Trade Policy Measures and Their Impact on Global Value Chains (GVCs): An Evidence from Selected South Asian Economies

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Abstract: This paper analyzes the impact of Trade policy on Value Chains measured through value added content in the form of intermediates. Panel data model is applied on dataset ranging from the time period 1994-2017 for selected South Asian economies. Data for policy variables is extracted from UN Commodity Trade Database (UN COMTRADE), World Development Indicators (WDI) while for non-policy variables is taken from World Governance Indicators (WGI). Findings show that trade policy variable i.e. tariff tax on primary intermediate products affects significantly negative to the trade of intermediates which predicts that these tariffs restrict connectivity through value chains.

Key words: Trade Policy, Value Chains, FDI, Logistic Index, Integration, Corruption.

1. Introduction

Interactions through integration among economies is growing in recent decades. Due to advanced technology, reduce costs of transportation, more open economies and information & communication revolution production process of a final product are fragmented across national economies. Production of parts and components has been unbundled. So, intermediate goods before final assembling cross borders many times and then sold as a final product. Activities as design, processing, marketing, product shipment, sale activities and a lot more to produce a final product called value chains. So, Global Value Chain (GVC) includes all these sequential activities to produce a final product or simply include trade in intermediate goods and services involving more than one country (UNCTAD, 2013). "The value chain includes all the activities that firms and companies perform to make a final product. This includes activities such as innovative work (R&D), outline, creation, advertising, circulation and sale services. The activities that includes value chain could be within a firm or among different firms" (Gereffi & Stark, 2016).

GVC plays a key role in increased connectivity between countries and the activity of producing commodities in order to take part in value chain across the border. Value chain activities include intermediate inputs and raw

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material and new values chains are evolving between developing countries for improving their economies and connectivity among nations. Connectivity among trading countries reduces the trade costs to reap benefits from involving in these chains globally. (Pomfret & Sourdin, 2014). Before Porter's model Hopkins & Wallerstien (1977) gave the idea of 'Commodity chains'. The basic idea was tracing out possible sets of inputs and changes that gave us "ultimate consumables" (Miroudot & De Backer, 2013). The idea was presented by Michael Porter in 1985. In 2000 a new terminology "Global value Chain" was introduced analyzing trade as value added chain (Gereffi, Humphrey, Kaplinsky, & Sturgeon, 2001). Global value chain trade is increasing much more faster than final goods trade, which exhibits that focusing more on specialization and fragmentation are the main features of integration (Feenstra, 1998; Yeats, 1999; Hummels, Ishii & Yi, 2001).Before 1980's countries only trade of final products, after that trading intermediate products was initiated. As per the estimates of (UNCTAD, 2013), World trade includes 60% of Global value chain trade which includes trade in intermediates.

1.1: Determinants of GVC

Factors both policy and non-policy influence integration in GVC. Factors such as distance between trading partners, size of the market, as well as factors such as trade openness, foreign direct investment, tariffs and logistics are key factors to determine GVC. GVC engagement has effects on determinants as technology, human capital and institutions. Further, technology and knowledge transfers were affected by GVC in two ways (World trade report, 2014). Firstly, knowledge transfers in the exchange of goods. Secondly, technology transfers if foreign firms invest in the domestic economy. Taxes on international trade play an important role. As more taxes brings less trade between trading partners and vice versa. More taxes on trade or tariffs impede engagement in GVC. Liberalization of trade in services could be helpful to facilitate engagement in GVC. Domestic policy factors also effect GVC engagement as, deregulation and law enforcement. Higher trade costs were associated with fewer chances to engage in international trade and GVC. Expansion of GVC in the last two decades was associated with reduce trade costs (Moïsé, & Le Bris, 2013). Regional trade agreements (RTAs) are also drivers of GVC. RTAs are helpful in expanding exports in value chains. Preferential trade agreements

(PTAs) along with tariff incentives and infrastructure related costs also determine GVC participation (Bhattacharya & Moazzem, 2013).

1.2: Trade policies of South Asian Region

India has the largest economy among its regional trading partners. India performs well in value added as well as other indicators to development mentioned below in this study. India doesn't have a fixed trade policy with Bangladesh, an economy with relatively low GDP and growth rate. So, can import and export goods from India. Poor governance and infrastructure of some countries has affected regional cooperation among these countries. This region lags behind other regions when we talk about performance in exports. There is continuous decrease in exports of this region (Athukorala, 2011). In 2014, South Asia has export growth close to almost zero[1].Trade policies of South Asian economies should address the issues of political disturbances, macroeconomic instability, more focus on agriculture sector, and quality of exports, energy shortages, more growth and foreign direct investment. Despite differences in geographical locations of South Asian economies their trade policies tend to effect in similar ways as:

- South Asian economies have restrictive trade policies so have poor performance in international trade. (Bandara, Jayatillak & Mcgillivray, 1998)
- Interventionist policies have worse effects on the Agriculture, Manufacturing and livestock sectors as these policies are implemented heavily against these sectors. Also, exchange rate overvaluation as a result of manufacturing protections hurts primary export industries. (World Bank report, 2004)
- The countries are among the least open of the world economies and trade liberalization programs have been flow in south Asian economies. Trade structure among the south Asian economies is not facilitating the enhancements in regional trade. (Pitigala, 2005)
- The region lags behind other regions when we talk about integration in trade. (Taneja, 2006)
- There is continuous decrease in exports of this region (Athukorala, 2011)

1.3: Objective

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[1] World Bank Report, 2014

- To investigate relationship between Trade policy measures and Trade value addition content for selected South Asian nations.

1.4: Hypotheses

The alternative hypotheses are as follows:

H_1 : There exists a significant relationship between trade policy factors and Trade in intermediates.

2: Literature Review

Global value chain literature has focused on various dimensions of GVC. The huge amount of literature on GVC make up many arguments about the role of trade policy factors and non-policy factors determine participation in value chains. The studies include developing as well as developed countries which offers a broader analysis of value chains. These studies help in understanding whether domestic or foreign factors are important when we talk about participation in value chains.

Blanchard et al., (2017) analyzed the impact of trade policy indicators on value added content, emerging a new approach of value added associated with GVC. The study examined data of 14 countries for the period of1995-2009 of value addition and other determinants. Value added data was collected from World Input Output Database (WIOD). Data of tariffs and other variables were collected from World Development Indicators (WDI). Findings of the study reveal that GVC affect trade policies in many perspectives and were important in shaping trade policies. The study also shows negative correlation between tariffs and participation in value chains. It concluded with that more participation in GVC will reduce the tariff rates.

Slany (2016) examined the role of trade policies affecting regional value chains (RVCs) in Africa. Literature stated that trade cost play a significant role in engagement of RVCs. Hypothesis to be tested stated the effect of trade policy measures on participation in regional value chains and whether these factors facilitate value chains trade or not. He analyzed panel data of 37 African countries from 2006-2012. The study make use of input-output tables collected from United Nations Conference on Trade and Development (UNCTAD) database to analyze factors affecting RVCs in Africa. The authors suggested different factors for driving GVC and RVCs participation.

Pomfret and Sourdin (2014) analyzed the factors which were helpful for economies in GVC engagement. The study identified the regions non

participation in value chains along with the factors responsible for this non-participation. The study exhibits that the costs of doing business were very high in these economies and the governments were not taking measures to minimize the costs. They also identified other barriers of non-participation in value chains.

Brunner (2013) tried to find out the role of GVC in development of South Asian economies. Methodology includes product studies. Analyzing a product by tracing value added and non-value added content at each stage of production. The paper also analyses issues related to trade and development of these economies. It concludes that engaging in GVC leads to more development and prosperity. Also, South Asian economies should improve their infrastructure and logistics along with investment in GVC.

Boileau and sydor (2011) analyzed factors effecting engagement in GVC and the blockades to their engagements focusing on firms of Canada. Findings reveal that services trade rose faster than goods trade. Analysis was done by using survey data from innovation and business strategies (SIBS) and then contrasting the results of Canadian firms with European Union (EU). The results identified some pull factors to attract value chain activities were low costs, access to new markets and access to skills while push factors include taxes were of less important.

Dedrick et al., (2010) attempted to answer the question of who get benefited from innovations in GVC by analyzing specific products of different industries. Methodology includes value chain analysis of respective products by looking at value gained by supplier. They demonstrated a method for estimating the value gained by companies in the supply chains. Face difficulty in the quest to find data of related variables. Firm level gross profits data were taken from annual reports. Market power can be captured through gross margins. Costs were obtained by looking at financial reports of companies. Results were analyzed from perspective of 'Profiting from innovation' model. Products were assembled in China but Chinese firms could not get a lot from value chains. Taiwan was the major supplier so got most of the value added content.

Gereffi et al., (2005) focused on changing nature for GVC structure. They developed a design for better understanding of GVC structure. The article analyzed three variables describing how Global value chain was governed; complexity of transactions, codifying transactions and capabilities in supply chains. Typology of governance structure includes hierarchy,

captive, relational, modular and market. Case studies of bicycle, apparel, and horticulture and electronics industry briefly explain the nature of governance structure. Governance structures were not static.

Humphrey and Schmitz (2002) investigated the effect of GVC participation on improvement of industrial clusters. Their investigation surrounds these questions; how GVC participation affects industrial clusters? And the extent of domestic improvement or upgrading strategies where producers work in GVC? They emphasized for improvement of clusters the role of inter-firm collaboration and domestic institutes were very important. They argued that for value chains upgrading play an important role as the world becomes more competitive. For this governance can play a vital role in upgrading. They discussed types of upgrading. The affect can vary depends upon assembling of value chains as well as on the type of upgrading. The paper stated that these clusters were interjected in value chains in distinct ways and the outcome can be in favor of improvement of domestic efforts or cannot be.

3: Theoretical Background:

Jones and kierzkowski, (1990) presented initial theory of fragmentation followed by trade in intermediate commodities (Feenstra & Hanson 1996b, Campa & Goldberg, 1997 and Yeats 1998). All this leads to unbundling (Baldwin, 2006) and trade in tasks (Grossman & Rossi-hansberg, 2008a). Framework of contract theory which was associated with sociologists approach to GVC (Antras & Helpman, 2004).

3.1 First Unbundling

Trade across borders begins to increase in the start of 19th century, with improved transport system, increasing trade beyond boundaries of nations. The economies of scale from mass logistics further lowers transport costs. Decrease in trade costs brings more trade volume of intermediate goods (Shiozawa, 2007).So, consumption and production points were unbundled, and goods travelled around the world searching for higher profits. International trade results in increased customers and enhanced production.

3.2 Second Unbundling

Improved technology in the late 1980's further enhanced international trade. High speed communication and networks along with internet, it becomes easier, time saving and cheap to coordinate production units in different locations. The technological unbundling of production activities

has accelerated. With some segments relocated across borders to exploit the cost differentials of production factors in various countries. The key to high productivity was trade in tasks which includes specialization in specific tasks to increase competition. So, partition of workers brings together in various stages because different tasks must be performed together to produce a homogenous product.

3.3 Intra Industry Trade

A country trading similar kind of goods and services with other nations called intra industry trade. For example, USA exports computer to Italy and then imports computers from china. The concept of intra industry trade was developed by Peter Verdoorn and Bela Balassa in their study on increased trade flows among European Union economies. After that Grubel and Lyold (1975) gave attention to the idea of intra industry trade and developed an index used to measure it. Index ranges from 0 to 1, called Grubel Lyold (GL) index. The more the index close to 1 indicating higher intra industry trade while when approaching 0 indicates lesser intra industry trade. Researches exhibit high GL index for more open economies. (OECD, 2002)

3.4 New Trade Theory and New New Trade Theory

New trade theory introduced by Krugman in 1970's and 80's gave attention to increasing return to scale rather than constant returns and network effects. According to new trade theory firms could achieve dominancy when they enter earlier in the market because of economies of scale. So, few firms compete in the market leading to monopolistic competition. Helpman and Krugman further generalized new trade theory in 1985.New New Trade Theory (NNTT) stresses on the importance of intermediate goods in world trade. Theory emphasis the growing importance of firms rather than sectors in the same industry of the same economy. NNTT assumed monopolistic competition and increasing returns to scale in the market.

Figure 1:   **Schematic Framework for impact incidence of variables**
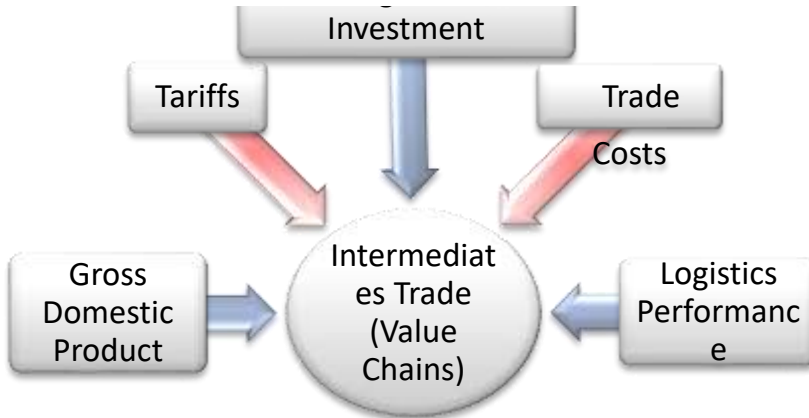
Source: Author's own conceptualization
In figure 1, schematic expression of policy variables with the trade in intermediates is given. The blue shaded arrows represent positive impact of variables while the red shaded arrow shows negative impact on the value added content trade as deduced from the past literature. Tariffs on intermediate products and trade costs have negative impacts on their trade shown by Slany, (2016). Logistics performance variable is used here for the control of business environment positively affects trade value as in existing literature (Slany, 2016 and Kowalski, 2015). Foreign direct investment and GDP positively affect trade value (Kowalski, 2015).

4: Data and Research Methodology
This study examines the effect of policy as well as non-policy variables on trade value acquired by economies by engaging in GVC. As literature proved that participation of countries in value chains bring value this was

affected by policy as well as non-policy factors. More participation in GVC brings more value to the economy so trade value also influenced by these factors.

4.1 Data Collection

The data is collected for selected South Asian economies for the time period of 1994-2019. Data includes policy as well as non-policy factors. Data for trade value is taken from UN COMTRADE Statistics database for SITC revision 3 including all commodities. Data of tariffs on intermediate goods and other variables as trade costs and FDI is collected from World Development Indicators (WDI). Government Effectiveness, Rule of law, Control of corruption and Political stability were taken from World Governance Indicators (WGI). Gross domestic product (GDP), logistics performance index and bound rate data are collected from World Development Indicators (WDI). Panel Data methodology including descriptive analysis of variables and analysis of ordinary least square, random effect and fixed effect models has been used applied.

4.2 Model Estimates

In order to analyze the role of trade policy factors and non-policy factors the following model is estimated. Considering that the model have linear unobseved effects model for i observations and T time periods:

$$LnTva_{it} = \alpha_i + \beta_1 lnTariffs_{it} + \beta_2 lnFDI_{it} + \beta_3 lnTrdcost_{it} + \beta_4 lnLogind_{it} + \beta_5 lnGDP_{it} + \varepsilon_{it}$$

For, i=1,.......N and t=1,........T

Where, Tva_{it} is the dependent variable defined as trade value acquired by economies when engaged in GVC. It is defined as trade value of re-exports and re-imports is derived as the average of the trade value in all commodities of SITC revision 3. Values are in current U.S. dollars.

$Tariffs_{it}$ represents taxes imposed on intermediates is policy variable taken for the analysis. Simple mean applied tariff is the unweighted average of effectively applied rates for intermediate products subject to tariffs calculated for all traded goods. Data are classified using the Harmonized System of trade at the six- or eight-digit level. Tariff line data were matched to Standard International Trade Classification (SITC) revision 3 codes to define commodity groups. Effectively applied tariff rates at the six- and eight-digit product level are averaged for products in each commodity group. When the effectively applied rate is unavailable, the most favored nation rate is used instead. To the extent possible, specific rates have been

converted to their ad valorem equivalent rates and have been included in the calculation of simple mean tariffs. Primary products are commodities classified in SITC revision 3 sections 0-3 plus division 68 (nonferrous metals).

GDP_{it} is the gross domestic product or output of South Asian economies taken as a non-policy factor affecting GVC of country i in time period t. Current GDP is gross domestic product which represents the sum of all the output produced by all residents in the economy plus any product taxes and minus any subsidies not included in the value of the products.. Data are in current US dollars. While FDI_{it} is net foreign direct investment on primary products of country i in time period t. It includes direct investment by the foreigners, taken in current US dollars for the study.

$Trdcost_{it}$ are the cost imposed on trade of intermediates in coutry i at time period t. While cost of trade is the border compliance which captures the time and cost associated with compliance with the economy's customs regulations and with regulations relating to other inspections that are mandatory in order for the shipment to cross the economy's border, as well as the time and cost for handling that takes place at its port or border. The time and cost for this segment include time and cost for customs clearance and inspection procedures conducted by other government agencies.

While $logind_{it}$ is the logistics performance and communication and technology of country i in time period t. Logistics Performance Index (LPI) indicates performance of a country by calculating average of six key dimensions. These include efficiency of transport system, quality of transport related infrastructure, and shipping of goods, quality of logistic services, to track consignments and on time delivery of goods. The index has value ranges from 1 to 5; highest value indicates better performance in logistics. The measure shows how goods are efficiently and easily traded, having positive effect on trade value according to literature.

4.2.1. Descriptive Analysis

Descriptive analysis includes analyzing the trend and behavior of variables under descriptive analysis for selected South Asian economies. Data is taken from world Development Indicators (WDI), World Governance Indicators (WGI) and from United Nations Commodities Trade Statistics (UN COMTRDADE) database for the time period 1994-2017, data for some of the variables is for 1996-2017. India is the largest economy in

South Asian region while Nepal is the smallest. Remaining economies include Pakistan, Afghanistan, Maldives, and Nepal lies in between these two. India is the largest exporter among the region, Pakistan is second largest and Nepal is the smallest exporter.

4.2.2 Intermediates Trade (Trade Values Content)

Intermediates Trade is measured through the variable titled Trade values collected from Standard International Trade Classification (SITC) revision 3 codes which is composed of re-exports and re-imports of primary products (intermediates referring to the variable GVC)). Both the economies (Pakistan and Srilanka) have trade in intermediates within the region with India, Bangladesh, Maldives, Afghanistan and Nepal. All the re-imports and re-exports data of primary products is averaged to get a single value in each year and reported in current US dollars. Figure 2 exhibits Sri Lanka is performing better than Pakistan in trade value acquired by the economies by engaging in value chains. But in some years Pakistan is performing better.

Figure 2: Intermediates Trade
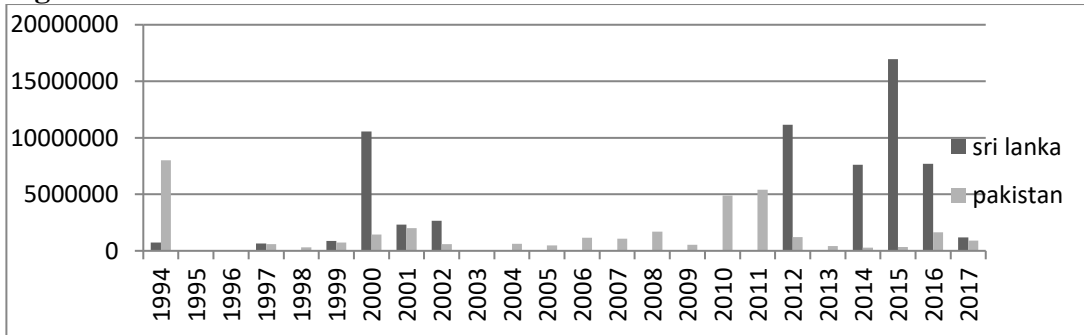
Source: Author's own using UN COMTRADE Database

4.2.3: Tariffs (Primary Products)

Simple mean applied tariff is the unweighted average of effectively applied rates for intermediate products subject to tariffs calculated for all traded goods. Tariff line data were matched to Standard International Trade Classification (SITC) revision 3 codes to define commodity groups. Primary products are commodities classified in SITC revision 3 sections. Simple mean tariffs on primary products are higher for Pakistan in almost year chosen for the analysis. Sri Lanka is having fewer tariffs on trade of primary products encouraging more trade and investment.

Figure 3: Tariffs on Primary Products
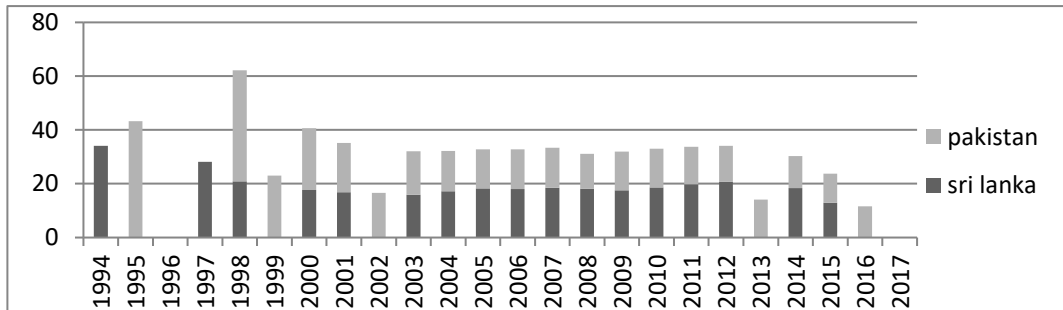
Source: World Development Indicators

4.2.4: Trade Costs

These are border compliance costs which measures the time and cost associated with cross border activities (inspection costs, shipment costs and time and costs associated with handling, clearance costs is also included). Data is in current US dollars. In 2013 and 2014 trade costs are higher for Pakistan than for Sri Lanka. In all other years when the data is available for trade costs, the costs are higher for Sri Lanka rather than Pakistan. For the recent year's trade costs data is not available.

Figure 4: Trade Costs
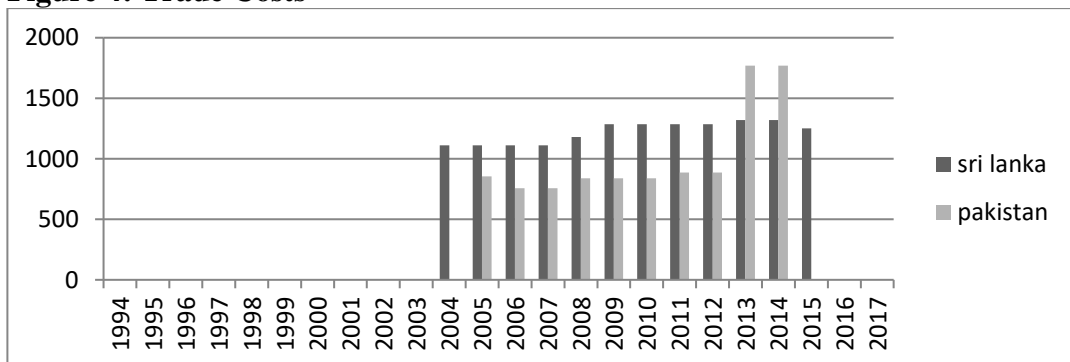


Source: Author's own using World Development Indicators

4.2.5: Foreign Direct Investment

It includes investment from Primary Products by foreign and domestic residents along with liabilities and asset transfers; it is net FDI by residents and non-residents. Data is in current US dollars. Sri Lanka is having lesser FDI on primary products than Pakistan, as the country involves less in primary products trade. Throughout the time period Pakistan is doing well in FDI on primary products.

**Figure 5: Foreign Direct Investment (Primary Products)**
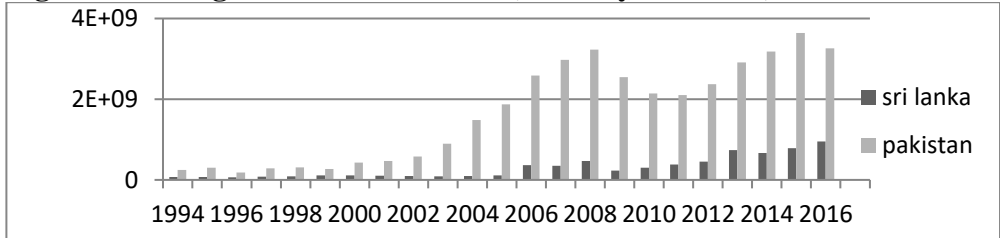
Source: World Development Indicators

4.2.6: Bound Rate (Primary Products)

The maximum rate of a tariff a country can impose on a commodity by the imported country, each country chooses a maximum rate of tariff on certain commodities. The rate varies across countries and commodities and they are not allowed to increase the bound rate they have imposed. So, the permissible level of tariffs a country can impose is known as bound rate. Light shaded bars indicates bound rate of Pakistan while dark shaded for Sri Lanka. Figure 6 exhibits higher bound rate for Pakistan than for Sri Lanka. So, Pakistan is having higher bound rate of tariff on commodities, involving less in international trade.

Figure 6: Bound Rate
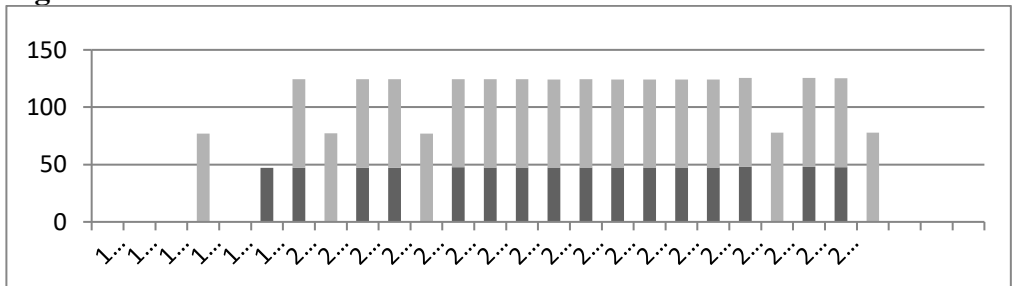
Source: World Development Indicators

4.2.7: Gross Domestic Product

Gross domestic product (GDP) is the total output by the producers of the economy including taxes and excluding the subsidies. While measuring GDP depletion of natural resources and depreciation in assets are not excluded. In the figure 7 given below Pakistan's GDP is higher than Sri Lanka in all the years chosen for the analysis. So, output by the producers in Pakistan is much higher than Sri Lanka.

Figure 7: Gross Domestic Product
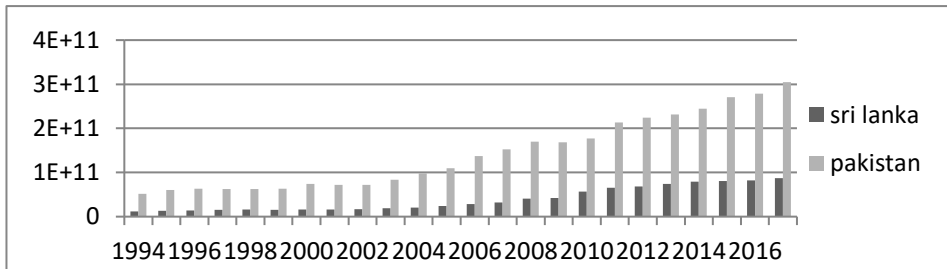
Source: World Development Indicators

4.2.8: Logistics Performance Index

Logistics performance index (LPI) evaluates quality of trade and other infrastructure, index ranges from 1 to 5. Countries attain a value of 1 have poor trade quality and transport related infrastructure while a value of 5 shows best performance in trade and infrastructure quality. Index is measured through surveys which evaluate eight markets; the markets are chosen based on the most important export and import markets of the respondent's country, random selection, and, for landlocked countries, neighboring countries that connect them with international markets. Values for LPI are missing for most of the time period. Data on LPI is available from 2008 and onwards exhibiting LPI values for both of the selected South Asian economies. Both the countries are having LPI values not more than 3. Pakistan is performing somehow well than Sri Lanka.

Figure 8: Logistics Performance Index
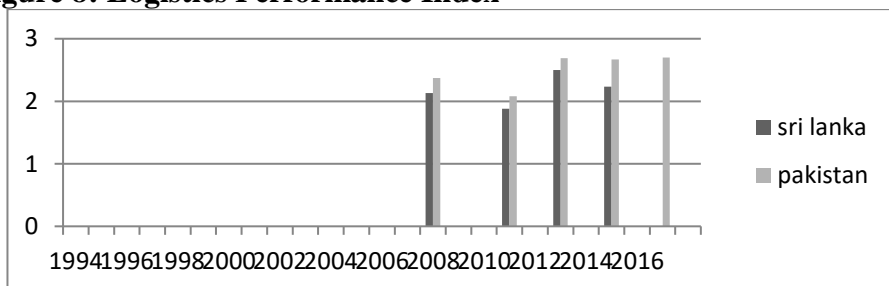
Source: World Development Indicators

5: Extended Analysis

It includes graphical analysis of different regions by looking at trade value of regions. The analysis shows trends in trade value and free trade agreements for different time period of 2011-2017.

5.1: Total Intermediates Trade

South Asian economies were unable to integrate regionally and around the globe. South Asia involve lesser in trade as well as GVC when compared to other regions of the globe. Although, the region has ability to integrate in international trade, investment and production (Tewari, 2008). Reasons for least integration of South Asian region are (Ahmed &Ghani, 2007)

- Poor connectivity
- Cross border conflicts
- Security concerns

Table 1:   South Asia Total Intermediates Trade (million $) comparison with Sub Regions

Years	Total Intermediates Trade (South Asia)	Total Intermediates Trade (East Asia And Pacific)	Total Intermediates Trade (Middle East Asia And North Africa)
2012	41054.80	2952285.97	601151.97
2013	43214.75	3053416.05	608762.63
2014	50731.37	3059010.94	599918.93
2015	47111.48	2892754.33	530553.23
2016	46751.57	2768509.83	514971.24

Source: Asian Regional Integration Centre (ARIC) Database

It can be seen from the Table above that South Asia is not doing well in intermediates trade compared to sub regions. As East Asia and South East Asia are doing well in total trade in intermediates. I have compared total intermediates trade of these three regions for recent time periods. Data shows least total intermediate trade by South Asian region.

5.2: Quality of Port Infrastructure

The Quality of Port Infrastructure represents a country's port services, data ranges from 1(poor services of ports) to 7(excellent services of ports). South Asian region lags behind other regions in quality of port infrastructure, showing poor performance among other regions of the globe.

Table 2   South Asia Quality of Port Infrastructure (QoI) comparison with Sub Regions

Years	QoI (South Asia)	QoI (East Asia and Pacific)	QoI (Middle East Asia and North Africa)
2012	3.86	4.65	4.53
2013	3.55	4.43	4.48
2014	3.43	4.36	4.36
2015	3.25	4.41	4.51
2016	3.26	4.41	4.52
2017	3.38	4.44	4.43

Source: World Development Indicators

5.3: Logistics Performance Index

Logistics performance index (LPI) evaluates quality of trade and other infrastructure, index range from 1 to 5. Countries attain a value of 1 have poor trade quality and transport related infrastructure while a value of 5 shows best performance in trade and infrastructure quality.

Table 3   South Asia Logistics Performance Index (LPI) comparison with Sub Regions

Years	LPI (South Asia)	LPI (East Asia and Pacific)	LPI (Middle East Asia and North Africa)
2012	2.38	3.03	2.88
2014	2.33	3.15	2.78
2016	2.44	3.01	2.89

Source: World Development Indicators

It can be seen from the table above that South Asia is not doing well in Logistics Performance Index compared to sub regions. The South Asian region ranks low in comparison to East Asia and competitor countries in Middle East Asia and North Africa (Ahmed, Suleri and Javed, 2015).

5.4: Free Trade Agreements

No such initiatives were taken before 1990's which can help the region to integrate more in trade. After that several attempts were made by South Asian Association for Regional Cooperation (SAARC) which can help South Asia to boost integration. Agreements include South Asian Preferential Trade Agreements (SAPTA), South Asia Free Trade

Agreement (SAFTA) and SAARC Agreement on Trade in Services (SATIS).

Table 4: Free Trade Agreements 2016

Country	Framework Agreement signed	Negotiations Signed	Signed but Not implemented	Signed and Implemented	Total Agreements
Afghanistan	0	0	0	2	2
Bangladesh	0	2	1	3	6
India	1	14	0	12	26
Maldives	0	1	3	1	5
Pakistan	0	6	2	9	17

Source: Asian Regional Integration Centre (ARIC) Database

South Asia could participate more in trade across the region by reducing tariff rates among trading partners of the region. Along with improvement in infrastructure, trade facilitation services such as shipment services and port services are also important. Pakistan, Sri Lanka, India and Bangladesh can participate in GVC by reducing barriers to trade.

6. Results and Discussions

The section of the study interprets and describes the detail discussion about the obtained results and significance of the variables. Below is given the detailed descriptive and empirical analysis.

5: Unit Root Test

Levin–Lin–Chu test, Harris–Tzavalistest, Im–Pesaran–Shin test, and Fisher-type tests all have been applied to check the stationarity of the variables. Im–Pesaran–Shin and Fisher-type tests are commonly used for unbalanced panel datasets. Unit root includes both cross sections and time trends in the model of the data-generating process in the panel data.

Table 5: Unit Root Test Results

Variables	Order of integration
Ln-tariffs	2nd difference
Ln-fdi	2nd difference
Ln-trdcost	1st difference
Ln-gdp	2nd difference

Ln-logind	1st difference
Ln-tariffs	1st Difference

Source: Author's own calculations

6.1 Ordinary Least Square (OLS) Regression

To evaluate this panel data study of South Asian economies first of all applied the Ordinary Least Square (OLS) regression for obtaining the initial results of the study. Evaluating the coefficients of the variables, for the impact incidence we obtain the estimates of the respective variables over the Trade value in the South Asian countries (Sri Lanka and Pakistan). Table 6 given below shows the results of OLS regression.

Table 6: OLS Results

Variables	OLS Model		Fixed Effect Model		Random Effect Model	
	Coefficients	Probability	Coefficients	Probability	Coefficients	Probability
Ln-tariffs	-6.664721	0.780	-2.98813	0.882	-6.664721	0.780
Ln-fdi	1.677434	0.254	.8059417	0.737	1.677434	0.254
Ln-trdcost	-1.471941	0.284	-1.45532	0.357	-1.471941	0.284
Ln-gdp	.5265125	0.785	5.265144	0.925	.5265125	0.785
Ln-logind	1.452651	0.506	.2288147	0.351	1.452651	0.506

Source: Author's own calculations

6.2: Fixed Effects

Least square dummy variables (LSDV) allow in explaining fixed effects more efficiently. The model has a benefit as it controls all the time invariant variables that cannot be included in the model or omitted so the coefficients of fixed effects are not biased. In fixed effect model, the effects of regressors captured by differences in countries. LSDV allows to add dummies for each country hence controlling for unobserved heterogeneity. Each dummy represents their respective countries by capturing their effect.

6.3: Random effects

Random effects say error term is not correlated with the Regressors. It allows using time invariant variables in the model. The difference between fixed and random effect is whether the unobserved individual effects include errors that are correlated with the Regressors in the model (Green, 2008).

6.4: Estimation Hausman Test

To decide between fixed or random affects Hausman test is used where the null hypothesis states that Regressors are not correlated with error term or random effects. Below is given the Table showing the results using this test.

Table 7: Hausman Test Results

Variables	Fixed(A)	Random(B)	Difference (A-B)
Ln-tariffs	-2.9881	-6.6647	2.7616
Ln-fdi	.8059	1.6774	.8604
Ln-trdcost	-1.4553	-1.4719	.4193
Ln-gdp	5.2651	.5265	1.2239
Ln-logind	.2288	1.4526	5.7623

Source: Author's own calculations

Prob>chi2 =   0.962

When we calculate Hausman test our results of chi squire test is above 5 % so we accept null hypothesis and reject the alternative hypothesis. It means that according to chi –sq statistic our results are above 5% in Hausman test then we must use the random effect model for results. As we seen above the probability of chi squire is insignificant so according to the chi squire statistic we will use random effects.

6.5: Breusch Pagan Lagrange Multiplier Test

This test allows choosing between random effects and pooled OLS regression. The null hypothesis is that there are no significant differences across economies chosen for the analysis.

Variance (U) = 0
Prob > chibar2 =   1.0000

The results here indicate that we reject the null hypothesis conclude that random effects are appropriate for the analysis. There is evidence of significant differences across countries, therefore no need to interpret simple OLS model.

6.6: Robustness Check

Robustness check allows us to correct our results which are not appropriate if their exist effects of variables not captured in the study. It gives us the best results of regression analysis.

Table 8: Robustness Results

Variables	Coefficients	Probability

Ln-tariffs	-6.6647	0.000
Ln-fdi	1.6774	0.000
Ln-trdcost	-1.4719	0.000
Ln-gdp	.52651	0.000
Ln-logind	1.4584	0.000

Source: Author's own calculations

In the literature it has been argued that tariffs and non- tariff barriers to trade are very high restricting RVCs. Cross border activities involve high cost of trading in value chains because itermediates are crossing borders many times, resulting in highprice of final products and services and lower RVCs. The results prove a negative correlation between trade value and tariffs. Tariffs on intermediate inputs and goods are significantly negative that is also proven in literature (Blanchard, 2017 & Slany, 2016). One percent decrease in avergae tariffs bring much more increase in trade value. Based on above results and interpretations it is concluded that tariffs have negative effect on trade value, which act as a barrier to value chains. Results indicate that lower tariff rates can bring more trade value, so engagement of a country in RVCs is improved.

All the control variables choosen for the study are having positive impact on trade value except trade costs. Acting as barrier to trade, trade costs on intermediate goods shows negative and significant impact on trade value (Slany, 2016).

FDI is having positive impact over trade value, and the coefficient is significant. The impact incidence is showing theoretically proven in the literature (Kowalski, 2015). FDI is linked with openness to trade as more openness brings more FDI in the economy, so higher levels of FDI brings more trade value leading to enhanced trade. Gross Domestic Product (GDP) is observed to be having a positive and significant impact over Trade value (TVA). The results are also theoretically and empirically proven in the literature (Slany, 2016).

While logistics performance index is used as a control variable is having positive and significant impact on trade value attained when both the economies involve in Regional value chains (RVCs).

7: Conclusion

South Asian economies are not performing well in international trade and Global value chain when compared with other regions of the globe.

Regional value chains (RVCs) could become a step towards GVC but performance of value chains within the region is not impressive. Although GVC and RVC trade is rising but its still less than other regions as South East Asia and pacific and Middle East and North Africa. Regional as well as trade with other economies face many trade barriers along the value chains. In the literature it has been argued that tariffs and non- tariff barriers to trade are very high restricting RVCs trade and so GVC. Cross border activities involve high cost of trading in value chains because itermediates are crossing borders many times, resulting in highprice of final products and services and lower RVCs and GVC. Based on above results and interpretations it is concluded that tariffs have negative effect on trade value, which act as a barrier to internation trade and value chains. Also, the results indicate border inefficiencies and poor infrasture for the selected economies of South Asia. I find empirical evidence for enhacement in trade value with a reduction in tariff rates. Results indicate that lower tariff rates can bring more trade value, so engagement of a country in RVCs is improved. Furthermore, at national level many factors affect trade and participation in value chains. Performamance of governance indicators is worse in almost all countries of of South Asia. South Asia is relying on poor infrastructure and political instablility, which has effects on RVCs. Productivity of domestic firms and quality of traded goods and inputs are also important, both are lower in South Asian region. Also, logistics perfromance is not well in whole of the region restricting trade.

8: Policy Recommendations

Based on results and conclusion folowing policy recommendation are made:

- South Asian region should make efforts to regional integration, it would be helpful in adding value in the economy through international trade and GVC.
- Removel or reduction of tariffs and non-tariff barrirers is necessary, as these barriers restrict RVCs trade and hence GVC.
- Along with regional integration trading activities with all other nations should be enhanced by engaging more in trade of parts and components and trade of other goods and services.
- Relaxation in trade policy and industrial policies should be made to enhance trade activities across border.

- Efforts to eliminate barriers to international trade along with improvements in trade facilitation services, logistics performance and cross border in efficiencies.
- Along with all these imprvements better law and order situation, regulaory quality, effectiveness of government and all other indicators of governanace are compulsory for international trade and development.

References:

Adhikari, K. B., Regmi, P. P., Gautam, D. M., Thapa, R. B., & Joshi, G. R. (2017). Value Chain Analysis of ORTHODOX TEA: Evidence from Ilam district of Nepal. *Journal of Agriculture and Forestry University*, *1*, 61.

Aggarwal, S. (2017). Smile curve and its linkages with Global value chain. *Journal of Economics Bibliography*, *4*(3), 278-286.

Aghion, P., Bloom, N., Blundell, R., Griffith, R., &Howitt, P. (2005). Competition and innovation: An inverted-U relationship. *The Quarterly Journal of Economics*, *120*(2), 701-728.

Ahmed, S., &Ghani, E. (2007).Growth and regional integration. *South Asia Growth and Regional Integration*.

Ahmed, V., Suleri, A. Q., & Javed, A. (2015). Strengthening South Asia Value Chain: Prospects and Challenges. *South Asia Economic Journal*, *16*(2_suppl), 55S-74S.

Antras, P., &Helpman, E. (2004).Global sourcing. *Journal of political Economy*, *112*(3), 552-580.

Anukoonwattaka, W. (2011). Driving forces of Asian international production networks: A brief history and theoretical perspectives,[in:] W. Anukoonwattaka, M. Mikic. *India: A New Player in Asian Production Networks? Studies in Trade and Investment*.

Appelbaum, R. P., &Gereffi, G. (1994).Power and profits in the apparel commodity chain. *Global production: the apparel industry in the Pacific Rim*, 42-62.

Athukorala, P. C. (2011). Production networks and trade patterns in East Asia: Regionalization or globalization? *Asian Economic Papers*, *10*(1), 65-95.

Baldwin, J. R., & Yan, B. (2014). *Global value chain and the productivity of Canadian manufacturing firms*.Statistics Canada.

Baldwin, R. (2006). Globalisation: the great unbundling (s). *Economic Council of Finland*, *20*(3), 5-47.

Baldwin, R. (2011). *Trade and industrialization after globalization's 2nd unbundling: How building and joining a supply chain are different and why it matters* (No. w17716). National Bureau of Economic Research.

Barton, J. H., Goldstein, J. L., Josling, T. E., & Steinberg, R. H. (2008). *The Evolution of the Trade Regime: Politics, Law, and Economics of the GATT and the WTO*. Princeton University Press.

Bernard, A. B., Jensen, J. B., & Lawrence, R. Z. (1995). Exporters, jobs, and wages in US manufacturing: 1976-1987. *Brookings papers on economic activity. Microeconomics*, 67-119.

Bhattacharya, D., &Moazzem, K. G. (2013). *Least Developed Countries (LDCs) in the Global Value Chain (GVC): Trends, Determinants and Challenges,* Centre for Policy Dialogue (CPD), (104).

Blanchard, E. J., Bown, C. P., & Johnson, R. C. (2017).Global value chain and Trade Policy.

Blaug, M. (1997). *Economic theory in retrospect*.Cambridge university press.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of econometrics*, *87*(1), 115-143.

Blundell, R., Griffith, R., & Van Reenen, J. (1999).Market share, market value and innovation in a panel of British manufacturing firms. *The Review of Economic Studies*, *66*(3), 529-554.

Boileau, D. and Sydor, A. 2011.Global value chain in Canada. In Sydor, A. (Ed.), *Global value chain: Impacts and Implications,* Trade Policy Research, Department of Foreign Affairs and International Trade, Canada: Ottawa.157-178.

Brander, J. A., & Spencer, B. J. (1984). Export subsidies and international market share rivalry.

Brander, J., &Krugman, P. (1983).A 'reciprocal dumping'model of international trade. *Journal of international economics*, *15*(3-4), 313-321.

Brooks, D. H., &Ferrarini, B. (2014). Vertical gravity.*Journal of Asian Economics*, *31*, 1-9.

Brunner, H. P. (2013). Can Global value chain Effectively Serve Regional Economic Development in Asia?

Corden, W. M., &Neary, J. P. (1982). Booming sector and de-industrialization in a small open economy. *The economic journal*, *92*(368), 825-848.

Das, J., Tanger, S., & Kennedy, P. L. (2016). Effect of Regulatory Quality on Wood Pulp Imports by India. In *2016 Annual Meeting, February 6-9, 2016, San Antonio, Texas* (No. 230097).Southern Agricultural Economics Association.

Dedrick, J., Kraemer, K. L., & Linden, G. (2010). Who profits from innovation in Global value chain?a study of the iPod and notebook PCs. *Industrial and corporate change*, *19*(1), 81-116.

Dickerson, K. G. (1999). *Textiles and apparel in the global economy*.Prentice Hall.

Escaith, H., Inomata, S., &Miroudot, S. (2018). Evolution of production networks in the Asia–Pacific region: A vision in value-added and employment dimensions.

ESCAP, U. (2013). Asia-Pacific Trade and Investment Report.

Feenstra, R. C. (1998). Integration of trade and disintegration of production in the global economy. *Journal of economic Perspectives*, *12*(4), 31-50.

Feenstra, R. C., & Hanson, G. H. (1996). *Globalization, outsourcing, and wage inequality* (No. w5424). National Bureau of Economic Research.

Feenstra, R. C., & Hanson, G. H. (1997). Foreign direct investment and relative wages: Evidence from Mexico's maquiladoras. *Journal of international economics*, *42*(3-4), 371-393.

Francois, J., Manchin, M., &Tomberger, P. (2013). *Services linkages and the value added content of trade*. The World Bank.

Gereffi, G. (2006). *The new offshoring of jobs and global development*.International labor organization.

Gereffi, G. (2014). A global value chain perspective on Industrial policy and development in Emerging markets.*Duke Journal of Comparative & International Law.24*(3), 433-458.

Gereffi, G., & Fernandez-Stark, K. (2016). Global value chain analysis: a primer.

Gereffi, G., &Korzeniewicz, M. (Eds.).(1994). *Commodity chains and global capitalism* (149).ABC-CLIO.

Gereffi, G., Humphrey, J., & Sturgeon, T. (2005).The governance of Global value chain. *Review of international political economy*, *12*(1), 78-104.

Gereffi, G., Humphrey, J., Kaplinsky, R., & Sturgeon*, T. J. (2001). Introduction: Globalisation, value chains and development. *IDS bulletin*, *32*(3), 1-8.

Gibbon, P., Bair, J., & Ponte, S. (2008). Governing Global value chain: an introduction. *Economy and Society*, *37*(3), 315-338.

Grubel, H. Lyold. (1975). P.].(1975), Intra-Industry Trade. *The Theory and Measurement of International Trade in Differentiated Products, Bristol*.

Helpman, E., &Krugman, P. R. (1985). *Market structure and foreign trade: Increasing returns, imperfect competition, and the international economy*. MIT press.

Hopkins, T. K., &Wallerstein, I. (1977).Patterns of development of the modern world-system. *Review (FernandBraudel Center)*, 111-145.

Hummels, D., Ishii, J., & Yi, K. M. (2001).The nature and growth of vertical specialization in world trade. *Journal of international Economics*, *54*(1), 75-96.

Humphrey, J., & Schmitz, H. (2002). How does insertion in Global value chain affect upgrading in industrial clusters? *Regional studies*, *36*(9), 1017-1027.

Inomata, S. (2017). Analytical frameworks for Global value chain: An overview.

Jones, R. W. (2008). Heckscher–Ohlin trade theory.In *The New Palgrave Dictionary of Economics* (pp. 1-13). Palgrave Macmillan, London

Jones, R. kierzkowski, H. (1990):"The Role of Services in Production and International Trade: A Theoretical Framework". *The Political Economy of International Trade, Basil Blackwell, Oxford*.*Journal of economic Geography*, *8*(5), 699-725.

Kaplinsky, R., & Morris, M. (2008). Do the Asian drivers undermine export-oriented industrialization in SSA? *World Development*, *36*(2), 254-273.

Kowalski, P., Gonzalez, J. L., Ragoussis, A., &Ugarte, C. (2015).Participation of developing countries in Global value chain.

Kravis, I. B. (1956)."Availability" and Other Influences on the Commodity Composition of Trade. *Journal of Political Economy*, *64*(2), 143-155.

Krugman, P. (1984). Import protection as export promotion: International competition in the presence of oligopoly and economies of scale. *Monopolistic competition and international trade*, 180-93.

Krugman, P. R. (1979). Increasing returns, monopolistic competition, and international trade. *Journal of international Economics*, *9*(4), 469-479.

Krugman, P. R. (1985). Increasing returns and the theory of international trade.

Linder, S. B. (1961). *An essay on trade and transformation* (pp. 82-109). Stockholm: Almqvist&Wiksell.

Low, P. (2013). The role of services in Global value chain. *Fung Global Institute, June*.

Melitz, M. J. (2003). The impact of trade on intra-industry reallocations and aggregate industry productivity. *Econometrica*, *71*(6), 1695-1725

Menkhoff, T. (1992).Chinese Non-Contractual Business Relations and Social Structure-the Singapore Case. *International Quarterly for Asian Studies*, *23*(1/2), 261.

Miroudot& De Backer, 2013.Mapping Global value chain. OECD trade policy papers. 2013.No.159, (159)

Moïsé, E., & Le Bris, F. (2013). Trade Costs-What Have We Learned?

Mudambi, R. (2008). Location, control and innovation in knowledge-intensive industries

Pomfret, R., &Sourdin, P. (2014).Global Value-Chains and Connectivity in Developing Asia-With Application to the Central and West Asian Region.ADB working paper, *142*

Porter, M. (1985).The value chain. *The Value Chain and Competitive advantage: creating and sustaining superior performance*.

Posner, M. V. (1961). International trade and technical change. *Oxford economic papers*, *13*(3), 323-341.

Rasiah, R., &Nazeer, N. (2016).Comparing Industrialization in Pakistan and the East Asian Economies.*The Lahore Journal of Economics*, *21*, 167.

Ricardo, D. (1891). *Principles of political economy and taxation*. G. Bell.

Rodrik, D., Subramanian, A., &Trebbi, F. (2004). Institutions rule: the primacy of institutions over geography and integration in economic development. *Journal of economic growth*, *9*(2), 131-165.

Roodman, David. "How to do xtabond2: An introduction to difference and
system GMM in Stata." (2006).

Rudassa, W., Azene, D., (2018). Global Value Chain Evolution, Feature
and Significance: Literature Review. Journal of social sciences,
20(2):137-150

Ruffin, R. (2002). David Ricardo's discovery of comparative
advantage. *History of political economy*, *34*(4), 727-748.

Sahoo, P. (2006). Foreign direct investment in South Asia: Policy, trends,
impact and determinants.

Sen, K. (2014). Global Production Networks and Economic Corridors: Can
They Be Drivers for South Asia's Growth and Regional Integration?

Shin, N., Kraemer, K. L., &Dedrick, J. (2012). Value capture in the global
electronics industry: Empirical evidence for the "smiling curve"
concept. *Industry and Innovation*, *19*(2), 89-107.

Shiozawa, Y. (2007). A New Construction of Ricardian Trade Theory—A
Many-country, Many-commodity Case with Intermediate Goods
and Choice of Production Techniques—. *Evolutionary and
Institutional Economics Review*, *3*(2), 141-187.

Slany, A. (2016). The Role of Trade Policies in Strengthening Regional
Value Chains in Africa.

Smith, A. (1937). The wealth of nations [1776].

Shih, S. (1992). Empowering technology—making your life easier. *Acer's
Report, Acer's, New Taipei*.

Stolper, W. F., & Samuelson, P. A. (1941).Protection and real wages. *The
Review of Economic Studies*, *9*(1), 58-73.

Storper, M., Chen, Y. C., & De Paolis, F. (2002).Trade and the location of
industries in the OECD and European Union. *Journal of Economic
Geography*, *2*(1), 73-107.

Sturgeon, T. J. (2006).Conceptualizing integrative trade: the Global value
chain framework. *Trade policy research*, *6*, 35.

Sydor, A. (2011). *Global value chain: Impacts and Implications*. Minister
of Public Works and Government Services.

Tewari, M. (2008). *Deepening intraregional trade and investment in South
Asia: The case of the textiles and clothing industry* (No.
213).Working Paper.

Timmer, M. P., Erumban, A. A., Los, B., Stehrer, R., & de Vries, G. J. (2014).Slicing up Global value chain. *Journal of Economic Perspectives*, *28*(2), 99-118.

Trade, A. P. (2015).Investment Report 2015. *Turning the Tide: Towards Inclusive Trade and Investment*.

UNCTAD, G. V. C. (2013). Investment and Trade for Development. *World investment report*.

Vernon, R. (1966). International investment and international trade in the product cycle. *V Quarterly Journal of Economics*, *190*, 207.

Wang, X. (2013). The determinants of textile and apparel export performance in Asian countries.

Williamson, O. E. (1975). Markets and hierarchies. *New York*, *2630*.

World Trade Organization.(2014). *World trade report 2014*.World Trade Organization.

Yeats, A. J. (1999). *Just how big is global production sharing?*The World Bank