

Analyzing the Trade Effect of Pakistan and Malaysia Free Trade Agreement**Ch. Mazhar Hussain**
Syed Zulfiqar Ali Shah*International Islamic University, Islamabad, Pakistan***Abstract**

This research scrutinizes quantitative effects of Pakistan-Malaysia Free Trade Agreement (FTA) on macroeconomic and trade variables. For that purpose, this study used a multiple country general equilibrium model, namely the Global Trade Analysis Project (GTAP) model. The model simulates the economic impact of the tariff eliminations under this bilateral agreement. The results depict that under bilateral Pakistan- Malaysia FTA, the real GDP of Pakistan is negative while Malaysia's real GDP is positive. There is trade deficit of Pakistan while Malaysia has trade surplus. Moreover, Malaysia's welfare gain is positive, but Pakistan is the loser in net welfare. In fact, Pakistan does not get the benefit from this FTA, however, Pakistan identify potential exports sectors such as process rice, textiles, wearing apparel, chemical products, plastic, rubber, metal products, cement and machinery and equipment. Thus, Pakistan may be develop the long term strategy to focused on these industries and allocate the resources efficiently on these sectors. In this way, Pakistan improves its exports to enhance its GDP growth, trade balance and welfare.

Keywords: Pakistan-Malaysia Free Trade Agreement, Computable General Equilibrium Model, GTAP

The aim of the Free Trade Agreements (FTAs) is to eliminate the policy distortion that impacts the free flows of commodities and services between the contracting economies with the underlying objective is to enhance the trade and welfare among each other. This research scrutinizes quantitative effects of Pakistan-Malaysia Free Trade Agreement (FTA) on macroeconomic and trade variables. In this study the computable general equilibrium (CGE) modeling is used with the help of Global Trade Analysis project (GTAP) model to examine this FTA. Moreover, the pre and post impact of this FTA is not analyzed before through GTAP model, which is the empirical contribution in the existing literature of this study. The significance of Pakistan-Malaysia Free Trade Agreement (FTA) is mentioned below.

Pakistan-Malaysia volume of trade, which was in the region of US\$ 1017.80 million in the year 2006-07 reached all time high in 2011-12, amounting to US\$ 2.66 billion showing an increase of 163 percent. Pakistan's exports registered 211% increase in 2011-12 as compared to 2006-07. Similarly, Malaysia's exports to Pakistan also increased by 157% during this period. The bilateral volume of trade between the Pakistan and Sri Lanka increased from US\$ 200 million in 2004-05 to US\$ 374 million in 2011 and 2012. Pakistan's export has increased by almost 100 percent during the said period. From US\$ 155 million in 2004-05 exports registered an increase by exceeding US\$ 305 million in 2011-12. (Pakistan Economic Survey 2011-2012)

Malaysia came into existence in 1960s and after that its economic development is very impressive, and shows extraordinary economic prosperity among the East Asian countries. In the early years, Malaysia economy was relying on its important natural resources, mineral and agriculture produces. However, later on government of Malaysia took steps for the development of industrial sector. The government transformed its economic structure in 1968, and adopted multiple trade reforms that included Export Oriented Industry (EOI) policy. This strategy changes the Malaysian economy from reliance on primary goods to depending on state of the art technology and knowledge based industrial commodities. Along with EOI strategy, the government also took inward looking policy like import-alternative. Moreover, the government also established capital intensive industries during the same time period. Due to EOI strategies, Malaysia ranked it as 3rd largest economy of the East-Asian region. Malaysia GDP per capita in 2014 was \$10,803

(world Economic Outlook). During 2014, the Foreign Direct Investment (FDI) attracted approximately \$10 billion (Central Bank of Malaysia). Since 2004, it has had a continuous trade surplus which was reached to \$25 billion in 2014 (International Trade Center- Trade Map).

In view of above, highlighted discussion it is clear that Malaysia has significant role in East Asian region and for the seek of economic cooperation, the desire to progress and economic prosperity, Pakistan and Malaysia initially engaged in Early Harvest Program (EHP). The objectives of this arrangement were to protect market for their export products and expand the economic and trade relationship being significant members of the region. The EHP between Pakistan and Malaysia was signed on January 1st 2006 based on the 2004 import statistic and the Most Favored Nation (MNF) applied tariff rates of January 1st 2005 of both countries. The first FTA was signed between both countries on November 8th 2007 at Kuala Lumpur, Malaysia, that was happened after the successful completion of the EHP program. This agreement was first Malaysia's bilateral FTA with any South Asian country and for Pakistan it was the first comprehensive FTA regarding integrating trade in goods, trade in services, investment and economic cooperation. The objective of this FTA is to improve bilateral trade between the two countries by giving tariff elimination on several goods. This study examines the Malaysia Pakistan Closer Economic Partnership Agreement (MPCEPA) came into effect in 2008. (Ministry of Commerce, Pakistan).

Literature Review

A lot of work has been done by researchers regarding FTAs. Nevertheless, few of the relevant work is discussed here. Like Faruqui, Ara and Qamruzzaman (2015), Lee and Itakura (2014), Cheong (2013), Rahman and Cheong (2014) Arif et.al (2014), Xin (2014), Narayanan and Sachin (2014) and Petri et.al (2011) used CGE modeling to examine different FTAs. Pakistan had signed South Asian Free Trade Agreement (SAFTA) in 2004 and most of the researchers like Usman (2010), A. R. Kemal (2005), Nisha, Shravani and Pallavi (2013), Coulibaly (2007) and Hassan, Fatima, Ayesha, and Muhammad (2011) found that SAFTA is not a successful agreement among South Asian Association for Regional Cooperation (SAARC) countries.

Moreover, Sasatra and Prasopchoke (2007) examined the ASEAN-5 which includes Indonesia, Malaysia, the Philippines, Singapore and Thailand. Their results showed that if this FTA fully liberalized than these countries would get maximum benefits. ASEAN+China, ASEAN+Japan, ASEAN+Republic of Korea and ASEAN+India had been evaluated by Kawai and Wignaraja (2007). They also examined the ASEAN+3 (ASEAN, China, Japan and the Republic of Korea), ASEAN+6 (ASEAN+3, Australia, New Zealand and India) and found that the East Asian countries get largest gains in ASEAN+6.

From the above discussion, it is clear that Pakistan is not a member of ASEAN and there is need to arrange collaboration with East Asian countries for economic development. For that purpose, this study investigate the pre and post impact of Pakistan-Malaysia FTA on macroeconomic factors such as real Gross Domestic Product (GDP), trade balance, output and trade in different sectors, welfare in context of Pakistan.

Methodology

In this study, the Global Trade Analysis Project (GTAP) is used to examine the impact of Pakistan- Malaysia FTA which is introduced by the Center for Global Trade Analysis, Purdue University. The GTAP model is a multi regional, comparative static, exogenous policy and applied general equilibrium (AGE) model. Moreover, the GTAP model is a widely acceptable tool to analyze the pre and post economic impact of FTAs.

The structure of the GTAP database is composed of households, government, industrial sectors and global sectors among different countries. The countries and regions are inter-linked among each other via trade in international economy. In the result, the prices and quantities are evaluated in both factor and commodity markets. The GTAP model assumes that national income is distributed among three types of final demand that is government, households, and saving and using aggregate Cobb-Douglass utility function.

Furthermore, Armington assumptions are used in the model for bilateral trade agreement. It is also assume that production in each economy and all sectors are constant return to scale technology and competitive markets. The production function of Leontief depicts the production for each sector in each economy. The information regarding value added and

intermediate inputs are gathered from input-output tables of each country. The firms utilize both local and imported commodities, what so ever cheaper for them.

In the GTAP model, the labor is assumed to be immobile among countries but mobile among sectors. Nevertheless, capital is assumed to be mobile among both sectors and countries. Saving is determined endogenously through fictitious Global Bank. The investment is allocated by the Global Bank among economies to determine the estimated returns on investment.

Data and the aggregation scheme in GTAP version-9

Currently, the new version of the GTAP model was released in May 2015. In this study, this latest version is used for the analysis of Pakistan-Malaysia FTA. This database is different from the previous versions of the database because it has more than one reference years: 2004, 2007 and 2011 with 140 regions and 57 sectors¹. The number of countries in the standard GTAP has been increased from 226 to 244 countries aggregated into 140 regions.

For the analysis purpose, the data for a CGE analysis is usually aggregated by regions, sectors and factors. In this study, the data on the 140 countries given in the GTAP database version-9 are aggregated into 10 regions: 2 main countries such as Pakistan and Malaysia are aggregated separately because the main focus of bilateral trade analysis is on these two countries. The remaining countries are aggregated into eight regions name as Sri Lanka, China, ASEAN, Rest of SAARC, Rest of America, European Union, Rest of West Asia and the last region is Rest of World. The GTAP database has data on 57 sectors, which have been aggregated into 43 sectors according to the nature of outputs (Appendix- 3).

In the GTAP database, the five factors are included such as land, natural resources, unskilled labor, skilled labor and capital. These are left disaggregated in this analysis. Land and natural resources are presumed to be perfectly immobile between sectors. Nevertheless, unskilled labor, skilled labor, and capital are perfectly mobile. The benchmark year for this CGE scrutiny is 2011 as the data from the GTAP database is from version-9 which is from the same year.

For the purpose of data analysis the mapping of Harmonized System (HS) codes has been done with GTAP codes. The Pakistan Malaysia FTA's mapping of major exports commodities of GTAP codes with HS 6 codes. The exports which are US \$ 1 million are equal to and above from 2004 to 2014 are considered as major Pakistani exports to Malaysia. The mapping of major imports commodities of GTAP codes with HS 6 codes. The imports which are US \$ 2 million are equal to and above from 2004 to 2014 are considered as major Pakistani imports from Malaysia.

Results of GTAP Simulation Effects of Pakistan Malaysia Free Trade Agreement

The GTAP simulation has been performed on Pakistan Malaysia FTA. In this simulation, the ad valorem tariffs on imports from Pakistan into Malaysia and imports from Malaysia into Pakistan are all reduced to zero. For the purpose of this simulation, the closure (i.e., the treatment of equilibrium in the model) used is the standard GTAP multiregional general equilibrium closure. The solution algorithm used is the Gragg 4 8 12 method with automatic correctness to obtain a high level of accuracy in the results. The following is the simulation results of Pakistan-Malaysia FTA:

Pakistan Malaysia Free Trade Agreement Simulated Aggregate Effects

Table # 1 presents the simulated aggregate effects of the Pakistan Malaysia FTA in terms of real GDP. This FTA causes a negative change of \$ -1.90 million for Pakistan. While, there is positive change \$58.60 million for Malaysia before and after FTA. In other words, there is contraction of real GDP in the Pakistan, however, an expansion of real GDP in the Malaysia.

¹ The lists of regions and sectors are given in Appendix-1 and 2 to this document.

Table 1. *Effect on Real GDP of Pakistan and Malaysia*

	Business as Usual \$ million	Post-FTA \$ million	Change \$ million
Pakistan	213,686.2	213,684.3	-1.9
Malaysia	289,259.56	289,318.16	58.6

Note: The GTAP variable used is: (i) *qgdp* for Real GDP

Source: Author's results from a GTAP simulation.

As for trade, both Pakistan and Malaysia experience an increase in export values, with Pakistan's trade expansion being more than Malaysia as depicted in table # 2. Pakistan has a larger increase in imports than in exports, worsening its trade balance. There was trade deficit of Pakistan with Malaysia in base year pre-simulation and it remains in deficit post-simulation, while there was trade surplus of Malaysia in base year before simulation and it remains in surplus after simulation. However, the results show in table # 2 that exports of Malaysia are more than Pakistan that is why Malaysia achieve trade surplus. As for the terms of trade, the simulation results in an improvement for Malaysia, but a deterioration for Pakistan.

Table 2. *Effect of Pakistan and Malaysia FTA on Exports, Imports, Trade Balances and Terms of Trade*

	Change in Export Value (\$ Million)	Change in Import Value (\$ Million)	Change in Trade Bal. value (\$ Million)	Change in Terms of Trade (%)
Pakistan	404.3424	1648.407	-1244.0646	-0.2486
Malaysia	1515.1586	455.1514	1060.0072	0.076

Source: Author's results from a GTAP simulation.

Simulated Sectoral Effects

The Pakistan Malaysia FTA produces mixed effects on different sectors in Pakistan (Table # 3). The Harmonized System (HS) 6 digit of Processed rice are Rice, semi-milled or wholly milled, whether or not polished or glazed (HS-100630) and Rice broken (HS-100640) has the second largest relative output expansion 0.96% driven by a largest increase in export volumes at \$260.139 million from base year. The Beverages & Tobacco includes Tobacco, unmanufactured, partly or wholly stemmed or stripped (HS-240120), Tobacco extracts and essences (HS- 240399), Cigars, cheroots and cigarillos, containing tobacco (HS-240210), Tobacco refuses (HS-240130), Non-alcoholic beverages nes, exclude fruit/vegetables juices (HS-220290) has the largest relative output expansion 1.55%, however, the increase in export volume at \$50.75 million from base year which is less than processed rice. In the results, the sectors have absolute percentage changes of less than 0.49% for export prices and less than 14.76% for export volume. The percentage change in export price turns out to be equal to the percentage change in the local price in each sector, in this simulation. There is largest drop in output and import prices in vegetable oil and fats products sector. This is due to an increase in import volume in terms of percentage is 26.97% and increase in import volume in terms of amount is \$1102.15 million from base year, which substitute for and reduce the local supply of vegetable oil and fats products in Pakistan's domestic market.

The textiles HS-6 digits items are Cotton yarn (HS-520511), Bed linen, of cotton, nes (HS-630231), Cotton yarn (HS-520512), Bed linen, of cotton, printed, not knitted (HS-630221), Toilet & kitchen linen, of terry towel or similar terry fabric, of cotton (HS-630260), Bed linen, of other textile materials, nes (HS-630239), Cotton yarn (HS-520513), Cotton yarn, single, combed, not put up (HS-520522), Cotton, not carded or combed (HS-520100), Cotton yarn ,single, combed, not put up (HS-520523), Plain weave cotton fabrics printed (HS-520851), T-shirts, singlet and other vests, of other textile materials, knitted (HS-610990), Bed linen, of textile knitted or crocheted materials (HS-630210), Full-length or knee-length stockings, socks and other hosiery (HS-611595), Cotton yarn (HS-520521), T-shirts, single and other vests, of cotton, knitted (HS-610910), Woven fabrics, containing of acrylic staple fabric (HS-551229), Made up articles, of textile materials, nes, including dress patterns (HS-630790), Ornamental trimmings in the piece knit, tassels, pompons & similar art

(HS-580890), Carpets of other textile materials, knotted (HS-570190), Sacks & bags, for packing of goods, of other man-made textile materials (HS-630539) and wearing apparel HS-6 digits include articles of apparel of leather or of composition leather (HS-420310), Shawls ,scarves, veils & the like, of other textile materials, not knitted (HS-621490), Men/boys trousers and shorts, of cotton, not knitted (HS-620342), Women/girls suits, of synthetic fabric, not knitted (HS-620413), Garments nes, of other textile materials, knitted (HS-611490), Track suits, of synthetic fabric, knitted (HS-611212), Gloves, mittens and mitts, nes, of cotton, knitted (HS-611692). The above mentioned items of textile and wearing apparel sector's output and export volumes percentage change are increased due to increase in export volumes at \$65.09million and \$21.10 million from base year respectively. Similarly, due to increase in export volumes at \$3.54 million from base year, the chemical products sector's output and export volume percentage change are also increased. The HS- 6 digits of chemical products include Gelatin and gelatin derives; is in glass; glues of animal origin, nes (HS-350300), Hydrogen chloride (hydrochloric acid) (HS-280610), Vinyl chloride (chloroethylene) (HS-290321), Beauty or make-up preparations nes; sunscreen or sun tan preparations (HS-330499), Insecticides (HS-380891), Phosphates of metals nes (HS-283529).

The contraction in Pakistan's real GDP is due, in order of importance, to vegetable oil and fats, auto parts, chemical products, Machinery and Equipment, wood products and textile and metals products, these sectors' import volumes increase such as \$1102.15million, \$154.71million, \$140.83million, \$83.65million, \$72.25million, \$41.48million and \$38.18million from base year respectively. The general increase in import volumes can be attributed to tariff reductions and drops in import prices in all of these above highlighted sectors.

Table 3. *Simulated Sectoral Effects of the Pakistan Malaysia FTA on Pakistan (% change)*

GTAP Code	Pakistan- Sectors	Domes tic Output (qo)	Ex po rt Pri ces (px w)	Expor ts Volu me (qxw)	Im por t ces (pi m)	Impor ts Volu me (qiw)
Wht	Wheat	0.01	-0.16	1.3	0	-0.83
Gro	Cereal grains nec	0.8	-0.15	0.29	-0.01	-0.71
v_f	Vegetables, fruit, nuts	0.05	-0.2	0.6	-0.01	-0.37
Sugar	Sugar	-0.12	-0.31	1.52	-0.75	1.31
Fsh	Fishing	-0.08	-0.48	1.09	-0.38	-0.19
Pcr	Processed rice	0.96	-0.3	14.14	-0.07	-0.68
Ofd	Food Products nec	-0.11	-0.31	1.15	-0.53	0.53
b_t	Beverages & Tobacco	1.55	-0.31	14.76	-0.22	-0.12
Tex	Textiles	0.82	-0.27	2.45	-0.18	-1.93
Wap	Wearing apparel	0.37	-0.29	2.63	-0.03	-0.94
Wood	Wood products	-0.44	-0.35	2.58	-1.05	2.09
Vol Miner al	Vegetable oil & fats	-14.16	-0.31	2.52	-11.34	26.97
	minerals	0.12	-0.3	0.42	-0.03	-0.22
Crp	Chemical,rubber,plastic products	0.31	-0.49	3.46	-0.25	-0.58
Ome	Machinery & Equip nec	0.21	-0.33	2.77	-0.2	-0.4

Omf	Manufactures nec	0.88	-0.33	2.36	-0.03	-0.93
Auto	Autoparts	-0.5	-0.34	2.26	-0.78	1.33
p_c	Petroleum,coal products	-0.01	-0.04	0.2	0	-0.11
Metal	Metals	0.33	-0.27	1.74	-0.13	-0.33

Source: Author's results from a GTAP simulation.

Table #4 shows how Malaysia's sectoral output and trade change due to the simulated Pakistan Malaysia FTA. Except for vegetable oil and fats, textiles, wood products, auto parts, fishing and food products all other sectors experience a contraction in output. The export prices of all the sectors are increased except beverages and tobacco, processed rice, food products and wearing apparel. Moreover, the export volumes percentage change are increased in vegetable oil and fats- Palm oil and its fractions refined but not chemically modified (HS-151190), Palm oil, crude (HS-151110), Palm nut/kernel oil-cake & other solid residues, whether/not ground/pellet (HS-230660), Vegetable fats & oils & fractions hydrogenated (HS- 151620), Edible mix/prep of animal/vegetable fats& oils/of fractions (HS-151790), Coconut (copra) oil& its fractions refined but not chemically modified (HS-151319), textiles- Filament yarn of polyester, incl. monofilament (HS-540247), Textured yarn nes, of polyester filaments, not put up for retail sale (HS-540233), Yarn of polyester staple fibers mixed (HS-550951), Textured yarn nes, of nylon/other polyamides (HS-540232), wood products- Medium density fiberboard MDF of wood, of a thickness (HS-441112), Medium density fiberboard MDF of wood, of a thickness (HS-441114), Lumber, Meranti nes, Lauan, Seraya, alan sawn (HS-440726), Fiberboard of wood or other ligneous materials (HS-441193), paper products- Self-adhesive paper and paperboard, surface-coloured, surface-decorate (HS-481141), process food - Fowl (gallus domesticus) meat, prepared/preserved (HS-160232), Food preparations nes (HS-210690) , Malt extract & food cocoa (HS-190190), processed rice- Rice, husked (brown) (HS-100620), Rice, semi-milled or wholly milled, whether or not polished or glazed (HS-100630), beverages and tobacco- Non-alcoholic beverages nes, exclude fruit/vegetables juices of (HS-220290), Tobacco, unmanufactured, not stemmed or stripped (HS-240110), and auto parts- Vessels and other floating structures for breaking up (HS-890800), Parts and accessories of bodies nes for motor vehicles (HS-870829) ; these sectors explain the positive movement in Malaysia's real GDP. Vegetable oil and fats displays the largest relative increase in output by 1.36%, which can be traced to an increased export volume of about 1.94%. The import price of processed rice drops the most in percentage terms relative to other sectors and due to which there is largest relative increased in import volume of the same sector among other sectors.

Table 4. Simulated Sectoral Effects of the Pakistan Malaysia FTA on Malaysia (%change)

GTAP Code	Malaysia- Sectors	Domes tic Output (qo)	Ex po rt Pri ces (px w)	Expor ts Volu me (qxw)	Im por t ces (pi m)	Impor ts Volu me (qiw)
Wht	Wheat	-1.59	0.21	-1.81	-0.01	0.13
Gro	Cereal grains nec	-0.75	0.4	-0.97	-0.01	-0.2
v_f	Vegetables, fruit, nuts	-0.83	0.46	-1.25	-0.01	0.18
Sugar	Sugar	-0.9	0.6	-1.11	0	0.17
Fsh	Fishing	0.01	0.1	-0.21	-0.01	0.2
Pcr	Processed rice	-5.44	-1.77	9.47	-8.44	14.74
Ofd	Food Products nec	0.19	-0.06	0.41	-0.01	0.01

b_t	Beverages & Tobacco	-0.88	-0.4	0.88	-4.49	1.81
Tex	Textiles	0.58	0.01	1.45	-0.34	0.86
Wap	Wearing apparel	-0.01	-0.02	0.14	-0.2	0.34
Wood	Wood products	0.13	0.07	0.4	0	0.16
Vol	Vegetable oil & fats	1.36	0.59	1.94	0.01	2.38
Mineral	Minerals	-0.13	0.02	-0.02	0	-0.14
Crp	Chemical, rubber, plastic products	-0.09	0.08	-0.05	0	0.16
Ome	Machinery & Equipment	-0.12	0.06	-0.12	0	0.1
Omf	Manufactures nec	-0.32	0.08	-0.52	0	0.13
Auto	Autoparts	0.68	0.05	2.92	0	0.29
p_c	Petroleum, coal products	-0.02	0.01	-0.04	0	-0.04
Metal	Metals	-0.15	0.05	-0.11	0	0.03

Source: Author's results from a GTAP simulation.

Simulated Welfare Effects of the Pakistan Malaysia FTA

As this simulation of the Pakistan Malaysia FTA does not include any changes in endowment or technical and productivity parameters, no welfare effects can be characteristics to these two sources. Moreover, this simulation's welfare results considered only to changes in allocative efficiency (the efficiency of resource utilization) and terms of trade (the change in the relative price of exports to imports both weighted by benchmark-year quantities).

The right most column of Table # 5 shows the total welfare change for Pakistan and Malaysia. Malaysia is with positive total welfare change from the Pakistan Malaysia FTA. However, Pakistan is with negative total welfare change. Since Malaysia's import prices of 9 sectors has no change and other sectors has lower import prices. The export prices of Malaysia are increased in all sectors except beverages and tobacco, processed rice, food products and wearing apparel due to tariff reductions with Pakistan. Therefore, Malaysia's terms of trade improve because it receives a higher price for its exports as compare to Pakistani export prices. The net welfare gainer with the positive change in allocative efficiency is Malaysia while Pakistan is the loser in net welfare with negative change in allocative efficiency. The Malaysia positive allocative efficiency reflects the fact that it had some level of tariff protection before the simulation. The removal of tariffs shifted resources from protected but inefficient sectors to more efficient sectors. Nevertheless, Pakistan is not successful to shift its resources from inefficient sectors to efficient sectors, therefore, it experience drop in allocative efficiency. If the change in Pakistan's allocative efficiency is broken down by sector, the seven worst performing sectors are auto parts, chemical products, machinery and equipment, petroleum and coal products, metal products, textile and wood products. Pakistan has net welfare loss of \$84.8079 million while Malaysia has net welfare gain of \$225.4793 million from this FTA. Table # 5 shows that Pakistan suffers mainly due to negative terms of trade effects.

Table 5. *Simulated Welfare Effects of Pakistan Malaysia FTA and Decomposition (\$ millions)*

	Allocative Efficiency	Terms of Trade Effects	Total
Pakistan	-1.3045	-83.5034	-84.8079
Malaysia	39.064	186.4153	225.4793

Note: The Global Trade Analysis Project (GTAP) variable containing the decomposed numbers above is welfare. Source: Author's results from a GTAP simulation.

Result Discussion

The finds of the results show that the real GDP of Pakistan is negative due to increase in imports of vegetable oil and fats, auto parts, chemical products, Machinery and Equipment, wood products, textile and metal products. Nevertheless, Malaysia's real GDP is positive because of increase in exports of vegetable oil and fats, textiles, wood products, process food, beverages and tobacco, paper products, processed rice and auto parts. These results are similar with the finding of Boumellassa, Decreux and Fontagné (2006). The exports of both countries increase substantially; however, Pakistan has a large increase in imports than in exports, worsening its trade balance. There is trade deficit of Pakistan while Malaysia has trade surplus. As highlighted above, Kawasaki (2003) discussed that the FTA has substantial effect on the trade balances. Furthermore, Malaysia's welfare gain is positive due to its positive terms of trade gain and positive allocative efficiency. This welfare position of Malaysia improves because its export prices are increased in all the main sectors and import prices are lower in main sectors in context of terms of trade gain. However, Pakistan terms of trade are negative because export prices are decreased in all sectors. Moreover, Pakistan is the loser in net welfare with negative change in allocative efficiency. These findings are in accordance with the examination of Sudsawasd and Mongsawad (2007).

Conclusion

This study presents the extensive analysis is the Pakistan-Malaysia FTA on the GDP, trade and sector wise output and trade variables and welfare position of Pakistan and Malaysia. The simulation in this study is assumed that the ad valorem tariffs imports from Pakistan into Malaysia and imports from Malaysia into Pakistan are all reduced to zero. The impact of the FTA as summarized from the simulation results is mentioned below:

The real GDP of Pakistan is negative while, Malaysia's real GDP is positive. The exports of both countries increase substantially; however, there is trade deficit of Pakistan while Malaysia has trade surplus. Moreover, Malaysia's welfare gain is positive. Nevertheless, Pakistan terms of trade and welfare are negative.

Historically, Pakistan's world exports are agriculture based commodities. It has been observed in this study that in Pakistan- Malaysia FTA, Pakistan top exports to Malaysia is rice and cotton. Conversely when looking at Malaysia's exports to Pakistan, exports are based more on goods manufactured within the country, along with a focus on palm oil. This shows a more diversified economy with a divided focus on both agro based and manufactured goods for export.

Contribution and Recommendations

It might be said that on the whole, the Pakistan-Malaysia FTA is likely to fetch much of the desired results for Malaysia: increased trade, better market access for Malaysian products to Pakistan, GDP growth and improved welfare for Malaysia. While Pakistan does not get the benefit from this FTA, however, this research highlight Pakistan's potential exports sectors such as process rice, textiles, wearing apparel, chemical products, plastic, rubber, metal products, cement and machinery and equipment. Therefore, Pakistan may be develop the long term strategy to focused on these industries and allocate the resources efficiently on these sectors. In this way, Pakistan improves its exports to enhance its GDP growth, trade balance and welfare.

Limitation and Future Research

In this study, the ad valorem tariffs on imports from Pakistan into Malaysia and imports from Malaysia into Pakistan are all reduced to zero, which is the limitation. As in future research the ad valorem tariffs on imports of Pakistan and Malaysia FTA can be reduced to different level of percentages like 20%, 50% and 80%. Moreover, the other methodology can be adopted to evaluate the same FTA.

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Appendix. 1. Commodity aggregation in GTAP.9

N 0.	Cod es	Description	N 0	Cod es	Descript ion	N 0.	Cod es	Description
1	pdr	Paddy rice	2 0	omt	Meat product s	39	Otn	Transport equipment nec
2	wht	Wheat	2 1	vol	Vege.. oils % fats	40	Ele	Electronic equipment
3	gro	Cereal grains nec	2 2	mil	Dairy product s	41	Om e	Machinery and equipment
4	v_f	Vegetables, fruit, nuts	2 3	pcr	Process ed rice	42	Omf	Manufactures nec

5	osd	Oil seeds	2 4	sg	Sugar	43	Ely	Electricity
6	c_b	Sugar cane, sugar beet	2 5	ofd	Food product s	44	Gdt	Gas manufacture, distribution
7	pfb	Plant-based fibers	2 6	b_t	Beverag es and tobacco product s	45	Wtr	Water
8	ocr	Crops nec	2 7	tex	Textiles	46	Cns	Construction
9	ctl	Cattle,sheep,goats ,horses	2 8	wap	Wearin g apparel	47	Trd	Trade
10	oap	Animal products nec	2 9	lea	Leather product s	48	Otp	Transport nec
11	rmk	Raw milk	3 0	lum	Wood product s	49	Wtp	Sea transport
12	wol	Wool, silk-worm cocoon	3 1	ppp	Paper product s, publishi ng	50	Atp	Air transport
13	for	Forestry	3 2	p_c	Petrole um, coal product s	51	Cm n	Communication
14	fsh	Fishing	3 3	crp	Chemic al, rubber plastic prods	52	Ofi	Financial services nec
15	col	Coal	3 4	nm m	Mineral product s	53	isr	Insurance
16	oil	Oil	3 5	i_s	Ferrous metals	54	obs	Business services nec
17	gas	Gas	3 6	nfm	Metals nec	55	ros	Recreation and other services
18	om n	Minerals	3 7	fmp	Metal product s	56	osg	PubAdmin/Defiance/Heal th/Educat
19	cmt	Meat:	3 8	mvh	Motor. V and parts	57	dwe	Dwellings

Source: GTAP version.9

Appendix 2. Regional Aggregation in GTAP. 9

No.	Codes	Description	No.	Codes	Description	No.	Codes	Description
1	AUS	Australia	25	LKA	Sri Lanka	48	XCA	R.O C. America

2	NZL	New Zealand	26	XSA	R.O. South Asia	49	DOM	Dominican Republic
3	XOC	Rest of Ocean	27	CAN	Canada	50	JAM	Jamaica
4	CHN	China	28	USA	USA	51	PRI	Puerto Rico
5	HKG	Hong Kong	29	MEX	Mexico	52	TTO	Trinidad & Tobago
6	JPN	Japan	30	XNA	Rest of N. America	53	XCB	Caribbean
7	KOR	Korea Rep. of	31	ARG	Argentina	54	AUT	Austria
8	MNG	Mongolia	32	BOL	Bolivia	55	BEL	Belgium
9	TWN	Taiwan	33	BRA	Brazil	56	CYP	Cyprus
10	XEA	Rest E. Asia	34	CHL	Chile	57	CZE	Czech Republic
11	BRN	B. Darussalam	35	COL	Colombia	58	DNK	Denmark
12	KHM	Cambodia	36	ECU	Ecuador	59	EST	Estonia
13	IDN	Indonesia	37	PRY	Paraguay	60	FIN	Finland
14	LAO	Lao People	38	PER	Peru	61	FRA	France
15	MYS	Malaysia	39	URY	Uruguay	62	DEU	Germany
16	PHL	Philippines	40	VEN	Venezuela	63	GRC	Greece
17	SGP	Singapore	41	XSM	Res.O S. America	64	HUN	Hungary
18	THA	Thailand	42	CRI	Costa Rica	65	IRL	Ireland
19	VNM	Viet Nam	43	GTM	Guatemala	66	ITA	Italy
20	XSE	R.O.S.E. Asia	44	HND	Honduras	67	LVA	Latvia
21	BGD	Bangladesh	45	NIC	Nicaragua	68	LTU	Lithuania
22	IND	India	46	PAN	Panama	69	LUX	Luxembourg
23	NPL	Nepal	47	SLV	El Salvador	70	MLT	Malta
24	PAK	Pakistan	48	LKA	Sri Lanka	71	NLD	Netherlands

Appendix 2. Regional aggregation in GTAP version.9

No.	Codes	Description	No.	Codes	Description	No.	Codes	Description
72	POL	Poland	95	AZE	Azerbaijan	118	NGA	Nigeria
73	PRT	Portugal	96	GEO	Georgia	119	SEN	Senegal
74	SVK	Slovakia	97	BHR	Bahrain	120	TGO	Togo
75	SVN	Slovenia	98	IRN	Iran	121	XWF	Rest of W. Africa
76	ESP	Spain	99	ISR	Israel	122	XCF	Central Africa
77	SWE	Sweden	100	JOR	Jordan	123	XAC	S. Central Africa
78	GBR	U. Kingdom	101	KWT	Kuwait	124	ETH	Ethiopia
79	CHE	Switzerland	102	OMN	Oman	125	KEN	Kenya
80	NOR	Norway	103	QAT	Qatar	126	MDG	Madagascar
81	XEF	Rest of EFTA	104	SAU	Saudi Arabia	127	MWI	Malawi
82	ALB	Albania	105	TUR	Turkey	128	MUS	Mauritius
83	BGR	Bulgaria	106	ARE	UAE	129	MOZ	Mozambique
84	BLR	Belarus	107	XWS	Rest of W. Asia	130	RWA	Rwanda
85	HRV	Croatia	108	EGY	Egypt	131	TZA	Tanzania
86	ROU	Romania	109	MAR	Morocco	132	UGA	Uganda
87	RUS	Russian. Fed	110	TUN	Tunisia	133	ZMB	Zambia

88	UKR	Ukraine	111	XNF	Rest of North Africa	134	ZWE	Zimbabwe
89	XEE	R.O E. Europe	112	BEN	Benin	135	XEC	Rest of E. Africa
90	XER	Rest of Europe	113	BFA	Burkina Faso	136	BWA	Botswana
91	KAZ	Kazakhstan	114	CMR	Cameroon	137	NAM	Namibia
92	KGZ	Kyrgyzstan	115	CIV	Cote d'Ivoire	138	ZAF	South Africa
93	XSU	R.O. F. Sov. U	116	GHA	Ghana	139	XSC	Rest of S. Afric..
94	ARM	Armenia	117	GIN	Guinea	140	XTW	Rest of World

Source: GTAP version.9

Appendix-3 Sectoral Aggregation used in the study

No .	Old Code	Sector Description	No .	New Code	Sector Description
1	Pdr	Paddy rice	1	Pdr	Paddy rice
2	Wht	Wheat	2	Wht	Wheat
3	Gro	Cereal grains nec	3	Gro	Cereal grains nec
4	v_f	Vegetables, fruit, nuts	4	V_f	Vegetables, fruit, nuts
5	Osd	Oil seeds	5	Osd	Oil seeds
6	c_b	Sugar cane, sugar beet	7	Sugar	Sugar cane, sugar beet
7	Pfb	Plant-based fibers	9	Pfb	Palnt-based fibers
8	Ocr	Crops nec	6	OCR	Crops nec
9	Ctl	Cattle,sheep,goats,horses	10	Ctl	Cattle,sheep,goats,horses
10	Oap	Animal products nec	12	Oap	Animal Product nec
11	Rmk	Raw milk	11	Animalprod	rawmilk,wool,silkwo
12	Wol	Wool, silk-worm cocoons	11	Animalprod	rawmilk,wool,silkwo
13	Frs	Forestry	13	Frs	Forestry
14	Fsh	Fishing	14	Fsh	Fishing
15	Coa	Coal	15	minerals	Coal
16	Oil	Oil	16	Oil	Oil
17	Gas	Gas	17	Gas	Gas
18	Omn	Minerals nec	32	omn	Minerals nec
19	Cmt	Meat: cattle,sheep,goats,horse	23	Meatfood	Meat:Cattl,sheep,goat,horse
20	Omt	Meat products nec	20	ProcessFood	Procerice,meatpro,foodpro
21	Vol	Vegetable oils and fats	21	Vol	Vegetable oil & fats
22	Mil	Dairy products	22	Mil	Dairy products
23	Pcr	Processed rice	18	PCR	Processed rice
24	Sgr	Sugar	8	sgr	Sugar
25	Ofd	Food products nec	19	OFD	Food Products nec
26	b_t	Beverages and tobacco products	24	b_t	Beverages & Tabacco
27	Tex	Textiles	25	Tex	Textiles
28	Wap	Wearing apparel	26	Wap	Wearing apparel
29	Lea	Leather products	27	Lea	Leather products
30	Lum	Wood products	28	Wood	Wood products
31	Ppp	Paper products, publishing	29	PPP	Paper product,publishing

32	p_c	Petroleum, coal products	30	p_c	Petroleum, coal products
33	Crp	Chemical, rubber, plastic prods	31	Crp	Chemical, rubber, plastic prods
34	Nmm	Mineral products nec	33	Nmm	Mineral products nec
35	i_s	Ferrous metals	36	i_s	Ferrous metals
36	Nfm	Metals nec	35	nfm	Metals nec
37	Fmp	Metal products	34	fmp	Metal products
38	Mvh	Motor vehicles and parts	37	Autoparts	Motor vehicles part, Transpo requi
39	Otn	Transport equipment nec	37	Autoparts	Motor vehicles part, Transpo requi
40	Ele	Electronic equipment	38	Ele	Electronic equipment
41	Ome	Machinery and equipment nec	39	Ome	Machinery & Equip nec
42	Omf	Manufactures nec	40	Omf	Manufactures nec
43	Ely	Electricity	41	Util_Con	Utilities and Construction
44	Gdt	Gas manufacture, distribution	41	Util_Con	Utilities and Construction
45	Wtr	Water	41	Util_Con	Utilities and Construction
46	Cns	Construction	41	Util_Con	Utilities and Construction
47	Trd	Trade	42	TransCom m	Transport and Communication
48	Otp	Transport nec	42	TransCom m	Transport and Communication
49	Wtp	Sea transport	42	TransCom m	Transport and Communication
50	Atp	Air transport	42	TransCom m	Transport and Communication
51	Cmn	Communication	42	TransCom m	Transport and Communication
52	Ofi	Financial services nec	43	OthServices	Other Services
53	Isr	Insurance	43	OthServices	Other Services
54	Obs	Business services nec	43	OthServices	Other Services
55	Ros	Recreation and other services	43	OthServices	Other Services
56	Osg	PubAdmin/Defence/Health/Educat	43	OthServices	Other Services
57	Dwe	Dwellings	43	OthServices	Other Services