General Equilibrium Analysis of Pakistan's Free Trade Agreements 'A Global CGE Approach'

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Abstract

As regional integration has proliferated in most parts of the world, so developing economies across the globe have made it a leading policy instrument to integrate their economies with the global markets to avail the benefits of international trade and to overcome their challenges. This has led to the establishment of various regional and bilateral free trade agreements. The successful performance of some of these trade agreements have motivated other economies to sigh bilateral and regional free trade agreements. Pakistan also has undertaken various trade policy measures over the past two decades, which has led to signing various free and preferential trade agreements with the important trade partner economies. However, the performance of Pakistan's international trade is not up to the mark. It is losing the own production's competiveness due to cheap and high quality goods imported from the trade partners. To enhance the international trade performance, Pakistan is renegotiating the existing bilateral FTAs to acquire additional market access in the trade partners' economies. Pakistan also is negotiating additional free trade agreements with the trade partners to enhance the trade performance.

With the above mentioned background, the aim of this paper is to investigate the economy wide impact of Pakistan's existing FTAs with China, Malaysia and Sri Lanka by using the MyGTAP model in the global CGE model framework. The paper also undertakes a preliminary assessment of Pakistan's potential FTAs with Korea, Turkey and Thailand. The paper examines two different scenarios [simulations]. The first one investigates the impact of the existing FTAs. The second scenario tests the implications of Pakistan's potential bilateral FTAs.

It is revealed by the simulation results that Pakistan is benefitted in terms of improvement in all the macroeconomic aggregates due to the bilateral free trade agreements due the existing FTAs. It is found that Pakistan-Thailand potential FTA would be more beneficial for Pakistan. It is also found that Pakistan is modestly affected due to Pakistan-China and Pakistan Malaysia FTAs in all respects. Pakistan-Sri Lanka FTA and Pakistan-Turkey FTAs on the other hand, have no meaningful impacts.

Key words: FTAs, tariffs, exports, imports, CGE model

General Equilibrium Analysis of Pakistan's Free Trade Agreements 'A Global CGE Approach'

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1. Introduction

Rising trend of globalization and the proliferation of global trade integrations are pushing Pakistan to reshape the international trade policies and reassert its position in the region to follow the proactive policy for boosting up the international trade performance. This transformation of Pakistan's policies on the global front with a focus on enhancing the bilateral trade relations with regional trade partners has been reflecting over the past many years. This is revealed by Pakistan's bilateral free and preferential trade agreements with important trade partners. Pakistan currently also is focusing on the East Asian economies to increase the volume of trade, to attract investment and enhance the diplomacy and exchange with regional trade partners (Irshad, Xin, Xuan, & Arsahd, 2016). Pakistan currently is engaged in three formal bilateral free agreements, which include Pakistan-China FTA [operating since 2006], Pakistan-Sri Lanka FTA [operational since 2005] and Pakistan-Malaysia FTA [operational since 2008]. However, Pakistan is losing competitiveness of the local production and also facing diversion in the domestic import substitution sectors due to the high quality and cheap imports coming from the FTA partners' economies [China and Malaysia].

Despite the above trade policy measures, Pakistan's international trade international performance is not up to the mark. Export growth during the last two years remained sluggish, however, regional counterpart economies i.e. Bangladesh, India and Sri Lanka of exports are experiencing an increasing growth (Mehmood, 2016). In additions, Pakistan currently is facing the ever largest deficit in the trade accounts[3]. The largest deficit is recorded in bilateral trade with China followed by UAE and then Malaysia. The possible reasons may include the fast increasing growth of imports and high exports concentration[4]. Other reason is the opening up borders for imports coming from the trade partners [China and Malaysia etc.] under the bilateral free trade agreements. It is leading to the excessive increase in imports. This further is deteriorating the domestic productive capacity and so decrease in exports. (Council, 2013).

To enhance the international trade performance, Pakistan is introducing extensive trade reforms. These include re-negotiating the existing bilateral FTAs and also undertaking additional FTAs, i.e. Pakistan-Korea potential FTAs, Pakistan-Turkey FTA and Pakistan-Thailand potential FTAs. With the growing importance of the East Asian Integrations, [*ASEAN*] and Asia and Pacific economies, Pakistan is aiming to enter the ASEAN agreement and to firm the trade ties with other economies. This may also facilitates Pakistan's integration with the currently negotiated two mega FTAs, i.e. RCEP and TPP. This paper is an attempt to evaluate Pakistan's existing

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[3] https://tradingeconomics.com/pakistan/balance-of-trade
[4] https://tribune.com.pk/story/1380899/trade-deficit-widens-historic-level/

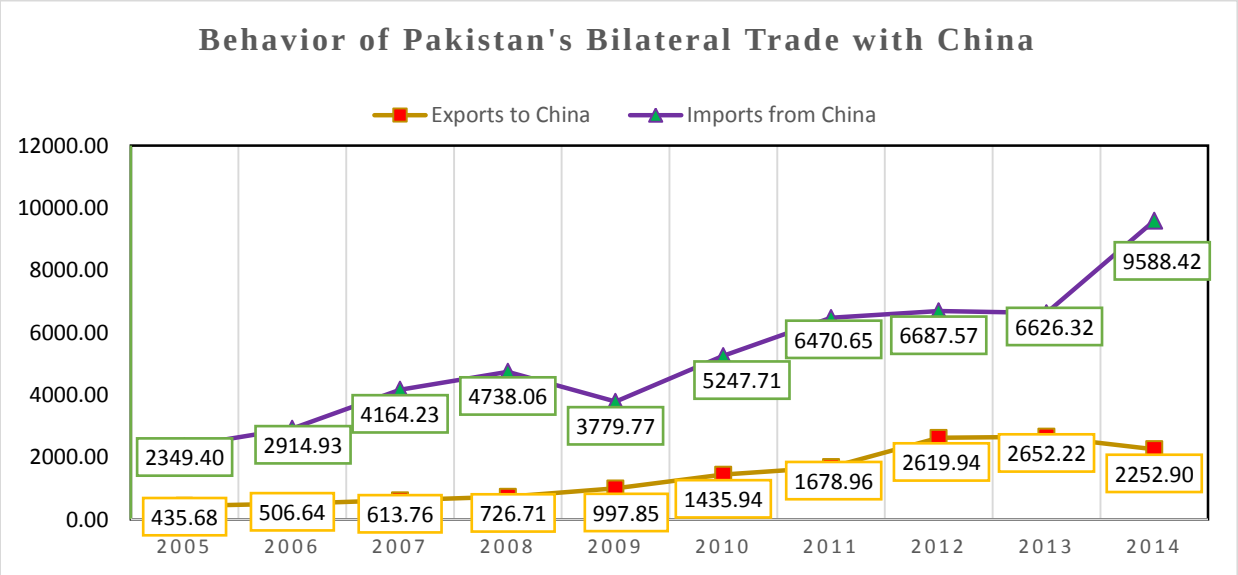
bilateral FTAs, i.e. with China, Malaysia and Sri Lanka. Additionally, the paper undertakes a preliminary assessment of Pakistan's potential free trade agreements with Korea, Turkey and Thailand.

The remainder of the paper is organized as follows. Section 2 provides an overview of Pakistan's bilateral FTAs [existing and potential]. Section 3 reveals a brief review of some of the CGE studies on free trade agreements. Section 4 overviews the model and methodology. Section 5 is meant for results discussion and analysis.

2. Overview of **Pakistan's Bilateral Free Trade Agreements**

Pakistan currently is engaged in three formal bilateral FTAs, including Pakistan-China FTA, Pakistan-Malaysia FTA and Pakistan-Sri Lanka FTA. The early Harvest Program (EHP) between Pakistan and China was put into operation on 1st January 2006. This program overtime evolved into the bilateral free trade agreement that became operationalize on November 2006. The provisions related to trade in goods and investment were signed by both countries in 2006, while trade in services provisions were signed in 2009. Pakistan provided market access to China in 11 sectors and 107 subsectors, while, China offered same on 11 sectors and 133 subsectors. Pakistan-China has not been beneficial for Pakistan as Pakistan is losing the competitiveness of its own domestic production. Pakistan also is recording the largest trade deficit in bilateral trade with China. This is shown view the following figure.

Figure: 2.1. Behavior of Pakistan's Bilateral Trade with China

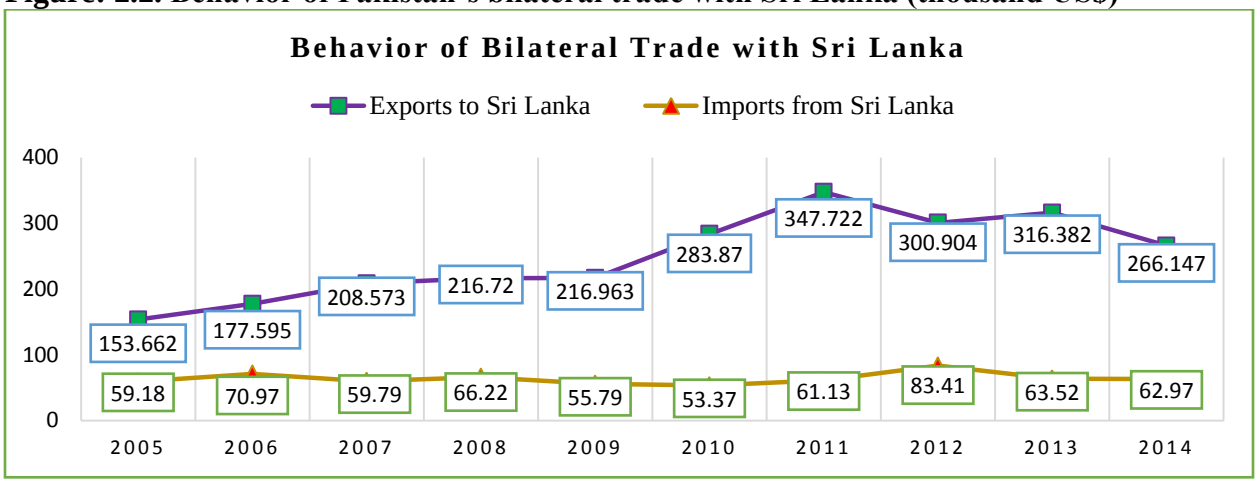


According to the figure, it is pointed out that after the commencement of Pakistan-China FTA, China is becoming the larger import source economy of Pakistan, leaving behind the Saudi Arabia and United Arab Emirate [UAE]. As revealed in the figure below, Pakistan's exports also show a modest increase after the FTA was put into force. However, increase in imports from China is significantly higher than increase in exports to China, resulting into a persistent and widening trade imbalance with China.

The negotiation for Pakistan-Sri Lanka started in August 2002 that came into force in 2005. Initially, Pakistan granted a full duty free market access to Sri Lanka on 206 tariff lines under the FTA coverage, whereas, Sri Lanka offered a free duty market access to Pakistan on 102 tariff

lines [6 digit level]. In addition to that, Pakistan also granted duty free [*or at concessional duty*] tariff rate quotas [TRQs] to Sri Lanka, according to which Sri Lankan could export 10,000 MT of tea at zero duty, 12000 MT of Betel Leaves at 35 % margin of preferences and garments at 35% MOP. The economic impacts of Pakistan-Sri Lanka FTA are not more modest. Despite a 100 percent free markets access to Pakistan's main exports [*cotton, apparel, knitted fabrics and cement*], Pakistan's exports to Sri Lanka hardly could increase from 154 million US$ [2004] to 316 million US$ [2013]. On the other hand, Sri Lankan exports to Pakistan could increase from 46 million US$ to 63 million US$ only during the same period. The following figure exhibits the behavior of Pakistan's bilateral trade with Sri Lanka.

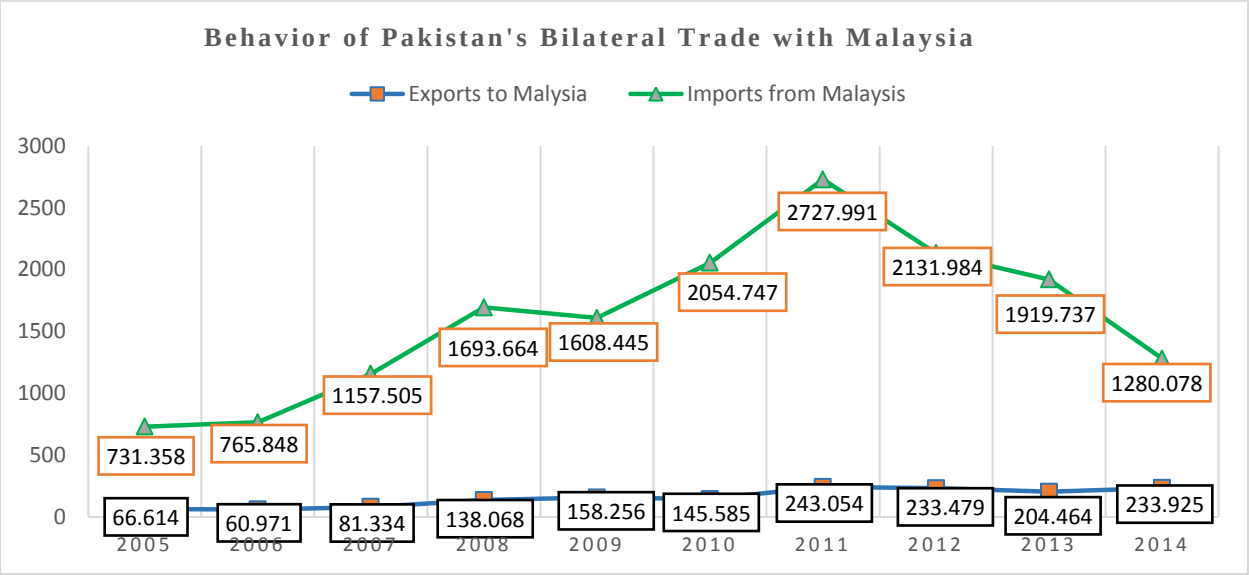
Figure: 2.2. Behavior of Pakistan's bilateral trade with Sri Lanka (thousand US$)



According to the above figure, we observe that Pakistan is enjoying a trade surplus in bilateral trade with Sri Lanka, since the commencement of the FTA [2005]. However, the value of trade [both exports and imports] between the two economies is insignificant, which indicates that Pakistan's bilateral FTA with Sri Lanka has not been successful to yield modest gains. This also indicates that bilateral trade flows of the two trade partners are not sensitive to trade liberalization and facilitation through decrease [elimination] of bilateral tariffs and other quota restrictions.

In 2005, Pakistan and Malaysia started negotiations for a closer economic integration and partnership. In connection to this, talks for a comprehensive free trade agreement also took place in 2005. Initially, the negotiation for a bilateral Early Harvest Program (EHP) between the two economies took place in October 2005, which was put into force in January 2006. This program facilitated the establishment of a free trade agreement, the talks for which were launched in November 2007, which became operational on the 1st January 2008. Malaysia-Pakistan FTA covered trade in goods and service, investment and other issues like economic cooperation and intellectually property rights etc. Despite the broader FTA coverage, Pakistan has been unable to boost up exports and its trade with Malaysia continues to run in deficit. The trade balance between the two trading partners has been tilted towards Malaysia. This revealed via the following figure.

Figure: 2.3. Behavior of Pakistan's bilateral trade with Malaysia (in million US$)

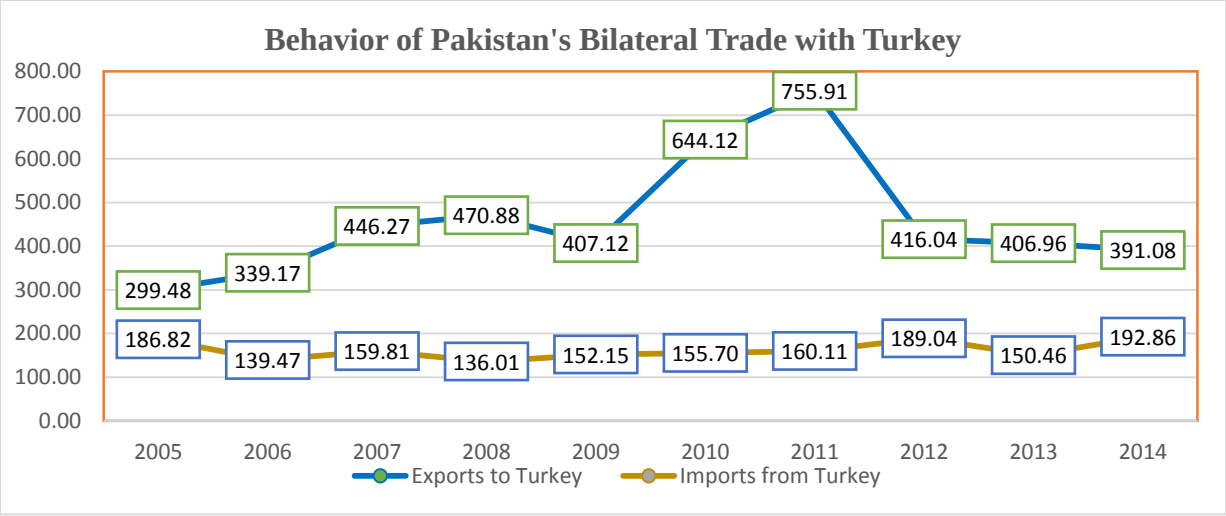


According to the above figure, it is claimed that Pakistan has been facing a continuous trade imbalances with Malaysia. It is also shown that Pakistan's exports to Malaysia show no meaningful increase over time. On the other hand, imports from Malaysia show a rapid increase since the commencement of the Pakistan-Malaysia FTA in 2005.

Keeping in view the recent global trend of global integrations, Pakistan is aiming to diversify the exports markets by undertaking free tree trade agreements. Currently three additional FTAs [bilateral FTAs with Turkey, Korea and Thailand] are under consideration. The one is the proposed Pakistan-Turkey FTA. Pakistan currently has no formal free trade agreement with Turkey. However, during the fourth session of the *High Level Strategic Cooperation Council (HLSCC)*, which held in Islamabad in February 2015, it was decided to start negotiation for a bilateral FTA [known as Pakistan-Turkey FTA], that would cover trade in goods and services and investment. During the visit of Turkey's Prime Minister to Pakistan in March 2015, Pakistan's PM announced the establishment of a comprehensive bilateral FTA with Turkey. He pointed that the two countries have enough trade potentials and so a bilateral FTA would enhance trade flows. The Joined Working Group of Trade of Turkey-Pakistan was given the task to assess the possibility of a free trade agreement and to find the area of potentials to undertake the proposed FTA. Recently, a considerable progress in the negotiation on tariff lines was made and according to a news report, the agreement is likely to sign in May 2017.

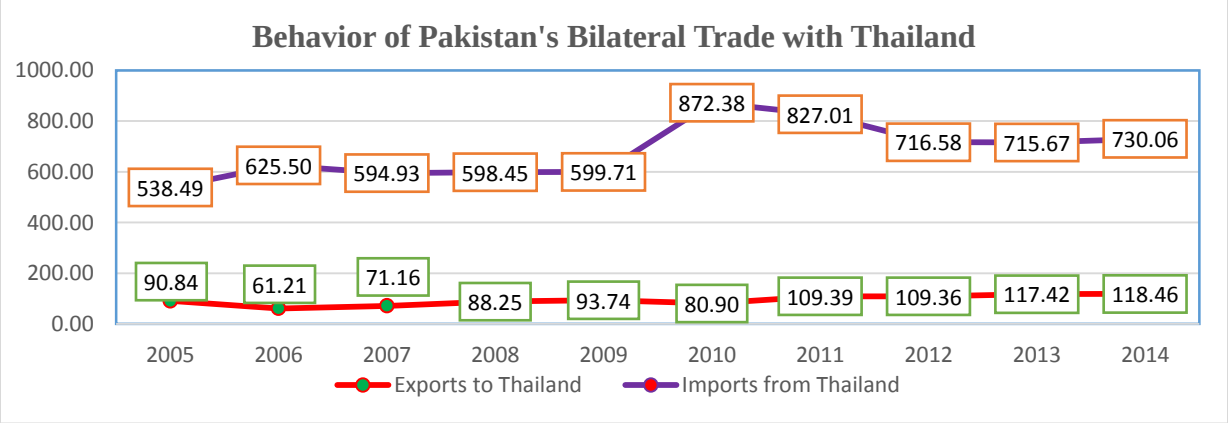
Pakistan is facing imbalance in bilateral trade with Turkey. As revealed in figure [figure 2.4], Pakistan's imports from Turkey is showing a sharp upward trend during 2005-11, i.e. imports boosted up from 299 US$ million in 2005 to 755 million US$ in 2011, while, exports is showing a steady downward trend during the same period, i.e. exports declined from 186 million US$ in 2005 to 160 million US$ in 2011. As shown in the Figure, exports is showing a slight revival, while imports are decreasing during 2011-14. However, Pakistan still is facing a modest deficit in bilateral trade with Turkey, which, is expected to eradicate by the proposed FTA between the trade partner economies.

Figure: 2.4. Behavior of Pakistan's bilateral trade Turkey [US$ million]



The other potential FTA is the Pakistan-Thailand proposed FTA, which is being negotiated between the governments of the two economies. During the visit of a Thai delegation to Pakistan in August 2015, the governments of the two economies showed intention of a comprehensive bilateral FTA. According to report "Thailand has comparative advantage nearly in 1000 commodities, whereas Pakistan has comparative advantage nearly in 684 commodities". The proposed Pakistan-Thailand FTA is expected to sign in 2017. The sixth round of the negotiation for the finalization of the bilateral FTA was held in Islamabad on January 17-18, 2017. Both the parties produced their own provisional list of products, which would be included in the FTA coverage. However, the two economies failed to finalize the tariff reduction modalities[5]. Pakistan rejected Thailand's initial offer of tariff concessions, and same was maintained by Thailand, who linked the opening of the auto sector for Thai exports with the finalization of the proposed FTA[6]. Statistics show that Pakistan is facing an adverse trade imbalance with Thailand. This is shown in the following figure.

Figure: 2.5. Behavior of Pakistan-Thailand Bilateral Trade (million US$)



According the above figure, it is revealed that Pakistan's exports to Thailand are much lower than Pakistan's imports from Thailand. On the other hand, during 2005-14, Pakistan's exports to

[5] http://fp.brecorder.com/2017/01/20170123131747/
[6] http://www.customstoday.com.pk/thailand-seeks-access-to-auto-sector-in-pakistan-under-fta/

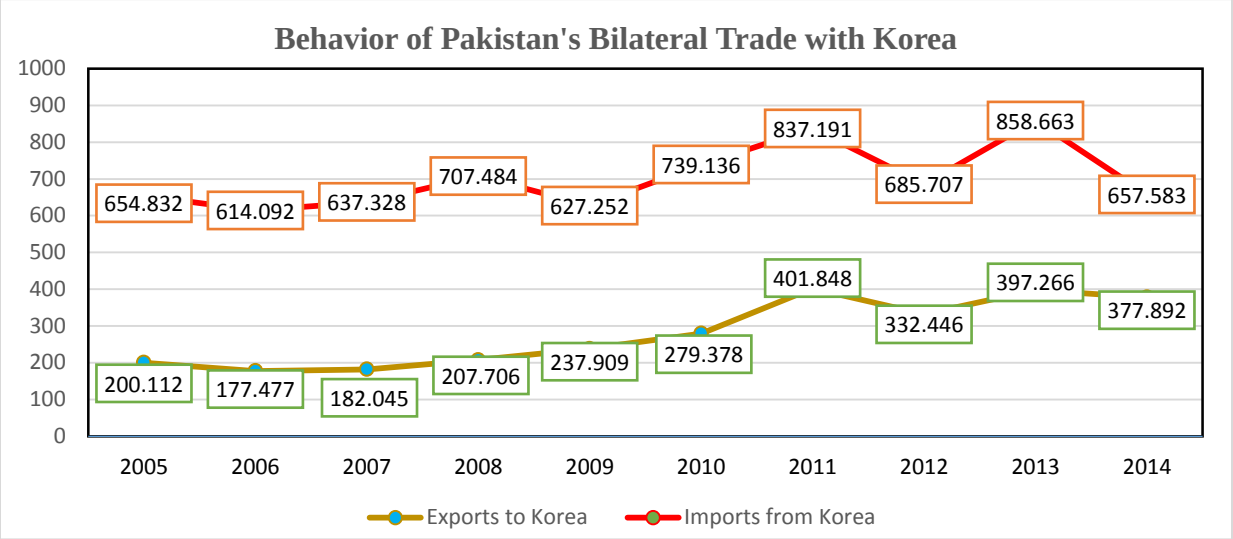
Thailand show only negligible increase, i.e. exports increase from around 90 million US$ [2005] to 118 million US$ [2014], whereas increase in imports from Thailand is relatively more modest, i.e. they increase from 538 million US$ to 730 million US$ during the same period. This indicates an increasing trade deficit of Pakistan with Thailand. So according to the above discussion, it is claimed that Pakistan is likely to face with a larger trade deficit with Thailand in post FTA period.

Pakistan and Korea are important trade partners, however, currently, trade between the two economies is done without a framework free trade agreement. However, the officials of the two countries are agreed to carry out a feasibility study of the proposed FTA in order to identify the prospects and areas of potentials for the establishment of the Pakistan-Korea proposed FTA. Prime Minster of Pakistan showed intention of signing a framework FTA with Korea that would cover trade in goods, services and investment during the visit of the Korean PM to Islamabad on April 14 2014[7]. PM stated that Korean SMEs are also encouraged to invest in the free economic zones alongside the CPEC. He pointed out that the Korean SMEs are also encouraged to strike investment in the construction of energy project under the China Pakistan Economic Corridor [CPEC]. To expand trade and business relations, PM announced that Korean financial institutions can also open their own financial institution in Pakistan to expand mutual co-operation. In a visit to Korea [July 8 2015] Pakistan's Commerce Minister stated that official of both the economies are launching the feasibility study on the proposed Pakistan-China FTA.

From Figure 2.6, it is revealed that Pakistan's trade balance with Korea is negative during 2005-14. However, exports to Korea is showing a bit improvement over this period, i.e. Pakistan's export to Korea increased from around 200 million US$ [2005] to around 377 million US$ [2014], whereas, Pakistan's imports from Korea is showing no meaning change during the same period, i.e. they increase from around 654 million US$ to only 657 during the same period. This indicates that Pakistan is gradually overcoming the trade imbalance with Korea. Therefore the proposed, when comes into effect, would lead to modest gains to Pakistan.

[7] http://www.thenews.com.pk/PrintEdition.aspx?ID=29731&Cat=13&dt=4/15/2014

Figure: 2.6. Behavior of Pakistan's bilateral trade with Korea (US$ Million)



It is revealed from the above discussion that Pakistan has been unable to boost up the international trade' performance despite chasing various trade liberalization polices. On the other hand, Pakistan's bilateral trade with the FTA partners has been running into a continuous deficit, indicating that Pakistan has been unable to take advantage of the free trade agreements. Pakistan also is experiencing a large inflow of cheap imports coming from the FTA partners' economies, which in turn is leading to the hindering of the local industry, followed by economy wide losses. According to PBC (2013), the primary reason of Pakistan adverse trade balance with the FTA partners [i.e. China and Malaysia etc.] is the inappropriate tariff concessions awarded to Pakistan under the free trade agreements. However, the trade performance can be enhanced if Pakistan acquires additional duty market access according the trade potentials of Pakistan.

In this paper, we investigate the impact of Pakistan's existing bilateral FTAs [China, Malaysia and Sri Lanka] by assuming that Pakistan acquires additional market access in the trade partner economies, i.e. same market access, which they have provided to other trade partner economies. In addition, we also investigate the expected economy wide impacts of Pakistan's potential bilateral FTAs i.e. with Korea, Turkey and Thailand by assuming that Pakistan along with FTA partners eliminate all the tariffs above the MFN tariffs they have awarded to other trade partners. Moreover, the paper addresses the following research objectives.

1.3. Research objectives

- To undertake a quantitative assessment of Pakistan's bilateral FTAs [i.e. with China, Malaysia and Sri Lanka] to investigate the economy wide impacts of these FTAs.
- To undertake a preliminary assessment of Pakistan's potential FTAs [i.e. with Korea, Turkey and Thailand] in order to suggest guideline guidelines to the government to the government.
- To investigate how Pakistan's trade liberalization under the bilateral FTAs affect the economy of Pakistan in various respects [macroeconomic aggregates, sectorial, output, exports and imports, households' types and factors' returns].

FTAs involve tariff reducing [elimination] and removing other trade barriers, which lead to alteration of the trade flows, i.e. increasing both exports and imports. Increase in exports

encourages the domestic export oriented sectors, while increase in imports discourages the domestic import substitution sectors. This lead to economy wide gains and losses. *Therefore to capture, these economy wide implications of trade liberalization [FTAs], we use the Computable General Equilibrium [CGE] model, which is capable of capturing the interlinkages between different sectors of the economy and also the interlinkages across the countries*. *We use the MyGTAP model which is the extension of the standard GTAP model that provide the modelling framework and also database for the implementation of the CGE model. The detail is given in section 4.*

3. Literature of Review

Despite the worldwide trend of global trade integration, in Pakistan most of the trade is done without free trade agreements. Currently Pakistan has a number of free and preferential trade agreements, however, they have not been operational according the terms and conditions. In this way, they have not been helpful in enhancing the trade performance. Pakistan also is the member of various regional trade agreements such as ECOTA and SAFTA. But they also have not been effective in boosting up the trade.

In Pakistan, there are only few research studies which have undertaken the general equilibrium analysis of Pakistan's trade liberalization reforms. These include study of Shaikh et al. (2012), who by using the GTAP model [4] in the framework of the global CGE model makes an assessment of trade liberalization under the SAFTA agreement. According to the findings, Pakistan faces increase in real GDP and real imports along with improvements in the terms of trade, while loss in exports. Overall SAFTA is benefitted due to increase in the aggregate trade volume. On the individual level, Pakistan and India stand out gainers, while rest of the SAFTA individual members are made up worsen due to trade liberalization by SAFTA members under the SATFTA agreement.

Another CGE analysis of Pakistan's trade agreements is the study of Pohit (2013), who undertakes an assessment of the proposed FTA between India and Pakistan, by using the GTAP model [8]. From the results, it is revealed that the welfare gains of the bilateral trade liberalization is positive for both India and Pakistan. However, India's welfare gains are higher than Pakistan indicating that India would be the biggest gainer from trade liberalization under the bilateral free trade agreement.

Chishti et al. (2008) using the global CGE model, carried out a more detailed analysis. They analyzed the possible impact of the EU-free trade agreements [with the Asian economies such as India, Korea and ASEAN] on Pakistan. It is revealed by the simulation results that the EU bilateral FTAs in Asia [EU-India FTA, EU-Korea FTA and EU-ASEAN FTA] have a smaller impact on Pakistan. Their results show that Pakistan could be impacted by the increased competition in the EU market in the textile, leather and clothing products. According to them "it does not appear likely that the EU's regional trade agreements with India, Korea, or ASEAN would have any significant impact on Pakistan".

Waqar and Donoghue (2010), who by employing the CGE model to study the impact of increase in foreign savings and import price using the Pakistani SAM [2002]. From the results, it is revealed that, increase in foreign savings along with increase in the international price of imports worsens the trade balance of Pakistan. It is also shown that the small farmers are benefitted due to increase in income, while the medium + farmers are made up poorer, thereby causing to decrease in the poverty level and also in the income inequality.

Kazutomo (2007) by using the GTAP model examines the potential bilateral FTAs of Japan. According to the simulation results, Japan's bilateral FTA partners receive positive welfare gains

due to FTAs with Japan. It is revealed that Japan's FTAs with Malaysia and Mexico are beneficial for Japan, however, Japan is adversely impacted due to the proposed FTA with Singapore. Rest of the world is also adversely impacted due to the possible trade diversion in Japan.

Abdelmalki, et al. (2007) by using the GTAP [6] model, show that the 'US' is benefitted modestly due to the trade liberalization with Morocco under the US-Morocco FTA. US' gains increase due increase in the extent of trade liberalization with Morocco [full trade liberalization]. However, Morocco overall receives negative gains along with the loss of welfare. From the simulation results, it is revealed that that Morocco is benefitted due to increase in the production of textile and clothing, however, it may faces loss in transportation. US' on the other hand, turns out to benefit from gains in production of wheat and poultry due to trade liberalization with Morocco.

Durongkaveroj, W. (2015) by using the CGE model, shows that Pakistan's bilateral FTA with ASEAN would lead to increase in real GDP, real exports and real imports of Pakistan and also ASEAN members. According to the results, it is shown that households related to all ASEAN economies except for the households of Lao PDR and Cambodia, would be benefitted due to Pakistan's trade liberalization with ASEAN economies under the proposed Pakistan-ASEAN FTA. Irshad et al. (2016) extends the analysis by focusing on the triangular type FTA [Pakistan-China-ASEAN FTA. According to the findings, it is shown that due to Pakistan's strategic and natural importance, Pakistan's integration with China and ASEAN would be beneficial for enhancing the bilateral trade flows of all the members. It is also revealed from the findings that Pakistan's joining the ASEAN-China FTA would facilitate a rapid and cheap access to multiple markets such as Middle East and Central Asia. It is also indicated that Pakistan's FTA with ASEAN is a win-win development, i.e. it would yield gains to all members.

Huong and Vanzetti (2006) developed CGE model for Vietnam. They showed that trade flows of Vietnam increase along with modest increase in sectorial exports and imports and also the aggregate welfare due to Vietnam's trade liberalization against the trade partners. *Wong (2008)* developed a more comprehensive model for Vietnam by combining the dynamic CGE model and the household representative model. He shows that Vietnam's trade liberalization with ASEAN may lead to increase in the trade flows and also economic growth. Overall poverty in Vietnam records decrease, however, rural poverty is boosted up, that in turn is leading to increase in inequality. *Nahar and Siriwardana (2009)* developed a CGE model for Bangladesh. Their results show that trade liberalization would encourage the export oriented sectors, while discourage the import oriented sectors. Poverty gap between rural and urban would increase, thereby leading to increase in income inequality.

Nufile et al. (2013) by using the gravity find that Sri Lanka has high trade potential with Pakistan. According to the findings, Sri Lanka can enhance trade flows with Pakistan by exploring new ways of bilateral trade and also by producing new industrial products according to the Pakistan demand pattern. According the findings, the current volume of bilateral trade is very low. The factors are diminishing marginal return to the bilateral trade integration between the two economies, product similarities [homogeneity], non-tariff barriers and also the lack of leadership in Pakistan. The results further point out that Sri Lanka has been facing largest trade deficit with Pakistan, mainly due to the negative list. They point out that Sri Lanka can enhance the performance of international trade with Pakistan by switching domestic production from traditional exports towards new production.

The above discussion implies that trade liberalization in the form of free trade agreements yield trade diversion and trade creation, which in turn affect the trade flows. Alteration of the trade flows in turn have economy wide implications, as revealed by of the above discussed studies. Therefore the best toll for studying these economy wide impacts is the Computable General Equilibrium [CGE] model which is capable of studying simultaneously the economy wide impacts of a change in policy by taking into account the interlinkages between different sectors of an economy. The above discussion also shows that there is no formal empirical study on the bilateral FTAs' performance of Pakistan. In addition to this, so far there is no a preliminary empirical assessment of the potentials FTAs of Pakistan. Evaluation of the existing FTAs and also a preliminary assessment of the potential FTAs is purely an empirical question, which this paper intends to address. The paper is expected to yield useful results that can be used to derive useful policy implications for the government, which can be helpful for re-negotiating the existing FTAs and also for undertaking the potential FTAs.

4. Methodology and Model

Keeping in view the interlinkages between an economy's different sectors and the economy-wide impacts of international trade reforms, this paper is based on the global Computable General Model (CGE) that allows for studying simultaneously the potential impact of a policy change on numerous economic indicators, to study the potential impacts of RCEP on Pakistan. Following section gives a brief introduction of the CGE model.

4.1. CGE Model

CGE models are economy-wide models that are employed for the evaluation of a change in the government policy action, change in technology and environment etc. using real economic data. CGE model is a multi-sectoral model and it explains the explicit information about the behavior of economic agent. The model treats households as utility maximizing agents and firms as cost minimizing or profit maximizing agents of the economy. Production and consumption decisions are made on the basis of prices which are determined by the equilibrium conditions of demand and supply. The beauty of the CGE model is that it allows for the numerical values of the coefficients that are estimated with reference to the numerical base data. Shoven & Whalley (1984) define CGE model: '*CGE model is one in which all markets clear simultaneously'.* According to Shoven & Whalley, CGE models have the floowing characteristics.

- CGE models assume a constant returns to scales, i-e non-increasing returns to scale.
- CGE models assumes that 'n' commodities are produced in 'n' markets in the economy.
- CGE models assume 'utility maximizing behavior of households' that can be used to derive consumers' demand function.
- CGE models assume a 'costs minimizing behavior of firms that can be used to derive production and costs function of profit maximizing/costs minimizing firms.

CGE models provide computer based simulations to evaluate government policy changes and then guide the policy by identifying the gains and losses of the government policy changes. They are developed from the linear programming models that involve the primal and also a dual solution of the country-wide resource allocation and general equilibrium (Ginsburgh & Waelbroeck, 1981). According to Wing, (2004) 'CGE model is a standard tool of the empirical analysis which is widely used for analyzing the welfare and distributional impacts of policies, whose effects may be transmitted through multiple markets.

The first CGE model was introduced by Johansen in 1960 in which he examined the multi-sectoral growth of the economy of Norway using 20 cost minimizing industries and a single utility maximizing household. The model was capable of producing numerical values of multi-sectoral growth in Norway through computer based simulations. Major contribution in the development of CGE model was made by (Scarf, 1969) who introduced the algorithm for the general equilibrium models' solutions. The algorithm was further improved and during 1970s, it was made possible to solve these models computationally. Scarf contribution in the development of CGE models was largely inspirational rather than practical.

Data source for the implementation of a CGE is the country's social accounting matrix (Athukorala, Bandara, & Kelegama) which is furnished with country's sectors-wise production, import and export data, data on macroeconomic aggregates and households' data. However, data source for the implementation of a global CGE model is the Global Trade Analysis Project (GTAP) model which provides both the database and modeling framework for the implementation of the global CGE model. Following section discusses the GTAP model.

4.2. GTAP model

The Global Trade Analysis Project (GTAP) is global network between researchers and policy makers. Its centerpiece is the GTAP database that records the annual flows of goods and services with a given base year. The database is a consistent database in the sense that the data is internally consistent and employed to simulate the impact of changes in individual countries specific as well as group wise policies at the international level. GTAP model is actually a multi-region CGE model and it is designed to deal with comparative static analysis of trade policy reforms as pointed out by 'Adam et al. (1997)'.

The GTAP model is based on a common global database for the economy wide analysis, the GTAP database (Narayanan, et al 2012). It assumes that all markets are perfectly competitive, all production and trade activities exhibit constant returns to scale, firms and household display profit and utility maximizing behavior respectively. The model is solved using the software GEMPACK (Harrison and Pearson, 1996).

4.3. MyGTAP Model

The extended version of the GTAP model, named MyGTAP, has several new characteristics that are helpful in examining the behavior of multiple households. It allows more flexibility in the treatment of government savings and spending by removing the regional household of the standard GTAP model and replacing it with a separate government and multiple private households. The model also includes transfers between government and households and among household groups, remittances and foreign capital incomes, thus allowing assessment of policy impacts on different household groups and production factors within an economy of interest. While many of these additional features are standard in the MyGTAP framework, others, such as multiple households, factors and transfers, require additional data to be prepared from a social accounting matrix (Athukorala et al.) or household survey and added to the GTAP database (Minor and Walmsley, 2013).

4.4. Factor and household types used in this paper

In this research paper, we use total 16 categories of households and 12 categories on factors of production. Table 3.2 highlights the households' types and factors' returns used in this paper.

Table 4.2. Factors' Types used in this Study**Pakistan Social Accounting Matrix (Athukorala**	
Code	Description
flab-s	Labor - small farmer
flab-m	Labor - medium+ farmer
flab-w	Labor - farm worker
flab-l	Labor - non-farm low skilled
flab-h	Labor - non-farm high skilled
flnd-s	Land - large
flnd-m	Land - medium
flnd-l	Land - small
fliv	Livestock
fcap-a	Capital - agriculture
fcap-f	Capital - formal
fcap-i	Capital - informal

Source: Pakistan's SAM [2010-11]

In addition to the above, factors' types, we also categorize all the domestic households into 16 different categories of households. Table 3.3 below shows the various types of households used in this study.

4.5. Region and sector aggregation in GTAP model

The total 144 regions and 57 commodity sectors are aggregated into following 30 different regions and 15 commodity sectors.

Table 4.1. Regional and sectorial aggregation

Regional aggregation				***Sectorial aggregation***	
S.no.	***Regional aggregation***	***S.no.***	***Regional aggregation***	***S.no***	***Sectorial aggregation***
1	Pakistan	16	Vietnam	1	Grain crops
2	Chin	17	Brazil	2	Vegetable and fruit
3	India	18	Peru	3	Meat & livestock
4	Turkey	19	Iran	4	Extraction
5	Thailand	20	Canada	5	Processed food
6	Malaysia	21	Singapore	6	Leather
7	Sri Lanka	22	Brunei	7	WAP
8	UAE	23	Japan	8	Textile
9	Saudi Arab	24	Chili	9	Light Manufactures
10	Bangladesh	25	Rest of South Asia	10	Heavy manufactures
11	Indonesia	26	Rest of Asia	11	Util-Cons
12	Australia	27	Mexico	12	Transport and
13	Korea	28	Egypt	13	Financial services
14	New Zealand	29	EU (25)	14	Business services
15	United States	30	Rest of Word	15	Other services

Source: GTAP Model version 9.

4.6. Table 4.3. Pakistan Household types in SAM 2010-11 and used in this paper

Pakistan Household types in SAM 2010-11 and used in this study					
S. No	**Household Types**	**HH Codes**	**S. No**	**Household Types**	**HH Codes**
1	Rural small farmer (quartile 1)	hhd-rs1	9	Rural non-farm (quartile 1)	hhd-rn1
2	Rural small farmer (quartile 234)	hhd-rs234	10	Rural non-farm (quartile 2)	hhd-rn2
3	Rural medium+ farmer (quartile 1)	hhd-rm1	11	Rural non-farm (quartile 3)	hhd-rn3
4	Rural medium+ farmer (quartile 234)	hhd-rm234	12	Rural non-farm (quartile 4)	hhd-rn4
5	Rural landless farmer (quartile 1)	hhd-rl1	13	Urban (quartile 1)	hhd-u1
6	Rural landless farmer (quartile 234)	hhd-rl234	14	Urban (quartile 2)	hhd-u2
7	Rural farm worker (quartile 1)	hhd-rw1	15	Urban (quartile 3)	hhd-u3
8	Rural farm worker (quartile 234)	hhd-rw234	16	Urban (quartile 4)	hhd-u4

Source: Pakistan's SAM [2010-11]

4.7. Simulation used in this paper

This paper carries out the following simulations.

Table 4.4. Simulation Design in the analysis of Pakistan's FTAs

Simulation Design used for the Analysis of Pakistan's Bilateral FTAs	
Simulations	**Description**
SIM-I	Trade liberalization between Pakistan and the existing FTA partners [China, Malaysia and Sri Lanka], with the elimination of all tariffs above the MFN tariffs
SIM-II	Trade liberalization between Pakistan and the potential FTA partners [Korea, Turkey and Thailand], with the elimination of all tariffs above the MFN tariff rates.

5. Results and Discussion

5.1. Impact of Bilateral FTAs on macroeconomic aggregates of Pakistan

In this section, we analyze and discuss the impact of Pakistan's bilateral FTAs on macroeconomic indicators of Pakistan under the two different simulations, i.e. one for Pakistan's existing FTAs and the other Pakistan's potential FTAs.

Pakistan's Existing FTAs: Table 5.1 reflects the impact of Pakistan's existing FTAs on macroeconomic aggregates. According to the results, impact of Pakistan's existing FTAs on real GDP of Pakistan is negative in case Pakistan-China FTA although very small. This result is not beyond the expectation and also the past experience with China, according to which, gains from Pakistan-China trade liberalization are biased toward China. The other two FTAs [with Malaysia

and Sri Lanka] have no significant impact of real GDP of Pakistan. Pakistan shows considerable increase in exports due to Pakistan's bilateral trade liberalization with the bilateral FTA partners [China and Malaysia]. Impact of Pakistan's bilateral FTAs on real investment of Pakistan is positive but is considerable only in the case of Pakistan-China FTA. From the simulation results, it can be shown that Pakistan's two bilateral FTAs can boost up Pakistan' exports and imports and also investment. However, Sri Lanka turns out to be an insignificant bilateral trade partner of Pakistan. This is also revealed from the very low bilateral trade flows between the two economies.

The possible reason of the negligible impact of Pakistan-Sri Lanka FTA on Pakistan's macroeconomic indicators, primarily due to the lack of coordination between the business class and policy makers. The other potential reason is that neither of the two trade partners', i.e. Pakistan and Sri Lanka, view the other one as the potential market for exports and imports.

The impact of Pakistan's bilateral FTAs with China and Malaysia on real GDP is modest for China and Malaysia and also for Sri Lanka, which indicates that Pakistan' bilateral FTAs would yield gains to the FTA partners. On the other hand, Pakistan existing FTA show no considerable impact on Pakistan's potential bilateral FTA partner [Turkey], whereas Thailand shows negative impact on trade flows [exports and imports] due to Pakistan-China and Pakistan-Malaysia FTAs. However, the adverse impact on Thailand's trade flows is higher in case of Pakistan-China FTA than Pakistan-Malaysia FTA. This indicates that Pakistan's trade liberalization with China also leads to trade diversion, thereby leading to losses to the other trade partners such as Thailand. From the simulation results, it is also revealed that Korea is marginally impacted due to Pakistan-China bilateral FTA, i.e. Korea faces only a small decrease in exports and imports due to Pakistan-China FTA, indicating that Korea also may face trade diversion due to Pakistan-China bilateral trade liberalization.

Table 5.1. Impact of Pakistan's Bilateral FTAs on Macroeconomic Indicators

Impact of Pakistan's Existing Bilateral FTAs on Maecroeconomic Aggregates												
	Pakistan – China FTA				*Pakistan – Sri Lanka FTA*				*Pakistan – Malaysia FTA*			
Countries,	Real GDP	Real Exports	Real Imports	Real Investment	Real GDP	Real Exports	Real Imports	Real Investme	Real GDP	Real Exports	Real Imports	Real Investme
Pakistan	-0.02	7.04	2.31	0.68	0.00	0.04	0.09	0.06	0.00	2.54	0.78	0.01
China	0.00	0.03	0.10	0.02	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.00
Sri Lanka	0.00	0.00	-0.02	-0.01	0.00	0.52	0.24	0.04	0.00	-0.01	-0.02	-0.01
Malaysia	0.00	0.00	-0.02	-0.02	0.00	0.00	0.00	0.00	0.02	0.09	0.21	0.23
Turkey	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Thailand	0.00	0.00	-0.03	-0.05	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01
Korea	0.00	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Impact of Pakistan's Potential Bilateral FTAs on Maecroeconomic Aggregates												
	Pakistan – Turkey FTA				***Pakistan – Thailand FTA***				***Pakistan – Korea FTA***			
Countries,	Real GDP	Real Exports	Real Import	Real Investmen	Real GDP	Real Export	Real Import	Real Investm	Real GDP	Real Export	Real Import	Real Investm
Pakistan	0.01	0.23	0.43	0.35	0.05	1.60	0.65	0.39	0.01	0.64	0.62	0.44
China	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00
Sri Lanka	0.00	-0.01	-0.02	-0.01	0.00	0.00	-0.01	0.00	0.00	0.00	-0.01	0.00
Malaysia	0.00	0.00	0.00	-0.01	0.00	0.00	-0.01	-0.02	0.00	0.00	0.00	0.00
Turkey	0.00	0.09	0.09	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Thailand	0.00	0.00	0.00	0.00	0.01	0.04	0.23	0.31	0.00	0.00	0.00	-0.01
Korea	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.06	0.03

Author's own simulations

Pakistan's Potential FTAs: Table 5.1 above reveals the impact of Pakistan's potential FTAs on macroeconomic aggregates. According to the simulation results, it can be shown that Pakistan is benefitted in all macroeconomic aggregates due to Pakistan' potential FTAs. However, Thailand turns out to be the most significant potential FTA partner, as Pakistan shows a considerable increase in all macroeconomic aggregates in case of FTA with Thailand. Pakistan is mainly benefited due to increase in real investment [1.60 %] followed by real imports [o.65%]. On the other hand, impact on the bilateral FTA members is also positive in most of the cases, however, Thailand receives relatively a more modest gains due to its potential FTA with Pakistan, while the gains extended to Turkey and Korea due to the bilateral potential FTA partners are not more modest. This implies that Pakistan-Thailand proposed FTA yields a win-win gains.

Table 4.1 also summarizes the impact of Pakistan's potential FTAs on Pakistan's existing bilateral FTA partners [China, Sri Lanka and Malaysia]. According the results, China receives no adverse impact in case of Pakistan's trade liberalization in the framework of potential FTAs. However, Sri Lanka is impacted adversely due to Pakistan-Turkey FTA, mainly in exports,

imports and investment. Malaysia on the other hand, is only marginally impacted due to decrease in exports and imports only in case of Pakistan-Thailand potential FTAs.

5.2. Sectorial Impact of Pakistan's FTAs on Pakistan

Pakistan's existing FTAs: Table 5.2 summarizes the impact of Pakistan's FTAs on sectorial output, sectorial exports and sectorial imports. From the simulation results, it is revealed that most of Pakistan' sectorial output show a positive impact due to Pakistan-China FTA, with a considerable increase in Pakistan's main exports sectors [WAP and textiles and also extraction etc.]. However, Pakistan-China FTA may also put threat to Pakistan's leather sector along with 'vegetable and fruit', meat and livestock and 'light manufactures', primarily due to increase in imports coming from China under the Pakistan-China FTA. Sri Lanka turns out to be an unimportant trade partner of Pakistan as Pakistan is adversely impacted due to decrease in sectorial output under Pakistan-Sri Lanka FTA. Malaysia turns out to be relatively more significant FTA partner of Pakistan than Sri Lanka. However, increase in sectorial output in case of Pakistan-China FTA is higher as compared to Pakistan-Malaysia FTA, which indicates that Pakistan may yield gains from trade liberalization with China if Pakistan cautiously renegotiates the Pakistan-China FTA according to Pakistan's trade potentials.

According to the simulation results, Pakistan records a considerable increase nearly in all sectorial exports due to Pakistan-China FTA [with the elimination of all tariffs above the MFN tariffs]. The highest increase is recorded by exports of by WAP [13.34 %] followed by leather [12.76 %]. Textile also shows, i.e. 8.41 percent, which indicates that Pakistan can enhance the export performance by cautiously renegotiating the existing Pakistan-China FTA according the Pakistan potential. Reason of the high increase in sectorial exports of Pakistan to China is that Pakistan and China are important trade partners and Pakistan's top exports to China include cotton made textile, leather products, WAP and articles of plastic etc. On the other hand, Pakistan has enough export potentials of these items and high trade ties with China, so trade liberalization between Pakistan and China under the renegotiated Pakistan-China FTA.

Malaysia also turns out to be highly significant for Pakistan in that nearly all of Pakistan's sectorial exports increase due Pakistan-Malaysia FTA. However, impact on sectorial exports of Pakistan is lower in this case as compared to Pakistan-China FTA, which indicates that China is more significant for Pakistan than other FTA partners. On the other hand, Sri Lanka with which Pakistan has an FTA, is not a natural trade partner of Pakistan as nearly all of Pakistan's sectorial exports decrease due to FTA with Sri Lanka although not more modestly.

From the simulation results, it is revealed that Pakistan's existing FTAs [with China] may put considerable gains to Pakistan due to most of Pakistan's sectorial imports as increase may enhance the domestic productive capacity. From the results, it can be pointed out that increase under this case [Pakistan-China FTA] is modestly higher than other FTAs, indicating that China is the most significant bilateral trade partner of Pakistan. The highest increase is recorded by leather imports [53 %], followed by WAP [45 %] and then textile [17 %]. Malaysia also turns out to be an important trade partner of Pakistan as Pakistan's major import groups show a modest increase due to Pakistan-Malaysia FTA. Pakistan's Malaysia FTA may also put losses to some sectorial imports. The possible reason is that liberalization of trade with Malaysia may enhance the domestic productive capacity, thereby leading to increase in the domestic substitution sectors, followed by decrease in imports although not more modestly. Pakistan's sectorial imports also record a positive impact in case of FTA with Sri Lanka, however, increase in imports under this

scenario is not more modest, indicating that Sri Lanka once again turns out to be an unimportant trade partner of Pakistan.

Table 5.2. Sectorial Impact of Pakistan's Bilateral FTAs

Sectorial Impacts of Pakistan's Existing Bilateral FTAs									
	Pakinstan – China FTA			*Pakistan – Sri Lanka FTA*			*Pakistan – Malaysia FTA*		
Sectors	*Output*	*Exports*	*Imports*	*Output*	*Exports*	*Import*	*Output*	*Exports*	*Imports*
Grain crops	0.06	-2.37	3.74	-0.06	-0.49	0.47	0.07	2.86	3.06
Veg- fruits	-0.06	-0.36	0.53	0.83	7.36	0.66	-0.39	-1.42	0.81
Meat & livestock	-0.21	0.88	0.09	-0.03	-0.98	0.40	-0.06	-3.12	2.17
Extraction	0.82	6.35	-0.44	-0.02	0.09	0.04	0.43	0.22	0.77
Processed food	0.30	5.05	-1.19	0.06	2.84	0.16	-0.66	3.48	16.43
Leather	-0.49	12.76	53.19	-0.02	-0.65	0.47	0.02	0.46	-0.11
WAP	2.10	13.34	45.04	-0.02	-0.14	0.39	0.77	4.15	-1.91
Textile	2.57	8.41	17.72	-0.28	-0.41	0.17	1.26	1.82	0.05
Light man	-1.11	9.53	7.97	-0.01	-0.05	0.08	0.51	4.25	-0.65
Heavy man	0.36	8.53	1.02	-0.01	-0.03	0.04	0.85	3.52	-0.68
Sectorial Impacts of Pakistan's Existing Bilateral FTAs									
	Pakinstan – Turkey FTA			*Pakistan – Thailand FTA*			*Pakistan – Korea FTA*		
Sectors	*Output*	*Exports*	*Imports*	*Output*	*Exports*	*Import*	*Output*	*Exports*	*Imports*
Grain crops	0.05	1.45	1.90	0.02	-1.19	1.39	0.01	-1.05	0.74
Veg- fruits	-0.24	-1.01	0.73	-0.06	-0.33	0.31	-0.06	-0.59	0.44
Meat & livestock	-0.06	-2.21	1.18	-0.02	2.07	0.54	0.02	-2.02	0.92
Extraction	-0.07	-0.64	0.14	0.24	0.88	0.25	-0.12	0.53	-0.19
Processed food	0.02	0.66	0.79	0.10	1.82	-0.24	0.47	21.46	0.55
Leather	-0.05	-1.70	1.38	-0.10	1.22	8.50	0.06	0.68	1.27
WAP	0.02	-0.02	1.84	0.53	2.83	0.16	-0.03	-0.57	0.65
Textile	0.12	0.41	0.84	1.15	1.79	0.59	-0.30	-0.13	1.51
Light man	-0.06	-0.43	0.67	-1.87	2.87	7.07	-0.24	-0.72	1.27
Heavy man	-0.02	0.24	0.27	0.44	2.45	-0.12	-0.31	0.30	0.69

Source: Author's simulations

Pakistan's Potential FTAs: Table 5.2 also reports the sectorial impact of Pakistan's potential FTAs on Pakistan. According to results, Thailand may be an important potential FTA partner of Pakistan as most of Pakistan's sectorial output show a meaningful increase due the potential Pakistan-Thailand FTA. Turkey and Korea on the other hand, are less important trade partners of Pakistan as sectorial production of most of Pakistan's exports may decrease in case of Pakistan's FTAs with these economies. Pakistan-Korea FTA may also put a loss to Pakistan's top exports [textile and WAP etc.] due to decrease in sectorial output of these economies. On the other hand,

Pakistan-Thailand FTA may modestly benefit Pakistan's top export sectors [WAP, textile and extractions], indicating that Pakistan-Thailand FTA would be beneficial for Pakistan.
The results illustrate that nearly all of sectorial exports of Pakistan record a considerable increase due to Pakistan-Thailand potential FTA. Pakistan receives highest increase in the exports of 'light manufactures' [2.87 %] and WAP [2.83 %]. Textile also shows a considerable increase, which indicates that Pakistan' FTA with Thailand would be beneficial for Pakistan. Pakistan receives a negative impact only on 'grain crops' and 'vegetable & fruit' in this case. The possible reason is that Thailand' top 20 exports to Pakistan includes 'vegetable & fruit' [whose share in total Pakistan's imports is around 15%, (10.3 million US$)] and 'cereal grains', particularly 'Maize or Corn', [whose share in Pakistan's imports is around 7 %-10 million US$]. On the other hand, 'maize' is the 2nd top exports of Pakistan following 'rice' under this group [cereal grains][8]. Therefor Pakistan's proposed trade liberalization under the proposed FTA, may lead to increase in exports of 'maize' from Thailand, which in turn may worsen the domestic productive capacity of maize and so exports. This is also evident from the meaningful increase in the imports of cereal grains [1.39 %] due to Pakistan's potential FTA with Thailand.

From the simulation results, it can be shown that Pakistan-Turkey potential FTA would not be much beneficial for Pakistan as Pakistan shows decrease in most of exports due to Pakistan-Turkey FTA. Pakistan receives a positive impact only on the export of WAP and textile and Cereal Grains etc. however, it is not modest. On the other hand, Pakistan-Korea potential FTA also turns out to not important as Pakistan sees considerable decrease in top exports sectorial. However, impact on the exports of 'processed food', extraction and leather is positive and also considerable. In overall, Pakistan's potential bilateral FTAs with Turkey and Korea seems to be not much significant, so the government needs to move cautiously in finalizing the FTAs, while taking into account these considerations.

It is revealed from the simulation results, that Pakistan records a positive impact on most of the sectorial imports due to Pakistan-Thailand FTA. However, imports of the 'light manufactures' and 'leather' exhibit a considerable increase, indicating that Pakistan may adversely be affected in these sectors due to increase in imports, which in turn may lead to decrease in the domestic production, which is also revealed by the decrease in output of these sectors [leather (-0.10 %) and ''light manufactures (1.87 %)] due to Pakistan's bilateral FTA with Thailand. On the other hand, Pakistan records a considerable increase in the sectorial imports in case of bilateral FTAs with Korea and Turkey. However, increase in the sectorial imports in case of Pakistan-Turkey FTA is higher than Pakistan-Korea FTA in most of the cases. So based on these results, it can be shown that the expected loss of increase in imports [as increase in imports may lead to decrease in output as revealed in Table 5.10] from Pakistan-Turkey are higher than the expected losses that arise from Pakistan-Korea FTA. So it is claimed that Pakistan-Korea potential FTA may relatively be more beneficial than Pakistan-Turkey FTA following Pakistan-Thailand FTA.

5.3. Impact of Pakistan's Bilateral FTAs on Households' income in Pakistan

Pakistan's existing FTAs: Table '5.3' highlights the impact of Pakistan's bilateral FTAs on real households' income in Pakistan. From the simulation results, it can be shown that income of the non-farm and urban households show a considerable decrease due to Pakistan-China bilateral

[8] http://www.trademap.org/Product_SelCountry_TS.aspx?nvpm=1|586|||10|||4|1|1|2|2|1|1|1|1

FTA. However, income of the rural non-farm and urban households record decrease due to Pakistan's bilateral FTA with China. It is revealed by the simulation results that increase in real income of 'medium + farm household' [medium and large] is higher than other farmers' categories [rural small farmers & rural landless farmers]. Therefore, it can be shown that Pakistan-China FTA primarily benefits the large and medium farmer households. As revealed by the results, Pakistan also records a considerable decrease in real income of the 'non-farm rural' and 'urban households' due to Pakistan-China FTA. This may be due the large inflow of cheap Chinese imports, adversely affect the domestic productive capacity. It is shown that decrease in real income of households is the lowest in Punjab, while highest in Baluchistan. So therefore it can be pointed out that Punjab would be the least affected, while Baluchistan would receive a larger adverse impact, arising from the cheap imports coming from China.

Table 5.3. Impact of Pakistan's Bilateral FTAs on Households' income in Pakistan

Impact of Pakistan'sBilateral FTAs on Households'Income in Pakistan						
	Pakistan'Existing FTAs			*Pakistan's Potential FTAs*		
Households'Types	China	Sri Lana	Malaysia	Turkey	Thailand	Korea
Rural small farmer (quartile 1)	1.51	0.35	1.54	0.83	0.56	0.35
Rural small farmer (quartile 234)	1.45	0.36	1.57	0.90	0.55	0.40
Rural medium+ farmer (quartile 1)	3.37	0.16	2.48	0.64	1.10	0.05
Rural medium farmer (quartile 234)	2.20	0.27	2.17	1.16	0.78	0.44
Rural landless farmer (quartile 1)	1.73	0.35	1.68	0.90	0.61	0.35
Rural landless farmer (quartile 234)	1.36	0.28	1.47	0.88	0.50	0.37
Rural farm worker (quartile 1)	0.27	0.16	0.56	0.32	0.19	0.20
Rural farm worker (quartile 234)	-0.41	0.11	0.15	0.25	-0.01	0.21
Rural non-farm (quartile 1)	-1.29	0.01	-0.61	0.07	-0.34	0.14
Rural non-farm (quartile 2)	-1.37	0.01	-0.66	0.07	-0.36	0.15
Rural non-farm (quartile 3)	-1.41	0.01	-0.69	0.07	-0.37	0.16
Rural non-farm (quartile.4)	-1.44	0.02	-0.75	0.08	-0.39	0.20
Urban (quartile 1)	-0.99	0.04	-0.40	0.13	-0.24	0.15
Urban (quartile 2)	-1.25	0.03	-0.57	0.10	-0.32	0.16
Urban (quartile 3)	-1.36	0.02	-0.65	0.09	-0.36	0.17
Urban (quartile 4)	-1.42	0.02	-0.75	0.10	-0.39	0.22

Source: Author's simulation

Impact of Pakistan-Sri Lanka bilateral FTA on households' income is positive in all case although not more modest in most of the cases. This indicates that the bilateral trade flows of Pakistan with Sri Lanka are less sensitive to trade liberalization in the framework of Pakistan-Sri Lanka FTA. On the other hand, Pakistan records a moderate impact on real income of farm and farm workers due to Pakistan-Malaysia FTA. However, real income of the 'non-farm rural workers' and 'urban households' show a negative impact due to Pakistan-Malaysia FTA.,

although not more modest. As in the case of Pakistan-China FTA, the 'rural medium+ farmers' are the biggest gainers of Pakistan-Malaysia FTA. From the simulation results, it is revealed that Punjab is the largest gainer, due to increase in real income of farmers and farm workers. Punjab also stands out to be the lowest loser due to the decrease in real income of the 'rural non-farm' and urban households. Baluchistan on the other hand, stands out to be the least gainer, followed by Khyber Pakhtunkhwa [KP] due to increase in real income of farmers and farm workers under the Pakistan-Malaysia FTA. Baluchistan also turns out to be the biggest loser due to decrease in income of the 'non-farm rural' and 'urban households' followed by KP and then Sindh.

Pakistan's potential FTAs: Table 5.3 also reports the impact of Pakistan's potential FTAs on real households' income. According to the results, the potential Pakistan-Turkey FTA would positively impact all households' types in Pakistan, although not more considerable. It is also shown that increase in real income of farmers and farm workers is higher as compared to the 'non-farm rural' and urban households under this case.

Pakistan-Thailand FTA would mainly benefit the farmers and farm workers but worsen the other types of households' [urban and rural non-farm households], primarily due to increase in imports, arising from trade liberalization in the framework of Pakistan-Thailand potential FTA. On the other hand, Pakistan-Korea potential FTA would be beneficial for all types of households. The main beneficiaries are the farmers and urban farm workers, whose increase in real income is higher than the other types of households. This indicates that trade liberalization of Pakistan with Korea primarily would lead to increase in agricultural related exports, thereby benefitting those households who work in the agriculture sector. From the simulation results, it can be concluded that Thailand and Korea are also the important trade partners of Pakistan in that increase in real households' income is positive and meaningful for most of the households.

5.4. Impact of Pakistan's Bilateral FTAs on Real Factors' Returns in Pakistan

Pakistan's existing FTAs: It is revealed from the simulation results given in Table 5.4, that the main beneficiaries of Pakistan-China FTA are the all types of land [small, medium and large] and also the 'agriculture capital'. This is revealed from the very modest increase in real returns, arising from Pakistan's trade liberalization with China in the framework of Pakistan-China FTA. The other largest beneficiaries are the farmers and farm workers, who also record a considerable increase in real returns due to the Pakistan-China FTA. 'Agriculture capital' shows a modest increase in real returns, which indicates that China-Pakistan FTA is mainly beneficial for farmers and capital engaged in the agriculture sector. The 'formal and informal capital' record decreases in returns, however, the adverse impact is not more modest. This indicates that Pakistan-China FTA also is leading to increase in imports that in turn leads to decrease in the domestic production and capital return as Pakistani imports are mostly consisted of capital goods and industrial raw materials. So therefore, increase in imports primarily affect the production of those sectors, which involve an intensive use of capital, thereby leading to decrease in the rewards of capital as revealed by the simulation results.

Impact of Pakistan-Malaysia FTA on factors' return is not very different from that of China-Pakistan FTA. However, the impact of factors' returns under this case [Pakistan-Malaysia FTA] is lower in magnitudes than the previous case [Pakistan-China FTA], which indicates that Pakistan-China FTA is the most effective in raising the trade flows that in turn alter domestic production and factors returns and also households' income substantially. It is revealed by the simulation results that rewards of land, labor, 'capital agriculture' and 'livestock' increase, while,

rewards of capital [formal and informal] and 'non-farm labor' decrease. Highest increase in labor' categories is revealed by the farm workers [Labor-farm workers], while 'small land' of the land types is the most beneficial due to Pakistan-Malaysia FTA.

Table 5.4. Impact of Pakistan's Bilateral FTAs on Real Factors' Returns in Pakistan

Impact of Pakistan's Bilateral FTAs on real Factors' Returns in Pakistan						
	Pakistan' Existing FTAs			*Pakistan's Potential FTAs*		
Sectors	*China*	*Lanka*	*Malaysia*	*Turkey*	*Thailand*	*Korea*
Labor - small farmer	7.47	-0.02	2.84	0.46	2.21	0.77
Labor – medium + farmer	7.35	-0.11	2.83	0.25	2.30	0.83
Labor - farm worker	7.82	0.34	3.09	0.38	2.26	0.59
Labor - non-farm low skilled	-1.30	-0.20	-0.45	-0.06	-0.32	-0.12
Labor - non-farm high skilled	-1.89	-0.18	-0.79	-0.06	-0.42	-0.14
Land - large	8.88	0.15	3.40	0.70	2.42	0.93
Land - medium	8.98	0.06	3.49	0.41	2.61	1.04
Land - small	9.08	-0.02	3.59	0.08	2.83	1.16
Livestock	2.46	-0.59	0.77	0.07	1.21	0.15
Capital - Agriculture	9.11	0.01	3.60	0.11	2.81	1.14
Capital – formal	-1.47	-0.27	-0.47	-0.04	-0.48	-0.12
Capital-informal	-1.41	-0.20	-0.49	-0.05	-0.40	-0.13

Source: Authors' simulations

The impact of Pakistan-Sri Lanka FTA is according to the expectations and also consistent to the above findings. According the results, Sri Lanka also turns out to be an unimportant FTA partner of Pakistan, i.e. Most of the factors show decrease in real returns. The large and medium land and also the farm workers exhibit increase in real returns. However, impact on factors' returns under this case [Pakistan-Sri Lanka] is significantly smaller, indicating that Pakistan's trade flows and so other macroeconomic aggregates and also domestic sectors are less responsive to trade liberalization with Sri Lanka under the Pakistan-Sri Lanka FTA. Overall accumulative impact of Pakistan's existing FTAs on real returns/rewards is positive and modest for all categories of land and labor and 'agriculture capital' and livestock, which indicates that Pakistan can potentially reduce the adverse impact of RCEP and TPP by renegotiating existing FTAs, particularly with China and Malaysia.

Pakistan's potential FTAs: Impact of Pakistan's potential FTAs with Turkey, Thailand and Korea on factors' reward is positive and meaningful for all types of factors except for the non-farm workers [skilled & unskilled] and capital [formal & informal]. This indicates that the main beneficiaries of Pakistan's potential FTAs are farmers and farm workers, small & large land, livestock and agriculture capital. However, impact on real factors returns in case of Pakistan-Thailand FTA is higher as compared to Pakistan's FTAs with Turkey and Korea, indicating that Thailand would be an important FTA partner of Pakistan.

From the simulations results, it is indicates that 'Land' and 'agriculture capital' stand out to be the larger gainers due to Pakistan's trade liberalization under the Pakistan-Thailand FTA. The

highest increase is revealed by the returns of the 'small land' [2.83 %] followed by 'agriculture capital' [2.81]. The negative impact on real returns of the low 'skilled' and 'high skilled' and also capital [both formal and informal], indicates that Pakistan's trade liberalization with the potential FTA partners may also lead to a considerable increase in imports, which in turn may lead to decrease in domestic production of import substitute sectors followed by decrease in factors returns. Overall impact of Pakistan's potential FTAs on real factor returns is positive and modest for most of factors, with the highest increase in reward of agriculture capital and 'small land' followed by 'land large' and 'land medium'.

6. Conclusion and Policy Recommendation

Based on the above discussion, it can be pointed out that Pakistan's trade liberalization with the bilateral FTA partners is beneficial for Pakistan and also for the trade partners in most of the cases. This is revealed from the significant and considerable increase in all macro variables [GDP, exports and imports etc.] along with a modest improvement in the domestic sectors [output, sectorial exports and imports]. This favorable impacts of macroeconomic variables and also the considerable sectorial impact of Pakistan's bilateral FTAs also lead to a considerable impact on real factors' returns and also on households' income. It can be pointed out that two of Pakistan's existing bilateral FTAs [i.e. with China and Malaysia] can be more beneficial for Pakistan if Pakistan renegotiates them according to Pakistan's trade potentials. However, Pakistan is unlikely to be beneficial due to trade liberalization with Sri Lanka under the Pakistan-Sri Lanka FTA if also Pakistan renegotiates it.

It can also be concluded from the above discussion that Thailand and Korea would be the most beneficial FTA partner of Pakistan as revealed by the moderate increase in all macroeconomic indicators and also in the sectorial output, exports and imports. However, Turkey may be an unimportant FTA partner of Pakistan in the future. The favorable impact of most of Pakistan's bilateral FTAs, indicates that Pakistan can potentially increase the international trade performance by renegotiating the existing FTAs, i.e. the Pakistan-China and Pakistan-Malaysia existing FTAs and by undertaking additional free trade agreements with the important trade partners, i.e. with Thailand and Korea.

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