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Master's Thesis

**The Impact of Global Value Chain on
Industrial Development**

February 2019

Graduate School of International Studies

Seoul National University

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The Impact of Global Value Chain on Industrial Development

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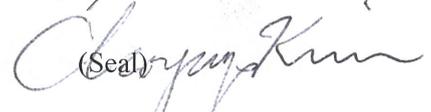
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The Impact of Global Value Chain on Industrial Development

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ABSTRACT

In this era of the globalisation, where production and final consumption doesn't take place simultaneously increasing concerns are there regarding who actually captures value. The rise of Global Value Chain with double accounting has become one of the prominent issues in trade, policy and investment. The alley to know the facts are really narrow and also their actual impact on the economic development have not been ascertained rigorously yet, considering the level of development and income. Thereby with the help of OECD and WTO, we are now exposed to the complex data set. In my research I have studied the causal relationship of global value chain participation and its effect on the industrial development of concerned countries. Most of the authors till now have mainly focused on developing GVC indicators. Using data sets from secondary sources, in my empirical research I have found out that there is a very significant strong positive relationship between the participation of global value chain on country level industrial development irrespective to the level of income and development. In an extension in my research I have also measured the individual industries performances/impacts to that of their industrial development which also gives us the idea about the causal relationship and the impact of individual industrial sectors to their industrial development and growth at a large.

Keywords: Global Value Chain, Industry value Added, Economic Development

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LIST OF ABBREVIATIONS

GVC	Global Value Chain
OECD	Organization for Economic Co-operation and Development
UNTAD	United Nations Conference on Trade and Development
MNC	Multinational Corporation
TiVA	Trade in Value-Added
WTO	World Trade Organization
MNE	Multinational Enterprise
ILO	International Labour Organization
UN	United Nations
TRIPS	Intellectual Property Rights
GDP	Gross Domestic Production
FDI	Foreign Direct Investment
WIOD	World Input-Output Database
MRIO	Multi-Region Input-Output
GTAP	Global Trade Analysis Project
ISIC	International Standard Industrial Classification
DVA	Domestic Value Added
FVA	Foreign Value Added

CHAPTER 1: INTRODUCTION

1.1 Background of the Study

In today's globalized interconnected world productions and final consumptions are not just confined in a single territory. Products are now 'Made in the World' by Fractionalization of production processes. Mostly they are spread in disperse location to smoothen the production process with the help of informational technology. It is perceived that almost more than half of the global trade and investment is in intermediate products and services and these are mostly part of GVCs. In the passage of time from various sources we also know that, the accumulated values of ultimate final and capital goods and services have been exceeded and surpassed by the World exports of intermediate goods back in the year 2009. (*Gereffi, 2015, referred to WTO and IDE-JETRO, 2011*). Many policy makers believe that GVC participation is one of the vital strategy of economic development (*UNCTAD 2013*). Basically the GVC framework emerged in the early 2000s when people from different scholastic backgrounds came unitedly to introduce a common general structure by using standard set of terms to explain an intricate network which sets the new age for the Global Value Chains (*UNCTAD 2013*). The trend of global value chain have been flourishing in an increasing trend due to the lower trade barriers and also the unbundling of production and service processes.

The extent or gradual rise of global value chains is basically one of the demonstration of globalization. Many examples we can see in this regard. There have been a significant

drop in the tariff barriers and restrictions, massive improvement in IT services, improvements in infrastructure and sophisticated transmission services, thereafter worldwide renowned logistics services are pretty much available anywhere and everywhere. Thereby different regulatory bodies like the protection of Intellectual Property Rights, more specifically the World Trade Organization (WTO) agreement on investment and trade related matters and also issues of Intellectual Property Rights (TRIPS) are making the pave way of global value chain more strong by removing barriers and obstacles. The importance of the new dimensional Global Value chain is enormous. It's helping us to extensively understand the interconnected global economy, trade and investments. MNCs are paving the way for global value chain with an extensive offshoring and outsourcing activities around the world. The rise of global value chain is even more increasingly apparent as political and geo political differences are smoothening, technological advancement are taking place which are bringing drastic changes in the cost of business operations internationally. These different kinds of forces are making the differences for the new era of global market place. *(Feenstra 1998)*.

The unbundling, fragmentation, or disaggregation of production has gained considerable attention in the past decades, with the advent of facilitated or instant communication, and the steadily increasing transportability of all things man-made across various logistic paths—air, land, and sea *.(Iliuteanu 2016)*.

Basically the constant fragmentation of production in the global market place have challenged the traditional view of investment and trade. Thereby to deal with the intricate

issues new approaches are necessary which deals with the new policy and ensures adequate data. The conventional statistical tools can't accurately ascertain these data sets. (UNCTAD 2013). Global value chain is far more extended than just mere fragmentation of production or double accounting system. This platform is bringing together firms, different establishments most importantly accumulating diverse and multidimensional labour forces. The impact is much more intense and deeper and the change is creating a way to improve global competition. (Sturgeon and Memedovic 2011). Thereby firms and establishments need to find effective way to inter into the value chain to add value and also to become specialized into their strengths. (Sturgeon and Memedovic 2011). To facilitate the whole process of Global Value Chain trade and investment policies should be more geared up into that dimension. (Whittaker et al. 2008).

WTO and OECD along with other economic institutions are continuously trying to bring the most updated database of the globally accepted value chain phenomenon with using different complex statistical tools. So by doing it they are being able to separate or disseminate the value which are being added to each stage by the concerned trading bodies in the production processes. Back in 2013 the new value added statistics of trade was 1st published which gives a better understanding to the policy makers regarding the whole complex phenomena of GVC. These database or index also allows to appreciate the involvement of service sectors which account almost half of the world's trade value and shows how interconnected the production and service processes are. (UNCTAD 2013).

But central issues still lies who cuts the most of the benefit from the participation. Still controversy among authors are there. Some are more into supporting developing countries and some more into akin technology advanced countries. This paper will try to ascertain the causal relationship between GVC participation and Industry value added.

1.2 Significance of the Study

Most empirical literatures regarding global value chain have mainly focused on developing indicators of global value chain participation of countries and their development and rise over times. However one of the very first paper empirically showing the effects of GVC on domestic value added was by (*Kummritz 2016*). GVC participation is allowing countries with their industrial modification and upgradation. GVCs not just facilitate job opportunities but also immensely contributes to the gross domestic production, income generation and tax facilitation and incentive processes. (*UNCTAD 2013: Global Value Chain and Developments*). One of the important phenomena regarding the global value chain is, not all the participating country can reap the benefit out of it. To enter and sustain in the system some set of skills are necessary which allows countries to move upward the value chain. Minimum level of education, technological skills and availability of the proper information sources are necessary. The participating countries can avail the benefits out of global value chain if they nurture the skill sets and upgrade it to the passage of time to be more competitive and competent. As in literature there are still debates regarding the potential benefit countries are having in terms of development and also growth process, thereby it is necessary to know how

actually GVC participation is enabling countries with the power of development. In my research I will try to draw that causal relationship and the linkage between the participation in the global value Chain and the industrial development.

1.3 Structure of the Paper

In the introduction chapter I have briefly discussed regarding the background and motivation of the research. Thereby in chapter 02 through literature reviews I will try to draw the ideas of previous literature along with GVC participation and a short glimpse of Global Value Chain. Latter in the empirical study chapter 03, I will briefly discuss the sources of data set, regression and econometric toll to prove my hypothesis and will show the result with expiations. In chapter 04 a very brief of limitations of the research will be discussed. In chapter 05, I will draw the concluding remarks followed by policy implications.

CHAPTER 2: LITERATURE REVIEW

2.1 Global Value Chain

Back in 1985 when porter introduced the concept value chain, that was basically the reference point of the global value chain movement. Porter described a complex production process to end user process where from customer to seller different bodies are included. Basically these are full range of production and service activities which goes along with the initial to end user process and sometimes beyond that by including after sales activities. The extent of activities include R & D , production, marketing and selling through distribution channel and the associated parties can be firms as well as it can be disseminated among different and varies firms (*globalvaluechains.org*).

For ensuring a proper profit maximization geographical location, proximity to the actual conception and the channels to distribute these are important variables. In the country difference there are differences in cost of inputs or raw materials, political social and thereby environmental factors and also other factors like cultural differences which also plays important roles and can be regarded as variables in the whole process. Hence, the process of production takes place and links the producer to the final consumer, taking into consideration the above mentioned differences (*Amiti, 2005*). Variables like time differences transportation facilities (*Venables and Baldwin, 2011*), thereby the cost of institutions and also the related benefits are important (*Rugman and Verbeke, 2004*).

Basically unbundling came into existence back in the 2nd half of the 19th Century and thereafter from the 1960s and onwards the idea of operation and disaggregation of all

kinds of production and the final consumption was actually in existence *Baldwin (2006, 2012)*. Offshoring and also outsourcing which were one of the key elements of 2nd unbundling started in the middle of 1980s became prominent with the help of dividing the production process across countries.

The increasing growth of modern digital technological advancement, more open liberal policies have paved the way for formulating new strategic choices and opened more policy options for the value chain spread across globally and also across countries irrespective of the geographical boarder. *Gereffi etill (2013)*

Basically the GVC framework emerged in the early 2000s where from different scholastic background different elite scholar grouped together to formulate a new complex set of networks which basically marks the beginning of the globally spread value chain. (*UNCTAD 2013*).

Basically through the stage of (GVCs) firms and different MNCs can spread their production process crossing the geographical boundaries to minimize the total cost and input cost of final production. The restructure and the disaggregation takes place through different outsourcing and also offshoring activities. Globalization or globally interconnected production process is not just a present phenomenon but in previous years and also in the decades they have observed the international phenomena of spreading production actives through different kinds of channel like marketing, R&D, production, distribution through promotional activities and also after sales services. Thereby it's not just a recent phenomenon or trend and also it channels different kinds of new ideas internationally.

Thus, the concept can be ingrained in intermediate or transitional services and goods and also can take the form of new innovation and learning. As participatory firms in GVCs have to compete globally they have to maintain the standards and also need to follow all the government rules and regulations. In this way firms stay more accountable and socially responsible. Different regulatory bodies are there to monitor trade and investment related steps. Participating countries are somewhat challenged especially the developing countries as it's important to follow the regulations from the international bodies like WTO, OECD, ILO, UN to be competitive in market. (*OECD, WTO, UNCTAD 2013*).

Most scholars describe GVC product development with the help of a convex bell curve or, or in other terms like a 'smiley face diagram' (*World Economic Forum, 2012, p. 21*). That is to say that on the left end of the bell curve, one finds the upper-tier activities for instance standardization, innovation, R&D, and design that bring in high-value added returns. On the lower and middle end of the curve, one finds labour-intensive activities such as manufacture and assembly that are associated with fewer returns. Finally, on the right end of the bell curve, logistics, marketing, and other brand activities occur that also bring in high returns. The challenge that most countries face is to reach either side of the bell curve and elevate themselves from the manufacturing and assembly positions in the diagram. (*Iliuteanu 2016*).

Basically the globally spread value chain now includes an extensive full variety of activities from production to final consumption and after sales services as well. In the production process from sourcing raw materials to idea generation, implementation,

labour sourcing to production, promotion and distribution, marketing and sales all the activities are now split and divided into across countries and also as the consumption is worldwide, value chains are changing the concepts of single market. (*Kaplinsky and Morris 2001*).

Furthermore various upgrading function and processes have been marked under the GVC framework. Such as (*Humphrey and Schmitz, 2002*):

- **Upgrading the Process** – Involves new and better coordinated production process and also includes modification of new technology, efficiency etc.
- **Upgrading the Product** – Includes more state of the art products and services.
- **Upgrading the Functional** – Includes upgrading the set of skills and expertise in the content of a product or service.
- **Upgrading the Inter-Sectoral Chain** – basically a country's total export be divided into two aspects, domestic value added and foreign value added. Thereafter basically this part denotes moving from one industry to another in the value chain. Thereby a country's export can be forwarded to another country for the ultimate final consumption or it can be an input as an intermediary of export to other country which will be re-exported to a third country,

In other words, basically the foreign value added in exports is regarded as the upstream aspect of value chain and also value added which are mixed and incorporated in third-country exports known as the downstream approach in the GVC phenomena.

Below the common parameters are given:

- **Value added (Foreign):** Basically it is the part or portion of export which will not be included in that countries' Gross Domestic Production. In other words it can be said that when countries export is made of inputs collected from other than the home country is mainly foreign value added.
- **Value added (Domestic):** More broadly it concerns with the issue that how trade and investment of home country effects or contributes to that countries' Gross Domestic Production. Thus, the portion of countries export that is included in that country's Gross Domestic Production is basically domestic value added.
- **Indicators of GVC Participation:** GVC participation is a double accounting process where countries export is a variety of production process system. It can be a part of making other countries export or can be inputs to make other countries export or the export also can be made of inputs collected from the third country. Though policy makers are not that much critically concerned about inputs which make further generation of export for other countries rather than domestic content used to produce own countries export. Thereafter the ratio between trade and GDP can be easily measured by it. Thereby the total participation rate is important to know the new nexus of investment and trade.

Only just export and import data of previously exposed database can't explain the global phenomenon properly so the limitations of previous indices can be eliminated by the new upstream and downstream activities in the value chain. Thereby the dependence of a countries export to the GVC participation can be assessed by these indicators.

Moreover how a countries production process is involved with the participation of the complex multi stage process can also be measured. Thereby the length can be ascertained as well. (UNCTAD 2013). Basically backward linkage or backward participation is the combination of foreign value added contents. On the other hand forward linkage or forward participation are basically the domestic value added portion in the partner countries' export. Both combines and gives us the idea of total GVC participation. (OECD 2017). The below picture explains the terms as follows:

Table 2.1 GVC Indices

Indices	Definition
Foreign Value-Added	Part of a country's gross exports consisting of inputs that are produced in other countries
Domestic Value-Added	Part of exports created within the country, which also contributes to country's GDP
GVC Participation	The share of a country's exports that is part of a multi-stage trade processes, by adding (1) to the foreign value-added used in a country's own exports (<i>upstream perspective</i>) and (2) the value-added supplied to other countries exports (<i>downstream perspective</i>)

Source: UNCTAD (2013:126)

In case of calculating the value added when a certain product or services are exported from a specific country, a combined and synchronized input-output table is used to ascertain the value added (domestic) and also the value added (foreign). Thereby domestic value added can be ascertain by subtracting foreign value added from the total gross export. Furthermore gross export and domestic value added are not at all the same thing. Basically by adding domestic value added to exports the global value added

exports can be ascertained for all the concerned countries and the ultimate cause is exporting and again re exporting. Basically double accounting is the net sum of global trade and investment. (*Banga 2013*).

2.2 GVC Participation

By estimating the root of the value embodied in export the complex GVC integration can be measured and tracked. The performance of import in maintaining the performance of export can be tracked back by evaluating foreign value added in exports. FVA basically is one of the indicators of the performance of export. Thereby when there is no actual linkage of straight direct trade and investment DVA ascertains how industries among countries work to nurture the broader customer base. (*OECD 2017*). From 2014 to back in 1995 we can clearly observe from the data sources that how FVA has increased along with the proper establishment of the value chain. Many countries have shown a significant increase among which some east and south Asian countries like India, South Korea and also the eastern giant Japan is prominent, Thereby some European countries like Poland and also Turkey have shown tremendous growth in FVA increase in the passage of time (*OECD 2017*). DVA linked in the concerned partner countries have increased in the said time period between the last 20 years and specially some countries have shown tremendous growth in the value chain of mineral products among them Asian giant BRICS specially China, Brazil and South Africa and also some other developed and developing countries like Canada, and Norway thereby Chile has also shown some tremendous growth in this sector. (*OECD 2017*).

Many European countries have shown tremendous contribution in the sector specific DVA and also the increase in the FVA which almost doubled in the last 20 years. UK had tremendous growth and also France along with other EU countries. As domestic export increased and also the foreign share of domestic export increased for some countries the value exported were more than thirty percent including raw materials to intermediate fragmented products. Thereby manufactured or manufacturing goods were also traded in large volume. *(OECD 2017)*.

In the report of (UNCTAD, OECD) it has been mentioned that the increase in DVA embodied in FVA increased almost more than hundred percent in the last 20 years starting from the year 1995. Basically the trade and investment was driven by GVC and helped a huge income generation in real actual terms. The participants of upstream and downstream activities are not gaining equally from the global Value Chain. Rather sources say G20 countries which basically represents the new emerging economies are more benefited than the least developed countries or developing countries. For some countries the increase is almost 50% and for some others it folded to 3, 6 even 5 starting from the year 1995 to 2009. Countries like Brazil, China and also India are prominent among them *(OECD, WTO and UNCTAD, 2013)*.

The Indo-Pacific region accounts for a notable share of GVC-issued products: 43 percent of intermediate goods (exports) and 38 percent (imports) that were traded internationally in 2013 came from this region. Yet, these products originated from only a handful of developed and developing countries like the east Asian countries South Korea, Japan and China the south Asian India and also other Asian countries like Singapore, Taiwan,

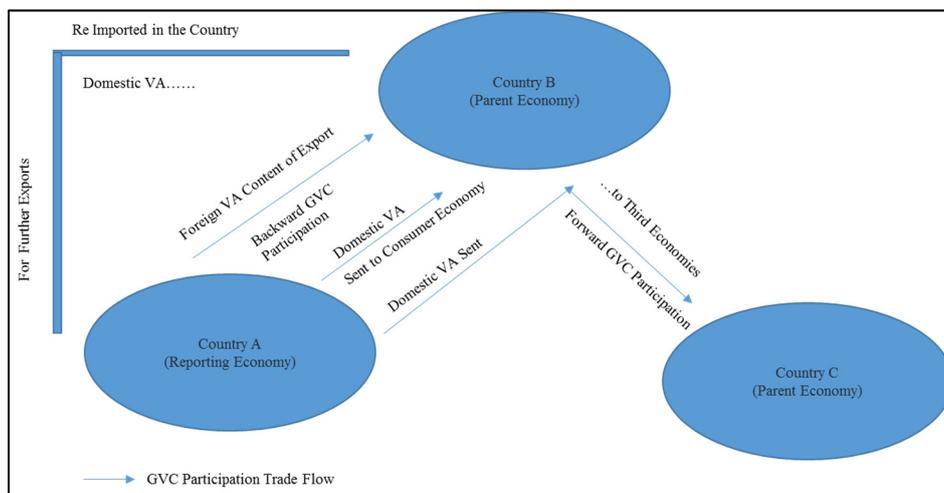
Thailand and also countries like Malaysia and Indonesia are doing quite well (*Iliuteanu 2016*).

One important fact in this global business phenomena is proximity of geographic location. It is evident that GVC has been spread to locations depending on the proximity to original source. Different reasons may act behind these, for example lowering the transportation and distribution cost and also to ease sourcing etc. for Instance many US MNCs source from Mexico and also Canada and there is also NAFTA agreement among them. Many Japanese MNCs also outsource their production and labour from east and south East Asian countries. Many famous electronics products of US basically outsource their assembly plants to China along with outsourcing facilities from Japan and South Korea. *Sturgeon (2000)* Thus regional collaboration making the GVC phenomena smoother (*Dedrick et al. 2008, 2012*).

- **Participation in the Global Value Chain:** Associating with the foreign partner's economy the GVC phenomena can be broadly divided into two aspects, these are basically the backward linkage and the forward linkage. Detailed descriptions are as follows:
- **Global value chain Forward Participation:** When the input of domestic value added sent to the 3rd country then it is basically called the forward participation. Thereby for more extensive and further export handling the domestic value added is used and can be said as the Seller associated part of the value chain.
- **Global value chain Backward Participation:** The buyer concerned side or the side of sourcing is basically the forward value added. When a country buys or

imports intermediary input to process their final export is basically the sourcing side of the global value chain or backward participation. In the following chart we can see the GVC Participation process.

Figure 2.1 Global Value Chain Participation



Source: The TiVA Database of OECD

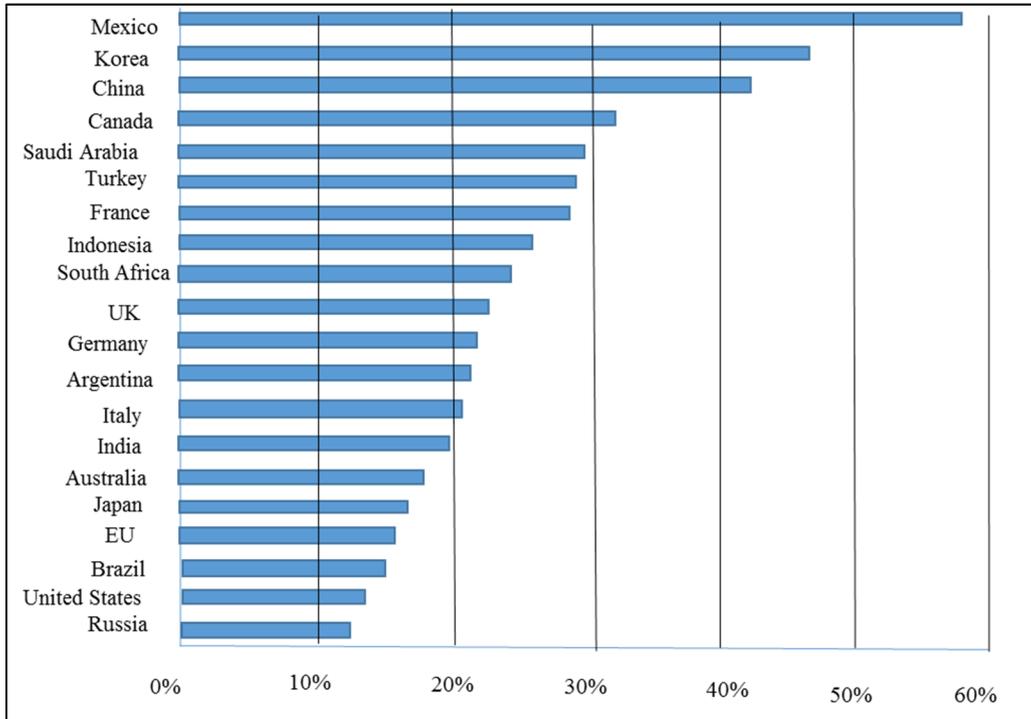
In the globally interconnected economies countries are heavily relying on different sources of fragmented production which is clearly evident in the TiVA data source. Thereby we can also assume the dependency of foreign inputs or using raw materials produced by any third country by observing the export content's phenomena. The bellow figure exhibits the extent to GVC participation in G20 economies. From the year starting from 1995 to 2009 almost all the countries participation index have been increased along the time, for some countries the increase is $\frac{1}{4}$ or for some countries the increase is almost more than half. Both forward and backward indexes can be seen in the picture. Countries

like South Korea, another east Asian giant Japan and also the emerging South Asian country India is having huge growth. *(OECD, WTO and UNCTAD, 2013)*.

From literature we also get examples that some industries use foreign related contents more than other industries. Industries like electronics use more imported foreign content and the production process is largely fragmented. It is obvious as these industries are known for outsourcing or offshoring their production process to gain substantially by using cheap labour, reduced cost of materials and also having skilled expertise within budget. The market of electronics or transport equipment's are also spread around the world where final production and consumption doesn't take place simultaneously within one geographic arena. Different trade facilitating barriers are also helping to promote or reduce the production and communication costs. WTO with the help of the agreement made on Info Tech has made the situation easier for countries relying on the foreign imported contents to process their exports and imports. *(OECD, WTO and UNCTAD, 2013)*.

In the below picture we can see countries using foreign contents in their gross export (Electrical products) for the year 2009 depicted in % form.

Figure 2.2 Electronics as Foreign Content of Gross Exports in % (2009)

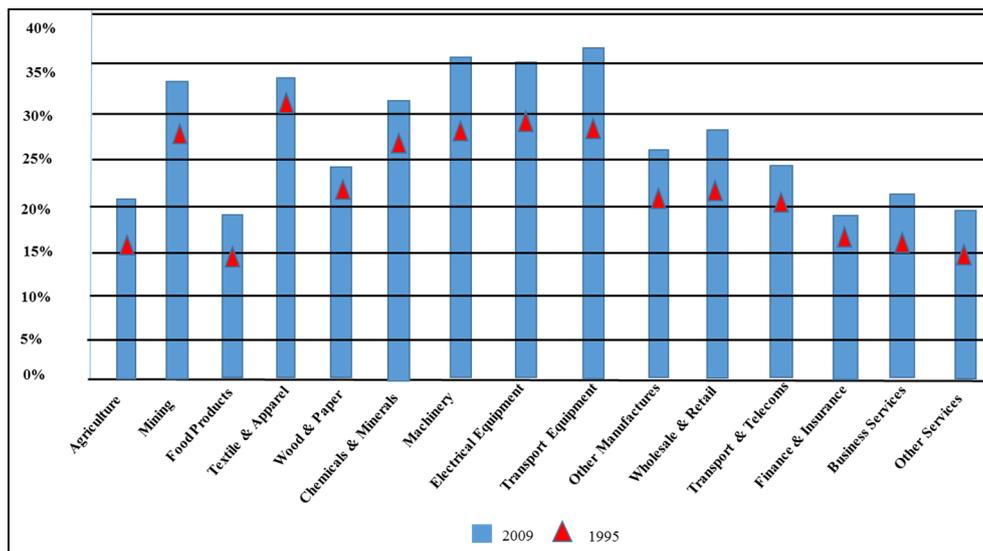


Source: (WTO, OECD and UNCTAD, 2013)

From the database of OECD and some other international economic forum we can have the clue that some industries are more into using foreign contents or the fragmented products. Almost 1/3 of the production process of these industries are taken care by the foreign imported contents. Industries like Mining is heavily related in the production process worldwide spread. Apart from it textile industry and also industry using machinery equipment's to process the production are using the disintegrated and scattered production process. As low cost and efficiency are some of the key elements of these industries, thereafter to reduce cost part of production facilities are subcontracted via offshoring or through FDI in different countries around the

world.(OECD, WTO and UNCTAD, 2013). Textiles, and other form of lathers and footwear industries are marked as using highly fragmented production process to take the cost and cheap labour advantage (Banga 2013). In the following graph we can see the industries using imported contents in their production process took place in 2009. We can see the use is increasing over time from the year 1995 to 2009 for all the industries, Mining electronics equipment’s and some other industries shows heavy reliance on intermediate fragmented products and also shows how countries are heavily depending on them.

Figure 2.3 Total Imported Intermediate Products in % (2009)



Source: (OECD, WTO, UNCTAD 2013)

When it comes to GVC participation, firms have three goals in mind: entrance, expansion, and upgrading. That is to say, they desire to gain access to GVCs, secure their presence and deepen it, and finally upgrade to higher value-added positions within the production chain. For these goals to be met, governments must be able to guarantee that the

following prerequisites are fulfilled: **(i)** adequate hard infrastructure is present; **(ii)** physical and institutional connectivity is ensured; **(iii)** domestic regulatory conditions are favourable; and **(iv)** trade liberalization and facilitation are pursued in an uncompromising manner. Additionally, a competitive business environment must be safeguarded, trade in services must be promoted, ICT development must be encouraged, innovation must be facilitated, intellectual property protection must be afforded adequate protection, foreign direct investment must be allowed freely, and standards must be coordinated. (*Iliuteanu 2016*). Furthermore the equal share of profit reaching to all the GVC participating countries is of huge debate. Many scholars argue that the benefits of global value chain is not equally distributed to all the participating countries and some are having more benefits in the participation process than the others. (*Gereffi (1994), Kaplinsky (1998), Schmitz (2006)*).

The relation between GVC participation and gain is bit complex. More or higher GVC involvement doesn't ensures higher profit. The phenomena can be observed by separating the Backward and again forward participation, as the gains may not equally effect both the participation. If the unit is measured in accordance with total value added (net) then the higher will be the gain if there is higher forward participation than the backward participation. The total ratio is important to measure the approximate gain from both backward and forward linkages. Countries which have higher participation rates are US, Mexico from Europe German, France and Italy and from Asia Japan, South Korea and China. (*Banga 2013*).

Now question comes how the GVC participation have become so dispersed .Trade facilitation is fostering the process. Trade facilitation has helped in facilitating the trades and reduced the probable cost in many forms. For low, middle and upper middle income generating countries the % varies from fifteen, sixteen to thirteen %. Thereby the OECD economies also having benefit of almost 10%.

In renowned papers and also by the scholars it has been mentioned that not all the benefit of participating in the global value chain can be derived automatically. The participating countries must have some set of expertise, knowledge training etc. In order to compete and also survive and move upward in the value chain they also need to increase their efficiency and effectiveness. Thereby the trade-off between the participation in the value chain need to be ascertained. How the quality of domestically value added products can be increased and also how to materialize the process in more efficient ways need to be ascertained to be more accurate. Thereby the process or upgradation along with the value chain is really need to be ascertained to reap the proper benefits from the participation in value chains. Thereby not just mere participation but some question needs to be answered before the participation like how to move upward, how to add more lines, how to capture more values and how to be competent and gaining profit from participating in the value chain is really important to ascertain in a proper way to capture the whole benefit out of GVC. (*ICTSD 2013*)

2.3 Linking GVC Participation with Industrial Development and Other Macro Economic Variables

Kummritz in his paper back in 2016 mentioned that participating countries in the GVC process can view a growth of domestic value added in both the industry level and also in country level production. In his paper he has shown both the country level and industrial level DVA and also FVA are higher, where higher the GVC participation is (*Kummritz 2016*). Therefore GVCs has become increasingly dominant forces to industrialization and economic growth. In a report jointly made by WTO, OECD and UNCTAD in a summit mentions that starting from the poorest to the richest GVC is such a global phenomenon now which includes all level of countries in all income level. GVCs provides a combined economic development in terms of better job, better industrial and infrastructural development and GDP growth and opens new opportunities of trade, investment and FDI. (*OECD, WTO and UNCTAD, 2013*).

(*Baldwin, 2011*) mentioned that GVC path is lot more hassle free and effective than the tradition route of import subsidy. Thereafter countries started to reap the benefits of GVC phenomena after the second unbundling stage. It is evident that GVC participation have paved the new ways of development for many emerging and also the developing countries. After inserting themselves in the GVC phenomena they are progressing and also have seen a continuous growth in the economic indicators. Starting at one stage countries are progressing to move upward in the value chains. Many countries are getting motivated to insert themselves as well in this global phenomena seeing the success of

these fellow countries. (*Uncted, OECD 2013*). Thereby emerging developing countries and developing countries can gain substantially from GVC participation and also can update their entire value chain (*OECD et al., 2013; UNCTAD, 2013*).

Basically the upgradation in global value chain means moving from one industry to a more value added industry. Government also need a proper geographical setting for the proximity of firms to be more interconnected in the value chain. (*Humphrey and Schmitz 2000*).

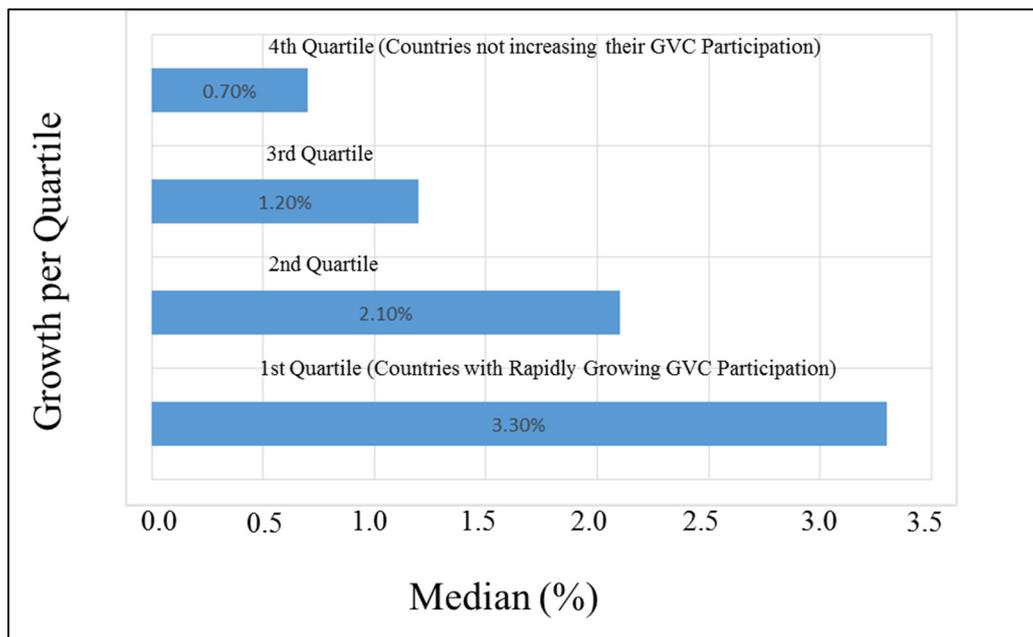
Thereby the amount of risk and obstacles which have to be overcome by the GVC participating countries is worth the effort as it is estimated that the participating countries can experience a GDP growth of almost two percent (*OECD, WTO and UNCTAD, 2013*).

Facts and figures shows that participation in the globally spread value chain process has enabled countries with growth and steady industrial development. The real term experience of these developing and emerging developing countries have motivated many countries to increase their attachments and participation in the process more to gain and experience both economic and industrial growths. These enthusiasm can be seen in many countries thereby making a healthy environment for global competition. (*OECD, WTO, and UNCTAD 2013*).

Sources from different article ensures that the domestic value added acquired from the GVC can substantially play a major role in economic development and GDP growth. Countries with more intense GVC participation can experience a constant development, more industrialization, and more job creation thereby a compact economic development.

Whether it is Forward or Backward participation irrespective to it, countries can be benefited in the whole participation process in both short and long ran (*OECD, WTO, and UNCTAD 2013*)

Figure 2. 4 GVC Participation by Developing Economies from the Year 1990 to 2010 (Quartile GDP per Capita Growth Rates)



Source: 2013, World Investment Report by UNCTAD

The scenario of GVC participation and the extent of participation gain is not the same for all level of countries and skill orientation. When the foreign contents are extensively used to process export the gain is relatively smaller than DVA thereby not all the GVC process includes the same value. But the experiences of individual economies have been mixed. The value added contribution of GVCs can be relatively small where imported

contents of exports are high and where GVC participation is limited to low-skilled and low-value parts of the chain. The value added contribution of GVC participation can be changed in consideration to the involvement of the MNCs. As MNCs can relocate any time to any country and the most values are captured by the domestic country thereby the participating partners may not derive the whole value out of it. Repatriation can take place in consideration with the foreign counter parts. Despite of the fact of repatriation the total contribution of local organization and firms are tremendously high in the value chain process which is making the process globally interconnected.

Thereby participating countries in the globally spread value chain process should exert the benefit being part of the value chain. Statistical analysis also portraits the fact that there is a high significant correlation with the GVC participation and the gross domestic production. Participating countries can enjoy a steady growth out of GVC participation and economic development. (*UNCTAD 2013*).

Thereby many policy makers have doubt that who actually captures the value of GVC participation. Many have feared that actually the values and gains are not equally divided as most of the time they are driven by MNCs. As many larger world economic groups advocates the rights of MNCs, many may fear that small local firms may not get the full benefits of GVC.

Geographical location is important in the value chain process. Some authors are fearful that some region will be benefited more compared to the others in respect to the value chain process. Thereby some are anxious that the developed economies are having the

most benefits out of the GVC process and using it to capitalize their own industrialization. The doubt is still there who captures the value and which region are the most benefited regions in the process. Such as not all the participating countries have benefited out of GVC. Many land locked countries couldn't get the benefit of participation. Apart from it many remote areas where communication is a problem, countries with less infrastructure arrangements couldn't get the privilege of participation. Like many Latin American countries, some countries in Africa who have tried to insert in the value chain process but wasn't successful. There by the fragmentation of production may lie between participating economies and non-participating economies which may create a diverse and bipolar outcome.

Thus, in consideration to the global value chain participation some countries may feel left out due to the trade liberalization and may not show enthusiasm in active participation and may protest some multilateral activities as well (*ICTSD 2013*).

Though the benefits of global value chains have been well accepted and noted by many scholars in terms of job creation and industrialization etc., but some spill overs or by-product benefits are also there which is not into much discussion and that is women empowerment and self-reliance. In the fragmented production process most of the parts are sent to developing economies where much more labour intensive job is required and most often these kind of and skills are performed by the women (*ICTSD 2013*).

To reap proper benefit from the global value chain phenomena a strong and effective industrial policy is required to coordinate in the entire process. However the term

industrial policy is not a new phenomenon in terms of global value chain only, it has been implemented by many countries before this term came into existence. Not just to engage themselves in a proper outline but also to protect each countries interest, promote production in a proper way and also to guard the interest of infant industries a proper and compact industrial policy should be there to guide into the value chain process. A well designed industrial plan not only just facilitates trade and investments but also promotes industrial clusters. Thereby each country plans their own policies bearing in mind the comparative advantage, its strength, natural and raw material sources etc. Furthermore, to guide a whole countries' industrial orientation and properly inserting in the GVC process a compact policy is necessary.

In other words, each country should be aware of their strengths and should know their upstream and also downstream facilities to be oriented into the GVC process. Inserting in which process will be more beneficial in terms of sourcing raw materials, labours and also will reduce or will incur less transport cost or other communication cost is necessary to ascertain before making a compact industrial policy. For many countries for instance inserting themselves in downstream activities are more beneficial to get the benefit of cost. Industrial policy should be focused to ensure the versatile quality of the global value chain bearing in mind each countries competencies and educational qualities set up. For instance China is giving up many of its industries to Asian especially South Asian parts which requires less value added contents and moving upward in the value chain with more skills and upgraded technology. So policy makers should be well informed about their strengths and also capacities to effectively implement policies to get the best

benefits out of GVC which will promote industries and also ultimately will develop the economy. (*ICTSD 2013*)

The process of policy making is not out of controversy as many believe industrial policies may be influenced and also the fact of countries comparative advantages can be misled while making policies to fit a country in the global value chain process and according to the needs. Many developing and developed countries have also adjusted their policies in that way.

These stages currently and predominantly take place in diverse locations either within or without the geographic proximity to the original firm. The rationale behind such decision is simple: ‘economic efficiency and competitive advantage considerations that are paired with the transaction cost minimizing behaviour of firms’ (*Elms and Low, 2013, p. 314*). Small developing countries have the opportunity to generate employment and capital, and join GVCs at those stages that best suit them, with the hope that given necessary policy changes and favourable capital and skill developments, they will eventually be able to expand the number of tasks and functions they perform, and climb up the GVC ladder to higher value-added echelons (*Iliuteanu 2016*)

According to the (UNESCAP), the benefits that may arise out of GVC participation are ‘multi-layered, in both macro and firm level. At firm level GVC promotes production, creates new job opportunities and enhances skills, on the other hand in a broader macro level it is concerned with the economic development of a country (*UNESCAP, 2015, p.103*). The bottom line, however, is that policymakers pursue development—not by any and all means but in a cogent, sustainable fashion. Therefore if GVC engagement

is done right it can indeed bear fruits that extend beyond the mother firm and its affiliates and diffuse towards the society at a large, in a way that furthers development. Yet, gains must be distributed evenly ‘between countries, within countries, and among participating firms’ (*Elms and Low, 2013, p. 316*).

In spite of the success achieved by the GVC participation there are debates regarding who is getting the benefit out of the participation? Many things that developing countries can’t assess properly is the probable benefits of global value chain participation and the trade and investment outcomes. Policy makers should be well aware regarding this fact and should design the process in such a way bearing in mind the fact of trade liberalization (*Banga 2013*).

As countries are involving them into fragmented production, where each country are producing some parts of export for their or the third countries, more trade connectivity is taking place among countries. Conventional ways to do trade and business like only bilateral importing of contents or Intra-industry trade is being replaced by a chain of fragmented production process and inter connected production process. Countries are not just mere importing or exporting products and services rather they are more into a connective channel of production process (*Banga 2013*).

The importance of global value chain can also be seen in facts and figures. Back in 2009 just after the financial crisis where world was still dealing with the recovery stage the percentage of the world export in terms of GDP was near about 1% and on the contrary value added exports was more or less about 3% (*Banga 2013*).

The form of global trade and investment are vast and interconnected. With the help of Multinational Cooperation the trade and investment is spreading in different forms. Some are dealing with producing export contents, some are doing mere inter industry trade some are engaging in offshoring and also outsourcing. Thus, these interactions accounts for almost eighty percent of the world's trade (*UNCTAD 2013*).

Some continents are more into GVC phenomena. Region like south East Asia have a high participation rate in both upstream and downstream contents, scholars have mentioned in articles regarding some countries more involvement in GVC then the others due to region proximity, raw material sourcing etc. Some countries in America especially the Central American part shows both upstream and downstream participation. Countries like Mexico is more into downstream activities as it can be assumed that they export more to the United States of America .(*UNCTAD 2013*).

In case of foreign direct investment along with the increase in trade and investment there can be seen a positive correlation and the ratio between trade and investment and also the proportion have increased substantially. From the year 1995 to the year 2009 the growth was almost 50 percent. Involving in the GVC process can be seen effective by many policy makers. GVC participation brings a compact industrial and economic development. More job opportunities are created by the global value chain and also income and tax benefits are there. But not only growth and benefits are there in GVC participation, the local economy may get hurt due to the import of foreign contents thereby locally produced inputs may face severe competition. Thus, to be competitive in the value chain and also to move upward, some skill sets are required. If proper skill set

is not there they may not face the competition and also may face difficulties staying in the low value added activities for a long time.

2.4 Previous Studies

In his paper (*Kummritz 2016*) mentioned, if GVC participation is higher across time the domestic value added and productivity of the labours will be higher as well. (*2009, Blair & Miller*) Mentioned in their articles based on the model of Leontief that total economic and industrial outcome and the output can be ascertained by the total fragmented production and also the amounts of goods and services have been consumed by an economy. *Koopman et al. (2011)* basically proposed the idea of measuring index of the globally spread value chain system. Furthermore, the North South debate like which part gains and acquires competences by which processes also have been pointed out in the year 2014 by the scholars (*Li and Liu*). Saying so, there is also a spill over effect between north and south and the gain is not the equal which was also elaborately mentioned in articles by a paper published in 2004 by *Baldwin and Robert N.* They mentioned that, South is the gainer as they have advanced technologies thereby north becomes the loser due to terms of trade. Regarding the north and south combination of the production process back in 2008 *Rossi H. and Grossman* have mentioned that North's labour requirement is lower than the south but the remuneration is higher than the South. On the other hand north has intensive technological facilities that South lacks. Thereby north and south's production is combined where north uses south's cheap labour and combines it with superior technology through offshoring and outsourcing and the unit cost of

production decreases as a result. But south also suffers tremendously from endowment decrease.

Thereafter both the region can be in a win - win situation and can gain if techno spill over takes place from north to south then south can also move upward in the value chain using low labour cost and technological advancement. (*Baldwin and Robert-Nicoud 2014*). Different articles and sources have tried to estimate the DVA by countries generated from trade and investment which are useful data to measure the impacts. One of the alternative to it is the Input-Output table which is really useful as it classifies specific goods and series according to the purpose and usage. Back in 2013 May, OECD along with WTO have provided the database of trade in value added combining data of total 58 countries. The data series were from the year of 1995 to 2009 including 2000, 2005 and 2008. Basically a synchronized and harmonised data set have been created in the form of I/O table. Later UNCTAD have taken it into further level by adding developing and developed countries in the dataset. (*Banga 2013*)

Basically the I/O tables are the statistical tools to measure the GVC participant of a country and gives an idea about products from their conception to the final consumption and also the total stages they go through. These are the basic for doing further studies and making assumption in the global value chain process to do further studies. Constant studies have been done to make the inter country input and output table for further progression in the global value chain phenomena.

(IDE-JETRO) basically did the 1st statistical data collection process which included seventy six industrial sectors and ten Asian countries from the year 1975 covering it to 2005. Basically these were the starting process later different other sources like:

- The Database of World Input-Output also provided GVC data covering almost 38 industries and the number of countries were 40. In this data base they also included data for the rest of the world covering almost 15 years of time period from 1995 to 2009
- Back in 2013 OECD released the most compact dataset covering almost ninety five percent of world's economic trades including fifty seven economies and 37 countries.

In Addition (GTAP) data bases is used to collect the information traditionally form the countries who don't have an I/O table thereby operates through social accounting process. The GTAP process constructed by Francois, M & T (2012) is also used by the World Bank to cover almost hundred regions and expanding a wide range of years from 1992 to 2007 to build an individual country basis measurement of value added for goods and also services. The last inclusion of this database process was the addition of MRIO developed by the University of Sydney and ARC who together combined the primary dataset to approximation and estimation techniques to build a continuous dataset. UNCTAD back in 2013 used the MRIO source to release their TIVA database .*Banga* back in 2003 in his paper also tried to explore the traditional sources of database for computing the TIVA dataset of different countries and tried to compare the input and output gains.

CHAPTER 3: EMPIRICAL STUDY

3.1 Description of Econometric Model

Firstly, it is important to review some article factors that shows casualty between GVC participation on industry value added studied by previous researches. The empirical literature on GVCs mainly worked to develop some acceptable indicators and standards to demonstrate the scale of development for certain period of times. Regarding the concept of dividing and sharing process globally and internationally was first and foremost captured in two papers (Seminar) by *Hummels et al (1998, 2001)*. Many scholars also voiced out that it is evident that an ongoing increasing trend of GVC can be seen. *Baldwin and Lopez G. (2013) and Johnson and Noguera (2012)*. Thereby the country level variable and the decomposition was pointed out by scholars. On the other hand, some scholar also doubt that the gain from GVC is not the same for all the countries and its reverse in some cases. *Baldwin and Robert-Nicoud (2014)* they mention that while south is suffering from TOT loss, North is having much technological advancement and reaping the benefits out of the GVC phenomena which was one of the characteristics of the model proposed by *Grossman and Rossi-Hansberg (2008)*. The relationships studied by the previous literatures shows no clear clue how countries as a whole is benefited from participation in the GVC process irrespective to their level of development. The first papers which have drawn a causal relationship is that of *(Kummiratz 2016)* which shows the role of GVC for the increase in the productivity of labours and also the increase in the overall domestic value added. Thereby industry

specific impact on development with casualty haven't been presented in any of the papers. Thus, I will be using a panel data to establish my hypothesis.

3.2 Research Question and Hypothesis

This research will be extended combining the existing literature by integrating insight from the authors and literature. Accordingly, the research starts at studying the GVC Participation by countries both backward and forward participation. Thereby the total participation index is backward+ forward participation. Then it tried to look into the impact of GVC participation to each countries industrial development. Some more macro-economic data have been used to see what impact they have on the industrial development to get a border idea. The effect of sector specific participation to each countries industry development have also been measured in my research. Subsequently, an econometric model will be built to test the research's hypothesis. In this case, Panel data regression will be applied as an analysing tool after relevant data are collected. In short there are two hypotheses to be analysed which are as follows:

- **Research Question (1)**

Does Global Value Chain has a positive and significant impact on industry value added?

- ***Hypothesis 1.*** An increase in GVC Participation will lead to higher industrial development.

- **Research Question (2)**

What are the impacts of industry specific Global Value Chain participation to the Industrial Development?

3.3 Description of Variables:

The aim of my research is to study the actual numerical effects of global value chain participation to country's industrial growth. Different authors and articles have given different views regarding the actual impact. Thereby the first article which shows that countries involving more into the GVC phenomena will experience a rise in the domestic value added and also labour inputs both across country and industry was empirically tested by (*Kummritz 2016*). Thereby in my study I will use GVC participation index as independent variable and each country's industry Value Added as dependent to have a simple yet compact approach of looking into the matter. There by in an extension individual industrial participation by sector of each countries and correlation between their industries will be analysed through the regression that will surely give a new dimension to the casualties of which industry is contributing significantly to the industrial development the most. So in regression table (01) I will use industry value added as dependent variable and country ways each industries GVC participation as the independent variable. Total of 16 industries are included in the industry value added data source starting from ISIC divisions 10-45. Furthermore in regression table (02-07) the industry value added data will be same as regression table (01) .Thereafter for Independent variables, in regression table (01) the data will be the breakdown of country-

level each industry's GVC participation. Some other macro-economic variables have been used as independent variable apart from the GVC participation index like inflation, unemployment and foreign direct investment to measure their impact on the industry value added to have a border outlook. The dependent variable which is 'Industry Value Added' will be the same data which have been used for table (01-07). On the other hand for regression table (02) the independent variable will be the top 5 industries (textile, mining, electronics, food and wood) to show their impact on industrial value added. Therefore, for table (03-07) each industry from the top five will be separately regressed to measure each industries impact in the industrial development. In case of other macro-economic variables the data of inflation, unemployment and FDI will be the same in all the regression tables (01-07) to see their impact along with different industries.

Now, to explain in details regarding the variables I will start from mentioning the sources and definition. Basically the dependent variable, **Industry Value Added** have been derived from *World Development Indicator*; and includes ISIC divisions 10-45 and correspondents to manufacturing (ISIC divisions 15-37). It is composed of value added in mining, manufacturing, construction, electricity, water, and gas. Basically Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is being calculated without making deductions for depreciation of fabricated assets or degradation of natural resources. Thus by ISIC, revision 3 the origin of value added is determined.

On the other hand the same source (*World Development Indicator*) defines **Unemployment** as the portion of labor force who are asking and seeking for job and employment and those who are currently without work.

Inflation according to the World Bank Data is basically the consumer price index which are reflected in the annual percentage change in the cost of the average consumer of acquiring a basket of goods and services that may be fixed or changed at specific intervals, such as yearly. The Laspeyres formula is generally used for measuring it.

Another variable **Foreign Direct Investment** is the net inflow which is described as that investment which is acquired as a management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor's. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows net inflows (new investment inflows less disinvestment) in the reporting economy from foreign investors, and is divided by GDP.

GVC participation index is the combination of both forward GVC participation and backward GVC participation as mentioned earlier in the literature review (chapter 02)

In short, the description of the variables are briefly summarized in the following tables:

Table 3. 1 Summaries of Variables (Regression 01)

Variables Name	Explanation	Remarks	Sources
Industry Value Added	(% of GDP) Corresponds: ISIC Division 10-45	Dependent Variable (Y)	World Development Indicator, UN Data, World fact Book
GVC Participation Index	Backward + Forward Participation	Independent Variable X_1t	OECD Statistics(Global Value Chain Indicators)
Inflation	Consumer Prices (annual %)	Independent Variable X_2t	World Development Indicator
Unemployment	% of Total Labor Force (Modelled ILO Estimate)	Independent Variable X_3t	World Development Indicator
Foreign Direct Investment	Net Inflows (% of GDP)	Independent Variable X_4t	World Development Indicator

Table 3. 2 Summaries of Variables (Regression 02-07)

Variables Name	Explanation	Remarks	Sources
Industry Value Added	(% of GDP) Corresponds: ISIC Division 10-45	Dependent Variable (Y)	World Development Indicator, UN Data, World fact Book
GVC Participation Index by Industry (Textile)	Textiles, Leather and Footwear	Independent Variable X_{1t}	OECD Statistics(Global Value Chain Indicators)
GVC Participation Index by Industry (Mining)	Mining and Quarrying	Independent Variable X_{2t}	OECD Statistics (Global Value Chain Indicators)
GVC Participation Index by Industry (Electrical)	Electrical and Optical Equipment	Independent Variable X_{3t}	OECD Statistics (Global Value Chain Indicators)
GVC Participation Index by Industry (Food)	Food Products and Beverages	Independent Variable X_{4t}	OECD Statistics(Global Value Chain Indicators)
GVC Participation Index by Industry (Wood)	Wood and Products of Wood and Cork	Independent Variable X_{5t}	OECD Statistics (Global Value Chain Indicators)
Inflation	Consumer Prices (annual %)	Independent Variable X_{6t}	World Development Indicator
Unemployment	% of total Labor Force (Modelled ILO Estimate)	Independent Variable X_{7t}	World Development Indicator
Foreign Direct Investment	Net Inflows (% of GDP)	Independent Variable X_{8t}	World Development Indicator

3.4 Data Collection and Statistical Tool

Relevant data have been collected through different global databases. As the matter of data mutual availability, there are 55 countries which are included in my research, ranging from both developing and developed economy. In total 35 developed country and 20 developing countries are included. The observation period will be from 1995 to 2009, up to the most updated data available. The total industries are 16 mostly under the manufactures categories. According to the world bank data's of industry value added the industries it covered from ISIC Rev 3 and codes covered from 10 to 45. Thereby **these data have been used in my research to ran the panel regression where there are total 275 observations which are strongly balanced in model without any missing data.**

Table below demonstrates a list of included industries.

Table 3.3 List of Industries, Names and Code

ISIC Rev. 3	Abbr.	Industry	Main Industry Categories
10 to 14	MIN	Mining and quarrying	Primary Products
15 to 16	FOD	Food products, beverages, and tobacco	Manufactures
17 to 19	TEX	Textiles, leather and footwear	Manufactures
20	WOD	Wood and products of wood and cork	Manufactures
21 to 22	PAP	Pulp, paper, paper products, printing and publishing	Manufactures
23	PET	Coke, refined petroleum products and nuclear fuel	Manufactures
24	CHM	Chemicals and chemical products	Manufactures
25	RBP	Rubber and plastics products	Manufactures
26	NMM	Other non-metallic mineral products	Manufactures
27 to 28	BFM	Basic metals and fabricated metal products	Manufactures
29	MEQ	Machinery and equipment n.e.c	Manufactures
30 to 33	EOQ	Electrical and optical equipment	Manufactures
34 to 35	TRQ	Transport equipment	Manufactures
36 to 37	OTM	Manufacturing n.e.c; recycling	Manufactures
40 to 41	EGW	Electricity, gas and water supply	Manufactures
45	CON	Construction	Services

Source: OECD Database

Most of the industries included in the panel are manufacturing under Industry category and one primary industry is included and also services industry is there. The total country list will be enclosed in the appendix part where total 55 countries are listed and divided into developed and developing countries.

Regarding regression model, although in the previous closely related study which was done by *Kummritz (2016)* shows the casualty between foreign value added and domestic value added studied using OLS regression, in my research I have used Panel data which allows more information to be gathered, thereby gives a more accurate and efficient estimation. Moreover, the use of this specific empirical tool panel data gives a broad and wide range of hypothesis to test, it can also control unobserved or unmeasurable sources of individual heterogeneity that basically don't vary much across time but varies depending on individuals. Importantly, regarding Panel regression, it is crucial to decide an appropriate model random or fixed effect. The distinction between fixed and random effects is whether the unobserved individual effect embodies elements that are correlated with the repressors in the model, not whether these effects are stochastic or not. (*Green, 2008, p.183*). While the random effect model allows us to include time invariant variables which are supposed to have an effect on dependent variable, the fixed effect model controls for all time-invariant differences between the individuals are designed to study the causes of changes within an entity. So, the estimated coefficients of the fixed-effects models cannot be biased because of omitted time-invariant characteristics such as culture, religion, gender, race, etc. In this case, I have applied **Hausman Test** to determine which model is most suitable in my research. I have used fixed effect for both the regression model to have the perfect result.

The **fixed effects** model equation is:

$$Y_{it} = \beta_1 X_{it} + \alpha_i + u_{it}$$

Where we can find,

- α_i ($i=1 \dots n$) n entity-specific intercepts, is the unknown intercept for each entity.
- Y_{it} is the dependent variable (DV) where i = entity and t = time.
- X_{it} represents one independent variable (IV),
- β_1 is the coefficient for that IV,
- uit is the error term

The random effects model is:

$$Y_{it} = \beta X_{it} + \alpha + uit + \epsilon_{it}$$

Where

uit is between-entity error; ϵ_{it} is within-entity error.

Drawing from the above mentioned information, the econometric model is as follows:

- **Industry Value Added** $_{(t)} = \alpha + \beta_1$ *GVC PARTICIPATION* $_{(t)} + \beta_2$
INFLATION $_{(t)} + \beta_3$ *UNEMPLOYMENT* $_{(t)} + \beta_4$ *FDIINFLOW* $_{(t)} + uit$
.....(**Regression 1**)
- **Industry Value Added** $_{(t)} = \alpha + \beta_1$ *TEXTILE* $_{(t)} + \beta_2$ *MINING* $_{(t)} + \beta_3$
ELECTRONICS $_{(t)} + \beta_4$ *FOOD* $_{(t)} + \beta_5$ *WOOD* $_{(t)} + \beta_6$ *INFLATION* $_{(t)} + \beta_7$
UNEMPLOYMENT $_{(t)} + \beta_8$ *FDIINFLOW* $_{(t)} + uit$
.....(**Regression 2**)
- **Industry Value Added** $_{(t)} = \alpha + \beta_1$ *TEXTILE* $_{(t)} + \beta_2$ *INFLATION* $_{(t)} + \beta_3$
UNEMPLOYMENT $_{(t)} + \beta_4$ *FDIINFLOW* $_{(t)} + uit$
..... (**Regression 3**)
- **Industry Value Added** $_{(t)} = \alpha + \beta_1$ *ELECTRICAL* $_{(t)} + \beta_2$ *INFLATION* $_{(t)} + \beta_3$
UNEMPLOYMENT $_{(t)} + \beta_4$ *FDIINFLOW* $_{(t)} + uit$
.....(**Regression 4**)

- **Industry Value Added** $(t) = \alpha + \beta_1 \text{ FOOD}_{(t)} + \beta_2 \text{ INFLATION}_{(t)} + \beta_3 \text{ UNEMPLOYMENT}_{(t)} + \beta_4 \text{ FDIINFLOW}_{(t)} + \text{uit}$
.....(Regression 5)
- **Industry Value Added** $(t) = \alpha + \beta_1 \text{ MINING}_{(t)} + \beta_2 \text{ INFLATION}_{(t)} + \beta_3 \text{ UNEMPLOYMENT}_{(t)} + \beta_4 \text{ FDIINFLOW}_{(t)} + \text{uit}$
.....(Regression 6)
- **Industry Value Added** $(t) = \alpha + \beta_1 \text{ WOOD}_{(t)} + \beta_2 \text{ INFLATION}_{(t)} + \beta_3 \text{ UNEMPLOYMENT}_{(t)} + \beta_4 \text{ FDIINFLOW}_{(t)} + \text{uit}$
.....(Regression 7)

Table below summarizes data collected for the regression model.

Table 3.4 Summary of Data (Regression 1)

Variable	Obs	Mean	Std. Dev	Max	Min
Industry Value Added	275	31.48	8.96	74.11	12.86
GVC Participation	275	34.71	10.88	63.91	5.36
Inflation	275	6.63	15.23	197.47	-4.48
Unemployment	275	7.35	4.38	26.7	0.2
FDI Inflow	275	6.87	23.43	341.1	-3.62

Source: Authors own calculation using data from sources

Table 3.5 Summary of Data (Regression 2-7)

Variable	Obs	Mean	Std. Dev	Max	Min
INDG	275	31.48	8.96	74.11	12.86
TEXTILE	275	2.09	2.54	14.45	0.02
ELECTRICAL E.	275	6.67	8.5	50.55	0.03
FOOD	275	1.61	1.44	7.55	0.02
MINING	275	4.33	8.25	43.59	0
WOOD	275	1.9	1.86	11.44	0.05
INFLATION	275	6.63	15.23	197.47	-4.48
UNEMPLOYMENT	275	7.35	4.38	26.7	0.2
FDI INFLOW	275	6.87	23.43	341.1	-3.62

Source: Authors own calculation using data from source

3.5 Empirical Result

- 3.5.1 Does Global Value Chain has a positive and significant impact on industry value added **(R1)**
- 3.5.2 An increase in GVC Participation will lead to higher industrial development **(H1)**

Table 3.6 Regression Result (01)

Regression 01 (Aggregate) Dependent variable (Industry Value Added)	Coef.	t-Statistic
GVC Participation(Backward + Forward Participation)	0.1476995***	4.69
Inflation	.0307696**	2.51
Unemployment	-0.0884261	-1.26
FDI Inflow	-0.0100763	-1.21
_cons	26.86988	21.09
Number of observation	275	
R-square (overall)	0.2341	
Prob>F	0	

Note: ***Denotes level of significance is 1% ** Denotes level of significance is 5%

The regression result shows that there is a significant effect (1% level) of GVC participation to industry value added. According to interpretation of panel data regression we can interpret that for a given country, as GVC participation increase across time by one percent, the industry value added will increase by 0.148%. Putting it in other way, higher industry value added will lead by higher GVC participation. This result proves (H1) and goes along with research question and confirms that the higher the GVC

participation higher will be the industrial development. Thereby this result shows similarity with *Kummritz* (2016) where he mentioned the more GVC participation takes place by individual country across the industry more will be domestic value added and also the productivity of labours will increase. Thereafter the result also shows us that such kind of gain from GVC participation is independent irrespective of each countries' income unit and stages of development or per capita GDP growth as both developing and developed countries are included in this panel regression. However, some policy makers always tends to raise an unambiguity and doubt that "who actually captures the value in the global value chains?" and also the north and south debate is prevailing regarding who is the winner and who is having the spill over effect. (*Haltmaier 2015*) mentioned that the accumulated value of current account imbalances have risen substantially as there is a rise in global value chain over the decades. Other debates like Global value chain is promoting the ideas like neo-liberal and also pro poor and thereby these ideas have been highlighted in the development communities. (*Dalle et al. 2014*). The research gives a clear picture that whatever is the level of development of industry that of individual countries GVC participation will have positive and significant impact. Thus it also affirms too many positive notion like GVCs has become increasingly dominant forces to industrialization and economic growth. Furthermore in the world economy Value chains have become prominent features which not only touches the lives of rich industrial countries but also poor developing economies in all level of income and development. Analysing the other macroeconomic variables Inflation, Unemployment and FDI we can see that inflation has positive and significant correlation

with industry value added. That means higher inflation will lead to higher industry value added. Basically there are different debates regarding the relationship and effects between inflation and the growth of the economy .Some showing empirical result which says there is a positive relationship in short run some says it has negative relationship. (*Akinsola and Odhiambo 2017*) in their paper mentioned that the relationship between inflation and economic growth varies country to country and also differs time to time. Thus, there are some country specific characteristics which may lead to the result and also the methodology of ascertaining it matters. Another variable Unemployment shows it has a negative relationship with the industrial development. Higher the level of unemployment lesser will be the industrial development. This result shows how significant role industrial development can play to promote job and creating new jobs. As GVCs are bringing prosperities to the economies linked with the process by giving them a competitive edge, expansion of production and jobs and also better access to global markets can be ensured (*Banga, 2017*). GVC is also helping to create new jobs for both developed and developing countries with some sets of skill. The next variable FDI Inflow is showing negative correlation with industrial development but not at a significant level. Authors have also mentioned the positive effects of Foreign Direct Investment and its effectiveness in fostering the productivity and also growth for the receiving economy. (*Castejón and Woerz, 2006*) Many also pinpointed the benefits of FDI inflow as a driving force to participate in the Global Value Chain. In various papers FDI has been regarded as an important factor for growth and development. According to the *World Investment Report* published in 2013 FDI is also regarded as one of the

important channel to access to GVC and also to increase participation. Empirical and statistical evidences have shown that there is a strong positive relationship between Foreign Direct Investment stock and participation rate of GVC which are mainly fostered by the involvements of the Trans National Corporations which are increasing continuously in less developed countries as well. (*World Investment Report 2013*). In an article (*Frontier 2007*) mentioned analysing his *Panel* data that although FDI brings positive effect but it may differ by the country of origin and some other factors like host countries characteristic also plays role in this matter. However the results aren't showing strong positive significant impact in my research which can be interpreted in a way that, there are still much scope of inward FDI to play and contribute significantly in the arena of global value chain.

3.5.3 What are the impacts of industry specific Global Value Chain participation to the Industrial Development? **(R2)**

Table 3.7 Regression Result (2)

Dependent variable (Industry Value Added)	Coefficient	t-Statistic
Textiles	0.5673249***	3.33
Mining	0.587935***	9.2
Electronics	0.1797055***	4.21
Food	0.3701054	1.29
Wood	0.3950066*	1.83
Inflation	0.0298594***	2.81
Unemployment	-0.1173062*	-1.93
Inward FDI	-0.0089511	-1.24
_cons	25.93564	30.56
Number of observation	275	
R-square (overall)	0.5362	
Prob>F	0	

Note: ***Denotes level of significance is 1%, ** Denotes level of significance 5%

* Denotes level of significance is 10%

The regression result (regression 02) shows that there is a significant effect (1% level) of GVC participation by industry like textile, mining and electronics to industry value

added. According to interpretation of panel data regression we can interpret as for a given country, as GVC participation of textile mining and electronics increase across time by one percent, the industry value added will increase by 0.567 % and 0.588 % and 0.180 % respectively. According to (OECD, WTO and UNCTAD, 2013) there are some specific industries which use imported intermediates at large quantities, some use intermediate inputs almost 1/3 of the total import those are mining, machinery, textiles and apparel Industry. Thereby some industries like food's GVC participation doesn't have a significant impact on the industry value added. Furthermore wood industries participation in the value chain is showing a positive and significant impact on industrial development at 10% level. That means if wood industries participation increases by 1% across time the industry value added will increase by 0.396 %. In case of other macroeconomic variables like inflation, unemployment and inward FDI it can be seen that inflation has strong positive impact on industry value added and unemployment has strong negative impact on industrial development. In case of FDI it also have negative impact on the industry value added.

In this regression table most significant individual country ways industries and sectors have been presented. But for some sectors or industries like machinery, construction, transport equipment and metal industries have negative correlation with the industry value added which wasn't demonstrated in the work. Thereby For the industries which are contributing most in overall have somewhat more spreader chain which are contributing to individual country and industries. Though articles say transport, and telecom industries also have high shares but in these research these sectors do not show

strong causal relationship. Industries like textile and electronics mainly take the advantage of the sophisticated value chain which are involved in the production of essential parts and components and can take advantage from economy of scale through off shoring and outsourcing activities. They basically reap the benefit of low cost as trade barriers are reduced with the help of international bodies. For instance, WTO ITA is such an agreement which helps to reduce trade costs and trade restrictions thereby industries like electronics and textile which are involved in long sophisticated fragmentation of production process become the beneficiaries. (OECD, WTO and UNCTAD, 2013). In my research as well, textile and electronics industries are showing strong significant impact on the overall industrial development and showing strong causal relationship. Now in the next five regression tables I will be looking at the individual industries GVC participation and their significant impact on countries industrial development.

Table 3.8 Regression Result (3)

Dependent variable (Industry Value Added)	Coefficient	t-Statistic
Textile	0.3937505**	2.03
Inflation	0.0150251	1.19
Unemployment	-0.1185587*	-1.62
FDI Inflow	-0.0089598	-1.03
_cons	31.49271	45.99
Number of observation	275	
R-square (overall)	0.0178	
Prob>F	0	

Note: ** Denotes level of significance is 5%, * Denotes level of significance is 10 %

In the regression table (03) we can see that there is a significant effect (5% level) of GVC participation by industry (textile) to industry value added. Accordingly if the interpretation takes place it can be said that for a given country, as GVC participation of textile increase across time by one percent, the industry value added will increase by 0.393%. So higher there will be textile GVC participation, higher will be the economic development. Looking into the other macro-economic variables like inflation, unemployment and inward FDI it can be seen that inflation has positive

correlation with industrial development but not significant. Unemployment has strong negative impact on industrial development at 10% level of significance. That means higher the rate of unemployment lesser will be the industrial development. In case of FDI it also have negative impact on the industry value added but not significantly high. It may also be said the more inward FDI is necessary in the age of global value chain.

Table 3.9 Regression Result (4)

Dependent variable - (Industry Value Added)	Coefficient	t-Statistic
Electrical	0.1345518***	2.72
Inflation	0.0218674*	1.76
Unemployment	-0.1090873	-1.51
FDI Inflow	-0.0095706	-1.11
_cons	31.30592	46.98
Number of observation	275	
R-square (overall)	0.0252	
Prob>F	0	

Note: * Denotes level of significance is 10 %, *** Denotes level of significance is 1%

In the regression table **(04)** we can see that there is a significant effect (1% level) of GVC participation by industry (electrical) to industry value added. If we interpret according to panel data it can be said that for a given country, as GVC participation of

electrical increase across time and region by one percent, the industry value added will increase by 0.135%. So higher there will be electrical GVC participation, higher will be the economic development. Looking into the other macro-economic variables like inflation, unemployment and inward FDI it can be seen that inflation has positive correlation with industrial development at a significant level 10% as some articles mentioned that the impact of inflation may vary according to country, time and industry. Unemployment has negative impact on industrial development. That means higher the rate of unemployment leads to lesser industrial development. In case of FDI it also have negative impact on the industry value added but not significantly high.

Table 3.10 Regression Result (5)

Dependent variable (Industry Value Added)	Coefficient	t-Statistic
Food	0.6146482*	1.87
Inflation	0.015146	1.2
Unemployment	-0.1258118*	-1.72
FDI Inflow	-0.011165	-1.29
_cons	31.39527	42.66
Number of observation	275	
R-square (overall)	0.0055	
Prob>F	0	

Note: * Denotes level of significance is 10 %

In the regression table **(05)** we can see that there is a significant effect (10% level) of GVC participation by industry (food) to industry value added. Accordingly if the interpretation takes place it can be said that for a given country, as GVC participation of food increase across time by one percent, the industry value added will increase by 0.615%. So higher there will be food industry GVC participation, higher will be the economic growth or industry value added. Looking into the other macro-economic variables like inflation, unemployment and inward FDI it can be seen that

inflation has positive correlation with industrial development but not significant. Unemployment has strong negative impact on industrial development at 10% level of significance. That means higher the rate of unemployment lesser will be industrial development. In case of FDI it also have negative impact on the industry value added but not significantly high.

Table 3.11 Regression Result (6)

Dependent variable (Industry Value Added)	Coefficient	t-Statistic
Mining	0.5458673***	8.01
Inflation	0.0329593***	2.94
Unemployment	-0.0991853	-1.53
FDI Inflow	-0.0118667	-1.55
_cons	29.71138	49.82
Number of observation	275	
R-square (overall)	0.4731	
Prob>F	0	

Note: *** Denotes level of significance is 1%

In the regression table **(06)** we can see that there is a very strong significance effect (1% level) of GVC participation by industry (mining) to industry value added. Accordingly if the interpretation takes place it can be said that for a given country, as GVC participation of mining industry increase across time by one percent, the industry value added will increase by 0.546%. So higher there will be mining GVC participation, higher will be the economic development. Looking into the other macro-economic variables like inflation, unemployment and inward FDI it can be seen that inflation has very positive correlation with industrial development at 1% level of significance. Unemployment has negative impact on industrial development. Furthermore, in case of FDI it also have negative impact on the industry value added but not significantly high. It may also be said the more inward FDI is necessary in the age of global value chain.

Table 3.12 Regression Result (7)

Dependent variable (Industry Value Added)	Coefficient	t-Statistic
Wood	0.5625252**	2.27
Inflation	0.0169894	1.36
Unemployment	-0.1317097*	-1.8
FDI Inflow	-0.0116011	-1.34
_cons	31.34877	44.94
Number of observation	275	
R-square (overall)	0.0797	
Prob>F	0	

Note: * Denotes level of significance is 10 %, *** Denotes level of significance is 1%

In the regression table (07) we can see that there is a significant effect (5% level) of GVC participation by industry (wood) to industry value added. Accordingly if the interpretation takes place it can be said that for a given country, as GVC participation of wood industry increase across time by one percent, the industry value added will increase by 0.563%. So higher there will be wood industry GVC participation, higher will be the economic development. Looking into the other macro-economic

variables like inflation, unemployment and inward FDI it can be seen that inflation has positive correlation with industrial development but not significant. Unemployment has strong negative impact on industrial development at 10% level of significance. That means higher the rate of unemployment lesser will be the industrial development. In case of FDI it also have negative impact on the industry value added but not significantly high.

CHAPTER 4: LIMITATION

4.1 Limitation

Industry such as Services haven't taken in to consideration except constrict in this paper. literature shows that huge number of services have been taking place in the global trade phenomena and increasing in almost double in amount since 1995 to 2009 (*OECD et al., 2013; UNCTAD, 2013*). Inclusion of service industries might have brought some other dimensions. Other facts like, the number of countries and the span of years are limited on the availability of data sources which doesn't give the whole picture of the world trade phenomena. Moreover integrating into the GVC process is a sound strategy. Countries included in the sample at least have some level of development to absorb and integrate them in the value chain. Thus, countries without any insituational setup may find themselves in trouble in integrating with the process. Aspects like, the exact effect of FTA and other collaborating agreements between/among countries haven't been assessed in this study, thereby their indirect effect may have promoted the result as well.

CHAPTER 5: CONCLUSION AND POLICY IMPLICATION

5.1 Conclusion

In literature there are still debates and ambiguity regarding the actual outcome of global value chain participation. To have a clear idea regarding the policy debates, this paper has provided objective evidences by assessing the empirical effects. Using inputs from OECD and World Bank my research have shown that, country level industry value added are higher, higher the GVC participation. The result also demonstrates that there is a significant effect at 1% level of GVC participation to industry value added. Interpretation can be done in that way, for a given country as GVC participation increase across time by one percent, the industry value added will increase by 0.148%. It also shows both upstream and downstream suppliers are benefited entering into the value chain. Thereby such gains are not linked with the country's stages of development and also level of income as both developed economies and developing economies/countries are included in the empirical test. Furthermore the study shows some industries are performing better than others in respect of industrial development like textile, electronics, mining industry etc. More weight can be given to these industries to work more effectively and also importance should be given to policy enforcement to other less significant and less impactful industries so that they remain more aligned and competitive. Lights should be

given to channels between GVC participation and development and further studies can be done on ascertaining the policies which are having more positive impact than the others to integrate countries and industries into the value chain. My study also didn't included the firm level effect of global value chain participation on the industrial development so scope also lies in this arena as well. More studies also need to be done to get the idea regarding FTA and other trade and non-trade barrier's effect.

5.2 Policy Implication

New countries as players in the GVC phenomena need to bear in mind that, they need a proper institutional set up, proper facilities of capacity building to promote inward foreign investment and they also need the set up and skills for outsourcing. Injecting themselves into this global phenomena can have a spill over effect like many developed and developing nations already have shown. At least countries should have an institutional setup and also a certain amount of educational level to absorb the benefit from GVC participation. As the overall result is showing significantly strong and positive in respect of global value chain participation and development more countries should actively participate with at least some set of qualities like education, institutional and governmental patronization etc. Some industries like textile, electronics, mining, food and wood industries are showing strong causal effect so more industrial policies to promote these sectors should be taken by individual government. Furthermore multilateral institutions like WTO and others may give emphasize to remove more restrictive trade barriers in these sectors to promote further. On the other hand more

robust policies need to be implemented for those industries which are not showing significant result. More participation through technical setup and other institutional backups may also promote the industries thereafter countries can reap the benefit out of GVC participation and can make their individual industries stronger and better.

REFERENCES

Amiti, M. 2005. "Location of Vertically Linked Industries: Agglomeration versus Comparative Advantage," *European Economic Review*, 49(4), 809–32.

Akinsola .A.F and Odhiambo N.2017. 'Inflation and Economic growth: A review of International Literature' *Comparative Economic Research*, Volume 20, Number 03, 2017

Athukorala and Nasir.2012. 'Global Production Sharing and South-South Trade, Background paper of ECIDC, UNCTAD

Banga K (2017); Impact of Linking into Global Value Chains on Indian Employment; CEP Working Paper 2017/1

Baldwin, R. and F. Robert-Nicoud .2014. Trade-in-goods and trade-in-tasks: An integrating framework. *Journal of International Economics* .92 (1), 51–62.

Banga R.2013. Measuring value in global value chains. Regional Value Chain, Background Paper No. Rvc-8, *UNCTAD*

Baldwin, R. (2006), Globalization: The great unbundling(s), contribution to the project Globalization Challenges for Europe and Finland organized by the Secretariat of the Economic Council.

Baldwin, R. 2012. "Global supply chains: why they emerged, why they matter, and where they are going?" *CEPR Discussion Paper* No. 9103, August.

Castejón F. C & Woerz J .2006. Good or bad? - The influence of FDI on productivity growth an industry-level analysis, Wissenschaftlich-Technisches Abkommen Project No. 20/2006

Dedrick, Jason, Kraemer, Kenneth L. and Linden, Greg. 2008. "Who Profits from Innovation in Global Value Chains? A Study of the iPod and Notebook PCs." Paper prepared for the Sloan Industry Studies Annual Conference, University of California, Irvine.

Dalle, D, V Fossati, and F Lavopa .2014. "Industrial Policy and Developmental Space: The Missing Piece in the GVCs Debate", VoxEU.org, 13 April.

Elms, D.K. and P. Low .2013. Global Value Chains in a Changing World. Geneva: WTO.

Accessed April 29, 2018.https://www.wto.org/english/res_e/booksp_e/aid4tradeglobalvalue13_e.pdf

- Feenstra, R. 1998. "Integration of Trade and Disintegration of Production in the Global Economy. Whittaker, D. H.; Zhu, Tianbiao; Sturgeon, T. J.; Tsai, MonHan; and Okita, T. 2008. "Compressed Development".
- Frontier 2007. Foreign direct investment and host country economic growth: Does the investor's country of origin play a role? *Transnational Corporations*, Vol. 16, No. 2
- Gereffi, G. 2015. Global Value Chains and Development. Background Paper for the UNIDO IDR 2016
- Grossman, G. M. and E. Rossi-Hansberg 2008. Trading Tasks: A Simple Theory of Offshoring. *American Economic Review* 98 (5), 1978–97.
- Gereffi (1994), Gereffi G. (1999a) "International trade and industrial upgrading in the apparel commodity chain", *Journal of International Economics*, Vol. 48, pp.37-70.
- Humphrey, J., and Schmitz, H. 2000. "Governance and Upgrading: Linking Industrial Cluster and Global Value Chain Research." IDS Working Paper 120. Brighton: Institute of Development Studies
- ICTSD .2013. Global value chains: development challenges and policy options proposals and analysis; E15 Expert Group on Global Value Chains: Development Challenges and Policy Options.
- Kaplinsky, R .1998. "Globalization, Industrialization and Sustainable Growth: The Pursuit of the Nth Rent", IDS discussion paper, Vol 365
- Kaplinsky, R &, Morris M .2001. "A Handbook for Value Chain Research", Institute of Development Studies, University of Sussex
- Kummritz V. 2016. Do Global Value Chains Cause Industrial Development? *CTEI Working Paper* No 2016-01
- Koopman, R., Z. Wang and S.-J. Wei .2011. "Give credit to where credit is due: tracing value added in global production chains", *NBER Working Papers* Series 16426, September 2010, revised in September 2011
- Li, B. and Y. Liu .2014. Moving up the value chain. Mimeo Boston University.
- Iliuteanu M. A. 2016. Deepening and Expanding Global Value Chain Participation across Asia and Europe. Economic Research Institute for ASEAN and East Asia
- Miller, R. and P. Blair .2009. *Input-Output Analysis. Foundations and Extensions*, Second edition, Cambridge University Press. Chapter 2.
- OECD 2017, "Participation in global value chains", in OECD Science, Technology and Industry Scoreboard 2017: The digital transformation, OECD Publishing, Paris.

OECD, WTO, and UNCTAD .2013. Implications of Global Value Chains for Trade, Investment, Development and Jobs. Proceedings of the G-20 Leaders Summit, September 2013, Saint Petersburg

O Cattaneo, G. Gereffi, S Miroudot, D. Taglioni .2013. Joining, Upgrading and Being Competitive in Global Value Chains, A Strategic Framework; *Policy Research Working Paper* 6406

Rugman A and Verbeke A. 2004. A perspective on regional and global strategies of multinational Enterprises, *Journal of International Business Studies*, 35, 3-18

Sturgeon, T. J. and Memedovic, O. 2011. "Mapping Global Value Chains: Intermediate Goods Trade and Structural Change in the World Economy," United Nations Industrial Development Organization.

Schmitz H .2006. "Learning and Earning in Global Garment and Footwear Chains", *The European Journal of Development Research*, Vol.18, No.4, pp.546–571

UNESCAP Secretariat Report .2015. 'Global value chains, regional integration and sustainable development: linkages and policy implications', E/ESCAP/71/8.

Accessed May 02, 2018. https://www.unescap.org/sites/default/files/E71_8E_0.pdf

UNCTAD. 2013. World investment report 2013: Global value chains: Investment and trade for development. New York and Geneva: UNCTAD

UNCTAD. 2013. Global value chains and development: Investment and value added trade in the global economy. A preliminary analysis

Venables, T. R. Baldwin .2011. "Relocating the value chain: off-shoring and agglomeration in the global economy," *Economics Series Working Papers* 544, University of Oxford, Department of Economics.

Websites:

WTO 2018. 'Global Value Chains' Accessed February 02, 2018 .https://www.wto.org/english/res_e/statis_e/miwi_e/countryprofiles_e.htm

OECD Stat.2016. 'OECD Global Value Chain Indicators ' Accessed January 20, 2018. https://stats.oecd.org/Index.aspx?DataSetCode=GVC_INDICATORS

The World Bank.2017. 'World Development Indicators' Accessed January 20, 2018. <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators>

UN Data.2018. 'Industry Value Added'

Accessed March 03, 2018. <http://data.un.org/>

OECD.Org.2018. 'Trade in value added' Accessed March 22,
2018 .<http://www.oecd.org/sti/ind/measuring-trade-in-value-added.htm>.

World Economic Forum .2012. 'The Shifting Geography of Global Value Chains:
Implications for Developing Countries and Trade Policy',
Accessed March 10, 2018. <http://www3.weforum.org/docs/>

APPENDIX

Table below shows list of Countries with Country Groups
(Countries included in the Empirical Research)

S/N	Name	Code	Economic Group
1	Australia	AU	Developed economies
2	Austria	AT	Developed economies
3	Belgium	BE	Developed economies
4	Bulgaria	BG	Developed economies
5	Canada	CA	Developed economies
6	Cyprus	CY	Developed economies
7	Czech Republic	CZ	Developed economies
8	Denmark	DK	Developed economies
9	Estonia	EE	Developed economies
10	Finland	FI	Developed economies
11	France	FR	Developed economies
12	Germany	DE	Developed economies
13	Greece	GR	Developed economies
14	Hungary	HU	Developed economies
15	Iceland	IS	Developed economies
16	Ireland	IE	Developed economies
17	Italy	IT	Developed economies
18	Japan	JP	Developed economies
19	Latvia	LV	Developed economies
20	Lithuania	LT	Developed economies
21	Luxembourg	LU	Developed economies
22	Malta	MT	Developed economies
23	Netherlands	NL	Developed economies
24	New Zealand	NZ	Developed economies
25	Norway	NO	Developed economies
26	Poland	PL	Developed economies

S/N	Name	Code	Economic Group
27	Portugal	PT	Developed economies
28	Romania	RO	Developed economies
29	Slovak Republic	SK	Developed economies
30	Slovenia	SI	Developed economies
31	Spain	ES	Developed economies
32	Sweden	SE	Developed economies
33	Switzerland	CH	Developed economies
34	United Kingdom	GB	Developed economies
35	United States	US	Developed economies
36	Argentina	AR	Developing economies
37	Brazil	BR	Developing economies
38	Brunei Darussalam	BN	Developing economies
39	Cambodia	KH	Developing economies
40	Chile	CL	Developing economies
41	China	CN	Developing economies
42	Colombia	CO	Developing economies
43	India	IN	Developing economies
44	Indonesia	ID	Developing economies
45	Israel	IL	Developing economies
46	Korea, Republic of	KR	Developing economies
47	Malaysia	MY	Developing economies
48	Mexico	MX	Developing economies
49	Philippines	PH	Developing economies
50	Saudi Arabia, Kingdom of	SA	Developing economies
51	Singapore	SG	Developing economies
52	South Africa	ZA	Developing economies
53	Thailand	TH	Developing economies
54	Turkey	TR	Developing economies
55	Viet Nam	VN	Developing economies

글로벌 가치사슬이 산업 개발에 미치는 영향

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국문초록

생산과 최종 소비가 동시에 발생하지 않는 세계화 시대에는 발생하는 가치가 실제로 누구의 몫인지에 대한 우려가 커지고 있다. 글로벌 가치 사슬과 복식부기의 부상은 무역, 정책, 그리고 투자에 있어 중요한 주제로 떠오르고 있다. 정보를 확인하기 위한 방법은 한정적이며 개발 및 소득 수준을 고려하며 글로벌 가치사슬이 실제로 경제 개발에 미치는 영향을 파악하는 철저한 작업은 아직 이루어지지 않았습니 다. OECD 와 WTO 의 도움으로 우리는 이제 복잡한 데이터 세트에 노출되었습니다. 이 연구는 대상 국가들의 글로벌 가치사슬의 참여도와 산업 발달의 인과 관계에 대하여 확인하였습니다. 기존의 저자들은 주로 GVC 지표를 개발하는 데에 중점을 두었습니다. 이 실증 연구는 2 차 자료의 데이터 세트를 사용하여 개발 및 소득 수준과 무관하게 세계 가치 사슬의 참여와 국가 차원의 산업 발전 사이에는 매우 강한 양의 상관관계가 있음을 발견하였습니다. 더 나아가 개별 산업들의 성과/영향들이 그 산업의 개발에 미치는 영향을 측정하여 대체적인 인과관계와 영향을 확인하였습니다.

실마리어: 글로벌 가치 사슬, 산업 부가가치, 경제 개발

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