define the value of the country's domestic production as the GDP function  $g(Pd, v)$ . The GDP function is the maximum profit reached by domestic firms given the price vector  $p$  and the vector of endowments or vector of factors of production available in the economy  $v$ . As per national income flow, the households supply the factors of production. The returns to

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<sup>97</sup> As defined by WOT, "regional trade agreements are reciprocal trade agreements between two or more partners. They include free trade agreements or custom unions." by the definition of RTA by WTO, Lloyd and MacLaren Model can be used for bilateral FTA.

<sup>98</sup> This notation holds throughout the thesis.

the factors of production are added to the households and, by the same token, the sum of the income of the household is the sum of the gross domestic product and net trade tax revenue.

Further, the model defines the household expenditure function based on prices and utility given the vector of prices and the minimum expenditures needed.  $e(Pd, u)$  indicates the household expenditure function.  $B$  is defined as the difference between the minimum total household expenditures and the total household income.

$$B = e(Pd, u) - g(Pd, v) - (Pd - Pp)m(P, v, u)$$

This function is a compensation function, which can be used for pre-FTA and post-FTA analysis. For the sake of this analysis, we can compare two situations: pre-FTA and post-FTA.

$$Welfare\ Impact = \Delta B = -[B(Pd^2, Pp^2, v, u^1) - B(Pd^1, Pp^1, v, u^1)]$$

Or

$$\begin{aligned} Welfare\ impact &= \Delta B \\ &= -\{[e(Pd^2, u^1) - e(Pd^1, u^1)] - [g(Pd^2, v) - g(Pd^1, v)] \\ &\quad - [(Pd^2 - Pp^2)m^2 - ((Pd^1 - Pp^1)m^1)]\} \end{aligned}$$

This equation subtracts the change in the national expenditures from the change in the national income and the change in the trade tax revenue.

Based on the expressions of  $\Delta B$ , the welfare effects are gauged for the two countries involved in the FTA. If  $\Delta B$  is  $> 0$ , the economy is worse off after signing the FTA, and if  $\Delta B$  is  $< 0$ , the economy is better off after signing the FTA.

#### 4.5.2 Lloyd and MacLaren Model: The Estimation Methodology

The earlier section presented the analytical framework and the mathematical formulation of the Lloyd and MacLaren model. Plummer *et al.* (2010) present a method to estimate quantitative welfare analysis based on Lloyd & MacLaren (2004). The model proposes two different indicators for quantifying the welfare effects: the *trade volumes* and *terms of trade*, based on observed data are one type of indicators, and the extrapolated values for *trade volumes* and *terms of trade* are the second types of indicators. So, the two types of indicators specify four formulas: two for the observed values and two for the extrapolated values.

*Trade volumes* and *terms of trade* for observed values are as follows:

##### 1<sup>st</sup> Formula:

$$\text{Change in trade volume} = \sum_p t_{mp} u_{mp}^0 (m_p^1 - m_p^0)$$

Where  $p$  indicates the partner country,  $t_{mp}$  is the import weighted ad valorem tariff on imports from partner country in the base period,  $u_{mp}^0$  is the unit value of imports from partner country in base period,  $m_p^1$  is the quantity of imports from partner country in the new period,  $m_p^0$  is the quantity of imports from partner country in the base period

If the calculation is positive (negative), the welfare effect has increased (decreased)

##### 2<sup>nd</sup> Formula:

$$\text{Change in terms of trade} = \sum_p x_p^0 (u_{xp}^1 - u_{xp}^0) - \sum_p m_p^0 (u_{mp}^1 - u_{mp}^0)$$

Where  $x_p^0$  is the quantity of exports to a partner country in the base period,  $u_{xp}^1$  is the unit value of exports to partner country in the new period,  $u_{xp}^0$  is the unit value of exports to partner country in the base period,  $u_{mp}^1$  is the unit value of imports from partner

country in the new period,  $u_{mp}^0$  is the unit value of imports from partner country in the base period, the formula is applied to intra- bloc and extra bloc partners.

Plummer *et al.* (2010) mentioned that the above mentioned two formulas do not account for the exact effects of FTA on the change in *trade volume* and on the change in *terms of trade*, so two other formulas for estimating the counterfactual estimates of the volume of trade and terms of trade have been presented.

### **3<sup>rd</sup> formula:**

$$\text{Change in trade volume} = \sum_p t_{mp} u_{mp}^E (m_p^1 - m_p^E)$$

Where  $u_{mp}^E$  the extrapolated *unit value of imports* from partner country is in the new period,  $m_p^E$  is the extrapolated *quantity of imports* from the partner country in the new period.

The positive (negative) value of this estimate appoints a positive (negative) welfare impact of FTA.

### **4<sup>th</sup> Formula:**

$$\text{Change in terms of trade} = \sum_p x_p^E (u_{xp}^1 - u_{xp}^E) - \sum_p m_p^E (u_{mp}^1 - u_{mp}^E)$$

Where  $x_p^E$  the extrapolated quantity of exports to partner country in the new period,  $u_{xp}^E$  is the extrapolated unit value of exports to partner country in the new period,  $m_p^E$  is the extrapolated quantity of imports from partner country in the new period,  $u_{mp}^E$  is the extrapolated unit value of imports from the partner country in the new period.

Estimated values from the latter two formulas are extrapolated and compared with actual values on the new period. The extrapolation method will be adopted based on the characteristics of the variable under consideration<sup>99</sup>.

## **4.6 Data Description and Construction**

The data for the different models has been taken from various sources. This section describes the sources of the data, data duration, the sample for different models and the construction of the data.

### **4.6.1 FTAs and Trade Profile of Pakistan**

We use two-panel datasets for import gravity and export gravity. Each panel dataset has 936 observations of 36 years and 26 cross sections. We have collected the data for aggregated imports and exports, GDPs, CPIs and the bilateral distance between Pakistan and the trading partners. Twenty-six trading partners of Pakistan have been included in the estimation of the gravity models. The countries include Australia, Bangladesh, Belgium, Canada, China, Egypt, France, Germany, Hong Kong, India, Italy, Japan, Kenya, Republic of Korea, Malaysia, Netherlands, Oman Portugal, Saudi Arabia, Singapore, Spain, Sri Lanka, Turkey, United Arab Emirates, United Kingdom, and the United States<sup>100</sup>. These countries cover 87% of the imports in Pakistan and comprise 74% of the exports of Pakistan. A significant export destination is Afghanistan, which is 7% of the export share of Pakistan's total export but we did not include Afghanistan because of the non-availability of the time series data since 1980.

The data on the aggregated imports and exports are taken at current market prices in US dollars. This data have been collected from the Direction of Trade Statistics (DOTS) of

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<sup>99</sup> The most widely used method is geometric mean growth rate.

<sup>100</sup> This number of countries has been included to better cover the trade creation and trade diversion effects



the International Monetary Fund (IMF) from 1980 to 2015. The data on GDPs and CPIs of the countries involved at the current market prices in USD have been taken from the World Development Indicators (2016) (henceforward WDI). The collected data are nominal and has been deflated using the corresponding CPI's of the countries. While deflating the data, 2010 has been taken as the base year. For China, CPI data from 1980 to 2009 is not available in WDI. So, the missing data of CPI has been taken from the National Bureau of Statistics of China. Its base year was 1978, and we converted its base to 2010 using splicing. CPI data for the UK was also not available from 1980 to 1987 hence, for the whole series from 1980 to 2015, the GDP deflator of UK was used for deflating the data of UK. The GDP deflator of 2015 was also not available. Hence, we used compound average growth rate formulae to calculate the value of the GDP deflator of 2015 taking 2011 as the starting year and 2014 as the final year. The CPI data for UAE was also not available on WDI. Hence, we used GDP deflator of the base year 2010 to convert the country's GDP from nominal to real. The data on the distance of Pakistan from its partner countries was taken from Google maps, and the distance is given in kilometres. Before the estimation, we made sure that the data of all variables was real, and the variables were transformed to the log-linear except for the dummy variables.

#### **4.6.2 FTAs and Agricultural and Manufacturing Sector**

To estimate the disaggregated gravity model, we used separate panel datasets for the manufacturing and agricultural sector. Magee (2016) is the empirical model to estimate the manufacturing and agricultural sector and this model needs data on imports<sup>101</sup>, GDPs, tariff rates, which were imposed by Pakistan on RTA and FTA partner countries

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<sup>101</sup> We only included imports data for sectors and industry level trade because Magee (2016) worked out trade creation and trade diversion for industry level imports.

and MFN tariff rates, which were imposed by Pakistan on non-RTA and non-FTA partner countries. The Magee model needs disaggregated data for estimation. Hence we have taken the data for manufacturing and agricultural sector imports at 4-digit level data classified under “International Standard Industrial Classification<sup>102</sup>” (henceforward ISIC). The data on preferential tariff rates and MFN tariff rates were collected at the same 4-digit level data under ISIC Rev.3.

The data on imports and tariff rates were retrieved from the World Integrated Trade Solutions (WITS) of the World Bank and the Trade Analysis Information Systems (TRAINS) of UNCTAD. We have collected the data for GDPs and CPIs from WDI. Also, the data on GDPs and imports was in nominal terms, and it was converted into real terms using CPIs. The data duration was 13 years from 2003 to 2015 and for twenty-two countries, which export goods to Pakistan. The set of twenty-two countries include Australia, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Kuwait, Malaysia, Netherlands, Oman, Saudi Arabia, Singapore, South Africa, Sri Lanka, Thailand, United Arab Emirates, United Kingdom, and the United States. Imports from these twenty-two countries were 85% of the total imports. Manufacturing and agriculture imports have been converted to real values from nominal values<sup>103</sup>.

For manufacturing sector data, all manufacturing sector related 4-digit commodity classes were used to make a panel, and these classes were 118,<sup>104</sup> starting from code 1511 and extending up to code 3699 under ISIC Rev. 3. The manufacturing sector includes the manufacture of food products and beverages, tobacco products, textiles,

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<sup>102</sup> This classification is an international reference classification of production activities. It provides separate classification and codes for manufacturing and agriculture sectors and it is easier to add trade for both sectors.

<sup>103</sup> Constant values form current values.

<sup>104</sup><https://unstats.un.org/unsd/cr/registry/regcs.asp?Cl=2&Lg=1&Co=D>

wearing apparel, tanning and dressing of leather, luggage, handbags, saddler, harness, footwear, wood and products of wood and cork, articles of straw and plaiting material, paper and paper products, publishing, printing and reproduction of recorded media, Coke, refined petroleum products, nuclear fuel, chemicals and chemical products, rubber and plastic products, other non-metallic mineral products, basic metals, fabricated metal products, except machinery and equipment, machinery and equipment n.e.c.<sup>105</sup>, office, accounting and computing machinery, electrical machinery and apparatus n.e.c., radio, television and communication equipment and apparatus, medical, precision and optical instruments, watches and clocks, motor vehicles, trailers and semi-trailers, other transport equipment and furniture; manufacturing n.e.c. The panel of manufacturing sector consisted of 34034 observations.

“Agriculture corresponds to ISIC divisions 1-5 and includes forestry, hunting, and fishing, as well as cultivation of crops and livestock production. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3. Data are in current U.S. dollars<sup>106</sup>.” (World Development Indicators Meta Data)<sup>107</sup> The following codes for agriculture sector were taken from ISIC Rev. 3: 0111, 0112, 0113, 0121, 0122, 0200 and 0500.<sup>108</sup> The panel dataset of agriculture sector consisted of 2002 observations.

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<sup>105</sup>N.e.c means not elsewhere classified

<sup>106</sup> This definition shows that the data is in current US dollars but, for the estimations in this study, we have converted all the data to real values from nominal values.

<sup>107</sup> WDI, 2016

<sup>108</sup><http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=2&Lg=1>

#### **4.6.3 Welfare Analysis: Viner Model**

Import data were used to estimate the Viner model and to calculate the trade creation and the trade diversion at the HS 6-digit level. We estimated the Viner model using the empirical model of Magee (2016), which needed data on GDPs of exporting countries, preferential tariff rates at the HS 6-digit level and MFN tariff rates at the HS 6-digit level. The top ten exporters of Pakistan, along with Sri Lanka,<sup>109</sup> were included in this dataset. The exporters were China, United Arab Emirates, Saudi Arabia, Kuwait, Indonesia, India, the United States, Japan, Malaysia, Singapore, and Sri Lanka. The imports from these eleven countries were 72 percent of the total imports. The time duration was 2003 to 2015. The HS 6-digit level data, which was used in our study, covered 5764 commodities. The most extensive dataset of our research had 824,252 observations. The exporter GDPs and imports were converted to real data using CPIs. A series named tariff preferences were obtained by subtracting preferential tariff rates from MFN tariff rates.

#### **4.6.4 Welfare Analysis: Lloyd and MacLaren Model**

We used the HS 4-digit level data to estimate the Lloyd and MacLaren model. The data needed for this model included the applied tariff,<sup>110</sup> import values, import quantities, export values and export quantities and this data was taken from the International Trade Centre from 2001 to 2015.

We selected those commodities at HS 4-digit level (a) whose trade value was five thousand USD or more and (b) those whose quantities were more significant than zero.<sup>111</sup> Ad valorem tariffs were taken for base years, and they vary from country to

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<sup>109</sup>Sri Lanka stands at 46<sup>th</sup> number in Top Exporters to Pakistan.

<sup>110</sup>International trade centre (ITC), [www.intracem.org](http://www.intracem.org)

<sup>111</sup>The commodities have been ignored which quantity data is not available, or zero in both base year and new year.

country. We selected 2006 for China, 2004 for Sri Lanka and 2007 for Malaysia as base years. All the base years were selected one year before the implementation of the agreements. For all the agreements, the new year was 2015. The values and quantities of import and export were also collected for the base years and the new year. We calculated the import-weighted applied tariff for the selected commodities using the following formula:

$$t_{mp} = \sum_{m \in HS} \left( \frac{M_m t_m}{\sum_{m \in HS} M_m} \right)$$

Where  $t_{mp}$  is an import-weighted applied tariff,  $M_m$  stands for imports of category  $m$  in base year from the partner country and  $t_m$  is the ad valorem applied tariff for the base year.

## CHAPTER NO 5

### RESULTS, INTERPRETATIONS AND DISCUSSIONS

#### 5.1 Introduction

This chapter presents the major findings of our study and discusses their implications. Also, we keep encompassing our results where and when required and possible. However, one note of caution seems necessary here. The results of our study are not directly comparable with the earlier studies for Pakistan due to the following reasons. Firstly, few studies concentrate on the welfare gains of Pakistan's FTAs and the trade creation and the trade diversion<sup>112</sup> for the whole economy and the sectors separately. Secondly, the quantitative measurement of trade creation and trade diversion was generally considered impossible, but we utilise the very recent contribution of Magee (2016), an empirical model, which allows for the estimation of trade creation and trade diversion in monetary terms. We also use this model to compute trade creation and trade diversion from the manufacturing and the agriculture sectors of Pakistan and the overall trade data at HS 6-digit.

Thirdly, we use the Lloyd and MacLaren model to assess welfare gains from the FTAs. This model is not used in any other empirical study for Pakistan so far. Fourthly, very few studies have been done so far for Pakistan that has used extensive and large datasets of trade. We use various datasets. The first dataset covers imports and exports at an aggregated level. The second dataset is comprised of 4-digit data of ISIC Rev. 3 of import volumes and tariff rates (preferential tariff rates and MFN tariff rates) for the manufacturing and the agriculture sectors. The third dataset of import volumes and tariff

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<sup>112</sup>Gauto & others (2012) worked on trade creation and trade diversion for MERCOSUR & Paraguay, Magee (2016) calculated trade creation and trade diversion for Turkey & European Commission.

rates at HS 6-digit is used to study the Viner model, and the fourth one is comprised of import and export volumes and their quantities at HS 4-digit.

This chapter is divided into the following sections. Section 5.1 explains the results and discussions on FTAs and the trade profile of Pakistan using the gravity equation. Section 5.2 presents the results and the discussions of the FTAs with the division of the manufacturing and the agriculture sectors of Pakistan using the disaggregated gravity equation. In section 5.3, the welfare implications deduced from the Viner model are discussed while section 5.4 presents the results of the Lloyd and Maclaren model for trade at product groups. Section 5.5 reports the trade creation and the trade diversions of the manufacturing and the agriculture sectors, and the industry-level trade. Every section provides results along with a discussion of their interpretations.

## **5.2 The Impact of FTAs on Aggregate Trade**

We estimate two separate gravity equations to examine the impact of the FTAs on the aggregate trade of Pakistan. One equation is for aggregated imports, and the other one is for aggregated exports. The next two sections discuss the results of these two equations.

### **5.2.1 The Import Model<sup>113</sup>**

We estimate the gravity equation for Pakistan's top import markets using traditional variables of the equation that include the aggregated imports<sup>114</sup> of Pakistan, the

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<sup>113</sup> As previously stated, we used the most suitable models and techniques depending on the data. For the aggregated data, we used gravity model for both the imports and exports; for sectoral level and industry level imports, we used Magee (2016) and for product group level data, we used Lloyd and Maclaren Model. The selection of the models and techniques are well justified and based on the contemporary literature quoted briefly in publications such as (Plummer et al., 2010) and (Bacchetta et al., 2012). These both guides to trade policy analysis and to impact assessment of free trade agreements recommend various tools and techniques based on the data and objective of analysis.

<sup>114</sup> Data of 26 countries have been used in the import model. The details are in section 4.5.1.

GDP's<sup>115</sup> and the distance of Pakistan from the trading partners.<sup>116</sup> The data used in this estimation cover 87% of the imports of Pakistan. The model is overall robust as shown by the Wald Chi<sup>2</sup> and the probability value. We use two specifications to estimate the import equation.<sup>117</sup> The first specification includes traditional gravity variables<sup>118</sup> along with a set of two dummies for each of the FTA.<sup>119</sup> These dummies give evidence for the existence of the trade creation and the trade diversion. In the second specification, we include two dummies, one for all the FTAs and another for all the RTAs. These two dummies capture the significance of all the regional trade agreements collectively (FTA's and PTA's) for Pakistan.<sup>120</sup>

Table 5 presents the results from the estimation of the first specification (Columns 2 & 3) and second specification (Columns 4 & 5). We estimate both specifications using OLS fixed effects<sup>121</sup> and PPML<sup>122</sup> fixed effects. These specifications are in double logged form, hence produce the results in elasticities.<sup>123</sup> We find that the imports to Pakistan are negatively related to Pakistan's GDP (Column 3 of Table 5), which implies that a rise in Pakistan's GDP caused a decrease in imports. Traditionally, there exists a positive relationship between the import volume and the importer's GDP, which means the import demand rises as the economy grows (Bacchetta et al., 2012) but we find a

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<sup>115</sup> The GDP of Pakistan termed as "importer GDP" and GDPs of rest of the exporting countries termed as "exporter GDP". Magee (2016) used exporter's GDP only for the industry level data so we remain stick to using the GDPs for both countries in Gravity equation.

<sup>116</sup>For the duration of 1980 to 2015.

<sup>117</sup> In export gravity equation, we use the same two specifications.

<sup>118</sup> Importer's GDP, exporter's GDP and the distance between Pakistan and the trading partners

<sup>119</sup>PSFTA, PCFTA and PMFTA

<sup>120</sup>And it is our first objective.

<sup>121</sup>The results of OLS fixed effects are reported only but not considered for interpretation and discussion.

<sup>122</sup> Presence of heteroskedasticity is confirmed by Breusch-Pagan/Cook-Weisberg test. The chi squared value is 135.5. The same test is used to test heteroskedasticity for all the datasets and estimations throughout this thesis.

<sup>123</sup>(Plummer, Cheong, &Hamanaka, 2010)



**Table 5: Estimation Results of the Import Gravity Equation**

Specifications	Gravity Equation Import Model		Gravity Equation Import Model	
	Specifications 1		Specifications 2	
	Fixed Effects	Fixed Effects PPML	Fixed Effects	Fixed Effects PPML
Variables	Coef.	Coef.	Coef.	Coef.
<b>Ln_GDP<sub>Pakistan</sub></b>	-0.64**	-0.04**	-0.31	-0.02
	-0.12	-0.02	-0.31	-0.02
<b>Ln_GDP<sub>(Exporter)</sub></b>	0.78***	0.05***	0.97***	0.06***
	-0.11	-0.02	-0.25	-0.02
<b>Ln_Dis</b>	107.36**	7.02**	95.46*	6.33*
	-13.37	-3.46	-53.23	-3.86
<b>Bpc</b>	0.23	0.00		
	-0.30	-0.02		
<b>Opc</b>	0.07	0.01		
	-0.15	0.00		
<b>Bps</b>	-1.94***	-0.13***		
	-0.25	-0.01		
<b>Ops</b>	0.65***	0.04***		
	-0.10	-0.01		
<b>Bpm</b>	-0.35	-0.03		
	-0.29	-0.02		
<b>Opm</b>	-0.16**	-0.01**		
	-0.13	0.00		
<b>RTA</b>			0.10	0.00
			-0.26	-0.02
<b>FTA</b>			-0.90	-0.06
			-0.83	-0.05
<b>Constant</b>	-893.06**		-806**	
	-110.49		438.46	
<b>R Squared</b>	0.49		0.49	
<b>F stat</b>	97.38		97.38	
<b>Prob., F Stat</b>	0.00		0.00	
<b>Wald Chi<sup>2</sup></b>		72.40		10628.54
<b>Prob. Chi<sup>2</sup></b>		0.00		0.00
<b>Observation</b>	936.00			

\*, \*\*, \*\*\* indicate that the coefficient is statistically significant at 10%, 5%, and 1% levels, respectively. Standard errors are in next rows to the coefficients.

negative relationship. We may deduce from this result that Pakistan has implemented an import substitution policy since 1980. However, this inference does not seem realistic because the import volume to Pakistan from the rest of the world has been increasing for a long time and this has widened the trade deficit as well.<sup>124</sup> In 2003, Pakistan's total import volume was USD 13 billion, and it increased to USD 46 billion in 2016. However, this relationship does not remain significant by controlling the RTAs and the FTAs while estimating the second specification.

To analyse the impact of the partner country's economic sizes, we also include the GDP of the exporting country in the import equation. Theoretically, the exports of a country increase as that economy expands. Hence, exporter's GDP is positively related to the country's exports in the gravity equation. The estimation results confirm the same that the partner countries export more to Pakistan as their economies expand. The exporter's GDP enters positively to Pakistan's imports model (Columns 3 & 5). This result is consistent with Tinbergen (1962), Aitken (1973) and Aitken and Obutelewicz (1976) and empirically supported by Malik et al., (2011) and Qadri (2012) for Pakistan.

The evidence corroborates that exporting countries bear a higher trade cost while exporting to Pakistan as the distance between Pakistan and the exporter countries enters positively (Columns 3 & 5 of Table 5) in the equation. This result shows that Pakistan imports more from the countries situated at a distance from Pakistan.<sup>125</sup> We can witness that Pakistan has imposed tariff rates to its trading partners except for the FTA and the RTA partners.<sup>126</sup>

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<sup>124</sup>It is obvious from Table 2 in Chapter 4.

<sup>125</sup>(Qadri, 2012) found that the imports are positively related with distance.

<sup>126</sup>In result of different FTAs and RTAs, Pakistan has relaxed tariffs to China, Sri Lanka, Malaysia, and Indonesia.

To capture the impact of agreements, we introduce dummy variables. Specification one contains a set of dummy variables<sup>127</sup> for the import and the export models for each FTA as was done by Bacchetta et al. (2012). We expect a positive sign for first dummy and negative for the second dummy to interpret the agreements trade creating and diverting. However, the results do not turn out as per our expectations.

The dummies estimated for PCFTA are not robust, suggesting that we cannot conclude whether this agreement creates a trade or diverts it. The agreement with Sri Lanka has not encouraged imports to Pakistan because the share of imports from Sri Lanka in Pakistan's imports from the rest of the world declined from 0.33 percent in 2003 to 0.16 percent in 2015.<sup>128</sup>

The result is further supported by the evidence from the dummies for PSFTA, which are statistically significant but with signs contrary to the expectations. The negative coefficient of first dummy 'Bps' shown that Pakistan had imported less from Sri Lanka after the implementation of PSFTA. Sri Lanka experienced a decline in the exports to Pakistan in the following product chapters at HS 2-digit: rubber and articles thereof, oil seed, oleagic fruits, grain, seed, fruit, etc, n.e.s, coffee tea mate and spices, edible fruit, nuts, peel of citrus fruit, melons and man-made staple fibre<sup>129</sup>. The positive coefficient of Ops shows that the imports of Pakistan increased from USD 13 billion in 2003 to USD 43.9 billion in 2015 from countries other than Sri Lanka. In case of the agreement with Malaysia, the imports did not change<sup>130</sup> significantly as the results are again not

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<sup>127</sup>Bpj and Opj where j varies for China, Sri Lanka, and Malaysia. Bpj is bilateral trade dummy and it takes one if Pakistan has FTA with jth country at time t and 0 otherwise. Opj is one if Pakistan does not have FTA with jth country but have some trade relation with other countries and 0 otherwise.

<sup>128</sup>Table 2, chapter 4

<sup>129</sup>("An Assessment of the Pakistan – Sri Lanka Free Trade Agreement," n.d.)

<sup>130</sup>Bpm is not statistically significant whereas the second dummy is significant suggesting that the agreement has caused a decline of 0.9%<sup>130</sup> in the imports from countries other than Malaysia.

consistent with the expectations. So, we cannot conclude whether there is trade creation or trade diversion from the FTAs.

The second specification includes separate dummies for all RTAs<sup>131</sup> and all FTAs<sup>132</sup>(Column 5 of Table 5). We do not find significant results for these RTA and FTA dummies. We infer that collectively from all RTAs and all FTAs, Pakistan does not receive benefits and we cannot work out the sum of the trade creation and the trade diversion from all agreements either.

In conclusion, it is difficult to decide the existence of trade creation and trade diversion from PCFTA, PMFTA and PSFTA in both cases with a single dummy of (Aitken, 1973) and two dummies of (Bacchetta et al., 2012). The reason for this limitation is that they are ‘extremely basic indicators’ (Bacchetta et al., 2012) and they provide fundamental information. These dummies do not give the ‘breadth-and-depth’ of an FTA.

Also, our study finds that the aggregate trade data does not consider tariff barriers which are measured by tariff rates and tariff preferences. The gravity equation using dummy variables from aggregate data do not provide the evidence for trade creation and trade diversion and thus, is not helpful for welfare analysis (Cheong & Wong, 2009b). So, we use Magee (2016)<sup>133</sup> to calculate trade creation and trade diversion by taking care of the tariff barriers up to the sectoral and industry level trade data.

### **5.2.2 Export Model**

Before we move to the results from the Magee model, we first complete reporting results from the aggregate gravity equation. Like imports, we also estimate the export gravity

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<sup>131</sup>RTAs dummy takes value 1 at time t if Pakistan has signed an RTA with a country and zero otherwise. FTA dummy is set equal to 1 at time t when Pakistan has signed an FTA with China, Sri Lanka, and Malaysia and zero otherwise.

<sup>132</sup>Aitken (1973) states one dummy can present the sum of both trade creation and trade diversion.

<sup>133</sup> The results are reported in section 5.3.

model using the two specifications for Pakistan's top export markets<sup>134</sup> covering 74% exports of Pakistan. We estimate this model using OLS fixed effects and PPML<sup>135</sup> as well. The model is overall robust as shown by the Wald Chi<sup>2</sup> and the probability value. GDP of Pakistan enters positively, although the coefficient is minimal,<sup>136</sup> affecting exports of Pakistan (column 3 & 5 of Table 6).<sup>137</sup> The result implies that the growth in the economy causes an increase in exports from Pakistan to the partner countries.

Specification one and two (Columns 3 & 5 of Table 6) do not give any evidence for the significant impact of importer's GDP on the exports from Pakistan.<sup>138</sup> The result suggests that the economic size of the partner countries does not cause an increase in the exports from Pakistan. A plausible explanation is that Pakistan's export base is highly concentrated in few export destinations namely the USA, China, Afghanistan, UAE, Bangladesh, Saudi Arabia, and India out of the 26 countries in the sample.

Also, the exports are highly concentrated in a few products namely, leather, rice, sports goods, chemicals, textile, clothing, and pharmaceuticals. The commodities included in these agreements may face competition from other exporting countries. The importer may have many other choices at some discounted tariff rates with enhanced quality.

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<sup>134</sup>Data of 26 countries have been used for the duration of 1980 to 2015. The details are in section 4.5.1.

<sup>135</sup>Heteroskedasticity also exists in this data.

<sup>136</sup>There is not a significant difference when these estimates are without dummies for trade creation and trade diversion. Qadri (2012) found the same result but with bigger coefficient value.

<sup>137</sup>This result is in concurrence with (Mohmand & Wang, 2013). They find comparable results for Pakistan's export gravity model using a sample of 142 countries.

<sup>138</sup>Consistent with the results of Qadri (2012). From the estimation of export equation, we find that there is negative relationship between import

**Table 6: Estimation Results of the Export Gravity Equation**

Specifications	Gravity Equation: Export Model			
	Specification 1		Specification 2	
	Fixed Effects	Fixed Effects PPML	Fixed Effects	Fixed Effects PPML
Variables	Coef.	Coef.	Coef.	Coef.
<b>Ln_GDP<sub>Pakistan</sub></b>	0.72***	0.05*	0.57***	0.04*
	-0.40	-0.03	-0.33	-0.05
<b>Ln_GDP<sub>(Importer)</sub></b>	0.07	0.01	0.23	0.02
	-0.30	-0.02	-0.26	-0.05
<b>Ln_Dis</b>	-39.72***	-2.81	-30.58*	-2.31
	-40.89	-2.69	-42.38	-5.91
<b>Bpc</b>	1.31***	0.08***		
	-0.29	-0.02		
<b>Opc</b>	0.12	0.01		
	-0.10	-0.01		
<b>Bps</b>	-2.23***	-0.14***		
	-0.97	-0.05		
<b>Ops</b>	0.05	0.00		
	-0.23	-0.02		
<b>Bpm</b>	0.81***	0.06***		
	-0.19	-0.01		
<b>Opm</b>	-0.07	0.00		
	-0.08	-0.01		
<b>RTA</b>			-1.63***	-0.10
			-1.20	-0.08
<b>FTA</b>			1.96***	0.13
			-1.42	-0.10
<b>Constant</b>	328.53***		251.32*	
	-338.83		-349.24	
<b>R Squared</b>	0.25		0.16	
<b>F stat</b>	33.74		33.50	
<b>Prob., F Stat</b>	0.00		0.00	
<b>Wald Chi<sup>2</sup></b>		129.38		21.09
<b>Prob. Chi<sup>2</sup></b>		0.00		0.00
<b>Observation</b>	919.00			

\*, \*\*, \*\*\* indicate that the coefficient is statistically significant at 10%, 5%, and 1% levels, respectively. Standard errors are in next rows to the coefficients.

We deduce from the evidence that the trade costs on exports from Pakistan to the partner countries do not affect the exports of Pakistan, and instead, there are other factors responsible for the export performance. The coefficient of distance was not found significant for the export gravity model. This result is similar to that of (Khan *et al.*, 2013) and (Qadri, 2012). Theoretically, distance is inversely related to trade flows (Tinbergen, 1962 and Bergstrand, 1989). A plausible explanation for this result is the historical ties and the strategic relationships with the countries that are found further away such as the USA. The USA has been a significant trading destination of Pakistan for a long time, and the USA also has a high share in Pakistan's trade. Pakistan's share of imports from the USA is 4% and Pakistan exports 17% of its exports to the USA.<sup>139</sup> Another plausible explanation is the relationship between Pakistan and India. Although Pakistan and India share a long border, the 'historical animosity' has a negative impact on trade relations between these two countries (Frankel *et al.*, 1997).<sup>140</sup>

The free trade agreement with China has a positive effect on the exports from Pakistan (Column 3 of Table 6). The evidence suggests that the exports from Pakistan have been increasing since the bilateral FTA with China has been signed, which is trade creation. However, we find weak evidence on the trade diversion because of the agreement with China. The result for exports from Pakistan to Sri Lanka does not significantly capture the real picture because the export to Sri Lanka has increased<sup>141</sup> While there is no evidence found for PSFTA causing trade diversion.

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<sup>139</sup> Economic Survey of Pakistan, 2015-2016

<sup>140</sup> This is only one example of this kind of relationship between two countries. (Frankel, Stein, & Wei, 1997) give different examples such as of Iran-Iraq and Israel-Syria. These countries make the proximity doubtful as important determinant of trade flows. Same is taken into the considerations by (Bhagwati, 1992).

<sup>141</sup> USD 84 million in 2003 to USD 237 million in 2016

The bilateral dummy ‘Bpm’ is significant with a positive coefficient that shows that PMFTA causes trade creation as higher Pakistan exports result. The same can also be seen from the export data as exports to Malaysia was USD 94 million in 2003 that raised to USD 151 million. We do not find trade diversion as the result of PMFTA. The evidence for all the FTAs suggests that PSFTA, PCFTA, and PMFTA do not cause trade diversion although PCFTA and PMFTA create trade. However, PSFTA does not create. In the second specification, dummies for all RTAs and all FTAs are not found significant (Column 5 of Table 6), lead us to infer that Pakistan does not reap the potentials of the RTAs and the FTAs.<sup>142</sup>

In addition to the findings of our models and variables, we find another insight about estimation techniques. Although the level of significance of the estimated coefficients and the signs of the variables do not change in both estimation techniques, the estimation results from OLS fixed effects overstate as compared to that of obtained from the PPML fixed effects. This finding is supported by the seminal work of Silva and Tenreyro (2006) which is further maintained by Santos Silva and Tenreyro (2011) and elaborated by Gauthier and others (2012).

### **5.3 Sectoral Level Welfare Analysis of FTAs**

Trade agreements may have a disproportionate impact on different sectors of the economy. Policies are separately needed for each of the sector so the general conclusions and policy recommendations of an FTA based on the aggregated trade lack the full information and thus, efficiency. We extend the analysis to welfare outcomes and effects of the FTAs on the agriculture and the manufacturing sectors of Pakistan. We estimate

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<sup>142</sup> The same is discussed in detail in the estimations of import gravity equation.



disaggregated gravity equation with an empirical model of Magee (2016)<sup>143</sup> for both sectors. The sectoral analysis helps us to examine the impact of the FTAs in a detailed manner.

Magee (2016) is instrumental in estimating the welfare effects for agriculture and manufacturing sectors and HS 6-digit data. Hence, for the three estimations, the specifications of this model would remain the same in Tables 7, 8 and 9. The specifications vary concerning the fixed effects<sup>144</sup> and explanatory variables. Specification one, two and three incorporate exporter fixed effects (in columns 2, 3 and 4 of tables 7, 8 and 9). Specification four accounts for exporter-year fixed effects (in Column 5 of table 7, 8 and 9). Specification five, six and seven (in Columns 6, 7, and 8 of Tables 7,8 and 9) take care of the exporter-industry fixed effects.<sup>145</sup>

The first and fifth specification regress imports over tariff rate, tariff preferences, FTA dummy, exporter GDP and year dummies (from 2003 to 2015), while second and sixth specification replaces the FTA with the RTA dummy. A set of separate dummies for the three FTAs enters in specification three and seven in place of the RTA and the FTA dummies. Specification four (Column 5) regresses imports over tariff rate and tariff preferences. The exporter-year fixed effects take care of the importer and exporter GDPs along with the macroeconomic effects without including year dummies.

We calculate trade creations and trade diversions for the manufacturing and the agriculture sector using 4-digit disaggregated data of International Standard Industrial

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<sup>143</sup> This empirical model is briefly explained in section 4.3.3.

<sup>144</sup> Exporter fixed effects, exporter-year fixed effects and exporter-industry fixed effects are discussed in section 4.3.3.

<sup>145</sup> Observations in exporter-industry fixed effects drop every time for all the estimations.

Classification (ISIC) Rev. 3<sup>146</sup> and for the Viner model using HS 6-digit industry level data. The results are reported in the next section (5.2.1).

### 5.3.1 Manufacturing

The estimation<sup>147</sup> results for the manufacturing sector of Pakistan are reported in Table 7. Tariff rate is negatively<sup>148</sup> related to manufacturing imports of Pakistan (Column 2 to 8), indicate that the reduction in tariff rate of manufacturing products raises imports of those manufacturing products in Pakistan while controlling for fixed effects.<sup>149</sup> The evidence corroborates that the tariff cut increases imports<sup>150</sup> from the FTA partners and trade creation from the FTAs as well. Magee (2016) articulates that the negative estimated coefficient of tariff rate is an indicator of trade creation. Magee (2016) find the same result from industry level HS 6-digit data of the European Community and Turkey trade. A cut in import tariffs decreases the import prices in the importing country and thus, leads to increasing import demand (Kreinin, 1961). It may be noted that one-fourth of the world trade is attributed to the tariff reduction (Baier & Bergstrand, 2001).

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<sup>146</sup>Details on data and its construction is described in section 4.5.2.

<sup>147</sup>Heteroskedasticity is also present in this data. Breusch-Pagan/Cook-Weisberg Heteroskedasticity test yields chi squared value 91.10 with prob. value 0.00.

<sup>148</sup>The magnitudes and level of significance are virtually same in all specifications.

<sup>149</sup>Exporter fixed effects, exporter-year fixed effects and exporter-industry fixed effects.

<sup>150</sup>Santos-Paulino & Thirlwall (2004) also find the comparable results.

**Table 7: Estimation Results of Manufacturing Sector Imports of Pakistan**

Specifications → Variables	Exporter Fixed Effects <sup>151</sup>			Exporter-Year Fixed effects <sup>152</sup>	Exporter-Industry Fixed Effects <sup>153</sup>		
	1	2	3	4	5	6	7
	<b>Manufacturing Imports</b>						
	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
<b>Tariff</b>	-0.056**	-0.056**	-0.056**	-0.056***	-0.050***	-0.054***	-0.051***
	-0.03	-0.03	-0.03	-0.01	-0.02	-0.02	-0.02
<b>Tariff Preference</b>	-0.121***	-0.121***	-0.121***	-0.124***	-0.053***	-0.057***	-0.053***
	-0.04	-0.04	-0.04	-0.01	-0.02	-0.02	-0.02
<b>RTA</b>		0.280**				0.338***	
		-0.13				-0.13	
<b>FTA</b>	0.172*				0.19		
	-0.10				-0.12		
<b>SF</b>			-0.03				-0.07
			-0.06				-0.17
<b>CF</b>			0.14				0.12
			-0.12				-0.13
<b>MF</b>			0.223**				0.292**
			-0.07				-0.14
<b>Ln_GDP(Exporter)</b>	0.93***	0.882***	0.953***		0.835***	0.768***	0.872***
	-0.15	-0.15	-0.17		-0.15	-0.16	-0.16
<b>Year03</b>	0.82***	0.832***	0.825***		0.782***	0.815***	0.799***
	-0.24	-0.23	-0.23		-0.18	-0.17	-0.19
<b>Year04</b>	0.89***	0.914***	0.899***		0.835***	0.874***	0.849***
	-0.22	-0.21	-0.21		-0.16	-0.16	-0.17
<b>Year05</b>	0.81***	0.836***	0.816***		0.849***	0.887***	0.859***

<sup>151</sup>Exporter fixed effects include Pakistan-exporter dyad effects such as bilateral distance, common language, sharing borders and other relations that do not change over time.

<sup>152</sup>Exporter year fixed effects include effects of the exporter's GDP and Pakistan-exporter dyad effects, including distance, size, historical relationships and the real exchange rate and capture factors specific to the importer year

<sup>153</sup>Exporter-industry fixed effects are used to capture the unobserved variables, which affect exporter j's exports to Pakistan for industry k. The unobserved variables include the comparative advantage an exporting country has in industry k.

	Exporter Fixed Effects <sup>151</sup>			Exporter-Year Fixed effects <sup>152</sup>	Exporter-Industry Fixed Effects <sup>153</sup>		
<b>Year06</b>	-0.13 0.93***	-0.13 0.955***	-0.13 0.927***		-0.13 0.934***	-0.13 0.979***	-0.13 0.940***
<b>Year07</b>	-0.14 0.75***	-0.14 0.774***	-0.14 0.761***		-0.12 0.803***	-0.11 0.828***	-0.12 0.816***
<b>Year08</b>	-0.14 0.66***	-0.14 0.664***	-0.13 0.661***		-0.12 0.690***	-0.12 0.694***	-0.13 0.694***
<b>Year09</b>	-0.16 0.38*	-0.17 0.379*	-0.16 0.383*		-0.14 0.386***	-0.13 0.384***	-0.14 0.393***
<b>Year10</b>	-0.20 0.35*	-0.21 0.356*	-0.20 0.353*		-0.13 0.385***	-0.12 0.390***	-0.13 0.389***
<b>Year11</b>	-0.22 0.27	-0.22 0.29	-0.21 0.27		-0.14 0.325**	-0.13 0.338***	-0.14 0.325**
<b>Year12</b>	-0.22 0.09	-0.22 0.11	-0.22 0.09		-0.14 0.17	-0.13 0.19	-0.14 0.17
<b>Year13</b>	-0.20 0.01	-0.21 0.02	-0.20 0.01		-0.12 0.06	-0.12 0.06	-0.12 0.05
<b>Year14</b>	-0.24 0.11	-0.24 0.12	-0.24 0.11		-0.13 0.06	-0.13 0.06	(0).1253 0.06
<b>Year15*</b>	-0.11	-0.11	-0.11		-0.08	-0.08	-0.07
<b>Wald Chi<sup>2</sup></b>	17893.02	23646.82	17129.88	96.21	473.83	496.19	494.27
<b>Prob.</b>	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Observation</b>		27165.00		27165.00		26927.00	

\*, \*\*, \*\*\* indicate that the coefficient is statistically significant at 10%, 5%, and 1% levels, respectively. Standard errors are in parenthesis.

The decline in tariff rates on manufacturing imports has reduced the manufacturing import prices in Pakistan and has resultantly caused manufacturing import volume of Pakistan from trading partners to rise. Pakistan has relaxed the import restrictions for its FTA partners because of the agreements. Historically, the imports of the manufacturing sector have increased from Sri Lanka, China, and Malaysia. In 2015, the manufacturing sector imports from Sri Lanka rose to around three times its level in 2003, rising from USD 6.1 million in 2003 to USD 17.65 million in 2015. Currently, manufacturing imports from China are 11 times more than that of 2003. In 2003, it was USD 910 million while it reached USD 10786.9 million in 2015.

The manufacturing imports from Malaysia after PMFTA have increased by 21 percent and reached USD 2696 million in 2011. This volume was USD 574.7 million in 2003, but since 2011 the manufacturing imports from Malaysia have grown undesirably and reduced to USD 889.5 million in 2016. Although the volume of manufacturing imports has declined from Malaysia, yet the manufacturing imports have increased in comparison with their volume in 2003, and this rise is attributed to a reduction in imports tariffs as the result of the FTAs of Pakistan. The evidence from manufacturing sector imports to Pakistan confirms trade creation because of the FTAs of Pakistan, and we deduce that manufacturing imports from the FTAs have displaced domestic production of manufacturing products.

To calculate trade diversion, we define tariff preferences and include it in the regression. Tariff preferences enter negatively into the manufacturing imports with slight differences in the magnitudes of all specifications in Table 7. The size of the estimated coefficient of tariff preferences increases when we estimate for exporter-industry fixed effects. However, the negative coefficient of tariff preference is evidence of no trade

diversion.<sup>154</sup> The increasing gap between the MFN tariff and the preferential tariff lowers the manufacturing imports, implying that Pakistan imports less from the countries that receive tariff preference and imports more from the MFN receiving countries. The fact that imports from the FTA partner countries do not displace the imports from non-FTA partner countries and is evident from the data of Pakistan's major trading partners. Sri Lanka and Malaysia have not improved their positions as Pakistan's major trading partner, but China has improved on the list of major trading partners as the imports from China have been continuously increasing. In these agreements, either the products having high trade potentials are not granted concessions or the products granted concession are not traded. In fact, these FTAs could not change the structure, the concentration, and the direction of the imports of Pakistan.<sup>155</sup>

To look for the general equilibrium effects<sup>156</sup> of exporters in the importing country beyond the impact caused by tariff reduction and tariff preferences, we supplement five dummies. The dummies include the dummy for all RTAs (Specification two & six in Columns 3 & 7 respectively, of Table 7), all FTAs (Specification one & five in Columns 2 & 6) and then separately for the three FTAs (Specification three & seven in Columns 4 & 8).

We see that the trade agreements collectively have general equilibrium effects on the manufacturing imports of Pakistan beyond the impact of tariff rates. While analysing these effects separately for Sri Lanka, China, and Malaysia (Columns 4 & 8), we find that Malaysian FTA has general equilibrium effects. The imports from Malaysia are

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<sup>154</sup> Magee (2016) describes that the trade diversion occurs from a trade agreement if the estimated coefficient of tariff preference is positive.

<sup>155</sup> Economic Survey of Pakistan 2016-2017

<sup>156</sup> General equilibrium effects include the effects of consumption, production, and various markets as well as the benefits of reduced uncertainty being avoided from the trade policy changes. General equilibrium effects also capture the effects of the FTAs on overall economic environment of the country.

affected by the general equilibrium effects of the Malaysian economy beyond tariff rates and tariff preferences. It may be because of the high complementarity of Malaysian exports for Pakistani imports, the nature of the products and revealed comparative advantage (Paracha and Manzoor, 2011). For China and Sri Lanka, there is a weak evidence of general equilibrium effects, and it implies that the tariff related effects are dominant over the general equilibrium effects.

The economic size of the exporting country affects its exports to Pakistan<sup>157</sup> because we find that the exporter's GDP enters positively in the estimation of all specifications<sup>158</sup> except the fourth specification.<sup>159</sup> We find evidence that the exporter's GDP causes a rise in the manufacturing imports to Pakistan. This result is empirically consistent with Malik, Chaudhary, and others (2011) and aligned with the theoretical and empirical underpinnings of the traditional gravity model (Anderson, 2011; Anderson & Van Wincoop, 2003b; Head & Mayer, 2013). The estimated coefficients of all the specifications vary between 0.768 and 0.953 suggesting the closer to unitary income elasticities<sup>160</sup> And this result is theoretically consistent with (Anderson & Van Wincoop, 2003b).

To capture Pakistan's yearly Macroeconomic effects on the manufacturing sector imports, we include year dummies in all specifications except specification four.<sup>161</sup> Pakistan's economy has macroeconomic effects from 2003 to 2010 while controlling for fixed effects as the dummies are to be found positive and significant (Columns 2 to 4). Macroeconomic circumstances stay conducive for the manufacturing sector imports

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<sup>157</sup> the importing country

<sup>158</sup> with a slight difference in the estimated coefficients

<sup>159</sup> GDP is not included in the fourth specification. The exporter year fixed effects capture it.

<sup>160</sup> There is one-to-one relationship between income and imports.

<sup>161</sup> Because specification 4 is estimated with exporter-year fixed effects. These fixed effects capture all factors related to time, dyad effects and importer effects.

from 2003 to 2010, however, for the next three years, Pakistan's economy did not affect the manufacturing imports.

Overall, the manufacturing sector has experienced a rise in the imports consequential to the bilateral FTAs. The bilateral FTAs brought welfare gains for the manufacturing sector because we find trade creation<sup>162</sup> in this sector. This sector did not face welfare loss because the trade did not divert to the FTA partners from the non-FTA partner countries.

### **5.3.2 Agriculture**

In the previous section, we discuss the results of the Manufacturing sector while the current section presents the findings, interpretations, and discussions of the agriculture sector of Pakistan. For the agriculture sector, we use the agriculture imports from International Standard Industrial Classification Rev. 3.<sup>163</sup> Table 8 follows the structure and estimation specifications of Table 7. The estimations also follow the same fixed effects estimated for manufacturing imports using PPML.<sup>164</sup>

As an indicator of trade creation, tariff rate enters negatively into the equation<sup>165</sup> for agriculture imports. The evidence suggests that the agriculture imports increase because of the tariff concessions granted in the FTAs of Pakistan on the same logic explained earlier for the manufacturing imports. We see increased agriculture imports to Pakistan from Sri Lanka, China, and Malaysia since 2003. Pakistan imported agricultural products from Sri Lanka worth USD 48.57 million in 2015, and it is 32% more than that of 2003 (USD 36.6 million). Although there is an oscillation in the imports from Sri

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<sup>162</sup>The magnitudes of trade creation for manufacturing sector are presented in section 5.5.2.

<sup>163</sup> Data construction for agriculture sector is given in section 4.5.2.

<sup>164</sup>Breusch-Pagan/Cook-Weisberg test confirms the heteroskedasticity of agriculture imports as the chi-squared value is 41.25 with prob. value 0.00.

<sup>165</sup> Tariff rate coefficient is -0.212, which is highly significant and virtually have same values in the estimations of specification one to four, exporter fixed effects and exporter-year fixed effects.



Lanka, yet the trend of increase in imports remained flat from 2003 to 2015. From China, agriculture imports increased until 2011 about five times the import volume of 2003 and reached its maximum. After 2011, the agriculture imports decreased, however, again recovered in 2015 with an import volume of USD 154.56 million.

**Table 8: Estimation Output of Agriculture Sector Imports of Pakistan**

Specifications → Variables	Exporter Fixed Effects			Exporter-Year Fixed effects	Exporter-Industry Fixed Effects		
	1	2	3	4	5	6	7
	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.	Coef.
<b>Tariff Rate</b>	-0.212***	-0.215***	-0.212***	-0.226***	0.01	-0.01	0.00
	-0.05	-0.06	-0.05	-0.02	-0.04	-0.03	-0.04
<b>Tariff Preference</b>	-0.1470**	-0.149**	-0.147**	-0.146***	-0.01	-0.04	-0.02
	-0.08	-0.07	-0.08	-0.03	-0.06	-0.05	-0.06
<b>RTA</b>		0.767***				0.678***	
		-0.34				-0.25	
<b>FTA</b>	-0.20				-0.35		
	-0.27				-0.22		
<b>SF</b>			-0.29				-0.29
			-0.30				-0.31
<b>CF</b>			0.14				-0.11
			-0.28				-0.31
<b>MF</b>			-0.856***				-0.960***
			-0.19				-0.19
<b>Ln_GDP<sub>(Exporter)</sub></b>	0.38	0.09	0.25		0.46	0.13	0.37
	-0.48	-0.35	-0.56		-0.45	-0.40	-0.55
<b>Year03</b>	1.604***	1.817***	1.545***		0.38	0.64	0.37
	-0.55	-0.38	-0.59		-0.51	-0.40	-0.54
<b>Year04</b>	1.871***	2.134***	1.833***		0.74	1.02	0.73
	-0.56	-0.42	-0.59		-0.55	-0.48	-0.57
<b>Year05</b>	1.135***	1.404***	1.108***		0.64	0.844**	0.63
	-0.49	-0.29	-0.49		-0.41	-0.34	-0.42
<b>Year06</b>	1.054***	1.318***	1.036***		0.540*	0.769***	0.53
	-0.31	-0.11	-0.31		-0.29	-0.16	-0.29

	Exporter Fixed Effects			Exporter-Year Fixed effects	Exporter-Industry Fixed Effects		
<b>Year07</b>	1.074***	1.302***	1.047***		0.771***	0.972***	0.757***
	-0.27	-0.24	-0.27		-0.26	-0.24	-0.26
<b>Year08</b>	0.881***	0.918***	0.868***		0.979***	0.987***	0.973***
	-0.22	-0.22	-0.22		-0.19	-0.18	-0.19
<b>Year09</b>	0.31	0.33	0.30		0.508**	0.494**	0.496**
	-0.29	-0.28	-0.29		-0.23	-0.21	-0.23
<b>Year10</b>	0.363*	0.405*	0.363*		0.584***	0.619***	0.584***
	-0.21	-0.23	-0.20		-0.10	-0.09	-0.09
<b>Year11</b>	0.472***	0.562***	0.484***		0.559***	0.614***	0.565***
	-0.17	-0.18	-0.16		-0.11	-0.11	-0.10
<b>Year12</b>	0.11	0.21	0.12		0.23	0.27	0.24
	-0.20	-0.22	-0.20		-0.20	-0.20	-0.20
<b>Year13</b>	-0.11	-0.06	-0.10		0.02	0.01	0.02
	-0.38	-0.38	-0.38		-0.25	-0.24	-0.25
<b>Year14</b>	-0.04	-0.01	-0.04		0.02	0.04	0.03
	-0.20	-0.19	-0.20		-0.10	-0.10	-0.10
<b>Year15*</b>							
<b>Wald Chi<sup>2</sup></b>	10331.99	13391.54	12217.38	114.18	1596.68	830.69	1662.96
<b>Prob.</b>	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Observation</b>		1516		1513		1508	

\*, \*\*, \*\*\* indicate that the coefficient is statistically significant at 10%, 5%, and 1% levels, respectively. Standard errors are in parenthesis.

From Malaysia, the import volume of agriculture products was USD 25.28 million in 2003, and it followed a negative trend since 2003. In 2015, the import volume of agriculture products from Malaysia decreased to USD 10.8 million. Overall, agriculture imports in Pakistan have increased from USD 96 million to USD 213.9 million in 2015 from the FTA partners. The empirical and temporal evidence confirm trade creation for the agriculture sector of Pakistan.

We cannot infer trade creation from the agriculture sector imports while considering for dyad effects as well as commodities' comparative advantage because the tariff rate enters (Columns 6,7 & 8) in the equation with a non-significant estimate, when the equation is estimated using exporter-industry fixed effects, controlling for product-related factors. We can presume that the agriculture imports are sensitive to the historical ties between the exporters and importer. Sino Pakistan ties are observable from the history based on strategic friendship.

A measure of trade diversion, tariff preferences yield negative and statistically significant coefficient (specification one to four in Columns 2 to 5 of Table 8). This result shows that agriculture imports decrease because of tariff preferences. The dyad relations, historical ties and time-related effects confirm there is no trade diversion of agriculture imports. The evidence reveals that Pakistan imports fewer agriculture goods from the countries that receive tariff preferences and instead imports more from the countries that receive MFN tariff rate thus the FTAs could not divert the trade from non-FTA partners to them. When counting for the comparative advantage of product and exporter-industry fixed effects (specification five to seven), the results for tariff preferences are not robust. Collectively agriculture imports to Pakistan from the FTA partners do not displace the similar imports for non-FTA partners. Pakistan continues to import agriculture products more from the countries receiving MFN tariff rates.

To account for the general equilibrium effects on the agriculture sector imports, we estimated the RTA and the FTA dummies in the same way while estimating the manufacturing sector imports. The RTA dummy is found robust and positive (Columns 3 & 7) capturing the general equilibrium effects. The general equilibrium effects enhance agriculture imports of Pakistan beyond the impact of tariff rates. The complementarity of trading products, nature of the products and the revealed comparative advantage affect agriculture imports even if the tariff concession is not granted. The FTA dummy is not found robust with a negative coefficient (specification 1 & 5), which means that the FTAs do not have general equilibrium effects collectively on the agriculture sector imports of Pakistan. So, the tariff rates matter more than the general equilibrium effects in agricultural imports, and the same is also true for each of the three FTAs (specification 3 & 7). So, for the FTAs, the tariff rates are more effective as compared to the general equilibrium effects.

The evidence approves that tariff rates and the tariff preferences have more effects on agriculture imports as compared to the general equilibrium effects for PCFTA and PSFTA. We observe that the agriculture imports from Sri Lanka and China have increased from 2003 to 2015. This rise is devoted to tariff cut instead of general equilibrium effects. In the case of Malaysian FTA, the estimation casts adverse general equilibrium effects on the agriculture imports. Historically, the agriculture imports of Pakistan have decreased since 2003, after PMFTA.

Exporter's GDP is not robust for agriculture imports of Pakistan in all specifications. This result indicates that the GDPs of the exporting countries do not affect agriculture imports to Pakistan.

The macroeconomic effects of Pakistan's economy did not remain stable on agriculture imports from 2003 to 2015. The macroeconomic impact was significant (specification 1 to 3) from 2003 to 2008 and 2010 to 2011. In the rest of the years, the macroeconomic effects were not significant for agriculture imports. The agriculture imports declined after 2011 significantly, and this was the year when imports reached their largest volume from FTA partner countries. Macroeconomic effects are not observed (specification five to seven) on the agriculture sector during 2003 to 2005, 2012 to 2014 however from 2006 to 2011, the economy of Pakistan was conducive for the sector.

We conclude that the FTAs of Pakistan have affected the agriculture sector of Pakistan and the agreements resulted in trade creation<sup>166</sup> for the agriculture sector. However, we could not find the evidence of trade diversion. The existence of trade creation and the absence of trade diversion show welfare gains for Pakistan from these FTAs. This implies that Pakistan has been importing from the FTA partner countries on the preferential tariff rates. The agriculture imports from other countries are not displaced, which means Pakistan is also importing from non-FTA partners. Consequently, agriculture imports are increased from both the FTA and the non-FTA partners.

#### **5.4 Industry Level Welfare Analysis of FTAs**

Aggregated and sectoral level trade data do not explain the trade of commodities. Much information stays hidden in the aggregated and sectoral level data causing a pretext bias. Aggregated trade does not set up a direct link with trade policy because the variations in tariff rates and tariff preferences are related to commodities, which are not captured in aggregate trade data. This link can only be established while using disaggregated data at industry and commodity level. For practical policy measures, analysis using

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<sup>166</sup>The magnitudes of trade creation are documented in section 5.5.3.

disaggregated data is recommended. This section presents the estimation results of Industry-Level Welfare Analysis based on the Viner Model<sup>167</sup> using Magee (2016).<sup>168</sup>

Table 9 shows the estimation results for industry level<sup>169</sup> imports of Pakistan. Table 9 also follows the structure of Tables 7 & 8. An extensive dataset is structured to estimate the model including 824,252 observations. We include 5764 goods imported from 11 countries from 2003 to 2015. This sample covers 72 percent of Pakistan's imports and top 10 import destinations of Pakistan including Sri Lanka<sup>170</sup>. This panel seems to be the most extensive panel dataset of trade ever used<sup>171</sup> for Pakistan. A complete description of this dataset is given in Section 3.5.3.

From industry-level data, we also find the evidence for trade creation. Tariff rate enters negatively (specification one to seven in Columns 2 to 8) in the equation<sup>172</sup> with imports at industry level data (HS 6-digit level). The evidence confirms that because of the tariff cut, industry level imports to Pakistan increase while controlling for proximity, common border, historical relationships, religious bonds, and comparative advantages of products. The tariff cut-induced increase in imports is the trade creation giving the intuition that imports of Pakistan increased from FTA partner countries. The industry level imports from the FTA partners increased since 2003 and especially after signing the FTAs. The imports from Sri Lanka increased with fluctuations while the imports from Malaysia increased steeply, but after 2011, the imports declined. From China, the imports have been continuously rising since signing PCFTA. Comprehensively, the industry level imports increased because of these FTAs.

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<sup>167</sup> Brief description on Viner Model is presented in section 4.3.

<sup>168</sup> To achieve 3<sup>rd</sup> objective of our study. The Magee (2016) model is estimated using PPML. Heteroskedasticity was also present in this dataset.

<sup>169</sup> HS 6-digit level is industry level data. Magee (2016)

<sup>170</sup> Sri Lanka is at 46<sup>th</sup> number. (WITS)

<sup>171</sup> As we are aware of.

<sup>172</sup> The exporter fixed effects, exporter-year fixed effects, and exporter-industry fixed effects have same results.

**Table 9: Estimation Output of Industry-Level Imports of Pakistan**

Variables	Exporter Fixed Effects			Exporter-Year Fixed effects	Exporter-Industry Fixed Effects		
	1	2	3	Imports at HS 6-digit			
	Coef.	Coef.	Coef.	4	5	6	7
<b>Tariff</b>	-0.057***	-0.057***	-0.057***	-0.057***	-0.018***	-0.018***	-0.018***
	-0.03	-0.03	-0.03	(0.0095)	-0.01	-0.01	-0.01
<b>Tariff Preferences</b>	-0.077**	-0.077**	-0.077**	-0.076***	-0.014*	-0.016**	-0.015**
	-0.03	-0.03	-0.03	(0.0101)	-0.01	-0.01	-0.01
<b>RTA</b>		-0.12				0.18	
		-0.20				-0.15	
<b>FTA</b>	-0.26				0.10		
	-0.20				-0.10		
<b>SF</b>			-2.346***				-0.482**
			-0.24				-0.20
<b>CF</b>			0.03				0.06
			-0.09				-0.12
<b>MF</b>			-0.645***				0.17
			-0.11				-0.18
<b>Ln_GDP(Exporter)</b>	0.655***	0.555**	0.478*		0.586***	0.539***	0.6020***
	-0.23	-0.25	-0.25		-0.15	-0.17	-0.17
<b>Year03</b>	0.578*	0.54	0.47		0.29	0.28	0.30
	-0.30	-0.30	-0.30		-0.19	-0.20	-0.20
<b>Year04</b>	0.760**	0.730**	0.680**		0.426**	0.426**	0.433**
	-0.30	-0.30	-0.30		-0.19	-0.19	-0.20
<b>Year05</b>	0.467*	0.45	0.41		0.457***	0.458***	0.462***
	-0.25	-0.25	-0.25		-0.17	-0.17	-0.17
<b>Year06</b>	0.565***	0.555***	0.524**		0.561***	0.567***	0.564***



	Exporter Fixed Effects			Exporter-Year Fixed effects	Exporter-Industry Fixed Effects		
<b>Year07</b>	-0.20	-0.21	-0.21		-0.13	-0.13	-0.13
	0.534**	0.509**	0.460*		0.546***	0.542***	0.554***
<b>Year08</b>	-0.26	-0.25	-0.25		-0.14	-0.14	-0.14
	0.599***	0.578***	0.557***		0.567***	0.562***	0.569***
<b>Year09</b>	-0.22	-0.22	-0.22		-0.12	-0.12	-0.13
	0.24	0.21	0.18		0.14	0.14	0.15
<b>Year10</b>	-0.22	-0.22	-0.21		-0.12	-0.12	-0.13
	0.287*	0.267*	0.248*		0.197**	0.194**	0.198**
<b>Year11</b>	-0.16	-0.16	-0.15		-0.09	-0.09	-0.09
	0.144*	0.136*	0.133*		0.214***	0.219***	0.215***
<b>Year12</b>	-0.08	-0.08	-0.08		-0.05	-0.05	-0.05
	-0.01	-0.01	-0.01		0.076*	0.084*	0.076*
<b>Year14</b>	-0.05	-0.05	(0.05040		-0.04	-0.04	-0.04
	-0.02	-0.02	-0.02		0.00	0.00	0.00
<b>Year15</b>	-0.08	-0.08	-0.08		-0.05	-0.05	-0.05
	-0.12	-0.13	-0.13		-0.10	-0.11	-0.10
	-0.16	-0.16	-0.16		-0.09	-0.09	-0.09
<b>Wald Chi<sup>2</sup></b>	3643.18	345.09	1743.41	141.71	369.19	404.81	375.76
<b>Prob.</b>	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Observations</b>		246274		246274		208327	

\*, \*\*, \*\*\* shows that the coefficient is statistically significant at 10%, 5%, and 1% levels, respectively. Standard errors are in parenthesis.

Tariff preference<sup>173</sup> is defined, while explaining the Magee (2016) model, to measure the preference that FTA partner countries are receiving with lower tariff rates as compared to the MFN tariff rates, which are higher. The estimated coefficient of tariff preference is negative and robust in all specifications (specification one to seven in Columns 2 to 8 of Table 9).<sup>174</sup> The result suggests that Pakistan imports less from the countries receiving tariff preference and more from those that which do not receive tariff preference. Pakistan imports more by paying the MFN tariff instead of preferential tariff hence, imports from the non-FTA partners are not displaced by imports from the FTA partner countries. Resultantly, there is no trade diversion from the non-FTA partner countries.

This can be validated from the list of the top import markets of Pakistan. China comes first in the list of top import markets of Pakistan while Malaysia and Sri Lanka come at 9<sup>th</sup> and 46<sup>th</sup> number, respectively.<sup>175</sup> China contributes 29.17%<sup>176</sup> of total imports<sup>177</sup> of Pakistan; however, Malaysia's share is 2.01%, whereas Sri Lanka's share is very meagre amounting to 0.16%.<sup>178</sup> Collectively, Pakistan imports 31.3% of its total import demand from the FTA partner countries. The rest of the 68.6% is imported from the non-FTA partners. The trade scenario of Pakistan had not changed much from 2005 when Pakistan signed the first FTA with Sri Lanka. The shares of Sri Lanka and Malaysia in Pakistan's trade either remained lower or did not improve because of the FTAs. A plausible reason is the tariff discounts for non-trading goods and tariff imposition on traded products.

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<sup>173</sup>explained earlier in section 4.3.3.

<sup>174</sup>The magnitude of coefficient is lowered when estimated with exporter-industry fixed effects and it is because of drop in observations.

<sup>175</sup>World Integrated Trade Solution (WITS), World Bank, 2016

<sup>176</sup> The share is expected to increase in the coming years because of CPEC.

<sup>177</sup> (Kamal, n.d.) says the increase in the imports from China is caused by diversion in 5 products from other trading partners and from informal channels to the formal channels.

<sup>178</sup>Table 2, All the statistics are in table 2.

Trade diversion is the sign of welfare losses and trade creation is the sign of welfare gains. Less efficient imports from the FTA partner countries displace the efficient imports from the FTA partner countries, and this displacement is not beneficial for the country (Plummer et al., 2010; Zidi & Dhifallah, 2013). The existence of trade creation and the nonexistence of trade diversion<sup>179</sup> show that Pakistan gains welfare from these FTAs. The import has increased from FTA, however with smaller shares from Sri Lanka and Malaysia, and non-FTA members.

At the industry level, the tariff effects are dominant over general equilibrium effects. Thus, the results indicate that general equilibrium effects of RTAs (specification two & six in Columns 3 & 7) and FTAs (specification one & five in Columns 2 & 6) do not affect the imports. These dummies are also not significant from exporter fixed effects and exporter industry fixed effects. The general equilibrium effects of Sri Lankan (specification three & seven in Columns 4 & 8) and Malaysian (specification three in Column 4) FTAs persist while PCFTA does not have significant general equilibrium effects. The change in industry level imports from Sri Lanka and Malaysia is because of both the tariff cut and general equilibrium, but industry level imports from China respond to the tariff cut rather than the general equilibrium effects. It is clear from the time series data that the imports from China have been continuously increasing since 2003. China has moved from 3<sup>rd</sup> top exporter to the most exporting country to Pakistan.<sup>180</sup>

We find that industry level imports of Pakistan are positively related to the exporter's GDP. A one percent increase in exporter GDP increases industry level imports to Pakistan by 0.65 percent. A rise in the exporting countries' GDP is a sign of the

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<sup>179</sup>Although we could not calculate the magnitudes of trade diversion from FTAs separately.

<sup>180</sup> TRAINS

increasing ability of the countries to export more and that they can meet the import demand of importing countries. The unitary income elasticities of import are not verified for the Viner model. The one-to-one relationship does not exist between the exporter's GDP with their exports (imports from other countries).

The year dummies have captured the macroeconomic effects of Pakistan's economy on the industry level imports for exporter fixed effects and exporter-industry fixed effects. Similar effects are documented for the manufacturing sector.

The economic growth of Pakistan was impeded in the 1990's and was further depressed by the 9/11 event and country's drought in the very first two years of the 21<sup>st</sup> century<sup>181</sup>. However, then the macroeconomic slowdown faded away, and Pakistan saw good economic performance from FY<sup>182</sup> 2002-03 to FY 2007-08<sup>183</sup>. The country grew with sustained high growth rates during these years, that was underpinned by the upturn of all the sectors of the economy with rising foreign direct investment during these years; the country experienced a surge in exports and imports. The export performance was excellent with an average of 16 percent growth from 2002-03 to 2005-06.<sup>184</sup> This performance is attributed to the country's robust economic growth, which further commanded to investment-led imports. Pakistan's imports grew at an average of 29 percent from 2002-03 to 2005-06<sup>185</sup>.

After FY 2007-08, the country had to face different internal and external challenges such as the internal law and order situations, swelled political strains, global financial crisis, and hike in international food and oil prices. However, the economy absorbed different

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<sup>181</sup> Economic Survey of Pakistan 2001-2002

<sup>182</sup> FY stands for fiscal year

<sup>183</sup> Economic Surveys of Pakistan, 2003-2004 to 2007-2008

<sup>184</sup> Economic Survey of Pakistan, 2007-2008

<sup>185</sup> Economic Survey of Pakistan, 2007-2008

shocks initially with 4.1 percent GDP growth but could not engross these shocks continuously. Then the economy stumbled to a GDP growth of mere 1.2% in 2008-09 that was further jeopardised by the supply shocks stemming from the devastating flood in 2010<sup>186</sup>. Moreover, hot-blooded security profile, grave energy crisis, internally displaced persons from the areas of military operation, the war on terror, spill-over-effects of the global financial crisis managed to grab the country to poor economic performance. The economy of Pakistan was not capable enough to absorb these shocks and would have grown in the absence of these shocks.

Pakistan's trade remained disturbed at the start of the second decade of this century owing to the European Sovereign debt crisis and the uproar in the Arabic countries. The story of macroeconomic performance narrated above is indeed captured by the year dummies used in the current estimations. From the discussion above, we observe that the results of year dummies are thus, robust in presenting the macroeconomic impact on imports of Pakistan.

## **5.5 Product Level Welfare Analysis of FTAs**

Having examined the sectoral and industry level welfare implications, we now turn to analyse the products involved. Although it is crucial to find out the products included in welfare gains and losses, this job is left to the Lloyd and MacLaren model.<sup>187</sup> In this model, trade creation and trade diversion at the product level is calculated using prices

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<sup>186</sup> Economic Survey of Pakistan, 2010-2011

<sup>187</sup> Ayhan Kose & Riezman (2000) analysed welfare of FTA and CU using volume-of-trade effect and terms-of-trade effect. The model is presented briefly in 4.4.

and quantities of the products. Prices<sup>188</sup> and quantities of the products are not included in the models of the last three models.

The product groups (HS 4-digit data) of imports and exports were used for calculating this model. Because of the selection criteria,<sup>189</sup> we ended up with the inclusion of 37 commodities in the calculation from PSFTA. The change in trade volume is based on base year, 2004 and the new year, 2015. The net change in trade volume is USD 0.6 million, a positive number that indicates welfare gain from PSFTA. Out of the 37 products,<sup>190</sup> 19 products see a positive change in trade volume amounting to USD 0.7 million whereas 12 products have observed the adverse change in trade volume amounting to USD -0.1 million. Six products do not see any change in trade volume. So, the net change in trade volume is USD 0.6 million which shows welfare increment partially because of PSFTA.

The Lloyd and MacLaren model presents a counterfactual analysis of the same indicators as well. For counterfactual analysis, the change in trade volume is extrapolated using the geometric mean growth rate for import quantity and unit values. For the geometric mean growth rate, 2001 to 2004 data is used. The counterfactual analysis presents what change in trade volume would have been in the absence of PSFTA. The extrapolated change in trade volume is calculated for 37 products.<sup>191</sup> The value for the extrapolated change in trade volume is USD -4 million; the negative value shows that if there had been a trade in these 37 product groups without PSFTA, the change in trade volume would be negative. The comparison of the actual change in trade

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<sup>188</sup> Unit prices of a product groups is used, which is obtained by dividing the total trade volume over trade quantity. For example, the unit price of product A is obtained by dividing the trade volumes of A over its quantity.

<sup>189</sup> Explained in section 4.5.4.

<sup>190</sup> The products are listed in the appendix.

<sup>191</sup> 2.96 percent of HS 4-digit product grouping

and extrapolated change in trade reveals imputed PSFTA effect and the effect is positive; Pakistan has gained from PSFTA.

We also compute the change in terms of trade for PSFTA. The change in terms of trade needs the data on the value of imports, exports, quantities of imports and quantities exports. Products with positive trade volumes and quantities have been selected, and resultantly the selection ended up with only 7 product groups. Of the seven selected product groups, the net change in terms of trade for PSFTA is USD 0.73 million. Out of the seven product groups, three face negative change in terms of trade while four have faced a positive change in terms of trade. The positive value of the change in terms of trade shows improved terms of trade and thus, welfare gain for Pakistan.

While extrapolating the required series for counterfactual analysis of change in terms of trade, only three products have been forecast based on the geometric mean growth rates. The extrapolated change in terms of trade is negative that means if PSFTA had not been in place, Pakistan's trade with Sri Lanka would be welfare reducing.

We also compute the change in trade volume and change in terms of trade for PCFTA. The required data have been collected and constructed as per the requirement explained in section 3.5.4. From PCFTA, 793 product groups at HS 4-digit are selected as per the commodity selection criteria.<sup>192</sup> From the selected 793 product groups, we calculate the net change in trade volume, which is USD 295.3 million. Out of the selected product groups, 537 groups have experienced a positive change in trade volume, and the change in trade volume is USD 362.13 million. The product groups that have seen the adverse change in trade volume are 240, which are 19.1 percent of all the commodities. The

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<sup>192</sup> Positive trade volumes in both new year and base year. The base year in case of China is 2006 while the new year is 2015.

negative change in trade volume is USD -66.8 million. Hence the net change in trade volume from PCFTA is USD 295.3 million showing welfare increase because of PCFTA.

To do counterfactual analysis, we extrapolate<sup>193</sup> change in trade volume for already selected 793 product groups. We include only those groups that have positive trade volumes and quantities. The extrapolated change in trade volume is negative with a large size, USD 1,247,315 million. This means that based on trade trends from 2001 to 2006, the change in trade volume would be negative with a large amount in the absence of PCFTA. The comparison of the actual change in trade volume and extrapolated change in volume shows a positive imputed change in trade which signals of trade gains from PCFTA.

To compute the change in terms of trade for PCFTA, we select the product groups, which have positive import and export volumes along with quantities. Resultantly, the selection ended up with 62 product groups. Net change in terms of trade is found negative with the magnitude of USD -111 million, indicating deterioration in terms of trade for PCFTA. Hence, it is deduced that the gains from PCFTA are lower. The overall gains in the welfare from PCFTA are calculated by adding the change in trade volume and change in terms of trade. The overall gain from PCFTA is USD 184 million.<sup>194</sup>

The extrapolated change in terms of trade is large with the magnitude of USD -868,071 million. This large magnitude indicates that in the absence of PCFTA, the terms of trade would have deteriorated a lot. The actual change in terms of trade is USD -111 million in comparison to a large extrapolated change in terms of trade. Overall, the indicators

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<sup>193</sup> For extrapolation, geometric mean growth rates have been calculated for imports quantity and unit price based on the trade data of 2001 and 2006.

<sup>194</sup> change in trade volume - change in terms of trade; USD 295 million - USD -111 million



of change in trade volume and change in terms of trade along with their extrapolated values show gains in welfare from PCFTA.

We select 272 product groups to calculate the change in trade volume for PMFTA. The net change in trade volume is USD -46 million. Out of the selected, 131 products have shown a positive change in their trade volume, while 117 products have experienced a negative change in trade volume. The rest of the product groups do not see the change in their trade volume. The positive change in trade volume is worth of USD 44.5 million, while the negative change in trade volume is of USD -90.5 million. The negative trade volume outweighs the positive trade volume change, leading us to conclude that there is a decline in welfare because of PMFTA. The extrapolated change in trade volume is USD -1026 million. The counterfactual scenario reveals that the situation could have been worse in the absence of PMFTA.

To calculate the change in terms of trade, only 19 product groups are found satisfying the selection criteria. Hence, the calculated change in terms of trade from these 19 product groups is USD 9.4 million, which indicates welfare gain from PMFTA. Ten products have a positive change in terms of trade and the rest of the nine products have seen a negative change. Nonetheless, the net change in terms of trade is positive. To have a counterfactual comparison with the actual change in terms of trade, the extrapolated value of the change in terms of trade is USD 11.9 million. The actual change in terms of trade is also positive and closer to the extrapolated change in terms of trade.

## **5.6 Welfare Implications**

The premier objective of our study is to examine the welfare gains or losses for Pakistan's free trade agreements. Having done estimations from various datasets

ranging from the aggregated trade to the product level trade, we proceed to examine the welfare implications, which are based on the trade creation and trade diversion of these agreements. We find that trade diversion for any level trade does not occur due to Pakistan's FTAs since the coefficient of tariff preference remained undesirable throughout the estimations<sup>195</sup>. Consequently, this section presents the magnitudes of the trade creation only obtained from the different models employed.

### **5.6.1 Assessment of Trade Creation and Trade Diversion**

To assess the trade creation and the trade diversion from the aggregate trade, we use a dummy variable approach in the gravity model. There is no evidence of either trade creation or trade diversion from the FTA with China from aggregate imports. From the aggregate exports, it is clear that the trade creation occurred for China, but there is no evidence for trade diversion from the same aggregate exports. We also cannot conclude the occurrence of trade creation and trade diversion from the FTA with Sri Lanka from aggregate imports and exports. The trade creation and trade diversion from aggregate imports from Malaysia are not clear from PMFTA either. We find the evidence of trade creation from aggregate exports to Malaysia, but trade diversion does not occur in exports to Malaysia.

We find notable evidence on the inefficiency of dummy variable approach to assessing trade creation and trade diversion using the aggregated trade via gravity equations hence, the conclusion on the trade creation and the trade diversion from dummy variables remains ambiguous. The dummy variable approach can only assess trade creation and trade diversion but cannot quantify the trade creation and trade diversion.

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<sup>195</sup> For trade diversion, variable of tariff preferences needs to enter positively in the equation.

Hence, we move further to calculate trade creation and trade diversion for the manufacturing and the agricultural sectors and from industry-level data.

### **5.6.2 Trade Creation from Manufacturing Sector**

For drawing conclusions about welfare implications from the manufacturing imports of the FTAs of Pakistan, we calculate trade creation<sup>196</sup> for manufacturing sector imports using the estimated coefficients of tariff rate, tariff preferences for significant dummies of RTA (specification two & six of Table 7), FTA (specification one & five of Table 7) and separate FTA dummies (specification three & seven of Table 7). From all FTAs (specification one in column 2 of Table 7) collectively, trade creation is USD 76.43 million. The major trade creation is credited to PCFTA worth USD 76.84 million. The trade creation of the Sri Lankan FTA is worth USD 0.15 million only. The Malaysian FTA has negative trade creation amounting to USD 0.56 million. Overall, Pakistan gains from these FTAs.

The trade creation from all RTAs is higher than that of the FTAs. The size of trade creation for the RTAs (using coefficient of RTA in specification two in Column 3 of Table 7) is USD 100 million. The RTAs have more impact on the magnitudes of trade creations for all the FTAs because the magnitudes of trade creation for the FTAs have increased a bit. Trade creation for PCFTA is increased to USD 77.56 million from USD 76.84 million obtained from FTA dummy. From PSFTA, trade worth of USD 0.23 million is created after signing the FTA, and this figure is also slightly improved. The notable change in the trade creation for Malaysian FTA is seen when it is calculated by keeping the RTA coefficient in formulae.<sup>197</sup> Trade creation for Malaysian FTA is worth

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<sup>196</sup> A note of caution seems necessary here that, for calculating trade creations for all level data, we include the significant dummies of RTA, FTA and separate FTAs and only use the specifications which carry significant estimates of dummy variables.

<sup>197</sup> Presented in section 4.3.3

USD 11.88 million, which is very meagre (USD -0.56 million) with the FTA coefficient. The welfare gains from all the RTAs are more than that of all the FTAs.

When we account for the exporter macroeconomic variables like GDP, bilateral distance, common languages, and any general equilibrium effects (these effects are exporter-year fixed effects),<sup>198</sup> trade creation becomes negative (USD -20.31 million) from the manufacturing sector. However, while accounting for the RTAs with the exporter-year fixed effects, the trade creation turns positive amounting to USD 98.28 million.<sup>199</sup> Trade creation from Chinese FTA is significantly lower in comparison with that calculated from exporter fixed effects. It was USD 77.56 million in the earlier calculation while, currently, it is USD 20.96 million. The trade creation reduced to zero for Sri Lankan FTA and the same reached to USD -41 million for Malaysian FTA. It is clear that exporter-year fixed effects have a significant impact on the FTAs not on the RTAs.

While we calculate the trade creation for industry related unobserved effects such as the comparative advantage of the products and other dyad effects, we find negative (USD -13.88 million) trade creation for all FTAs. The trade creation for Chinese FTA turns out to be negative (USD -17.58 million). The magnitudes of trade creation for Sri Lanka and Malaysia turn to be USD 0.2 million and USD 3.49 million, respectively. Interestingly, when we consider the effects of the RTAs and the product related unobserved effects, the trade creation for the manufacturing sector reaches a higher worth of USD 543.85 million. Out of this trade creation, the biggest chunk is devoted to PCFTA. However, there is a marginal change in the trade creation for Sri Lankan and

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<sup>198</sup>Trade creation from exporter-year fixed effects are calculated from the formulae of trade creation that uses the estimated coefficients of tariff and tariff preferences and does not use the estimated coefficient of RTA dummy or FTA dummies. The formulae are in equation 9 of Magee model.

<sup>199</sup>This value is USD 2.3 million lower as compared to that of the exporter fixed effects.

Malaysian FTAs. This calculation suggests that the industry related trade is more effective for all the RTAs and products are enjoying a higher revealed comparative advantage along with dyad effects that can create more trade.

The FTAs of Pakistan are welfare yielding for the manufacturing sector of Pakistan.

### **5.6.3 Trade Creation from Agriculture Sector**

We calculate the trade creation from the agricultural sector as well. The RTA dummy enters significantly in the equation (specification 2 in Columns 3 of Table 8) resultantly the trade creation for the agricultural sector has been calculated. We find trade creation worth 36.47 million USD from the agricultural sector. The significant coefficient of tariff rate has ensured that there exists trade creation, but the insignificance of the FTA dummy and other the FTA dummies (CF & SF) made us unable to isolate the trade creation for these FTAs.

The FTA dummy along with the separate FTA dummies cannot be used to calculate trade creation for the agricultural sector because these dummies are found insignificant (Table 8) with exporter fixed effects and exporter-industry fixed effects. Except for Malaysia, the dummy is significant. Trade creation from exporter-industry fixed effects (specification 5 to 7 of Table 8) is very much similar as it is from exporter fixed effects (specification 1 to 3 of Table 8).

The findings for the agricultural sector have given insight that, although, there exists trade creation from the agricultural sector, they cannot be isolated separately for the FTAs.

#### 5.6.4 Trade Creation from HS six-digit data

The highpoint of our study is an estimation of welfare implications from the FTAs using a large data set, presented in this section. A panel of top countries from which Pakistan imports, is made using industry-level trade. The panel consists of 824,252 observations.

The dummies for trades agreements, the RTAs (second and sixth specification in Table 9) and the FTAs (first and fifth specification in Table 9), are not found significant for exporter fixed effects and exporter-industry fixed effects. We find meaningful results for the Sri Lankan and the Malaysian FTAs but not for the Chinese FTA, using industry-related effects. We use the coefficients of both the FTAs to calculate trade creations, but there are not positive amounts calculated for trade creation from PSFTA and PMFTA.

We use the estimation of exporter-year fixed effects<sup>200</sup> to calculate trade creation for the welfare analysis. We calculate trade creations by keeping all the dummies equal to 1 sequentially to segregate the trade creations for each of the FTA. The trade creation from all the FTAs is USD 52.97 million and from all the RTAs<sup>201</sup> is USD 54.75 million. As we find previously, the major part of trade creation is devoted to the Chinese FTA, which is USD 27.69 million. The lowest part goes to the Sri Lankan FTA, which is USD 0.92 million. The Malaysian FTA has trade creation worth USD 24.73 million. The welfare from industry-level trade is calculated when we consider the exporter, importer, dyad and time-related factors.<sup>202</sup> We find the welfare gains for the industry level trade. We do not find trade diversion from these agreements, which indicates that Pakistan does not bear welfare loss from these agreements and the net welfare is positive from these agreements. We do not calculate trade creation using exporter-industry fixed effects

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<sup>200</sup> These effects capture all the factors of trade flows in gravity model as well as unobserved factors specific to dyad, time, importer, or exporter (Magee, 2016).

<sup>201</sup> RTAs include all the FTAs and PTAs of Pakistan.

<sup>202</sup> Exporter year fixed effects include effects of the exporter's GDP and Pakistan-exporter dyad effects, including distance, size, historical relationships and the real exchange rate and capture factors specific to the importer year.

except for the Sri Lankan FTA because the related dummies are not significant. We only calculate trade creations for Sri Lanka, but they are not positive.

## CHAPTER NO 6

### CONCLUSIONS AND WAY FORWARD

#### 6.1 Introduction

This chapter presents a summary of our working on welfare analysis from trade creation and trade diversions and outlines major conclusions. We assess the welfare impact of the FTAs of Pakistan with Sri Lanka, China, and Malaysia by utilising a variety of empirical models and estimation techniques with various datasets. We use different empirical models including the gravity model for aggregate trade, the disaggregated gravity model for sectoral level trade, the Viner Model for industry-level trade and the Lloyd & MacLaren model for product groups. We estimate models using four datasets: (1) aggregated trade, (2) sectoral level trade, (3) industry-level trade, and (4) product grouping

Except for the Lloyd and MacLaren model, all models have been estimated using Poisson Pseudo Maximum likelihood method to tackle the presence of heteroskedasticity, zero trade values, and log-linear specification of gravity equation. These are factors that the OLS does not attend. Further, we estimate the models for exporter fixed effects, exporter-year fixed effects, and exporter-industry fixed effects using PPML. The Lloyd and MacLaren model is based on calculations for a change in actual trade volume, a change in extrapolated trade volume, a change in terms of trade and a change in extrapolated<sup>203</sup> terms of trade.

We add to the literature in diverse ways. Firstly, we quantify the net welfare from the free trade agreements of Pakistan. Secondly, we give insights into the welfare

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<sup>203</sup>For extrapolation, geometric mean growth rates have been used in Lloyd and MacLaren model.



implications for the manufacturing and the agricultural sectors, for further policy considerations. Thirdly, we investigate the welfare effects of the three bilateral FTAs of Pakistan at the industry level and product level trade to have breadth-and-depth of an FTA in the context of welfare. Fourthly, we give ex-post analysis using historical data. Fifthly, we use the models, which include the prices and quantities of imports and exports to add the price effects of the net welfare changes. Sixthly, we extend recent Magee (2016) model to calculate the trade creation and the trade diversion from sector-level trade for each of the FTA and all the FTAs collectively. The rest of the chapter is divided into two sections; Section 6.1 gives major conclusions of the study while Section 6.2 draws on some policy lessons and suggests a way forward.

## **6.2 Major Conclusions**

Pakistan gains welfare from all its FTAs, though the magnitude of the welfare gains varies depending on the agreements. All the FTAs<sup>204</sup> create trade (trade creation), but none of the FTAs results in trade diversion. The existence of trade creation and the absence of trade diversion show welfare gains of the FTAs for Pakistan. The tariff cut from the FTA partner countries in comparison with the non-FTA partners increases the imports from the FTA partners. We remain unable to calculate the magnitude of trade diversion because the FTAs of Pakistan do not cause any diversion of trade from non-FTA countries.<sup>205</sup> Pakistan continues to import from other non-FTA partners and has also increased importing from its FTA partners. Thus, the overall imports have increased. The welfare analysis goes from aggregated trade to the product level trade.

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<sup>204</sup> With varying magnitudes

<sup>205</sup> Captured in the estimated coefficient of tariff preference.

To conclude welfare implications from the aggregate trade, we assess<sup>206</sup> the trade creation and the trade diversion from the total trade of Pakistan. Estimations based on aggregate trade data do not show trade creation. The trade creation for China from total exports occurs, but there is no trade diversion in total exports to China. FTA with Sri Lanka does not cause trade creation or trade diversion from both total imports and exports. In the case of the Malaysian FTA, we find evidence of trade creation in total exports to Malaysia. However, this FTA does not cause trade diversion in total exports. By further moving to the sectoral welfare analysis, we find evidence for net positive welfare gains for the manufacturing and the agricultural sectors from all three FTAs. All the FTAs of Pakistan are beneficial for the manufacturing sector of Pakistan, and they create trade for Pakistan. The trade creation from all the FTAs is worth USD 76.48 million that is the welfare gained by Pakistan. The major chunk of the trade creation is credited to PCFTA. Although the estimations show welfare gains from the Sri Lankan and the Malaysian FTAs, the size of welfare gains from these two agreements is exceedingly small.

While accounting for all regional trade agreements, we gain more welfare, which is worth USD 100 million<sup>207</sup>. Out of this welfare gain, again a major part goes to PCFTA along with a considerable share to the other two free trade agreements. The maximum welfare gain is the result of regional trade agreements while considering the industry related unobserved effects. The welfare gain reaches to USD 543.85 million for all the regional trade agreements including the RTAs and the FTAs. There are products

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<sup>206</sup> The word “assess” is used here because the dummy variable approach to examine the trade creation and the trade diversion does not quantify both rather this approach gives the assessment of the existence of trade creation, trade diversion. This only leads to assess the welfare gains or losses, not the magnitude of the gains or losses.

<sup>207</sup> The value of trade creation from the estimations using all RTAs.

available with the revealed comparative advantage that can raise the trade creation of manufacturing imports from these regional trade agreements.

The welfare gains from the agricultural imports are also witnessed from the regional trade agreements of Pakistan. Tariff cut-induced increase in agricultural imports shows the welfare gain because of the trade creation. We do not find the significant FTA dummies so the share of the FTAs in the welfare gain cannot be separated.

We further move to analyse the welfare implications for the industry level trade. The evidence suggests that the industry-level trade is positive and there are no welfare losses from the FTAs. Pakistan's industry gains from all the FTAs and the RTAs. The results are robust when controlled for the effects<sup>208</sup> of distance, size, historical ties, the real exchange, and the effects specific to the time. The major share in the net welfare gains of Pakistan is credited to PCFTA, while the least welfare gain is from PSFTA.

Going into more details and considering the unit prices, export and import quantities and their trade values, the positive welfare changes for trade at product groups<sup>209</sup> belong to 19 product groups from PSFTA. Twelve product groups cause welfare loss; however, we have net welfare gains from the change in trade volume. If PSFTA would not have been effective, the counterfactual analysis predicts worse trade conditions between Pakistan and Sri Lanka. By signing this agreement, Pakistan has improved terms of trade, a confirmation of welfare gain for Pakistan. In the absence of PSFTA, Pakistan would have experienced an adverse change in terms of trade, causing a reduction in welfare for Pakistan.

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<sup>208</sup> Using exporter-year fixed effects

<sup>209</sup> The product groups are at HS 4-digit from the Lloyd and MacLaren model.

Pakistan experiences a positive change in trade of 793 product groups<sup>210</sup> and adverse change in trade of 240 product groups because of PCFTA. The net change in trade is welfare enhancing for Pakistan, and the counterfactual analysis confirms the same. The terms of trade are negative which shows lower welfare gains. The terms of trade are not in favour of Pakistan. However, the change in trade stays positive. Pakistan can gain more from the trade with China by improving its terms of trade. The overall welfare gains<sup>211</sup> for Pakistan are worth USD 184 million.

From the Malaysian FTA, we find a positive change in the trade of 131 product groups and a negative change in the trade of 117 product groups, however, the negative change outweighs the positive change and net change is negative. We conclude a decline in welfare from the change in trade and the counterfactual analysis shows the situation could have been worse in the absence of PMFTA. Pakistan enjoys improved terms of trade with Malaysia even though the net change in trade volume is negative.

From the product group analysis, we conclude that the countries with a high concentration of exports and imports in a few products do not enjoy a much from the FTAs. It is necessary to diversify the trade to reap the fruits of FTAs fully. The FTAs could not divert trade from non-FTA partners because of two reasons: (1) The agreements that grant higher concessions to the products either have lower trade volume or lower trade potentials and (2) the products with higher trade volume and higher trade potentials are granted lower concessions. Hence, Pakistan is unable to reap the full benefits of these agreements.

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<sup>210</sup> 63 % of total product groups

<sup>211</sup> Overall welfare gains are calculated by adding the change in trade volume and change in terms of trade.

Consumer gains are based on the accessibility of a variety of products at lower prices. The consumers of Pakistan gain from these FTAs because the prices of several import products are reduced after precluding tariff, and consequently, the import demand for the products for the FTA partners is enhanced. In the case of PCFTA, the imports from China have increased, and it can be concluded that the Pakistani consumers gain because of the availability of versatile products at cheaper rates. Producers, however, are worse off because of high competition because of trade liberalisation caused by the FTAs. The availability of a variety of goods at cheaper rates is causing lower local production.

Currently, many “Made in China” products are available in the local markets at cheaper rates displacing the local production of those products in competition with “Made in Pakistan” products. The consumer gains from the rest of the two free trade agreements are not significant as the imports from PSFTA and PMFTA have not increased substantially. The imports from Malaysia declined in 2016 after reaching its maximum volume in 2011 and declined below the volume of imports that was in 2007, before signing of PMFTA. On the other side, in absolute terms, the imports from Sri Lanka have increased with the implementation of PSFTA, but the increase is not significant because the share in Pakistan’s total imports has declined continuously. Hence, we can deduce that the consumer gains from PSFTA and PMFTA are not significant. On the same note, the producers have not lost much because imports from Sri Lanka and Malaysia have not displaced their products. Although, the increase in exports to both the countries, Sri Lanka, and Malaysia, have increased sluggishly and the FTAs have not brought a considerable change in exports, yet we can deduce that the producers have gained from these FTAs.

From the aggregated trade to the product level trade, it has been noted that the trade performance of both the countries is not very impressive under PSFTA. The exports to

Sri Lanka have grown sluggishly and simultaneously the imports from Sri Lanka have decreased. The reasons behind the sluggish growth in exports to Sri Lanka are the imposition of Special Commodity Levy by Sri Lanka unilaterally on Pakistan's agricultural products and charging of high tariff rates on the top exporting products. The imports from Sri Lanka have declined while the exports to Sri Lanka have grown indolently. The country also faces a perplexing scenario as it does not have a concession in the top exporting products; it enjoys concession on the products which are not exported to Sri Lanka and does not export the products on which it enjoys concession. Same is the scenario with imports from Sri Lanka. We presume that this confusing scenario is another cause of lower trade from PSFTA. It is also learned that Pakistan's exports to Sri Lanka are not affected by concessions given to India as it is perceived. Pakistan has a tariff advantage over India in many products.<sup>212</sup>

While studying the trade chapters of Economic surveys of 1990's until the late 2000's, we do not find China in Pakistan's top trade destination in the trade scenario; nevertheless the situation changed melodramatically soon after the execution of PCFTA. Trade performance turns significant with China; whether it is exports to China or imports from China, both perform well. China has gained the momentum in exporting to Pakistan and has received 29 percent share of Pakistan's imports. Pakistan has also performed well in exports; however, this is far behind the increase in imports from China. It is conclusive for us that the gap between exports performance and import performance is because of the mismatch of positive offer lists between the two partners. The composition of the FTAs is a cause in the unenjoyable performance of the PMFTA. Like PSFTA, this FTA is not efficient in offering concessions to Pakistan. Thus, the

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<sup>212</sup>“The Sri Lanka - Pakistan Business Council,” 2015 have provided the list of commodities in which Pakistan has tariff advantage over India.

trade performance of Pakistan and Malaysia is slow. Both the countries do not utilise the concessions offered to one another. In PTA, Indonesia offers Pakistan more concession in tariff on palm oil in competition with Malaysia. Resultantly, the major importing product from Malaysia has alone caused a huge decline in the import bill.

Further, it is revealed that the FTA's could not break the concentration of exports because they are highly concentrated in a few items. For decades, the exports of Pakistan are highly concentrated. Pakistan's export bill is dominated by cotton manufacturers, leather, rice, synthetic textiles, and sports goods for many years. In 2015-2016, only cotton manufacturers, leather and leather manufactured, and rice has contributed 71.5% of Pakistan's total exports. The top 10 exports to Sri Lanka are concentrated with those products that have been exported before PSFTA. Salt, Sulphur, earth, stone, plaster, lime and cement (chapter 25 at HS-2 digit), Beverages, spirits, and vinegar (chapter 22 at HS-2 digit) and knitted or crocheted fabric (chapter 60 at HS-2 digit) have been included in the top 10 list, however, the rest of the 7 products remain the same as they were before PSFTA.

The top 10 exports to China are less concentrated as compared to Sri Lanka. The export of cereals (chapter 10 at HS-2 digit), beverages, spirits, and vinegar (chapter 22 at HS-2 digit), copper and articles thereof (chapter 74 at HS-2 digit) and edible fruit, nuts, peel of citrus fruit, melons (chapter 8 at HS-2 digit) have been included in the list of top 10 exports with the implementation PCFTA. Before PCFTA, these products were not the top exporting products. Export Concentration of Pakistan to Malaysia changed a bit. In the list of top 10 products, products under 3 chapters (chapter 88 including aircraft, spacecraft, and parts thereof; chapter 25 containing salt, sulphur, earth, stone, plaster, lime and cement; chapter 22 containing at HS 2-digit beverages, spirits and vinegar) are not included which were not a part of the list before the implementation of PMFTA.

Although few more products are included in the top 10 exports to Sri Lanka, China and Malaysia, the volume of these products does not leave a handsome impact on the export performance of these FTAs.

Same as for the export concentration in a few products, the imports of Pakistan are also highly concentrated in 8 products for many years. The statistics show that the products that are overriding other products include machinery, petroleum & products, chemicals (excluding fertiliser), transport equipment, edible oil, iron and steel, fertiliser and tea. PSFTA could not diversify the imports from Sri Lanka. Table 3 is clear in the concentration of imported products from Sri Lanka. Three product chapters with truly little import volume has become a part of topmost products list and those chapters are chapter 89 covering ships, boats and other floating structures, chapter 62 containing articles of apparel, accessories, not knit or crochet and chapter 47 including of the pulp of wood, fibrous cellulosic material, waste etc.

The ten topmost imports from Malaysia are also concentrated in the same products as they were before executing PMFTA. Three product chapters are included in the list from 2003 to 2015. These chapters are mineral fuels, oils distillation products, etc (chapter 27 at HS-2 digit), aircraft, spacecraft, and parts thereof (chapter 88 at HS-2 digit) and residues, wastes of the food industry and animal fodder (chapter 23 at HS-2 digit). The concentration of imported products is of a high degree as we see from the statistics above. Although, all the three FTAs have added a few product chapters to the list of imports, yet they have not changed the concentration as it should be and could not diversify the imports at a higher degree.

The major trade destinations of Pakistan are also stagnant. Major import markets of Pakistan are USA, Japan, Saudi Arabia, Kuwait, UAE, UK, Germany, Malaysia. For the



last few years, Indonesia, India, and China have been added to the list<sup>213</sup>. The growth of imports from China is very steep since 2011 and China is now the top import market of Pakistan. PSFTA and PMFTA have not altered the positions of Sri Lanka and Malaysia as imports markets of Pakistan. Sri Lanka and Malaysia have not made their markets as Pakistan's major import markets. Before the implementation of the FTAs, major export markets of Pakistan were USA, Germany, Japan, UK, Hong Kong, Dubai, and Saudi Arabia<sup>214</sup>. However, now the picture is changed in case of the export markets of Pakistan.

The major exports markets of Pakistan are the USA, China, UAE, Afghanistan, UK, Germany, France, Bangladesh, Italy, and Spain<sup>215</sup>. Remarkably, China has been included in the top export markets of Pakistan which earlier it was not. China is now the second major export market of Pakistan with 8 percent share in exports<sup>216</sup>. But Pakistan has remained unable to promote its exports to Sri Lanka and Malaysia and in the result of this share of exports to these two countries is not outstanding.

### **6.3 Policy Recommendations**

Based on the findings of our study and after studying the FTAs in detail, we draw a few policy lessons to keep them in consideration while re-negotiating and reviewing the current FTAs to maximise the benefits for Pakistan. The study of all the three FTAs presents a mixed scenario. There are three different situations<sup>217</sup> are that (1) Pakistan is not blessed with the tariff rate reduction on high exporting products; (2) Pakistan does not utilise the tariff lines that have concessions; and (3) Pakistan is not granted with

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<sup>213</sup>Economic Surveys of Pakistan from 2000-2001 to 2016-2017

<sup>214</sup>Economic Survey of Pakistan, 2002-03 & 2006-07

<sup>215</sup>Economic Survey of Pakistan, 20016-17

<sup>216</sup>Economic Survey of Pakistan, 20016-17

<sup>217</sup> These situations are workable for total exports and imports.

concessions in high trade potential products. The same is the case with Pakistan's treatment of the FTA partners. We infer that the concerned stakeholders such as the business community, chambers of commerce and industry, and other concerned ministries were not the part of the negotiations of the all the three FTAs.

Currently, Pakistan is following the Strategic Trade Policy Framework 2015-18, targeting export to rise by USD 35 billion by the end of June 2018. However, this policy framework seems unable to achieve its target because the current exports are USD 20.54 billion. This policy framework is heavily criticised by the analysts, business community and other stakeholders because of its ineffectiveness to achieve the targets. It is criticised to be a hodgepodge of raw ideas, lacking planned proposals, and focusing on mistaken ambitions of high targets. The policy framework has the ideas from the earlier frameworks, which were not successful and could not achieve the targets. It is generally believed that the ministry of Commerce does not work autonomously and many of its decisions are taken by the Ministry of Finance, the Federal Bureau of Revenue, and the State Bank of Pakistan.

The ministry of Commerce of Pakistan needs to address the following things while negotiating new trade agreements or re-negotiating the already active FTAs. **Firstly**, we can see from our findings on PCFTA that the imports from China displace the local production, although the imports from China at lower prices have increased consumer surplus. Because of PCFTA, the protection to inefficient local producers is eroded and that is the reason they are highly vulnerable to lose. Pakistani firms are inefficient because of several reasons: the excessive cost of doing business, old production techniques, lower research and development, energy shortages and the imposition of various taxes by the revenue authorities at the provincial and federal levels.

The concerned authority (definitely the Ministry of Commerce) needs to work with the Ministry of Industries and Production and other stakeholders to take care of the local producer before opening up the foreign competition to them. Without making the local producer able to compete with foreign competition, the PCFTA<sup>218</sup> and other such FTAs will be continuously worsening off the local producer. The sad plight of the local producer is expected to be dangerous for the economy in the long run as it will increase unemployment, decrease production and national income. This is also leading Pakistan to be a consumer society, heavily dependent on imports from China and other major developed countries.

Secondly, the commodities being included in positive (negative) offer list are obligatory to be based on rigorous research findings; the research to find the tariff lines which are of high trade potentials and high revealed comparative advantage. Pakistan must ensure getting tariff concessions on the high trading products such as the products on the top 10 trading chart. The concession offers on the commodities with the least trade potential and lower revealed comparative advantage are of no use and are there just to stuff the pages of the agreements. Specialisation is on the back of trade creation and trade diversion. Exports of low cost and efficiently produced products and imports of excessive cost and inefficiently produced products affect trade creation and trade diversion.

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<sup>218</sup> Second phase of PCFTA is under negotiations and eight rounds of negotiations are over. Pakistan demands China to (1) grant more concession of its top 70 export products, which are 80% of Pakistan's current exports to China, initially and to 300 products gradually (2) give tariff concessions to Pakistan as China has granted to ASEAN (3) encourage exports from Pakistan to reduce the trade imbalance between Pakistan and China.

Thirdly, all the FTAs need to be re-negotiated<sup>219</sup> with a special focus on exports from Pakistan. The country is unable so far to promote exports to the FTA partners. Again, inefficient offer lists of the FTAs are one reason. It must start the discussion on the promotion of Pakistani exports to the FTA partners., Regardless of the country's all-weather friendship and excellent strategic relationships with China, Pakistan is unable to get its intermediate products included in the final production of products. Another example is of the unilateral imposition of duty by Sri Lanka on various products under the 'Special Commodity Levy' since 2011. This levy has declined Pakistan's exports to Sri Lanka hence, Pakistan needs to necessitate negotiation on such types of unilateral levies.

Fourthly, for gains from trade liberalisation, the balance of trade matters a lot. The growth of imports outweighs the growth of exports, and thus, the balance of payment gets worsened. The growth of imports is found to be more than the growth in exports once the trade liberalisation occurs.<sup>220</sup> Pakistan observed this situation specifically in the case of the Chinese free trade agreement. The trade balance is worsening with every passing year. This worsened trade balance is induced by a sharp slowdown in export growth and upsurge of import growth posing a great threat to the macroeconomic environment of the country. Cheaper imported products are so far taking the lead in making the society a 'consumer society' and can be controlled by putting forward an efficient research-oriented export promotion policy.

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<sup>219</sup> This policy recommendation is related with our analysis. We deduce that the FTAs could not change the trade conditions and could not diversify the import and export products. Hence, re-negotiation is needed to make the trade conditions conducive for both imports and exports of Pakistan with Sri Lanka China, and Malaysia.

<sup>220</sup>(Santos- Paulino & Thirlwall, 2004)

Exports from Pakistan are highly concentrated in a few products and markets for many years. The export concentration needs to be chalked out and be replaced by export diversification. Export promotion policies of the governments have failed so far to diversify the exports. Most of the times, exaggerating claims cause the failure and targets are far away from the reality, exposing the non-seriousness of the governments. As in the Strategic Trade Policy Framework 2015-18, the exports are set to reach USD 35 billion by the end of June 2018, but until 2016, the exports are USD 20.5 billion.<sup>221</sup> A very necessary ingredient of the export policy is to introduce export diversification. This can be achieved only when all the stakeholders are serious and rely heavily on realities instead of claims. The export destinations are also focussed around a few countries since a long time. Further, factors such as load shedding and the energy crisis, a lack of research and development locally for figuring out the products that can diversify the exports, perseverance of old technology and the undue political uncertainty in the country do not allow for good export growth. These issues are to be taken care of by the relevant ministries and the government departments.

Fifthly, the concerned departments need to start a continuous awareness campaign for the local producers so that they can be well informed about the concessions and benefits of the FTAs. The local producers consider least export potentials in Sri Lankan markets. A major chunk of this class has not visited Sri Lanka or met with Sri Lankan importers and they have been neglecting this market based on their misperception while India has captured a big share of Sri Lankan export market. The producers are also not aware of trading potentials with Malaysia and China. Expos in Pakistan and in the FTA partner countries for the products with good trade potential can stimulate the demand for those

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<sup>221</sup> As per the statistics of WITS

products internationally and it would be a good mechanism and a platform for the interaction of the local producer and the international buyer.

Sixthly, it must include all the stakeholders for consultation such as the business community, chambers of commerce and industry, experts in all sectors at federal and provincial levels, ministries and concerned departments. The inclusion of all stakeholders would address their concerns.

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## APPENDICES

### Appendix A

#### A.1. Economic Integration

Naively, economic integration is mere a unification of different economic policy indicators. Unlike other disciplines, in economics, scientific theories perceived and explicated on economic integration mechanism. (Suranovic, 2010) defines an economic integration is a sort of “Trinity” by which trade policies, fiscal policies and monetary policies are aligned with trading countries. (Molle, 2006) defines integration as “the gradual elimination of economic frontiers among independent states.” He interprets that an economic integration is accomplished through dynamic to static sense. When integration is in embryonic stages, the integration would be dynamic as opposed to static integration in which an integration completes all its stages and the participating countries in integration reach to work as one entity.

Magnanimously, market integration and policy integration are the two mutually exclusive attributes explaining an economic integration. Economic integration is a fledgling mechanism that undergoes with market integration. Market integration carries away any impediment to trade of goods, services and factors of production with trading countries; meanwhile, policy integration brings around common policies for the trading countries. Devising welfare of economic agents in partner countries, called economic sense, and elimination of barriers for trade integration are the two coherent themes infused in market and policy integration ((Molle, 2006). Institutional economics deals with an elimination of barriers for trade exhaustively for the attainment of efficient common policies. Market integration is a personification for economic integration which devolves into three stages which are Free Trade Area (FTA), Customs Union (CU), Common Markets (CM) and makes an embodiment with “One Entity” (Molle,

2006). Policy integration is also reared into three stages which are Economic Union (EU), Monetary Union (MU) and Economic and Monetary Union (EMU).

Sánchez de Paz *et al.*, (1999), economic integration processes are realized through the preferential trade club, customs union, economic union, and finally monetary union transitions.

## **A.2. Regional Trade Agreements and their Type**

The regional trade agreement is formed when some countries form a group and eliminate all tariffs among the countries without any change in tariffs with rest of the world. (Feenstra, 2003). Regional trade agreements are unilateral, bilateral and multilateral with respect to the number of trading partners involved.

Unilateral trade agreements<sup>222</sup> are imposed on one country by the other country yielding benefit only to the imposing country. Such trade agreements are imposed by developed countries on the developing countries with almost no benefit to the developing country (Qadri, 2012). GSP plus granted to Pakistan by the European Union in a unilateral trade agreement.

Ganelli & Tervala (2015) estimated New Keynesian model in which they concluded that unilateral trade liberalization reduces welfare due to terms-of-trade deterioration, creating an incentive for a trade agreement.

Bilateral trade agreements are mutually signed by the two partner countries with the aim of the benefit of both trading partners (Carrere, 2006). Bilateral trade agreements are called second best option in the regional trade agreements.<sup>223</sup>

Multilateral trade contracts started in 1995 with the General Agreement on Trade in Services (GATS) to liberalize trade services among the WTO members and to decide

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<sup>222</sup> Trade facilitation through unilateral reduction in tariffs and facilitation through other non-tariff barriers is termed as “unilateral trade agreements” even though it is not agreement per se as it has no partner on the other side.

<sup>223</sup> See (Yilmazkuday & Yilmazkuday, 2014) and (Abeyratne, 2012)

which principles are good for trading contracts and which principles will be covered during the process of trade. Multilateral trade agreements are signed by more than two countries at the same time for the benefit for all. Multilateral trade agreements are considered as a first best option for regional integration as they involve the benefits of many countries simultaneously. But because of many partners in one agreement, multilateral trade agreements are hard to sustain. Yilmazkuday & Yilmazkuday (2014) find them difficult to sustain because of the lack of forcing authority. Multilateral trade agreements are not associated with measuring more liberal trade policy. Heterogeneity in political preferences played a significant role in determining the relative merits of multilateral approaches to trade liberalization. A multilateral approach to trade liberalization come true when the trading countries share their same political preferences, (Stoyanov & Yildiz, 2015).

The nature of regional trade agreements varies with respect to tariff reduction and the partner countries. All member countries of GATT should be treated equally for tariff reduction under most favored nation status<sup>224</sup>. If some of the countries form a group to reduce all the tariffs among them, this is the shape of the preferential trade agreement. If a group of countries makes the decision for zero tariffs among them and unified tariff for rest of the world, it is **customs union**. When a group of countries decides zero tariffs for mutual trade and the countries of the group set their own different tariffs for the rest of the world, it is termed as **free trade area**. (Robert C Feenstra, 2003; Molle, 2006 and Panagariya, 2000)

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<sup>224</sup>Article I of GATT

## Appendix B

### Trade Agreements of Pakistan

Sr. No	Trade Agreement	Country
1	Transit Trade Agreement	Afghanistan
2	South Asian Free Trade Agreement	SAARC
3	Free Trade Agreement	Malaysia
4	Free Trade Agreement	China
5	Free Trade Agreement	Sri Lanka
6	Preferential Trade Agreement	Iran
7	Preferential Trade Agreement	Mauritius
8	Preferential Trade Agreement	Indonesia

Source: Ministry of Commerce, Pakistan

## Appendix C

### Table C.1. Tariff Reduction Modality of China

Category No.	Track	No. of Tariff Lines	% of tariff lines at 8 digit
I	Elimination of Tariff (Three Years)	2681	35.50%
II	0-5%	2604	34.50%
III	Reduction on Margin of Preference of 50% (five years)	604	8%
IV	Reduction on Margin of Preference from 20% (five years)	529	7%
V	No Concession	1132	15%

Source: Ministry of Commerce, Govt. of Pakistan

### Table C.2. Tariff Reduction Modality of Pakistan

Category No.	Track	No. of Tariff Lines	% of Tariff Lines at 8 digit
I	Elimination of Tariff (Three Years)	2423	35.60%
II	0-5%	1338	19.90%
III	Reduction on Margin of Preference of 50% (five years)	157	2%
IV	Reduction on Margin of Preference from 20% (five years)	1768	26.10%
V	No Concession	1025	15%
VI	Exclusion	92	1.40%

Source: Ministry of Commerce, Govt. of Pakistan

### Pakistan Malaysian Free Trade Agreement

#### Table C.3. Fast Track (FT)

x = Base Rate (%)	MPCEPA Preferential Tariff Rate (%)	
	2008	2009
$X \geq 30$	15	0
$20 \leq X < 30$	10	0
$10 \leq X < 20$	5	0
$5 \leq X < 10$	5	0
$X < 5$	0	0

Source: Ministry of Commerce, Govt. of Pakistan

#### Table C.4. Normal Track (NT)

x = Base Rate (%)	MPCEPA Preferential Tariff Rate (%)				
	2008	2009	2010	2011	2012
$X \geq 30$	25	15	10	5	0
$20 \leq X < 30$	20	15	10	5	0
$10 \leq X < 20$	15	10	5	5	0
$5 \leq X < 10$	5	5	5	5	0
$X < 5$	Standstill		0	0	0

Source: Ministry of Commerce, Govt. of Pakistan

#### Table C.5. Sensitivity Track 1 (ST1)

x = Base Rate (%)	MPCEPA Preferential Tariff Rate (%)						
	2008	2009	2010	2011	2012	2013	2014
$X \geq 30$	25	10	10	5	5	5	5
$20 \leq X < 30$	20	10	10	5	5	5	5
$10 \leq X < 20$	15	10	10	5	5	5	5
$5 \leq X < 10$	5	5	5	5	5	5	5

Source: Ministry of Commerce, Govt. of Pakistan

#### Table C.6. Sensitivity Track 2 (ST2)

x = Base Rate (%)	MPCEPA Preferential Tariff Rate (%)						
	2008	2009	2010	2011	2012	2013	2014
$X \geq 20$	20	20	20	15	15	15	10
$10 \leq X < 20$	15	15	10	10	10	10	10

Source: Ministry of Commerce, Govt. of Pakistan



Table C.7. Sensitivity Track 3 (ST3)

x = Base Rate (%)	MPCEPA Preferential Tariff Rate (%)			
	2008	2009	2010	2011
X ≥ 50	40	30	25	20
40 ≤ X < 50	35	30	25	20
30 ≤ X < 40	25	25	20	20
20 ≤ X < 30	25	25	20	20

Source: Ministry of Commerce, Govt. of Pakistan

Table C. 8. Margin of Preference Track 1 (MoP T1)

Year	2008	2009	2010	2011
Margin of Preference of the prevailing Applied MFN Tariff Rate in the current year or MFN rate upon entry into force of the Agreement, whichever is lower	5%	10%	15%	20%

Margin of Preference Track 2 (MoP T2)

Margin of Preference of the prevailing Applied MFN Tariff Rate in the current year or MFN rate upon entry into force of the Agreement, whichever is lower			
Tariff Lines	2008	2009	2010
1511 10 00, 1511 90 10, 1511 90 20, 1511 90 30, 1511 90 90, 1513 21 00, 1513 29 00;	10%	10%	15%
1513 11 00, 1513 19 00.	10%	10%	10%

Source: Ministry of Commerce, Govt. of Pakistan

## Appendix D

### Trade Creation from Manufacturing sector:

Table D.1. Exporter Fixed Effects &amp; First Specification

Year	FTAs		PCFTA		PSFTA		PMFTA	
	Value	Perc.	Value	Perc.	Value	Perc.	Value	Perc.
2005	0.01	0	0	0	0.01	0	0	0
2006	0.05	0.02	0	0	0.05	0.02	0	0
2007	8.11	2.55	8.09	2.54	0.02	0.01	0	0
2008	17.12	5.18	18.57	5.62	0.01	0	-1.47	-0.44
2009	7.03	3.03	6.09	2.63	0	0	0.93	0.4
2010	7.64	3.04	7.43	2.96	0	0	0.21	0.08
2011	5.74	2.21	8.16	3.14	0	0	-2.41	-0.93
2012	7.94	3.46	7.5	3.27	0.01	0	0.43	0.19
2013	7.04	3.41	7.03	3.4	0.01	0.01	0.01	0
2014	6.72	3.23	5.78	2.79	0.02	0.01	0.91	0.44
2015	9.04	4.83	8.18	4.37	0.02	0.01	0.84	0.45
2003-2015	76.43	2.72	76.84	2.73	0.15	0.01	-0.56	-0.02

Values are in the million dollars

**Trade Creation from Manufacturing Sector**  
**Table D.2. Exporter Fixed Effects & Second Specification**

Year	Trade Creation								
	RTAs		PCFTA		PSFTA		PMFTA		
	Value	%	Value	%	Value	%	Value	%	
2005	0.05	0.02	0	0	0.05	0.02	0	0	
2006	0.05	0.02	0	0	0.05	0.02	0	0	
2007	17.09	5.37	17.07	5.36	0.01	0	0	0	
2008	10.65	3.22	8.08	2.44	-0.01	0	0.72	0.22	
2009	14.12	6.08	9.36	4.03	0.01	0	2.58	1.11	
2010	15.02	5.98	10.02	3.99	0.02	0.01	3.2	1.28	
2011	12.2	4.69	9.74	3.75	0.01	0	0.56	0.21	
2012	15.5	6.76	11.94	5.21	0.01	0	1.95	0.85	
2013	9.53	4.61	10.92	5.29	0.04	0.02	1.36	0.66	
2014	1.82	0.88	2.87	1.38	0.02	0.01	0.82	0.39	
2015	4.56	2.44	-2.44	-1.31	0.02	0.01	0.69	0.37	
2003-2015	100.58	3.58	77.56	2.76	0.23	0.01	11.88	0.42	

Values are in the million dollars,

**Trade Creation from Manufacturing sector**  
**Table D.3. Exporter Fixed Effects & Third Specification**

Year	Trade Creation	
	PMFTA	
	Value	Percentage
2005	-0.03	-0.01
2006	0.02	0.01
2007	1.51	0.48
2008	1.41	0.43
2009	1.17	0.5
2010	0.2	0.08
2011	-1.32	-0.51
2012	0.36	0.16
2013	-0.16	-0.08
2014	10.13	4.88
2015	11.99	6.41
2003-2015	25.3	0.9

Values are in the million dollars

**Trade Creation from Manufacturing sector:**  
**Table D.4. Exporter Year Effects**

Year	Trade Creations									
	FTAs		RTAs		PCFTA		PSFTA		PMFTA	
	Val.	Perc.	Val.	Perc.	Val.	Perc.	Val.	Perc.	Val.	Perc.
2005	-0.03	-0.01	-0.03	-0.01	0	0	-0.03	-0.01	0	0
2006	0.02	0.01	0.02	0.01	0	0	0.02	0.01	0	0
2007	1.55	0.49	1.55	0.49	1.53	0.48	0.02	0.01	0	0
2008	-9.02	-2.73	-8.98	-2.71	1.99	0.6	0.02	0.01	-11.04	-3.34
2009	-3.67	-1.58	-3.56	-1.53	-0.69	-0.3	-0.02	-0.01	-2.96	-1.28
2010	-5.97	-2.38	-6.44	-2.57	-0.52	-0.21	-0.03	-0.01	-5.43	-2.16
2011	-15.09	-5.8	-15.19	-5.84	-0.67	-0.26	-0.02	-0.01	-14.4	-5.54
2012	-4.76	-2.08	-4.8	-2.09	-0.79	-0.34	0.01	0.01	-3.98	-1.74
2013	-5.17	-2.5	36.37	17.61	-0.86	-0.42	-0.03	-0.01	-4.28	-2.07
2014	9.84	4.74	87.44	42.12	9.43	4.54	0.02	0.01	0.38	0.18
2015	11.99	6.41	11.88	6.35	11.26	6.02	0.02	0.01	0.7	0.38
2003-2015	-20.31	-0.72	98.28	3.49	20.69	0.74	0	0	-41	-1.46

Values are in the million dollars

**Trade Creation of Manufacturing Sector:  
Table D.5. Exporter Industry Fixed Effects & First Specification**

Year	Trade Creation							
	FTAs Value	Perc.	PCFTA Value	Perc.	PSFTA Value	Perc.	PMFTA Value	Perc.
2005	0.04	0.01	0	0	0.04	0.01	0	0
2006	0.17	0.05	0	0	0.17	0.05	0	0
2007	15.7	4.93	15.75	4.95	-0.04	-0.01	0	0
2008	9.17	2.77	7.97	2.41	-0.01	0	1.21	0.37
2009	8.61	3.71	6.96	3	0.01	0	1.64	0.71
2010	9.78	3.9	8.77	3.49	0.02	0.01	1	0.4
2011	8.94	3.44	9.87	3.79	0.01	0.01	-0.94	-0.36
2012	9.82	4.28	8.72	3.8	0.04	0.02	1.06	0.46
2013	8.56	4.14	8.03	3.89	0.02	0.01	0.51	0.25
2014	67.86	32.69	69.64	33.54	-0.04	-0.02	-1.74	-0.84
2015	-152.54	-81.55	-153.27	-81.94	-0.02	-0.01	0.74	0.4
2003-2015	-13.88	-0.49	-17.58	-0.62	0.2	0.01	3.49	0.12

Values are in the million dollars,

**Trade Creation of Manufacturing Sector:  
Table D.6. Exporter Industry Fixed Effects & Second Specification**

Year	Trade Creation							
	RTAs Value	Perc.	PCTFA Value	Perc.	PSFTA Value	Perc.	PMFTA Value	Perc.
2005	0.06	0.02	0	0	0.06	0.02	0	0
2006	0.04	0.01	0	0	0.04	0.01	0	0
2007	30.07	9.44	30.04	9.44	0.02	0.01	0	0
2008	-132.74	-40.15	-132.38	-40.04	0.04	0.01	3.35	1.01
2009	17.74	7.64	11.54	4.97	0	0	3.56	1.53
2010	20.04	7.98	14.35	5.71	0.03	0.01	2.95	1.18
2011	21.57	8.3	16.1	6.19	0.02	0.01	2.2	0.85
2012	19.97	8.71	14.49	6.32	0.05	0.02	2.93	1.28
2013	17.36	8.4	13.32	6.45	0.04	0.02	2.08	1.01
2014	476.52	229.53	480.76	231.58	0.04	0.02	-5.43	-2.62
2015	73.22	39.14	75.2	40.2	0.03	0.02	-7.89	-4.22
2003-2015	543.85	19.33	523.42	18.6	0.37	0.01	3.74	0.13

Values are in the million dollars,

Perc.: percentage of the imports

**Trade Creation of Manufacturing Sector:  
Table D.7. Exporter Industry Fixed Effects & Third Specification**

Year	Trade Creation	
	PMFTA Value	Percentage
2005	0	0
2006	0	0
2007	0	0
2008	2.59	0.78
2009	3.02	1.3
2010	2.19	0.87
2011	1.54	0.59
2012	2.44	1.07
2013	1.68	0.81
2014	-7.01	-3.38
2015	-4.4	-2.35
2003-2015	2.04	0.07

Values are in the million dollars,

Appendix E

Trade Creation from Agriculture Sector

First Specification is not robust from exporter fixed effects so trade creation is not calculated.

Table E.1. Exporter Fixed Effects & Second Specification

Year	Trade Creation									
	RTAs		FTAs		PCFTA		PSFTA		PMFTA	
	Value	Perc.	Value	Perc.	Value	Perc.	Value	Perc.	Value	Perc.
2005	0.264	1.5	0.264	1.5	0	0	0.264	1.5	0	0
2006	-6.402	-39.18	-6.402	-39.18	0	0	-6.402	-39.18	0	0
2007	-1.311	-6.2	-1.311	-6.2	-0.431	-2.04	-0.88	-4.16	0	0
2008	11.189	43.53	1.024	3.98	0.087	0.34	1.028	4	-0.091	-0.36
2009	6.5	41.21	1.534	9.72	0.923	5.85	0.592	3.76	0.018	0.11
2010	-4.323	-24.24	-4.343	-24.35	-5.93	-33.25	1.241	6.96	0.346	1.94
2011	6.76	37.52	1.542	8.56	1.454	8.07	0.039	0.22	0.048	0.27
2012	17.428	133.66	0.534	4.09	0.439	3.37	-0.014	-0.11	0.108	0.83
2013	1.663	15.91	0.551	5.27	0.41	3.92	0.052	0.5	0.089	0.85
2014	2.176	21.06	1.484	14.36	1.391	13.47	0.002	0.02	0.091	0.88
2015	2.532	25.69	1.544	15.66	0.988	10.02	0.432	4.39	0.124	1.25
2003-2015	36.474	20.71	-3.582	-2.03	-0.669	-0.38	-3.646	-2.07	0.732	0.42

Values are in the million dollars

Trade Creation from Agriculture Sector:

Table E.2. Exporter Fixed Effects & Third Specification

Year	Trade Creation	
	PMFTA	
	Value	Percentage
2005	-0.037	-0.21
2006	-0.353	-2.16
2007	-0.148	-0.7
2008	-1.514	-5.89
2009	-0.116	-0.74
2010	-0.224	-1.26
2011	-1.505	-8.35
2012	-0.036	-0.28
2013	-15.75	-150.74
2014	-1.262	-12.22
2015	-0.12	-1.22
2003-2015	-21.067	-11.96

Values are in the million dollars

**Trade Creation from Agriculture Sector:**  
**Table E.3. Exporter Industry Fixed Effects**

Year	Trade Creation									
	RTAs		FTA		PCFTA		PSFTA		PMFTA	
	Value	Perc.	Value	Perc.	Value	Perc.	Value	Perc.	Value	Perc.
2005	-0.05	-0.26	-0.05	-0.26	0	0	-0.05	-0.26	0	0
2006	-0.49	-2.98	-0.49	-2.98	0	0	-0.49	-2.98	0	0
2007	-0.41	-1.93	-0.41	-1.93	-0.11	-0.51	-0.30	-1.42	0	0
2008	-1.51	-5.9	-2.92	-11.34	-0.24	-0.94	-2.69	-10.45	0.01	0.04
2009	-2.01	-12.74	-0.04	-0.28	0.25	1.6	-0.29	-1.84	-0.005	-0.03
2010	-1.19	-6.68	-1.31	-7.34	-0.19	-1.05	-0.07	-0.39	-1.05	-5.9
2011	4.41	24.48	5.02	27.86	5.02	27.86	-0.04	-0.25	0.04	0.25
2012	-1.34	-10.26	0.12	0.9	0.12	0.9	-0.097	-0.75	0.097	0.75
2013	1.39	13.28	0.66	6.28	0.56	5.37	-0.057	-0.55	0.152	1.46
2014	-4.19	-40.61	-3.62	-35.07	-2.86	-27.73	-0.42	-4.1	-0.34	-3.24
2015	-0.79	-7.99	-0.42	-4.28	-0.07	-0.77	-0.28	-2.81	-0.069	-0.7
2003-2015	-6.18	-3.51	-3.46	-1.97	2.47	1.4	-4.78	-2.71	-1.16	-0.66

Values are in the million dollars

**Appendix F**  
**Trade Creation of Industry Level Trade**  
**Table F.1. Exporter Fixed Effects & Third Specification**

Year	Trade Creation							
	PSFTA		PMFTA		PSFTA*		PMFTA**	
	Value	Perc.	Value	Perc.	Value	Perc.	Value	Perc.
2005	-9.13	-3.51	0.00	0.00	-9.13	-3.51	0.12	0.04
2006	-10.34	-3.38	0.00	0.00	-10.34	-3.38	0.21	0.07
2007	-7.72	-2.40	0.00	0.00	-6.79	-2.11	1.12	0.35
2008	-7.23	-2.06	-10.44	-2.97	3.94	1.12	-7.58	-2.16
2009	-5.27	-2.38	-10.52	-4.76	1.50	0.68	-10.24	-4.63
2010	-5.03	-1.98	-12.63	-4.97	3.55	1.40	-12.60	-4.96
2011	-4.90	-1.74	-21.28	-7.57	-0.51	-0.18	-17.07	-6.07
2012	-5.48	-2.13	-14.95	-5.81	-1.07	-0.42	-10.70	-4.15
2013	-4.25	-1.78	-12.48	-5.22	3.02	1.26	-5.39	-2.25
2014	-3.85	-1.59	-7.38	-3.05	2.01	0.83	-1.74	-0.72
2015	-4.41	-2.09	-4.78	-2.26	0.88	0.42	0.21	0.10
2003-2015	-67.60	-2.29	-94.46	-3.21	-12.94	-0.44	-63.66	-2.16

\*Using coefficient of SF, RTA=1,

\*\* Using coefficient of MF, RTA=1

Values are in the million dollars

**Table F.2. Exporter Year Fixed Effects**

Year	Trade Creation									
	FTAs		RTAs		PCFTA		PSFTA		PMFTA	
	Val.	Perc.	Val.	Perc.	Val.	Perc.	Val.	Perc.	Val.	Perc.
2005	0.116	0.04	0.116	0.04	0	0	0.116	0.04	0	0
2006	0.208	0.07	0.208	0.07	0	0	0.208	0.07	0	0
2007	1.11	0.34	1.11	0.34	0.92	0.29	0.19	0.06	0	0
2008	11.134	3.17	11.134	3.17	2.717	0.77	0.121	0.03	8.296	2.36
2009	6.731	3.04	6.731	3.04	0.207	0.09	0.072	0.03	6.453	2.92
2010	8.423	3.31	8.423	3.31	0.015	0.01	0.004	0	8.404	3.31
2011	4.379	1.56	4.379	1.56	4.149	1.48	0.029	0.01	0.202	0.07
2012	4.421	1.72	4.421	1.72	4.176	1.62	0.043	0.02	0.201	0.08
2013	4.099	1.71	7.217	3.02	3.836	1.6	0.041	0.02	0.221	0.09
2014	5.75	2.38	5.851	2.42	5.451	2.25	0.046	0.02	0.254	0.1
2015	6.604	3.13	5.159	2.44	6.215	2.94	0.047	0.02	0.341	0.16
2003-2015	52.976	1.8	54.75	1.86	27.687	0.94	0.917	0.03	24.372	0.83

Values are in the million dollars,

Perc.: percentage of the imports

**Appendix G**  
**Product Groups from Pakistan-Sri Lanka Free Trade Agreement**  
**Table G.1. Change in Trade Volume (Actual and Extrapolated)**

Sr. No	Product code	Product label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
1	'0801	Coconuts, Brazil nuts and cashew nuts, fresh or dried, whether or not shelled or peeled	-66.22	-392.66
2	'0813	Dried apricots, prunes, apples, peaches, pears, papaws "papayas", tamarinds and other edible ...	-3704.44	255.97
3	'0902	Tea, whether or not flavoured	3102.37	-16787.50
4	'0906	Cinnamon and cinnamon-tree flowers	0.00	0.00
5	'0908	Nutmeg, mace and cardamoms	666.07	-629.95
6	'1203	Copra	0.00	0.00
7	'1404	Vegetable products, n.e.s.	67771.17	-521846.42
8	'1513	Coconut "copra", palm kernel or babassu oil and fractions thereof, whether or not refined, ...	287.24	-2348.12
9	'1517	Margarine, other edible mixtures or preparations of animal or vegetable fats or oils and edible ...	10.91	
10	'2306	Oilcake and other solid residues, whether or not ground or in the form of pellets, resulting ...	15717.65	38151.77
11	'2504	Natural graphite	0.00	0.00
12	'2936	Provitamins and vitamins, natural or reproduced by synthesis, incl. natural concentrates, derivatives ...	0.00	
13	'3305	Preparations for use on the hair	7850.00	
14	'3507	Enzymes; prepared enzymes, n.e.s.	-3111.90	
15	'3802	Activated carbon; activated natural mineral products; animal black, whether or not spent	1134.38	1170.67
16	'3912	Cellulose and its chemical derivatives, n.e.s., in primary forms	-10157.68	-1196726.66
17	'3923	Articles for the conveyance or packaging of goods, of plastics; stoppers, lids, caps and other ...	-49.27	
18	'3926	Articles of plastics and articles of other materials of heading 3901 to 3914, n.e.s.	1335.09	-1100.26
19	'4001	Natural rubber, balata, gutta-percha, guayule, chicle and similar natural gums, in primary ...	-58806.23	-855135.57
20	'4003	Reclaimed rubber in primary forms or in plates, sheets or strip	-12.86	
21	'4004	Waste, parings and scrap of soft rubber and powders and granules obtained therefrom	0.00	
22	'4008	Plates, sheets, strip, rods and profile shapes, of vulcanised rubber (excluding hard rubber)	-16.59	-447810.96
23	'4011	New pneumatic tyres, of rubber	92.25	370.43
24	'4012	Retreaded or used pneumatic tyres of rubber; solid or cushion tyres, tyre treads and tyre flaps, ...	17.66	89.01
25	'4015	Articles of apparel and clothing accessories, incl. gloves, mittens and mitts, for all purposes, ...	160.65	-5932.39
26	'4411	Fibreboard of wood or other ligneous materials, whether or not agglomerated with resins or ...	572743.17	
27	'4821	Paper or paperboard labels of all kinds, whether or not printed	-11792.52	-1039728.60
28	'5305	Coconut, abaca "Manila hemp or Musa textilis Nee", ramie, agave and other vegetable textile ...	3618.83	16410.88
29	'5308	Yarn of vegetable textile fibres; paper yarn (excluding flax yarn, yarn of jute or of other ...	757.62	2068.56
30	'5508	Sewing thread of man-made staple fibres, whether or not put up for retail sale	0.00	
31	'5509	Yarn of synthetic staple fibres (excluding sewing thread and yarn put up for retail sale)	101.20	
32	'5607	Twine, cordage, ropes and cables, whether or not plaited or braided and whether or not impregnated, ...	-8421.19	-9032.29
33	'6116	Gloves, mittens and mitts, knitted or crocheted (excluding for babies)	-10188.75	
34	'6911	Tableware, kitchenware, other household articles and toilet articles, of porcelain or china ...	12789.47	18404.04
35	'7607	Aluminium foil, "whether or not printed or backed with paper, paperboard, plastics or similar ...	19716.93	-16733.28
36	'8536	Electrical apparatus for switching or protecting electrical circuits, or for making connections ...	7662.27	-1568.96
37	'8538	Parts suitable for use solely or principally with the apparatus of heading 8535, 8536 or 8537, ...	-366.17	-496.12
		Total Change in trade Volume in million USD	608841.11	-4039348.42
			0.61	

**Product Groups from Pakistan-Sri Lanka Free Trade Agreement  
Table G.2. Change in Terms of Trade (Actual and Extrapolated)**

Sr. No	Product code	Product label	Actual Change in Terms of Trade	Extrapolated Change in Terms of Trade
1	'1211	Plants and parts of plants, incl. seeds and fruits, of a kind used primarily in perfumery, ...	319831.5851	610022.4784
2	'3923	Articles for the conveyance or packaging of goods, of plastics; stoppers, lids, caps and other ...	294980	
3	'3926	Articles of plastics and articles of other materials of heading 3901 to 3914, n.e.s.	-90478.53403	-443426.2175
4	'4901	Printed books, brochures and similar printed matter, whether or not in single sheets (excluding..	6666.666667	
5	'5509	Yarn of synthetic staple fibres (excluding sewing thread and yarn put up for retail sale)	676093.2722	
6	'6116	Gloves, mittens and mitts, knitted or crocheted (excluding for babies)	-387392.4051	
7	'8536	Electrical apparatus for switching or protecting electrical circuits, or for making connections ...	-80181.81818	-337740798.6

**Product Groups from Pakistan-China Free Trade Agreement  
Table G.3. Change in Trade Volume (Actual and Extrapolated)**

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
1	'0402	Milk and cream concentrated or containing added sugar or other sweetening matter	29974.06	#DIV/0!
2	'0602	Live plants incl. their roots, cuttings and slips; mushroom spawn (excluding bulbs, tubers, ...	36260.00	#DIV/0!
3	'0603	Cut flowers and flower buds of a kind suitable for bouquets or for ornamental purposes, fresh, ...	3681.82	#DIV/0!
4	'0701	Potatoes, fresh or chilled	-9.62	-12337.15
5	'0703	Onions, shallots, garlic, leeks and other alliaceous vegetables, fresh or chilled	430308.20	-102961273.40
6	'0710	Vegetables, uncooked or cooked by steaming or boiling in water, frozen	14.19	#DIV/0!
7	'0712	Dried vegetables, whole, cut, sliced, broken or in powder, but not further prepared	431.09	37594.32
8	'0713	Dried leguminous vegetables, shelled, whether or not skinned or split	-203504.96	-539279.43
9	'0808	Apples, pears and quinces, fresh	-69308.23	-12293012419.00
10	'0902	Tea, whether or not flavoured	29224.08	642131.89
11	'0904	Pepper of the genus Piper; dried or crushed or ground fruits of the genus Capsicum or of the ...	-6.69	#DIV/0!
12	'0906	Cinnamon and cinnamon-tree flowers	2570.48	-40102.23
13	'0909	Seeds of anis, badian, fennel, coriander, cumin or caraway; juniper berries	-196.68	-243852.65
14	'0910	Ginger, saffron, turmeric "curcuma", thyme, bay leaves, curry and other spices (excluding pepper ...	803402.19	-56956498.53
15	'1005	Maize or corn	5.23	#DIV/0!
16	'1006	Rice	811991.58	#DIV/0!
17	'1209	Seeds, fruits and spores, for sowing (excluding leguminous vegetables and sweetcorn, coffee, ...	-8996.27	-1502106.91
18	'1211	Plants and parts of plants, incl. seeds and fruits, of a kind used primarily in perfumery, ...	-418.50	-5474.50
19	'1302	Vegetable saps and extracts; pectic substances, pectinates and pectates; agar-agar and other ...	2984612.67	7012534.80

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
20	'1401	Vegetable materials of a kind used primarily for plaiting, e.g. bamboos, rattans, reeds, rushes, ...	1610.82	#DIV/0!
21	'1505	Wool grease and fatty substances derived therefrom, incl. lanolin	255.28	-399454.87
22	'1515	Fixed vegetable fats and oils, incl. jojoba oil, and their fractions, whether or not refined, ...	-693.22	-3983.18
23	'1518	Animal or vegetable fats and oils and their fractions, boiled, oxidised, dehydrated, sulphurised, ...	4974.51	#DIV/0!
24	'1521	Vegetable waxes, beeswax, other insect waxes and spermaceti, whether or not refined or coloured ...	360.73	#DIV/0!
25	'1604	Prepared or preserved fish; caviar and caviar substitutes prepared from fish eggs	-52000.00	#DIV/0!
26	'1702	Other sugars, incl. chemically pure lactose, maltose, glucose and fructose, in solid form; ...	49592.39	-6215443.14
27	'1704	Sugar confectionery not containing cocoa, incl. white chocolate	18590.90	-1726197.17
28	'1805	Cocoa powder, not containing added sugar or other sweetening matter	250.49	#DIV/0!
29	'1806	Chocolate and other food preparations containing cocoa	12211.73	-108076.42
30	'1902	Pasta, whether or not cooked or stuffed with meat or other substances or otherwise prepared, ...	78.59	#DIV/0!
31	'1905	Bread, pastry, cakes, biscuits and other bakers' wares, whether or not containing cocoa; communion ...	940.07	2394.94
32	'2002	Tomatoes prepared or preserved otherwise than by vinegar or acetic acid	87475.41	-485215.41
33	'2003	Mushrooms and truffles prepared or preserved otherwise than by vinegar or acetic acid	16892.72	-1283445.74
34	'2007	Jams, fruit jellies, marmalades, fruit or nut purée and fruit or nut pastes, obtained by cooking, ...	59.29	#DIV/0!
35	'2008	Fruits, nuts and other edible parts of plants, prepared or preserved, whether or not containing ...	147895.68	-26415977.06
36	'2009	Fruit juices, incl. grape must, and vegetable juices, unfermented, not containing added spirit, ...	-8432.78	#DIV/0!
37	'2102	Yeasts, active or inactive; other dead single-cell micro-organisms, prepared baking powders ...	12743.14	10317.83
38	'2103	Sauce and preparations therefor; mixed condiments and mixed seasonings; mustard flour and meal, ...	1544034.81	-18497666.55
39	'2106	Food preparations, n.e.s.	853135.71	-6422797.57
40	'2202	Waters, incl. mineral waters and aerated waters, containing added sugar or other sweetening ...	-2625.48	#DIV/0!
41	'2207	Undenatured ethyl alcohol of an alcoholic strength of $\geq$ 80%; ethyl alcohol and other spirits, ...	-9317.90	#DIV/0!



Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
42	'2301	Flours, meals and pellets, of meat or meat offal, of fish or of crustaceans, molluscs or other ...	-49.45	#DIV/0!
43	'2309	Preparations of a kind used in animal feeding	5425188.15	3848657.93
44	'2501	Salts, incl. table salt and denatured salt, and pure sodium chloride, whether or not in aqueous ...	14.06	#DIV/0!
45	'2504	Natural graphite	-346.59	-27478.00
46	'2505	Natural sands of all kinds, whether or not coloured (excluding gold- and platinum-bearing sands, ...	-33.07	-3753.07
47	'2507	Kaolin and other kaolinic clays, whether or not calcined	-576.45	-3988.27
48	'2508	Clays, andalusite, kyanite and sillimanite, whether or not calcined; mullite; chamotte or dinas ...	-35.85	-2619.03
49	'2509	Chalk	2.64	#DIV/0!
50	'2513	Pumice stone; emery; natural corundum, natural garnet and other natural abrasives, whether ...	12.43	27.50
51	'2517	Pebbles, gravel, broken or crushed stone, for concrete aggregates, for road metalling or for ...	-4.65	#DIV/0!
52	'2519	Natural magnesium carbonate "magnesite"; fused magnesia; dead-burned "sintered" magnesia, whether ...	-999.13	-22827.13
53	'2520	Gypsum; anhydrite; plasters consisting of calcined gypsum or calcium sulphate, whether or not ...	23.13	-83243.41
54	'2523	Cement, incl. cement clinkers, whether or not coloured	-617644.15	-813894989.80
55	'2526	Natural steatite, whether or not roughly trimmed or merely cut, by sawing or otherwise, into ...	44.69	488.48
56	'2530	Vermiculite, perlite and other mineral substances, n.e.s.	-91.30	-72279.92
57	'2701	Coal; briquettes, ovoids and similar solid fuels manufactured from coal	-22581.87	#DIV/0!
58	'2704	Coke and semi-coke of coal, of lignite or of peat, whether or not agglomerated; retort carbon	-2338345.05	-712072356.60
59	'2707	Oils and other products of the distillation of high temperature coal tar; similar products ...	-37.38	#DIV/0!
60	'2708	Pitch and pitch coke, obtained from coal tar or from other mineral tars	0.45	#DIV/0!
61	'2710	Petroleum oils and oils obtained from bituminous minerals (excluding crude); preparations containing ...	42456.66	130053.42
62	'2711	Petroleum gas and other gaseous hydrocarbons	-1.32	#DIV/0!
63	'2712	Petroleum jelly, paraffin wax, micro- crystalline petroleum wax, slack wax, ozokerite, lignite ...	-692.48	8143.07
64	'2713	Petroleum coke, petroleum bitumen and other residues of petroleum oil or of oil obtained from ...	6.98	8.47
65	'2803	Carbon "carbon blacks and other forms of carbon", n.e.s.	8424.97	2819.50

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
66	'2804	Hydrogen, rare gases and other non-metals	311.07	403.43
67	'2809	Diphosphorus pentaoxide; phosphoric acid; polyphosphoric acids, whether or not chemically defined	1326.38	-29587.10
68	'2810	Oxides of boron; boric acids	-35.34	-5426.56
69	'2811	Inorganic acids and inorganic oxygen compounds of non-metals (excluding hydrogen chloride "hydrochloric ...	277.28	30.65
70	'2815	Sodium hydroxide "caustic soda", potassium hydroxide "caustic potash"; peroxides of sodium ...	-2271.44	734.69
71	'2816	Hydroxide and peroxide of magnesium; oxides, hydroxides and peroxides, of strontium or barium	0.46	#DIV/0!
72	'2817	Zinc oxide; zinc peroxide	-104.39	-481.65
73	'2818	Artificial corundum, whether or not chemically defined; aluminium oxide; aluminium hydroxide	-272.08	401.93
74	'2819	Chromium oxides and hydroxides	128.24	-1792.70
75	'2820	Manganese oxides	-5.25	8.92
76	'2821	Iron oxides and hydroxides; earth colours containing >= 70% by weight of combined iron evaluated ...	2950.97	-1332.96
77	'2822	Cobalt oxides and hydroxides; commercial cobalt oxides	165.46	#DIV/0!
78	'2823	Titanium oxides	36.67	-2909.86
79	'2824	Lead oxides; red lead and orange lead	-13.73	-466.42
80	'2825	Hydrazine and hydroxylamine and their inorganic salts; inorganic bases, metal oxides, hydroxides ...	178.73	-1031.68
81	'2826	Fluorides; fluorosilicates, fluoroaluminates and other complex fluorine salts (excluding inorganic ...	-11.41	-1.51
82	'2827	Chlorides, chloride oxides and chloride hydroxides; bromides and bromide oxides; iodides and ...	1560.43	-3.49
83	'2829	Chlorates and perchlorates; bromates and perbromates; iodates and periodates	2063.67	-123.31
84	'2830	Sulphides; polysulphides, whether or not chemically defined	-385.10	4017.32
85	'2831	Dithionites and sulfoxylates	3135.86	-16148.82
86	'2832	Sulphites; thiosulphates	143.51	192.08
87	'2833	Sulphates; alums; peroxosulphates "persulphates"	102491.39	-1771.07
88	'2834	Nitrites; nitrates	-241.30	-17644.92
89	'2835	Phosphinates "hypophosphites", phosphonates "phosphites" and phosphates; polyphosphates, whether ...	-12571.15	-2285583.36
90	'2836	Carbonates; peroxocarbonates "percarbonates"; commercial ammonium carbonate containing ammonium ...	-1642.15	-109702.22

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
91	'2837	Cyanides, cyanide oxides and complex cyanides	1.23	-17.65
92	'2839	Silicates; commercial alkali metal silicates (excluding inorganic or organic compounds of mercury)	137.64	-5066.16
93	'2840	Borates; peroxoborates "perborates"	-0.31	0.17
94	'2841	Salts of oxometallic or peroxometallic acids	73.94	1566.78
95	'2842	Salts of inorganic acids or peroxyacids, incl. aluminosilicates whether or not chemically defined ...	50.04	-1163.60
96	'2843	Colloidal precious metals; inorganic or organic compounds of precious metals, whether or not ...	#DIV/0!	#DIV/0!
97	'2844	Radioactive chemical elements and radioactive isotopes, incl. their fissile or fertile chemical ...	-20.52	-124.16
98	'2849	Carbides, whether or not chemically defined	43347.42	52089.15
99	'2850	Hydrides, nitrides, azides, silicides and borides, whether or not chemically defined (excluding ...	-6.38	-311.06
100	'2901	Acyclic hydrocarbons	-74.76	-2162.78
101	'2902	Cyclic hydrocarbons	-2603.45	-311559.09
102	'2903	Halogenated derivatives of hydrocarbons	12458.19	-449469.77
103	'2904	Sulphonated, nitrated or nitrosated derivatives of hydrocarbons, whether or not halogenated	-41.30	24.68
104	'2905	Acyclic alcohols and their halogenated, sulphonated, nitrated or nitrosated derivatives	4001.73	-54048.72
105	'2906	Cyclic alcohols and their halogenated, sulphonated, nitrated or nitrosated derivatives	8810.03	47693.10
106	'2907	Phenols; phenol-alcohols	51.83	727.21
107	'2908	Halogenated, sulphonated, nitrated or nitrosated derivatives of phenols or phenol-alcohols	14.48	-238.99
108	'2909	Ethers, ether-alcohols, ether-phenols, ether-alcohol-phenols, alcohol peroxides, ether peroxide, ...	544.39	731.97
109	'2912	Aldehydes, whether or not with other oxygen function; cyclic polymers of aldehydes; parafo ...	387.87	-910.96
110	'2913	Halogenated, sulphonated, nitrated or nitrosated derivatives of cyclic polymers of aldehydes ...	-0.19	#DIV/0!
111	'2914	Ketones and quinones, whether or not with other oxygen function, and their halogenated, sulphonated, ...	1431.68	-8206.22
112	'2915	Saturated acyclic monocarboxylic acids and their anhydrides, halides, peroxides and peroxyacids; ...	121282.40	-724886.64
113	'2916	Unsaturated acyclic monocarboxylic acids, cyclic monocarboxylic acids, their anhydrides, halides, ...	72351.73	-1442600.17
114	'2917	Polycarboxylic acids, their anhydrides, halides, peroxides and peroxyacids; their halogenated, ...	31249.65	115302.18

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
115	'2918	Carboxylic acids with additional oxygen function and their anhydrides, halides, peroxides and ...	87960.43	-76387.89
116	'2919	Phosphoric esters and their salts, incl. lactophosphates; their halogenated, sulphonated, nitrated ...	10.56	20.36
117	'2920	Esters of other inorganic acids of non-metals and their salts; their halogenated, sulphonated, ...	-507.65	-60600.64
118	'2921	Amine-function compounds	1684.05	-48669.58
119	'2922	Oxygen-function amino-compounds	42047.26	-231531.37
120	'2923	Quaternary ammonium salts and hydroxides; lecithins and other phosphoaminolipids, whether or ...	-1103.23	-30484.19
121	'2924	Carboxamide-function compounds; amide-function compounds of carbonic acid	54431.20	-644081.28
122	'2925	Carboxyimide-function compounds, incl. saccharin and its salts, and imine-function compounds	-535.58	-5337.76
123	'2926	Nitrile-function compounds	701.69	417.93
124	'2927	Diazo-, azo- or azoxy-compounds	408.99	-20965.00
125	'2928	Organic derivatives of hydrazine or of hydroxylamine	-2.83	-5.76
126	'2929	Compounds with other nitrogen function (excluding amine-function compounds; oxygen-function ...	7180.29	-55481.45
127	'2930	Organo-sulphur compounds	58087.14	87881.35
128	'2931	Separate chemically defined organo-inorganic compounds (excluding organo-sulphur compounds ...	808.25	6352.62
129	'2932	Heterocyclic compounds with oxygen hetero-atom[s] only	10269.25	70604.85
130	'2933	Heterocyclic compounds with nitrogen hetero-atom[s] only	353207.94	562624.29
131	'2934	Nucleic acids and their salts, whether or not chemically defined; heterocyclic compounds (excluding ...	54864.85	558747.53
132	'2935	Sulphonamides	3734.68	-4328.01
133	'2936	Provitamins and vitamins, natural or reproduced by synthesis, incl. natural concentrates, derivatives ...	11050.55	-6157.94
134	'2937	Hormones, prostaglandins, thromboxanes and leukotrienes, natural or reproduced by synthesis; ...	-1406.51	-5498.30
135	'2938	Glycosides, natural or reproduced by synthesis, and their salts, ethers, esters and other ...	1.69	-54.86
136	'2939	Vegetable alkaloids, natural or reproduced by synthesis, and their salts, ethers, esters and ...	2705.70	6302.86
137	'2940	Sugars, chemically pure (excluding sucrose, lactose, maltose, glucose and fructose); sugar ...	12.07	-52.74

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
138	'2941	Antibiotics	261151.39	-332610.20
139	'2942	Separate chemically defined organic compounds, n.e.s.	1179.89	-7912.51
140	'3002	Human blood; animal blood prepared for therapeutic, prophylactic or diagnostic uses; antisera ...	185340.63	1589480.58
141	'3003	Medicaments consisting of two or more constituents mixed together for therapeutic or prophylactic ...	335835.15	14621099.77
142	'3004	Medicaments consisting of mixed or unmixed products for therapeutic or prophylactic uses, put ...	1405651.07	-3639114.83
143	'3005	Wadding, gauze, bandages and the like, e.g. dressings, adhesive plasters, poultices, impregnated ...	11895.41	-214076.55
144	'3006	Pharmaceutical preparations and products of subheadings 3006.10.10 to 3006.60.90	1865.16	244.47
145	'3101	Animal or vegetable fertilisers, whether or not mixed together or chemically treated; fertilisers ...	12.97	#DIV/0!
146	'3102	Mineral or chemical nitrogenous fertilisers (excluding those in pellet or similar forms, or ...	325056.81	195573.27
147	'3104	Mineral or chemical potassic fertilisers (excluding those in tablets or similar forms, or in ...	275.38	141.44
148	'3105	Mineral or chemical fertilisers containing two or three of the fertilising elements nitrogen, ...	6968523.45	15072300.51
149	'3202	Synthetic organic tanning substances; inorganic tanning substances; tanning preparations, whether ...	-4076.95	#DIV/0!
150	'3204	Synthetic organic colouring matter, whether or not chemically defined; preparations based on ...	1334777.56	-4706452.53
151	'3206	Inorganic or mineral colouring matter, n.e.s.; preparations based on inorganic or mineral colouring ...	70000.20	-1780178.92
152	'3207	Prepared pigments, prepared opacifiers and prepared colours, vitrifiable enamels and glazes, ...	8572.68	-1202954.06
153	'3208	Paints and varnishes, incl. enamels and lacquers, based on synthetic polymers or chemically ...	14191.69	-101583.98
154	'3209	Paints and varnishes, incl. enamels and lacquers, based on synthetic polymers or chemically ...	416.69	-15541.80
155	'3210	Paints and varnishes, incl. enamels, lacquers and distempers (excluding those based on synthetic ...	-657.68	-272942.36
156	'3211	Prepared driers	-0.57	#DIV/0!
157	'3212	Pigments, incl. metallic powders and flakes, dispersed in non-aqueous media, in liquid or paste ...	-274.19	-209.55

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
158	'3213	Artist's, student's or signboard painter's colours, modifying tints, amusement colours and ...	3645.99	5357.07
159	'3214	Glaziers' putty, grafting putty, resin cements, caulking compounds and other mastics; painters' ...	298.72	-3265278.24
160	'3215	Printing ink, writing or drawing ink and other inks, whether or not concentrated or solid	40243.76	10708.63
161	'3301	Essential oils, whether or not terpeneless, incl. concretes and absolutes; resinoids; extracted ...	37451.09	20594.11
162	'3302	Mixtures of odoriferous substances and mixtures, incl. alcoholic solutions, based on one or ...	239830.98	23313583.47
163	'3304	Beauty or make-up preparations and preparations for the care of the skin, incl. sunscreen or ...	19207.16	-325480.40
164	'3305	Preparations for use on the hair	20766.77	#DIV/0!
165	'3306	Preparations for oral or dental hygiene, incl. denture fixative pastes and powders; yarn used ...	-11393.45	-65517.20
166	'3307	Shaving preparations, incl. pre-shave and aftershave products, personal deodorants, bath and ...	168169.64	-20203240.21
167	'3401	Soap; organic surface-active products and preparations for use as soap, in the form of bars, ...	923.89	-60884839.41
168	'3402	Organic surface-active agents (excluding soap); surface-active preparations, washing preparations, ...	2505864.70	-2537026.32
169	'3403	Lubricant preparations, incl. cutting-oil preparations, bolt or nut release preparations, anti-rust ...	78207.30	-443676873.70
170	'3404	Artificial waxes and prepared waxes	-6014.82	#DIV/0!
171	'3405	Shoe polish, furniture wax and floor waxes, polishes and creams for coachwork, glass or metal, ...	149057.93	309.11
172	'3406	Candles, tapers and the like	6729.51	-8875551.80
173	'3407	Modelling pastes, incl. those put up for children's amusement; preparations known as "dental ...	197.43	#DIV/0!
174	'3501	Casein, caseinates and other casein derivatives; casein glues (excluding those packaged as ...	-295.30	-225428.64
175	'3503	Gelatin, whether or not in square or rectangular sheets, whether or not surface-worked or coloured, ...	242.06	#DIV/0!
176	'3504	Peptones and their derivatives; other protein substances and their derivatives, n.e.s.; hide ...	-6.69	#DIV/0!
177	'3505	Dextrins and other modified starches, e.g. pregelatinised or esterified starches; glues based ...	1245.94	-72208.63

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
178	'3506	Prepared glues and other prepared adhesives, n.e.s.; products suitable for use as glues or ...	584450.99	389023.24
179	'3507	Enzymes; prepared enzymes, n.e.s.	104015.48	#DIV/0!
180	'3603	Safety fuses; detonating fuses; percussion or detonating caps; igniters; electric detonators ...	-9930.06	-496.03
181	'3701	Photographic plates and film in the flat, sensitised, unexposed, of any material other than ...	980367.51	-234308.33
182	'3702	Photographic film in rolls, sensitised, unexposed, of any material other than paper, paperboard ...	-777.41	#DIV/0!
183	'3703	Photographic paper, paperboard and textiles, sensitised, unexposed	8664.15	-2099968.50
184	'3707	Chemical preparations for photographic uses (excluding varnishes, glues, adhesives and similar ...	5691.63	-6674706.54
185	'3801	Artificial graphite; colloidal or semi-colloidal graphite; preparations based on graphite or ...	15.46	-3.21
186	'3802	Activated carbon; activated natural mineral products; animal black, whether or not spent	-129.57	-3176.95
187	'3804	Residual lyes from the manufacture of wood pulp, whether or not concentrated, desugared or ...	10.48	-4.13
188	'3805	Gum, wood or sulphate turpentine and other terpenic oils produced by the distillation or other ...	-205.20	-21970.16
189	'3806	Rosin, resin acids and derivatives thereof; rosin spirit and rosin oils; run gums	-7931.87	-932769.30
190	'3808	Insecticides, rodenticides, fungicides, herbicides, anti-sprouting products and plant-growth ...	746799.97	698590.58
191	'3809	Finishing agents, dye carriers to accelerate the dyeing or fixing of dyestuffs and other products ...	-8218.35	-458118.42
192	'3810	Pickling preparations for metal surfaces; fluxes and other auxiliary preparations for soldering, ...	878.34	-359.14
193	'3811	Anti-knock preparations, oxidation inhibitors, gum inhibitors, viscosity improvers, anti-corrosive ...	12.30	#DIV/0!
194	'3812	Prepared rubber accelerators; compound plasticisers for rubber or plastics, n.e.s.; anti-oxidising ...	351.17	-9639.12
195	'3813	Preparations and charges for fire-extinguishers; charged fire-extinguishing grenades (excluding ...	-1.14	-146.62
196	'3814	Organic composite solvents and thinners, n.e.s.; prepared paint or varnish removers (excluding ...	2.05	3.46
197	'3815	Reaction initiators, reaction accelerators and catalytic preparations, n.e.s. (excluding rubber ...	-2.99	-11.18

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
198	'3816	Refractory cements, mortars, concretes and similar compositions (excluding preparations based ...	443.26	-8362.87
199	'3817	Mixed alkylbenzenes and mixed alkylnaphthalenes produced by the alkylation of benzene and naphthalene ...	11525.80	#DIV/0!
200	'3819	Hydraulic brake fluids and other prepared liquids for hydraulic transmission not containing ...	3.21	30.45
201	'3820	Anti-freezing preparations and prepared de-icing fluids (excluding prepared additives for mineral ...	-5.55	#DIV/0!
202	'3822	Diagnostic or laboratory reagents on a backing, prepared diagnostic or laboratory reagents ...	4267.38	-3978498.09
203	'3823	Industrial monocarboxylic fatty acids; acid oils from refining; industrial fatty alcohols	49.32	#DIV/0!
204	'3824	Prepared binders for foundry moulds or cores; chemical products and preparations for the chemical ...	138409.19	-8138.21
205	'3901	Polymers of ethylene, in primary forms	-2125.39	-279921160.40
206	'3902	Polymers of propylene or of other olefins, in primary forms	390.04	1581.06
207	'3903	Polymers of styrene, in primary forms	378.21	-15.60
208	'3904	Polymers of vinyl chloride or of other halogenated olefins, in primary forms	68591.30	-610761196.70
209	'3905	Polymers of vinyl acetate or of other vinyl esters, in primary forms; other vinyl polymers, ...	37276.59	-16404761.03
210	'3906	Acrylic polymers, in primary forms	24069.40	-6015884.56
211	'3907	Polyacetals, other polyethers and epoxide resins, in primary forms; polycarbonates, alkyd resins, ...	503708.07	-12533737.47
212	'3908	Polyamides, in primary forms	532.86	-6508.60
213	'3909	Amino-resins, phenolic resins and polyurethanes, in primary forms	275657.50	-2735797.23
214	'3910	Silicones in primary forms	437.40	-155.94
215	'3911	Petroleum resins, coumarone-indene resins, polyterpenes, polysulphides, polysulphones and other ...	485.39	-3958.30
216	'3912	Cellulose and its chemical derivatives, n.e.s., in primary forms	25133.84	-584976.85
217	'3913	Natural polymers, e.g. alginic acid, and modified natural polymers, e.g. hardened proteins, ...	-22063.20	-469970.81
218	'3914	Ion-exchangers based on polymers of heading 3901 to 3913, in primary forms	42.34	-7402.92
219	'3916	Monofilament of which any cross-sectional dimension > 1 mm, rods, sticks and profile shapes, ...	1294.13	-106779.11
220	'3917	Tubes, pipes and hoses, and fittings therefor, e.g. joints, elbows, flanges, of plastics	109280.19	-20986214.05



Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
221	'3918	Floor coverings of plastics, whether or not self-adhesive, in rolls or in the form of tiles; ...	4145.64	-186236.21
222	'3919	Self-adhesive plates, sheets, film, foil, tape, strip and other flat shapes, of plastics, whether ...	471125.78	-21196695.82
223	'3920	Plates, sheets, film, foil and strip, of non-cellular plastics, not reinforced, laminated, ...	648658.92	-40745620.27
224	'3921	Plates, sheets, film, foil and strip, of plastics, reinforced, laminated, supported or similarly ...	20768.39	-240518.01
225	'3922	Baths, shower-baths, sinks, washbasins, bidets, lavatory pans, seats and covers, flushing cisterns ...	577.31	#DIV/0!
226	'3923	Articles for the conveyance or packaging of goods, of plastics; stoppers, lids, caps and other ...	148184.71	-12085862.78
227	'3924	Tableware, kitchenware, other household articles and toilet articles, of plastics (excluding ...	32023.13	-2029283.80
228	'3925	Builders' ware of plastics, n.e.s.	60414.58	-2555155.52
229	'3926	Articles of plastics and articles of other materials of heading 3901 to 3914, n.e.s.	439415.13	-18345045.56
230	'4002	Synthetic rubber and factice derived from oils, in primary forms or in plates, sheets or strip; ...	849.04	-2470.25
231	'4003	Reclaimed rubber in primary forms or in plates, sheets or strip	17.65	114.23
232	'4005	Compounded rubber, unvulcanised, in primary forms or in plates, sheets or strip (excluding ...	10.85	-16.91
233	'4006	Rods, bars, tubes, profiles and other forms of unvulcanised rubber, incl. mixed rubber, and ...	-53.91	-50420.42
234	'4008	Plates, sheets, strip, rods and profile shapes, of vulcanised rubber (excluding hard rubber)	-5486.34	-498944.96
235	'4009	Tubes, pipes and hoses, of vulcanised rubber other than hard rubber, with or without their ...	3176.30	-45188.57
236	'4010	Conveyor or transmission belts or belting, of vulcanised rubber	27927.83	-460790.33
237	'4011	New pneumatic tyres, of rubber	24956489.95	-293575335.40
238	'4012	Retreaded or used pneumatic tyres of rubber; solid or cushion tyres, tyre treads and tyre flaps, ...	44.91	-1140.38
239	'4013	Inner tubes, of rubber	32984.02	-1669481.05
240	'4014	Hygienic or pharmaceutical articles, incl. teats, of vulcanised rubber (excluding hard rubber), ...	-817.93	-92690.31
241	'4015	Articles of apparel and clothing accessories, incl. gloves, mittens and mitts, for all purposes, ...	2100.36	-362105.36
242	'4016	Articles of vulcanised rubber (excluding hard rubber), n.e.s.	43005.40	-567019.24
243	'4017	Hard rubber, e.g. ebonite, in all forms, incl. waste and scrap; articles of hard rubber, n.e.s.	-86.57	#DIV/0!
244	'4107	Leather further prepared after tanning or crusting "incl. parchment-dressed leather", of bovine ...	10625.00	#DIV/0!

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
245	'4202	Trunks, suitcases, vanity cases, executive-cases, briefcases, school satchels, spectacle cases, ...	33647154.02	-701924962.00
246	'4203	Articles of apparel and clothing accessories, of leather or composition leather (excluding ...	381.65	-205925.66
247	'4205	Articles of leather or composition leather (excluding saddlery and harness bags; cases and ...	49.17	#DIV/0!
248	'4302	Tanned or dressed furskins, incl. heads, tails, paws and other pieces, scraps and remnants, ...	0.00	#DIV/0!
249	'4303	Articles of apparel, clothing accessories and other furskin articles (excluding gloves made ...	-4913.17	#DIV/0!
250	'4304	Artificial fur and articles thereof (excluding gloves made of leather and artificial fur, footwear ...	0.00	1093.33
251	'4408	Sheets for veneering, incl. those obtained by slicing laminated wood, for plywood or for other ...	14785.30	-302409.38
252	'4409	Wood, incl. strips and friezes for parquet flooring, not assembled, continuously shaped "tongued, ...	400.92	-59978.56
253	'4410	Particle board, oriented strand board "OSB" and similar board "e.g. waferboard" of wood or ...	-4142.40	#DIV/0!
254	'4411	Fibreboard of wood or other ligneous materials, whether or not agglomerated with resins or ...	365256.84	#DIV/0!
255	'4412	Plywood, veneered panel and similar laminated wood (excluding sheets of compressed wood, cellular ...	370280.26	-15055233.23
256	'4413	Metallised wood and other densified wood in blocks, plates, strips or profile shapes	14.21	0.72
257	'4414	Wooden frames for paintings, photographs, mirrors or similar objects	0.00	#DIV/0!
258	'4415	Packing cases, boxes, crates, drums and similar packings, of wood; cable-drums of wood; pallets, ...	-16.51	#DIV/0!
259	'4417	Tools, tool bodies, tool handles, broom or brush bodies and handles, of wood; boot or shoe ...	353.15	#DIV/0!
260	'4418	Builders' joinery and carpentry, of wood, incl. cellular wood panels, assembled flooring panels, ...	12000.32	-9320957.97
261	'4420	Wood marquetry and inlaid wood; caskets and cases for jewellery or cutlery, and similar articles, ...	-0.97	-214.28
262	'4421	Other articles of wood, n.e.s.	17253.31	-10043078.95
263	'4601	Plaits and similar products of plaiting materials, whether or not assembled into strips; plaiting ...	1059.40	#DIV/0!
264	'4602	Basketwork, wickerwork and other articles, made directly to shape from plaiting materials or ...	-20030.64	-2597433.61
265	'4801	Newsprint as specified in Note 4 to chapter 48, in rolls of a width > 36 cm or in square or ...	-1606.05	#DIV/0!

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
266	'4802	Uncoated paper and paperboard, of a kind used for writing, printing or other graphic purposes, ...	-6594.57	-951142.82
267	'4803	Toilet or facial tissue stock, towel or napkin stock and similar paper for household or sanitary ...	127.31	233.37
268	'4804	Uncoated kraft paper and paperboard, in rolls of a width > 36 cm or in square or rectangular ...	1493.60	844.64
269	'4805	Other paper and paperboard, uncoated, in rolls of a width > 36 cm or in square or rectangular ...	4346.42	1535.35
270	'4806	Vegetable parchment, greaseproof papers, tracing papers and glassine and other glazed transparent ...	33.20	131.25
271	'4807	Composite paper and paperboard "made by sticking flat layers of paper or paperboard together ...	24.10	-69.22
272	'4808	Corrugated paper and paperboard "with or without glued flat surface sheets", creped, crinkled, ...	30.88	-269.34
273	'4809	Carbon paper, self-copy paper and other copying or transfer papers, incl. coated or impregnated ...	8246.80	-11214.36
274	'4810	Paper and paperboard, coated on one or both sides with kaolin "China clay" or other inorganic ...	4075343.98	-15447362450.00
275	'4811	Paper, paperboard, cellulose wadding and webs of cellulose fibres, coated, impregnated, covered, ...	482216.10	-6037270.02
276	'4813	Cigarette paper, whether or not cut to size or in the form of booklets or tubes	1497.19	#DIV/0!
277	'4814	Wallpaper and similar wallcoverings of paper; window transparencies of paper	-797.23	-1735382.69
278	'4816	Carbon paper, self-copy paper and other copying or transfer papers, in rolls of a width of ...	23.03	28.22
279	'4817	Envelopes, letter cards, plain postcards and correspondence cards, of paper or paperboard; ...	4.87	-800.54
280	'4818	Toilet paper and similar paper, cellulose wadding or webs of cellulose fibres, of a kind used ...	-77342.24	-2283651230.00
281	'4819	Cartons, boxes, cases, bags and other packing containers, of paper, paperboard, cellulose wadding ...	8481.23	-85310476.27
282	'4820	Registers, account books, notebooks, order books, receipt books, letter pads, memorandum pads, ...	66026.22	-4392002.11
283	'4821	Paper or paperboard labels of all kinds, whether or not printed	26675.44	-1164910.79
284	'4823	Paper, paperboard, cellulose wadding and webs of cellulose fibres, in strips or rolls of a ...	78129.67	-47283521.60

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
285	'4901	Printed books, brochures and similar printed matter, whether or not in single sheets (excluding ...	2575.56	#DIV/0!
286	'4903	Children's picture, drawing or colouring books	7.17	#DIV/0!
287	'4906	Plans and drawings for architectural, engineering, industrial, commercial, topographical or ...	1.61	0.00
288	'4907	Unused postage, revenue or similar stamps of current or new issue in the country in which they ...	-992.85	#DIV/0!
289	'4908	Transfers "decalcomanias"	-46942.51	#DIV/0!
290	'4909	Printed or illustrated postcards; printed cards bearing personal greetings, messages or announcements, ...	2506.41	#DIV/0!
291	'4910	Calendars of any kinds, printed, incl. calendars blocks	-10.36	-636.33
292	'4911	Printed matter, incl. printed pictures and photographs, n.e.s.	-303837.79	-13552742457.00
293	'5002	Raw silk "non-thrown"	-12758.98	-1511292.61
294	'5004	Silk yarn (excluding that spun from silk waste and that put up for retail sale)	-34991.70	-1351830042.00
295	'5005	Yarn spun from silk waste (excluding that put up for retail sale)	-87429.45	-7095056.85
296	'5007	Woven fabrics of silk or of silk waste	2445256.54	-41328900000.00
297	'5105	Wool and fine or coarse animal hair, carded or combed, incl. combed wool in fragments	-61.93	-344.58
298	'5106	Carded wool yarn (excluding that put up for retail sale)	-5581.47	-8194834.66
299	'5107	Yarn of combed wool (excluding that put up for retail sale)	69521.03	-480832.13
300	'5111	Woven fabrics of carded wool or of carded fine animal hair (excluding fabrics for technical ...	37338.87	-1256103.76
301	'5112	Woven fabrics of combed wool or of combed fine animal hair (excluding fabrics for technical ...	12018.33	-1017839.31
302	'5201	Cotton, neither carded nor combed	-110.18	-170694.73
303	'5205	Cotton yarn other than sewing thread, containing >= 85% cotton by weight (excluding that put ...	2892.27	#DIV/0!
304	'5207	Cotton yarn put up for retail sale (excluding sewing thread)	40.69	#DIV/0!
305	'5208	Woven fabrics of cotton, containing >= 85% cotton by weight and weighing <= 200 g/m <sup>2</sup>	9873822.66	18900053.40
306	'5209	Woven fabrics of cotton, containing >= 85% cotton by weight and weighing > 200 g/m <sup>2</sup>	-1102739.07	-112118673.10
307	'5210	Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, mixed principally ...	45781.90	48270.14
308	'5211	Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, mixed principally ...	-47615.10	-99317654.19

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
309	'5212	Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, other than those ...	45.21	#DIV/0!
310	'5306	Flax yarn	-4025.08	#DIV/0!
311	'5309	Woven fabrics of flax	8201.02	-23240.09
312	'5311	Woven fabrics of other vegetable textile fibres; woven fabrics of paper yarn (excluding those ...	-406901.41	-45112934.14
313	'5401	Sewing thread of man-made filaments, whether or not put up for retail sale	4715.26	1314.98
314	'5402	Synthetic filament yarn, incl. synthetic monofilaments of < 67 decitex (excluding sewing thread ...	1664539.37	-102844867.80
315	'5403	Artificial filament yarn, incl. artificial monofilament of < 67 decitex (excluding sewing thread ...	248489.20	-9638804.98
316	'5404	Synthetic monofilament of >= 67 decitex and with a cross sectional dimension of <= 1 mm; strip ...	99.61	-291.27
317	'5407	Woven fabrics of synthetic filament yarn, incl. monofilament of >= 67 decitex and with a cross ...	-34723290.48	-23736314516.00
318	'5408	Woven fabrics of artificial filament yarn, incl. monofilament of >= 67 decitex and a maximum ...	23.63	#DIV/0!
319	'5501	Synthetic filament tow as specified in Note 1 to chapter 55	38.38	#DIV/0!
320	'5503	Synthetic staple fibres, not carded, combed or otherwise processed for spinning	1742287.84	-385195259.90
321	'5504	Artificial staple fibres, not carded, combed or otherwise processed for spinning	59730.86	#DIV/0!
322	'5506	Synthetic staple fibres, carded, combed or otherwise processed for spinning	706.32	#DIV/0!
323	'5507	Artificial staple fibres, carded, combed or otherwise processed for spinning	42.39	#DIV/0!
324	'5508	Sewing thread of man-made staple fibres, whether or not put up for retail sale	45804.64	-13151005.88
325	'5509	Yarn of synthetic staple fibres (excluding sewing thread and yarn put up for retail sale)	212514.95	#DIV/0!
326	'5510	Yarn of artificial staple fibres (excluding sewing thread and yarn put up for retail sale)	4465.52	#DIV/0!
327	'5511	Yarn of man-made staple fibres, put up for retail sale (excluding sewing thread)	0.41	313.81
328	'5512	Woven fabrics containing >= 85% synthetic staple fibres by weight	10029.97	-4105.66
329	'5513	Woven fabrics containing predominantly, but < 85% synthetic staple fibres by weight, mixed ...	431333.27	-5857796.80
330	'5514	Woven fabrics containing predominantly, but < 85% synthetic staple fibres by weight, mixed ...	7856.57	-3283253.03
331	'5515	Woven fabrics containing predominantly, but < 85% synthetic staple fibres by weight, other ...	161180.74	-144093787.30
332	'5516	Woven fabrics of artificial staple fibres	-816867.19	-1097204151.00

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
333	'5601	Wadding of textile materials and articles thereof; textile fibres with a length of <= 5 mm ...	1906.13	-22326308.58
334	'5602	Felt, whether or not impregnated, coated, covered or laminated, n.e.s.	-1127.12	#DIV/0!
335	'5603	Nonwovens, whether or not impregnated, coated, covered or laminated, n.e.s.	934084.35	-5049190.16
336	'5604	Textile-covered rubber thread and cord; textile yarn, strip and the like of heading 5404 and ...	56.80	#DIV/0!
337	'5605	Metallised yarn, whether or not gimped, being textile yarn, or strip or the like of heading ...	36615.84	#DIV/0!
338	'5606	Gimped yarn, gimped strip and the like of heading 5404 or 5405; chenille yarn, incl. flock ...	81060.23	-40517614519.00
339	'5607	Twine, cordage, ropes and cables, whether or not plaited or braided and whether or not impregnated, ...	37242.88	-4294555.43
340	'5608	Knotted netting of twine, cordage or rope, by the piece or metre; made-up fishing nets and ...	174139.54	-8053321.96
341	'5702	Carpets and other textile floor coverings, woven, not tufted or flocked, whether or not made ...	-22946.66	-55094071.16
342	'5703	Carpets and other textile floor coverings, tufted "needle punched", whether or not made up	37602.17	-339962819.30
343	'5704	Carpets and other floor coverings, of felt, not tufted or flocked, whether or not made up	1756.83	#DIV/0!
344	'5705	Carpets and other textile floor coverings, whether or not made up (excluding knotted, woven ...	2727732.15	#DIV/0!
345	'5801	Woven pile fabrics and chenille fabrics (excluding terry towelling and similar woven terry ...	-328278.61	-3744542.29
346	'5802	Terry towelling and similar woven terry fabrics, tufted textile fabrics (excluding narrow woven ...	-7066.87	-10812273.54
347	'5804	Tulles and other net fabrics (excluding woven, knitted or crocheted fabrics); lace in the piece, ...	5542.61	-65882.58
348	'5806	Narrow woven fabrics of textile materials, with a width of <= 30 cm (excluding labels, badges ...	60487.94	19636.67
349	'5807	Labels, badges and similar articles, of textile materials, in the piece, in strips or cut to ...	51971.18	-2680782.96
350	'5808	Braids of textile materials, in the piece; ornamental trimmings of textile materials, in the ...	3201.59	-245745.31
351	'5810	Embroidery on a textile fabric ground, in the piece, in strips or in motifs	-3136909.27	#DIV/0!
352	'5811	Quilted textile products in the piece, composed of one or more layers of textile materials ...	1.83	0.22
353	'5901	Textile fabrics coated with gum or amylaceous substances, of a kind used for the outer covers ...	20925.22	-109312.36
354	'5902	Tyre cord fabric of high-tenacity yarn of nylon or other polyamides, polyesters or viscose ...	68229.50	-113038.78
355	'5903	Textile fabrics impregnated, coated, covered or laminated with plastics (excluding tyre cord ...	10024549.69	-1033891345.00

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
356	'5904	Linoleum, whether or not cut to shape; floor coverings consisting of a coating or covering ...	-663.71	#DIV/0!
357	'5906	Rubberised textile fabrics (excluding tyre cord fabric of high-tenacity yarn of nylon or other ...	1138.11	-16060.13
358	'5907	Impregnated, coated or covered textile fabrics; painted canvas being theatrical scenery, studio ...	220458.81	-22847776.08
359	'5908	Textile wicks, woven, plaited or knitted, for lamps, stoves, lighters, candles or the like; ...	-107.49	-442.04
360	'5909	Textile hosepiping and similar textile tubing, whether or not impregnated or coated, with or ...	-2393.34	-3903674.17
361	'5910	Transmission or conveyor belts or belting, of textile material, whether or not impregnated, ...	2190.80	-9635.96
362	'5911	Textile products and articles, for technical use, specified in Note 7 to chapter 59	5491.13	-259790.80
363	'6001	Pile fabrics, incl. "long pile" fabrics and terry fabrics, knitted or crocheted	-971731.65	-20130921316.00
364	'6002	Knitted or crocheted fabrics, of a width <= 30 cm, containing by weight >= 5% of elastomeric ...	1.98	42.01
365	'6004	Knitted or crocheted fabrics, of a width > 30 cm, containing by weight >= 5% of elastomeric ...	3157.21	#DIV/0!
366	'6005	Warp knit fabrics "incl. those made on galloon knitting machines", of a width of > 30 cm (excluding ...	-50607.19	#DIV/0!
367	'6006	Fabrics, knitted or crocheted, of a width of > 30 cm (excluding warp knit fabrics "incl. those ...	1317498.93	#DIV/0!
368	'6102	Women's or girls' overcoats, car coats, capes, cloaks, anoraks, incl. ski jackets, windcheaters, ...	-402.79	#DIV/0!
369	'6103	Men's or boys' suits, ensembles, jackets, blazers, trousers, bib and brace overalls, breeches ...	3886065.61	-21322412702.00
370	'6104	Women's or girls' suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers, ...	13849.97	177558513.00
371	'6105	Men's or boys' shirts, knitted or crocheted (excluding nightshirts, T-shirts, singlets and ...	60.85	#DIV/0!
372	'6106	Women's or girls' blouses, shirts and shirt-blouses, knitted or crocheted (excluding T-shirts ...	-34506.74	#DIV/0!
373	'6107	Men's or boys' underpants, briefs, nightshirts, pyjamas, bathrobes, dressing gowns and similar ...	32458.77	#DIV/0!
374	'6108	Women's or girls' slips, petticoats, briefs, panties, nightdresses, pyjamas, négligés, bathrobes, ...	3728.80	#DIV/0!
375	'6109	T-shirts, singlets and other vests, knitted or crocheted	5241.99	-15753335.75
376	'6110	Jerseys, pullovers, cardigans, waistcoats and similar articles, knitted or crocheted (excluding ...	-3476003.63	-53342000000.00

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
377	'6111	Babies' garments and clothing accessories, knitted or crocheted (excluding hats)	-1092.68	-8333.58
378	'6112	Track-suits, ski-suits and swimwear, knitted or crocheted	-1518.40	#DIV/0!
379	'6114	Special garments for professional, sporting or other purposes, n.e.s., knitted or crocheted	-531.51	#DIV/0!
380	'6115	Pantyhose, tights, stockings, socks and other hosiery, incl. graduated compression hosiery ...	480139.48	-10617205146.00
381	'6116	Gloves, mittens and mitts, knitted or crocheted (excluding for babies)	13855.67	#DIV/0!
382	'6117	Made-up clothing accessories, knitted or crocheted; knitted or crocheted parts of garments ...	12859.16	-436158233.70
383	'6201	Men's or boys' overcoats, car coats, capes, cloaks, anoraks, incl. ski jackets, windcheaters, ...	7331317.48	-8942515443.00
384	'6202	Women's or girls' overcoats, car coats, capes, cloaks, anoraks, incl. ski jackets, windcheaters, ...	67727.40	#DIV/0!
385	'6203	Men's or boys' suits, ensembles, jackets, blazers, trousers, bib and brace overalls, breeches ...	24568507.87	-10850432860.00
386	'6204	Women's or girls' suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers, ...	2940813.42	7158845.93
387	'6205	Men's or boys' shirts (excluding knitted or crocheted, nightshirts, singlets and other vests)	3866.79	-17382.14
388	'6207	Men's or boys' singlets and other vests, underpants, briefs, nightshirts, pyjamas, bathrobes, ...	-36.36	#DIV/0!
389	'6208	Women's or girls' singlets and other vests, slips, petticoats, briefs, panties, nightdresses, ...	-7.74	#DIV/0!
390	'6209	Babies' garments and clothing accessories of textile materials (excluding knitted or crocheted ...	-1308.01	-2852152.27
391	'6210	Garments made up of felt or nonwovens, whether or not impregnated, coated, covered or laminated; ...	-1096.73	#DIV/0!
392	'6211	Tracksuits, ski suits, swimwear and other garments, n.e.s. (excluding knitted or crocheted)	-994.77	#DIV/0!
393	'6212	Brassieres, girdles, corsets, braces, suspenders, garters and similar articles and parts thereof, ...	83887.45	#DIV/0!
394	'6213	Handkerchiefs, of which no side exceeds 60 cm (excluding knitted or crocheted)	-2134.14	-938944.63
395	'6214	Shawls, scarves, mufflers, mantillas, veils and similar articles (excluding knitted or crocheted)	9243.12	#DIV/0!
396	'6215	Ties, bow ties and cravats of textile materials (excluding knitted or crocheted)	-264.54	#DIV/0!
397	'6216	Gloves, mittens and mitts, of all types of textile materials (excluding knitted or crocheted ...	-3452.15	#DIV/0!



Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
398	'6217	Made-up clothing accessories and parts of garments or clothing accessories, of all types of ...	210.32	-3733.87
399	'6301	Blankets and travelling rugs of all types of textile materials (excluding table covers, bedspreads ...	3390595.81	-615793260.70
400	'6302	Bedlinen, table linen, toilet linen and kitchen linen of all types of textile materials (excluding ...	82719.87	-2067646.29
401	'6303	Curtains, incl. drapes, and interior blinds; curtain or bed valances of all types of textile ...	646.93	#DIV/0!
402	'6304	Articles for interior furnishing, of all types of textile materials (excluding blankets and ...	15071.07	#DIV/0!
403	'6305	Sacks and bags, of a kind used for the packing of goods, of all types of textile materials	-11965.79	#DIV/0!
404	'6306	Tarpaulins, awnings and sunblinds; tents; sails for boats, sailboards or landcraft; camping ...	-1225385.30	-142647397.60
405	'6307	Made-up articles of textile materials, incl. dress patterns, n.e.s.	35066.07	-5061665.88
406	'6402	Footwear with outer soles and uppers of rubber or plastics (excluding waterproof footwear of ...	7132658.33	3475302.45
407	'6403	Footwear with outer soles of rubber, plastics, leather or composition leather and uppers of ...	-179175.82	-756019503.00
408	'6404	Footwear with outer soles of rubber, plastics, leather or composition leather and uppers of ...	2594942.01	-13108783499.00
409	'6405	Footwear with outer soles of rubber or plastics, with uppers other than rubber, plastics, leather ...	-3436096.19	#DIV/0!
410	'6406	Parts of footwear, incl. uppers whether or not attached to soles other than outer soles; removable ...	12224.98	30486.88
411	'6505	Hats and other headgear, knitted or crocheted, or made up from lace, felt or other textile ...	-402458.46	-1222410071.00
412	'6506	Headgear, whether or not lined or trimmed, n.e.s.	147676.73	#DIV/0!
413	'6507	Headbands, linings, covers, hat foundations, hat frames, peaks and chinstraps, for headgear ...	74.90	#DIV/0!
414	'6601	Umbrellas and sun umbrellas, incl. walking-stick umbrellas, garden umbrellas and similar umbrellas ...	8026872.55	2366374.31
415	'6602	Walking sticks, seat-sticks, whips, riding-crops and the like (excluding measure walking sticks, ...	31066.18	#DIV/0!
416	'6603	Parts, trimmings and accessories for umbrellas and sun umbrellas of heading 6601 or for walking ...	-1020.10	-413717.13
417	'6702	Artificial flowers, foliage and fruit and parts thereof, and articles made of artificial flowers, ...	54279.98	-22955576.34
418	'6704	Wigs, false beards, eyebrows and eyelashes, switches and the like, of human or animal hair ...	618.03	#DIV/0!

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
419	'6802	Monumental or building stone, natural (excluding slate), worked, and articles; mosaic cubes ...	789140.70	-42351427.03
420	'6804	Millstones, grindstones, grinding wheels and the like, without frameworks, for milling, grinding, ...	39134.31	-121007.40
421	'6805	Natural or artificial abrasive powder or grain, on a base of textile material, paper, paperboard ...	34131.91	-326537.04
422	'6806	Slag-wool, rock-wool and similar mineral wools; exfoliated vermiculite, expanded clays, foamed ...	14021.84	-3703692.98
423	'6807	Articles of asphalt or of similar materials, e.g. petroleum bitumen or coal tar pitch	41.09	#DIV/0!
424	'6808	Panels, boards, tiles, blocks and similar articles of vegetable fibre, of straw or of shavings, ...	12.46	#DIV/0!
425	'6809	Articles of plaster or of compositions based on plaster (excluding plaster bandages for straightening ...	-7083.78	-67257539.25
426	'6810	Articles of cement, concrete or artificial stone, whether or not reinforced	17837.01	#DIV/0!
427	'6811	Articles of asbestos-cement, cellulose fibre-cement or the like	200.27	#DIV/0!
428	'6812	Fabricated asbestos fibres; mixtures with a basis of asbestos or with a basis of asbestos and ...	1835.59	512.48
429	'6813	Friction material and articles thereof, e.g., sheets, rolls, strips, segments, discs, washers, ...	17.26	-2020.70
430	'6814	Worked mica and articles of mica, incl. agglomerated or reconstituted mica, whether or not ...	29.24	11.71
431	'6815	Articles of stone or of other mineral substances, incl. carbon fibres, articles of carbon fibres ...	521.65	31.47
432	'6901	Bricks, blocks, tiles and other ceramic goods of siliceous fossil meals, e.g. kieselguhr, tripolite ...	-4831.45	-10299400.62
433	'6902	Refractory bricks, blocks, tiles and similar refractory ceramic constructional goods (excluding ...	-1855.47	-90310.33
434	'6903	Retorts, crucibles, mufflers, nozzles, plugs, supports, cupels, tubes, pipes, sheaths, rods ...	-238.35	-78789.11
435	'6904	Ceramic building bricks, flooring blocks, support or filler tiles and the like (excluding those ...	108.09	#DIV/0!
436	'6907	Unglazed ceramic flags and paving, hearth or wall tiles; unglazed ceramic mosaic cubes and ...	2479972.95	-474907339.40
437	'6908	Glazed ceramic flags and paving, hearth or wall tiles; glazed ceramic mosaic cubes and the ...	7411688.72	-151394000000.00
438	'6909	Ceramic wares for laboratory, chemical or other technical uses; ceramic troughs, tubs and similar ...	281.39	-20.83
439	'6910	Ceramic sinks, washbasins, washbasin pedestals, baths, bidets, water closet pans, flushing ...	291292.12	-4980508.89

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
440	'6911	Tableware, kitchenware, other household articles and toilet articles, of porcelain or china ...	317719.77	-41304087.16
441	'6912	Tableware, kitchenware, other household articles and toilet articles, of ceramics other than ...	39.60	351.57
442	'6913	Statuettes and other ornamental ceramic articles, n.e.s.	647.58	-80.72
443	'6914	Ceramic articles, n.e.s.	507.94	-17731377.82
444	'7001	Cullet and other waste and scrap of glass; glass in the mass (excluding glass in the form of ...	-2.92	-16.30
445	'7002	Glass in balls, rods or tubes, unworked (excluding glass microspheres <= 1 mm in diameter, ...	4105.30	-27020.77
446	'7003	Cast glass and rolled glass, in sheets or profiles, whether or not having an absorbent, reflecting ...	29529.50	#DIV/0!
447	'7004	Sheets of glass, drawn or blown, whether or not having an absorbent, reflecting or non-reflecting ...	486056.78	8334976798.00
448	'7005	Float glass and surface ground or polished glass, in sheets, whether or not having an absorbent, ...	-375205.13	-7662653.78
449	'7006	Sheets or profiles of glass, whether or not having an absorbent, reflecting or non-reflecting ...	41.09	-0.64
450	'7007	Safety glass, toughened "tempered", laminated safety glass (excluding multiple-walled insulating ...	74122.96	-98505.78
451	'7008	Multiple-walled insulating units of glass	10.29	#DIV/0!
452	'7009	Glass mirrors, whether or not framed, incl. rear-view mirrors (excluding optical mirrors, optically ...	97797.19	-860954.50
453	'7010	Carboys, bottles, flasks, jars, pots, phials, ampoules and other containers, of glass, of a ...	76206.63	-1554573.10
454	'7011	Glass envelopes, incl. bulbs and tubes, open, and glass parts thereof, without fittings, for ...	-0.11	#DIV/0!
455	'7013	Glassware of a kind used for table, kitchen, toilet, office, indoor decoration or similar purposes ...	1773818.20	-52072908.69
456	'7015	Clock or watch glasses and similar glasses, glasses for non-corrective or corrective spectacles, ...	50.80	397.82
457	'7016	Paving blocks, slabs, bricks, squares, tiles and other articles of pressed or moulded glass, ...	3632.05	-160719.21
458	'7017	Laboratory, hygienic or pharmaceutical glassware, whether or not graduated or calibrated (excluding ...	564.21	188.32
459	'7018	Glass beads, imitation pearls, imitation precious or semi-precious stones and similar glass ...	49863.74	-7819155.01

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
460	'7019	Glass fibres, incl. glass wool, and articles thereof (excluding mineral wools and articles ...	43241.34	-22562.88
461	'7020	Articles of glass, n.e.s.	-6403.81	-29899946.25
462	'7117	Imitation jewellery	256999.93	-24276529.04
463	'7202	Ferro-alloys	-24442.11	-47059.35
464	'7205	Granules and powders of pig iron, spiegeleisen, iron or steel (excluding granules and powders ...	9.55	-553.05
465	'7208	Flat-rolled products of iron or non-alloy steel, of a width >= 600 mm, hot-rolled, not clad, ...	-1080053.77	-174551377.60
466	'7209	Flat-rolled products of iron or non-alloy steel, of a width of >= 600 mm, cold-rolled "cold-reduced", ...	539403.04	#DIV/0!
467	'7210	Flat-rolled products of iron or non-alloy steel, of a width >= 600 mm, hot-rolled or cold-rolled ...	5451360.83	-24597900000.00
468	'7211	Flat-rolled products of iron or non-alloy steel, of a width of < 600 mm, hot-rolled or cold-rolled ...	-266664.36	#DIV/0!
469	'7212	Flat-rolled products of iron or non-alloy steel, of a width of < 600 mm, hot-rolled or cold-rolled ...	-18581.77	-36980269.20
470	'7213	Bars and rods of iron or non-alloy steel, hot-rolled, in irregularly wound coils	-124763.42	#DIV/0!
471	'7214	Bars and rods, of iron or non-alloy steel, not further worked than forged, hot-rolled, hot-drawn ...	-224252.45	-5823762574.00
472	'7215	Bars and rods, of iron or non-alloy steel, cold-formed or cold-finished, whether or not further ...	-6367.27	-471473144.20
473	'7216	Angles, shapes and sections of iron or non-alloy steel, n.e.s.	9484.74	#DIV/0!
474	'7217	Wire of iron or non-alloy steel, in coils (excluding bars and rods)	22785.49	-698778.56
475	'7219	Flat-rolled products of stainless steel, of a width of >= 600 mm, hot-rolled or cold-rolled ...	118873.08	#DIV/0!
476	'7220	Flat-rolled products of stainless steel, of a width of < 600 mm, hot-rolled or cold-rolled ...	348.85	#DIV/0!
477	'7222	Other bars and rods of stainless steel; angles, shapes and sections of stainless steel, n.e.s.	475.46	-70308.09
478	'7223	Wire of stainless steel, in coils (excluding bars and rods)	6.82	-1.99
479	'7225	Flat-rolled products of alloy steel other than stainless, of a width of >= 600 mm, hot-rolled ...	439054.00	1008706.88
480	'7226	Flat-rolled products of alloy steel other than stainless, of a width of < 600 mm, hot-rolled ...	#DIV/0!	#DIV/0!
481	'7227	Bars and rods of alloy steel other than stainless, hot-rolled, in irregularly wound coils	33826.09	#DIV/0!
482	'7228	Other bars and rods of alloy steel other than stainless, angles, shapes and sections of alloy ...	1323792.70	-109362354.90
483	'7229	Wire of alloy steel other than stainless, in coils (excluding bars and rods)	604.64	#DIV/0!
484	'7301	Sheet piling of iron or steel, whether or not drilled, punched or made from assembled elements; ...	20.95	#DIV/0!

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
485	'7302	Railway or tramway track construction material of iron or steel, the following : rails, check-rails ...	30.42	#DIV/0!
486	'7303	Tubes, pipes and hollow profiles, of cast iron	329.59	-11596.56
487	'7304	Tubes, pipes and hollow profiles, seamless, of iron or steel (excluding products of cast iron)	4739281.09	-698801141.70
488	'7305	Tubes and pipes, having circular cross-sections and an external diameter of > 406,4 mm, of ...	83867.43	#DIV/0!
489	'7306	Tubes, pipes and hollow profiles "e.g., open seam or welded, riveted or similarly closed", ...	40516.31	-17225963.54
490	'7307	Tube or pipe fittings "e.g. couplings, elbows, sleeves", of iron or steel	-27482.88	-2635623.87
491	'7308	Structures and parts of structures "e.g., bridges and bridge-sections, lock-gates, towers, ...	5707570.35	-20236194.11
492	'7309	Reservoirs, tanks, vats and similar containers, of iron or steel, for any material "other than ...	4330.02	-578395.56
493	'7310	Tanks, casks, drums, cans, boxes and similar containers, of iron or steel, for any material ...	1261.36	-6924.89
494	'7311	Containers of iron or steel, for compressed or liquefied gas (excluding containers specifically ...	2573.06	-481152592.50
495	'7312	Stranded wire, ropes, cables, plaited bands, slings and the like, of iron or steel (excluding ...	19771.58	-665708.68
496	'7313	Barbed wire of iron or steel; twisted hoop or single flat wire, barbed or not, and loosely ...	793.12	#DIV/0!
497	'7314	Cloth, incl. endless bands, grill, netting and fencing, of iron or steel wire, expanded metal ...	27519.90	-648045.38
498	'7315	Chain and parts thereof, of iron or steel (excluding watch chains, necklace chains and the ...	53114.18	-46707.66
499	'7317	Nails, tacks, drawing pins, corrugated nails, staples and similar articles of iron or steel, ...	14601.31	-427303.98
500	'7318	Screws, bolts, nuts, coach screws, screw hooks, rivets, cotters, cotter pins, washers, incl. ...	58973.91	-7239688.85
501	'7319	Sewing needles, knitting needles, bodkins, crochet hoods, embroidery stiletos and similar ...	857.61	-9136.67
502	'7320	Springs and leaves for springs, of iron or steel (excluding clock and watch springs, springs ...	418.24	-25079.39
503	'7321	Stoves, ranges, grates, cookers, incl. those with subsidiary boilers for central heating, barbecues, ...	48491.10	-10591539.33
504	'7322	Radiators for central heating, non-electrically heated, and parts thereof, of iron or steel; ...	20.70	#DIV/0!
505	'7323	Table, kitchen or other household articles, and parts thereof, of iron or steel; iron or steel ...	70239.46	-4879750.79
506	'7324	Sanitary ware, and parts thereof, of iron or steel (excluding cans, boxes and similar containers ...	2370.28	-32008.53
507	'7325	Articles of iron or steel, cast, n.e.s.	-20439.40	-1599288291.00
508	'7326	Articles of iron or steel, n.e.s. (excluding cast articles)	54906.98	-2583950.82

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
509	'7407	Bars, rods and profiles, of copper, n.e.s.	252.03	#DIV/0!
510	'7408	Copper wire (excluding surgical sutures, stranded wire, cables, plaited bands and the like ...	-1519.58	-56235.01
511	'7409	Plates, sheets and strip, of copper, of a thickness of > 0,15 mm (excluding expanded sheet ...	5432.09	-2324433.00
512	'7410	Copper foil "whether or not printed or backed with paper, paperboard, plastics or similar backing ...	4481.28	263.29
513	'7411	Copper tubes and pipes	658725.27	-1269695382.00
514	'7412	Copper tube or pipe fittings "e.g., couplings, elbows, sleeves"	3407.95	#DIV/0!
515	'7413	Stranded wire, cables, plaited bands and the like, of copper (excluding electrically insulated ...	3319.41	#DIV/0!
516	'7415	Nails, tacks, drawing pins, staples and similar articles, of copper or with shafts of iron ...	-253.24	#DIV/0!
517	'7418	Table, kitchen or other household articles, sanitary ware, and parts thereof, of copper; pot ...	185.69	-4300.31
518	'7419	Other articles of copper, n.e.s.	2029.07	218.75
519	'7505	Bars, rods, profiles and wire, of nickel (excluding electrically insulated products)	20823.93	15534.16
520	'7506	Plates, sheets, strip and foil, of nickel (excluding expanded plates, sheets or strip)	#DIV/0!	#DIV/0!
521	'7507	Tubes, pipes and tube or pipe fittings "e.g., couplings, elbows, sleeves", of nickel	12168.42	#DIV/0!
522	'7508	Articles of nickel, n.e.s. (excluding powder, flakes, bars, profiles, wire, plates, sheets, ...	-1270.89	-163.06
523	'7601	Unwrought aluminium	-14.20	-16831.50
524	'7603	Powder and flakes, of aluminium (excluding pellets of aluminium, and spangles)	-49.18	-83.63
525	'7604	Bars, rods and profiles, of aluminium, n.e.s.	9911.26	12123.46
526	'7605	Aluminium wire (excluding stranded wire, cables, plaited bands and the like and other articles ...	889.99	-320366.93
527	'7606	Plates, sheets and strip, of aluminium, of a thickness of > 0,2 mm (excluding expanded plates, ...	828385.56	-14621488.93
528	'7607	Aluminium foil, "whether or not printed or backed with paper, paperboard, plastics or similar ...	1900082.69	-2512097.39
529	'7608	Aluminium tubes and pipes (excluding hollow profiles)	4474.04	#DIV/0!
530	'7609	Aluminium tube or pipe fittings "e.g., couplings, elbows, sleeves"	39.02	16.59
531	'7610	Structures and parts of structures "e.g., bridges and bridge-sections, towers, lattice masts, ...	42377.96	-431186.55

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
532	'7612	Casks, drums, cans, boxes and similar containers, incl. rigid or collapsible tubular containers, ...	2131.76	#DIV/0!
533	'7613	Aluminium containers for compressed or liquefied gas	44.55	#DIV/0!
534	'7614	Stranded wire, cables, plaited bands and the like, of aluminium (excluding such products electrically ...	142193.95	#DIV/0!
535	'7615	Table, kitchen or other household articles, sanitary ware, and parts thereof, of aluminium, ...	18065.66	-326586.93
536	'7616	Articles of aluminium, n.e.s.	61607.95	-19224767.12
537	'7901	Unwrought zinc :	-17470.12	#DIV/0!
538	'7904	Zinc bars, rods, profiles and wire, n.e.s.	3250.80	#DIV/0!
539	'7907	Articles of zinc, n.e.s.	-2647.54	-242489.96
540	'8007	Articles of tin, n.e.s.	30625.00	#DIV/0!
541	'8101	Tungsten "wolfram" and articles thereof, n.e.s.; tungsten waste and scrap (excluding ash and ...	-3878.47	232763.59
542	'8102	Molybdenum and articles thereof, n.e.s.; molybdenum waste and scrap (excluding ash and residues ...	0.00	#DIV/0!
543	'8104	Magnesium and articles thereof, n.e.s.; magnesium waste and scrap (excluding ash and residues ...	532.70	-3746.54
544	'8105	Cobalt mattes and other intermediate products of cobalt metallurgy; cobalt and articles thereof, ...	0.00	0.00
545	'8108	Titanium and articles thereof, n.e.s.; titanium waste and scrap (excluding ash and residues ...	4792.31	-814877.82
546	'8110	Antimony and articles thereof, n.e.s.; antimony waste and scrap (excluding ash and residues ...	-179.26	-2851.26
547	'8111	Manganese and articles thereof, n.e.s.; manganese waste and scrap (excluding ash and residues ...	-827.41	-18066.89
548	'8201	Hand tools, the following: spades, shovels, mattocks, picks, hoes, forks and rakes, of base ...	-11587.21	-9401379.64
549	'8202	Handsaws, with working parts of base metal (excluding power-operated saws); blades for saws ...	1155.64	-586304.38
550	'8203	Files, rasps, pliers, incl. cutting pliers, pincers and tweezers for non-medical use, metal-cutting ...	12858.58	-35020.93
551	'8204	Hand-operated spanners and wrenches, incl. torque meter wrenches (excluding tap wrenches), ...	19219.66	-46814.72
552	'8205	Hand tools, incl. glaziers' diamonds, of base metal, n.e.s.; blowlamps and the like; vices, ...	-5302.93	-1098946.18
553	'8206	Sets of two or more tools of heading 8202 to 8205, put up in sets for retail sale	-472.97	#DIV/0!
554	'8207	Tools, interchangeable, for hand tools, whether or not power-operated, or for machine tools ...	22175.87	-68766.35

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
555	'8208	Knives and cutting blades, of base metal, for machines or for mechanical appliances	3343.56	-37115.58
556	'8209	Plates, sticks, tips and the like for tools, unmounted, of sintered metal carbides or cermets	-699.60	-98120.89
557	'8210	Hand-operated mechanical devices, of base metal, weighing <= 10 kg, used in the preparation, ...	792.34	-328590.95
558	'8211	Knives with cutting blades, serrated or not, incl. pruning knives, and blades therefor, of ...	18085.17	-3638.34
559	'8212	Non-electric razors and razor blades of base metal, incl. razor blade blanks in strips	17884.27	#DIV/0!
560	'8213	Scissors, tailors' shears and similar shears, and blades therefor, of base metal (excluding ...	-1736.39	-817742.16
561	'8214	Articles of cutlery, n.e.s., e.g. hair clippers, butchers' or kitchen cleavers, choppers and ...	9370.53	-1005382.44
562	'8215	Spoons, forks, ladles, skimmers, cake-servers, fish-knives, butter-knives, sugar tongs and ...	7628.69	-4455925.67
563	'8301	Padlocks and locks "key, combination or electrically operated", of base metal; clasps and frames ...	2912448.62	-10929315.53
564	'8302	Base metal mountings, fittings and similar articles suitable for furniture, doors, staircases, ...	426030.63	-11907260.04
565	'8303	Armoured or reinforced safes, strongboxes and doors and safe deposit lockers for strongrooms, ...	123.84	-29321.43
566	'8304	Filing cabinets, card-index cabinets, paper trays, paper rests, pen trays, office-stamp stands ...	2.32	-7178.49
567	'8305	Fittings for loose-leaf binders or files, letter clips, letter corners, paper clips, indexing ...	1661.58	-53587.93
568	'8306	Bells, gongs and the like, non-electric, of base metal (excluding musical instruments); statuettes ...	-125.48	-7316799.09
569	'8307	Flexible tubing of base metal, with or without fittings	474.98	-6695.89
570	'8308	Clasps, frames with clasps, buckles, buckle-clasps, hooks, eyes, eyelets and the like, of base ...	4874.76	-47664.69
571	'8309	Stoppers, caps and lids, incl. crown corks, screw caps and pouring stoppers, capsules for bottles, ...	2098.02	#DIV/0!
572	'8310	Sign-plates, nameplates, address-plates and similar plates, numbers, letters and other symbols, ...	-9.41	#DIV/0!
573	'8311	Wire, rods, tubes, plates, electrodes and similar products, of base metal or of metal carbides, ...	-61.96	-16712451.16
574	'8401	Nuclear reactors; fuel elements "cartridges", non-irradiated, for nuclear reactors; machinery ...	109246.06	87024328.07
575	'8402	Steam or other vapour generating boilers (excluding central heating hot water boilers capable ...	-267.46	-19215.87



Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
576	'8404	Auxiliary plant for use with boilers of heading 8402 or 8403, e.g. economizers, superheaters, ...	982.12	-3.02
577	'8405	Producer gas or water gas generators, with or without their purifiers; acetylene gas generators ...	#DIV/0!	#DIV/0!
578	'8406	Steam turbines and other vapour turbines; parts thereof	7163.69	-514374.42
579	'8407	Spark-ignition reciprocating or rotary internal combustion piston engine	312453.47	-47547637.71
580	'8408	Compression-ignition internal combustion piston engine "diesel or semi-diesel engine"	-34320.06	-207345.36
581	'8409	Parts suitable for use solely or principally with internal combustion piston engine of heading ...	183.23	-1438868.21
582	'8410	Hydraulic turbines, water wheels, and regulators therefor (excluding hydraulic power engines ...	-4263.90	#DIV/0!
583	'8411	Turbojets, turbopropellers and other gas turbines	-0.53	#DIV/0!
584	'8412	Engines and motors (excluding steam turbines, internal combustion piston engine, hydraulic ...	249.29	#DIV/0!
585	'8413	Pumps for liquids, whether or not fitted with a measuring device (excluding ceramic pumps and ...	172277.37	-3493254.37
586	'8414	Air or vacuum pumps (excluding gas compound elevators and pneumatic elevators and conveyors); ...	235176.28	-223062602.00
587	'8415	Air conditioning machines comprising a motor-driven fan and elements for changing the temperature ...	-1348517.72	-60556109812.00
588	'8416	Furnace burners for liquid fuel, for pulverised solid fuel or for gas; mechanical stokers, ...	-84.85	-12797530.03
589	'8417	Industrial or laboratory furnaces and ovens, non-electric, incl. incinerators (excluding drying ...	-1803.74	-9790028.08
590	'8418	Refrigerators, freezers and other refrigerating or freezing equipment, electric or other; heat ...	281121.13	-909833258.90
591	'8419	Machinery, plant or laboratory equipment whether or not electrically heated (excluding furnaces, ...	56014.21	-12926584.79
592	'8420	Calendering or other rolling machines (other than for metals or glass) and cylinders therefor; ...	1.11	#DIV/0!
593	'8421	Centrifuges, incl. centrifugal dryers (excluding those for isotope separation); filtering or ...	-37655.99	-53691882.26
594	'8422	Dishwashing machines; machinery for cleaning or drying bottles or other containers; machinery ...	3725.27	-68182.15
595	'8423	Weighing machinery, incl. weight-operated counting or checking machines (excluding balances ...	-453.23	-8266.54
596	'8424	Mechanical appliances, whether or not hand-operated, for projecting, dispersing or spraying ...	-1034.14	-42188.89

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
597	'8425	Pulley tackle and hoists (other than skip hoists); winches and capstans; jacks	118.89	-6097.96
598	'8426	Ships' derricks; cranes, incl. cable cranes (excluding wheel-mounted cranes and vehicle cranes ...	31547.32	-11100387.27
599	'8427	Fork-lift trucks; other works trucks fitted with lifting or handling equipment (excluding straddle ...	710.80	-107455.27
600	'8428	Lifting, handling, loading or unloading machinery, e.g. lifts, escalators, conveyors, teleferics ...	21901.04	-292328.34
601	'8429	Self-propelled bulldozers, angledozers, graders, levellers, scrapers, mechanical shovels, excavators, ...	1361.50	#DIV/0!
602	'8430	Moving, grading, levelling, scraping, excavating, tamping, compacting, extracting or boring ...	-60942.76	-569441.80
603	'8431	Parts suitable for use solely or principally with the machinery of heading 8425 to 8430, n.e.s.	3191.47	-2472734.45
604	'8432	Agricultural, horticultural or forestry machinery for soil preparation or cultivation (excluding ...	0.13	-249.37
605	'8433	Harvesting or threshing machinery, incl. straw or fodder balers; grass or hay mowers; machines ...	13.72	-29.54
606	'8434	Milking machines and dairy machinery (excluding refrigerating or heat treatment equipment, ...	0.25	#DIV/0!
607	'8435	Presses, crushers and similar machinery used in the manufacture of wine, cider, fruit juices ...	-0.04	#DIV/0!
608	'8436	Agricultural, horticultural, forestry, poultry-keeping or bee-keeping machinery, incl. germination ...	255.95	233.35
609	'8437	Machines for cleaning, sorting or grading seed, grain or dried leguminous vegetables; machinery ...	-1038.18	-18405.46
610	'8438	Machinery, not specified or included elsewhere in this chapter, for the industrial preparation ...	194.98	-2340.20
611	'8439	Machinery for making pulp of fibrous cellulosic material or for making or finishing paper or ...	237.00	#DIV/0!
612	'8440	Bookbinding machinery, incl. book-sewing machines (excluding machinery of heading 8441, general-purpose ...	-0.36	#DIV/0!
613	'8441	Machinery for making up paper pulp, paper or paperboard, incl. cutting machines of all kinds, ...	631.02	-13350.68
614	'8442	Machinery, apparatus and equipment (other than the machine-tools of headings 8456 to 8465) ...	-52.89	-31.63
615	'8443	Printing machinery used for printing by means of plates, cylinders and other printing components ...	-881.01	-40902.91

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
616	'8444	Machines for extruding, drawing, texturing or cutting man-made textile materials	-90.80	-433881.06
617	'8445	Machines for preparing textile fibres; spinning, doubling or twisting machines and other machinery ...	-173360.79	-547654.86
618	'8446	Weaving machines "looms"	-244.80	-5792.03
619	'8447	Knitting machines, stitch-bonding machines and machines for making gimped yarn, tulle, lace, ...	45653.67	-3411359.05
620	'8448	Auxiliary machinery for use with machines of heading 8444, 8445, 8446 or 8447, e.g. dobbies, ...	2006.71	-32608.48
621	'8449	Machinery for the manufacture or finishing of felt or nonwovens in the piece or in shapes, ...	43.17	#DIV/0!
622	'8450	Household or laundry-type washing machines, incl. machines which both wash and dry; parts thereof	3027.75	-253512.36
623	'8451	Machinery (excluding of heading 8450) for washing, cleaning, wringing, drying, ironing, pressing ...	1355.78	-587903.57
624	'8452	Sewing machines (other than book-sewing machines of heading 8440); furniture, bases and covers ...	2549.91	-170820.85
625	'8453	Machinery for preparing, tanning or working hides, skins or leather or for making or repairing ...	52.74	-23452.44
626	'8454	Converters, ladles, ingot moulds and casting machines of a kind used in metallurgy or in metal ...	-144.52	#DIV/0!
627	'8455	Metal-rolling mills and rolls therefor; parts of metal-rolling mills	-1529.02	-395369.46
628	'8456	Machine tools for working any material by removal of material, by laser or other light or photon ...	-130.79	-74168.83
629	'8457	Machining centres, unit construction machines "single station" and multi-station transfer machines ...	-7.18	-0.28
630	'8458	Lathes, incl. turning centres, for removing metal	-84.53	-17.69
631	'8459	Machine tools, incl. way-type unit head machines, for drilling, boring, milling, threading ...	-102.51	-37.54
632	'8460	Machine tools for deburring, sharpening, grinding, honing, lapping, polishing or otherwise ...	12.21	-551.96
633	'8461	Machine tools for planing, shaping, slotting, broaching, gear cutting, gear grinding or gear ...	-36.23	-4.61
634	'8462	Machine tools, incl. presses, for working metal by forging, hammering or die-stamping; machine ...	-306.87	-1644.35
635	'8463	Machine tools for working metal, sintered metal carbides or cermets, without removing material ...	115.92	-187626.55

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
636	'8464	Machine tools for working stone, ceramics, concrete, asbestos-cement or like mineral materials ...	-6.43	#DIV/0!
637	'8465	Machine tools, incl. machines for nailing, stapling, glueing or otherwise assembling, for working ...	52.40	-1289.69
638	'8466	Parts and accessories suitable for use solely or principally with the machine tools of heading ...	0.71	-489.28
639	'8467	Tools for working in the hand, pneumatic, hydraulic or with self-contained electric or non-electric ...	16019.97	#DIV/0!
640	'8468	Machinery and apparatus for soldering, brazing or welding, whether or not capable of cutting ...	-25.05	#DIV/0!
641	'8470	Calculating machines and pocket-size "dimensions <= 170 mm x 100 mm x 45 mm" data recording, ...	318.41	-24217.27
642	'8471	Automatic data-processing machines and units thereof; magnetic or optical readers, machines ...	296271.16	2250960.20
643	'8472	Office machines, e.g. hectograph or stencil duplicating machines, addressing machines, automatic ...	3562.69	60981385.25
644	'8473	Parts and accessories (other than covers, carrying cases and the like) suitable for use solely ...	-1950.72	-28328.33
645	'8474	Machinery for sorting, screening, separating, washing, crushing, grinding, mixing or kneading ...	-1118.12	-115964571.90
646	'8475	Machines for assembling electric or electronic lamps, tubes or valves or flashbulbs, in glass ...	11.55	-10304.50
647	'8477	Machinery for working rubber or plastics or for the manufacture of products from these materials, ...	16105.77	-1747323.81
648	'8479	Machines and mechanical appliances having individual functions, not specified or included elsewhere ...	-7133.71	-391701.61
649	'8480	Moulding boxes for metal foundry; mould bases; moulding patterns; moulds for metal (other than ...	3148.86	-229794.25
650	'8481	Taps, cocks, valves and similar appliances for pipes, boiler shells, tanks, vats or the like, ...	44639.48	-835335.34
651	'8482	Ball or roller bearings (excluding steel balls of heading 7326); parts thereof	13962.46	-9673.44
652	'8483	Transmission shafts, incl. camshafts and crankshafts, and cranks; bearing housings and plain ...	129049.08	-643254.93
653	'8484	Gaskets and similar joints of metal sheeting combined with other material or of two or more ...	247.06	-11874.23
654	'8501	Electric motors and generators (excluding generating sets)	153406.18	-2089713.94
655	'8502	Electric generating sets and rotary converters	701132.29	-170107856.70

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
656	'8503	Parts suitable for use solely or principally with electric motors and generators, electric ...	45640.35	53811.18
657	'8504	Electrical transformers, static converters, e.g. rectifiers, and inductors; parts thereof	-424126.70	#DIV/0!
658	'8505	Electromagnets (excluding magnets for medical use); permanent magnets and articles intended ...	563.46	5197.78
659	'8506	Primary cells and primary batteries, electrical; parts thereof (excluding spent)	-40144.69	-124171.62
660	'8507	Electric accumulators, incl. separators therefor, whether or not square or rectangular; parts ...	-8397.35	-120563.77
661	'8509	Electromechanical domestic appliances, with self-contained electric motor; parts thereof (excluding ...	61553.94	#DIV/0!
662	'8510	Electric shavers, hair clippers and hair-removing appliances, with self-contained electric ...	#DIV/0!	#DIV/0!
663	'8511	Electrical ignition or starting equipment of a kind used for spark-ignition or compression-ignition ...	-17212.90	-4295003.80
664	'8512	Electrical lighting or signalling equipment (excluding lamps of heading 8539), windscreen wipers, ...	13433.27	#DIV/0!
665	'8513	Portable electric lamps designed to function by their own source of energy, e.g. dry batteries, ...	36606.96	-656563.62
666	'8514	Industrial or laboratory electric furnaces and ovens, incl. those functioning by induction ...	296.62	-3019.40
667	'8515	Electric, incl. electrically heated gas, laser or other light or photon beam, ultrasonic, electron ...	229.28	-378.39
668	'8516	Electric instantaneous or storage water heaters and immersion heaters; electric space-heating ...	-157995.54	#DIV/0!
669	'8517	Telephone sets, incl. telephones for cellular networks or for other wireless networks; other ...	-5386295.08	#DIV/0!
670	'8518	Microphones and stands therefor (excluding cordless microphones with built-in transmitter); ...	67221.72	#DIV/0!
671	'8519	Sound recording or sound reproducing apparatus	1005.03	#DIV/0!
672	'8521	Video recording or reproducing apparatus, whether or not incorporating a video tuner (excluding ...	14010.44	-290715.24
673	'8522	Parts and accessories suitable for use solely or principally with sound reproducing and recording ...	-707.95	-983.18
674	'8523	Discs, tapes, solid-state non-volatile storage devices, "smart cards" and other media for the ...	58405043.18	78771445649.00
675	'8525	Transmission apparatus for radio-broadcasting or television, whether or not incorporating reception ...	-354956.44	-26469392890.00
676	'8526	Radar apparatus, radio navigational aid apparatus and radio remote control apparatus	#DIV/0!	#DIV/0!

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
677	'8527	Reception apparatus for radio-broadcasting, whether or not combined, in the same housing, with ...	77826.98	478226.28
678	'8528	Monitors and projectors, not incorporating television reception apparatus; reception apparatus ...	56236714.19	35326100000.00
679	'8529	Parts suitable for use solely or principally with transmission and reception apparatus for ...	39101.22	-29427619.30
680	'8530	Electrical signalling, safety or traffic control equipment for railways, tramways, roads, inland ...	0.67	0.36
681	'8531	Electric sound or visual signalling apparatus, e.g. bells, sirens, indicator panels, burglar ...	15007.78	#DIV/0!
682	'8532	Electrical capacitors, fixed, variable or adjustable "pre-set"; parts thereof	1971.52	-19572.37
683	'8533	Electrical resistors, incl. rheostats and potentiometers (excluding heating resistors); parts ...	25.80	-12.70
684	'8534	Printed circuits	-58.50	#DIV/0!
685	'8535	Electrical apparatus for switching or protecting electrical circuits, or for making connections ...	4981.07	#DIV/0!
686	'8536	Electrical apparatus for switching or protecting electrical circuits, or for making connections ...	77366.43	#DIV/0!
687	'8537	Boards, panels, consoles, desks, cabinets and other bases, equipped with two or more apparatus ...	206290.26	#DIV/0!
688	'8538	Parts suitable for use solely or principally with the apparatus of heading 8535, 8536 or 8537, ...	1076.79	-50960.92
689	'8539	Electric filament or discharge lamps, incl. sealed beam lamp units and ultraviolet or infra-red ...	-369214.21	-5657286.28
690	'8540	Thermionic, cold cathode or photo-cathode valves and tubes, e.g. vacuum or vapour or gas filled ...	-101.15	#DIV/0!
691	'8541	Diodes, transistors and similar semiconductor devices; photosensitive semiconductor devices, ...	-468.02	#DIV/0!
692	'8542	Electronic integrated circuits; parts thereof	-6282.53	-9050335.72
693	'8543	Electrical machines and apparatus, having individual functions, n.e.s. in chapter 85 and parts ...	-1885.57	-836571.71
694	'8544	Insulated "incl. enamelled or anodised" wire, cable "incl. coaxial cable" and other insulated ...	384451.04	-6300120.66
695	'8545	Carbon electrodes, carbon brushes, lamp carbons, battery carbons and other articles of graphite ...	-1371.45	-10131.04
696	'8546	Electrical insulators of any material (excluding insulating fittings)	8374.11	-951719.26
697	'8547	Insulating fittings for electrical machines, appliances or equipment, being fittings wholly ...	-879.84	-22778.70

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
698	'8548	Waste and scrap of primary cells, primary batteries and electric accumulators; spent primary ...	572.50	194799.08
699	'8602	Rail locomotives (excluding those powered from an external source of electricity or by accumulators); ...	-476314.90	#DIV/0!
700	'8607	Parts of railway or tramway locomotives or rolling stock, n.e.s.	248328.87	-48043246919.00
701	'8608	Railway or tramway track fixtures and fittings (excluding sleepers of wood, concrete or steel, ...	5.03	#DIV/0!
702	'8609	Containers, incl. containers for the transport of fluids, specially designed and equipped for ...	-164.20	#DIV/0!
703	'8701	Tractors (other than tractors of heading 8709)	251671.57	-1008816889.00
704	'8702	Motor vehicles for the transport of >= 10 persons, incl. driver	14291.66	#DIV/0!
705	'8703	Motor cars and other motor vehicles principally designed for the transport of persons, incl. ...	74508.89	-42595046.70
706	'8704	Motor vehicles for the transport of goods, incl. chassis with engine and cab	316626.23	-886036884.60
707	'8705	Special purpose motor vehicles (other than those principally designed for the transport of ...	-35908.80	-353493.06
708	'8706	Chassis fitted with engines, for tractors, motor vehicles for the transport of ten or more ...	-7966.78	#DIV/0!
709	'8707	Bodies, incl. cabs, for tractors, motor vehicles for the transport of ten or more persons, ...	-2077.33	#DIV/0!
710	'8708	Parts and accessories for tractors, motor vehicles for the transport of ten or more persons, ...	-4908.10	-287156966.50
711	'8709	Works trucks, self-propelled, not fitted with lifting or handling equipment, of the type used ...	-5.92	#DIV/0!
712	'8711	Motorcycles, incl. mopeds, and cycles fitted with an auxiliary motor, with or without side-cars; ...	532958.53	-7680149.56
713	'8712	Bicycles and other cycles, incl. delivery tricycles, not motorised	-195229.08	-47075822.42
714	'8713	Carriages for disabled persons, whether or not motorised or otherwise mechanically propelled ...	297.30	-12231.96
715	'8714	Parts and accessories for motorcycles and bicycles and for carriages for disabled persons, ...	1880529.26	-34527991.63
716	'8715	Baby carriages and parts thereof, n.e.s.	266.32	#DIV/0!
717	'8716	Trailers and semi-trailers; other vehicles, not mechanically propelled (excluding railway and ...	52321.40	-37697757.16
718	'8801	Balloons and dirigibles; gliders, hang gliders and other non-powered aircraft	-0.57	#DIV/0!
719	'8803	Parts of aircraft and spacecraft of heading 8801 or 8802, n.e.s.	-180767.60	-82259.47
720	'8903	Yachts and other vessels for pleasure or sports; rowing boats and canoes	-5380.68	#DIV/0!

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
721	'8907	Rafts, tanks, coffer-dams, landing stages, buoys, beacons and other floating structures (excluding ...	-254.63	-212.15
722	'9001	Optical fibres and optical fibre bundles; optical fibre cables (excluding made up of individually ...	-10110.81	-47728.79
723	'9002	Lenses, prisms, mirrors and other optical elements, of any material, mounted, being parts of ...	8.56	22144.33
724	'9003	Frames and mountings for spectacles, goggles or the like, and parts thereof, n.e.s.	30862.35	#DIV/0!
725	'9004	Spectacles, goggles and the like, corrective, protective or other (excluding spectacles for ...	634669.89	#DIV/0!
726	'9005	Binoculars, monoculars, astronomical and other optical telescopes, and mountings therefor; ...	#DIV/0!	#DIV/0!
727	'9006	Photographic cameras, photographic flashlight apparatus and flashbulbs (excluding discharge ...	-151.26	#DIV/0!
728	'9008	Image projectors, and photographic enlargers and reducers (excluding cinematographic)	-5.44	-16.74
729	'9010	Apparatus and equipment for photographic or cinematographic laboratories, not elsewhere specified ...	161.95	74.87
730	'9011	Optical microscopes, incl. those for photomicrography, cinephotomicrography or microprojection ...	-348.94	-1581.82
731	'9013	Liquid crystal devices not constituting articles provided for more specifically in other heading; ...	-465.97	#DIV/0!
732	'9014	Direction finding compasses; other navigational instruments and appliances (excluding radio ...	#DIV/0!	#DIV/0!
733	'9015	Surveying, incl. photogrammetrical surveying, hydrographic, oceanographic, hydrological, meteorological ...	237769.85	902372.45
734	'9016	Balances of a sensitivity of 50 mg or better, with or without weights	3.16	#DIV/0!
735	'9017	Drawing, marking-out or mathematical calculating instruments, e.g. drafting machines, pantographs, ...	-6783.89	-92023.42
736	'9018	Instruments and appliances used in medical, surgical, dental or veterinary sciences, incl. ...	-282234.01	-9051095.92
737	'9019	Mechano-therapy appliances; massage apparatus; psychological aptitude-testing apparatus; ozone ...	1999.49	-87445.41
738	'9020	Breathing appliances and gas masks (excluding protective masks having neither mechanical parts ...	0.97	-18.00
739	'9021	Orthopaedic appliances, incl. crutches, surgical belts and trusses; splints and other fracture ...	33.14	#DIV/0!
740	'9022	Apparatus based on the use of X-rays or of alpha, beta or gamma radiations, whether or not ...	-14221.98	-1246622.37



Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
741	'9023	Instruments, apparatus and models designed for demonstrational purposes, e.g. in education ...	34.82	112.62
742	'9024	Machines and appliances for testing the hardness, strength, compressibility, elasticity or ...	-573.96	-554.01
743	'9025	Hydrometers, areometers and similar floating instruments, thermometers, pyrometers, barometers, ...	996.71	#DIV/0!
744	'9026	Instruments and apparatus for measuring or checking the flow, level, pressure or other variables ...	7226.19	6425.14
745	'9027	Instruments and apparatus for physical or chemical analysis, e.g. polarimeters, refractometers, ...	10729.82	-682021.25
746	'9028	Gas, liquid or electricity supply or production meters, incl. calibrating meters therefor	-255172.78	-707970.74
747	'9029	Revolution counters, production counters, taximeters, milometers, pedometers and the like (excluding ...	13685.72	#DIV/0!
748	'9030	Oscilloscopes, spectrum analysers and other instruments and apparatus for measuring or checking ...	4753.67	-709.06
749	'9031	Measuring or checking instruments, appliances and machines not elsewhere specified in chapter ...	-1760.11	-489.18
750	'9032	Regulating or controlling instruments and apparatus (excluding taps, cocks and valves of heading ...	23743.97	#DIV/0!
751	'9033	Parts and accessories for machines, appliances, instruments or other apparatus in chapter 90, ...	217.84	39.52
752	'9102	Wrist-watches, pocket-watches and other watches, incl. stop-watches (excluding of precious ...	85588.13	-1447923515.00
753	'9105	Clocks (excluding wrist-watches, pocket-watches and other watches of heading 9101 or 9102, ...	154470.50	22377.53
754	'9106	Time of day recording apparatus and apparatus for measuring, recording or otherwise indicating ...	-9.38	-184.80
755	'9107	Time switches with clock or watch movement or with synchronous motor	-4996.54	-7323292.44
756	'9109	Clock movements, complete and assembled (excluding watch movements)	497.30	438.57
757	'9110	Complete, unassembled or partly assembled watch or clock movements or movement sets; incomplete ...	71.80	-3141.42
758	'9111	Cases for wrist-watches, pocket-watches and other watches, incl. stop-watches, of heading 9101 ...	-157.33	#DIV/0!
759	'9112	Clock and watch cases and parts thereof, n.e.s. (excluding for wrist-watches, pocket-watches ...	#DIV/0!	#DIV/0!

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
760	'9113	Watch straps, watch bands and watch bracelets, and parts thereof, n.e.s.	339.06	-185410.02
761	'9114	Clock or watch parts, n.e.s.	148.60	-81.69
762	'9202	String musical instruments, e.g. guitars, violins, and harps (excluding with keyboard)	24283.76	#DIV/0!
763	'9207	Musical instruments, the sound of which is produced, or must be amplified, electrically, e.g. ...	1220.62	#DIV/0!
764	'9208	Musical boxes, fairground organs, mechanical street organs, mechanical singing birds, musical ...	593060.58	#DIV/0!
765	'9401	Seats, whether or not convertible into beds, and parts thereof, n.e.s. (excluding medical, ...	316539.88	-106940102.70
766	'9402	Medical, surgical, dental or veterinary furniture, e.g. operating tables, examination tables, ...	633.87	-43697.76
767	'9403	Furniture and parts thereof, n.e.s. (excluding seats and medical, surgical, dental or veterinary ...	358222.47	-74436628.18
768	'9404	Mattress supports (excluding spring interiors for seats); articles of bedding and similar furnishing, ...	7528.57	-39479882.77
769	'9405	Lamps and lighting fittings, incl. searchlights and spotlights, and parts thereof, n.e.s; illuminated ...	1761697.47	-8521230.17
770	'9406	Prefabricated buildings, whether or not complete or already assembled	115343.71	#DIV/0!
771	'9503	Tricycles, scooters, pedal cars and similar wheeled toys; dolls' carriages; dolls; other toys; ...	404301.69	388569.15
772	'9504	Video game consoles and machines, articles for funfair, table or parlour games, incl. pintables, ...	-47652.55	-274314.78
773	'9505	Festival, carnival or other entertainment articles, incl. conjuring tricks and novelty jokes, ...	166576.17	13526155.80
774	'9506	Articles and equipment for general physical exercise, gymnastics, athletics, other sports, ...	857544.52	-95068649.81
775	'9507	Fishing rods, fish-hooks and other line fishing tackle n.e.s; fish landing nets, butterfly ...	4001.19	1196.01
776	'9508	Roundabouts, swings, shooting galleries and other fairground amusements; travelling circuses ...	184.84	#DIV/0!
777	'9602	Worked vegetable or mineral carving material and articles of these materials n.e.s; moulded ...	136.07	#DIV/0!
778	'9603	Brooms, brushes, incl. brushes constituting parts of machines, appliances or vehicles, hand-operated ...	720994.93	-1792782.46
779	'9605	Travel sets for personal toilet, sewing or shoe or clothes cleaning (excluding manicure sets)	100.27	#DIV/0!
780	'9606	Buttons, press-fasteners, snap-fasteners and press studs, button moulds and other parts of ...	187172.41	-2493531.69
781	'9607	Slide fasteners and parts thereof	581018.93	-43251892.47

Sr. No	Product Code	Product Label	Actual Change in Trade Volume	Extrapolated Change in Trade Volume
782	'9608	Ball-point pens; felt tipped and other porous-tipped pens and markers; fountain pens, stylograph ...	-126182.83	#DIV/0!
783	'9609	Pencils, crayons, pencil leads, pastels, drawing charcoals, writing or drawing chalks and tailors' ...	159967.58	-724079.64
784	'9610	Slates and boards, with writing or drawing surfaces, whether or not framed	231.79	-47953776.88
785	'9611	Hand-operated date, sealing or numbering stamps, and the like; hand-operated composing sticks ...	31.03	58.04
786	'9612	Typewriter or similar ribbons, inked or otherwise prepared for giving impressions, whether ...	#DIV/0!	#DIV/0!
787	'9613	Cigarette lighters and other lighters, whether or not mechanical or electrical and parts thereof, ...	-51.01	#DIV/0!
788	'9614	Smoking pipes, incl. pipe bowls, cigar or cigarette holders, and parts thereof, n.e.s.	#DIV/0!	#DIV/0!
789	'9615	Combs, hair-slides and the like; hairpins; curling pins, curling grips, hair-curlers and the ...	30290.59	-1700149.31
790	'9616	Scent sprays and similar toilet sprays, and mounts and heads therefor; powder puffs and pads ...	2470.90	-7183.60
791	'9617	Vacuum flasks and other vacuum vessels, and parts thereof (excluding glass inners)	231796.64	-10075749.63
792	'9618	Tailors' dummies and other lay figures, automata and other animated displays used for shop ...	42.89	#DIV/0!
793	'9701	Paintings, e.g. oil paintings, watercolours and pastels, and drawings executed entirely by ...	-550.00	#DIV/0!
794	'9999	Commodities not elsewhere specified	#N/A	#DIV/0!

**Product Groups from Pakistan-China Free Trade Agreement**  
**Table G.4. Change in Terms of Trade (Actual and Extrapolated)**

Sr. No	Product code	Product label	Actual Change in Terms of Trade	Extrapolated Change in Terms of Trade
1	'0713	Dried leguminous vegetables, shelled, whether or not skinned or split	-7493269.24	-115514327.80
2	'1006	Rice	-835201.23	#DIV/0!
3	'1211	Plants and parts of plants, incl. seeds and fruits, of a kind used primarily in perfumery, ...	-108963.84	-1246577.12
4	'1302	Vegetable saps and extracts; pectic substances, pectinates and pectates; agar-agar and other ...	1201802.08	-8391996.98
5	'1704	Sugar confectionery not containing cocoa, incl. white chocolate	-96270.63	#DIV/0!
6	'2009	Fruit juices, incl. grape must, and vegetable juices, unfermented, not containing added spirit, ...	-354802.36	#DIV/0!
7	'2301	Flours, meals and pellets, of meat or meat offal, of fish or of crustaceans, molluscs or other ...	6074257.55	#DIV/0!
8	'2501	Salts, incl. table salt and denatured salt, and pure sodium chloride, whether or not in aqueous ...	16389.16	#DIV/0!
9	'2530	Vermiculite, perlite and other mineral substances, n.e.s.	-2410665.11	#DIV/0!
10	'3005	Wadding, gauze, bandages and the like, e.g. dressings, adhesive plasters, poultices, impregnated ...	-511315.83	-99366136.07
11	'3204	Synthetic organic colouring matter, whether or not chemically defined; preparations based on ...	-20194086.34	-40683756.44
12	'3307	Shaving preparations, incl. pre-shave and aftershave products, personal deodorants, bath and ...	-878985.63	-7804482418.00
13	'3505	Dextrins and other modified starches, e.g. pregelatinised or esterified starches; glues based ...	-85374.51	-40036529.77
14	'3809	Finishing agents, dye carriers to accelerate the dyeing or fixing of dyestuffs and other products ...	135108.88	14292870.02
15	'3903	Polymers of styrene, in primary forms	-71217.85	#DIV/0!
16	'3907	Polyacetals, other polyethers and epoxide resins, in primary forms; polycarbonates, alkyd resins, ...	161548.32	550828289.10
17	'3926	Articles of plastics and articles of other materials of heading 3901 to 3914, n.e.s.	-50167175.30	-910954929.50
18	'4107	Leather further prepared after tanning or crusting "incl. parchment-dressed leather", of bovine ...	18647932.41	#DIV/0!
19	'4203	Articles of apparel and clothing accessories, of leather or composition leather (excluding ...	-281442.62	#DIV/0!
20	'4302	Tanned or dressed furskins, incl. heads, tails, paws and other pieces, scraps and remnants, ...	100769.23	#DIV/0!
21	'4420	Wood marquetry and inlaid wood; caskets and cases for jewellery or cutlery, and similar articles, ...	-39816.74	#DIV/0!
22	'5205	Cotton yarn other than sewing thread, containing $\geq$ 85% cotton by weight (excluding that put ...	152291005.30	#DIV/0!
23	'5208	Woven fabrics of cotton, containing $\geq$ 85% cotton by weight and weighing $\leq$ 200 g/m <sup>2</sup>	1417996.41	-75547.73
24	'5209	Woven fabrics of cotton, containing $\geq$ 85% cotton by weight and weighing $>$ 200 g/m <sup>2</sup>	#DIV/0!	#DIV/0!
25	'5210	Woven fabrics of cotton, containing predominantly, but $<$ 85% cotton by weight, mixed principally ...	-101796.21	-49411874.40
26	'5211	Woven fabrics of cotton, containing predominantly, but $<$ 85% cotton by weight, mixed principally ...	-2088695.19	#DIV/0!

Sr. No	Product code	Product label	Actual Change in Terms of Trade	Extrapolated Change in Terms of Trade
27	'5212	Woven fabrics of cotton, containing predominantly, but < 85% cotton by weight, other than those ...	-77714.29	#DIV/0!
28	'5407	Woven fabrics of synthetic filament yarn, incl. monofilament of >= 67 decitex and with a cross ...	#DIV/0!	#DIV/0!
29	'5509	Yarn of synthetic staple fibres (excluding sewing thread and yarn put up for retail sale)	1172851.54	#DIV/0!
30	'5513	Woven fabrics containing predominantly, but < 85% synthetic staple fibres by weight, mixed ...	-2719167.58	-504882332.30
31	'5514	Woven fabrics containing predominantly, but < 85% synthetic staple fibres by weight, mixed ...	-1066204.38	#DIV/0!
32	'5702	Carpets and other textile floor coverings, woven, not tufted or flopped, whether or not made ...	-449321.43	375250608.00
33	'5810	Embroidery on a textile fabric ground, in the piece, in strips or in motifs	#DIV/0!	#DIV/0!
34	'5903	Textile fabrics impregnated, coated, covered or laminated with plastics (excluding tyre cord ...	-2075592.73	-5815012977.00
35	'6001	Pile fabrics, incl. "long pile" fabrics and terry fabrics, knitted or crocheted	-67266179.89	#DIV/0!
36	'6006	Fabrics, knitted or crocheted, of a width of > 30 cm (excluding warp knit fabrics "incl. those ...	-5651197.41	#DIV/0!
37	'6103	Men's or boys' suits, ensembles, jackets, blazers, trousers, bib and brace overalls, breeches ...	15467141.67	#DIV/0!
38	'6104	Women's or girls' suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers, ...	-13242671.22	#DIV/0!
39	'6109	T-shirts, singlets and other vests, knitted or crocheted	-3121869.79	1404655664.00
40	'6110	Jerseys, pullovers, cardigans, waistcoats and similar articles, knitted or crocheted (excluding ...	-27725243.32	-835344000000.00
41	'6115	Pantyhose, tights, stockings, socks and other hosiery, incl. graduated compression hosiery ...	-5645310.81	#DIV/0!
42	'6116	Gloves, mittens and mitts, knitted or crocheted (excluding for babies)	#DIV/0!	#DIV/0!
43	'6203	Men's or boys' suits, ensembles, jackets, blazers, trousers, bib and brace overalls, breeches ...	7224527.81	#DIV/0!
44	'6204	Women's or girls' suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers, ...	#DIV/0!	#DIV/0!
45	'6211	Tracksuits, ski suits, swimwear and other garments, n.e.s. (excluding knitted or crocheted)	#DIV/0!	#DIV/0!
46	'6216	Gloves, mittens and mitts, of all types of textile materials (excluding knitted or crocheted ...	-851714.29	#DIV/0!
47	'6301	Blankets and travelling rugs of all types of textile materials (excluding table covers, bedspreads ...	-8372675.51	#DIV/0!
48	'6302	Bedlinen, table linen, toilet linen and kitchen linen of all types of textile materials (excluding ...	-215122.32	-16101927.46
49	'6303	Curtains, incl. drapes, and interior blinds; curtain or bed valances of all types of textile ...	-32081.48	#DIV/0!
50	'6802	Monumental or building stone, natural (excluding slate), worked, and articles; mosaic cubes ...	-1908592.51	-4794570595.00
51	'7326	Articles of iron or steel, n.e.s. (excluding cast articles)	-5981473.20	#DIV/0!
52	'8203	Files, rasps, pliers, incl. cutting pliers, pincers and tweezers for non-medical use, metal-cutting ...	-1886764.27	#DIV/0!

Sr. No	Product code	Product label	Actual Change in Terms of Trade	Extrapolated Change in Terms of Trade
53	'8212	Non-electric razors and razor blades of base metal, incl. razor blade blanks in strips	-366536.26	#DIV/0!
54	'8213	Scissors, tailors' shears and similar shears, and blades therefor, of base metal (excluding ...	-2864726.03	#DIV/0!
55	'8214	Articles of cutlery, n.e.s., e.g. hair clippers, butchers' or kitchen cleavers, choppers and ...	-4347162.63	-287369255.80
56	'8306	Bells, gongs and the like, non-electric, of base metal (excluding musical instruments); statuettes ...	-4672159.42	-4451942643.00
57	'8419	Machinery, plant or laboratory equipment whether or not electrically heated (excluding furnaces, ...	#DIV/0!	#DIV/0!
58	'8480	Moulding boxes for metal foundry; mould bases; moulding patterns; moulds for metal (other than ...	#DIV/0!	#DIV/0!
59	'9018	Instruments and appliances used in medical, surgical, dental or veterinary sciences, incl. ...	#DIV/0!	#DIV/0!
60	'9404	Mattress supports (excluding spring interiors for seats); articles of bedding and similar furnishing, ...	-4456201.09	-6161500096.00
61	'9405	Lamps and lighting fittings, incl. searchlights and spotlights, and parts thereof, n.e.s.; illuminated ...	-58403685.60	#DIV/0!
62	'9506	Articles and equipment for general physical exercise, gymnastics, athletics, other sports, ...	-5863553.80	-3971075863.00

**Product Groups from Pakistan-Malaysia Free Trade Agreement**  
**Table G.5. Change in Trade Volume (Actual and Extrapolated)**

Sr. No	Product code	Product label	Change in Trade Volume	Change in Trade Volume
1	'0304	Fish fillets and other fish meat, whether or not minced, fresh, chilled or frozen	-4738.85	#DIV/0!
2	'0305	Fish, fit for human consumption, dried, salted or in brine; smoked fish, fit for human consumption, ...	192.31	#DIV/0!
3	'0402	Milk and cream, concentrated or containing added sugar or other sweetening matter	207990.94	#DIV/0!
4	'0603	Cut flowers and flower buds of a kind suitable for bouquets or for ornamental purposes, fresh, ...	66666.67	#DIV/0!
5	'0710	Vegetables, uncooked or cooked by steaming or boiling in water, frozen	-25490.74	#DIV/0!
6	'0713	Dried leguminous vegetables, shelled, whether or not skinned or split	2176.38	#DIV/0!
7	'0801	Coconuts, Brazil nuts and cashew nuts, fresh or dried, whether or not shelled or peeled	13709.32	15711.45
8	'0802	Other nuts, fresh or dried, whether or not shelled or peeled (excluding coconuts, Brazil nuts ...	-97508.77	-1200095.47
9	'0904	Pepper of the genus Piper; dried or crushed or ground fruits of the genus Capsicum or of the ...	-17941.19	-1262321.79
10	'1104	Cereal grains otherwise worked, e.g. hulled, rolled, flaked, pearled, sliced or kibbled; germ ...	4494.10	1334.51
11	'1106	Flour, meal and powder of peas, beans, lentils and other dried leguminous vegetables of heading ...	673.68	-7.27
12	'1507	Soya-bean oil and its fractions, whether or not refined (excluding chemically modified)	45.75	-362.01
13	'1511	Palm oil and its fractions, whether or not refined (excluding chemically modified)	-83705073.81	-286959609.90

Sr. No	Product code	Product label	Change in Trade Volume	Change in Trade Volume
14	'1513	Coconut "copra", palm kernel or babassu oil and fractions thereof, whether or not refined, ...	-6126.82	22869.15
15	'1516	Animal or vegetable fats and oils and their fractions, partly or wholly hydrogenated, inter-esterified, ...	9548.86	37760.09
16	'1517	Margarine, other edible mixtures or preparations of animal or vegetable fats or oils and edible ...	-27326.67	-95130232.10
17	'1518	Animal or vegetable fats and oils and their fractions, boiled, oxidised, dehydrated, sulphurised, ...	-30.22	-3024.72
18	'1520	Glycerol, crude; glycerol waters and glycerol lyes	-11.29	-26.01
19	'1521	Vegetable waxes, beeswax, other insect waxes and spermaceti, whether or not refined or coloured ...	2.52	#DIV/0!
20	'1522	Degras; residues resulting from the treatment of fatty substances or animal or vegetable waxes	-519.37	-3856.12
21	'1601	Sausages and similar products, of meat, offal or blood; food preparations based on these products	-164.73	#DIV/0!
22	'1602	Prepared or preserved meat, offal or blood (excluding sausages and similar products, and meat ...	741985.92	#DIV/0!
23	'1604	Prepared or preserved fish; caviar and caviar substitutes prepared from fish eggs	1030.58	#DIV/0!
24	'1701	Cane or beet sugar and chemically pure sucrose, in solid form	-745399.34	-600034064.80
25	'1704	Sugar confectionery not containing cocoa, incl. white chocolate	-36.42	-2755.87
26	'1803	Cocoa paste, whether or not defatted	-249.48	-43494.21
27	'1804	Cocoa butter, fat and oil	1366.51	-46666.34
28	'1805	Cocoa powder, not containing added sugar or other sweetening matter	17655.69	-85035.41
29	'1806	Chocolate and other food preparations containing cocoa	34632.73	-124390604.40
30	'1901	Malt extract; food preparations of flour, groats, meal, starch or malt extract, not containing ...	414647.70	23615.36
31	'1904	Prepared foods obtained by the swelling or roasting of cereals or cereal products, e.g. corn ...	5139.99	2221.76
32	'1905	Bread, pastry, cakes, biscuits and other bakers' wares, whether or not containing cocoa; communion ...	44330.30	-51584.07
33	'2005	Other vegetables prepared or preserved otherwise than by vinegar or acetic acid, not frozen ...	-34.97	-11.52
34	'2007	Jams, fruit jellies, marmalades, fruit or nut purée and fruit or nut pastes, obtained by cooking, ...	2202.48	#DIV/0!
35	'2008	Fruits, nuts and other edible parts of plants, prepared or preserved, whether or not containing ...	68291.04	-36521.74
36	'2009	Fruit juices, incl. grape must, and vegetable juices, unfermented, not containing added spirit, ...	31549.45	25074.40
37	'2103	Sauce and preparations therefor; mixed condiments and mixed seasonings; mustard flour and meal, ...	5561.74	-165822.34
38	'2106	Food preparations, n.e.s.	158533.23	-3100633.30
39	'2202	Waters, incl. mineral waters and aerated waters, containing added sugar or other sweetening ...	46349.16	#DIV/0!

Sr. No	Product code	Product label	Change in Trade Volume	Change in Trade Volume
40	'2306	Oilcake and other solid residues, whether or not ground or in the form of pellets, resulting ...	667170.06	#DIV/0!
41	'2309	Preparations of a kind used in animal feeding	384086.23	72907.44
42	'2505	Natural sands of all kinds, whether or not coloured (excluding gold- and platinum-bearing sands, ...	38.22	#DIV/0!
43	'2507	Kaolin and other kaolinic clays, whether or not calcined	0.00	0.00
44	'2710	Petroleum oils and oils obtained from bituminous minerals (excluding crude); preparations containing ...	24035248.97	433379223.20
45	'2712	Petroleum jelly, paraffin wax, micro- crystalline petroleum wax, slack wax, ozokerite, lignite ...	6461.40	#DIV/0!
46	'2815	Sodium hydroxide "caustic soda", potassium hydroxide "caustic potash"; peroxides of sodium ...	-125.81	#DIV/0!
47	'2833	Sulphates; alums; peroxosulphates "persulphates"	10295.61	#DIV/0!
48	'2835	Phosphinates "hypophosphites", phosphonates "phosphites" and phosphates; polyphosphates, whether ...	8.07	#DIV/0!
49	'2836	Carbonates; peroxocarbonates "percarbonates"; commercial ammonium carbonate containing ammonium ...	10027.04	-9694.61
50	'2902	Cyclic hydrocarbons	2725.93	11909.32
51	'2905	Acyclic alcohols and their halogenated, sulphonated, nitrated or nitrosated derivatives	8127.25	49702.15
52	'2915	Saturated acyclic monocarboxylic acids and their anhydrides, halides, peroxides and peroxyacids; ...	-179234.77	-375602.06
53	'2916	Unsaturated acyclic monocarboxylic acids, cyclic monocarboxylic acids, their anhydrides, halides, ...	-5649.44	-1053832.94
54	'2917	Polycarboxylic acids, their anhydrides, halides, peroxides and peroxyacids; their halogenated, ...	-2080025.48	-9647445.96
55	'2922	Oxygen-function amino-compounds	4.82	#DIV/0!
56	'2929	Compounds with other nitrogen function (excluding amine-function compounds; oxygen-function ...	-1199.68	-287801.75
57	'2930	Organo-sulphur compounds	193.93	#DIV/0!
58	'2936	Provitamins and vitamins, natural or reproduced by synthesis, incl. natural concentrates, derivatives ...	-47.41	-21924.21
59	'2937	Hormones, prostaglandins, thromboxanes and leukotrienes, natural or reproduced by synthesis; ...	-32.60	-121.74
60	'2938	Glycosides, natural or reproduced by synthesis, and their salts, ethers, esters and other ...	0.00	#DIV/0!
61	'2941	Antibiotics	22.41	17.95
62	'3002	Human blood; animal blood prepared for therapeutic, prophylactic or diagnostic uses; antisera ...	-6.79	#DIV/0!
63	'3003	Medicaments consisting of two or more constituents mixed together for therapeutic or prophylactic ...	596.28	1536.43
64	'3004	Medicaments consisting of mixed or unmixed products for therapeutic or prophylactic uses, put ...	81423.79	326215.29



Sr. No	Product code	Product label	Change in Trade Volume	Change in Trade Volume
65	'3105	Mineral or chemical fertilisers containing two or three of the fertilising elements nitrogen, ...	-4826.32	#DIV/0!
66	'3204	Synthetic organic colouring matter, whether or not chemically defined; preparations based on ...	146.57	-2558.66
67	'3206	Inorganic or mineral colouring matter, n.e.s.; preparations based on inorganic or mineral colouring ...	-42457.88	-109077.27
68	'3208	Paints and varnishes, incl. enamels and lacquers, based on synthetic polymers or chemically ...	-44102.89	-1045586.13
69	'3209	Paints and varnishes, incl. enamels and lacquers, based on synthetic polymers or chemically ...	-402.53	-13232.51
70	'3210	Paints and varnishes, incl. enamels, lacquers and distempers (excluding those based on synthetic ...	-890.13	-18844.30
71	'3214	Glaziers' putty, grafting putty, resin cements, caulking compounds and other mastics; painters' ...	5161.35	11412.58
72	'3215	Printing ink, writing or drawing ink and other inks, whether or not concentrated or solid	160.25	440.62
73	'3302	Mixtures of odoriferous substances and mixtures, incl. alcoholic solutions, based on one or ...	-108.23	-522196.31
74	'3304	Beauty or make-up preparations and preparations for the care of the skin, incl. sunscreen or ...	59316.72	24104.27
75	'3305	Preparations for use on the hair	23354.83	20933.80
76	'3307	Shaving preparations, incl. pre-shave and aftershave products, personal deodorants, bath and	14435.32	#DIV/0!
77	'3401	Soap; organic surface-active products and preparations for use as soap, in the form of bars, ...	947488.94	-77305874.14
78	'3402	Organic surface-active agents (excluding soap); surface-active preparations, washing preparations,	2206.47	-393122018.00
79	'3404	Artificial waxes and prepared waxes	-997.04	-1613.33
80	'3501	Casein, caseinates and other casein derivatives; casein glues (excluding those packaged as ...	-2054.41	#DIV/0!
81	'3505	Dextrins and other modified starches, e.g. pregelatinised or esterified starches; glues based ...	56.12	#DIV/0!
82	'3506	Prepared glues and other prepared adhesives, n.e.s.; products suitable for use as glues or ...	-90050.01	-49355733.85
83	'3707	Chemical preparations for photographic uses (excluding varnishes, glues, adhesives and similar .	-48180.31	-532720.63
84	'3808	Insecticides, rodenticides, fungicides, herbicides, anti-sprouting products and plant-growth ...	-14617.48	-665406.35
85	'3809	Finishing agents, dye carriers to accelerate the dyeing or fixing of dyestuffs and other products ...	232.21	#DIV/0!
86	'3810	Pickling preparations for metal surfaces; fluxes and other auxiliary preparations for soldering, ...	36.01	#DIV/0!
87	'3811	Anti-knock preparations, oxidation inhibitors, gum inhibitors, viscosity improvers, anti-corrosive ...	-1.86	#DIV/0!
88	'3812	Prepared rubber accelerators; compound plasticisers for rubber or plastics, n.e.s.; anti-oxidising ...	334.24	-104926.83
89	'3814	Organic composite solvents and thinners, n.e.s.; prepared paint or varnish removers (excluding ...	-44986.36	#DIV/0!

Sr. No	Product code	Product label	Change in Trade Volume	Change in Trade Volume
90	'3816	Refractory cements, mortars, concretes and similar compositions (excluding preparations based ...	281.87	#DIV/0!
91	'3822	Diagnostic or laboratory reagents on a backing, prepared diagnostic or laboratory reagents ...	-0.96	#DIV/0!
92	'3823	Industrial monocarboxylic fatty acids; acid oils from refining; industrial fatty alcohols	1949919.94	1386944.73
93	'3824	Prepared binders for foundry moulds or cores; chemical products and preparations for the chemical ...	12851.44	9522.64
94	'3901	Polymers of ethylene, in primary forms	-1144945.12	-103518290.00
95	'3902	Polymers of propylene or of other olefins, in primary forms	-2888.85	-13924314.88
96	'3903	Polymers of styrene, in primary forms	-10669.79	-203747.18
97	'3904	Polymers of vinyl chloride or of other halogenated olefins, in primary forms	-9542.97	-29010.09
98	'3905	Polymers of vinyl acetate or of other vinyl esters, in primary forms; other vinyl polymers, ...	14.51	41.81
99	'3906	Acrylic polymers, in primary forms	-245.90	-24168.82
100	'3907	Polyacetals, other polyethers and epoxide resins, in primary forms; polycarbonates, alkyd resins, ...	30223.39	-26865.68
101	'3908	Polyamides, in primary forms	0.19	#DIV/0!
102	'3909	Amino-resins, phenolic resins and polyurethanes, in primary forms	-2700.57	-1828499.51
103	'3910	Silicones in primary forms	-0.48	-6.68
104	'3915	Waste, parings and scrap, of plastics	27.58	-78638.32
105	'3917	Tubes, pipes and hoses, and fittings therefor, e.g. joints, elbows, flanges, of plastics	-4102.73	-1072524.90
106	'3919	Self-adhesive plates, sheets, film, foil, tape, strip and other flat shapes, of plastics, whether ...	16393.79	146568.70
107	'3920	Plates, sheets, film, foil and strip, of non-cellular plastics, not reinforced, laminated, ...	-2643.01	-96474.59
108	'3921	Plates, sheets, film, foil and strip, of plastics, reinforced, laminated, supported or similarly ...	334.00	-32308.12
109	'3923	Articles for the conveyance or packaging of goods, of plastics; stoppers, lids, caps and other ...	1760.45	-4319.61
110	'3924	Tableware, kitchenware, other household articles and toilet articles, of plastics (excluding ...	-86.71	-466284.09
111	'3926	Articles of plastics and articles of other materials of heading 3901 to 3914, n.e.s.	123.89	-1361.62
112	'4001	Natural rubber, balata, gutta-percha, guayule, chicle and similar natural gums, in primary ...	-124370.27	-524119.47
113	'4002	Synthetic rubber and factice derived from oils, in primary forms or in plates, sheets or strip; ...	124.44	44.74
114	'4003	Reclaimed rubber in primary forms or in plates, sheets or strip	5.27	-77.24
115	'4007	Vulcanised rubber thread and cord (excluding ungimped single thread with a diameter of > 5 ...	487.78	-3374.50
116	'4008	Plates, sheets, strip, rods and profile shapes, of vulcanised rubber (excluding hard rubber)	1.76	3.16

Sr. No	Product code	Product label	Change in Trade Volume	Change in Trade Volume
117	'4009	Tubes, pipes and hoses, of vulcanised rubber other than hard rubber, with or without their ...	-259.07	-1389.53
118	'4011	New pneumatic tyres, of rubber	-7208.91	-84560.04
119	'4012	Retreaded or used pneumatic tyres of rubber; solid or cushion tyres, tyre treads and tyre flaps, ...	#DIV/0!	#DIV/0!
120	'4013	Inner tubes, of rubber	-38.32	-2669.61
121	'4014	Hygienic or pharmaceutical articles, incl. teats, of vulcanised rubber (excluding hard rubber), ...	4027.01	18586038.14
122	'4015	Articles of apparel and clothing accessories, incl. gloves, mittens and mitts, for all purposes, ...	121195.87	134994543.60
123	'4016	Articles of vulcanised rubber (excluding hard rubber), n.e.s.	1211.75	1250.01
124	'4403	Wood in the rough, whether or not stripped of bark or sapwood, or roughly squared (excluding ...	94881.15	693156073.60
125	'4407	Wood sawn or chipped lengthwise, sliced or peeled, whether or not planed, sanded or end-jointed, ...	-48041.26	-209641463.80
126	'4410	Particle board, oriented strand board "OSB" and similar board "e.g. waferboard" of wood or ...	-1271.53	#DIV/0!
127	'4411	Fibreboard of wood or other ligneous materials, whether or not agglomerated with resins or ...	#DIV/0!	#DIV/0!
128	'4412	Plywood, veneered panel and similar laminated wood (excluding sheets of compressed wood, cellular ...	9.50	-624.42
129	'4418	Builders' joinery and carpentry, of wood, incl. cellular wood panels, assembled flooring panels, ...	258058.46	-6366693.69
130	'4809	Carbon paper, self-copy paper and other copying or transfer papers, incl. coated or impregnated ...	388.75	#DIV/0!
131	'4811	Paper, paperboard, cellulose wadding and webs of cellulose fibres, coated, impregnated, covered, ...	30532.25	-1252002.28
132	'4813	Cigarette paper, whether or not cut to size or in the form of booklets or tubes	47.23	#DIV/0!
133	'4818	Toilet paper and similar paper, cellulose wadding or webs of cellulose fibres, of a kind used ...	-9858.35	-116225.10
134	'4819	Cartons, boxes, cases, bags and other packing containers, of paper, paperboard, cellulose wadding ...	421.41	38415.40
135	'4820	Registers, account books, notebooks, order books, receipt books, letter pads, memorandum pads, ...	155.26	-514.22
136	'4821	Paper or paperboard labels of all kinds, whether or not printed	49.67	10.34
137	'4823	Paper, paperboard, cellulose wadding and webs of cellulose fibres, in strips or rolls of a ...	3443.88	-22711.16
138	'4901	Printed books, brochures and similar printed matter, whether or not in single sheets (excluding	471075.10	9464959.44
139	'4911	Printed matter, incl. printed pictures and photographs, n.e.s.	909.88	51.32
140	'5402	Synthetic filament yarn, incl. synthetic monofilaments of < 67 decitex (excluding sewing thread ...	2020036.56	-19652230.27
141	'5509	Yarn of synthetic staple fibres (excluding sewing thread and yarn put up for retail sale)	-9796.60	-41660.09

Sr. No	Product code	Product label	Change in Trade Volume	Change in Trade Volume
142	'5513	Woven fabrics containing predominantly, but < 85% synthetic staple fibres by weight, mixed ...	81767.96	-126538.49
143	'5601	Wadding of textile materials and articles thereof; textile fibres with a length of <= 5 mm ...	3912.08	#DIV/0!
144	'5603	Nonwovens, whether or not impregnated, coated, covered or laminated, n.e.s.	16667.53	#DIV/0!
145	'5604	Textile-covered rubber thread and cord; textile yarn, strip and the like of heading 5404 and ...	15099.07	-309738.30
146	'5608	Knotted netting of twine, cordage or rope, by the piece or metre; made-up fishing nets and ...	7476.53	-366.40
147	'5806	Narrow woven fabrics of textile materials, with a width of <= 30 cm (excluding labels, badges ...	120036.95	#DIV/0!
148	'6005	Warp knit fabrics "incl. those made on galloon knitting machines", of a width of > 30 cm (excluding ...	298391.65	#DIV/0!
149	'6302	Bedlinen, table linen, toilet linen and kitchen linen of all types of textile materials (excluding ...	2185.38	#DIV/0!
150	'6309	Worn clothing and clothing accessories, blankets and travelling rugs, household linen and articles ...	183471.69	-505258.75
151	'6806	Slag-wool, rock-wool and similar mineral wools; exfoliated vermiculite, expanded clays, foamed ...	-4604.43	#DIV/0!
152	'6813	Friction material and articles thereof, e.g., sheets, rolls, strips, segments, discs, washers, ...	-61483.75	-94144.13
153	'6907	Unglazed ceramic flags and paving, hearth or wall tiles; unglazed ceramic mosaic cubes and ...	-89811.25	-665431.73
154	'6908	Glazed ceramic flags and paving, hearth or wall tiles; glazed ceramic mosaic cubes and the ...	2391460.60	-6144195.91
155	'6912	Tableware, kitchenware, other household articles and toilet articles, of ceramics other than ...	3377.07	-31384.95
156	'7013	Glassware of a kind used for table, kitchen, toilet, office, indoor decoration or similar purposes ...	1476.79	76295.63
157	'7208	Flat-rolled products of iron or non-alloy steel, of a width >= 600 mm, hot-rolled, not clad, ...	-1324.65	#DIV/0!
158	'7209	Flat-rolled products of iron or non-alloy steel, of a width of >= 600 mm, cold-rolled "cold-reduced", ...	-699.93	#DIV/0!
159	'7210	Flat-rolled products of iron or non-alloy steel, of a width >= 600 mm, hot-rolled or cold-rolled ...	-74280.19	#DIV/0!
160	'7213	Bars and rods of iron or non-alloy steel, hot-rolled, in irregularly wound coils	-51137.52	-2903557.48
161	'7217	Wire of iron or non-alloy steel, in coils (excluding bars and rods)	33624.50	-127986.17
162	'7219	Flat-rolled products of stainless steel, of a width of >= 600 mm, hot-rolled or cold-rolled ...	40488.43	#DIV/0!
163	'7222	Other bars and rods of stainless steel; angles, shapes and sections of stainless steel, n.e.s.	3.37	#DIV/0!
164	'7306	Tubes, pipes and hollow profiles "e.g., open seam or welded, riveted or similarly closed", ...	-1289.55	-6940.43
165	'7307	Tube or pipe fittings "e.g. couplings, elbows, sleeves", of iron or steel	-155.84	#DIV/0!
166	'7308	Structures and parts of structures "e.g., bridges and bridge-sections, lock-gates, towers, ...	-132881.84	#DIV/0!

Sr. No	Product code	Product label	Change in Trade Volume	Change in Trade Volume
167	'7310	Tanks, casks, drums, cans, boxes and similar containers, of iron or steel, for any material ...	-146.96	#DIV/0!
168	'7311	Containers of iron or steel, for compressed or liquefied gas (excluding containers specifically ...	-1845.08	-244556.53
169	'7312	Stranded wire, ropes, cables, plaited bands, slings and the like, of iron or steel (excluding ...	-1123.64	#DIV/0!
170	'7315	Chain and parts thereof, of iron or steel (excluding watch chains, necklace chains and the ...	7226.36	-19127.98
171	'7323	Table, kitchen or other household articles, and parts thereof, of iron or steel; iron or steel ...	-1.46	#DIV/0!
172	'7326	Articles of iron or steel, n.e.s. (excluding cast articles)	-1668.70	-26974.78
173	'7407	Bars, rods and profiles, of copper, n.e.s.	209558.84	189605.11
174	'7601	Unwrought aluminium	23188.42	51034.97
175	'7606	Plates, sheets and strip, of aluminium, of a thickness of > 0,2 mm (excluding expanded plates,	-81.90	-2548.42
176	'7607	Aluminium foil, "whether or not printed or backed with paper, paperboard, plastics or similar ...	97834.96	#DIV/0!
177	'7610	Structures and parts of structures "e.g., bridges and bridge-sections, towers, lattice masts, ...	-16026.05	-3725204.25
178	'7612	Casks, drums, cans, boxes and similar containers, incl. rigid or collapsible tubular containers, ...	20.89	298.95
179	'7616	Articles of aluminium, n.e.s.	-364.16	#DIV/0!
180	'7801	Unwrought lead :	508895.38	3169752.99
181	'7904	Zinc bars, rods, profiles and wire, n.e.s.	1014.04	190123.31
182	'8001	Unwrought tin	96847.83	288080.53
183	'8208	Knives and cutting blades, of base metal, for machines or for mechanical appliances	#DIV/0!	#DIV/0!
184	'8302	Base metal mountings, fittings and similar articles suitable for furniture, doors, staircases, ...	-18696.39	#DIV/0!
185	'8305	Fittings for loose-leaf binders or files, letter clips, letter corners, paper clips, indexing ...	40.56	#DIV/0!
186	'8311	Wire, rods, tubes, plates, electrodes and similar products, of base metal or of metal carbides, ...	-2978.20	#DIV/0!
187	'8407	Spark-ignition reciprocating or rotary internal combustion piston engine	112.01	#DIV/0!
188	'8408	Compression-ignition internal combustion piston engine "diesel or semi-diesel engine"	-47.57	-505.69
189	'8409	Parts suitable for use solely or principally with internal combustion piston engine of heading ...	684.76	-64.20
190	'8411	Turbojets, turbopropellers and other gas turbines	#DIV/0!	#DIV/0!
191	'8413	Pumps for liquids, whether or not fitted with a measuring device (excluding ceramic pumps and ...	-6.83	-59.93
192	'8414	Air or vacuum pumps (excluding gas compound elevators and pneumatic elevators and conveyors);	#DIV/0!	#DIV/0!
193	'8415	Air conditioning machines comprising a motor-driven fan and elements for changing the temperature ...	226348.48	-3152771.58
194	'8417	Industrial or laboratory furnaces and ovens, non-electric, incl. incinerators (excluding drying ...	-1.19	#DIV/0!

Sr. No	Product code	Product label	Change in Trade Volume	Change in Trade Volume
195	'8418	Refrigerators, freezers and other refrigerating or freezing equipment, electric or other; heat ...	-373.59	-10855.95
196	'8419	Machinery, plant or laboratory equipment whether or not electrically heated (excluding furnaces, ...	897.74	-8590.54
197	'8421	Centrifuges, incl. centrifugal dryers (excluding those for isotope separation); filtering or ...	-59.73	-125338.97
198	'8422	Dishwashing machines; machinery for cleaning or drying bottles or other containers; machinery ...	-15.51	-234.85
199	'8423	Weighing machinery, incl. weight-operated counting or checking machines (excluding balances	#DIV/0!	#DIV/0!
200	'8424	Mechanical appliances, whether or not hand-operated, for projecting, dispersing or spraying ...	-52.49	-266.12
201	'8425	Pulley tackle and hoists (other than skip hoists); winches and capstans; jacks	-10.68	-4.79
202	'8426	Ships' derricks; cranes, incl. cable cranes (excluding wheel-mounted cranes and vehicle cranes ...	-38.17	#DIV/0!
203	'8428	Lifting, handling, loading or unloading machinery, e.g. lifts, escalators, conveyors, teleferics ...	-30.99	-4613.87
204	'8429	Self-propelled bulldozers, angledozers, graders, levellers, scrapers, mechanical shovels, excavators,	-249.56	#DIV/0!
205	'8431	Parts suitable for use solely or principally with the machinery of heading 8425 to 8430, n.e.s.	-256.08	-34976.32
206	'8436	Agricultural, horticultural, forestry, poultry-keeping or bee-keeping machinery, incl. germination ...	-234.25	-422696.22
207	'8438	Machinery, not specified or included elsewhere in this chapter, for the industrial preparation ...	-2.71	#DIV/0!
208	'8441	Machinery for making up paper pulp, paper or paperboard, incl. cutting machines of all kinds, ...	6.44	#DIV/0!
209	'8442	Machinery, apparatus and equipment (other than the machine-tools of headings 8456 to 8465) ...	-1196.43	#DIV/0!
210	'8443	Printing machinery used for printing by means of plates, cylinders and other printing components ...	-10.96	-661.81
211	'8448	Auxiliary machinery for use with machines of heading 8444, 8445, 8446 or 8447, e.g. dobbies, ...	29.08	#DIV/0!
212	'8451	Machinery (excluding of heading 8450) for washing, cleaning, wringing, drying, ironing, pressing ...	-35.25	#DIV/0!
213	'8452	Sewing machines (other than book-sewing machines of heading 8440); furniture, bases and covers ...	-0.40	-1.35
214	'8457	Machining centres, unit construction machines "single station" and multi-station transfer machines	0.44	#DIV/0!
215	'8462	Machine tools, incl. presses, for working metal by forging, hammering or die-stamping; machine ...	0.13	#DIV/0!
216	'8465	Machine tools, incl. machines for nailing, stapling, glueing or otherwise assembling, for working ...	-1.39	#DIV/0!
217	'8466	Parts and accessories suitable for use solely or principally with the machine tools of heading ...	-1.74	#DIV/0!
218	'8467	Tools for working in the hand, pneumatic, hydraulic or with self-contained electric or non-electric ...	#DIV/0!	#DIV/0!
219	'8470	Calculating machines and pocket-size "dimensions <= 170 mm x 100 mm x 45 mm" data recording, ...	#DIV/0!	#DIV/0!

Sr. No	Product code	Product label	Change in Trade Volume	Change in Trade Volume
220	'8471	Automatic data-processing machines and units thereof; magnetic or optical readers, machines ...	54961.88	-452821.43
221	'8472	Office machines, e.g. hectograph or stencil duplicating machines, addressing machines, automatic ...	0.00	#DIV/0!
222	'8473	Parts and accessories (other than covers, carrying cases and the like) suitable for use solely ...	-2030.62	-2000.06
223	'8477	Machinery for working rubber or plastics or for the manufacture of products from these materials, ...	-31.69	-428.99
224	'8479	Machines and mechanical appliances having individual functions, not specified or included elsewhere ...	-16810.03	-3545705.01
225	'8481	Taps, cocks, valves and similar appliances for pipes, boiler shells, tanks, vats or the like, ...	-1414.60	-11656.16
226	'8483	Transmission shafts, incl. camshafts and crankshafts, and cranks; bearing housings and plain ...	#DIV/0!	#DIV/0!
227	'8484	Gaskets and similar joints of metal sheeting combined with other material or of two or more ...	5.55	-7.06
228	'8501	Electric motors and generators (excluding generating sets)	-2.81	-308.04
229	'8502	Electric generating sets and rotary converters	-32.04	-5875.71
230	'8504	Electrical transformers, static converters, e.g. rectifiers, and inductors; parts thereof	#DIV/0!	#DIV/0!
231	'8507	Electric accumulators, incl. separators therefor, whether or not square or rectangular; parts ...	#DIV/0!	#DIV/0!
232	'8511	Electrical ignition or starting equipment of a kind used for spark-ignition or compression-ignition ...	48.71	#DIV/0!
233	'8512	Electrical lighting or signalling equipment (excluding lamps of heading 8539), windscreen wipers, ...	1525.50	-839821.26
234	'8515	Electric, incl. electrically heated gas, laser or other light or photon beam, ultrasonic, electron ...	10.07	-0.65
235	'8516	Electric instantaneous or storage water heaters and immersion heaters; electric space-heating ...	-3032.70	-72567.38
236	'8517	Telephone sets, incl. telephones for cellular networks or for other wireless networks; other ...	#DIV/0!	#DIV/0!
237	'8518	Microphones and stands therefor (excluding cordless microphones with built-in transmitter); ...	0.00	17.76
238	'8522	Parts and accessories suitable for use solely or principally with sound reproducing and recording ...	0.02	#DIV/0!
239	'8523	Discs, tapes, solid-state non-volatile storage devices, "smart cards" and other media for the ...	-120.70	-57727.17
240	'8525	Transmission apparatus for radio-broadcasting or television, whether or not incorporating reception ...	-801721.70	-118079801.30
241	'8527	Reception apparatus for radio-broadcasting, whether or not combined, in the same housing, with ...	-632.65	-7781731.72
242	'8529	Parts suitable for use solely or principally with transmission and reception apparatus for ...	-552356.15	-7409811.20
243	'8531	Electric sound or visual signalling apparatus, e.g. bells, sirens, indicator panels, burglar ...	-41.53	-3894.05

Sr. No	Product code	Product label	Change in Trade Volume	Change in Trade Volume
244	'8535	Electrical apparatus for switching or protecting electrical circuits, or for making connections ...	-1255.12	#DIV/0!
245	'8536	Electrical apparatus for switching or protecting electrical circuits, or for making connections ...	3243.55	284147.05
246	'8537	Boards, panels, consoles, desks, cabinets and other bases, equipped with two or more apparatus ...	#DIV/0!	#DIV/0!
247	'8538	Parts suitable for use solely or principally with the apparatus of heading 8535, 8536 or 8537, ...	-0.79	#DIV/0!
248	'8539	Electric filament or discharge lamps, incl. sealed beam lamp units and ultraviolet or infra-red ...	#DIV/0!	#DIV/0!
249	'8542	Electronic integrated circuits; parts thereof	#DIV/0!	#DIV/0!
250	'8543	Electrical machines and apparatus, having individual functions, n.e.s. in chapter 85 and parts ...	#DIV/0!	#DIV/0!
251	'8544	Insulated "incl. enamelled or anodised" wire, cable "incl. coaxial cable" and other insulated ...	-10867.65	-664378.85
252	'8546	Electrical insulators of any material (excluding insulating fittings)	41.72	#DIV/0!
253	'8701	Tractors (other than tractors of heading 8709)	1772.90	#DIV/0!
254	'8703	Motor cars and other motor vehicles principally designed for the transport of persons, incl. ...	-578.52	#DIV/0!
255	'8707	Bodies, incl. cabs, for tractors, motor vehicles for the transport of ten or more persons, ...	40.82	#DIV/0!
256	'8708	Parts and accessories for tractors, motor vehicles for the transport of ten or more persons, ...	6422173.46	16920840.02
257	'8714	Parts and accessories for motorcycles and bicycles and for carriages for disabled persons, ...	114671.51	-96580176.68
258	'8803	Parts of aircraft and spacecraft of heading 8801 or 8802, n.e.s.	#DIV/0!	#DIV/0!
259	'9010	Apparatus and equipment for photographic or cinematographic laboratories, not elsewhere specified ...	-3.33	#DIV/0!
260	'9018	Instruments and appliances used in medical, surgical, dental or veterinary sciences, incl. ...	#DIV/0!	#DIV/0!
261	'9022	Apparatus based on the use of X-rays or of alpha, beta or gamma radiations, whether or not ...	1554.36	#DIV/0!
262	'9026	Instruments and apparatus for measuring or checking the flow, level, pressure or other variables ...	-897.37	-1799.35
263	'9027	Instruments and apparatus for physical or chemical analysis, e.g. polarimeters, refractometers, ...	-2254.26	#DIV/0!
264	'9030	Oscilloscopes, spectrum analysers and other instruments and apparatus for measuring or checking ...	-69334.28	-102358208.40
265	'9031	Measuring or checking instruments, appliances and machines not elsewhere specified in chapter ...	-52.16	-1987.09
266	'9032	Regulating or controlling instruments and apparatus (excluding taps, cocks and valves of heading ...	18414.26	13116391.94
267	'9401	Seats, whether or not convertible into beds, and parts thereof, n.e.s. (excluding medical, ...	781.39	-27733.66
268	'9403	Furniture and parts thereof, n.e.s. (excluding seats and medical, surgical, dental or veterinary ...	#DIV/0!	#DIV/0!



<b>Sr. No</b>	<b>Product code</b>	<b>Product label</b>	<b>Change in Trade Volume</b>	<b>Change in Trade Volume</b>
269	'9405	Lamps and lighting fittings, incl. searchlights and spotlights, and parts thereof, n.e.s.; illuminated ...	49727.54	127169.24
270	'9506	Articles and equipment for general physical exercise, gymnastics, athletics, other sports, ...	259195.30	2354100.42
271	'9608	Ball-point pens; felt tipped and other porous-tipped pens and markers; fountain pens, stylograph ...	-3297.16	7209456.83
272	'9612	Typewriter or similar ribbons, inked or otherwise prepared for giving impressions, whether ...	#DIV/0!	#DIV/0!

**Product Groups from Pakistan-Malaysia Free Trade Agreement**  
**Table G.6. Change in Terms of Trade (Actual and Extrapolated)**

Sr. No	Product Code	Product Label	Actual Change in Terms of Trade	Extrapolated Change in Terms of Trade
1	'0304	Fish fillets and other fish meat, whether or not minced, fresh, chilled or frozen	96617.39	
2	'0305	Fish, fit for human consumption, dried, salted or in brine; smoked fish, fit for human consumption, ...	-16325.23	
3	'2009	Fruit juices, incl. grape must, and vegetable juices, unfermented, not containing added spirit, ...	-82183.73	-1692014.56
4	'3003	Medicaments consisting of two or more constituents mixed together for therapeutic or prophylactic ...	-248100.00	
5	'3004	Medicaments consisting of mixed or unmixed products for therapeutic or prophylactic uses, put ...	195126.70	5798628.67
6	'3302	Mixtures of odoriferous substances and mixtures, incl. alcoholic solutions, based on one or ...	-29792.45	
7	'3304	Beauty or make-up preparations and preparations for the care of the skin, incl. sunscreen or ...	-110421.62	-330634.57
8	'3305	Preparations for use on the hair	-34321.30	87691.15
9	'3402	Organic surface-active agents (excluding soap); surface-active preparations, washing preparations,	-138080.52	
10	'4819	Cartons, boxes, cases, bags and other packing containers, of paper, paperboard, cellulose wadding ...	68805.56	7564970.81
11	'4821	Paper or paperboard labels of all kinds, whether or not printed	119090.91	-912213.02
12	'4901	Printed books, brochures and similar printed matter, whether or not in single sheets (excluding ...	79933.44	50719.56
13	'5402	Synthetic filament yarn, incl. synthetic monofilaments of < 67 decitex (excluding sewing thread ...	7865230.05	
14	'5509	Yarn of synthetic staple fibres (excluding sewing thread and yarn put up for retail sale)	800689.58	1514133.29
15	'6309	Worn clothing and clothing accessories, blankets and travelling rugs, household linen and articles ...	-243455.37	
16	'7326	Articles of iron or steel, n.e.s. (excluding cast articles)	143000.00	
17	'8473	Parts and accessories (other than covers, carrying cases and the like) suitable for use solely ...	698903.23	
18	'9405	Lamps and lighting fittings, incl. searchlights and spotlights, and parts thereof, n.e.s; illuminated	-119834.46	924898.94
19	'9506	Articles and equipment for general physical exercise, gymnastics, athletics, other sports,	366503.59	-1121534.03