“India-U.K Bilateral Trade: Trends, Patterns and Prospects”

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By

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DECLARATION

I declare that the thesis/ dissertation entitled **"India-U.K Bilateral Trade: Trends, Patterns and Prospects"** has been prepared by me under the guidance of Dr. Sandeep Kaur Bhatia, Assistant Professor, Centre for Economic Studies, School of Social Sciences, Central University of Punjab. No part of this thesis/dissertation has formed the basis for the award of any degree or fellowship previously.

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ABSTRACT

India-U.K Bilateral Trade: Trends, Patterns and Prospects

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International trade acts as an important mean which contributes significantly to economic growth by opening domestic economy to the global level (Sun & Heshmati, 2010). Recently, the trend of South-South and North-North trade agreement has shown a changing landscape towards a North-South agreement. India has shown keen interest to have large global access by setting up its policy covering east as India-ASEAN FTA, Regional Comprehensive Economic Partnership (RCEP) and India-EU FTA is under negotiation process since 2007. Now, BREXIT i.e. U.K exit from EU on 23rd of June 2016, has put before India one of the biggest opportunity to form FTA between India –U.K so as to enhance the trade and make their relation strong. The use of various indices in the study has shown that the trade competitiveness between India and U.K, supports Free Trade Agreement. As of Trade Complementarity and Trade Similarity Index has shown that both the nations have high complementarity in their trade pattern while dissimilarity in their export in the third country which will enhance the trade if FTA is signed between both the countries. For, the SMART Model analysis, it has been found that India would stand benefit when trade alone with United Kingdom than with European Union (excluding U.K) and India gains more with the United Kingdom under full liberalization than restricted trade.

Mandeep Bhardwaj **Dr. Sandeep Kaur Bhatia**

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LIST OF ABBREVIATIONS

Sr. No.	Full Form	Abbreviation
1	Asia-Pacific Economic Cooperation	APEC
2	Asia-Pacific Trade Agreement	APTA
3	Association Of South East Asian Nations	ASEAN
4	Association Of Southeast Asian Nations	ASEAN
5	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation	BIMSTEC
6	Bilateral Investment Treaties	BITs
7	Brazil, Russia, India, China	BRIC
8	Britain Exit	BREXIT
9	Broad- Based Bilateral Trade and Investment Agreement	BTIA
10	Common Market for Eastern and Southern Africa	COMESA
11	Compound Annual Growth	CAGR
12	Comprehensive Economic Cooperation Agreement	CECA
13	Comprehensive Economic Partnership Agreement	CEPA
14	Custom Union	CU
15	East African Community	EAC
16	Economic and Financial Dialogue	EFD
17	Economic Partnership Agreement	EPA
18	European Union	EU
19	Export Intensity Index	EII
20	Export Propensity Index	EPI
21	Export Similarity Index	ESI
22	Foreign Direct Investment	FDI
23	Free Trade Agreement	FTA
24	General Agreement on Trade and Tariffs	GATT

Sr. No.	Full Form	Abbreviation
25	Gross Domestic Product	GDP
26	Harmonized System	HS
27	Horizontal Intra-Industry Trade	HIIT
28	Import Intensity Index	MII
29	Import penetration index	IPI
30	India and Japan Comprehensive Economic Partnership	JICEPA
31	India- Malaysia Comprehensive Economic Cooperation Agreement	IMCECA
32	India- Srilanka Free Trade Agreement	ISLFTA
33	India-ASEAN Free Trade Agreement	AIFTA
34	India-Korea Comprehensive Economic Partnership Agreement	IKCEPA
35	India-Singapore Comprehensive Economic Cooperation Agreement	ISCECA
36	India-UK Financial Partnership	IUKFP
37	International Monetary Fund	IMF
38	Intra-Industry Trade	IIT
39	Joint Economic and Trade Committee	JETCO
40	Less Developed Countries	LDCs
41	North American Free Trade Agreement	NAFTA
42	Preferential Trade Agreement	PTA
43	Regional Comprehensive Economic Partnership	RCEP
44	Regional Trade Agreement	RTA
45	Revealed Comparative Advantage	RCA
46	Software for Market analysis and Restrictions On Trade	SMART
47	South Asian Free Trade Area	SAFTA

48	Southern African Development Community	SADC
49	Trade Complementarity index	TCI
50	Trade Intensity Index	TII
51	Tripartite Free Trade Area	TFTA
52	UK-India Education and Research Initiative	UKIERI
53	United Kingdom	U.K
54	United Nations	UN
55	United Nations Conference On Trade and Development	UNCTAD
56	United State	US
57	Vertical Intra-Industry Trade	VIIT
58	World Development Indicator	WDI
59	World Trade Integrated Solutions	WITS
60	World Trade Organization	WTO

Chapter 1

Introduction

International trade acts as an important mean which contributes significantly to economic growth by opening domestic economy to the global level (Sun & Heshmati, 2010). The trade between countries also exits before the formation of GATT/WTO, but the smooth and free flow of trade exits only after the formation of such an international institution, which serve as guardian of rules and regulations of international trade. Therefore, now-a-days, almost all countries have incorporated themselves into one or more regional trade agreement. As these bilateral and multi-lateral ties between countries help the country to reap benefit by exploring its potential (www.wto.org, 2016). Therefore, over the last two decades, there is an emergence of RTA's which has characterized as the powerful mode of economic growth. According to WTO (2016), by the beginning of Feb 2016, there are 625 notifications of RTAs, till reported to WTO, out of which 454 are currently in force and 267 under negotiation.

Various economists have different views about RTAs, Brown et al, (2005) is the view that the rising share of RTA's in Asia, Africa and Europe continent have a positive impact on their structure and volume of trade. As the European Union is an example of economically successful trade agreement and peaceful political arrangement which has a considerable impact on the world economy. While after the success of regional trade agreement in the European continent, South Asian economies has been following its footsteps, which will help in flourish its trade more among members and less between non-member countries due to its natural trading partnership (Shin & Lee, 2006). Therefore presently, the African continent has shown great interest in forming such regional trade agreements as Common Market for Eastern and Southern Africa (COMESA), Southern African Development Community (SADC) and its East African Community (EAC) which leads to its regional development and global integration.

The "Enabling Clause" adopted in 1974, Tokyo round of GATT negotiations enables developing countries to sign preferential trade agreement which does not meet the strict criteria laid out in GATT Article XXIV for regional free-trade agreements. The regional trade agreement is an agreement between two or more countries where there is a

reduction of tariffs, quotas and other restrictions on trade between member countries. Most predominantly there is an agreement among regionally closed entity where there is a trade of goods and services while maintaining their intellectual property rights environmental standards, investment and various other norms set out in the agreement. However, economies have to step up various stages to reach a deeper integration as explained by Viner (1950's), there are five stages of RTA. The first stage is, preferential trade agreement (PTA) in which they impose lower trade barriers on goods produced within the union, with some flexibility for each member country on the extent of the reduction, then reaching FTA which is a special case of PTA where member countries completely abolish trade barriers (both tariff barriers and non-tariff barriers) for goods origination within the member countries and thirdly A Customs Union (CU) which provides deeper integration than an FTA. Thus, PTA, FTA and CU are called 'shallow integration'. The most prestigious stage of RTA is the 4th or 5th stage of the common market and economic integration in which member has common external policies and internal policies respectively becoming the cause of deeper integration and emerging as a global power as European Union (www.wto.org, 2016).

India has signed bilateral trade deals in the form of Comprehensive Economic Partnership Agreement (CEPA)/ Comprehensive Economic Cooperation Agreement (CECA)/FTA/Preferential Trade Agreements (PTAs) with some 18 groups/countries. It is low, but watchful, a starter in concluding comprehensive preferential tariff agreements covering substantially all trade with some of its trading partners. Some of its agreement are Asia-Pacific Trade Agreement (APTA,1975), Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC,2014), India, Brazil, South Africa (IBSA,2010), South Asian Free Trade Area (SAFTA), India-Sri Lanka FTA (ISLFTA, 2001), India- Malaysia Comprehensive Economic Cooperation Agreement (IMCECA,2011), India-Singapore Comprehensive Economic Cooperation Agreement (ISCECA,2005), India and Japan Comprehensive Economic Partnership Agreement (JICEPA,2011), and India-Korea Comprehensive Economic Partnership Agreement (IKCEPA,2010), etc. (http://commerce.nic.in, 2016).

Thus, the various agreement of India has shown that India has set up its policy covering east as India-ASEAN FTA, Regional Comprehensive Economic Partnership (RCEP) so as to have easy access to global market. While agreements with its natural trading partners have been fulfilling its urge to have a cordial, peaceful and economical relation so as to attain benefit of its geographical proximity. Therefore, the trend of South-South and North-North trade agreement has shown a changing landscape towards a North-South agreement which further shows that poor countries are receiving profit from its agreement with developed countries as Spain with the EU, Mexico with the North American Free Trade Agreement (NAFTA), and small southern African countries with SADC. Therefore, less developed economies are getting the benefit is large and stable in nature for its inclination towards developed –market economies. (Schiff 2002; World Bank 2000).

Historically, India has a trade relation with British Empire under its colonization period where India fulfilled the two-tier need of British as one supply of raw material and second become a market for their manufactured products. Thus, ties between the U.K and India have been very close. From curry to culture to cricket, the two countries have much in common, so it's no surprise that the U.K is home to one of the largest Indian Movements in the world. But a shared past is not enough to keep a relationship going. Although with the change in time this structure of trade between both the nations has changed in abundant (www.britishcouncil.org, 2013).Various programs were initiated in 2004 under India-U.K Strategic partnership program like India-U.K Economic and Financial Dialogue (EFD) (2005), India-U.K Financial Partnership (IU.KFP) (2014), India-U.K Joint Economic and Trade Committee (JETCO) (2005), India-EU Broad-Based Bilateral Trade and Investment Agreement (BTIA) (2007), U.K-India Education and Research Initiative (U.KIERI, 2005) (https://www.mea.gov.in/Portal/ForeignRelation/UK, 2016). All these programs are working in a way to strengthen the relation between India-U.K. However, some of the analysts are of the view that one of the biggest step taken by India to expand its relation with EU is to compensate the loss of not enrolling in Trans –Pacific Partnership Agreement. Thus, an essential steps and measures has been taken by India in order to make its relation strong with EU, which come in the form of the agreement of India-

EU FTA signed in 2007,has been redefining its aim from 'Broad-based Trade and Investment Agreement' (BTIA) to Bilateral Investment Treaties (BITs). Because of the failure of attaining objectives of BTIA, BITs structured in 2013 in the 16th round of India-EU Summit for re-negotiation of existing BITs and negotiation of future BITs and investment chapters in Comprehensive Economic Cooperation Agreements/ Comprehensive Economic Partnership Agreements/FTAs (The Hindu Times, 2016).Thus, both sides of government are eager to conclude the negotiation process as soon as possible as both countries are keen to expand their trade relation. While India's interest to have full access to EU is also due to its strong and cordial relation with the U.K which will enable them to have easy access. Thereby, the pace and interest of Indian trade market over access to global market has put one more opportunity in its plate i.e. BREXIT- A small finger in the hand of India since its independence to hold full hand and be a strong fist together.

Significance of the study:

The study has its significance in itself, as very limited work has been done until today, on computing, India-U.K trade trends and patterns. Therefore, keeping in view further, the study has been trying to estimate what will be their future prospects of India-U.K Bilateral trade by analyzing trends and pattern for the period 2000-2015. The study period has its importance, as various steps have taken already by both sides of the government to make its relations strong and cordial. As in 2004 'Strategic Partnership' has begun, under which various programs has initiated to give their relation a new direction. Secondly, the blow of BREXIT-i.e U.K exit from EU is not an immediate decision. But, it is since, 1973, U.K has been trying to get an exit from EU, and while lost its first chance, the U.K has succeeded in getting its vote out decision on 23rd June 2016. Therefore, the study period shows what will be the changes in the trade pattern of India-U.K has occurred under various programs and policies framed to enhance the trade between both the countries.

Thus, there is an urgent need, on both counterfeit, to focus on such trade agreement between India and U.K. As on U.K front, it is most accurate to join hand with commonwealth countries so as to establish its relation with those countries with which,

she couldn't participate, being the member of EU (http://blogs.lse.ac.U.K/brexit, 2016). Secondly, U.K have to enhance its trade relations by going for a new trade agreement, so as to overcome the atmosphere of uncertainty, emerges after BREXIT. Whereas, India should sign free trade agreement with U.K because both countries shares common interests in the area of Trade (Cultural Relations In the 21st Century- India-U.K, 2011)

Objectives:

Keeping in view the importance of India's trade with U.K and its historical relation with U.K, the present study has been structured to analyze the trends, prospects and future scope for their trade relation. The main objectives of the present study are:

- To study the trends and composition of India-U.K bilateral trade for the period of 2000-2015.
- To examine the trade competitiveness of India-U.K with various indices during the study period.
- To assess the India-U.K proposed FTA through 'SMART Model' given by WITS.
- To suggest suitable policies for strengthening the bilateral economic relations of India-U.K.

Hypotheses:

- U.K's exports to India shows more fluctuations than India's exports to U.K, while imports show opposite results.
- India's composition of trade with U.K has significantly changed from pure primary based products to semi-manufactured products in terms of its export and imports, but this change has not found significant with India.
- The huge competitiveness and complementarity exist between India and U.K.
- India's trade creation with U.K is more as compared to trade diversion.
- India's trade creation and diversion with U.K is more than trade creation and diversion with EU (exclude U.K).

Structure of the Dissertation:

The study has been planned into six chapters including the present one. The second chapter (Chapter2) reviews the literature related to the objectives and theme of the study. The studies reviewed are aimed to highlight the importance and future potential of India and the U.K. economic trade relations. Chapter 3 explains the data base and methodology. The chapter discusses the various sources of the data used in the study. The different trade indices used to assess the India- U.K bilateral trade trends and prospects has also been described. Chapter 4 analyzes the trends and pattern of bilateral trade between India and U.K. The results obtained from various trade Indices are discussed in this chapter. Chapter 5 tries to apply SMART analysis to have an ex-ante analysis of tariff liberalization in case both countries agree to sign free trade agreement. To end with, Chapter 6 is an attempt to summarize the findings of the study. It also concludes some possible suggestions for policy building to improve the India-U.K trade ties.

The present study will serve as a base to enhance the work toward India's trade relations with U.K after BREXIT.

Chapter -2

Review of Literature

The existing literature on the subject provides an overview of bilateral trade relations of India and U.K. Both countries have trade relations since the former independence. The present chapter has taken a number of studies to envisage the objectives of the present study. This chapter has been separated into three sections- section one compiles the studies on regional trade agreement and its significant impact. Section two discusses the different studies using different Indices that have been used in present study along with the significant impact on India of BREXIT. Section three discusses how the FTA between countries creates trade by using SMART model- a partial equilibrium market analysis.

India and U.K both are large countries from trade view as both countries are specialized and have its global importance either for its comparative advantage in labour intensiveness or in capital intensiveness or due to its increasing growth process or because of easy access to EU. However, as discussed in the last chapter, there is a proliferation of regional trade agreement which takes the form of FTA or PTA depends on the objectives of countries trade perspectives and their present relation and progressively benefit both engaged countries. Thus, the one of heat blown news of BREXIT in June 23rd has spread the gloomy atmosphere for trade all over the world. Out of that situation, this study has attempted to bring out the new portrait of gloomy picture.

I: Regional Trade Agreement and its significant impact

The essential concept associated with the success of RTAs depend on the creation and diversion of trade. Various economists have expressed their observations as Viner (1950) suggested that the free trade agreement is beneficial if and only if trade creation is dominant over trade diversion which will be beneficial in term of creating trade with the partner country by diverting trade from non-member country. Bhagwati and Panagariya (1996) and Panagariya (2000) interpreted their observations as Viner in which RTAs provide preferential treatment to its members, either when it could be least-cost suppliers than non-member country or proving costly to the partner economy.

While an opposite view of Wonnacott (1996) and De Melo et al.(1993) shows that trade diversion is not certainly welfare decreasing but can prove in large gains from an RTA due to its difference in factor endowments between developed and developing countries. Scollay and Gilbert (2000) has shown the another aspect of study in which trade liberalization for a set of Asia-Pacific Economic Cooperation (APEC) countries shows that welfare gains from a bilateral trade in RTA were minimal. However, welfare gains were much higher for APEC liberalization and highest in the case of global trade liberalization.

Jaumotte (2004) in his working paper, has estimated that large market size of regional trade agreement has attracted large inflow of capital from outside which further enhanced by having a high degree of correlation with the nature of labour supply of country, as if it is educated and there is stable financial market condition, it will attract more FDI in a country and increases trade by diverting trade from non-member countries.

Lee and Shin (2006) argued in favour of regional trade agreement of East Asian region. Because geographical proximity is proving beneficial to them by a significant increase in trade. Whereby there is more of trade creation with the member countries and less trade diversion from non-member countries resulting in an increase in the welfare of the region.

Albertin (2008) revealed that Regional trade agreements (RTAs) had become a noticeable feature of the global trading system, due to which their proliferation has been one of the most observable trends in recent years. The flow in regionalism has continued unabated since the early 1990s, and some 380 RTA'S had been notified to the GATT/WTO through July 2007.

Crivilléb et.al, (2010) are of the view that free trade agreement is more successful in South –South RTA's than North-South RTA's when estimated with various gravity model specifications. There is an increase in bilateral trade between North–South

RTA'S by 53 percent whereas it enhances by 107% in South-South RTA's. Both the RTA's have its significance as while developed and developing signatories lead to the transfer of technology and other productivity benefit while sharing common border signatories lead to deeper economic and political integration.

Vicard (2011), has investigated that the regional trade agreement is significantly affected by the economic characteristics of the country pair as more particularly its size and distribution of GDP induce bilateral trade by more when the two countries are large and symmetric, and other RTA members are small and asymmetric. Further, the agreements like North/North, North/South and South/South RTAs are found to have similar effects on trade some with more and some less benefit depending on above-mentioned characteristics.

Liu (2015) has shown one of the important prospects of the RTAs out of its important and unique quality of achieving faster and deeper liberalization at no further expense of multilateral rules. But the historical view of such commitment has shown very poor aspects of the growth. As the study concluded through regression that the effects of regional trade agreements (RTAs), promote growth for non- WTO members, while the growth effect is insignificantly different from zero for WTO members. This indicates that the complementarity between the two approaches of trade liberalization in promoting economic growth is so far limited.

II: Different trade indices to measure the competitiveness:

The present study uses many measures and tools for the examination of pattern and competitiveness of India's trade with U.K. The following literature mainly focuses on those studies which have already used many indices in order to measure the pattern and competitiveness of trade.

Ando (2006) attempts to measure the vertical Intra-Industry Trade (IIT) in East Asia. In his study, he analyzed that trade structure as of both in exports and imports of East-Asia has shifted to the machinery equipment's which has increased its capacity in intra-industry trade in East Asia. Further, focusing on its objective of finding the share of

vertical intra-industry trade in East Asia, he decomposed each country's machinery trade at the HS six-digit level for 1990, 1996, and 2000 into one-way trade, vertical IIT, and horizontal IIT. The result of the study concluded that the increasing importance of machinery components and parts has resulted in an increase in its share of vertical intra-industry trade while the relevance of one-way trade is dropped over the last decade in East Asia due to the expansion of back-and-forth transactions with value-added embodied in the vertically fragmented production process.

Wu et al. (2006) investigated the trade pattern between India-China have enjoyed exceptional economic growth in the last decade. The study analyzed its changed pattern through trade intensity, intra-industry trade and comparative advantage of the country at three points of time 1992, 1997 and 2003. Thus, the study concluded that bilateral trade intensity from India's side is not as high as it should be due to which the potential for growth in trade is still expected which pull it upward further, while overlapping in its trade put limit to its trade but still both nation can increase bilateral trade in areas where there is no overlapping and scope of increase in intra-industry trade in their competitive zone and lastly due to its high complementarities in their trade both nations should explore the possibility of free trade agreement.

Kelkar and Burange, (2016) examined that since liberalization, India's intra-industry trade (IIT) is expanding. For such analysis, the study has attempted to measure the growth in India's intra-industry trade with other countries group (IIT) from 1987-2006. It also revealed marginal intra-industry trade from the change in the trade flow propagating to IIT. The study results show that although growth of the country has been low but IIT index showing an upward trend in measurement in which certain products are showing extremely well. In terms of direction, the study reveals that India's IIT is greater with Asia and Europe. On the other hand, America and the Middle East are fast spreading up, and Africa shows the growth in IIT in the region at the highest rate. However, the component of IIT in total trade with the region is quite small when compared to the other regions.

Meilak (2008) empirically analyzed that concentration of exports in the limited range has turned into country collapse in case of any sudden crash of the economy. For such,

the study has undertaken various concentration indices in order to analyses the concentration of smaller and larger export categories for the years 1980-2004 and concluded that export concentration as measured by these indices, reveals a negative link with country size factor. Further, the results show that export concentration is higher in less developed countries, indicating that both size and the stage of economic development are relevant factors in determining export concentration. So, the countries should diversify as much as possible their trade structure to escape from risk and stability although not higher earnings if the exports of low value.

Chandarn et. al, (2012) studied that Revealed Comparative Advantage (RCA) of India-ASEAN specifically on fishery products in the context of free trade agreement. The study shows that bilateral trade is on upward direction due to the enhancement of trade complementarities. The study further resulted that India got a comparative advantage in the marine exports especially on the 'crustaceans' whether in 'shell or not and mollusks', whether in the shell or not and all the major ASEAN countries have similar trade structure with India. Thus, in order to secure from a limited trade, the India-ASEAN agreement should put the product 'marine' in the negative list. The study also analyzed Trade Intensity Index (TII) and examined that India's export intensity, as well as import intensity with ASEAN, is at its highest level. So, India is having intense relation with ASEAN region. Further, the study revealed that ASEAN'S export intensity index is higher for import intensity index as compared to India. Thus, it is suggested that both countries should remove their tariff barriers on those products which have a comparative disadvantage and low trade intensity for their further development.

Fundria (2013) in his paper made an attempt to measure the export performance and export similarity index of Africa's country under Tripartite Free Trade Area TFTA) market with the selected countries like (BRIC, EU, the US, Japan) from the year 2006 to 2011, which is the rising markets of the south and would be the future target of developed nations. The study resulted that African countries is not facing any competition from third countries such as BRIC, EU, US & Japan because the export similarity index estimated has shown low competition/overlap which clearly indicates that there will be brutal competition among TFTA members and a clear opportunity at their door from North, if they diversify its trade and grasp the opportunity positively.

Ji et al. (2014) has tried to assess the Sino-Australian trade interdependence from 2001-2010 through trade intensity, revealed comparative advantage and complementarity of trade. The results of the study are positive on the front that both governments have a strong political will for taking this negotiation into the more advanced stage with an "active, balanced and mutually beneficial" way. While analyzing all the indices, the results concluded that both countries are enjoying different export advantages, reflecting its comparative advantages & potential of resource endowment. Secondly, the intensity of trade between Sino-Australian trades is rising in which the degree of dependence of the Australian products on the Chinese market is much higher than opposite showing that china is on the back front in this trade and the widening gap between these intensities is reflecting that intra-industry trade is affecting and need improvement. Thirdly, complementarities between both nations are good for the enhancement of bilateral trade.

Shafi (2011) has done an appreciable work on measuring in which direction trade relation between India-U.K is going. One of the limited work in such area shows that although India-U.K has historical trade relation which has built mutual trust upon each other, strengthen their relation even after independence in term of rising trade between them until U.K had not taken the membership of the EU in 1973. As, the study has shown that although U.K is known for its global competitiveness and door to enter in Europe, but the trend pattern of trade between them shown diversification of trade from only U.K to whole Europe, ultimately resulting in falling trade with U.K until 2004-05 from 1973 on account of trade diversion.

Koch (2016) has shown that immigrants of EU in U.K serving U.K economy in a positive manner. As from 2001-2011, EU immigrants contribute 34% more to its fiscal contributions than they had received in U.K as welfare cost. Moreover, various studies have shown that immigrants from EU are well educated and fulfil the need of the U.K demand for labour, net contributors to the U.K budget and enhancing their economic performance which might be dampened if U.K takes strict action against visa policy after BREXIT.

III: Study of SMART ANALYSIS- a Partial equilibrium market analysis:

The present study has tried to apply SMART analysis for analyzing the partial market equilibrium when there is a change in tariff structure between the countries under the free trade agreement. Thus, this section reviewed such studies which have used SMART analysis in order to compute the creation, diversion and welfare effect.

Abdelmalki et al. (2007) have manipulated the hypothetical situation between US and Morocco in such a manner which state that a gradual and asymmetrical tariff liberalization is more balancing and trade creating than an immediate and full reciprocity liberalization. Further, the study highlights that FTA not only creates trade with in the both nations but also create trade with third countries which enhances their welfare level. Besides the above conclusion, the study further concluded that Morocco stands to gain by diversifying its market and capabilities and US take one step ahead for satisfying its geostrategic need by successfully enter into the Middle East.

Veeramani et al. (2010) have attempted quantitative analyses of India- ASEAN FTA for selected plantation commodities and simulated that there will be an increase in planation products under the proposed tariff elimination scenario under AIFTA. The study results highlight that India stands to gain from overall welfare benefit despite revenue loss to the government because there is a diversion of trade from high-cost domestic production to the low-cost partner country which exceeds the loss in revenue of the government. The another important fact come out of the study is that the writer also applied the above data as used in smart analysis in gravity model and realized the same and significant trade expansion and welfare and lastly there is suggestion of limiting new imports in the production of theses commodities as it will have an adverse effect on them.

Raihan (2011) has tried to the analysis of SAFTA future, in which he analyzed that trade agreement for the region will be beneficial if the region as a whole work on the economic corridor which will facilitate a better environment to trade along with market access through tariff liberalization. The simulation resulted from the study highlighted that India, Pakistan and Sri Lanka are benefitting by welfare gain while there are risks

of welfare loss for Bangladesh and other LDCs in South Asia out of FTA in goods under the SAFTA agreement because of the fact that the trade diversion effects could be larger than trade creation effects for these countries. Further, it also seems that the gains from trade facilitation are much bigger than the gains from trade liberalization.

Villa et al. (2012) has used smart analysis on Canada-Colombia free trade area and estimated that simulation carried out for 2010 shows one and half times larger trade than trade diversion and trade increase between both countries is 10% but concentrated into limited variety of goods and for both nations trade diversion is stronger with the largest trading partner i.e., U.S. Further, the increase in creation of trade in Canada of Colombia products although increase but not of new but already existing which is cause for concern in term export concentration and limited benefit from trade liberalization.

Choudary et al. (2013) have attempted the study to show that India- Sri Lanka FTA has shown a bright future if both nations work well to improve their complementarities. The simulation result has shown that there is more of trade creation than diversion in base and metals equipment's which is among top trading commodity in their bilateral trade structure along with it trade baskets has added some high quality products due to which welfare of both nations enhance in metals products, electronic equipment's, chemical, machinery equipment's, etc.

Thomy et al. (2013) have shown in his study how much beneficial is free trade agreement of SACU-EU Economic Partnership Agreement (EPA) based on 2008 data from Botswana trade statistics. The study concluded that Botswana gain benefits from EU because the net welfare to Botswana is 54.52 million on imports of food, beverages and tobacco from EU under full liberalization from both sides. Further study, using sensitivity analysis has found that whether there is complete substitutability, or if the imports from the different regions are less substitutable, the net welfare effect remains positive which is dependent on how SACU signing the economic partnership with its European counterparts as a united group.

Mahmood & Sabir (2014) highlighted the growing importance of China-Pakistan Economic Corridor on the development of infrastructure facility and land connectivity which will increase the trade, employment and technology sharing, economy growth, etc. Meanwhile, the simulation accounted on 2013 under full liberalization of trade between both nations has shown that Pakistan can stand benefit on agro-based products as cotton, cereals and salt, etc. whereas, china is attaining benefit in organic chemicals.

Mahmood & Gul (2014) made an attempt to realize that in whose favour the FTA signed between Pakistan-Malaysia resides under tariff liberalization scenario. The study has shown the simulated results in which Malaysia stands to gain in such FTA. Further, the study has undertaken automobile sector of Pakistan in which increase in creation, diversion and welfare is not significantly enhance the welfare of the country. Thus, the study sets a question and answer them well as policy makers should be cautious about FTA between Pakistan and Malaysia as here one stands to benefit at other country's cost due to similar export pattern and trade structure of the country.

Banga (2016) has estimated how much it is beneficial for India to make an FTA between India & UK after BREXIT by using SMART Model. Thus, her study has estimated that India's Trade and Investment will enhance with U.K under FTA after eliminating all tariff barriers or having full liberalization at zero tariff. Along with it, the study has also calculated new products which will come with highest creation under FTA by using various other indices.

Mathur and Roy (2016) has analyzed quantitatively by using GTAP model that heat of BREXIT could be the realized over FTA between India and the EU. As it further loses its importance between India and the EU, when the UK exits the EU. Moreover, the analysis has further estimated that India would experience the decline of GDP growth rate from 1.1 to 0.5 percent while the European Union, from 0.1 to -0.5 percent.

The above mentioned studies explained the importance of regional trade agreement for getting out their potential and accelerating its trade access to the

global market and analyzing scope for India to increase its trade with U.K after BREXIT which has dampened recently by formation of FTA.

Chapter 3

Database and Methodology

This chapter deals with different sources of data and methodology used in the study for computing India- the U.K bilateral trade relations.

Data Base:

The study, in essence, covers the time period of 15 years, i.e. 2000 to 2015. While focusing on the accessibility of data in used, secondary data has been collected from various sources:

- Data for computing trends and competitiveness of India and U.K trade Revealed Comparative Advantage, Grubel –Lloyd index, and trade complementarity index, etc. have been collected from UN COMTRADE database, 2016 at four points of time, i.e., 2000,2005,2010,2015.
- Data for Export Propensity Index and Import Penetration Index has been calculated by taking GDP of India and U.K for 2000-2015 from World Development Indicators.

Methodology:

The study has used various trade indices to access India and U.K trend and competitiveness with each other. The trade indices are computed by going with 6 digit HS (Harmonized System) level of exports and imports .Various Indicators are used in such manner:

- Direction of trade (Intensity index)
- Sectoral structure of trade(Revealed comparative advantage , Intra-industry trade, complementarity index , export similarity index)
- Trade and economy(import penetration, export propensity)

Trade Intensity Index (TII):

The trade intensity index is used to determine whether the value of trade between two countries is greater or smaller than would be expected on the basis of their importance

in world trade. In another manner, it defines the ratio of the share of one country trade with another to the other country's share of the world trade. Trade intensity index of India and U.K has been calculated for 2000,2005,2010,2015.

The simple technique of trade intensity index was developed by K. Kojima in 1964 has been used which is as follows:

$$T_{ij} = \frac{(x_{ij}/X_{it})}{(x_{wj}/X_{wt})}$$

Where

$T_{ij} = Trade\ Intensity\ index\ for\ country\ i\ and\ country\ j$

$X_{ij} = \text{Country's export to country j}$

$x_{wj} = \text{World exports to country j}$

$X_{it} = \text{Country i's total trade}$

$X_{wt} = \text{Total world exports}$

It lies between 0 and ∞. Zero indicates no trade, and a value greater than 1 indicates that there is an intense trade relation between two trading countries. According to Kojima (1964), an index of more than one indicates a bilateral trade flow that is larger than expected given the partner country's importance in world trade.

Export Intensity Index (EII) & Import Intensity Index (MII):

In order to measure the intensities between two trading countries, it is developed in the more precise manner by Brown, 1949 and Kojima, 1964 i.e. the Export Intensity Index (XII) and Import Intensity Index (MII).

Export intensity index is defined as:

$$XII_j = \frac{(x_{ij}/X_{iw})}{\left(M_{jw}/(M_w - M_{iw})\right)}$$

Where,

$XII_j =$ Country i's export intensity index

$x_{ij} =$ Country i's exported to country j

$X_{iw} = \text{Country i's total exports to the world}$

$M_{jw} = Country\ j's\ total\ imports\ from\ world,$

$M_w = World\ total\ imports$

$$M_{iw} = country\ i's\ total\ imports\ from\ the\ world,$$

Import Intensity Index is defined as:

$$MII_j = \frac{(m_{ij}/M_{iw})}{\left(X_{jw}/(X_w - X_{iw})\right)}$$

Where,

$m_{ij} = Country\ i's\ Imports\ from\ Country\ j$

$X_{jw} = Country\ j's\ Exports\ to\ World$

$X_w = World\ Total\ Exports$

Where i and j represent country India and U.K

Both indices lie between 0 and ∞. However, both the trade indices are associated with the IIT index between two countries. If the trade gap between MII and XII yearly is widening, then, the level of intra-industry trade between the two countries became worse and needed to be enhanced (Zhou et. al, 2006).

Revealed Comparative Advantage (RCA):

To analyzes the competitiveness of inter-industry trade of one country with respect to the world. Revealed Comparative Advantage Index is used to analyze how competitive is a product in Countries export compared to the products share in world trade. Thus, a product is competitive if it had a high comparative advantage and used to export to the country where there is the low comparative advantage of the similar product. Whereas, a similar attaining RCA Countries can also high bilateral trade intensities if both countries are having high involvement in the intra-industry trade (Chingarande et al, 2014).

In view of above requirement, Balassa's Revealed comparative advantage index has been used at four points of time to analyses the top 20 products of India and U.K.

Balassa's revealed comparative advantage index (RCA): It is defined as the share of a commodity in the total exports of a given country, divided by the share of the same commodity in total world exports (Seyman and Utkulu, 2004).

$$RCA_{ij} = \frac{(X_{ij}/X_{it})}{\left(X_{wj}/X_{wt}\right)}$$

Where,

$X_{ij} = Value\ of\ country\ i^{th}\ export\ of\ commodity\ j$

$X_{it} = Country\ i^{th}\ total\ exports$

$X_{wj} = Value\ of\ Worlds\ of\ commodity\ j$

$X_{wt} = World's\ Total\ exports$

Revealed comparative advantage (RCA) ranges from o to +∞. A value greater than unity signify country has a comparative advantage in the production of that good or vice- versa.

Trade Complementarity index (TCI):

Trade Complementarity index (TCI) measures the degree to which the export pattern of one country matches the import pattern of a region. It is defined as 1 minus the sum of the absolute value of the difference between the import category shares of the region and the export shares of the country divided in half (Cheong, 2010). The first TCI was proposed by Kojima and corrected by Drys Dale in 1967 (Ji et. al, 2014). In the same fashion, Michaely (1996), defined TCI as the measures to the extent to which two countries are "Natural Trading Partners" in the sense that one country exports overlap with what the other country imports.

In the present study, it is used to measure the competitiveness of the trade structures of India/U.K exports with the trade structure of U.K/India's imports. Following formula, given by United Nations Economic and Social Commission for Asia and Pacific (UNESCAP, 2016), is used to measure India's Trade Complementarity with U.K.

$$TCI_{ik} = 100 - \sum\left(\left|M_{ik} - X_{ij}\right|/2\right)$$

Where,

$TCI_{ik} = Trade\ Complementarity\ Index\ between\ Country\ j\ and\ k$

$M_{ik} = Share\ of\ Good\ i\ in\ All\ Imports\ of\ Country\ k$

$X_{ij} = Share\ of\ Good\ i\ in\ Global\ Exports\ of\ Country\ j.$

The value of Trade complementarity index (TCI) converted into percentage form, ranges between 0 and 100. Zero means no overlap and 100 means a perfect match between the imports and exports pattern.

A high degree of TCI indicates more favourable prospects for a successful trade arrangement. If trade complementarity index has a relatively small value, the development potential of bilateral trade will be limited.

This index has included only the demand of partners while overlooking other parameters (e.g. the distance of partners. (Castro, 2012)

Intra-Industry Trade (IIT):

Intra-Industry Trade (IIT) arises if a country, in the same period of time, imports and exports similar types of goods or services recorded at a detailed level of product aggregation, with in the same industry trade).

Similarity characterizes as goods or services are taken from the same sector (Grubel and Lloyd (1975) and Lloyd and Grubel (2003). Most commonly used the index to measure the IIT is Grubel-Lloyd (G-L) index. G-L Index computes the ratio of net exports in a commodity category to its total trade i.e.

Based on Grubel-LLyod (G-L) formula, the IIT index between India and U.K can be computed as follows:

$$GL_i = 1 - (export\ sector_i - imprt\ sector_i)/(export\ sector_i + imprt\ sector_i)$$

The value of Intra-Industry trade index lies between 0 and 1. Zero signifies as there is perfect inter-industry trade while 1 implies there is a perfect intra-industry trade. It has shown the trade specialization, productivity gain and large scale of economies by attaining a comparative advantage in the naturally enriched production process or by started focusing or utilizing resources to its potential level which thereby lowers the adjustment cost in term of trade expansion (Sahoo et.al, 2009).

It is based on the Grubel-Lloyd (G-L) formula; G-L Index for bilateral trade is used to find out the intra-industry trade between India and U.K. It is modified form used by Sahoo (2009). The formula is;

$$GL_i = 1 - \{|Xk_{ij} - M_{jik}|/Xk_{ij} + M_{jik}\}$$

Where,

$Xk_{ij} = Exports\ of\ commodities\ from\ industry\ j\ from\ India\ to\ UK$

$M_{jik} = Imports\ of\ commodities\ from\ industry\ j\ to\ India\ from\ UK$

Export Similarity Index:

The Export Similarity Index, developed by Finger and Kreinin (1979). This index captures the degree of similarity between the export profiles of one country and other countries in a region. It is defined as the sum over export categories of the smaller sect oral export shares, comparing the export share of the country with that of other countries in the region.

The formula for the export similarity index is:

$$ESI_{ij,k} = \left[\sum_k = Min\left(X^k{}_{iw}/X_{iw}, X^k{}_{jw}/X_{jw}\right)\right] \times 100$$

Where,

X= Export & M=Import

$X^k{}_{iw} = amount\ of\ export\ to\ the\ target\ market\ of\ products\ k\ of\ country$

$X_{iw} = total\ value\ of\ export\ to\ the\ target\ market\ of\ country\ i$

$X^k{}_{jw} = amount\ of\ export\ to\ the\ target\ market\ of\ products\ k\ of\ country\ j$

$X_{jw} = total\ value\ of\ export\ to\ the\ target\ market\ of\ country\ j.$

The index value ranges between 0 and 1. A value of zero indicates no overlap in the export profiles (i.e., the country is not a competitor with other countries in the region) and a value of one indicates perfect overlap. The more similar the export profiles are, then the more likely that there is limited potential for gains from inter-industry trade with a regional trading arrangement. This index does not consider gains from intra-industry trade.

The study computed the similarity index for India and U.K at HS 6 digit level at four points of time 2000,2005,2010,2015.

Market Concentration Index:

The Herfindahl-Hirschman market concentration index has originated its name from the two economists who build up to it independently. Albert O. Hirschman proposed the index (1945), while Orris C. Herfindahl presented it in (1950).The HHI accounts for the number of firms in a market, as well as concentration, by incorporating the relative size (that is, market share) of all firms in a market. It is calculated by

squaring the market shares of all firms in a market and then summing the squares, as follows (Naldi et.al.2014):

$$HHI = \sum_{i=1}^{n} {s^2}_i$$

Where,

$$HHI = \text{Herfindahl} - \text{Hirschman index}$$

$${s^2}_i = share\ of\ ith\ firm\ in\ market$$

The HHI is obviously a positive figure (Naldi et.al.2014). The range of HHI lies between 0 to 1. If the If we have a monopoly, where a single company takes all the market, we have n = 1 and $s_1 = 1$, it implies we have HHI =1.

But in the opposite case, where the market is uniformly distributed between the company (perfect competition) does not lead to HHI = 0 but have a minimum value. Thus, the HHI index is used to measure the concentration ratio of firms in India and U.K so as to thrive at the conclusion whether the market is diversified or not which ultimately limits the trade between trading country as one is not optimally utilizing its potential level.

Import penetration index:

The import penetration rate shows to what degree domestic demand (the difference between GDP and net exports) is satisfied by imports. The index may be used as the basis of specific policy objectives targeting self-sufficiency. It may provide an indication of the degree of vulnerability to certain types of external shocks.

Correspondingly, it is the ratio of total imports to domestic demand as a percentage. It can be computed by using the below formula:

$$IPI = \left[\sum_{s} M_{sd}/GDP_d - \sum_{s} X_{ds} + \sum_{s} M_{sd}\right] \times 100$$

$IPI = \text{Import penetration index}$

$M_{sd} = Import\ of\ country\ d\ from\ s\ country$

$X_{ds} = export\ of\ country\ d\ to\ s\ country$

$GDP_d = Gross\ domestic\ production\ of\ d\ country$

The computed value of IPI lies between 0 to100. Zero implies no trade and 100 percent implies that the whole domestic demand is satisfied only by import from the partner country. However, a lower Import penetration index implies complete self – sufficiency which is not appropriate in terms of policy target from an efficiency perspective.

Export Propensity Index:

The index shows the overall degree of reliance of domestic producers on foreign markets. It may provide a better indicator of vulnerability to certain types of external shocks (e.g., falls in export prices or changes in exchange rates). It may be a policy target.

It is calculated by dividing the bilateral export of country with the GDP of the country. The formula for EPI is:

$$EPI = \left(\sum_{s} X_{ds} / GDP_{d} \right) \times 100$$

Where,

$EPI = \ Export\ Propensity\ Index$

$X_{ds} = \ Total\ bilateral\ export\ of\ country\ d\ to\ country\ s$

$GDP_{d} = \ Gross\ domestic\ product\ of\ \ country\ d$

The calculated value of EPI lies between 0 to100 in percentage form. Zero means no export while 100 percent means the whole production is exported. A high export propensity may be an inappropriate policy target from an efficiency perspective.

Vertical Intra-Industry Trade:

A horizontal intra-industry trade founded by Helpman and Krugman (1985) which shows that there is a trade of relatively close substitute products within the same industry. Whereas, vertical intra-industry trade originated from Caves (1981), implies the trade of differentiated products within the same industry (Botric, 2012).

The various methodology used by different experts for analyzing whether the trade is VIIT or HIIT are Abd-el Rahman (1991), Greenaway, Hine, and Milner (1994, 1995) and Fontagne and Freudenberg (1997).

Among them, the methodology used by Fontagne and Freudenberg (1997) is used to find the type of intra-industry trade between India and U.K.

Step 1: Identify whether the trade of commodity j is a one-way trade or intra-industry trade in nature by using a certain range of overlapping value of Export(X) & Import (M).

$$Trade\ overlap = \left[Min\left(X_{abj}, M_{baj}\right)/Max\ \left(\left(X_{abj}, M_{baj}\right)\right)\right] \leq 0.1$$

Where,

$X_{abj} = \ Country\ a\ export\ from\ b\ in\ j\ product$

$M_{baj} = \ Country\ b\ import\ from\ a\ in\ j\ product$

If the above eq. holds true then it is one-way trade otherwise, it is two-way trades.

Step 2: the Intra-industry trade of commodity j is horizontal or vertical is measured by using a certain range of relative unit prices of X and M goods.

$$1/1.25 \leq {P^x}_{aj}/{P^m}_{aj} \leq 1.25$$

Where,

${P^x}_{aj} = \ unit\ value\ of\ j\ commodity\ exported\ to\ b\ country$

${P^m}_{aj} = \ unit\ value\ of\ j\ commodity\ imported\ to\ the\ b\ country\ by\ a\ country$

If there is a small range of price differentials, then it is HIIT. If the gap of unit- price is outside the range, then it is VIIT.

Step 3: Finally share of the n-type trade pattern i.e. the threshold based index for the aggregated commodity category is calculated as follows:

$${S^n}_i = \sum\nolimits_j \left({X^n}_{aj} + {M^n}_{aj}\right) \Big/ \sum\nolimits_j \left(X_{aj} + M_{aj}\right)$$

Where,

${X^n}_{aj} = \ Type\ of\ production\ in\ j\ product\ exported$

${M^n}_{aj} = \ Type\ of\ production\ in\ j\ product\ imported$

$M_{aj} = \ Total\ import\ of\ a\ country\ from\ b\ country$

Hence, for the purpose of calculating the Value of India and U.K export and import, data has been taken from UN COMTRADE at HS 6- digit level.

Software for Partial Equilibrium Market analysis (SMART Model):

After calculating trade indices and examining trade potentials, trends and patterns between India and U.K, now SMART analysis is used to analyze further what will be the future of India –The U.K trade if both countries agreed for a free trade agreement. SMART Analysis is a partial equilibrium model used in WITS for market analysis. It emphases on the hypothetical structured scenario which captures the effect of tariff elimination on exporting country when on other side importing country reduces the tariff. It assesses the impact of a tariff change scenario by estimating new values for a set of variables that are directly affected not like general equilibrium analysis where markets are simultaneously modelled and interact with other. It is suitable for the analysis where following factors are required:

(a) Minimal data requirement,

(b) The only data requirement is- trade flows, trade policy (tariff) and a couple of behavioural parameters (e) which can be easily available on WITS,

(c) It permits an analysis at a fairly disaggregated level.

This analysis is particularly used when to estimate the effect of a change in trade policy on the change on the imports of a particular market. The demand side of the market in SMART is based on the Armington assumption that commodities are differentiated by their country of origin. This assumption implies that, for a particular commodity, imports from one country are an imperfect substitute for imports from another country. Thus, even though an FTA entails preferential trade liberalization, import demand does not completely shift to another country product from within the FTA. The SMART model also assumes that consumer's demand is decided in a two-stage optimization process that involves allocating their spending by commodity and by national variety. At the first stage, consumers decide how much to spend on the commodity given changes in the price index of this commodity. Import demand elasticity shows the impact of price change on the import demand for that imported commodity. At the second stage, the chosen level of spending for this commodity is allocated among the different national varieties, depending on the relative price of each variety. The extent of the between-variety response to a change in the relative price is determined by the substitution elasticity. Different countries compete to supply (export to) the market and the model simulates changes in the composition and volume of imports into that market after a

tariff reduction or another change in trade policy. The degree of responsiveness of each foreign exporter‘s supply to changes in the price is known as the export supply elasticity. The SMART model, by default, assumes that the export supply elasticity of each foreign country is infinite, which implies that each foreign country can export as much of the good as possible at a certain price. This assumption may be appropriate for an importing country whose import quantity is too small to affect the prices of foreign exporters (i.e. the price-taker assumption). If changes in the country‘s import quantity can have a price effect on the foreign exporter, SMART can operate with a finite export supply elasticity, but the value of this parameter must be found and incorporated into the analysis. In the SMART model, an FTA will affect both the price index of the commodity and the relative prices of the different national varieties.

SMART requires the following data, which can be extracted from WITS or from alternative sources of information, for the simulation of an FTA: (i) the import value from each foreign partner, (ii) the tariff faced by each foreign partner, (iii) the import demand elasticity for the commodity, (iv) the export supply elasticity for the commodity, and (v) the substitution elasticity between varieties of the commodity. SMART accepts just one import demand elasticity for the commodity and not for each national variety. Moreover, the export supply elasticity must be the same for all foreign exporters of the commodity. SMART also expects that the substitution elasticity is the same for any pair of varieties of the commodity. Thus with the use of SMART Analysis, though hypothetical but a situation can be analyzed if both nation sign an agreement in future (wits.worldbank.org, 2016).

The following scenarios have assumed to have partial equilibrium market analysis:

The scenario I: The simulation of first scenario studies, what will be the effect on trade when there is a frequent reduction in tariff through the SWISS formula.

Scenario II: The simulation of the scenario II considers India top five exports products to the U.K with the full access to these products at full tariff liberalization environment.

Chapter 4:

India-U.K Bilateral Trade: Trends and Patterns:-

India and U.K has an intense trade relations since U.K has its colonial empowerment over Asian and African countries. Even after India's Independence, both countries have taken step to polish their established relations by continuously exploring its new bilateral trade potential. In 2004, an important decision has been undertaken to upgrade their bilateral relationship through Strategic Partnership which has laid the foundations for Enhanced Partnership for the future, with high level of economic and technological cooperation along with close management on many regional and global issues. This chapter is an attempt to have an overview of trends and patterns of bilateral trade of India-U.K for the period of 2000-2015. Various trade indices has been used to assess the trade patterns to project the scope of India- U.K trade relation in future.

When the India has awoken from the dawn of stagnant economy by adopting liberal reforms in 1991, there has been a tremendous increase in its trade balance. As after that, according to WTO (2015), India has a contribution of 24.8 percent of GDP in total world trade and it has acquired the 19th and 13th position among world's largest trading exporter and importer of the world. Thus, with its liberal and attractive trade atmosphere, India is being the world largest and fastest growing country in the world and third-largest Asian growing country (IMF, 2016). While in situation of bilateral trade between India and U.K, U.K is currently at in 5th position in terms of India's export destination but it fails to make its place in top 10 import source country of India. Since, 2005 India's trade with U.K has been declining and have a little share of 2.7 percent in each other's trade basket.

Table 4.1 shows the trends of India and U.K bilateral trade for the period of 2000-2015. However, Table depicts that the total merchandise trade of India and U.K has been continuously increasing over the period from US$ 53684393.99 million in 2000 to US$ 142668295.58 million in 2015 i.e. increased by 6.70 percent. The highest average annual growth in export is examined in 2011 by 37.95percent after continuously decline in 2009 and 2010 by approx. 1-1.5 percent. However, the reason

behind is due to its ambitious target of expanding trade and investment in the areas of their strategic interests set in 2010 annual meeting of India-U.K Strategic Partnership summit.

Table 4.1 India–U.K bilateral Trade (US$ Million)

Year	Exports	Imports	Total Trade	Exports	Imports	Total Trade
2000	22079593.66	31604800.33	53684393.99	37985942.05	28835733.89	66821675.94
2001	21966287.45 (-0.51)	27585249.12 (-14.57)	49551536.57 (-11.44)	29569979.4 (-22.15)	29606262.02 (2.67)	59176241.42 (-7.70)
2002	24090570.99 (9.67)	26430529.91 (-4.36)	50521100.90 (0.98)	28602235.35 (-3.27)	31156055.79 (5.23)	59758291.14 (1.96)
2003	27693739.32 (14.95)	29803235.30 (11.31)	57496974.62 (27.88)	38950432.89 (36.17)	37467118.14 (20.25)	76417551.03 (13.81)
2004	34094307.12 (23.11)	32908233.45 (9.43)	67002540.57 (5.37)	43057049.1 (10.57)	37467118.14 (0)	80524167.24 (16.53)
2005	49588610.09 (45.44)	43004388.76 (23.47)	92592998.85 (37.34)	53699745.67 (24.71)	56893981.62 (51.85)	110593727.3 (38.19)
2006	53838288.28 (8.56)	40308149.04 (-6.68)	94146437.32 (-6.11)	50135515.59 (-6.63)	53699745.67 (-5.61)	103835261.3 (1.68)
2007	62869135.36 (16.77)	47945350.84 (15.92)	110814486.20 (36.46)	59429411.14 (18.53)	82262253.77 (53.18)	141691664.9 (17.70)
2008	65975208.20 (4.94)	62168290.75 (22.87)	128143498.95 (16.05)	77812733.56 (30.93)	86619309.65 (5.29)	164432043.2 (15.64)

Contd…

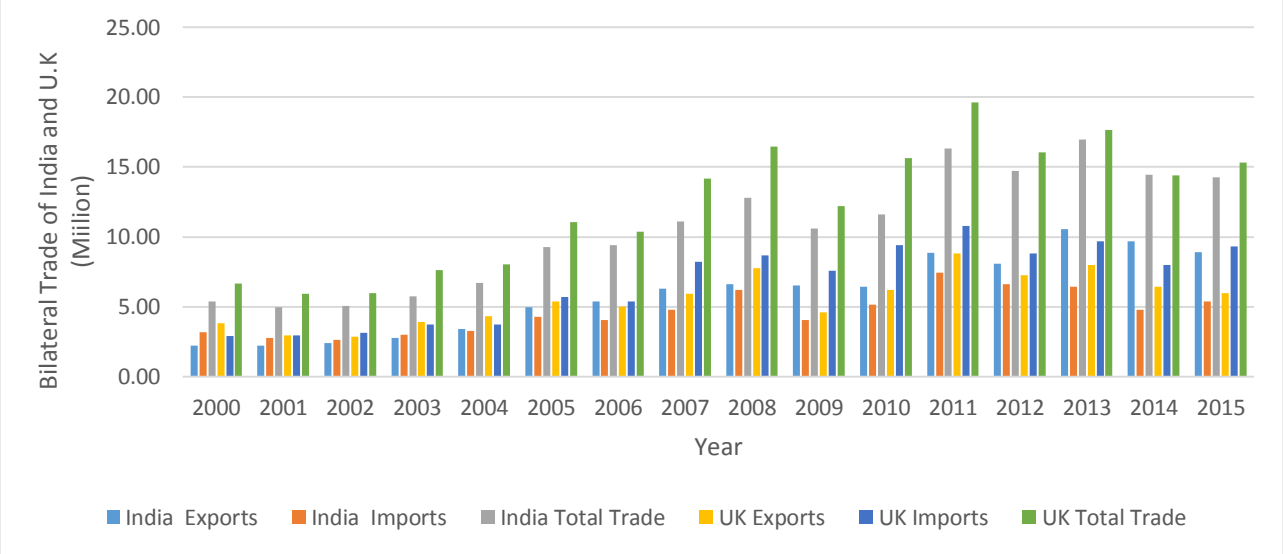
Year	Exports	Imports	Total Trade	Exports	Imports	Total Trade
2009	65288511.37 (-1.04)	40535939.53 (-53.36)	105824450.90 (-25.82)	46118929.62 (-40.73)	75856318.03 (-12.42)	121975247.7 (-17.42)
2010	64364134.63 (-1.41)	51668168.40 (21.54)	116032303.03 (28.12)	62121415.63 (34.69)	94158616.99 (24.12)	156280032.6 (9.65)
2011	88791147.13 (37.95)	74539286.89 (30.68)	163330434.02 (25.45)	88003698 (41.66)	108050608 (14.75)	196054306 (40.76)
2012	81001769.78 (-8.77)	66361146.02 (-12.32)	147362915.80 (-18.19)	72396871.32 (-17.73)	88003698 (-18.55)	160400569.3 (-9.78)
2013	105594055.59 (30.36)	64307871.15 (-3.19)	169901926.74 (10.19)	80055636.56 (10.57)	96692365.39 (9.87)	176748002 (15.29)
2014	96653390.02 (-8.46)	47911111.95 (-34.22)	144564501.97 (-18.43)	64115841.49 (-19.91)	80055636.56 (-17.20)	144171478.1 (-14.91)
2015	88911952.83 (-8.00)	53756342.75 (10.87)	142668295.58 (6.16)	59787551.79 (-6.75)	93259514.67 (16.49)	153047066.5 (-1.31)
CAGR (%)	9.70	3.60	6.70	3.10	8.10	5.70
Source: UN Comtrade (2015) Note: Figure in parentheses shows bilateral growth of India and U.K Exports, Imports and Total Trade.						

On India's front, Table 4.1 depicts that exports and imports of India with U.K has been fluctuating. It has reached to a level of US$ 22079593.66 million to US$ 88911952.83 million i.e. by 9.70 percent, whereas India's Imports from U.K has changed from US$ 31604800.33 million to US$ 53756342.75 million while its growth rate has 3.60 percent. And the positive fact which emerge from the Table is that out of total trade, export share is dominating over imports share which has positive impact on India's trade balance. On the other hand, U.K trade trends shows that exports of U.K has increased from US$ 37985942.05 million to US$

59787551.79 million i.e. export has grown by 3.10 percent. While its import has reached a level of US$ 93259514.67 million from US$ 28835733.89 million and shows a growth of 8.10 percent.

Thus, the overall view of trade trend has shown similar picture where the bilateral trade between both nations has fluctuated, while India's total trade shoot down later than U.K's total trade because of the reason that global crisis of 2008. An another factarises from such data is that although bilateral trade of U.K is more than that of India's total trade but the share of India's export dominates the share of India Imports in U.K. Thus, on an average, for whole study period, the trade is in the favor of India.

Figure I: India–U.K bilateral Trade (US$ million)



Source: Table 4.1

Fig. I clearly shows that U.K total trade is above the India's total trade during the study period. Where the export of India to U.K has been increasing continuously and it surpasses the export from U.K to India in 2007 as due to decline in export trend of U.K to India. Nevertheless, on both the front, the imports remains more or less remain same. However, the imports from U.K to India is continuously increasing which has positive impact on India's trade balance.

A) Trade Intensity Index:

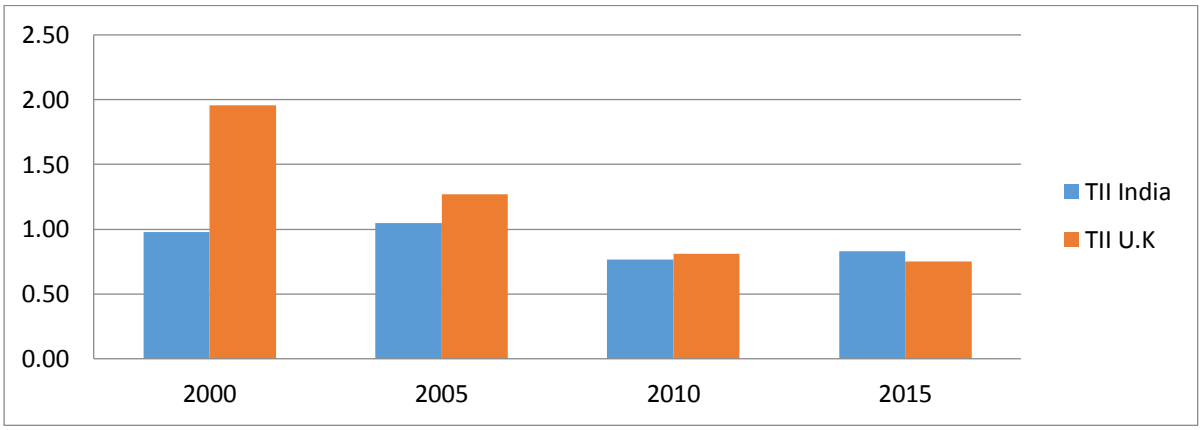
The changing trends in India-U.K bilateral trade relations can also be identified by trade intensity between both countries. Trade intensity index highlights the relative importance of evidently low levels of trade (in absolute terms) between countries. An index showing value above/below one indicates that bilateral trade flows between countries is greater/smaller than would be expected on the basis of the partner's share in world trade; vice-versa is also true.

Table 4.2: Trade Intensity Index of India and U.K

Year	TII India	TII U.K	India's EII With U.K	India's III With U.K	U.K EII With India	U.K III With India
2000	0.98	1.96	0.89	1.46	1.72	1.07
2005	1.05	1.27	0.97	1.03	1.27	1.05
2010	0.77	0.81	0.69	0.80	0.94	0.99
2015	0.83	0.75	0.78	0.81	0.89	0.80

Note: EII- Export Intensity Index & MII- Import Intensity Index
Source : UN Comtrade 2015

Fig II: Trade Intensity Index of India and U.K



Source: Table 4.2

Table 4.2 shows the fluctuating trends in the trade intensity of India and U.K in each other's market, during the study period. The value of TII of India remains below 1, except 2005 (1.05 percent), over which it remain less than 1 as in 2010 it is 0.77 percent and rises to 0.83 percent in 2015. However, in economic term, on an average India's

bilateral relation has not been explored to its potential level as its value is less than 1 as also shown in Fig. II.

On the other hand, the value of trade intensity for U.K's exports to India continuously shows the downward trend during 2000 to 2015. As in 2000, TII of U.K is 1.96 percent which set at 0.75 percent in 2015, shows a continued decline. While the important fact rises is that in 2000 it is 1.96 percent shows a very intense relation with India as because of India's trade mainly with U.K in Europe, but as India diversified it export geographical to other countries in Europe in 2005 there is a decrease in trade pattern between India and U.K (Shafi, 2011). The other reason behind declining trade trend during 2005 to 2015 is global financial economic crisis came in 2008 which adversely affect merchandise export of both India & U.K.

B) Export & Import Intensity:

Export and import intensity indices show the ratio of the share of country i's trade with countries j relative to the share of world trade destined for country j. The value of export and import trade indices above /below than one deduce as a sign of larger/smaller than expected trade flows between two countries engaged in trade.

Table 4.2 shows that India's EII is less than 1 and fluctuating over the time period from 2000 to 2015 indicates that the export level from India to U.K is less than that of U.K in the world market share; also the Import Intensity Index (III) of India from U.K has been declining in the time period of 2000 to 2015 which interprets that the import level of India from U.K is less than that of U.K share of import in world market. On the other hand, U.K Export Intensity Index (EII) shows declining trend as the value continuously fall from 1.72 percent to 0.89 percent state that U.K exports to India is greater than India's in the world market share till 2005 and started declining after 2005 and become 0.89 percent which implies U.K export to India is less to India than that of India's share in world market; while U.K Import Intensity Index (III) shows the simultaneous fall along with the Export Intensity Index (EII) which means that U.K import from India is declining than that of India's share in world market.

Further comparing, India's Export Intensity Index (EII) with U.K Export Intensity Index (EII), it shows complicated relation as till 2005 India's Export Intensity Index (EII) is smaller than U.K Export Intensity Index (EII) which shows that till 2005, the dependence of India's on U.K export is much stronger than that of U.K on India's export market. While U.K Import Intensity Index (III) is greater than India's Import Intensity Index (III), showing that the dependence of U.K on Indian import market is much less than that of India's dependence of import from U.K.

C) Composition of Trade:

Table 4.3 shows that the percentage shares of India's top 20 exports to U.K at four points of time i.e. 2000,2005,2010,2015. Since 2000, there has found much more changes in composition of India's exports to U.K. If, the whole study scrutinizes then the export structure of year 2000 is known for the export of mainly primary products as of Art. Of jewellery and pts share (3.27), Articles of apparel of leather (2.62), Furnishing articles, nes, of cotton (excl. knit) (1.97) percent of total exports. Thus, mainly export basket of India was filled with exports of Gems, Jewelry, Dry Fruits, and from manufacturing side export of Cotton clothes and leather made products.

The year 2005 shows the India's exports basket which has a mix variety of products apart from agriculture and mainly primary based products. In year 2005 India, has tried to explore its comparative advantage in new manufactured products which has diversified its export composition give boost to economy by coming out of the chain of purely agriculture based products, Gems and Jeweler though still in 2005 primary products share is more than half out of top 20 products but the entry of new products as if Petroleum oils, etc, (excl. crude); preparation (14.68), Other medicaments of mixed or unmixed products (2.03), Automobiles with reciprocating piston engine di (1.24), Motor vehicle parts nes (0.91) and Other organic compounds, nes (0.78) gave a new direction to the composition of Indo-U.K trade.

However, 2010 has not shown the exploration of any new entry and there is also the falling share of Petroleum products (4.25) which might be due to global financial crisis. However, the highlighting fact is that top 3 products are from manufacturing sector which shows the changing trend of India's export to U.K although the rest export products shuffle in between itself as if Art. of jewellery and pts thereof of/o prec

mtl(3.14).A medicine product (4.31) puts a new entry on top one in export basket of India in 2015 and the Table further shows the increasing share of Art. of jewellery and pts thereof of/o prec mtl (3.41), Automobiles with reciprocating piston engine di from 0.97 to 1.58 while the other export basket constitutes mainly of cotton made products, leather products , Frozen shrimps and prawns, diamonds and recently an increasing share of pharmaceutical products

Table 4.3: India's Top 20 Exports Commodities to U.K

2000		2005		2010		2015	
Product Code	Share	Product Code	Share	Product Code	Share	Product Code	Share
711319	3.27	271000	37.49	271000	19.58	300490	4.31
420310	2.62	711319	5.41	870322	6.76	711319	3.41
30613	2.49	610910	3.98	300490	5.69	640391	2.08
710239	2.45	620630	3.86	711319	1.87	610910	1.83
640610	2.39	300490	2.52	880330	1.66	100630	1.81
620520	2.36	620452	1.24	620630	1.55	611120	1.8
640351	2.28	640351	0.99	610910	1.4	880330	1.78
100630	2.25	710239	0.89	640351	1.38	870322	1.58
840890	2.21	30613	0.86	620442	1.29	640351	1.52
630492	1.97	870321	0.74	620520	1.07	710239	1.46
90240	1.71	100630	0.74	420221	1.06	420221	1.28
80130	1.44	630492	0.64	640391	1.05	870899	1.21
830241	1.44	420221	0.64	730900	1.04	620520	1.2
610910	1.42	183339	0.62	710239	0.87	30613	1.16
852490	1.24	630790	0.61	611120	0.82	620443	1.07
630790	1.15	90240	0.61	870321	0.79	251622	1.06
620630	1.07	840890	0.51	630492	0.72	621143	1.01
420221	1.01	870899	0.46	30613	0.71	870321	1.01
640391	0.99	970190	0.42	90240	0.64	840890	1.01
520811	0.87	294200	0.42	294200	0.64	620442	0.94

Source: UN Comtrade 2015

Thus the Table 4.3 shows that India's export basket has been shown a change from exports of Gems and Stones and Pure Agriculture based products to Pharmaceutical and manufactured products in the time span of 2000-2015. It shows that India has developed its comparative advantage in new fields by exploring and optimizing its unutilized resources in context with U.K export and started sharing a crown of exporter

of manufactured and semi- manufactured products with other developed countries by coming out of the shell of agriculture dominated economy.

Table 4.4: India's Top 20 Imports Commodities from U.K

2000		2005		2010		2015	
Product Code	Share	Product Code	Share	Product Code	Share	Product Code	Share
710231	34.66	710231	37.49	710231	19.58	710691	21.49
710812	20.6	720449	5.41	720449	6.76	710812	5.36
710691	6.73	710691	3.98	710812	5.69	720449	5.19
710813	4.26	710813	3.86	760200	1.87	760200	3.16
720449	1.64	710692	2.52	890590	1.66	220830	2.16
710692	1.43	480252	1.24	710691	1.55	841112	1.55
740400	0.69	760200	0.99	480252	1.4	740400	1.54
870919	0.54	880330	0.89	880330	1.38	490199	1.5
490199	0.53	710812	0.86	780200	1.29	880260	1.46
852490	0.49	470790	0.74	840710	1.07	720421	1.43
880330	0.48	310420	0.74	470790	1.06	220890	1.38
852520	0.41	490199	0.64	740400	1.05	470790	1.08
848180	0.35	880240	0.64	870850	1.04	880330	0.94
710610	0.35	740400	0.62	710692	0.87	710692	0.87
721890	0.35	847989	0.61	220830	0.82	880390	0.84
840999	0.35	852490	0.61	490199	0.79	300490	0.73
310420	0.35	840999	0.51	870324	0.72	840890	0.68
852990	0.34	848180	0.46	840999	0.71	870899	0.68
870899	0.32	720824	0.42	220890	0.64	841199	0.65
847290	0.31	852990	0.42	400239	0.64	847989	0.64

Source: WITS Trade Database 2015

Table 4.4 represents the percentage share of top 20 imports of India from U.K, during the study period 2000-2015. Gems and stones in the form of Diamond, Gold and Silver continue to be the top imports products from U.K since 2000 to 2010. However, in between these commodity like Iron and Steel had taken its position in top 3 or 4 products of imports. Other products which were mainly existed in import composition of Indian imports are Machines & Mechanical appliances nes having ind (0.61), Printed books increased share from 0.51 to 0.78, Parts of Diesel has shown upward trend from 0.35 to 0.71. So, it is clear from the Table that till 2010 imported products are more or less similar. However, the totally different import composition of India in 2015 has been brought into picture when top one imported product Diamond with unwrought (21.49) share followed by other unwrought forms (5.39), Aluminum waste and scrap(3.16), The

Share of Whisky has been increased from 0.82 to 2.16 and so on products which are not imported as before. Thus, it can be said that the Indian imports from U.K are highly concentrated till 2010 around Diamond, Gold, Silver, Aluminum Scrap and Waste, Printed Books, Waste and Scrap of Different Products, Parts of Diesel and Semi Diesel Engines, Potassium etc which change into Unwrought, Other Categories Products and Spacecraft etc. So, a picture emerged out of this is that ,overall there are handful of sectors as stone/glass, manufactured sector and a few metals which are concentrated in bilateral trade between India and U.K.

D) Revealed Comparative Advantage:

Revealed comparative advantage (RCA) revealed the comparative advantage of country in relative export performance of individual export categories. If the RCA index for a particular industry is greater than 1, it implies that the country has a revealed comparative advantage in the exports of that industry and vice-versa (Balassa's 1965)

Table 4.5 shows the RCA of India at four points of time 2000,2005,2010,2015. This is computed by taking top twenty exports of India to U.K. So, it has been understood from the above Table that export basket of India has undergone a drastic change as from the export of primary products to the export of manufactured products or in technical words, India's comparative advantage has changed from primary sector to manufacturing sector. During year 2000, Unbleached plain cotton weave, with >=85percent cotton (26692.85), Handbags with outer surface of leather, or comp (27805.83), (T-*shirts, singlet's and other vests, of cotton) 33617.88,* (Articles of apparel of leather) 189715.99 and so on. Thus, the year 2000 demonstrated the dominance of primary based manufactured products. Similarly, during 2005 India's greater comparative advantage shifted to Furnishing articles, nes, of cotton (excl. knit)(12075.58), Women's or girls' blouses, shirts, etc, of cotton (9848.34), Skirts and divided skirts of cotton(6650.60), Handbags with outer surface of leather, or comp (5987.95) which characterized the year 2005 with the dominance of still primary based manufactured products in its higher attaining comparative advantage. While the year 2010 shows higher advantage in producing and exporting, Furnishing articles, nes, of cotton (excl. knit)(20717.36), Footwear with leather soles and uppers, covering (21294.20), Automobiles with reciprocating piston engine di (10783.74) and respective

so on. Thus, during 2010, India has explored its new comparative advantage in Automobile, a step out of its primary based manufacturing products rigid wall. However, the year 2015 shows the new inspection of products in achieving higher comparative advantages as if Automobiles with reciprocating piston engine di (84465.09), Footwear with leather soles and uppers, covering (6571.40), Automobiles with reciprocating piston engine di (6471.12), Semi-milled or wholly milled rice(9542.41) etc. But while concluding, it must be noticed that although the trade composition of India's trade has been undergoing a change from primary based products to fully or semi secondary based products but still its revealed comparative advantages lies in mainly primary based products.

On other hand, U.K comparative advantage in 2000 lies in Diamonds non-industrial unworked or simply sawn (397.76), Ferrous waste and scrap, iron or steel, nes(363.02) , Parts of gas turbines nes(197.28) and respective others. Thus, year 2000 characterized as export specialization in Gems, Space and Metals. Similarly, 2005 has shown revealed comparative advantages in Diamonds unsorted whether or not worked (7402.19), 7039.16 Waste and scrap, of tinned iron or steel (7039.16) and Ferrous waste and scrap, iron or steel, nes (1402.95) and so on. Further in 2010, Ferrous waste and scrap, iron or steel, nes (131328.86), Waste and scrap, copper or copper alloy (3432.13) and Waste and scrap, of alloy steel, other than sta (3351.08) shows higher RCA with India and lastly the time period of 2015 shows their comparative advantages in Silver in unwrought forms (5471.92), Engines, diesel, for the vehicles of Chapter 87(970.66) and Whiskeys (333.19).

Thus, The RCA of U.K overall state is very much dissimilar to that of India's situation as India's has diversified its export basket but still its RCA lies in primary based manufacturing products but if the situation applied in U.K its shows that U.K along with the bringing diversification in export basket also shows increasing and altering its RCA in new invented products of its export composition.

Table 4.5: Revealed Comparative Advantage of India

Product Code	2015	Product Code	2010	Product Code	2005	Product Code	2000
300490	12.09	271000	46.95	271000	239.69	711319	249.40
711319	30.29	870322	10783.74	711319	61.27	420310	189715.99
640391	3378.20	300490	18.91	610910	1645.64	30613	-
610910	251.73	711319	30.10	620630	9848.34	710239	124.37
100630	9542.41	880330	-	300490	29.84	640610	1120.88
611120	1227.11	620630	954.07	620452	6650.60	620520	-
880330	1.57	610910	396.42	640351	-	640351	2225.75
870322	6471.12	640351	21294.20	710239	8.81	100630	-
640351	6571.40	620442	2441.69	30613	-	840890	100.23
710239	24.58	620520	546.38	870321	-	630492	-
420221	1686.24	420221	2236.47	100630	-	90240	-
870899	13.63	640391	4630.93	630492	12075.58	80130	-
620520	170.32	730900	493.16	420221	5987.95	830241	13175.61
30613	-	710239	19.03	183339	-	610910	33617.88
620443	253.58	611120	153.20	630790	642.39	852490	-
251622	-	870321	1138.25	90240	-	630790	3470.68
621143	912.54	630492	20717.36	840890	40.03	620630	15924.94
870321	84465.09	30613	-	870899	17.62	420221	27805.83
840890	5.29	90240	-	970190	326.72	640391	1735.68
620442	905.00	294200	190.90	294200	60.38	520811	26692.85

Note: (-) Hypen stands for data not available for calculation of RCA of product.
Source: WITS Trade Database 2015

Table 4.6: Revealed Comparative Advantage of U.K

Product Code	2015	Product Code	2010	Product Code	2005	Product Code	2000
710691	5471.92	710231	93.96	710231	228.64	710231	397.76
841112	16.49	710691	-	710210	7402.19	710812	-
880330	0.64	720449	131328.86	710691	-	270900	-
760200	-	841112	-	720449	1402.95	710691	-
220830	333.19	760200	-	710812	-	710813	-
841191	108.84	740400	3432.13	760200	27.43	901420	-
720449	-	720429	3351.08	740400	769.41	841191	-
720429	-	780200	-	480252	316.85	720449	363.02
740400	62.68	220830	249.92	490700	0.85	841112	-
880250	-	480252	31.64	220830	228.83	841199	197.28
720421	-	841191	6.82	841191	42.10	843149	45.31
300490	0.08	841182	-	490199	6.57	852520	14.12
880240	-	870324	141.98	710239	0.11	740400	158.29
711011	-	711011	-	720441	-	870899	0.19
490199	23.44	490199	13.38	840999	0.30	490199	14.74
720430	-	841199	11.37	720430	7039.16	840999	0.56
841182	2.00	870899	0.42	840991	0.43	284390	-
840820	970.66	840890	0.54	750210	-	721890	-
711021	-	970300	7.16	470790	-	530919	17.38
840999	0.31	711021	-	470730	-	854390	13.20

Note: (-) Hypen stands for data not available for calculation of RCA of product.
Source: WITS Trade Database 2015

(E) Trade Complementarity Index (TCI):

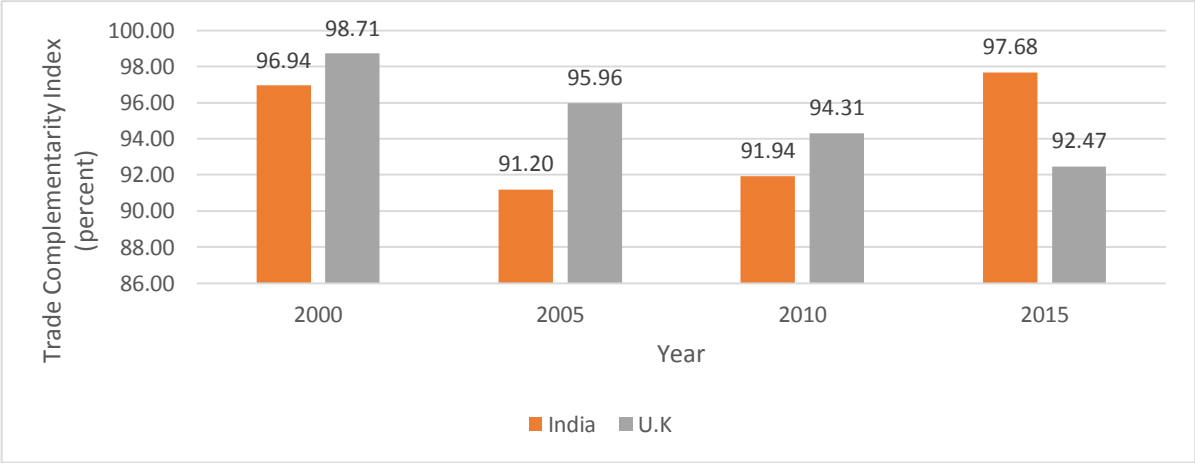
TCI measures the degree to which the export pattern of one country matches the import pattern of its trading partner. A high degree of complementarity indicates more favorable prospects for a successful trade arrangement. If the trade complementarity index has a relatively small value, the development potential of bilateral trade will be limited.

Table 4.7: India-U.K Bilateral Trade Complementarity Index (percent)

Year	India	U.K
2000	96.94	98.71
2005	91.20	95.96
2010	91.94	94.31
2015	97.68	92.47

Source: UN Comtrade 2015

Figure III: Trade Complementarity Index of India and U.K



Note: 0= No Overlap, 100= Perfect match between exports and imports
Source: Table 4.7

Table 4.7 reflects the results of TCI for India and U.K at four points of time 2000,2005,2010,2015. The trade complementarity for India's exports to U.K has been increasing and reached to 97.68 percent at 2015 after a continuous decline in two consecutive year i.e. 91.20 percent and 91.94 percent in 2005 and 2010 respectively. Thus, Table shows there is enhancing compatibility in bilateral trade with U.K trade. However, U.K export's TCI has been decreasing continuously though close to 100 indicates that although in recent years the compatibility of U.K with India's trade has been declining but still it is very close to 100, so it is not limiting trade potential. Overall, the level of complementarities in bilateral trade is above the normal which indicates that there is a fuller utilization of their potential but with declining trend. Further, with

declining complementarity there is also falling trade intensity index between both nations which is the main cause of concern and requires some effective and suitable steps to undertake for controlling the continuous falling trend.

F) Intra-Industry Trade index (G-L Index):

Intra-Industry trade (IIT) arises in a country when in the same period of time, there is similar exports and imports of goods and services taken from the same sector. IIT allows country to take advantage of large market. Grubel- Lloyd index is mostly used to measure IIT. The value of IIT lies between 0 and 1 where 0 value shows there are no exports and imports of a particular commodity group, i.e. no IIT in that particular good. On the other hand, 1 shows that there is similar export and import of particular good.

Table 4.8 represents different computable value of IIT of India and U.K for the period of 2000 to 2015. Markedly, India's IIT value reflects more fluctuations than U.K IIT index with India. During 2000- 2004, India's IIT value has risen up to 0.98 percent from 0.82 percent while during 2005 to 2015, IIT value lies between 0.91 percent to 0.75 percent shows the downward trend situation. However, U.K IIT index shows that the value has declined steeply over the whole period expect in the period 2005 and 2006 where it has increased and become steady at 0.97 percent and then during the study period from 2011 -13 it has shown upward and stable trend of 0.90 percent thereby fell till 2015 to 0.75 percent.

However, the observed facts about IIT indices are that IIT values show fluctuations during the study period and in the later year, the values move in the same downward direction. Thus, the reason behind is the changing export basket of both countries by exploring potential in new goods as shown in the Table 4.6 and Table 4.7 and also due to the strict regulatory framework of EU towards non-members countries.

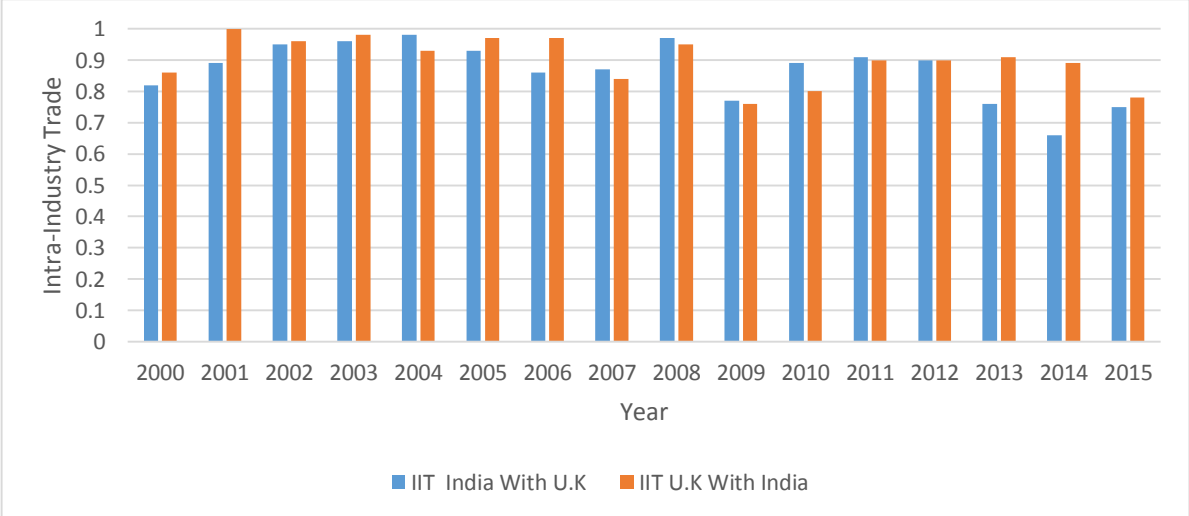
Thus, by examining EII and III in the above Table 4.2, it is clear that as the outcome of EII and III gap is narrowing though declining effecting the intra industry trade between India and U.K in two ways, firstly the narrowing positions improving the intra-industry trade pattern secondly the declining the value of EII and III weakens and limiting the intra industry trade pattern.

Table 4.8: India and U.K Bilateral Grubel-Lloyd Index Of India and U.K (Percent)

Year	IIT India With U.K	IIT U.K With India
2000	0.82	0.86
2001	0.89	1.00
2002	0.95	0.96
2003	0.96	0.98
2004	0.98	0.93
2005	0.93	0.97
2006	0.86	0.97
2007	0.87	0.84
2008	0.97	0.95
2009	0.77	0.76
2010	0.89	0.80
2011	0.91	0.90
2012	0.90	0.90
2013	0.76	0.91
2014	0.66	0.89
2015	0.75	0.78

Source: UN Comtrade 2015

Figure IV: India and U.K Intra-Industry Trade



Note: 0= Perfect Inter-Industry Trade, 1= Perfect Intra-Industry Trade
Source: Table 4.8

G) Export Similarity Index (ESI):

ESI is used to measure the similarity between exports of a two countries to a third market. The index is based on the share of each product in each country's total exports and is calculated as the sum of the minimum value for each product (Eskisehir, 2009). The value of ESI ranges from 0 to 1 or in percentage form 0 to 100, where 0 means no trade overlap while 100 means perfect overlap.

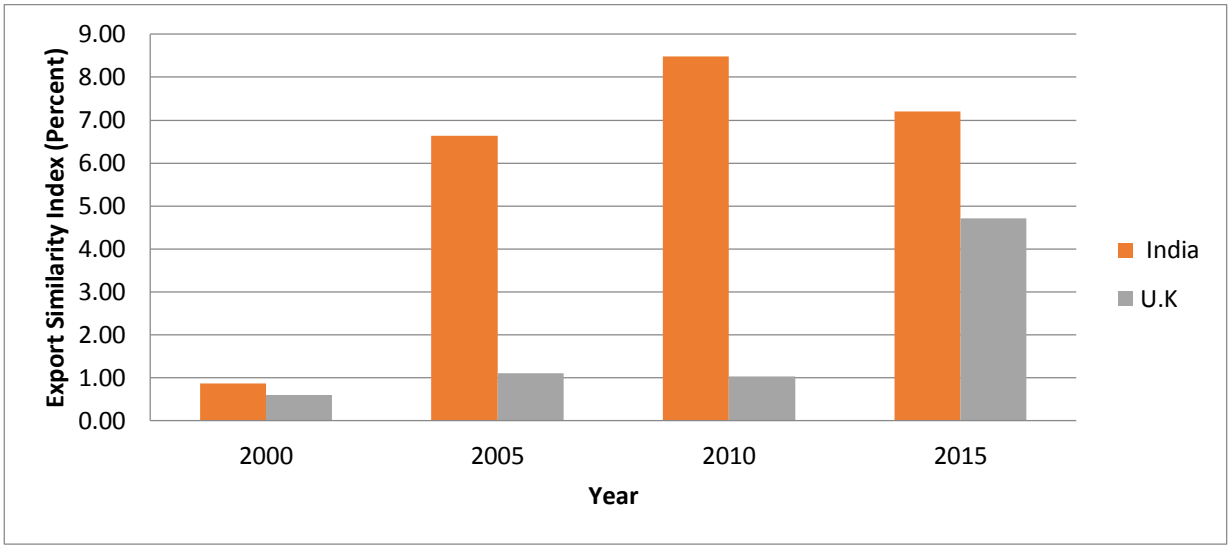
The results of Table 4.9 reflect that ESI of India has been increasing in percentage but far less than 100 which implies that the export basket of India is dissimilar with the export basket of U.K. However, the trends show that after 2000 ESI has shoot up six fold times i.e in 2005 6.63 percent from 0.87 percent in 2000 and then to 8.49 percent in 2010 but then decline to 7.21 percent. Thus, it shows that there is the potential gain from inter-industry trade if both countries engaged in regional agreement. U.K ESI was fluctuating between 0 to 5 percent during the study period though it is good indicator that U.K export doesn't match with India's export structure in third market and have a great potential of getting trade specialization or attaining comparative advantage in inter –industry trade.

Table 4.9: India and U.K Export Similarity Index (percent)

Year	India	U.K
2000	0.87	0.60
2005	6.63	1.11
2010	8.49	1.04
2015	7.21	4.71

Source : UN Comtrade 2015

Figure V: Export Similarity Index of India and U.K (percent)



Note: 0= No Overlap, 1= Perfect Overlap
Source: Table 4.9

But the main reason behind the increasing value of ESI of India till 2010 may be the change structure of Indian export basket from being export of primary products to manufacturing and services sector which keep it close to the U.K export structure though it cannot be perfect overlap due to the restrain and comparative advantage of both countries in highly diversified products.

H) Herfindhal-Hrischman Index:

This index is the measure of the degree of market concentration. It has been standardized to obtain values ranking from 0 to 1.

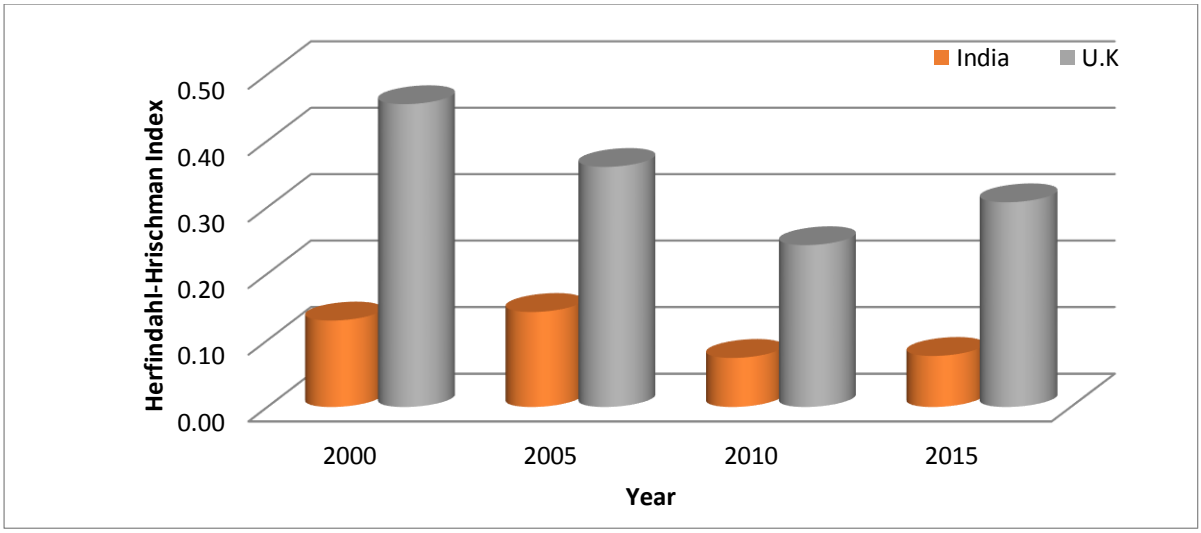
Table 4.10 depicts that the concentration index for exports of India and U.K during the study period of 2000,2005,2010,2015. The value of HHI of India was less than 0.50 indicates that exports of India is geographical diversified and after every half decade its export has changed and shows that there is not concentration of market in few hands and with every passing year India is exploring new products for its exports basket and another interpretation of it is also that India has not be dependent on few products for income while trading with U.K which will keep her safe during adverse scenario.

Table 4.10: India And U.K Herfindhal-Hrischman Index (Percent)

Year	India	U.K
2000	0.13	0.46
2005	0.14	0.36
2010	0.07	0.24
2015	0.08	0.31

Source: UN Comtrade 2015

Figure VI: Herfindahl–Hrischman Index of India and U.K (percent)



Note: 0= No Concentration and 1= Full Concentration
Source: Table 4.10

The figure VI shows export market concentration index in which the structure of only U.K shows a concentration of market with the percentage of nearly 50 percent while the India export market concentration structure is more or less near about 15 percent which with each passing year is declining amplifying that export concentration of Indian exports to U.K is not in just few hand but it is diversifying and continuously adding new products to its export basket as shown in Table 4.3. While the HHI of U.K is near to 0.50 in 2000 meaning there is concentration of exports in few commodities, although with passing decade HHI value falling continuously but it is nearly threefold higher than

India HHI corresponds to each year which is not sign of good and healthy scenario for U.K export structure to India.

Thus, the another fact which comes out from the together analysis of complementarity index and export similarity index is that both have compatibility in their bilateral trade while dissimilar behavior in third country shows the good sign of enhancing the trade between them.

I) Import Dependency Index (IDI) and Export Propensity Index (EPI):

Import penetration is the dependency of one country on imports in order to fulfill the demand requirements of their country. The value of IDI lies between 0 to 100. Zero means self- sufficiency while 100 means whole demand of country is fulfilled by imports. Export propensity index shows how much export of the country total production exported to world or respective country. It also ranges between 0 to100 percent where 0 implies as no export while 100 shows whole production is exported.

Table 4.11: Export Propensity Import dependency index of India and U.K with World (percent)

Year	EPI_{IW}	IDI_{IW}	EPI_{UW}	IDI_{UW}
2000	8.89	10.87	18.97	22.92
2001	8.88	10.12	18.19	22.21
2002	9.56	10.81	22.14	22.14
2003	9.60	11.47	16.06	18.57
2004	10.52	13.29	15.45	20.56
2005	12.03	16.10	16.24	20.69
2006	12.77	17.71	17.72	22.40
2007	11.78	16.67	15.29	21.28
2008	14.86	23.25	17.26	23.38
2009	12.95	18.31	15.54	22.02
2010	12.90	19.04	17.56	24.05
2011	16.60	23.39	19.93	25.67
2012	15.87	24.15	18.29	24.28
2013	18.07	23.39	20.21	23.29
2014	15.55	21.03	17.09	18.10
2015	12.75	17.76	16.36	20.89

Source: UNCOMTRADE 2015 Note: I- India , U- U.K and W= World

EPI_{IW}= Export Propensity Index of India with World, EPI_{UW}= Export Propensity Index of U.K with World, IDI_{IW}= Import Dependency Index of India with World, IDI_{UW}= Import Dependency Index of U.K with World

Table 4.12: Export Propensity and Import Dependency Index of India and U.K

Year	EPI_{IU}	IDI_{IU}	EPI_{UI}	IDI_{UI}
2000	0.46	0.66	0.24	0.19
2001	0.44	0.56	0.19	0.19
2002	0.46	0.50	0.17	0.19
2003	0.45	0.48	0.20	0.19
2004	0.47	0.46	0.19	0.16
2005	0.59	0.52	0.22	0.24
2006	0.57	0.42	0.19	0.21
2007	0.51	0.39	0.20	0.28
2008	0.54	0.51	0.28	0.31
2009	0.48	0.30	0.20	0.33
2010	0.38	0.30	0.26	0.39
2011	0.49	0.41	0.34	0.42
2012	0.44	0.36	0.28	0.33
2013	0.57	0.35	0.30	0.36
2014	0.47	0.23	0.21	0.27
2015	0.43	0.26	0.21	0.33

Source: UNCOMTRADE 2015 Note: I- India, U- U.K and W= World

EPI_{IU}= Export Propensity Index of India with U.K, EPI_{UI}= Export Propensity Index of U.K with India, IDI_{IU}=Import Dependency Index of India with U.K, IDI_{UI}= Import Dependency Index of U.K with India.

Table 4.11 and 4.12 shows that the value of Export Propensity Index of India with U.K (EPI_{IU}) is fluctuating between 0.50 percent which means that India exports to U.K at a large amount and exported more out of total production. While U.K Export Propensity Index of U.K with India (EPI_{UI}) is revolving around 0.30percent which means that U.K exports to India is less than India's export to U.K. Further, Table 4.12 depicts that Export Propensity Index of India with U.K (EPI_{IU}) is increasing till 2006 i.e 0.46 percent in 2000 to 0.57 percent in 2006 then the value shows the steadily fluctuating trend and set at 0.43 in 2015. On the other hand, India's Import Dependency Index of India with U.K

(IDI_{IU}) shows the downward trends implies that the India's import dependency has decreased from U.K imports while its exports have been increasing which balancing India's trade balance with U.K. While Import Dependency Index of U.K with India (IDI_{UI}) value has been increasing continuously increased which shows that U.K dependency on Indian imports is increasing, showing India's export market is flourishing in the U.K market.

J) Vertical Intra Industry Trade:

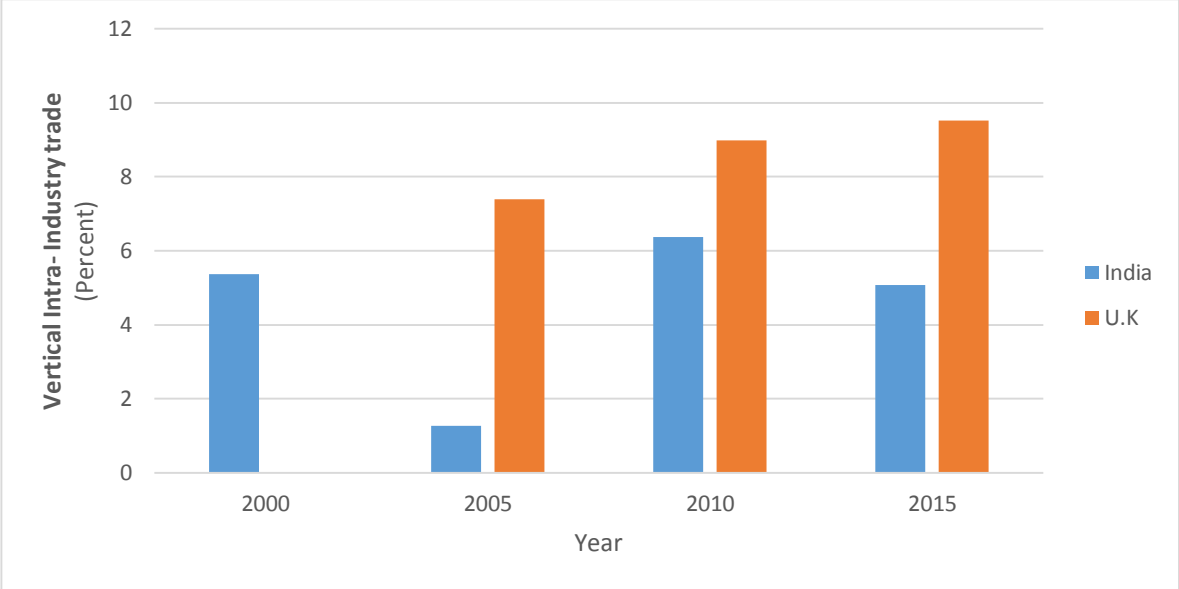
Vertical intra-industry trade (VIIT) is the exchange of commodities characterized by different qualities. VIIT is considered to be particularly relevant to trade among unequal trading partners with different income levels (Ekanayake, 2009)

Table 4.13: Vertical Intra Industry Trade of India and U.K (percent)

Year	India	U.K
2000	5.36	0.00
2005	1.27	7.39
2010	6.37	8.99
2015	5.08	9.53

Source: UN Comtrade 2015

Figure VII: Vertical Intra- Industry trade of India and U.K (Percent)



Source: Table 4.13

The results of Table 4.13 shows that the composition of India top 20 exports is particularly vertical in nature and shows a mix trend of fluctuations during the study period. The starting period of study shows that there is no contribution of VIIT in the countries IIT. However, the share of VIIT in India's IIT does not show consistency with time as in 2000 it is 5.38 percent, in 2005 (1.27 percent) and in 2010 (6.3 percent) whereas in 2015, it again declines to 5.08 percent because of new composition in export basket of India as shown in the Table 4.3. While U.K share of VIIT has been jumped to 9.53 from 0 percent from 2000 to 2015. Along with it, the Table and Fig have also shown that share of VIIT in U.K'S IIT shows a steady increasing trend showing that there is an increasing trade of manufactured products to India as the composition of India's export is inclined more towards manufactured products along with its imports. Thus, both countries should incorporate their efforts more in research and development in order to enhance their intra industry trade flows in VIIT. Other main finding of this index is that horizontal type intra industry trade has not been the share of top 20 products of India and U.K both which shows that there is an existence of perfect competition and not a concentration of market in few commodities because in the case

of horizontal IIT, the typical ingredients of imperfectly competitive market structures play the dominant role; While, in the case of vertical IIT, the dynamics of product differentiation (by quality) operate according to a Heckscher-Ohlin model based on comparative advantages deriving from resource endowments and factor proportions (Ekanayake, 2009).

This chapter shows India-U.K intensity, complementarities, its contribution towards intra industry development, vertical intra industry and other indexes which highlighted that both nations are utilizing its trade potential but the trend of last year shows declining trend in their trade volume which is the cause of the concern as both nation has their strong relation since British empire. Further the chapter also puts light on the issue that India-U.K trade relation has reached at the stage of precondition of take-off but for the proper take-off, both nations have to tie up their relation more intensely so that trade can be boosted.

Chapter-5

India- U.K FTA: A SMART Analysis

This chapter has focused on accessing the quantitative gains from proposed India- U.K FTA. Presently, one of the most important opportunity for India is the India-EU FTA, which is under process since 2007 and India is of the faith of having huge benefit from such agreement as India has good trade relation with the U.K since its colonial periods. But after 23rd June 2016, India-U.K trade relationship is in the pool of indeterminate circumstances, as thereby both have to redefine their trade priorities and potential to make their bilateral relation strong and get benefit. Thus, a partial equilibrium market analysis has been used to have quantitative access of the possible effects of trade policy for India- U.K FTA.

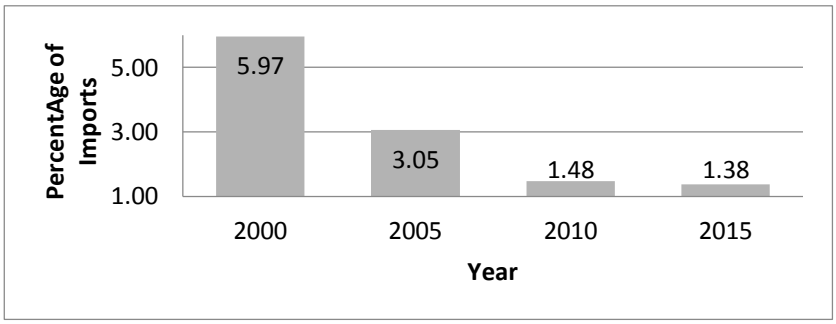
The last chapter has analyzed that increase in the bilateral trade in goods between the two countries has shown the changing demand structure along with the attainment of new comparative advantages by both the economies in various complementary sectors. The Indian export basket has conventionally consisted of low value added products which has shifted over time to a broad range of semi-manufactured high value products, while the Indian import basket was largely comprise of metals as of Copper Waste And Scrap, Steel And Aluminum has balanced its imports into semi-manufactured product as of Space Craft, Ferrous Waste And Scrap, Iron Or Steel, Silver In Unwrought Forms and various other semi manufactured products.

During 2000-2015, India‘s total merchandise trade with the U.K has faced various ups and downs, whereas, bilateral trade has increased 40 times during the study period. The trend has shown that the trade has increased from US$ 0.56 billion in 2001 to US$ 15.8 billion in 2008. While share of U.K in India‘s exports lies in the range of 1 percent to 30 percent and imports lies in the range of 3 percent to 50 percent during 2000-2015. And the share of India in U.K exports lies in the range of 3 percent to 68 percent and its imports lies in the range of 5 percent to 20 percent approx. during 2000-2015.

Figure I shows that Indian imports from U.K. It represents that India is importing approximately US$ 5.97 billion in 2000 which has decreased to US$ 1.38 billion in 2015. During this period, the U.K tariff rate on imports from India has also declined

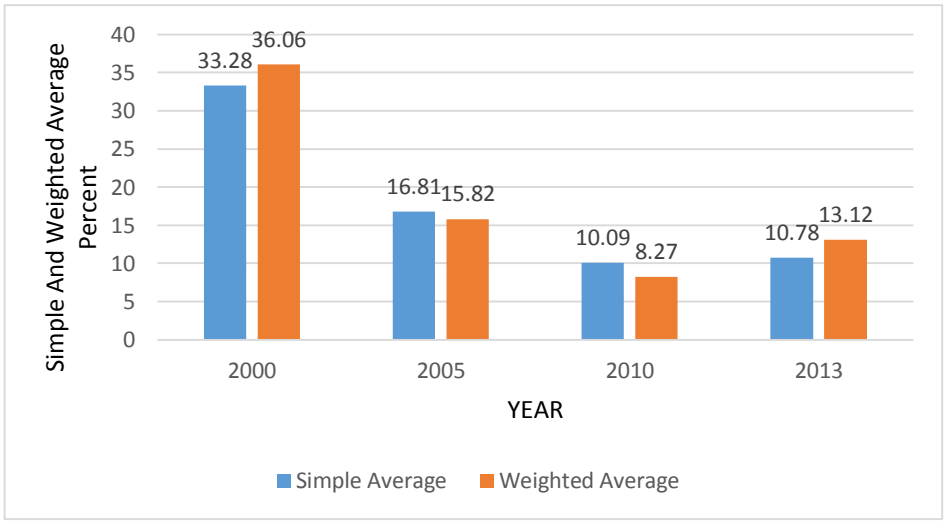
substantially as well (figure II). India's imports from U.K in the time period of 2000-2015 are intensely proportionate in HS chapter 28-38 (Chemicals) 68-71(Stone Glass), 84-85 (Mech - Elec), 72-83 (Metals), 86-89 (Transport), 90-99 (Miscellaneous) etc. Another important fact comes out from the computed data is that most of the India's import items are highly incorporated in low tariff HS chapters. While fig. III and Table 5.1 together has shown that all the chapters in the list is totally different, which concludes that U.K firm's exports only low tariff stretching products. Thus, tariffs act as significant trade barrier in trade between India and U.K.

Figure I: Indian Imports from U.K (Percent)



Source: WITS Trade Database (2015)

Figure II: ***India Tariff Rates on Imports from U.K (Percent)***

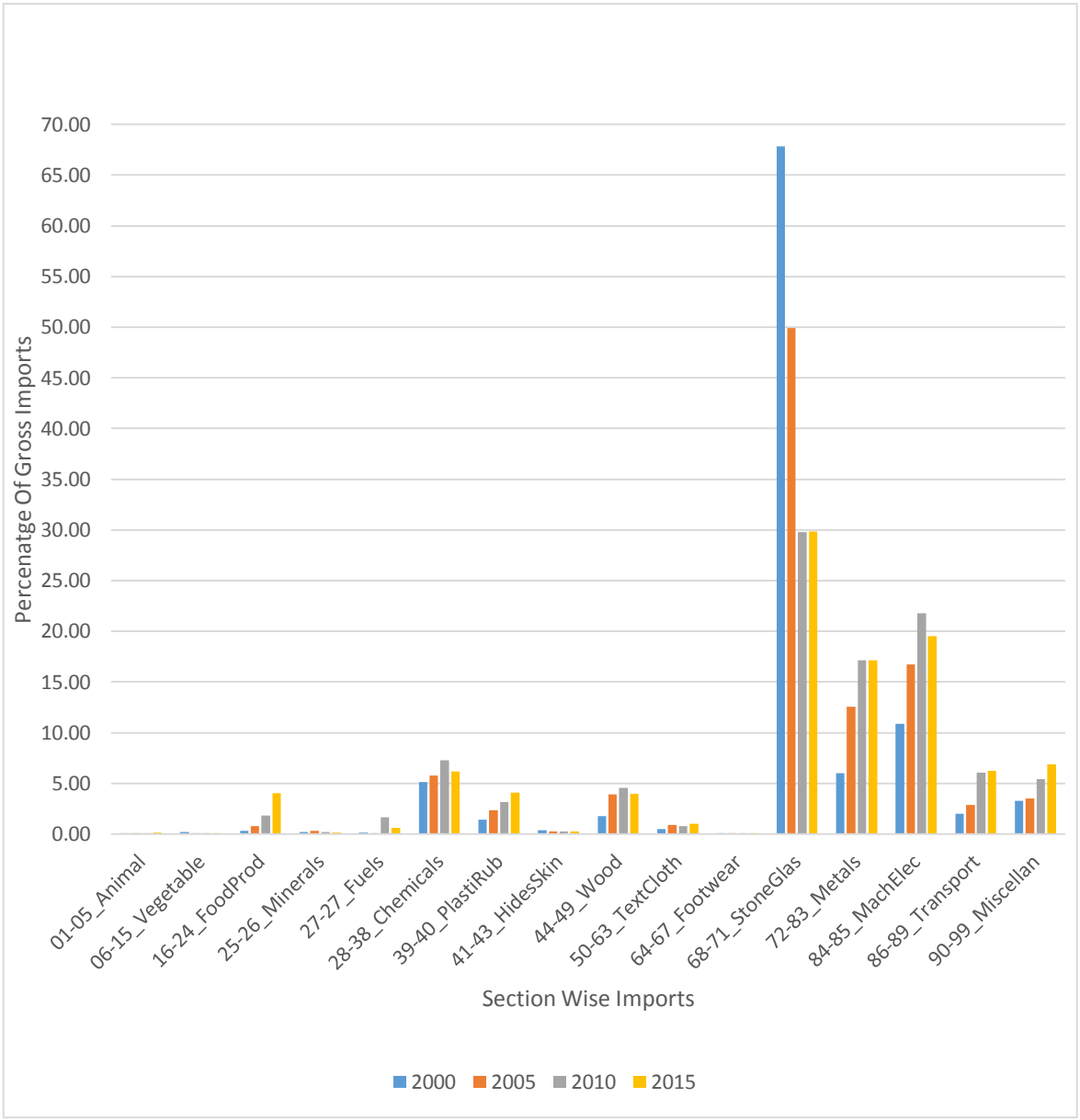


Note: As defined by WITS: Simple Average = Sum of duties/Number of duties

Weighted Average = (Sum of duties collected/Total imports) X 100

Source: WITS Tariff Database (2015)

Figure III: Section Wise Imports of India from U.K (Percent)



Source: WITS Trade Database (2015)

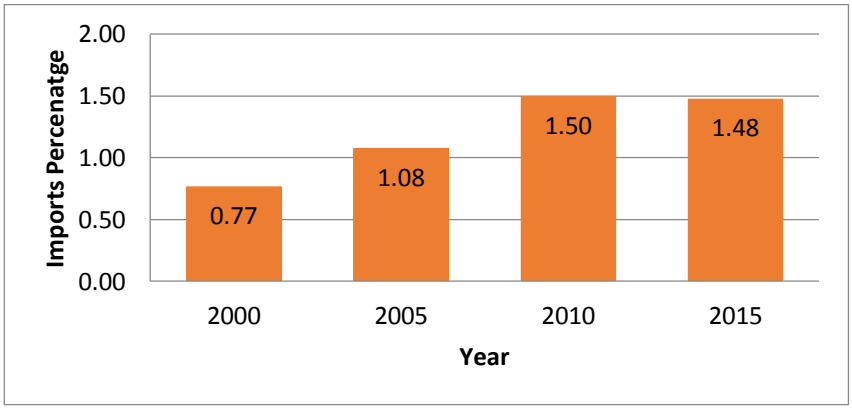
Table 5.1: India Tariff rate on Imports from U.K (Section Wise Percent)

2000			2005			2010			2015		
Product code	Simple Average	Weighted Average	Product code	Simple Average	Weighted Average	Product code	Simple Average	Weighted Average	Product code	Simple Average	Weighted Average
24	44.28	32.66	24	44.3	32.1	24	39.7	61.9	24	45	45
16	18.34	20.18	16	18	19.2	16	17.1	19	16	18	20
20	17.64	16.53	20	17.3	16.4	20	17.1	16.2	20	17	17
17	13.1	13.39	17	13.1	13.2	17	13.1	13.2	11	12	8.5
61	12.23	12.15	61	11.7	11.9	11	12.1	8.18	61	12	12
62	11.87	11.84	62	11.3	11.6	61	11.7	11.9	17	11	13
64	10.95	5.92	64	10.9	6.75	62	11.3	11.6	62	11	12
19	10.65	12.23	19	10.7	12.8	64	10.8	7.15	64	11	7.3
63	10.56	11.39	63	10.4	11.2	19	10.7	12.8	3	11	13
11	10.32	8.44	3	10.3	10.3	63	10.2	10.8	19	11	13

Source : Author Calculations from WITS Tariff Database 2015

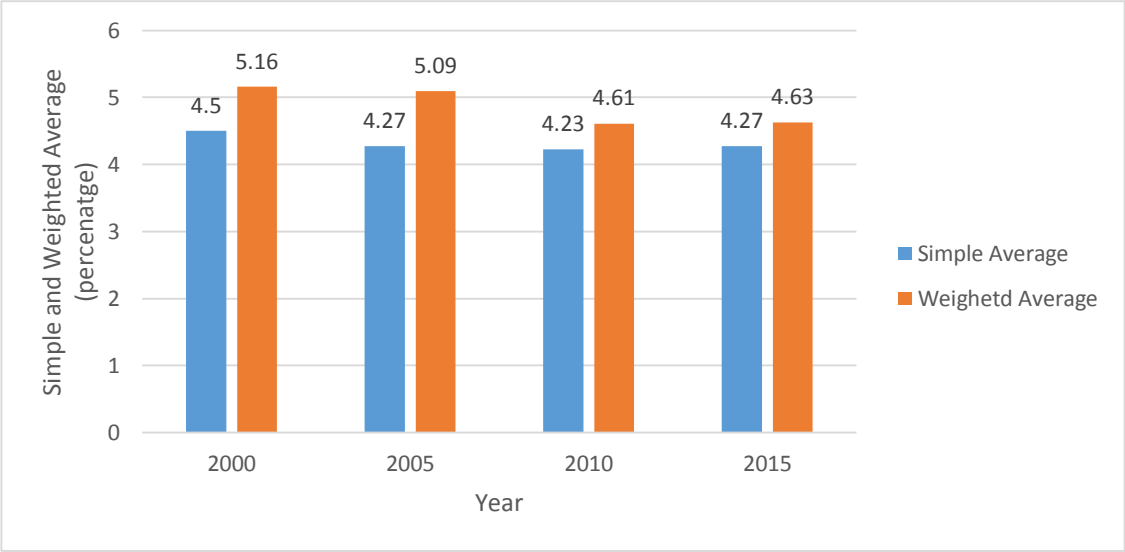
Note: 3- Fish and crustaceans, and other aquatic I, 11- Products of the milling industry; malt; starches, 16- Preparations of meat, of fish or of crustaceans, m, 17- Sugars and sugar confectionery, 19- Preparations of cereals, flour, starch or milk; pa, 20- Preparations of vegetables, fruit, nuts or other p, 24- Tobacco and manufactured tobacco substitutes, 61- Articles of apparel and clothing accessories, knit, 62- Articles of apparel and clothing accessories, not, 63- Other made-up textile articles; sets; worn clothin, 64- Footwear, gaiters and the like; parts of such arti.

Figure IV: U.K Imports from India (Percent)



Source: WITS Tariff Database (2015)

Fig. V: U.K Tariff rate on Imports from India (Percent)

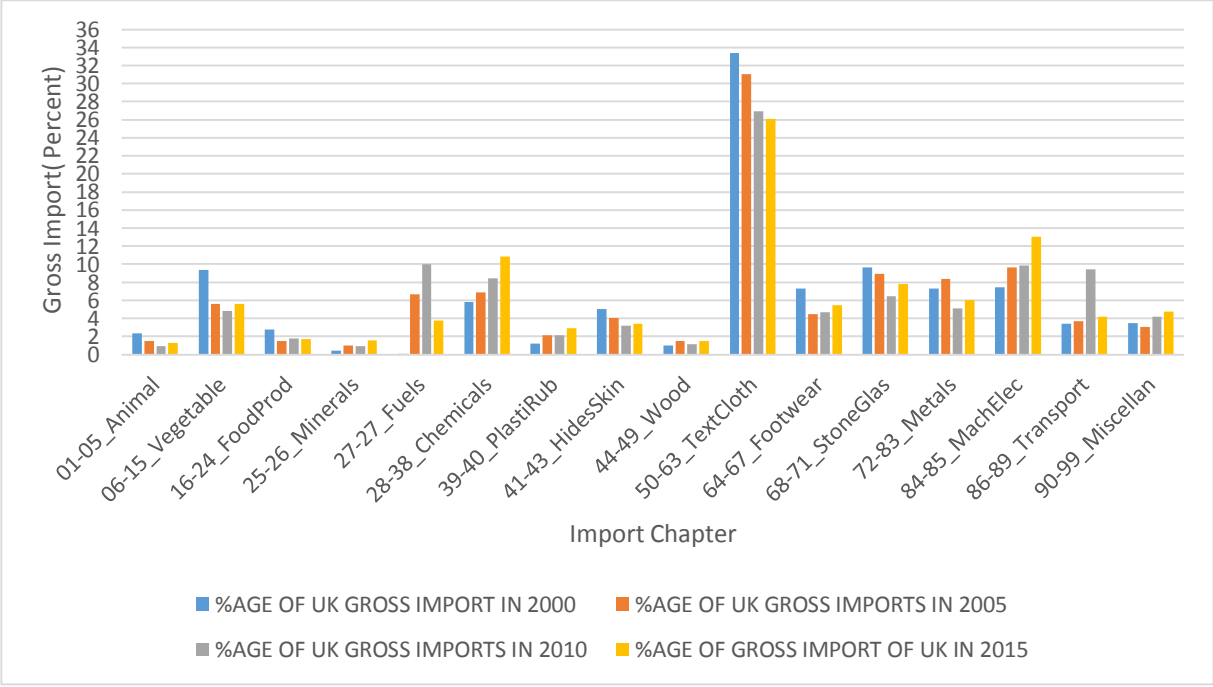


Note: As defined by WITS: Simple Average = Sum of duties/Number of duties

Weighted Average = (Sum of duties collected/Total imports) X 100

Source: WITS Tariff Database (2015)

Figure VI: Section Wise U.K Imports from India (Percent)



Source: WITS Tariff Database (2015)

Table 5.2: U.K Tariff Rate on Imports from India (Section-wise) (Percent)

2000			2005			2010			2013		
Product code	Simple Average	Weighted Average	Product code	Simple Average	Weighted Average	Product code	Simple Average	Weighted Average	Product code	Simple Average	Weighted Average
22	131.02	202.1	22	111.24	179.19	22	110.38	149.2	22	113.98	149.47
4	45.67	50.86	9	81.11	97.19	9	73	96.19	9	70.79	90.3
17	40.83	53.78	15	46.43	34.02	6	41.67	58.04	10	70	70
5	38.5	38.5	17	45.5	47.99	4	37.5	31.43	17	38.5	38.23
8	38.5	38.5	21	40	62.14	17	36.88	55.63	21	38	66.4
9	38.5	38.5	8	38.57	30.55	7	32.5	37.42	15	35.14	28.17
11	38.5	38.5	6	35	58.31	21	31.73	37.19	4	34.29	31.31
19	38.5	38.5	87	34.77	44.03	1	30	30	87	33.47	65.79
24	38.5	38.5	4	33.64	33.58	2	30	30	1	30	30
31	38.5	38.5	19	32.73	40.82	16	30	30	2	30	30

Source: Author Calculations from WITS Tariff Database 2015

Note : 1- Live animals, 2- Meat and edible meat offal,4- Dairy produce; birds' eggs; natural honey; edible, 5- Products of animal origin, not elsewhere specified, 6- Live trees and other plants; bulbs, roots and the, 7- Edible vegeTables and certain roots and tubers,8- Edible fruit and nuts; peel of citrus fruit or mel, 9- Coffee, tea, maté and spices, 10- Cereals, 11- Products of the milling industry; malt; starches;, 15- Animal or vegeTable fats and oils and their cleava, 17- Sugars and sugar confectionery, 19- Preparations of cereals, flour, starch or milk; pa, 21- Miscellaneous edible preparations, 22- Beverages, spirits and vinegar, 24- Tobacco and manufactured tobacco substitutes, 31- Fertilisers, 87- Vehicles other than railway or tramway rolling sto

Figure IV shows that U.K imports from India have increased to US$ 1.05 billion from US$ 0.77billion which is very insignificant increase in trade during the time span of 2000-2015. While India's tariff on imports from U.K is far less or more on same range from 4 percent to 5 percent U.K imports from India are concentrated in HS chapter 50-63 (Text Cloth), 68-71(Stone Glass), 84-85 (Mach-Elec), 86-89(Transport), 06-

15(Vegetable), 27-27(Fuels), 28-38(Chemicals), 64-*67(Footwear's)* as shown in fig (6).The above details shows that India's export to U.K is still concentrated in low valued goods but appreciably diversification is enhancing supported by its comparative advantage. U.K's imports from India are also concentrated in low tariff HS chapters. Table 5.1 shows the first 10 HS exports chapters of India bears tariff from U.K in descending order. The tariff rate of India lies in the range of 30 Percent to 150 Percent. While examining the fig VI and Table 5.2 simultaneously, it seems that like India, U.K's imports from India has rooted its arms in low average tariffs. Thus, it seems that tariffs act as significant trade barrier of India- U.K bilateral trade

SMART ANALYSIS:

The term Free Trade has its origin from Adam Smith publication of "The Wealth of Nations" in 1776 where he concluded that free trade among countries based on its Absolute Advantage leads to the economic welfare of respective regions and underlies the multilateral trading system. Free trade involves the removal of tariffs, quotas or other restrictions on international trade, enable increased in the production of good and services world widely. Thereby, WTO concept of multi trade agreements has originated back to the Bretton Woods Agreement in 1947 and the subsequent creation of the United Nations (UN) Article 13 of the UN Charter 9 in which the UN continued in its efforts to reduce tariffs through a series of multilateral negotiations and it is a widely held view that these trade rounds have been a significant cause of progress in international trade liberalization (Allen et, al. 2012) where as in recent year the trend tilted towards bilateral trade agreement because the process of trade in WTO has become inefficiently slow. In the last two decades, there has been propagation in the number of preferential trade agreement being in the form of bilateral trade agreement or regional trade agreement. According WTO website, there are 625 notifications of RTA's till Feb, 2016 reported to WTO out of 454 were in force out of which 267 are currently in force and other are under negotiation (www.wto.org, 2016).

Thus, to analyze the quantitative impact of trade agreement upon countries, various trade indicators has been discussed in the previous chapter which may provide limited answers to questions about the economic effects of an FTA in an individual market. Thus, for a more comprehensive analysis a simulation model has been used based on

standard microeconomic theory which supports trade policy analysis. Various trade simulation models are there to have detailed and scrutinize analysis as Gravity Model, Global Trade Analysis Project (GTAP), Computed General Equilibrium analysis (CGE) and Software for partial equilibrium market analysis (SMART) etc.

SMART Model for India-U.K Economic Corridor:

With the use of SMART model, it has been tried to analyze what will be the economic effects of preferential tariff liberalization if both nations will take the initiative of strengthening their economic relations which might be lag behind due to some hard rule of European Union trade policies with non-Member countries. The model is applied with the assumption of eliminating the tariff on imports from each other countries in a various pre-assumed executive manner while keeping the same trade pattern with other countries as it existing. The simulation is done keeping the assumption of SMART model and evaluating the various trade and economic effects upon both the nations. The data required for the SMART analysis has been collected and computed from COMTRADE, TRAINS and official site of WITS for trade and tariff, which also include the parameter values for import demand elasticity and substitution elasticity estimated by World Bank, but the values can be changed as per requirement of the study or nature of trade flows.

In this analysis, an effort has been undertaken for “Proposing FTA” between India-U.K based on its last 15 years trade for which various experimental scenarios has been designed in order to analyses at what level the India-U.K FTA should go so that it will ultimately benefit both the nations with the changes reflecting in the values of trade creation, diversion, welfare and revenue effects for specific product and origin of flows (Mahmood et, al. 2014).

Simulations and Results

The study has attempted to predict what would be the trade environment if India-U.K is going to sign FTA and its relation with EU after BREXIT. Thus, SMART analysis is used to capture all the possible partial outcome of India-U.K a hypothetical FTA by creating various scenarios on given details in the analysis itself as of elasticity, tariff elimination and trade flows. In a concrete analysis, there are following three scenarios formed:

Scenario I: The simulation of first scenario studies, what will be the effect on trade when there is frequent reduction in tariff through SWISS formula.

Scenario II: The simulation of the scenario II considers, India top five exports products to U.K with the full access to these products at full tariff liberalization environment.

In this section, the study focuses on analyzing how far trade with the European Union after BREXIT benefited India by comparing it with the simulated trade effects of European Union without U.K with the simulated trade effects of trade only with U.K.

Effect on India of 25 % Tariff Reduction:

The study has attempted to analyze whether the India's trade with U.K is beneficial or not and whether India or U.K will be profiTable to trade more when there is a reduction of tariff by 25 Percent. Table 5.3 and Table 5.4 show the simulated trade effects of only top twenty products, which have the highest trade creation capacity. As the India's trade creation in Automobiles with reciprocating piston engine di (870324) with U.K is US$ 671320.31 thousands only, it is US$ 1332846.99 thousands with EU as a whole (excluding U.K). While the revenue loss of India, for the same product is less with U.K i.e US$ 114729.70 thousands than EU (excluding U.K) i.e US$ 360432.38 thousands. And the welfare effect of India for the similar product is US$ 412512.59 thousands with U.K which is less than the welfare value of US$ 1202518.88 thousands with EU. More precisely, the Table 5.3 & Table 5.4, further depicts that the product shows highest trade creation in Automobiles with reciprocating piston engine di (870324), is different from the product shows highest trade diversion that Diamonds non-industrial unworked or simply sawn (710231), which is US$ 28874.86 thousands with U.K and for the same product it is highest with EU (excluding U.K) by the amount US$ 134160.67 thousands. While revenue loss to India is found highest for product Whiskeys (220830) by US$-93806 thousands when trade with only U.K. While it is highest revenue loss to India in Diamonds non-industrial unworked or simply sawn (710231) with EU (excluding U.K) – with the value of US$ -215945 thousands, which is also more than any product loss to India under 25 % tariff reduction. On the other hand, in aggregated sense, with the reduction of 25 percent tariff there is a total creation of India by amount of US$ (1583917) thousands which is more than total diversion of US$ -131679.4 thousands amount, when trading with U.K only.

Table 5.3: Simulated Net Trade Effect with Tariff Elimination (25 percent) ('000 US$)

Trade Effect of India with U.K				Trade Effect on India without U.K		
Product Code	**Trade Creation**	**Trade Diversion**	**Trade Total**	**Trade Creation**	**Trade Diversion**	**Trade Total**
870324	671320.31	7850.31	679170.63	1332846.99	687.23	1333534.26
870333	275169.09	7891.79	283060.88	410501.83	5865.55	416367.39
870332	189821.75	9737.01	199558.77	373586.07	1156.86	374742.94
220830	156409.28	11100.33	167509.61	3680.30	547.05	4227.36
710691	91000.70	37532.37	128533.06	13954.79	5371.16	19325.94
710231	46983.25	28874.86	75858.11	478403.14	134160.67	612563.82
220820	35764.82	1891.08	37655.91	124295.43	4525.44	128820.86
220890	25097.88	4774.25	29872.14	1171.21	125.36	1296.57
220850	20600.60	2211.55	22812.14	25706.98	695.75	26402.72
220710	8258.53	269.32	8527.85	6331.24	243.69	6574.93
710812	7470.28	10875.01	18345.30	2107.29	3062.37	5169.66
860900	5443.83	27.81	5471.64	28400.01	132.56	28532.56
841583	5352.16	101.86	5454.02	8739.97	143.11	8883.08
350300	5111.12	671.05	5782.17	6338.17	507.01	6845.18

Contd...

Trade Effect of India with U.K				Trade Effect on India without U.K		
854370	4915.33	308.28	5223.61	18254.00	958.58	19212.58
871190	4182.17	66.10	4248.28	179.20	2.99	182.19
710692	4032.42	2057.33	6089.75	1560.10	723.07	2283.17
240311	3923.85	13.85	3937.70	312.53	1.16	313.68
440799	3499.99	240.35	3740.34	875.63	48.88	924.51
350691	3463.05	45.04	3508.09	47083.36	430.00	47513.36
220590	3441.22	42.05	3483.28	10563.66	8.50	10572.16
761090	3422.98	45.07	3468.05	41129.54	452.54	41582.08
220870	3339.43	4021.22	7360.65	2635.14	1822.03	4457.17
330730	3003.67	52.55	3056.22	2361.10	35.64	2396.74
720421	2889.55	978.97	3868.52	7475.19	1888.57	9363.76
Total	1583917	131679.4	1715597	2948493	163595.8	3112089

Source: Author Calculations from WITS SMART Analysis 2015

Table 5.4: Simulated Results For Revenue And Welfare Effect of India with tariff elimination (25 percent) ('000 US$)

Simulated Effect of India on Revenue and Welfare with U.K				Simulated Effect of India on Revenue and Welfare without U.K		
Product Code	Export Change In Revenue	Revenue	Welfare	Export Change In Revenue	Revenue	Welfare
870324	679171	114730	412513	1333534	360432	1202519
870333	283061	34665.7	177081	416367	93930.1	414399
870332	199559	11041.4	125210	374743	54500.6	338069
220830	167510	-93806	134065	3911.14	-93017	137220
710691	128533	-37745	8600.73	19325.9	-43430	9834.75
710231	75858.1	-19759	4661.1	612564	-215945	48106.3
220820	37655.9	1604.21	36797.7	128821	10342.7	137674
220890	29872.1	-87987	21512.5	1296.57	-87736	22516.4
220850	22812.2	-4537.1	19663.8	26402.7	-5355.4	39692.2
220710	8527.85	769.51	7504.16	6574.93	1312.49	12595.1
710812	18345.3	-7816.3	746.1	5169.66	-10021	956.23
860900	5471.64	367.31	533.82	28551.6	2285.24	3134.56

Contd…

Simulated Effect of India on Revenue and Welfare with U.K				Simulated Effect of India on Revenue and Welfare without U.K		
841583	5454.02	298.71	520.65	9855.8	841.97	1412.39
350300	5782.17	-208.32	937.77	6845.19	-414.61	1934.53
854370	5223.61	40.9	353.67	19015.3	198.66	1646.4
871190	4248.28	723.04	3054.74	182.19	752.73	3168.14
710692	6089.75	-1683.8	390.15	2283.17	-2327.2	534.26
240311	3937.7	517.72	877.08	313.69	558.98	944.79
440799	3740.34	-31.19	328.07	1079.06	-38.92	416.85
350691	3508.09	212.32	342.32	47793.4	3133.02	4626.28
220590	3483.28	596.15	3054.9	10572.2	2631.66	12004.2
761090	3468.05	209.72	339.86	44151.2	2893.23	4403.18
220870	7360.65	-16061	3502.12	4456.12	-24440	5121.06
330730	3056.22	167.38	285.05	2396.74	299.33	495.17
720421	3868.52	-640.86	143.35	9372.9	-2292.9	504.24
Total	1715598	-104332	963018.6	3115578	49094.68	2403928

Source: Author Calculations from WITS SMART Analysis 2015

While, total creation of India with EU (excluding U.K) is US$ -2948493 thousands which is also more than trade diversion i.e US$ 163595.8 thousands and also shows more difference between creation and diversion than U.K. Thus, it shows that India will be benefited more by tariff reduction in the form of trade creation with EU (exclude U.K). While, computing the aggregate revenue loss of India with U.K, it is US$ -104332 thousands. Whereas revenue loss of India with EU (excluding U.K) is showing positive effect with the amount US$49094.68 thousands .Therefore, India has to work simultaneously in reducing its revenue loss in products which show highest revenue loss along with the production of products showing highest trade creation. On the contrary, the product which shows highest trade diversion from rest of world to India should be given special attention. Thus, fact which emerges from the above Table is that trade creation, diversion, welfare etc. of India with U.K(14 products) is less than simulated net trade creation ,welfare and revenue effect with EU, which is opposite to the results of Scenario I simulated net trade effects with U.K trade creation, welfare and trade diversion to U.K. Thus, the possible fact emerges out of this is that India-U.K trade will flourish more in fully liberalized trade scenario then in restricted trade scenario. Another reason behind it is the tariff scenario which is prevailing with U.K alone is different to that of U.K with EU as whole. More precisely, although the tariff of U.K or any member country of EU is considered similar to EU as a whole.

Effect of India at Full Liberalization:

Table 5. 5: Simulated Net Trade Effect of India with EU at Full Liberalization ('000 US$)

(A) Net Trade effects of India with EU (excluding U.K)								
Product Code	Trade Creation with EU	Trade Diversion	Trade Total	Exports Before	Exports After	Export Change In Revenue	Revenue	Welfare
220830	4293.687	664.8057	4958.493	2068.945	7027.439	4958.494	-148543	140078.4
710691	48841.75	19792.61	68634.36	231713.8	300348.1	68634.36	-188271	27641.33
710812	7375.508	10737.55	18113.06	79372.57	97485.63	18113.06	-40948.8	3330.579
720449	7952.558	13085.25	21037.8	246593.3	267651.7	21058.33	-27610.3	724.016
760200	0	0	0	0	0	0	0	0
Total	68463.5	44280.2	112744	559749	672513	112764	-405373	171774
(B) Net Trade effect of India with only U.K ('000 US$)								
Product Code	Trade Creation	Trade Diversion	Trade Total	Exports Before	Exports After	Export Change In Revenue	Revenue	Welfare
220830	182477.5	11100.33	193577.8	87928.13	281505.9	193577.8	-148543	136858.1
710691	318502.4	130971.5	449473.9	1511031	1960505	449473.9	-164200	24906.11
710812	26145.99	38081.64	64227.63	281373.8	345601.4	64227.63	-31945.5	2601.471
720449	8972.384	17005.02	25977.41	277945.2	303922.6	25977.41	-14747.5	413.782
760200	0	0	0	127475.7	127475.7	0	0	0
Total	536098	197158	733257	2285754	3019011	733257	-359436	164779

Note: Top 5 Imported products of India from U.K.
Source: Author Calculations from WITS SMART Analysis2015

Table 5.5 shows the comparison of simulated results of net trade, revenue and welfare effects of India at 25 percent tariff reduction with U.K only and with EU (excluding U.K). The full liberalization is applied on top five imported products of India from U.K. Thus, the results has shown that, the India's trade creation in product Whiskeys (220830) with only U.K is US$ 182477.5 thousands, which is forty times fold than trade creation with EU (excluding U.K) i.e US$ 4293.687 thousands. While the similar results has found for trade diversion, where trade diverted from rest of world to India is more with U.K only than EU (excluding U.K) which is US$ 11100.33 thousands and US$ 664.81 thousands. While revenue loss is similar in both situations i.e US$ -148543 thousands. However, the welfare effect on India is more with U.K only i.e US$ 140078.4 thousands and it is US$ 136858.1 thousands with EU (excluding U.K). On the other hand in aggregate view, total trade creation of India with EU (excluding U.K) at 25 % tariff reduction is US$ 68463.5 thousands which is more than its trade diversion of amount US$ 44280.2 thousands. However, revenue effect shows negative results of US$ -405373 thousands, whereas welfare effect is US$ 171774 thousands. While the aggregate simulated results of India with U.K only shows trade creation of US$ 536098 thousands which is with large difference from its trade diversion of US$ 19715.8 thousands. It implies that trade creation is more by the full liberalization which is restricted before due to high imposition of tariff. While, revenue effect of India with U.K only is negative with the amount of US$ 359436 thousands and its welfare effect is US$ 164779 thousands. However, on comparing the net simulated effects under full liberalization, it is out looking that overall trade creation of India is less with EU (excluding U.K) than with only U.K, as it is US$ 68463.5 thousands and US$ 536098 thousands. While, trade diversion of India is less with EU (excluding U.K) than with only U.K i.e US$ 44280.2 thousands and US$ 197158 thousands. As a concluding remark of the Table 5.5 is that India trade will enhance more with U.K than with EU (excluding U.K) under full liberalization.

Table 5.6: Simulated Net Trade Effect of India with U.K ('000 US$)

Simulated Net Trade Effect (at 25 percent tariff)				Simulated Net Trade Effect (at 10 percent tariff)			
Product Code	Trade Creation	Trade Diversion	Trade Total	Product Code	Trade Total	Trade Creation	Trade Diversion
870324	671320.3	7850.31	679170.6	870324	772034.3	762864.1	9170.25
870333	275169.1	7891.79	283060.9	870333	321722.3	312692.2	9030.13
870332	189821.8	9737.01	199558.8	870332	226787.7	215706.5	11081.14
220830	156409.3	11100.33	167509.6	710691	224873.7	159251.2	65622.53
710691	91000.7	37532.37	128533.1	220830	182173	171072.6	11100.33
710231	46983.25	28874.86	75858.11	710231	132779.1	82220.69	50558.39
220820	35764.82	1891.08	37655.91	220820	41189.36	39117.78	2071.59
220890	25097.88	4774.25	29872.14	220890	32225.06	27450.81	4774.25
220850	20600.6	2211.55	22812.14	710812	32107.14	13073	19034.14
220710	8258.53	269.32	8527.85	220850	24953.11	22531.9	2421.21
710812	7470.28	10875.01	18345.3	710692	10655.87	7056.73	3599.14
860900	5443.83	27.81	5471.64	854370	9768.15	9191.67	576.48
841583	5352.16	101.86	5454.02	860900	9575.42	9526.7	48.72
350300	5111.12	671.05	5782.17	841583	9544.52	9366.29	178.24
854370	4915.33	308.28	5223.61	220710	9327.86	9032.76	295.1
871190	4182.17	66.1	4248.28	350300	8673.35	7666.68	1006.67
710692	4032.42	2057.33	6089.75	720449	8662.52	2990.8	5671.73
240311	3923.85	13.85	3937.7	220870	8079.72	3652.5	4427.22
440799	3499.99	240.35	3740.34	720421	7736.85	5779.11	1957.74
350691	3463.05	45.04	3508.09	440799	6545.15	6124.98	420.18

Contd….

Product Code	Trade Creation	Trade Diversion	Trade Total	Product Code	Trade Total	Trade Creation	Trade Diversion
220590	3441.22	42.05	3483.28	350691	6139.16	6060.34	78.82
761090	3422.98	45.07	3468.05	761090	6069.1	5990.22	78.88
220870	3339.43	4021.22	7360.65	240311	5414.66	5395.29	19.37
330730	3003.67	52.55	3056.22	330730	5348.65	5256.43	92.22
Total	1581028	130700.4	1711728		2102386	1899071	203314.5

Source : Author Calculations from WITS SMART Analysis2015

Effects of India by Reduction of Tariff at 10 percent and 25 percent Tariff Elimination:

Table 5.6 and Table 5.7 show comparisons of India net simulated results with U.K at 25 percent and 10 percent tariff reduction. The Table further shows top 20 products which have the highest trade creation capacity at 10 percent and 25 percent tariff reduction. Thus, the highest trade creation of India with 25 percent tariff reduction in product Automobiles with reciprocating piston engine di(870324) is US$ 671320.3 thousands which is more than trade diversion of India under the similar tariff reduction i.e US$ 7850.31 thousands. While, India's welfare effect amounted of US$ 412512.59 thousands and revenue effect amounted of US$ 114729.70 thousands. Whereas, under 10 percent tariff reduction, the highest trade creating product is also similar to the product of 25 percent tariff elimination i.e Automobiles with reciprocating piston engine di (870324) where trade creation of India is found US$ 762864.1 thousands which is more than trade creation under 25 percent tariff reduction i.e US$ 671320.3 thousands. However, the trade diversion for similar product is US$ 762864.1 thousands under 10 percent tariff elimination which is many times more than trade diversion of India under 25 percent tariff reduction i.e US$ 7850.31 thousands. And, the revenue effect of India under 10 percent reduction is US$ 45953.1 thousands which is less than revenue effect of India under 25 percent tariff elimination i.e US$ 114729.70 thousands. More deeply, under both scenarios of tariff reduction, it has been observed that there is no match of trade creating and diverting products along with revenue and welfare effects. As, the highest trade creating product under 25 percent tariff reduction is Silver in unwrought forms (710691) which amounted of US$ 37532.37 thousands as comparison to the product of Whiskeys (220830) which shows the highest trade diversion under 10 percent tariff reduction i.e US$ 65622.3 thousands. While, the highest revenue loss to India under both scenario is in same product 710691 i.e US$ -37744.63 thousands under 25 percent tariff reduction and US$ -123220 thousands under 10 percent tariff reduction. While the trade creation of India under 25 percent reduction i.e US$ 3000350 thousands. While, the similar trend has shown with trade diversion as it is US$ 4715947 thousands with 10 percent tariff elimination and US$ 130700.4 thousands at 25 percent tariff reduction. On the contrary, there is the highest revenue loss under 10 percent tariff reduction i.e US$ -345627 thousands which is only

US$ -104330 thousands under 25 percent tariff reduction. While, its welfare effect is more under 10 percent tariff elimination than 25 percent tariff reduction i.e US$ 963017.9 thousands and US$1000978 thousands. It is due to the fact that tariff elimination according the SWISS formula shows more welfare with lower value tariff reduction or vice-versa. As a results, tariff should be reduced by lower value but due to protection cost it is reduced with higher value, so as to protect the infant and uncompetitive firms of the country.

Table 5.7: Simulated Welfare and Revenue effects of India with U.K ('000 US$)

Simulated Welfare and Revenue effects at 25 percent reduction					Simulated Welfare and Revenue effects at 10 percent reduction				
Product Code	Exports Before	Exports After	Welfare	Revenue	Product Code	Exports Before	Exports After	Welfare	Revenue
a	b	c	d	e	f	g	h	I	j
870324	16567.65	695738.25	412512.59	114729.70	870324	16567.65	788601.94	426684.53	45953.19
870333	17568.33	300629.22	177080.53	34665.72	870333	17568.33	339290.63	184048.22	4246.13
870332	23916.62	223475.39	125210.03	11041.44	870332	23916.62	250704.30	130503.98	-12206.46
220830	87928.13	255437.73	134065.09	-93806.04	710691	1511030.63	1735904.38	14331.53	-70870.09
710691	1511030.63	1639563.75	8600.73	-37744.63	220830	87928.13	270101.09	136323.52	-123220.71
710231	780138.38	855996.50	4661.10	-19758.63	710231	780138.38	912917.44	8100.76	-37423.63
220820	2822.01	40477.91	36797.73	1604.21	220820	2822.01	44011.37	38014.51	-3214.33
220890	67842.91	97715.05	21512.47	-87986.80	220890	67842.91	100067.97	21874.86	-99544.36
220850	4750.77	27562.91	19663.84	-4537.14	710812	281373.78	313480.91	1304.32	-14366.75

Contd….

Product Code	Exports Before	Exports After	Welfare	Revenue	Product Code	Exports Before	Exports After	Welfare	Revenue
220710	508.60	9036.44	7504.16	769.51	220850	4750.77	29703.88	20123.89	-7973.23
710812	281373.78	299719.09	746.10	-7816.25	710692	66956.70	77612.57	663.46	-3174.96
860900	725.92	6197.56	533.82	367.31	854370	14146.72	23914.87	655.92	-61.74
841583	2823.81	8277.83	520.65	298.71	860900	725.92	10301.34	903.33	437.60
350300	8061.48	13843.65	937.77	-208.32	841583	2823.81	12368.33	875.61	318.21
854370	14146.72	19370.32	353.67	40.90	220710	508.60	9836.46	7654.28	-283.37
871190	75.64	4323.92	3054.74	723.04	350300	8061.48	16734.83	1318.37	-697.97
710692	66956.70	73046.45	390.15	-1683.80	720449	277945.22	286607.75	145.88	-4627.26
240311	92.21	4029.90	877.08	517.72	220870	9026.93	17106.65	3621.72	-18577.47
440799	9601.40	13341.73	328.07	-31.19	720421	90371.97	98108.81	284.28	-1346.19
350691	1181.55	4689.64	342.32	212.32	440799	9601.40	16146.55	537.69	-194.83
220590	67.81	3551.09	3054.90	596.15	350691	1181.55	7320.71	587.79	240.00
761090	1172.08	4640.13	339.86	209.72	761090	1172.08	7241.17	587.70	236.96
220870	9026.93	16387.58	3502.12	-16060.60	240311	92.21	5506.87	1040.60	379.54
330730	1598.29	4654.51	285.05	167.38	330730	1598.29	6946.94	465.94	178.30
720421	90371.97	94240.49	143.35	-640.86	284210	1635.75	6821.60	325.04	166.33
Total	3000350	4715947	963017.9	-104330	13534239	3279788	5387359	1000978	-345627

Source : Author Calculations from WITS SMART Analysis 2015

Effect on EU of tariff reduction:

Table 5.8 and 5.9 show what will be the trade effect on EU when India reduces the Tariff under 10 and 25 percent through SWISS formula. The products are chosen as taken in above Tables. Table 5.8 and Table 5.9 show that there are different top twenty products which has the highest trade creation capacity. However, the first five products are same under both scenarios. Thus, by comparing, the Table shows that trade creation of EU under 25 percent tariff reduction in product Printed bed-linen of man-made fibres (excl. kni (630222) is US$ 88971.52 thousands while it is more under 10 percent tariff elimination as of US$ 153365.88 thousands. Whereas, trade diversion is also more for EU as a whole at 10 percent which is US$ 2815.57 thousands and US$ 1631.445 thousands at 25 percent tariff reduction. While, Revenue effect and Welfare Effect of EU is more under 10 percent i.e US$ 5672.20 thousands and it is US$ 5401.871 thousands and US$ 4123.14 thousands. More concisely, the total trade creation effect of EU is more at 10 percent i.e US$ 730445.7 thousands than at 25 percent which is US$ 413658.9 thousands. While, trade diversion and welfare is also higher at 10 percent than at 25 percent tariff reduction. Thus, the fact come out of the analysis is that there is more of trade creation and less of trade diversion, which may be due to any reasons. As India might be trading with EU at less than its potential level because of harsh rules and regulations of EU for non- members countries. Thereby tariff reduction shows more of trade creation than trade diversion. While another reason may be due to the small size of Indian economy as comparison to EU that there is less of trade diversion. However, the most important fact emerged from the together analysis of Table 5.8, Table 5.9, Table 5.3 and Table 5.4 has come up that India-EU FTA with U.K is more profitable for India in comparison to EU without U.K.

Table 5.8: Simulated Net Trade Effect of EU('000 US$)

25Percent Tariff Elimination				10Percent Tariff Elimination			
Product Code	**Trade Creation**	**Trade Diversion**	**Trade Total**	**Product Code**	**Trade Creation**	**Trade Diversion**	**Trade Total**
630222	88971.52	1631.445	90602.96	630222	153365.88	2815.57	156181.45
410712	61227.47	1367.962	62595.43	410712	117745.13	2632.16	120377.28
30617	38300.91	39579.46	77880.36	30617	62238.97	64281.84	126520.81
410792	26962.94	600.7044	27563.64	410792	52240.71	1163.70	53404.41
610910	21827.46	42631.44	64458.90	610910	36709.83	71747.48	108457.31
620520	15197.9	17835.12	33033.02	870322	26479.34	42706.94	69186.28
870322	15131.05	24399.72	39530.77	30799	25785.37	8444.30	34229.66
30799	14786.88	4844.59	19631.46	620520	25560.11	29992.85	55552.95
620640	14088.5	17159.64	31248.14	620640	23694.30	28865.21	52559.50
620630	13125.68	13876.46	27002.14	620630	22075.01	23326.40	45401.41
640399	11680.59	15238.5	26919.09	640399	21598.07	28176.17	49774.24
610831	8683.505	7409.381	16092.89	410711	15497.83	357.48	15855.32
620342	8569.694	11856.82	20426.51	610831	14604.08	12460.53	27064.61
410711	8117.915	187.1285	8305.04	620342	14412.67	19941.26	34353.93
620443	7448.065	9246.038	16694.10	620443	12526.29	15582.37	28108.66
611020	7319.919	12584.95	19904.87	611020	12310.78	21170.43	33481.20
611120	6616.959	10583.67	17200.63	611120	11470.47	18369.66	29840.14
870331	6373.036	5223.014	11596.05	640391	11342.00	20649.58	31991.57

Contd….

Product Code	Trade Creation	Trade Diversion	Trade Total	Product Code	Trade Creation	Trade Diversion	Trade Total
630260	6257.267	9345.885	15603.15	870331	11152.81	9143.77	20296.58
640391	6139.245	11177.44	17316.68	271019	10950.52	10100.88	21051.40
620462	5853.629	6946.478	12800.11	630260	10523.59	15729.46	26253.04
620442	5626.556	7789.594	13416.15	620462	9844.74	11682.77	21527.51
610462	5565.839	9546.475	15112.31	680293	9493.59	298.05	9791.64
630251	4988.922	2604.351	7593.27	620442	9462.85	13104.44	22567.29
30749	4797.484	2992.017	7789.50	610462	9360.73	16056.26	25416.99
Total	413658.9	286658.3	700317.2		730445.7	488799.6	1219245

Source: Author Calculations from WITS SMART Analysis, 2015

Table 5.9: Simulated Welfare and Revenue Effect of EU ('000 US$)

25 percent Tariff Elimination					10 percent Tariff Elimination			
Product Code	Exports Before	Exports After	Revenue	Welfare	Product Code	Exports Before	Exports After	Revenue
630222	41540.15	132143.1	5401.871	4123.14	630222	41540.15	197721.61	5672.20
410712	90966.22	153561.7	1925.359	3077.117	410712	90966.22	211343.50	2313.57
30617	715465	793345.4	-31430.7	2757.617	30617	715465.00	841985.81	-55049.34
410792	43017.72	70581.36	813.91	1010.234	410792	43017.72	96422.13	995.53
610910	895262.5	959721.4	-30512.6	664.284	610910	895262.50	1003719.81	-54188.31
620520	377776.3	410809.3	-12849.3	797.016	870322	688990.88	758177.13	-32082.75
870322	688990.9	728521.6	-17486.5	493.155	30799	180887.98	215117.66	-7982.68
30799	180888	200519.5	-4148.72	943.031	620520	377776.31	433329.25	-23084.59
620640	398752.3	430000.4	-14049.5	971.297	620640	398752.25	451311.75	-25025.50
620630	372654.6	399656.8	-12955.9	821.201	620630	372654.63	418056.03	-22995.59
640399	703995.5	730914.6	-11840.4	607.405	640399	703995.50	753769.75	-22654.44
610831	207811.8	223904.7	-7150.65	575.454	410711	11266.60	27121.92	332.69
620342	225680.5	246107	-7470.06	264	610831	207811.81	234876.42	-12745.34
410711	11266.6	19571.64	275.524	145.354	620342	225680.45	260034.39	-13474.84
620443	198543.5	215237.6	-7173.03	650.442	620443	198543.48	226652.14	-12812.64
611020	245016.9	264921.8	-8623.31	414.258	611020	245016.88	278498.06	-15391.81

Contd...

Product Code	Exports Before	Exports After	Revenue	Welfare	Product Code	Exports Before	Exports After	Revenue
611120	294333.5	311534.1	-8480.61	447.121	611120	294333.50	324173.63	-15377.60
870331	135161.5	146757.5	-3151.93	156.844	640391	527029.00	559020.56	-17319.69
630260	210320.9	225924	-7115.25	218.593	870331	135161.48	155458.06	-5950.48
640391	527029	544345.7	-9108.58	331.185	271019	3775957.00	3797008.50	-6996.75
620462	131478.9	144279	-4336.81	222.265	630260	210320.89	236573.94	-12661.81
620442	214370.4	227786.6	-7770.73	431.231	620462	131478.94	153006.45	-7865.05
610462	198124.4	213236.7	-6868.42	256.082	680293	271967.63	281759.28	-217.26
630251	100597.3	108190.6	-3410.89	362.053	620442	214370.42	236937.72	-13670.18
30749	127203.7	134993.3	-2103.94	197.501	610462	198124.41	223541.41	-12225.94
Total	7336248	8036565	-209621	20937.88		11156372	12375617	-380459

Source: Author Calculations from WITS SMART Analysis, 2015

Conclusion:

Partial equilibrium application has given analytical fact about the future scope of trade between India - U.K FTA. As it shows that when there is reduction of tariff by higher value i.e 25 percent then India has got higher net simulated effects by trading with EU (excluding U.K). Whereas India's trade with U.K only, enhance under lower value tariff reduction and under full liberalization. Thus, India should keep in view their trade creation, diversion and welfare of the citizen while negotiating on the proposals of the India-U.K FTA, so as to get maximum benefit from such a trade agreement while protecting the interests of the infant industries and increasing the welfare of the citizen. . However, the above analysis is one sided attempt as it shows only what will impact on India's trade when U.K alone and EU (excluding U.K) reduces tariff from India. Later on the comparison shows U.K full trade liberalization scenario is much beneficial for India's trade balance than EU (excluding U.K). Thereby, the analysis as it definition at much disaggregated level shows that products under Chapter 87 Vehicles other than railway or Tramway Rolling -Stock, and Parts and Accessories thereof shows highest trade creation under tariff reduction scenario in case of U.K alone. So in a commercial sense, India should polish its potential in these products so as to get much benefit from a free trade agreement with U.K after BREXIT. However, by comparing the Table 5.3 and Table 5.4 and Table 5.8 and Table 5.9, it is clear that the partial equilibrium analysis, the net simulated results of India and EU as a whole has given the picture that under different scenarios India will stand benefit more than EU as a whole though EU also stands benefit but less than India. So both nations, India and U.K should focus on their trade created, diverted products so as to reap benefit by proper and efficient management of these products.

Chapter 6

Conclusions:

The decision of BREXIT from EU has an indeterminate impact on the global trade where all the countries who are negotiating trade agreements with EU have strained line on their forehead. As, London being the financial hub of EU, is also the important state of Britain. Thereby, the decision of U.K exit from EU has shaken the whole world trades trusts from EU trade policies. Among other countries, India is also under the negotiation with EU since 2007, which is not concluded yet. While out of 28 member's countries, U.K is among the top six countries with which India's trade has been at large scale and which serves as an entrance point to trade with whole Europe. But after BREXIT, India has to quantitatively access as whether to trade with EU under FTA is worth it or not. And whether the direction of trade between India & U.K can be appropriable for forming a separate free trade agreement or not? Thus, the present study has provided all answers, it seems to be in favor of India's pocket if both countries start from new Free Trade Agreement.

The U.K has a strong trade relation with India since latter's Independence. However, from 1947 to 2015, there is a change in the trade structure of the trade between India and U.K. Thereby, considering the volume of bilateral trade between India and U.K, it seems that the volume of trade between India and U.K is fluctuating as the trade has grown from US$ million 53684393.99 to US$ 142668295.58 million till 2015 by the compound annual Growth rate of 6.70 percent of India and the trade of U.K has grown by 5.70% percent

While analyzing the composition of Indo-U.K bilateral trade, it has been found that since 2000, there has been changing landscape of composition of India's trade with U.K as from export of primary based products as gems, jewelry, dry fruits, and from manufacturing side export of cotton clothes and leather made products to pharmaceutical and manufactured products as Automobiles with reciprocating piston engine di and medicine acquiring top position in export basket in the time span of 2000-2015. Whereas Indian imports from U.K are highly concentrated till 2010 around the diamond, gold, silver, aluminum scrap and waste, printed books, waste and scrap of

different products, parts of diesel and semi-diesel engines, potassium, etc., has changed into unwrought, other categories products and spacecraft, etc.

Similarly, RCA of India and U.K has shown that in the year 2000 there is higher comparative advantage in primary based products as in T-shirts and cotton articles, handbags, footwear and other articles of apparel of leathers and same results come out from 2005 while in the year 2010 and 2015, there is addition of new products as of petroleum products, automobiles, pharmaceuticals and organic products, but its comparative advantage lies in primary based manufactured products as in furnishing articles of cotton, footwear's, leather products and also growing comparative advantage in automobiles, etc. Thus, while analyzing together composition and comparative advantage of India, it seems that there are dissimilar results to that composition of trade as India although have diversified its export basket but still its RCA lies in primary based manufacturing products. On the other hand, U.K RCA has shown that along with bringing diversification in its export basket. It seems to enhance and to alter its RCA in newly invented products of its export composition.

While the Export Similarity Index (ESI) of India and U.K has shown that there is a dissimilarity in their trade pattern of both countries in the third country as for India FKI has risen from 0.87 to 7.21 percent during the study period of 2000-2015, which has both positive and negative sign. As on the one hand, it shows that India's has been diversifying its export basket while on the other hand, its export is matching with U.K's export in the third country meaning thereby that it cannot get benefit from the free trade agreement. But the complementarity index has shown that trade pattern of both nations is highly complemented to each other, in which complementarity value of India with U.K is increasing and reached the value of 97.68 percent from 96.94 percent with minor fall in between the study period of 2000 and 2015. While on U.K's front the complementarity value has been declining continuously and settled at 92.47percent from 98.71 percent which is the cause of concern. But as the values of trade intensity between both countries are falling steadily, it is evident that its complementarity also declines. But both the similarity and complementarity indices, together shows that there is an increase in the in inter-industry trade between both nations.

However, results of Intra-Industry Trade indicates that the trade between both nations is high of homogenous products which lead to the large share of Intra –industry trade

in its total bilateral trade and among it the most significant part of intra -industry trade between both nations for top 20 products in the period of 2000-2015 is vertical intra-industry trade which signifies that there is no existence of monopoly and less concentration of market in few hands as also shown in Herfindahl - Hirschman Market Concentration Index which is the good sign for success of any trade agreement.

The trade indices which are computed, is of high weightage to prove that India-U.K has a long way to go together and earn benefit from its already reached growth status. While India has been under negotiating process of India-EU FTA since 2007, but still no conclusions come in hand. And in between, the referendum of U.K to leave EU is in her favour and U.K has voted out, which put a number of questions before India. Therefore, an ex-ante 'SMART' analysis has been used to predict that how India's trade atmosphere will change under different hypothetical tariff elimination process with U.K and EU (excluding U.K).

Firstly, the net simulated results of India is compared, when there is reduction of 25 percent tariff, with U.K only and With EU (excluding U.K). Thus, it has been found that in aggregated sense, there is a total creation of India by amount of US$ (1583917) thousands which is more than total diversion of US$ -131679.4 thousands, when trading with U.K only. While, total creation of India with EU (excluding U.K) is US$ -2948493 thousands which is also more than trade diversion i.e US$ 163595.8 thousands and also more of creation than U.K. Thus, it shows that India will be benefited more by tariff reduction in the form of trade creation with EU (exclude U.K). While, aggregate revenue loss of India with U.K is US$ -104332 thousands which is less than the revenue loss of EU (excluding U.K) which has shown positive effect with the amount US$49094.68 thousands.

Secondly, the net trade effect of India is calculated for top 5 imports of India from U.K at full liberalization. The results have shown that India's trade creation with U.K only is US$ 536098 thousands which is with large difference from its trade diversion of US$ 19715.8 thousands. Further, It implies that trade creation is more by the full liberalization which is restricted before due to high imposition of tariff. While, revenue effect of India with U.K only is negative with the amount of US$ 359436 thousands and its welfare effect is US$ 164779 thousands. However, on comparing the net simulated effects under full liberalization, it is out looking that overall trade creation of India is less

with EU (excluding U.K) than with only U.K, as it is US$ 68463.5 thousands and US$ 536098 thousands. Similarly, trade diversion of India is less with EU (excluding U.K) than with only U.K i.e US$ 44280.2 thousands and US$ 197158 thousands. As a concluding remark of the Table 5.5 is that India trade will enhance more with U.K than with EU (excluding U.K) under full liberalization.

Thirdly, the net simulated results of India when trade with U.K is compared at 10 percent and 25 percent tariff reduction , and concluded that total trade creation of India under 10 percent reduction is amount of US$ 1581028 thousands which is more than trade creation of India under 25 percent reduction is valued at US$ 3000350 thousands. Similarly, trade diversion of India is more at 10 percent tariff elimination amounted of US$ 4715947 thousands which is only US$ 130700.4 thousands at 25 percent tariff reduction. On the contrary, there is highest revenue loss under 10 percent tariff reduction i.e US$ -345627 thousands which is only US$ -104330 thousands under 25 percent tariff reduction. While, its welfare effect is found more under 10 percent tariff elimination (US$ 963017.9 thousands) than 25 percent tariff reduction (US$1000978 thousands). Thus, it is concluded that tariff elimination according to the SWISS formula shows more welfare with lower value tariff reduction or vice-versa.

Lastly, the total trade creation effect of EU is calculated at 10 percent and 25 percent tariff reduction. There is more of trade creation of EU at 10 percent tariff reduction (US$ 730445.7 thousands) than at 25 percent (US$ 413658.9 thousands). While, trade diversion and welfare is also higher at 10 percent than at 25 percent tariff reduction. Thus, the fact come out of the analysis is that there is more of trade creation and less of trade diversion of EU. However, the most important fact emerged from the together analysis is that India-EU FTA with U.K is more profitable for India in comparison to EU without U.K.

Thus, a partial equilibrium analysis computation has shown that there is good scope of enhancing trade if both governments make an FTA between India and U.K. As there is more of trade creation and also trade diversion from other nations to India. Meanwhile, trade with EU after U.K has to be restructured and priorities should be redefined as how to extract benefit from EU after U.K. So, India and U.K will benefit from trade under free trade scenario, as supported by the results of the indices chapter, that there is a high potential of increasing trade due to either declining intensity in the

recent year or due to rising complementarity in trade between both countries. Besides, on the opposite side, in the case of tariff liberalization by India, there is a trade creation for EU, but very less trade diverted of EU.

Regarding prospects, U.K has been identified as one of the India's trading partners with high unexploited trade potential. Along with exploring new trade potentials, both nations should focus on diversifying its export basket. But this prospect has been restricted by many trade barriers. Thus, various hurdles in increasing the trade between India –U.K are excessive red tape and bureaucracy, local sourcing requirements and import tariffs, intellectual property protection (IP), risk of delays due to administrative requirements, difficulty of land acquisition, access to the right skills in the local workforce, infrastructure challenges, regulatory including for distribution and logistics, sweltering weather in summer and wet weather during the monsoon season can affect business. These hurdles have to be examined and overcome to raise the already began trade and economic cooperation to a higher level.

Suggestions:

For India, U.K always sustain a status of 'special trading partner' but though the trade between both can't reach a stage where it should be. Following are certain suggestions that may serve this goal:

- U.K's import structure is mostly composed of Gems & Stones, Few Metals and Metals Scrap, Apparels, Medicinal and Pharmaceutical products and recently increasing the share of Machines and Mechanical appliances. To improve bilateral trade, India may align itself to U.K's import structure and demand. India may continue to focus on meeting the demand in U.K's market for a variety of primary based commodities like various Footwear, Textiles and Clothes and Apparels, etc and also India can increase exports of chemicals, leather products and organic products to the U.K. Similarly, U.K fulfil the needs of India's manufactured goods such as Airspace, Automobiles metal scrap, Unwrought, etc. Thereby, India and U.K will need to align their export strategy to meet their requirements. It will be ultimately helpful for India to balance the unfavorable terms of trade.

- The computation of various indices as intensity, complementarity, intra-industry trade, export similarity index, Herfindahl - Hrischman index has shown that there is significant trade competitiveness between India & U.K and yet there is further scope of optimizing the trade relation between the two countries by exploring their trade potential. So it's good opportunity for both the countries after BREXIT, to transform its undetermined trade path under Most-Favored Nation Clause into free trade agreement.
- U.K government may review its tariff schedule. The U.K is required to follow a strict schedule of reduction of duties stage-by-stage. Also, the rules governing this schedule should be transparent and predictable so that foreign traders and investors can build their business strategy for U.K.
- While, declining trade balance between both the countries is having various reasons but one of the emerging issues according to the report of House of Commons Trade and Industry Committee, is the risk averter attitude of the U.K towards India due to the barriers settled down by Indian governments in its FDI inflow from foreign nations. Due to which there is declining trend in FDI inflow from U.K to India in recent year (UNCTAD, 2016). Therefore, both Governments should do work in a practical not only in paper works for attracting investors and increasing its trade relations.
- The products of chapter 87(Vehicles o/t railw/tramw roll-stock, pts & acc) which show the higher trade creation, when tariff elimination is simulated. But those products are not observed as composition of top 20 products of India's export to U.K. So tariff reduction may be helped to get benefit of FTA. While the commodity namely Silver in unwrought forms has been observed as a commodity shows the highest trade diversion. Therefore, it can be used as a value chain products with many countries.

Bibliography:

Schiff, M. (2002). Love thy neighbor: trade, migration, and social capital. European Journal of Political Economy, 18(1), 87-107.

Bhagwati, J., & Panagariya, A. (1996). The theory of preferential trade agreements: historical evolution and current trends. The American Economic Review, 86(2), 82-87.

Regional trade agreement data retrieved from (www.wto.org, 2016).

Panagariya, A. (2000). Preferential trade liberalization: the traditional theory and new developments. Journal of Economic literature, 38(2), 287-331.

Wonnacott, R. J. (1996). Free-trade agreements: For better or worse?. The American Economic Review, 86(2), 62-66.

De Melo, J., Panagariya, A., & Rodrik, D. (1993). The new regionalism: a country perspective (Vol. 715). World Bank Publications.

Viner, J. (1950). The economics of customs unions. The customs union issue, 41-81.

Scollay, R., & Gilbert, J. (2000). Measuring the gains from APEC trade liberalisation: an overview of CGE assessments. The World Economy, 23(2), 175-197.

Free Trade Agreements, Frequently Asked Questions (FAQs) taken from http://commerce.nic.in 2014.

Jaumotte, M. F. (2004). Foreign direct investment and regional trade agreements: The market size effect revisited (No. 4-206). International Monetary Fund.

Lee, J. W., & Shin, K. (2006). Does regionalism lead to more global trade integration in East Asia?. The North American Journal of Economics and Finance, 17(3), 283-301.

India – United Kingdom Relations, https://www.mea.gov.in/Portal/ForeignRelation/UK-Jan_2016

Albertin, G. (2008). Regionalism or multilateralism? A political economy choice.

Behar, A., & i Crivillé, L. C. (2010). The impact of North-South and South-South trade agreements on bilateral trade (No. CSAE WPS/2010-30).

Vicard, V. (2011). Determinants of successful regional trade agreements. Economics Letters, 111(3), 188-190.

UK Participation with commonwealth countries, retrieved from http://blogs.lse.ac.U.K/brexit, 2016.

Liu, X. (2009). GATT/WTO promotes trade strongly: Sample selection and model specification. Review of international Economics, 17(3), 428-446.

Ando, M. (2006). Fragmentation and vertical intra-industry trade in East Asia. The North American Journal of Economics and Finance, 17(3), 257-281.

Wu, Y., & Zhou, Z. (2006). Changing bilateral trade between China and India. Journal of Asian Economics, 17(3), 509-518.

SMART Analysis, Theoretical framework, wits.worldbank.org, 2016.

Meilak, C. (2008). Measuring export concentration: the implications for small states. Bank of Valletta Review, 37, 35-48.

Shafi, S. M. (2011). India-U.K Trade: A phenomenon of sliding scenario. Australian Journal of Business and Management Research, 1(9), 37.

Mathur, P. N. (2016). Why Developing Countries Fail to Develop: International economic framework and economic subordination. Springer.

India-EU-aim-to-break-Free-Trade-Agreement-impasse, article14378438.ece http://www.thehindu.com/business/Industry , Updated Sep, 2016.

Jallab, M. S., Abdelmalki, L., & Sandretto, R. (2007). The free trade agreement between the United States and Morocco: the importance of a gradual and assymetric agreement. Journal of Economic Integration, 852-887.

Veeramani, C., & Saini, G. K. (2011). Impact of ASEAN-India Preferential trade agreement on plantation commodities: a simulation analysis. Economic and Political Weekly, 46 (10), 83-92.

Raihan, S. (2011). Economic Corridors in South Asia: Exploring the Benefits of Market Access and Trade Facilitation.

Balassa, B. (1965). Trade liberalisation and “revealed” comparative advantage. The Manchester School, 33(2), 99-123.

Cheong, D. (2010). Methods for Ex Ante Economic Evaluation of Free Trade Agreements.

Sun, P. & Heshmati, A. (2010). International Trade and its Effects on Economic Growth in China. IZA DP No. 5151, Germany.

Brown, O., Shaheen, F. H., Khan, S. R., & Yusuf, M. (2005). Regional Trade Agreements: Promoting conflict or building peace?. International Institute for Sustainable Development. Canada.

Schiff, M., Wang, Y., & Olarreaga, M. (2002). Trade-related technology diffusion and the dynamics of North-South and South-South integration (No. 2861). World Bank Publications.

Kelkar, H. K., & Burange, L. G. (2016). India’s vertical and horizontal intra-industry trade during post-liberalization period. Trade, Investment and Economic Development in Asia: Empirical and Policy Issues, 25.

Chandran, B. S., & Sudarsan, P. K. (2012). India–ASEAN free trade agreement implications for fisheries. Economic and Political Weekly, 47(16), 65-70.

Fundira, T. (2013). An analysis of Africa's export performance and export similarity for select countries within the Tripartite Free Trade Area market. Tralac trade Brief No S13TB03/2013.

Ji, Z., Hu, Y. W. & Mao, J. (2014). An Analysis on the Interdependence of Sino-Australian Trade. Journal of Empirical Economics, 3(1), 1-9.

Koch, T. (2016). Before a Potential Brexit: European immigration to the U.K its relative benefits and politico-economic implications, *"Migration and Society"* James Guten*berg University Mainz's, Center for Continuing Education.*

Villa, C. P., Abella, D. G., & Herrera, L. O. (2012). The Colombia-Canada Free Trade Area: A Partial Equilibrium Simulation. University of Medellin.

Choudhry, S., Kallummal, M., & Varma, P. (2013). Trade Creation and Trade Diversion in India-Sri Lanka Free Trade Agreement – A Sector Specific Analysis. Centre for WTO Studies, Indian Institute of foreign Trade. CWS/WP/200/11.

Ekanayake, E. M. (2009). Vertical and Horizontal Intra-Industry Trade between the U.S. and NAFTA partners. Revista de Analisis Economico, 24(1), 21-42.

Mahmood, H. M., & Gul, S. G. (2014). Assessing the Impact of FTA: A case Study of Pakistan- Malaysia FTA. MPRA Paper No. 55802, Ministy of Planning, development & Reform, Planning Commission, Islamabad, Pakistan.

Mahmood, H., & Sabir, M. (2014). Trade Facilitation and Connectivity: Perspective from China-Pakistan Economic Corridor and Free Trade Agreement.

Grubel, H. G., & Lloyd, P. J. (1975). Intra-industry trade: the theory and measurement of intra-industry trade in differentiated products. Londyn Macmillan.

Grubel, H. G., & Lloyd, P. J. (2003). Intra-industry trade. Elgar.

Sahoo, P. (2009). India-Korea Trade and Investment Relations. Working Paper (242). Indian Council for Research on International Economic Relations.

Thomy, B., Tularam, G.A., Sriwardana, M. (2013). Partial Equilibrium Analysis to Determine the Impacts of a Southern African Customs Union – Europe Union Economic Partnership Agreement on Botswana's Imports. American journal of economics and business administrations, 5(1), 1-14.

Erlat, G., Ekmen, S. (2009), Export Similarity and Competitiveness: The Case of Turkey in the EU Market. Anadolu International Conference in Economics.

Botric, V. (2012), Intra-industry Trade between the European Union and Western Balkans: A Close-up. EIZ Working Papers, EIZ-WP-1202.

Ahmed, S. (2011), India- Korea CEPA: An Assessment*. Korea and the World Economy, 12(1), 45-98.

Utkulu, U., Seymen, D. (2004) Revealed Comparative Advantage and Competitiveness:
Evidence for Turkey vis-à-vis the EU/15. European Trade Study Group 6th Annual Conference, ETSG 2004, Nottingham.

Castro, T.D. (2012) EU -BRIC Trade Assessment: Introversion, Complementarity and RCA. *"Politics of the European Union"*- IGA project, Department of World Economy, Faculty of International Relations, University of Economics, Prague.

Chingarande, A., Mzumara, M., Karambakuwa, R.T. (2014) Does Mercosur Possess Comparative Advantage? J Economics, 5(3), 341-349.

Roy, A., Mathur S.K., (2016) Brexit and India–EU Free Trade Agreement. Journal of Economic Integration Vol.31 No.4, 740-773.

Banga, R., (2016) BREXIT: Opportunities for India, Emerging Issues Briefing Paper (7) the Commonwealth Secretariat 2016.