

GLOBAL VALUE CHAINS AND TURKISH FOREIGN TRADE



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PLAGIARISM

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ABSTRACT

Turkey has experienced significant globalization through foreign trade since the 1980s. The globalization of trade is important in terms of economic developments in Turkey. In this context, the role and importance of the global value chain, which is one of the most popular concepts of recent years, in Turkish foreign trade is the central hypothesis of the study. In this study, the participation of Turkey and the BRIC countries in the global value chain has been calculated. Within the framework of the evaluation of the relevant literature and empirical calculations, we can say that although these countries have structural and historical differences, Turkey's participation in the global value chain converges with the values of the BRIC countries. However, since the 1980s, Turkey, with its structural current account deficit problem, has differed from these countries. In addition, according to our regression analysis, Turkey's increase in foreign trade participation positively affects GDP growth regardless of imports and exports.

Key words: foreign trade, globalization, global value chain, current account deficit, global value chain participation, BRIC countries

ÖZET

Türkiye, 1980'lerden itibaren dış ticaret yoluyla önemli bir küreselleşme yaşamıştır. Ticaretin küreselleşmesi Türkiye'deki ekonomik gelişmeler açısından önemlidir. Bu bağlamda son yılların en popüler kavramlarından biri olan küresel değer zincirinin Türk dış ticaretindeki rolü ve önemi çalışmanın temel hipotezini oluşturmaktadır. Bu çalışmada Türkiye ve BRIC ülkelerinin küresel değer zincirine katılımları hesaplanmıştır. İlgili literatürün değerlendirilmesi ve ampirik hesaplamalar çerçevesinde, bu ülkelerin yapısal ve tarihsel farklılıkları olmasına rağmen, Türkiye'nin küresel değer zincirine katılımının BRIC ülkelerinin değerleri ile yakınsadığını söyleyebiliriz. Ancak 1980'li yıllardan itibaren Türkiye yapısal cari açık sorunu ile bu ülkelerden farklılaşmıştır. Ayrıca regresyon analizimize göre, Türkiye'nin dış ticarete katılımındaki artış, ithalat ve ihracattan bağımsız olarak GSYİH büyümesini olumlu yönde etkilemektedir.

Anahtar kelimeler: dış ticaret, küreselleşme, küresel değer zinciri, cari açık, küresel değer zinciri katılımı, BRIC ülkeler

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ABBREVIATIONS

C: Chosen country

CRI: Ratio of country's manufacturing goods imports to exports

EXGRI: Country's export of manufacturing goods

EXGR: Country's total goods export

GDP: Gross Domestic Product

GL: Grubel Lloyd

IMGRI: Country's import of manufacturing goods

IMGR: Country's total goods import

OECD: Organization for economic co-operation and development

Q: Group of product

P: Chosen second country

R&D: Research and Development

RITI: Relative importance of trade in country's manufacturing goods

TISH: Share of country's manufacturing goods in total trade

TÜİK: Turkish Statistical Institute

XISH: Share of country's manufacturing goods in exports

WTO: World Trade Organization

MISH: Share of country's manufacturing goods in imports

1. Introduction

As a result of globalization, the global value chain has recently increased its importance. Today, companies operating in the international market constitute an important part of trade. As these companies increase, competition will increase more and more and companies that understand the concept of the global value chain will win. Of course, with the certain crises experienced in this process, it has become an important issue for companies to use the global value chain in the most beneficial way. Especially with the crises experienced, the global value chain has taken on such an important dimension for countries. Failure to procure any raw material may lead to disruptions in the trade of many products, and this has been experienced by countries in the past. It has become a goal not to disrupt the global value chain and to use it as the highest benefit.

Global value chain analysis has been the subject of both theoretical and empirical studies. In general, the main thing that is important in the global value chain is to create the most profitable and most beneficial system. Within this, every link of the global value chain should be analyzed very well and followed up. When the trade is on a global scale, it will be just as difficult to follow every link of the global value chain. In this process, companies in the international market can get help from other companies, establish profitable partnerships or expand the company in other countries. All of these possibilities are created through a broad global value chain analysis.

The hypothesis of this study is to state the importance of the global value chain in foreign trade. Certain studies have been made on this subject. Turkey-based studies were conducted. In this study, the effect of the global value chain on the Turkish economy was examined. At the same time, global trade data were compared with BRIC countries such as; Brazil, Russia, India and China.

This study consists of three parts. In the first part, it is aimed to evaluate the conceptual and measurement literature related to the global value chain. In the second part, developments in world trade, the importance of China in world trade and global value chain are briefly mentioned. In this section, the importance of the global value chain for Turkey will be discussed while underlining the important points of the liberalization of Turkey's foreign trade or the export-oriented industrialization strategy and the developments in foreign trade since the 1980s.

In the third part of this study, Turkey's indicators related to the global value chain will be discussed in comparison with the BRIC countries, namely Brazil, Russia, India, China. The values used in this study are the import and export values of the countries. In order to make a general approach, the import-export values in 1995, 2000, 2010, 2018 and 2020 were evaluated. A comparison of past data with current data was made.

2. Basic Concepts and Literature Review

2.1.Global Value Chain

The global value chain covers all the activities that the product performs until it reaches its final form. The known supply chain has been adapted to the present day according to the global market requirements. Today, many organizations have understood the importance of inter-business relations in order to gain competitive advantage and have started to restructure their relations with both suppliers and customers based on mutual cooperation and interest. In particular, the close cooperation developed with suppliers; It is observed that it has made extremely positive contributions in issues such as increasing product quality, reducing the cost of purchased products, improving production and distribution flexibility, and increasing customer satisfaction. The concept of supply chain focuses on the transportation of materials and products between locations. On the other hand, global value chain is a consumer-oriented system that attaches importance to the benefit between producer and consumer. In this chain, suitable packaging, marketing the product, adding value to the product, and consumer advantages stand out. The important criteria in global value chain are cost, market share, sales amount, growth rate, customer satisfaction, product quality, profitability and speed to market. As trade became global, it gained new dimensions.

Global Value Chain is a high-level model developed by "Michael Porter" in order to define the process by which businesses buy raw materials, add value to the raw material through various processes to create a finished product and sell this end product to customers. Porter first detailed the value chain in his "Creating and Sustaining Superior Performance " article in 1985. The concept of global value chain was fully prevalent in the mid-1990s, when global trade was concentrated.

According to Gereffi from “The Organization of Buyer-Driven Global Commodity Chains: How US Retailers Shape Overseas Production Networks”, value chain in trade is a natural learning. In other words, global value chain is naturally adopted as a requirement. The biggest impact of this is globalization.

2.1.1. Benefits of the Global Value Chain

Companies conduct value chain analysis by looking at each stage of production required to create a product and identifying ways to increase the efficiency of the chain. The overall goal is to offer maximum value for the lowest possible total cost and create a competitive advantage. In the global value chain, companies divide the production chain as companies specialize in certain tasks. With the global value chain, companies do not produce the entire product. Firms become a chain of production in their areas of expertise. Companies work with more than one company in a production chain. Relationships between these companies are long term. Thus, companies gain long-term profit and the quality of the product is preserved. With the global value chain, the quality of the products has increased, companies aim to be the best in certain areas rather than being good in many areas. With the global value chain, the manufacturer does not worry about the packaging of the goods it produces. Thus, companies spend their energy only for the product they produce and the best product comes out. Of course, companies compete to sell the best quality goods at the best price but competition is essential for quality in trade. The use of the global value chain analysis method, which consists of basic and support activities, is extremely important in terms of identifying the shortcomings, actions and future developments of both the company and the competitors. Thanks to the global value chain; businesses increase their efficiency, reduce their costs, achieve goals such as customer satisfaction and profitability.

Also, the global value chain has become an important issue for the economies of countries. The global value chain directly affects the economies of countries. It plays an important role in the economic development of countries. The global value chain has become an important condition for the sustainable economic growth of countries. There are three main sectors of the economy which are agriculture, manufacturing and services; to develop the country's economy in the global value chains. Since it is a competitive environment, it is necessary to be different from other countries. In the global value chains, upgrading by empowering production sectors through technology, know-how and richer skill.

“The GVC research approach uses the value chain as its organizational structure for describing and visualizing detailed industry studies. It is inclusive as it covers all manufacturing and service-related activities from conception through end use.”

(Frederick; 2019:30)

One of the important factors in the development of many countries over the years is their good use of the global value chain. Profitability increases towards the last link of the production chain. When producing a product, it should provide the best quality and cheapest product, starting from the raw material to the final product. For this, high technology is important in production. Technology has not only accelerated the globalization process, but also accelerated technological developments as the fruit of globalization.

By addressing the issue from the very beginning, the speed of globalization gained momentum with technological developments. With this globalization, trade between countries intensified and technological developments spread.

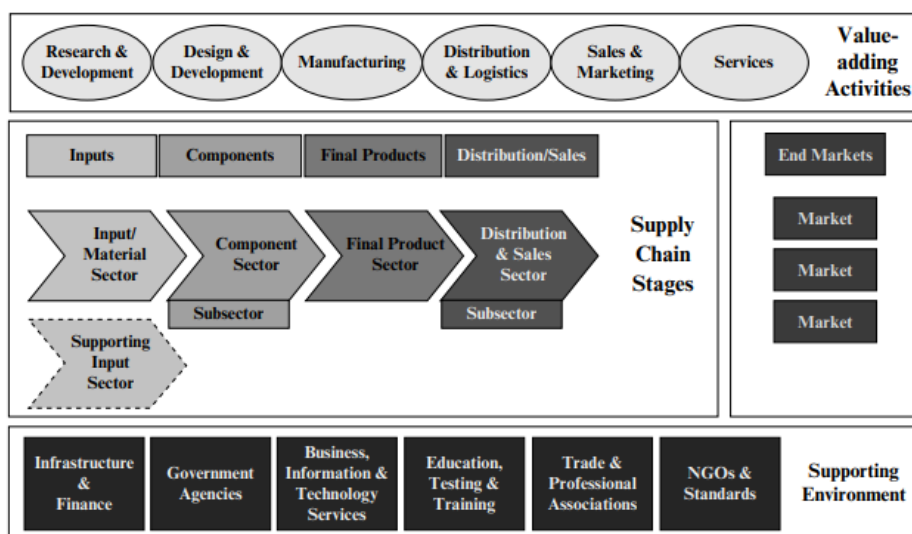
“In information and communication technologies, especially with the developments in the industry, the increased production capacity has accelerated the spread of technology to society and the globalization process. Especially, equipping the computer with integrated circuits and microprocessors and the internet, which developed after the 1990s, stand out as important developments in gaining an international dimension with the disappearance of borders in the globalization process as a network that surrounds the world. The reflection of this area has affected many areas, including the increase in production in the industrial sector .”

(Çelik, 2012: 65-67).

As a result, the production speed has increased and the production time has been shortened with the developing mechanization thanks to the technological developments.

2.1.2. Global Value Chain Model

According to global value chain model; there are four key parts which are (1) value-adding activities or business functions; (2) supply chain; (3) end markets; and the (4) supporting environment.

Table 1: Global Value Chain Model, Source: (Frederick; 2019: 30)

- (1) Value adding activities or business functions: The value adding activities are research& development, design& development, manufacturing, distribution& logistics, sales& marketing and services. Added value can be measured by high or low value added products. High value-added products are products in which high technology is used. Countries that produce high value-added products are economically high-income countries. Since innovation is important in value added products, countries allocate significant budgets for R&D studies. Adding value does not only depend on technological advances. It adds value to the product in service to the customer. A link can be established between the brand and the customer. For this it plays an important role in marketing. With good marketing, the product can be sold as a completely high quality product. There are many ways to create value-added products.
- (2) Supply chain: Supply chain stages are inputs, components, final products and distribution& sales. It is the classical of the trade. It is the part of the product

from the raw material to the seller. However, the supply chain is mostly based on logistics and production.

- (3) End markets: The third part of the global value chain model is the end markets of the final product or service.

“this segment can be considered an extension of the supply chain; it is analytically useful to separate it. End market categories can be used to group products that share product.” (Frederick; 2019: 32).

In fact, he states that a separate interpretation on a sectoral basis reaches a clearer conclusion. In table 1, end markets include different markets which are industrial, medical, consumer electronics, automotive electronics, etc. Extra, end market buyers are non-financial corporations, government, households and others. The producer, who is at the end of the chain link, earns the most.

- (4) Supporting environment: These are infrastructure& finance, government agencies, business information & technological services, education testing& training, NGOs& standards. The last part of the model includes supporting actors. It includes legal and social parameters. These actors include government agencies, industry associations, infrastructure and service providers. It must be traded within certain quality standards and producers must comply with them.

With these specific stages, the global value chain has changed over time. Because technology is changing, as the population increases, the needs increase. In the 21st century, a new paradigm has emerged in the global value chain.

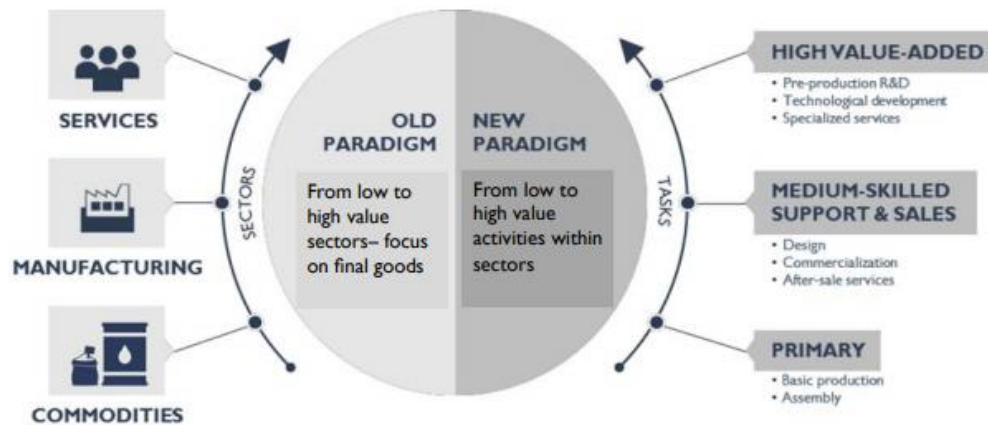
2.1.3. Old vs. New Paradigm

As trade increased in the world and foreign trade became easier, traditional methods in trade were abandoned.

“The development trajectory of the ‘old’ or traditional paradigm was to move from agriculture into manufacturing and finally into services. Upgrading in a GVC-oriented world today, essentially means moving into higher value segments of the industries in which countries have already established expertise. GVC-oriented industrial policy is therefore based on specialization in specific functions. This shift in development thinking has important implications for developed and developing countries alike.”
(Bamber&Brun&Frederick&Gereffi; 2017: 5)

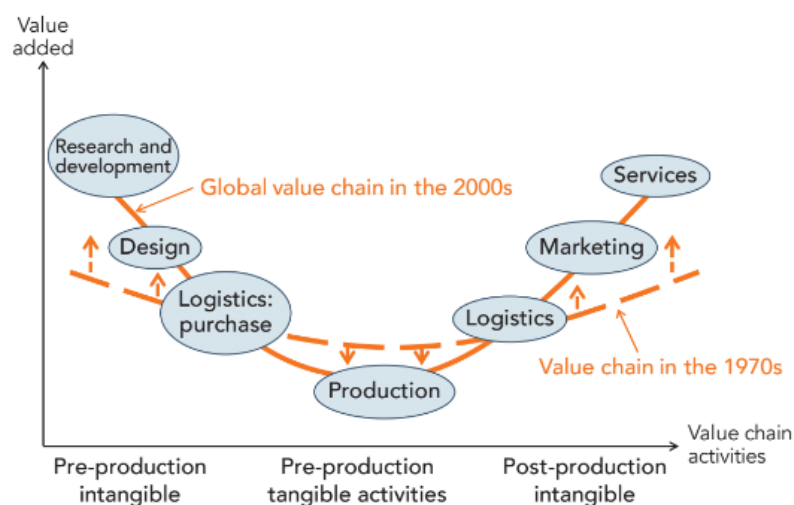
Thanks to the global value chain, it encourages empowerment to developing economies. It adds value to all sectors, including local industries. The global value chain supports the economic development plans of countries by diversifying their economies. Developed countries have benefited more from knowledge and innovation advantages. In general, all countries had to focus on economic growth patterns in trade.

Table 2: Old Paradigm and New Paradigm, Source: (Taglioni and Winkler; 2016: 23)



Old Paradigm and New Paradigm table (Table 2) shows the difference between the old paradigm and new paradigm. The old paradigm is based on sectors like services, manufacturing and commodities. On the other hand, the new paradigm is based on tasks like high value added, medium skilled support& sales and primary activities. The old paradigm focuses on final goods and the new paradigm focuses on every step within sectors.

Table 3: The smile curve of the global value chain, 1970s and 2000s (World Bank Group; 2017:70)



The new paradigm is more multidimensional than the old paradigm. The new paradigm emphasizes customer satisfaction, comfort and communication. It also provides more economic returns. It proceeds through tasks to create this environment. One of the task of the new paradigm is high value-added. R&D studies, technological development and service are required for high added value. The other task is medium-skilled support and sales require design, commercialize and after sale services. The last one which is the primary tasks require basic production and assembly. The common point of the tasks is customer satisfaction and selling quality products. In an environment where there is a lot of competition, sectors win in this way. The global value chain has arisen from a necessity. With the developing technologies in the developing world, the sectors should increase their service and product quality.

2.1.4. Offshoring and Outsourcing

Offshore can occur because labor is cheap in another country. A company can also manufacture abroad because raw material costs less in the other country. Also, other country's tax rates may be lower. In other words, offshoring is the practice of placing some of a firm's services or operations abroad. While offshoring, by definition, means relocating an activity to a foreign country, outsourcing can take place in the leading firm's country or abroad. According to Supply Chain Perspectives and Issues; this “offshoring” phenomenon is expected to reduce jobs for low and semi-skilled workers in advanced economies while increasing them in developing economies.

“This rise of offshoring and international outsourcing, by enabling the more optimal utilization of country’s comparative advantage results in win-win situation. Developing countries –particularly the East Asian economies- took this opportunity to industrialize, while developed

countries saw the replacement of industry jobs with higher value-added service jobs.” (Park& Nayyar & Low; 2013: 57)

Outsourcing is a management strategy and business model. With outsourcing, companies will focus only on what they do best and make an effort to create the best product. There will not be a single company responsible for every link in the production chain.

According to the results of a study conducted among the members of the “The Outsourcing Institute” in 1998, the main reasons for outsourcing were grouped under 10 headings:

First one is; controlling and reducing operating expenses; companies that provide outsourcing services know in advance the costs that will occur in the business.

Detailed and clear information about the cost is given.

Second one is; directing the company to the main activity, developing the basic capabilities like; firms find the opportunity to focus on their basic capabilities. A more comfortable working environment is provided by distributing tasks in the global value chain. The chance to develop in the area of expertise is provided.

Third one is; access to world-class opportunities; an outsourcing enterprise can have the opportunity to follow all technological and management developments indirectly but instantaneously. Companies that use external resources also turn to companies that can provide the best service or meet expectations because they are customers. There is an unlimited market in this regard, the desired country can be preferred.

Fourth one is; releasing internal resources for other activities like in outsourced businesses, it is possible to shift resources, especially personnel, to areas where they

can serve the customer better, instead of non-basic activities. In this way, it will both focus its energy within itself and its staff will focus on its customers.

Fifth one is accessing resources; businesses benefit from external resources if certain resources they need are not available within their structure. In this way, companies can reach the missing inputs and continue their production processes successfully.

Sixth one is accelerating the restructuring process; when a business that takes a restructuring decision benefits from service providers that are experts in their fields and have completed their own restructuring processes, they may have the opportunity to reach their targeted returns in a very short time. Instead of training its own existing staff, the company can get help from organizations that are experts in their fields.

The other one is risk management (Coping with functions that are out of control or difficult to manage); thanks to the outsourcing of companies, deficiencies in the production process can be overcome. After all, thanks to outsourcing, everyone in a production chain is doing what they are good at.

The eighth one is, establishing capital funds which is the most important decision that the management has to make is the decision to use the available capital for investments with the best efficiency. Outsourcing allows some expenses to be incurred by suppliers from their capital rather than capital expenditure to obtain resources.

The other one is sharing the risk; outsourcing companies have responsibilities towards the companies which they do business with. For any issue, outsourcing companies take on this problem. The rights of the companies are protected with the agreements.

The last one is providing cash flow which is the outsourcing ensures the transfer of assets from the customer to the supplier. As a result of the agreements made between

companies, valuable assets such as equipment, vehicles, licenses can be sold to the company that will be outsourced. The service provider company uses these assets to serve the customer.

In general, outsourcing is an important step for companies. Especially in the 2000s, with the acceleration of global value chain activities, outsourcing has become an important issue. Outsourcing has provided a competitive advantage for countries. Countries have become a race in the import and export of intermediate goods, as well as producing the final product.

According to Gereffi and Sturgeon, as the resources in global supply base improved, more lead firms gained the confidence to embrace the twin and often intertwined strategies of outsourcing and offshoring.

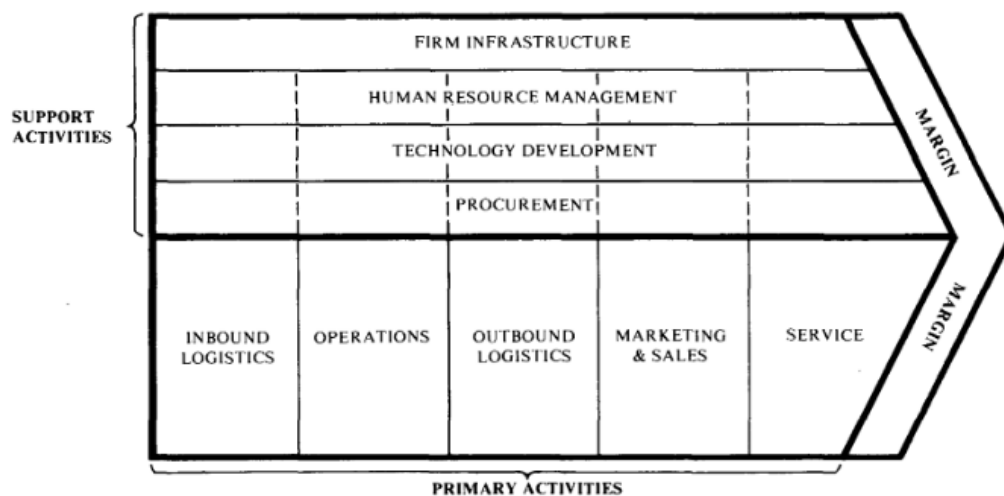
It is an outsourcing opportunity for the growth of countries. The common feature of many countries that have grown in the economic field with the global value chain is their good use of outsourcing.

“Over time, retailers and branded manufacturers in wealthy countries became more experienced with international outsourcing. In response, developing countries acquired the infrastructure and capabilities needed to sustain larger scale operations, and suppliers upgraded their capabilities in response to larger orders for more complex goods. “(Hamilton& Gereffi, 2009)

2.1.5. Porter's Value Chain Model

According to Michael Porter's value chain model has two main fields of activity. (Porter; 1985:39). The first is the primary activities that are composed of actions that are linked together in series and form the main operations of the business. The second activities are support activities. All main activities are required to add value and create competitive advantage. The purpose of this model is to increase the competitive advantage of companies. Michael Porter thought that companies will provide a serious advantage in competition by providing maximum efficiency. Value activities are physically and technologically different activities that a firm performs. For this, Michael Porter has categorized each activity in Competitive Advantage 1985.

Table 4 The generic value chain. Source: Porter (1985)



Primary activities are;

The first activity in the value chain is *inbound logistics*, which includes all purchases of raw materials ready for production, warehouses and stock management. The second activity is operations involving all the efforts required to transform raw materials into a finished product or service. Outbound logistics is the third activity in

the value chain and occurs when all transactions are completed and the final product is ready for the customer. The activities required to deliver a product to the end user are considered as part of the outbound logistics segment. It is the fourth part of the marketing and sales value chain and includes all strategies used to enable potential customers to purchase a product, such as channel selection, advertising, and pricing. Service is the fifth and final tier of a company's value chain and describes all activities that create better consumer experiences, such as customer service and repair services.

Companies can achieve a competitive advantage at any of the five activities in the value chain. For example, creating highly efficient shipping logistics allows a company to lower shipping costs and either earn more profits or pass the savings to the consumer and lower the price point.

According to Porter's value chain model; the second activities are support activities. The support activities are procurement, human resources management, technological development and firm infrastructure. To briefly define them separately;

Procurement is the acquisition of inputs or resources for the firm.

Human Resources management which consists of all activities involved in recruiting, recruiting, training, development and compensation.

Technological Development which belongs to the equipment, hardware, software, procedures and technical knowledge that result in the firm's transformation of inputs into output.

Firm Infrastructure which meets the needs of the company and connects its various departments; It consists of functions or departments such as accounting, law, finance, planning, public affairs, government relations, quality assurance and general management.

As Porter states in his article *Competitive Advantage* (1985), companies consist of very different departments such as marketing, production, management and sales. It is extremely critical to create different value chain analyses according to these different departments and increase the value of the service offered to the customer. Value chain analysis can be done for businesses as well as for competitors of the company. Value chain analysis is an important method for conducting due diligence analysis on competitors that go through similar processes and use similar methods. This value chain analysis on competitors is very functional to monitor competitors using the same or close processes and to determine the status of the business among its competitors.

2.1.6. New Trends of Global Value Chain

The global value chain is important for countries. It has become an important issue in the developing economy, especially for middle-income countries. Countries attach great importance to international trade, as it directly affects the country's economy. Thanks to the global value chain, many low-income countries have improved their economies. On the other hand, countries with good national economies have achieved economic sustainability.

In the article "Global Value Chains and Economic Development", the Asian market trend of the global value chain was mentioned. This trend is the orientation of the global value chain to the Asian market. The Asian market has played a decisive role in world trade. With the change in demand and supply, the trend in the global value chain is to turn to the Asian market. This is due to the low-cost labor and growing industry of the region. In the past, the general trade model was between developed

countries. Today, however, countries with rapidly growing trade include Asia and the Middle East, North Africa, Asia and Sub-Sahara Africa, and Asia and Latin America.

“Historically, the export- oriented development strategy of the East Asian NICs and buyer-driven commodity chains emerged together in the early 1970s, suggesting a close connection between the success of EOI and the development of new forms of organizational integration in buyer-driven industrial networks.” (Gereffi; 2018:48).

With the price advantage provided by these countries, it is demanded from other countries. As a result, a product in the global value chain can be added to the production chain in many countries. For this reason, these trend regions have become popular countries with cheap labor and facilities.

“The challenge of economic upgrading in GVCs is to identify the conditions under which developing and developed countries and firms can “climb the value chain” from basic assembly activities using low-cost and unskilled labor to more advanced forms of “full package” supply and integrated manufacturing.” (Gereffi& Fernandez Stark; 2013: 16)

The global value chain is a renewed version of the trade. Companies are no longer competing only with companies in their own region, they must compete with the world in order to get stronger. The key issue that increases competition in the 21st century is technology. As a general judgment, companies that are open to technological developments will be strong competitors in global trade. The importance of technology has become more meaningful with global value chain. R&D work has gained momentum. Countries are allocating a serious budget for these

studies. Because the countries that produce high value-added products get richer. High value-added products are products where innovation is completely used. The common feature of countries with rich income is to export high value-added products to world. Therefore, countries are in a race with each other to produce the latest innovative products.

Products produced with the newest innovation have become better quality. With this situation, thanks to the competitive environment, the consumer purchased the quality product at a more affordable price. Of course, the issue of product and service pricing is a separate sales and marketing tactic, but in general, the consumer has access to quality products at every price.

With the global value chain, companies produce more products in a shorter time. Thus, it both saves time and increases productivity. Anyway, the main purpose of the global value chain is to increase efficiency with the least cost. One of the main purposes of the global value chain is production in the most profitable way. Thus, both the producer and the consumer provide maximum profit while purchasing. One of the main goals is to produce the cheapest, best quality and most innovative products. The higher the production, the higher the growth rate.

2.1.7. Benefits of the Country

Considering the global value chain benefit as a country, the economy of the country rises with the strengthening of companies. Since Adam Smith, we know that the mercantilist ideas suggest an economic policy designed to maximize exports and minimize imports for a strong economy. In contrast, free trade between two countries increases the output and welfare of the trade partners.

“These new developments represent a potential change in the center of gravity for economic growth, with significant implications for GVCs, employment and innovation, and the strategy of governments and firms in developing countries. Globalization’s benefits will continue to be unevenly distributed, with its gains going to those with more education, skills, wealth, and power. However, the inclusion of large emerging economies like China, India, Brazil and Mexico among those who are benefitting, at least in part, is a qualitative shift in the process.” (Gereffi& Fernandez Stark; 2016: 32)

The global value chain creates different business lines, employment increases. Thus, poverty is reduced. The difference between the rich and the poor is reduced.

According to statistics, more women workers play an active role in companies with the global value chain. As employment increases in countries, it contributes to the economy. At the same time, the number of qualified personnel has increased. The importance of education has been valued more in the world.

The global acceleration of trade has increased labor migration. Developed countries have increased the number of qualified personnel by taking brain drain. Worker migration has increased not only as qualified personnel but also as workers.

Another important effect of the global value chain is that it aims to reduce environmental degradation. Protecting nature has become an important issue, especially in the competitive environment. Recycled clothes, waste-free packaging, sustainability industries have become frequently used terms today. According to the OECD and WTO report; the measurement of trade flows in value-added terms would support policymaking in assessing the environmental impact of trade. For example,

concerns over greenhouse gas emissions and their potential role in climate change have triggered research on how trade openness affects CO₂ emissions. In addition, having production facilities that are less harmful to the environment is like securing their place in this competitive environment. Especially in the upcoming years, sustainability will become an important issue in global value chain.

2.1.8. Domestic Government Policies to Global Value Chain

The role of countries is very important in increasing and upgrading global value chain participation. Government policies come to the fore in this regard. Government policies to support GVC participation are grouped under 4 main headings which are factor endowments matters, market size matters, geography matters and institutional quality matters.

The first one is, factor endowments matter; countries should remove the trade barrier in order to benefit from the comparative advantage. Favorable trade terms and effective investment promotion facilitate foreign direct investment. Countries must remove barriers to investment because, restrictive conditions force international trade. Policies aimed at attracting foreign direct investment increase GVC participation. An investment policy should be GVC focused and should support investors.

“Because factor endowments matter, countries should exploit their comparative advantage by eliminating barriers to investment and ensuring that labor is competitively priced, by avoiding over valued exchange rates and restrictive regulations” (The World Bank; 2020: 161)

The second one is, market size matters, trade liberalization is a key event for GVC participation. Thus, the market area in trade increases. One of the barriers to trade is

the tariffs applied by the countries. Countries expand their market areas by lowering their tariffs. With sensible trade agreements, countries' GVC participation increases. Another issue is to improve the e-commerce environment with the policies implemented by the countries. It is important for GVC to give importance to e-commerce, which has an important place in global trade. With e-commerce, countries can expand their market size. In this regard, countries should master the innovations in telecommunication and e-commerce. Thus, countries reach more customers and increase their market size.

The third one is geography matters; transportation is an important factor in trade costs. Therefore, the location of the countries is one of the important issues in terms of the trade of the countries. In addition, the transportation and customs services implemented by the countries are among the events that cause competition in international trade. In case of disruption of these services, there will be delays and uncertainties in trade. It is one of the important criteria that countries have a solid infrastructure in logistics. Because geography is important in trade, countries can overcome distance by expanding their connections and lowering trade costs.

Landlocked and remote countries are geographically disadvantaged in trade. Others are disadvantaged by policy restrictions on transport services and bureaucratic actions such as slow, costly, unpredictable border procedures. Situations that countries can do in this regard:

Countries should improve customs and border procedures;

Transport services should be improved;

Port structure and management should be improved;

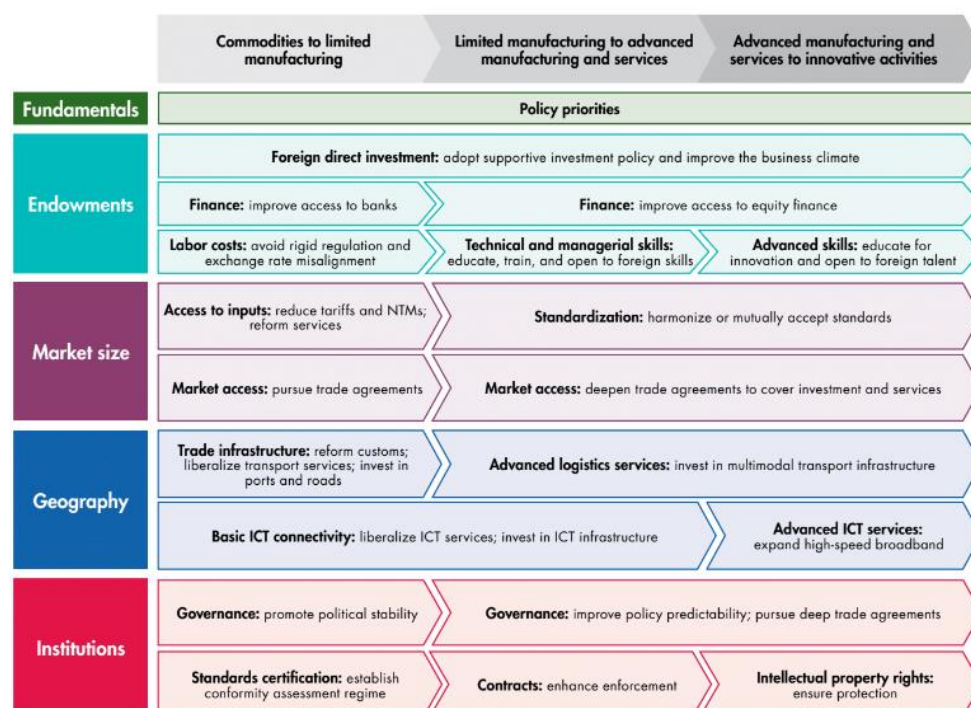
Information and communication technology (ICT) connectivity should be improved.

Thus, the commercial costs related to time and uncertainty in trade are reduced and it is in a more advantageous position than other countries.

The last one is institutional quality matters, contracts have an important place in trade for quality. These contracts should protect the rights of both parties. Institutional framework and governance policies in countries should be stable and predictable.

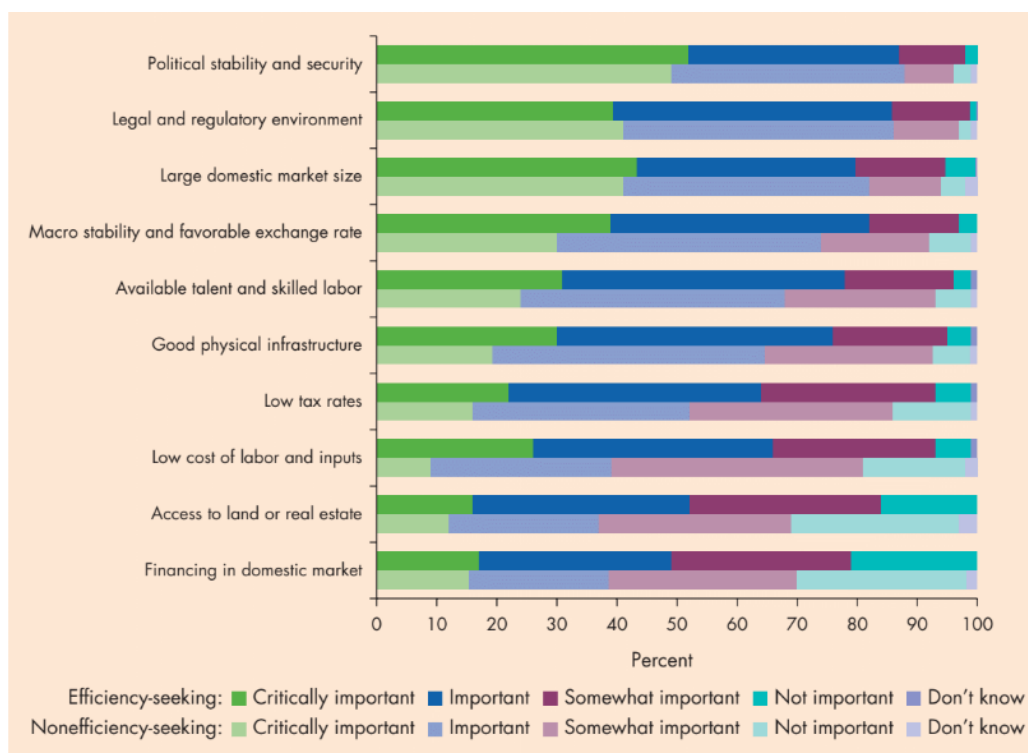
“But being in a value chain today does not guarantee that a country will capture significant benefits from participation and that those benefits will grow. Many of the traditional approaches to industrial policy, including tax incentives, subsidies, and local content policies, are more likely to distort than help in today’s GVC context, as Brazil’s poor experience of promoting localization in the automotive sector illustrates. However, a range of proactive policies can enhance GVC participation.” (The World Bank; 2020: 161).

Table 5: Policy Priorities Source; WDR 2020 team



Proactive policies implemented by countries increase GVC participation. GVC participation is shaped by the policies that countries implement in terms of trade. In this regard, countries should take sensible decisions and remove barriers to trade. At the same time, countries should be open to innovations and constantly upgrade.

Table 6: Efficiency Seeking Foreign Direct Investments; Source; World Bank 2018



The table shows the multinational cooperation involved in efficiency-seeking foreign direct investments are more selective. Foreign companies have to be selective when investing in countries, some important issues are shown in the table. The most important thing is political stability and security for foreign investors. Investors want stability in the country they are in because they think long-term. Countries without stability are viewed as slippery ground. With the political stability in the countries, investors feel safe and it is one of the most important situations for multinational cooperation. It is shown as critically important for the table. The second critically important thing is large domestic market size which is one of the 4 main topics that

increase the GVC participation of countries. The other ones are legal & regulatory environment and macro stability & favorable exchange rate which all depends on the policies implemented by the countries. One of the most important aspects in increasing GVC participation is the country's policies.

2.2. Global Value Chain Measurement

According to the OECD, there are two ways to empirically study the global value chain which are “indicators based on international trade statistics” and “indicators based on input and output tables”. Although there is no clear measurement for global value chain measurement, some theoretical studies are carried out. One of the analytical studies for global value chain participation is called “input trade”. This analytical study focuses on input trade as global value chains are production and trade networks between countries. Production factors are detailed with input-output data. Thus, the efficiency of the global value chain can be determined. Input and output data related to value-added product or service part and shows the relationship between supply and demand of an economy. The effective participation of countries with a global value chain can be seen with the input-output study. Actually, there is still no clear analytical study of the global value chain in the 21st century, because the global value chain contains many issues.

According to OECD, the most commonly used global value chain indicators based on international trade statistics. The name of this theoretical work is “trade based global value chain indicators”. This study examines the country's import, export and gross domestic product. Thus, an average result is obtained for global value chain participation.

There are lot of ideas for measuring or evaluating the global value chain. However, there is no clear way to measure factors such as countries' global value chain participation, impact, etc. An opinion can be obtained in the light of the empirical information obtained. This is because the global value chain is a chain that encompasses so many issues. Each link of these chains contains a different subject. The simplest sustainability is one of the factors that highlight the global value chain. Designing an effective packaging for the product is another matter. Marketing the product to the customer and the service sector is a separate issue. In short, the global value chain includes more than one sector, so it isn't easy to calculate the global value chain.

In general, studies for measuring the global value chain are listed:

2.2.1. Trade Data Based Global Value Chain Indicators

According to OECD, the most commonly used GVC indicators based on international trade statics. This method is linked to Grubel Lloyd index. There are several stages for this GVC measurement share of manufacturing goods in exports and imports, share of manufacturing in total trade, relative importance of the trade in manufacturing goods, manufacturing imports to exports and Grubel Lloyd index. In addition, Revealed Comparative Advantage (RCA) can be found with this calculation method.

Share of manufacturing goods in exports and imports;

Global value chain starts with the circulation of products between countries.

Chosen country's global trade examined separately. The share of imports and exports on total values has been observed. In formula, "C" represent chosen country.

$$(1) \quad XISH_c = \frac{EXGRI_c}{EXGR_c}$$

Formula (1) relates to chosen country's export value. It occurs with the division of total good export and total manufacturing goods export.

$$(2) \quad MISH_c = \frac{IMGRI_c}{IMGR_c}$$

Formula (2) relates to chosen country's import value. Same as the formula 1; it occurs with the division of total good import and total manufacturing goods export.

Share of Manufacturing Goods in Total Trade;

This formula shows the share of manufacturing in total trade, include in export and import.

$$(3) \quad TISH_c = \frac{EXGRI_c + IMGRI_c}{EXGR_c + IMGR_c}$$

“TISH provides a complementary view of a country's participation in GVCs to the two separate indicators described above, this is not a comprehensive view. For example, a country with high levels of imports and exports relative to its gross domestic product (GDP) may have a similar TISH ratio to a country with a low ratio of trade to GDP.” (OECD; 2017:14)

This calculation uses total import and total export values and manufacturing import and manufacturing export values. Thus, information about the general trade of the sector is obtained.

As the value approaches 1, the chosen sector (manufacturing) can be said to have a good global trade involvement. A value of “1” is the best desired value in share of goods in total trade.

Relative Importance of Trade in Manufacturing Goods;

To understand relative importance of the trade in manufacturing goods, the value of GDP comes into play in this formula. An economic impact on the country can be seen. A conclusion will be drawn according to the economic situation of the country.

$$(4) \quad RITI_c = \frac{EXGRI_c + IMGRI_c}{GDP_c}$$

This formula does not include total import and export figures. In this formula, only the selected sector, which is manufacturing, has import and export figures.

Ratio of Manufacturing Imports to Exports;

The current account deficit issues discussed in detail;

$$(5) \quad CRI_c = \frac{IMGRI_c}{EXGRI_c}$$

This ratio of manufacturing imports to exports analysis uses the export and import values of the selected sector. If the result in this formula is low, the result will be the country located at the beginning of the production chain. It is the desired result for the countries. Simply put, the country imports less and exports are more than imports.

Grubel Lloyd Index;

This Grubel Lloyd index has been used to obtain information about the foreign trade of the countries. In this part, (p) represents other country and (q) represents general trade. The differences from the previous calculations are (p) and (q).

$$(6) \quad GL_{c,p} = 1 - \frac{\sum_{q \in \text{int}} |EXGR_{c,p}(q) - IMGR_{c,p}(q)|}{\sum_{q \in \text{int}} (EXGR_{c,p}(q) + IMGR_{c,p}(q))}$$

It is the Grubel-Lloyd index that is widely used in the analysis of intra industry foreign trade. Developed in 1971 by Herb Grubel and Peter Lloyd, this index is used to measure the global trade of certain or total products. In this parametric analysis total products chosen. Details to know when calculating the Grubel-Lloyd index:

The index result should always be between 0 and 1.

If import and export are equal, the index becomes one. This means that global trade is reaching its maximum. It is the most ideal point.

Trade increases as the Grubel Lloyd index approaches 1.

Trade decreases as the Grubel Lloyd index approaches 0.

1.2.2. Indicators Based on Input Output Tables: Trade in Value Added

Trade in value-added index is an index calculated on value-added products. The importance of value-added products for the global value chain is quite high. When the trade volume of developed countries is examined, it is noticed that the export of value-added products has a very high volume.

Steps to calculate trade in value-added:

Input Output Analysis

The relationship between supply and demand economy;

$$\mathbf{y}_c = \mathbf{Z}_c^D \mathbf{t} + \mathbf{f}_c$$

$\mathbf{y}_c$ = is a K X 1 vector of the output of country (c),

$\mathbf{Z}_c^D \mathbf{t}$ = K X K matrix of domestic intermediate demand for the countries (c)

$\mathbf{f}_c$ = is a K X 1 final demand vector for the products of country (c)

It is like that;

$$\begin{bmatrix} y_c(1) \\ \vdots \\ y_c(K) \end{bmatrix} = \begin{bmatrix} z_c^D(1,1) & \dots & z_c^D(1,K) \\ \vdots & \ddots & \vdots \\ z_c^D(K,1) & \dots & z_c^D(K,K) \end{bmatrix} \begin{bmatrix} 1 \\ \vdots \\ 1 \end{bmatrix} + \begin{bmatrix} f_c(1) \\ \vdots \\ f_c(K) \end{bmatrix}$$

Each industry's intermediate demand of domestically produced products can be expressed in terms of technical coefficients. This equation is like that;

$$\mathbf{y}_c = \mathbf{A}_c^D \mathbf{y}_c + \mathbf{f}_c$$

$\mathbf{A}_c^D$ = is a K X K matrix of direct domestic input coefficient of country (c)

The fundamental input output identity rewritten as;

$$(\mathbf{I} - \mathbf{A}_c^D) \mathbf{y}_c = \mathbf{f}_c \quad \text{where "I" is K X K matrix.}$$

Therefore Leontief inverse;

$$\mathbf{y}_c = (\mathbf{I} - \mathbf{A}_c^D)^{-1} \mathbf{f}_c = \mathbf{B}_c \mathbf{f}_c$$

This equation represents the multiplier matrix. It shows the how much output from each domestic industry is directly and indirectly required in country c to produce a given vector of final demand.

Johnson and Noguera's (2012) international input-output framework is;

It is N countries equation;

$$\mathbf{y} = \mathbf{A}\mathbf{y} + \mathbf{f} \quad \text{with;}$$

$$\mathbf{y} = \begin{bmatrix} y_1 \\ \vdots \\ y_N \end{bmatrix}, \quad \mathbf{A} = \begin{bmatrix} A_{1,1} & \dots & A_{1,N} \\ \vdots & \ddots & \vdots \\ A_{N,1} & \dots & A_{N,N} \end{bmatrix}, \quad \text{and} \quad \mathbf{f} = \begin{bmatrix} \sum_p f_{1,p} \\ \vdots \\ \sum_p f_{N,p} \end{bmatrix}$$

In this equation, y_c is a K X 1 vector of the output of c country. This equation is all about vectors like others. Again;

$$\mathbf{y} = (\mathbf{I} - \mathbf{A})^{-1} \mathbf{f} = \mathbf{B} \mathbf{f}$$

I= (K X N) X (K X N) matrix

“Matrix A (referred to here as global technical coefficient matrix) summarises the entire structure of within-country, cross-country, and cross-industry intermediate products linkages. Consequently, the global Leontief inverse B (or global total requirements matrix) indicates how much output from each country and industry is required to produce a given vector of world final demand f. “ (Ahmad& Bohn& Mulder& Vaillant& Zalcicever ; 2017:8)

2.2.3. Tiva Database: Input Output Table Based Global Value Chain Indicators

Input-output analysis is an old analysis method that has become a tradition started by Wassily Leontief. With input-output analysis, international trade can be examined in more detail. It is a method that systematically quantifies

the relationships between various sectors. Input- output analysis method can be used regardless of the economy of each country.

“The structure of each sector's production process is represented by an appropriately defined vector of structural coefficients that describes in quantitative terms the relationship between the inputs it absorbs and the output it produces. The interdependence among the sectors of the given economy is described by a set of linear equations expressing the balances between the total input and the aggregate output of each commodity and service produced and used in the course of one or several periods of time. The technical structure of the entire system can accordingly be represented concisely by the matrix of technical input-output coefficients of all its sectors. It constitutes at the same time the set of parameters on which the balance equations are based.” (Leontief, 19: 1986)

One of the most used input-output analysis is the ratio of imported inputs to domestic inputs. With this indicator, the values of imported and domestic intermediate goods used by the country in production are compared.

$$RMD_c = \frac{IA_c^M y_c}{IA_c^D y_c}$$

“Moreover, the indicator only provides a limited perspective on countries’ integration in GVCs, since it does not differentiate between imported inputs ultimately used to produce goods and services for domestic consumption and exports.” (Ahmad& Bohn& Mulder& Vaillant& Zaclicever ;21:2017)

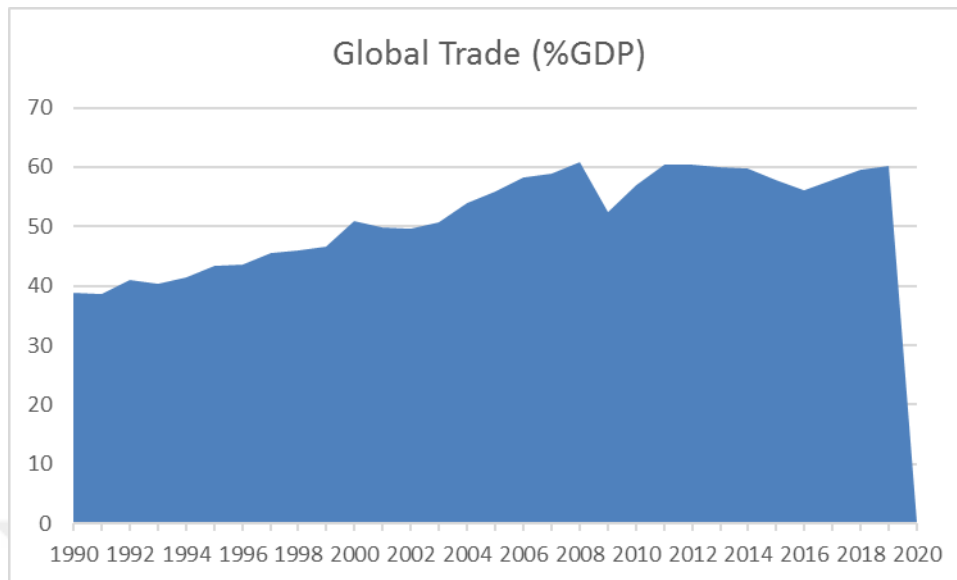
3. DEVELOPMENTS IN GLOBAL TRADE, LIBERALIZATION OF FOREIGN TRADE IN TURKEY AND THEIR RELATIONS TO GLOBAL VALUE CHAIN

3.1. World International Trade and Global Value Chain

Globalization has made a great contribution to countries both in the economic field and in the social field. Globalization has removed the barriers to foreign trade. With the increase in global trade, countries have benefited greatly in the economic dimension. One of the most important developments of the last century is the integration of national economies into a global economic system with globalization. Foreign trade, which is a result of globalization, has an intense effect on the economy of countries.

“Globalization in the world is seen not only in the social dimension but also in the economic dimension. The process of economic globalization, with the use of new communication technologies in economic life, the integration of distant places with each other, and economic activities gaining a global dimension; It is defined as the elimination or trivialization of the time and space factor of production-consumption activities.” (Yıldız et al., 2010:2).

The world gets smaller as time progresses. There is the concept of “international product” in the 21st century. Thanks to global value chain, every consumer can benefit from the same innovations. The consumer in America and the consumer in Europe can access the same products. Obviously with global value chain, the difference between countries has been partially removed and will disappear with further more awareness of global value chain.

Table 7: World Trade (%GDP) by the author; Source: The World Bank.

Per capita income worldwide is growing at an unprecedented rate. When the estimates for 2007 are included, it is observed that the per capita (real) gross product has increased by an average of 2.3 percent per year in the last five years (2003-2007). While this rate was 1.2 percent in the 1990-2002 period, it was 1.4 percent in the 1981-1989 period.

From a global perspective, foreign trade has developed rapidly especially after 1990. According to World Development Report 2020, one of the reasons for the rapid development of foreign trade is the global value chain. Poor countries got rich with the global value chain like China, Vietnam. While foreign trade developed with the global value chain awareness, the rate of poverty in the world has decreased. After the 2008 crisis, trade growth and global value chain participation slowed down. Trade, which grew seriously in the 1990s, stagnated with the 2008 crisis. There may be ups and downs in trade because the crises experienced by countries can turn into global crises.

A group of developing countries that make up a very large portion of the world's population are the largest contributors to global growth. The economies of these

countries are growing faster than the economies of developed countries. Also, these countries are starting to catch up with the richest countries in terms of human development. Every year, millions of citizens in these countries are lifted out of poverty, and life expectancy, child mortality and literacy rates are approaching the levels of developed countries. These developing countries have access to global markets for goods, capital and technology, and are trading more and more with each other and with rich countries. The share of developing countries in global trade—especially due to developing countries with successful economies—was 29 percent in 1996, and it has reached 37 percent today.

The global financial crisis started in the summer of 2007 and affected the whole world in September 2008. The damage from the crisis has exceeded \$3.4 trillion worldwide, according to the British Central Bank calculation. Periodically, there has been a decrease in the global trade volume due to certain reasons. The main cause of the crises is not the global value chain malfunction, but indirectly, it is affected by the crisis. However, these decreases can be indirectly dealt with global value chains.

Especially the crisis that started in America, which has a large volume of global trade, has spread globally. In this case, the global trade volume decreased, then its effects continued like unemployment rate increase. Global value chain has been indirectly affected by this crisis and with good crisis management (including global value chain) the decline can be avoided.

One of the benefits of global value chain to countries is to reduce unemployment figures, and this affects economic growth and inflation rates. Countries should regulate policies to increase production in times of crisis. They can make multi-directional policies for this. China has become the center of world trade by attracting

foreign investors to the country. In order to increase production, studies that will attract the attention of both domestic and foreign investors should be continued.

3.1.1. China and Global Value Chains Since 1990s

In the last 30 years, radical changes have occurred in the structure of the global economy. Many countries have played an important role in global trade as the supply chain has acquired a global dimension. Thus, trade increased and the production of countries increased. The global value chain has been an important opportunity for developing countries' economies.

“What are some of these changes? Not so long ago it was common to assume that production took place in the East for consumption in the West. With the growth of the middle class in Asia and more policies to support domestic demand, however, the momentum for consumer growth is more likely to be in Asia than in the West. Companies must adapt their strategies and supply chains as a result.” (K.Fung ;21: 2013)

According to the World Development Report 2020, one of essential reasons for the rapid expansion of foreign trade after 1990 is global value chain. Poor countries such as Bangladesh, China and Vietnam grew faster for that reason. China has been one of the countries that best implemented and adapted the global value chain. Besides, China has made good use of its location advantage and market advantage. Larger countries tend to be geographically closer to end-goods consumers, so the more centralized their location. It maintains a large base of local suppliers. Exporters in China have begun to buy more domestic intermediate inputs and have less reliance on imported inputs. Global value chain failure probability is low. As the market grows to you, it becomes the main point of the trade.

China has achieved an average annual growth of around 10 percent between 1978 and 2013. Thus, it has become the world's largest exporter of goods. China is a country with brand awareness in the consumer market. The word "Made in China", which is widely seen on the products, has become a brand today. China has had a large volume in global trade, increasing its market share over the years. There are many reasons for this situation.

It can list the reasons why China has become the main point of the global value chain as follows;

First one is lower cost producer; China initially exported low-cost, labor-based cheap goods. The second one is, increased the profit level of foreign companies with China's cheap cost export goods, companies reduced their product costs. At the same time, many companies have established production facilities in China. China, an important player in the global economy; the rapid growth in China contributed to the increase in world output. As a result of high export growth, there was an accumulation of foreign currency reserves in China. China has attracted the attention of foreign investors due to the rapid economic growth.

The other one is innovative technology which is China has focused on imitative or innovative high-tech products after a certain growth. Today, China has started to gain competitive advantage in high-tech sectors with the developing industrial production technology.

Export based growth strategy is one of the most important factors in China's rapid economic development has been the successful implementation of the export-based growth strategy. Joining the World Trade Organization; the rights of importing and

exporting countries have been protected. Global value chain has effectively used. China's low exchange rate policy has attracted the attention of foreign investors.

China has played an important role in imports as well as exports. In 2013, China became the second largest importer country after the USA with an import of 1.9 trillion dollars. Most of the imports made were for export like raw material or intermediate goods for use in production.

China's location and infrastructure; China has an advantageous position in global trade with its proximity to countries with large markets. In general, the highways, railways network and the telecommunications infrastructure in the cities are in good condition. China also has high volume ports. China has the most important ports in the world like, Shanghai port, the second busiest port in the world. After the 2008 crisis, trade growth and global value chain expansion slowed down. Trade, which grew seriously in the 1990s, stagnated with the 2008 crisis.

“The 2008-2009 financial crises were characterized by a synchronized trade collapse in all economies. Authors have discussed the role of global supply chains in the transmission of what was initially a shock on demand in markets affected by a credit shortage. In particular, the literature has emphasized the “bullwhip effect” of global value chains. When there is a sudden drop in demand, firms delay orders and run down inventories with the consequence that the fall in demand is amplified along the supply chain and can translate into a standstill for companies located upstream. A better understanding of value-added trade flows would provide tools for policymakers to anticipate the impact of macro-economic shocks and adopt the right policy responses.” (OECD&WTO, 2019 ;8)

The reasons for the slowdown of the foreign trade rate after the 2008:

With the development of technology, the need for labor power has decreased. 3d printers, full automation machines played a big role in production.

The need for blue-collar employees has decreased, but the need for white-collar employees has increased. The need for blue collar employees has fallen. There was a brain drain between countries. Most of the skilled workers migrated to developed countries.

Trade disputes between major countries can lead to a reduction or segmentation in the global value chain.

3.1.2. 21st Century Global Value Chains

The 21st century has been a period of increased consumption and unpredictable events. Demand for the products increased, a serious consumption environment occurred.

Trade reforms have slowed. Another factor that slows growth is “protectionism”, which may cause the global value chains to be restructured or shifted to new places. Low tariffs contributed positively to the expansion of global trade in the 1990s. When future access to markets is uncertain, firms are encouraged to delay investment plans until uncertainty is resolved. For this, states should renew their policies in an incentive way.

Decline in overall economic growth and investment in particular.

“A moderation in foreign direct investment (FDI) flows might also have played a role in explaining weak trade growth. The dynamic interaction between trade and foreign investment is at the core of globalization, and

FDI can either create or substitute trade. A negative relationship or trade-substituting relation would follow if existing trade moved abroad in response to FDI activity.” (European Central Bank; 2016:33)

Certain countries have become central points in production. In 2003, China represented about 3% of the world economy. Today, China constitutes about 16% of the world economy. China is a global net exporter and importer and an important supplier. As a result of globalization, countries have become dependent on each other in both production and trade.

3.1.3. The Way to Improve the Global Value Chain

Due to developments in global trade, countries improve their productivity and the quality of output. Before the global value chain, only the final product which is the last link of the chain, was important. In the current process with global value chain, every stage of the chain is important. Countries try to provide high quality at every stage of the chain.

Promotion through GVC or the drive to higher value activities has gained importance in economic development and job creation in the global economy where competition remains intense and production is fragmented and geographically dispersed.

State policy of developing countries should be supportive. Developing countries must undertake deeper reforms and pursue predictable policies.

To encourage manufacturers to expand with low trade barriers.

Less harmful industry for nature; Environmental products and production systems should be increased. According to Sustainable Investment Group (SIG) research; One

of the most important issues of Generation Z is climate change and sustainability.

Production and trade should be shaped according to the interests of the next generation like,

“It’s clear businesses are beginning to adopt sustainability not only to protect the environment, but to keep up with the market changes brought on by younger and more conscious generations.” (Furbee,2020:1)

Countries with technological advances play an important role in the global value chain. Countries compete with their technologies and in this competition, countries should open the new technological advances. World Trade Report (2018) highlighted that digital technologies transform global trade. Clearly; technology is the future of world trade.

There should be no disruptions in the global value chain. If necessary, it should be intervened. The efficiency of logistics operations between countries should be increased.

Furthermore, Humphrey and Schmitz (2002) stated in their study that the increase in GVC occurs in four different ways.

First one is product upgrading or moving into more sophisticated product lines.

Reorganizing production systems or upgrading to superior technologies to increase the value of products in the production chain. Product promotion processes cause manufacturers not to leave the market and to continue on their way competitively.

Second one is process upgrading which is increasing unit value in product lines.

Reducing the cost per production. Desired state; minimum process cost, maximum product value.

The other one is functional upgrade which is moving to higher value-added processes among global value chain. Acquiring new functions or editing existing ones. The aim

is to move to value-added positions. The term "functional upgrade" is often spoken in trade with the global value chain. Functional upgrading is recognized as the path to leadership in the global value chain. Design, marketing, branding, retail and after-sales services are included in functional upgrade activities. Functional upgrading is one of the requirements of high value-added production.

The last one is chain or inter sectoral upgrading; inter-sectoral rise, which is expressed as the transition of companies in chains to new productive activities. Inter sectoral movements by companies in order to maintain their existence by moving towards more profitable chains.

“Promotion models differ in terms of both industry and country, based on the input-output structure of the value chain and the institutional structure of each country. Certain industries require linear advancement and countries must gain expertise in one segment of the value chain before moving on to the next level.” (Gereffi and Fernandez-Stark, 2016).

"Upgrade" as a term in the global value chain is one of the important considerations. The term of "upgrade" is done in high value-added products in the global value chain. Value-added growth is achieved through skills upgrading, process upgrading and capital upgrading. Innovation and upgrading must always be present in the global value chain. Because products are sold or served to the world. Adapting to the developments in the world in global trade is one of the obligations, especially for countries that want to earn high income.

“Policymakers, in particular, are interested in finding ways for their countries to participate in GVCs that will provide well-paid jobs, ensure effective skills acquisition and transfer, and greater involvement in higher

value-added activities – in short, a process of upgrading that contributes to an economic transformation.”

(Park& Navyar& Low; 2013:16).

Upgrading is like an economic transformation. Poor countries need to improve themselves in this regard.

“Value chain upgrading is important, since we want value chains to contribute to the development of countries and the income of poor households. Value chain upgrading could take place via a partnership between the public and the private sector.” (Pieter van Dijk&Trienekens; 2012: 22).

Another vital criterion is specialization. Specialization of functions and skills developed for the industry fall under this criterion. Now, traditional production centers have been replaced by modern production centers. For this, high technology and advanced systems are required. Today, prominent industries include bio and nanotechnology and artificial intelligence. In global value chains, these situations are called chain or inter-sectoral escalation.

Finally, technological developments are the biggest pioneers for the development of industries. Countries whose technological developments are at the forefront are the countries that benefit most from the global value chain.

“Modern communication and transportation technologies have enhanced the tradability of services. This has facilitated their incorporation in supply chain production as traded inputs.” (Park& Nayyar & Low; 2013: 127)

3.2. Turkey

The volume and shape of international trade between countries have changed with the global value chain relationships. In this environment; competition and dependence between countries have increased. As countries compete with each other to attract more investment, they have become dependent on each other to meet demands.

Comparative advantages of countries with the global value chain have been reshaped according to the production stages rather than the sector. There has now been a transformation based on task trading, not just merchandise trade. This situation reshaped the foreign trade perception in both developed and developing countries.

Turkey's liberalization of foreign trade began with the decision of January 24, 1980.

Turkey adopted a stabilization program that represented a radical break with her traditional inward looking development strategy. Turkish trade has gained momentum with the export-based development strategy. Turkey in 1980 and the period after the liberalization process of a foreign trade target for export instead of import substitution industrialization process was monitored with the start. This strategy is also sometimes called an “open economy development strategy”. With commercial liberation, state control over trade in goods and services has been decreased. The aim was to provide free international trade. The acceleration of the commercial liberation process was supported by the financial liberation that took place in 1989. Financial liberation is the reduction of government intervention in domestic banking and financial sectors. The aim; here was the integration of the Turkish domestic financial markets into the global financial markets.

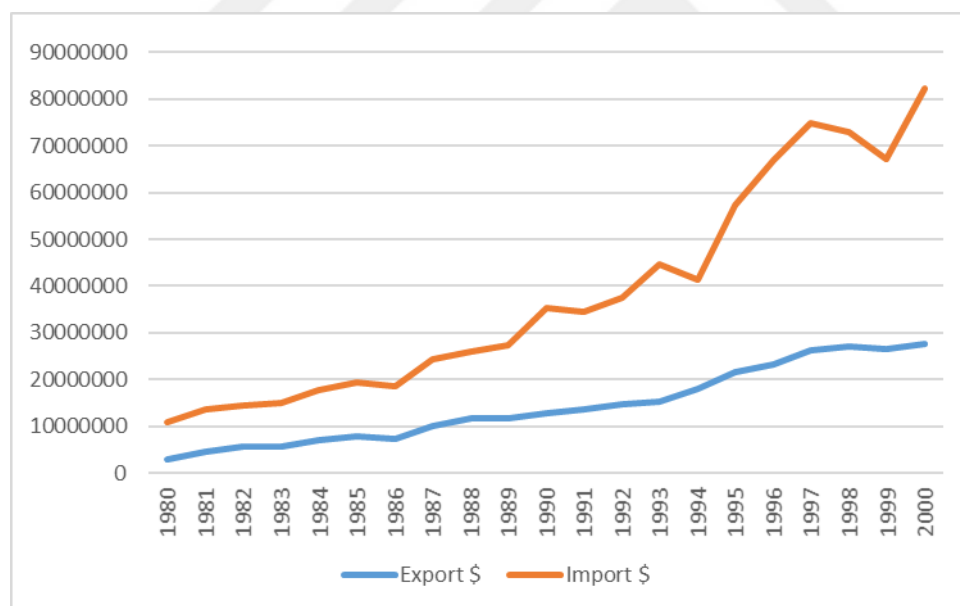
Producers in Turkey was recognized manufacturers in the world. Quality has increased to take an active role in the world.

In addition, there were severe international crises in the various countries (Latin American Crisis, South East Asian Crisis, Russian Crisis, and the Great Recession in 2008) in the world economy and their reflection to the Turkish economy, besides Turkish economy's domestic financial Crisis in 1994, 2000-2001 crises in Turkey.

3.2.1. Foreign Trade in Turkey (1980-2000)

In table 8 is seen in Turkey after the January 24 1980 decision of the increase in imports and exports. The data in the chart is taken from the official institution of TÜİK.

Table 8: Foreign Trade in Turkey (1980-2000) by the author; Source: TÜİK.



According to the data in the table, the years of 1980, 1986, 1994, 1995 are important for country trade. As a reflection of the economic crises experienced in Turkey during these years, sudden decreases or breaks in the export trend were observed. While some temporary improvements have been made to mitigate this problem, a long-term and sustainable improvement has never been achieved. Looking at the

picture in general, the current account deficit is seen as one of the essential problems of the Turkish economy. Although the governments tried to decrease the impact of this problem on the economy with some short-term measures, the current account deficit always made its presence felt as a structural problem of Turkey in this period.

In 1980, daily exchange rate announcement with 32.7% devaluation, reduction of the state's share in the economy, liberalization of foreign trade, foreign capital investment incentive, low-interest credit, tax refund, foreign exchange free, and interest rates fixed. After that economic policy reform, Turkey was ready for a new era. Foreign trade has developed due to removing barriers to imports and exports.

High current account deficit and increasing inflation were the two most important problems in the 1987-1994 period. Afterwards, a devaluation was made in 1994 and the "Stability Measures Package" was implemented. As can be seen from the table as a result, the rate of increase in exports has gradually shrunk since 1996.

In 1994; the stand-by agreement with the IMF in 1994 is effective for the liberalization process.

In 1995; Customs Union agreement signed with the EU in 1995. In this agreement, customs taxes were zeroed on industrial products imported from the EU since 1996, other taxes (fees, stamps, etc.) were abolished. Thus, the rate of increase in imports was higher than the rate of increase in exports. With this agreement, it has increased the export opportunities to EU countries.

Overall, according to the 1980-2000 Turkey import and export graphics, there is a huge difference between import and export rates. Turkish government has tried to close the gap in the increase rate with certain policies, but it seems that these policies are not sufficient to close the current account deficit. Since different policies are applied on imports, the import graph is fluctuating. However, it is an indication that

these decisions taken to reduce imports have a short-term effect on the table.

Especially after 1990, the difference in imports and exports increased considerably.

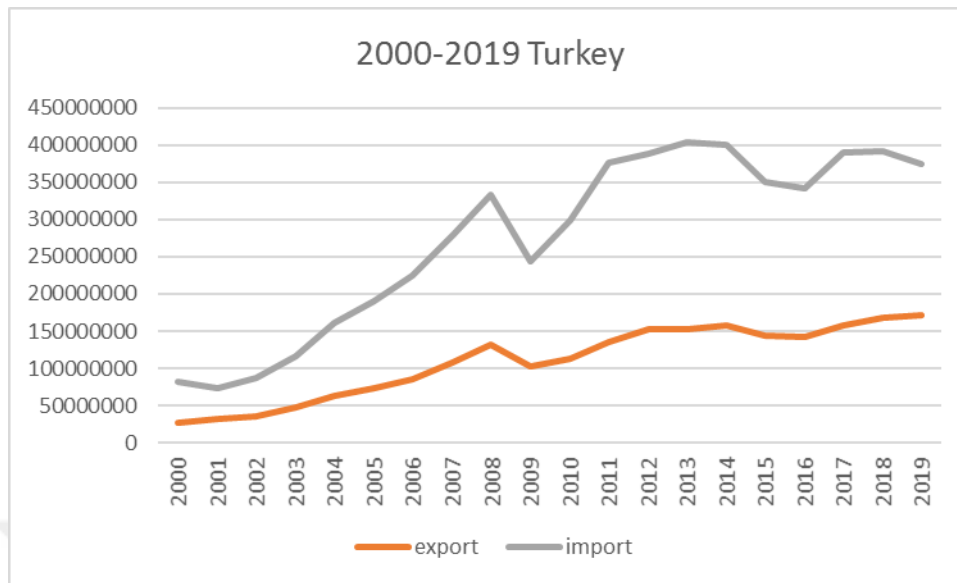
In the 1990s, economists have different opinions about the current account deficit problem. The current account deficit problem, is shown as one of the most important causes of economic crises in developing countries.

Discussions about accepting the current account deficit as a crisis signal also started in these years. Dornbusch and Fischer (1990) stated that the ratio of current account deficit to GDP is 4%, and Freund (2000) is 5%, which is a threshold value and considered exceeding this value as a crisis signal.

There are economists (Edwards, 2001; Uygur, 2004) who think that it would be insufficient to talk about the possibility of a crisis by looking only at the high ratio of the current account deficit to GDP, and that the country's exchange rate policy, the amount, maturity and composition of foreign debts should also be considered.

3.2.2. Foreign Trade in Turkey (2000-2019)

In table 9 is seen in foreign trade in Turkey between 2000 and 2019 years. The data in the chart is taken from the official institution of TÜİK.

Table 9: Foreign Trade in Turkey (2000-2019) the author; Source:TÜİK.

In 2000; the rate of export and import is higher than in previous years. During this period, "The Inflation Reduction Program" was implemented.

In 2001; "The Inflation Reduction Program" failed due to the economic crisis. Due to the economic crisis, the floating exchange rate application was introduced. This situation caused the Turkish lira to depreciate rapidly. Due to this situation, there was a decrease in imports. At the same time, there was an increase in exports.

Thanks to "The Transition to a Strong Economy Program" implemented after the 2001 crisis, serious improvements were made in the economy and exports. Turkey has increased its competitiveness in international markets. Consumption increased with the decrease in interest rates and the increase in credit opportunities.

In 2008; according to the graph, there is a serious decrease in imports and exports in 2008. It is a period of global financial crisis. The 2008 global crisis created uncertainty and confidence problems in Turkey. Real sector and consumer confidence indices decreased. The most negative effect in Turkey has been the increase in unemployment rates.

In 2009; the effects of the crisis experienced in 2008 have decreased. Imports and exports have increased, but the problem of foreign trade deficit still continues. During this period, natural gas started to be imported from Russia, and the foreign trade deficit increased more.

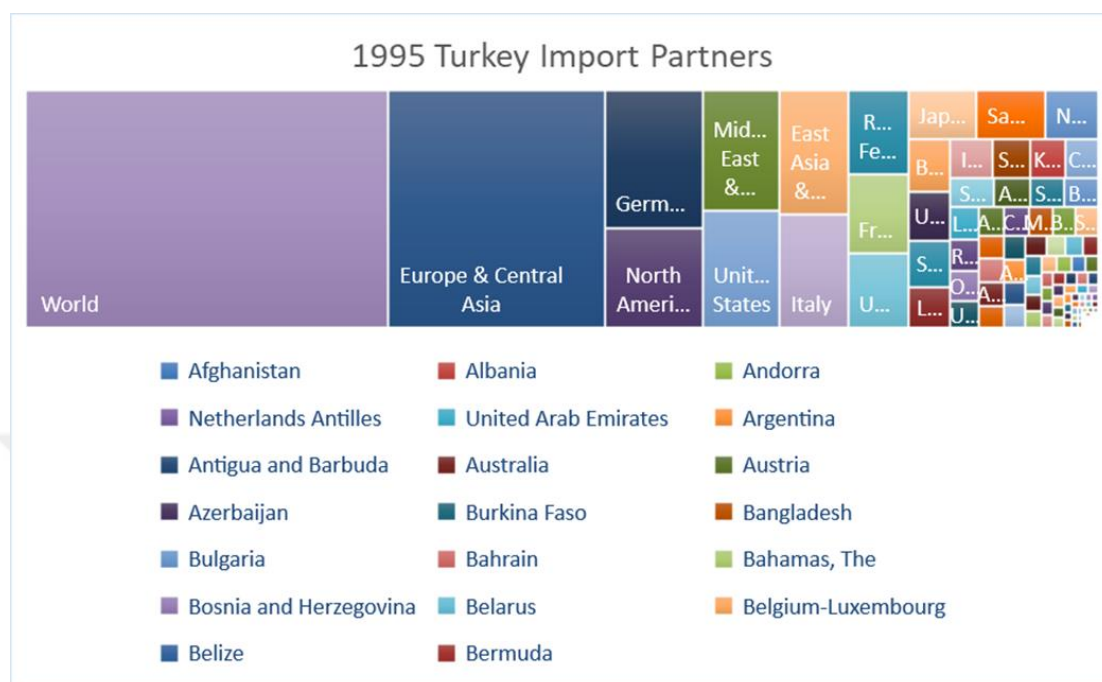
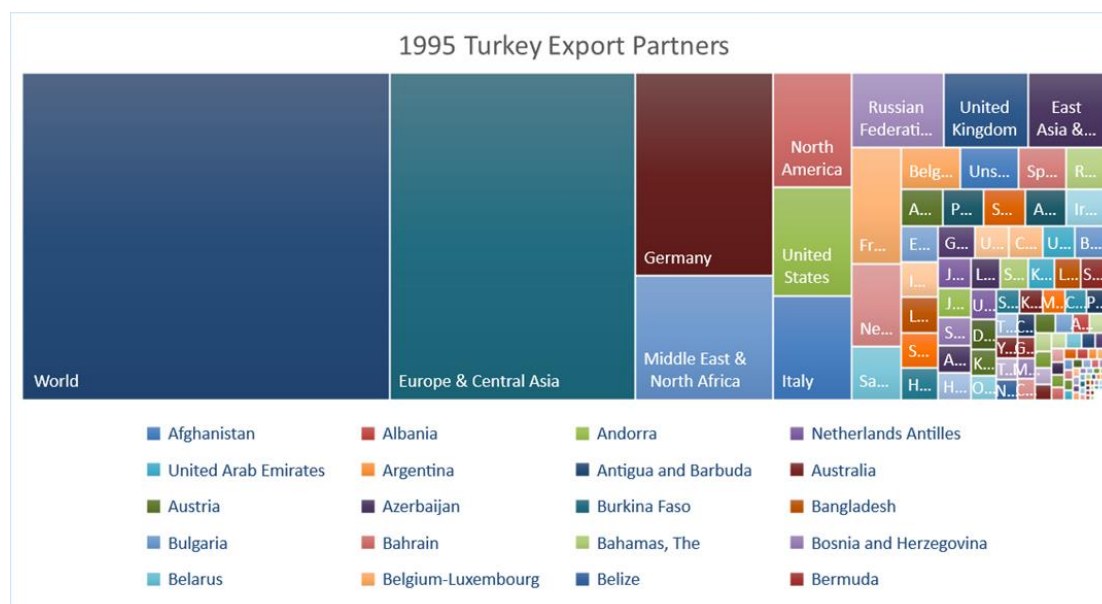
In 2015; there is a slight improvement in foreign trade figures. However, the global recession still continues.

According to Turkey's Import and Export table in the 2000-2019 year, the global economic crisis experienced in 2008 has serious implications for the world market.

Although Turkey is not directly affected by this crisis too, it was affected by the global contraction in demand experienced. The biggest problem in Turkey's trade is the current account deficit. However, Turkey has started to gain strength in the global market. In particular, Turkey's natural gas needs for basic needs such as imported petroleum, the trade deficit has increased even more. Dependency in the energy sector is one of the biggest causes of current deficit problem. Because countries consume too much energy not just Turkey.

3.2.3. 1995 Turkey's Foreign Trade Product Group and Trade Partners

The data in the tables (table 10,11,12,13) are obtained from the World Bank (with World Integrated Trade Solution Data). Turkey's import and export products are shown based on certain years. At the same time, Turkey's trade partners in the mentioned years (1995 & 2000 & 2010) were examined.

Table 10: Import Partners of Turkey, 1995 by the author.**Table 11:** Export Partners of Turkey, 1995 by the author.

Turkish government signed the Turkey Customs Union agreement in 1995 and started an important period in terms of Turkish trade. With the Customs Union Agreement,

trade with European countries has intensified. According to the data in 1995, Turkey's busiest trade partner was determined as Europe & Central Asia. Next comes Germany. When analyzed separately as imports and exports, there is no big difference between the two.

Table 12: Export Products of Turkey's, 1995 by the author.

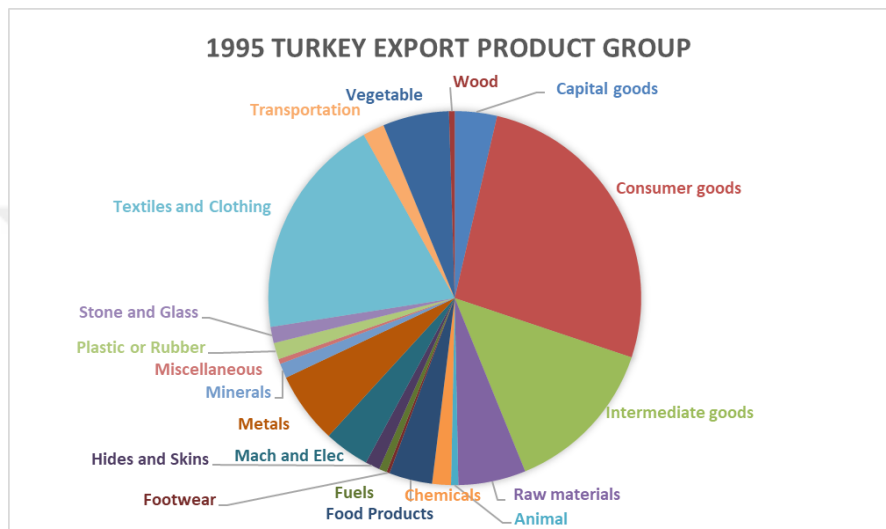
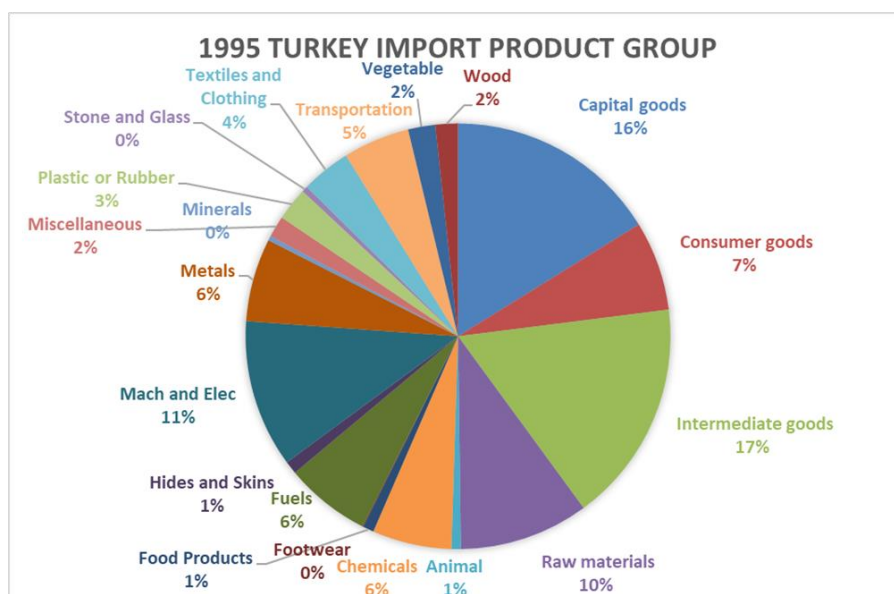


Table 13: Import Products of Turkey's, 1995 by the author.



According to the 1995 import and export data in the table; The products used by Turkey in exports are mostly textile, consumer goods and intermediate goods.

According to the import data, the most heavily imported products are intermediate goods, capital goods and mach&elec.

“We can say that Turkey has been in the world markets especially in low technology and medium-low technology sectors since 1995. Between 1995 and 2016, Turkey's declared competitive advantage in world markets continued in the production of low-tech tobacco products, textile products, clothing, leather and leather goods, and furniture and buys manufacturing industry products (such as toys).” (T.C Kalkınma Bakanlığı;2018: 12)

3.2.4. 2000 Turkey's Foreign Trade Product Group and Trade Partners

Turkey, the year 2000 and after; experienced two major crises, namely November 2000, February 2001 and 2008. Foreign trade was affected by the crises after 2000. At that time, high inflation was one of the problems in Turkey. During this period, “The Inflation Reduction Program” was implemented.

Table 14: Import Partners of Turkey, 2000 by the author.

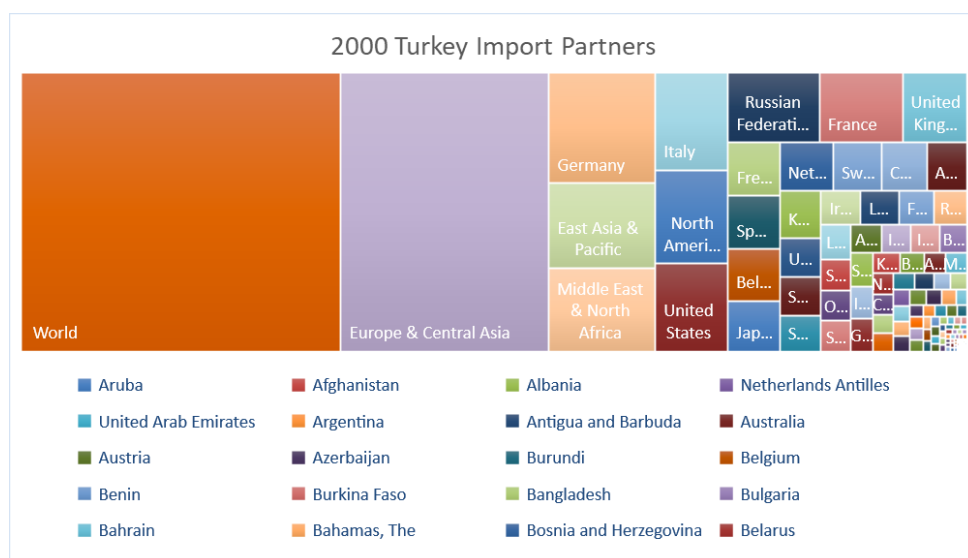


Table 15: Export Partners of Turkey, 2000 by the author.

When the export and import partners of Turkey are examined in 2000, there is not much difference compared to 1995. In 2000, as in 1995, trade was mostly between Europe & Central Asia countries.

When the foreign trade data of 2000 is analyzed on the basis of product group, it is determined that the highest export products are consumer goods and textile clothing. Compared to the year 1995, there was not much difference according to the product category. In 2000, capital goods and mach&elec products were imported the most among the import product groups.

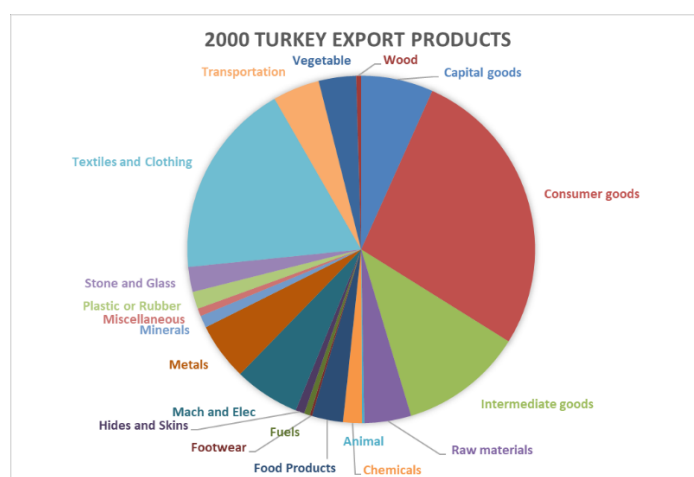
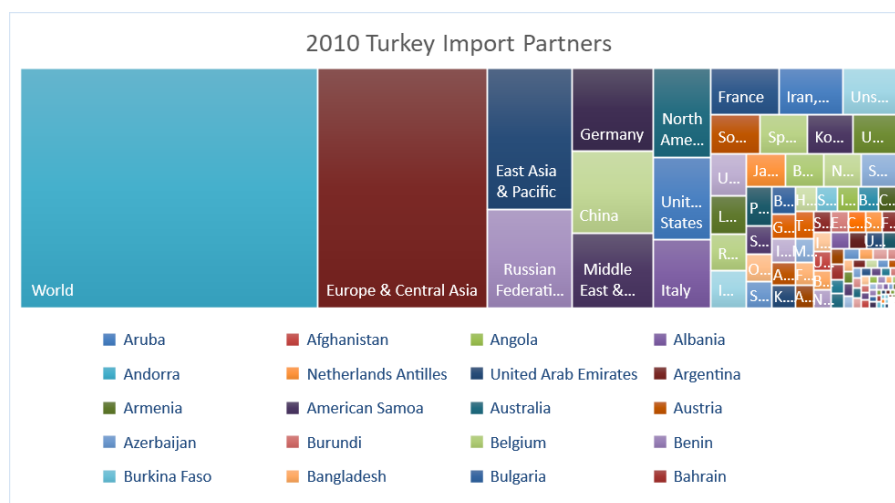
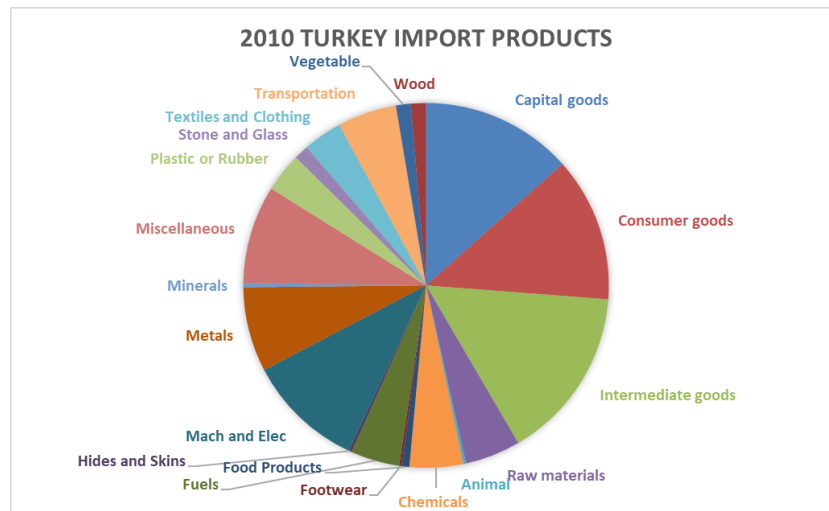
Table 16: Export Products of Turkey's, 2000 by the author.

Table 19: Import Partners of Turkey, 2010 by the author.

The most preferred among the product groups imported from Turkey; capital goods, consumer goods and intermediate goods. 2010 Europe & Central Asia was the first among Turkey's import and export partners, as in the other examined years. Russia has replaced Middle East & North Africa in imports. In 2010, Turkey increased the intensity of imports to Russia.

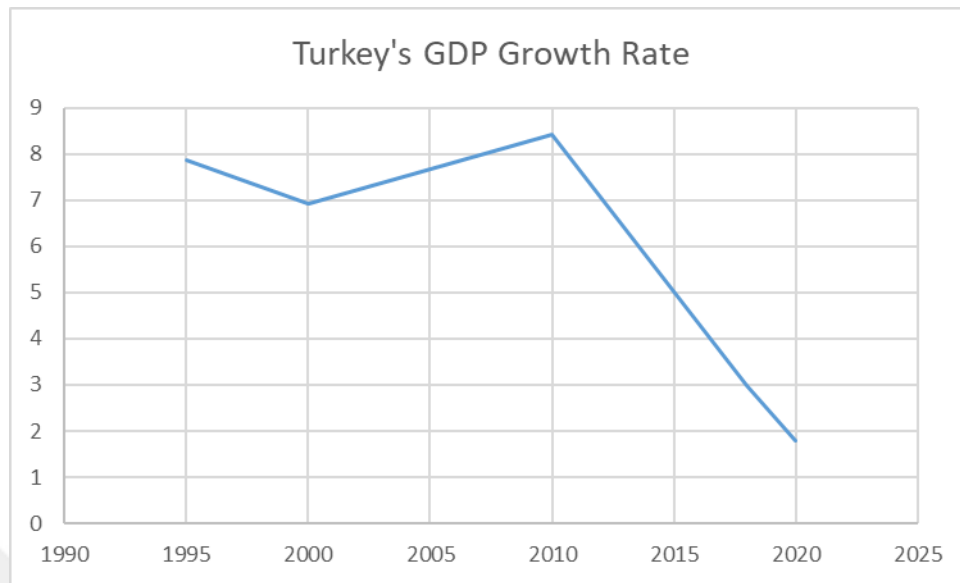
Table 20: Export Products of Turkey's, 2010 by the author.

Table 21: Import Products of Turkey's, 2010 by the author.

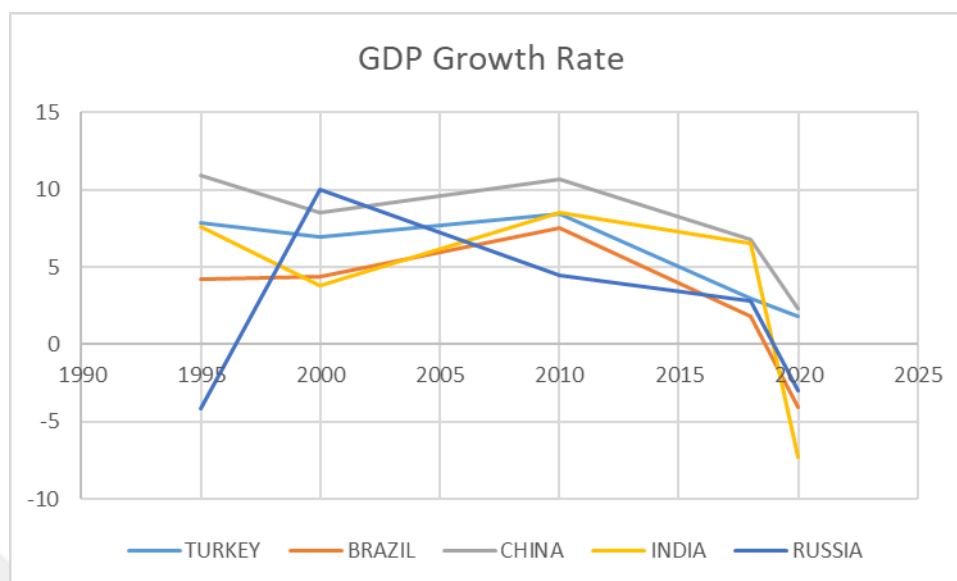
Export product group carries an important situation for countries. According to the years examined, Turkey has concentrated on the export of low-tech products. The common feature of developed countries is that they focus on the export of high-tech products. In general, it is one of the important elements in foreign trade.

3.2.6. Current Account Deficit and GDP Growth

According to the Economist Mahfi Eğılmez, after the 2000s Turkey, there has been a growth model based on a deficit, which we can summarize as a growth model with a current account deficit. As seen in GDP Chart of Turkey graph, there has been a positive increase after 2000.

Table 22: Turkey's GDP Growth Rate chart by the author.

The biggest reason for the current account deficit in Turkey is the import of oil and natural gas, which are used most intensively. In order for Turkey to close the current account deficit, it is necessary to restrict imports. However, when there is a restriction on imports, the country restricts exports in the right proportion. The reason for this is that the country buys imported products while producing. The raw material or part product shortage experienced directly affects exports. According to Economist Mahfi Eğılmez, the economic impact of the contraction in foreign trade in Turkey is negative. According to Akçay, it is considered normal to make the investments needed to increase the production capacity of the economies in the development stage and to finance the part of the investments that are not covered by domestic savings, by giving a current account deficit and by external resources. Because, as the country grows, the difference between savings and investment will gradually narrow, and therefore, the dependence on foreign resources will gradually decrease.

Table 23: GDP Growth Rate chart of countries by the author.

The situation is the same in India, which has a current account deficit problem along with Turkey in the years 1995-2000-2010-2018-2020. Despite the current account deficit problem, India has grown faster than Turkey. India draws a more successful picture in exported products. The main reason for this is that it produces products with high added value. For example, India became the world's largest tractor manufacturer in 2013. India's main export products; engineering products, chemicals, pharmaceuticals, jewelry, textiles and agriculture. It is in the second place in the world especially in the field of agriculture. India's biggest source of employment is agriculture.

At the same time, Brazil, which had a current account deficit in 2000 and 2010, has a positive GDP growth between the mentioned years.

According to Labonte; in developing countries such as Mexico, Turkey, East Asia, Brazil and Argentina, large current account deficits are the most important leading indicator for financial and currency crises. The current account status in these countries is very important for the sustainability of economic stability.

In fact, Brazil was one of the fastest growing major economies in the world, with an average annual growth rate of over 5% after 2000. According to GDP Growth table, Brazil started to decline slightly after achieving a certain growth in 2010.

There are economists who think that it would be insufficient to talk about the possibility of a crisis by looking only at the high ratio of the current account deficit to GDP, and that the country's exchange rate policy, the amount, maturity and composition of foreign debts should also be considered. There are also economists who think that there is no need to worry when it comes from the private sector rather than from the public sector.

China and Russia did not have a current account deficit problem in the specified years. According to the “GDP Chart of Countries” graph, the only country that makes a big difference in GDP seems to be China. One of the reasons for this situation is that China exports high-tech products which is meaning of value added products. The feature that distinguishes China from other countries is that it produces products with high added value and sells these products to the world. In other words, it is among the countries that benefit most from the global value chain.

As a result, the economic impact of GVC participation on countries is quite high.

Quotas on imports or exports affect the economy of countries. At the same time, even if the GVC participation is quite high, this may not be a sufficient difference in the GDP ratio. The most important reason for this is the product used in foreign trade.

3.2.7. Improve the Global Value Chain in Turkey

Emphasis should be placed on training in foreign languages and creating an educated and qualified workforce.

Turkey is one of the countries with a large number of migration workers. Besides, Turkey gives a lot of brain drain. Many young people who have completed their higher education in Turkey migrate to work abroad. This situation affects the country's economy, because citizens who can work efficiently migrate. Countries especially need employees who have completed their training. According to TÜİK data, 330 thousand 289 people immigrated from Turkey to abroad in 2019, and the youngest are at most between the ages of 25-29.

Provide cheap and quality labor force relative to competitors bring Turkey to the central point in global trade.

Having a long-term strategic vision for attracting foreign direct investment and a coordinated approach like; the level of customs tariffs and other taxes should be reduced.

Providing a sound business environment: Importing from Turkey, firms dealing with local export products will be willing to trade at the rate of economic and political stability. Investors do not like slippery floors.

Make free trade agreements. The investors should be protected with the agreements.

Trade should not be restricted through bans and taxes.

Thanks to geographical location, Turkey is a profitable country for the logistics operation. Turkey, which provides logistical advantages due to its geographic location

and flexible, that enables relatively low-cost production using low-cost labor, is located in a very competitive way in the global value chain.

The problem of current account deficit has been going on for many years.” One of the reasons for this current account deficit is being dependent on imports during the production phase.” (Erkok; 2018: 15). For this, production in the country should be increased. The country's policies should be revised to increase exports. Turkey should reduce foreign dependency in trade.



4. EMPIRICAL STUDIES

4.1. Statistical Analysis of the Relationship between Foreign Trade and GDP in Turkey

Two sectors have been selected for this study which are merchandise and goods& services. This statistical analysis was made on the SPSS program. As a result of the statistical analysis, the effect of import and export situation on GDP will be seen. The values in the statistical data are taken from the TÜİK. The statistical data is based on 40 years, between 1980 and 2020 Turkey. The unit of values are in thousand US Dollar.

This thesis elaborated on the general merchandise sector, because it is the sector that Turkey is the most active in global trade. It also includes merchandise, semi-finished and full finished products. Thus, it represents both the end and the middle of the GVC chain. On the other hand, this correlation has been clarified by selecting another sector which is goods and services. Thus, a general idea will be reached.

4.1.1. Variables

It is a study based on 40 years between 1980 and 2020. Two sectors have been studied which are merchandise and goods& services sectors. It was studied on the data of the Turkish Statistical Institute.

Table 24: Descriptive statics of merchandise sector by the author.

Descriptive Statistics						
	N	Range	Minimum	Maximum	Mean	Std. Deviation
MerchandiseImport	40	2,53E11	7,91E9	2,61E11	9,499E10	9,02262E10
MerchandiseExport	40	1,78E11	2,91E9	1,81E11	6,331E10	6,20933E10
Valid N (listwise)	40					

In merchandise sector, minimum import value is 7,91 US Dollar and the minimum export value is 2,91 US Dollar. On the other hand, maximum merchandise import value is 2,61 US Dollar and the maximum merchandise export is 1,81 US Dollar. The mean of the merchandise import is 9,499US Dollar and the merchandise export mean is 6,331 US Dollar.

Table 25: Descriptive statics of goods and services by the author.

Descriptive Statistics						
	N	Range	Minimum	Maximum	Mean	Std. Deviation
ImportsGoodsAndService	40	2,67E11	8,21E9	2,75E11	1,021E11	9,50699E10
ExportsGoodsAndService	40	2,46E11	3,55E9	2,49E11	9,164E10	8,52520E10
Valid N (listwise)	40					

In goods and service sector, minimum import value is 8,21E9 US Dollar and minimum export value is 3,55E9 US Dollar. Also, graph shows that maximum goods and service import value is 2,75E9 US Dollar and the maximum export value is 2,49E11 US Dollar. The means of the goods and service import is 1,021E11 US Dollar. The goods and service export mean is 9,164E10 US Dollar.

4.1.2. Research Questions

In Turkish merchandise and goods and services sectors during the 1980-2020 period

- 1- Does import affect GDP? What is the relationship between GDP and import?

- 2- Does export affect GDP? What is the relationship between GDP and export?
- 3- Does export affect imports? What is the relationship between exports and imports?

4.1.2.1. Merchandise

Normality test was performed first to learn the connection between Turkey's GDP and merchandise export& merchandise import rates. In the normality test, it is seen that the data are not normally distributed because, significance values are 0 in all perspectives which are Kolmogorov Smimov and Shapiro Wilk. (Table 26). Spearman correlation will be used in non-normal distributions which is non-parametric technique in SPSS Program.

Table 26: Tests of Normality (Merchandise) by the author.

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
GDP	,217	40	,000	,832	40	,000
MerchandiseImport	,248	40	,000	,816	40	,000
MerchandiseExport	,247	40	,000	,813	40	,000

a. Lilliefors Significance Correction

Spearman test will be applied according to the normality state to see the connection between the GDP and merchandise export & merchandise import data, which is the main purpose.

Table 27: Spearman Correlation Test (Merchandise) by the author

Correlations			Merchandise Import	Merchandise Export	GDP
Spearman's rho	MerchandiseImport	Correlation Coefficient	1,000	,984**	,983**
		Sig. (2-tailed)	.	,000	,000
		N	40	40	40
	MerchandiseExport	Correlation Coefficient	,984**	1,000	,971**
		Sig. (2-tailed)	,000	.	,000
		N	40	40	40
	GDP	Correlation Coefficient	,983**	,971**	1,000
		Sig. (2-tailed)	,000	,000	.
		N	40	40	40

** . Correlation is significant at the 0.01 level (2-tailed).

Spearman test result is shown in Table 27. It has been determined that there is a positive relationship between the merchandise values and GDP. That is; as the merchandise import values increase, the GDP increases. Likewise; as export values increase, GDP increases. There appears to be a clear relationship between them because their significance (2-tailed) value is 0. In addition, it has been determined that there is a positive relationship between merchandise import and merchandise export values. A high positive relationship was found between each other at a value of GDP, merchandise export and merchandise import. The importance of foreign trade for the country's economy is obvious. This statistical study has strengthened this thesis. There is one more sector which is goods and services.

4.1.2.2. Goods and Services Sector

This time correlation analysis has been made for the goods and service sector in Turkey. Likewise, the state of normality should be looked at first. Just like the merchandise sector, the significant values are 0 both in Kolmogorov Smirnov and Shapiro Wilk. This shows the values are not normally distributed. In this case, non-

parametric analysis should be done which is Spearman Correlation test according to questions.

Table 28: Tests of Normality (Goods and Services) by the author.

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
GDP	,217	40	,000	,832	40	,000
ImportsGoodsAndService	,240	40	,000	,823	40	,000
ExportsGoodsAndService	,218	40	,000	,839	40	,000

a. Lilliefors Significance Correction

According to Spearman's Correlations; there is a positive relationship between GDP and imports of goods& services. GDP increases as import increase. There is a direct relationship between each other like the merchandise sector. This situation is same as the relationship between the exports of goods& services and GDP. There is a positive relationship between GDP and exports. In addition; there is also a direct proportion between goods& services import and goods& services export.

Table 29: Spearman Correlation Test (Goods and Services) by the author.

Correlations			GDP	Imports GoodsAnd Service	ExportsGoods AndService
Spearman's rho	GDP	Correlation Coefficient	1,000	,983**	,972**
		Sig. (2-tailed)	.	,000	,000
		N	40	40	40
	ImportsGoodsAndService	Correlation Coefficient	,983**	1,000	,984**
		Sig. (2-tailed)	,000	.	,000
		N	40	40	40
	ExportsGoodsAndService	Correlation Coefficient	,972**	,984**	1,000
		Sig. (2-tailed)	,000	,000	.
		N	40	40	40

**. Correlation is significant at the 0.01 level (2-tailed).

4.1.3. Results

According to questions in a section;

Answers are in both sector which are merchandising and goods& services;

- 1- Import effect GDP and there is a direct relationship between GDP and imports.
- 2- Export effect GDP and there is a direct relationship between GDP and exports.
- 3- Export and import effect each other. There is a direct relationship between export and import.

Both of them (export, import, GDP) have positive relationship between each other.

To sum up, exports and imports play an important role in the economic development of the country.

4.2. Global Value Chain Participation

4.2.1. Foreign Trade data based global value chain indicators

There are a lot of ideas for measuring or evaluating global value chain. However, there is no clear way to precisely measure factors such as countries' global value chain participation. An opinion can be obtained in the light of the empirical information obtained. This is because global value chain is a chain that encompasses so many issues. Each link of these chains contains a different subject. The simplest sustainability is one of the factors that highlight the global value chain. Designing an effective packaging for the product is another matter. Marketing the product to the customer and the service sector is a separate issue. In short, global value chain contains more than one sector, so there is no analysis to solve global value chain clearly.

International trade is the most fundamental for the global value chain. The basis of globalization is international trade. International trade developed with globalization. In fact, the point where this developing international trade has come is the global value chain. In this section global trade will be examined, which is the artery of the global value chain. Data will be examined in the analysis are Turkey's & BRIC countries' import and export value. At the same time, Turkey's GDP data used to examine the impact on the economy of Turkey's global trade. The data has been taken in its most current form. The value of Turkey's import, export and GDP carried out in this empirical study.

However, there is a remarkable subject in the study. Since analysis data are both import and export, sectoral analysis is required. As it is known, global value chain is a chain and the last link of the chain does not give enough information in this study. Because the last link of the chain is where it reaches the end consumer and this analysis details the trade dimension. This work required, the product's semi-processed or unprocessed way to go to come to Turkey or other countries. The sector preferred in this thesis is the merchandise industry. Merchandise industry includes semi-processed and finished goods. However, it is the data that will bring the desired result closest in recent. On the other hand, the merchandise sector is a sector with a high volume in international trade.

The main objective of this thesis is to compare an overall GVC participation indicator density between Turkey and BRIC Countries in the chosen years 1995, 2000, 2010, 2018, and 2020. Global value chain is the main issue of international trade. Primarily examine the commercial movement of Turkey's and BRIC countries' merchandise products. The reason for the examination of merchandise products in particular; by studying or semi-processed products in the production process it can be identified

countries participation in global value chain. Especially “Indicators of global value chain: A Guide for Empirical Work” from OECD stated on intermediate goods (for the same reason), this thesis proceeded in line with the same purpose. Thus, the chain will continue and perhaps continue to bring the global value chain process will continue in countries.

Updated data in terms of unprocessed or semi-processed products found in World Bank Database.

On the other hand, Grubel Lloyd index is based on general trade data. Turkey, Brazil, Russia, India and China import& export values were used in this index.

As is stated above, the data to be used in this empirical study are from World Bank Database. 1995, 2000, 2010, 2018, and 2020 import and export value of country’s merchandise industries is based. All Values show as Current US \$. Merchandise imports and exports show the c.i.f. value of goods received from the rest of the world valued in current U.S. dollars

This merchandise sector includes semi-finished and finished products. It is the most ideal sector to examine the country's approach to global value chain. Thus, a general comment can be made as a result of the analysis.

Imports & exports of goods and services represent the value of all goods and other market services received from the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. They exclude compensation of employees and investment income (formerly called factor services) and transfer payments. Data are in current U.S. dollars.

4.2.2. Empirical Results

4.2.2.1. 1995

Calculations have been made according to the specified years and there are comparisons between BRIC countries and Turkey.

Table 30: 1995 Turkey Values; calculated by the author.

				EXGR-IMGR	-7558089520
				EXGR+IMGR	41271567686
				=	
EXGRI	21599000000	IMGRI	35710000000	0,183130662	-0,183130662
EXGR	33713478166	IMGR	41271567686		1
				=	
XISH(TURKEY)	0,640663651	MISH(TURKEY)	0,865244574	GL(TURKEY)	0,816869338

Table 31: 1995 Brazil Values, calculated by the author.

				EXGR-IMGR	-14822283208
				EXGR+IMGR	1,30662E+11
				=	
EXGRI	46506000000	IMGRI	54137000000	0,113439575	-0,113439575
EXGR	57920041190	IMGR	72742324398		1
				=	
XISH(BRAZIL)	0,802934512	MISH(BRAZIL)	0,744229724	GL(BRAZIL)	0,886560425

Among the analyzed countries, Turkey, India and Brazil have a current account deficit in foreign trade.

Table 32: 1995 China Values, calculated by the author.

				EXGR-IMGR	11958000000
				EXGR+IMGR	2,5176E+11
				=	
EXGRI	1,4878E+11	IMGRI	1,32084E+11		0,047497682
EXGR	1,31859E+11	IMGR	1,19901E+11		1
				=	
XISH(CHINA)	1,128327959	MISH(CHINA)	1,101610426	GL(CHINA)	0,952502318

China was determined as the country with higher foreign trade participation compared to other countries examined in 1995. Structural reforms in China yielded positive results in 1995.

Table 33: 1995 Russia; calculated by the author.

				EXGR-IMGR	13428951157
				EXGR+IMGR	2,18269E+11
				=	
EXGRI	82419000000	IMGRI	62603000000		0,0615248
EXGR	1,15849E+11	IMGR	1,0242E+11		1
				=	
XISH(RUSSIA)	0,711435135	MISH(RUSSIA)	0,611238158	GL(RUSSIA)	0,9384752

Table 34: 1995 India; calculated by the author.

				EXGR-IMGR	-4249571158
				EXGR+IMGR	82387290734
				=	
EXGRI	30630000000	IMGRI	34707000000	0,051580421	-0,051580421
EXGR	39068859788	IMGR	43318430946		1
				=	
XISH(INDIA)	0,784000356	MISH(INDIA)	0,801206305	GL(INDIA)	0,948419579

Table 35: 1995 GL Comparison; calculated by the author.

					1995							
0,5	<	GL(TURKEY)	<	GL(BRAZIL)	<	GL(RUSSIA)	<	GL(INDIA)	<	GL(CHINA)	<	1

Among the countries examined in 1995, the two countries that did not experience a current account deficit in foreign trade were Russia and China. China has a high share in foreign trade participation. Turkey is seen as the last one. Turkey joined the Customs Union in 1995. Especially after this year, Turkey will intensely trade with European countries.

Within the framework of these empirical statistical calculations, although Turkey's participation in the global value chain converges to the BRIC countries, Turkey's distinctive feature has been determined as the structural current account deficit.

4.2.2.2. 2000

In 2000, "The Inflation Reduction Program" was implemented in Turkey. It is aimed to prevent high inflation. However, this method was short-term, and in 2001, "The Inflation Reduction Program" lost its validity due to the economic crisis.

Table 36: 2000 Turkey values; calculated by the author.

EXGRI	27775000000	IMGRI	54503000000	EXGR-IMGR	-7110040307
EXGR	54534716891	IMGR	61644757198	EXGR+IMGR	61644757198
=		=		=	
				0,11533893	-0,11533893
XISH(TURKEY)	0,509308594	MISH(TURKEY)	0,88414656		1
				=	
				GL(TURKEY)	0,88466107

Table 37: 2000 Brazil values; calculated by the author.

EXGRI	55119000000	IMGRI	58643000000	EXGR-IMGR	-14836530036
EXGR	66774569992	IMGR	81611100027	EXGR+IMGR	1,48386E+11
=		=		=	
				0,099986272	-0,099986272
XISH(BRAZIL)	0,82544897	MISH(BRAZIL)	0,718566469		1
				=	
				GL(BRAZIL)	0,900013728

Table 38: 2000 China values; calculated by the author.

EXGRI	2,49203E+11	IMGRI	2,25094E+11
EXGR	2,53092E+11	IMGR	2,24306E+11
=		=	
XISH(CHINA)	0,984633697	MISH(CHINA)	1,003511993

EXGR-IMGR	28785851578
EXGR+IMGR	4,77398E+11
=	
	0,060297345
	1
=	
GL(CHINA)	0,939702655

Table 39: 2000 Russia values; calculated by the author.

EXGRI	1,05033E+11	IMGRI	44862000000	EXGR-IMGR	52012086740
EXGR	1,14429E+11	IMGR	62417348027	EXGR+IMGR	1,76847E+11
=		=		=	
XISH(RUSSIA)	0,917884461	MISH(RUSSIA)	0,718742488		0,294108187
					1
=		=		=	
				GL(RUSSIA)	0,705891813

Russia and China have always increased their trade volume towards export in the four years examined. When growth is achieved by increasing the volume of exports in trade, the economic return to the countries will be higher.

Table 40: 2000 India values; calculated by the author.

EXGRI	42379000000	IMGRI	51523000000	EXGR-IMGR	-4245767257
EXGR	60878396866	IMGR	65124164122	EXGR+IMGR	1,26003E+11
=		=		=	
XISH(INDIA)	0,696125427	MISH(INDIA)	0,79115027		0,033695881
					-0,033695881
=		=			1
				=	
				GL(INDIA)	0,966304119

Turkey, Brazil and India countries that had a current account deficit problem in 2000.

Table 44: 2010 China values; calculated by the author.

EXGRI	1,57775E+12	IMGRI	1,39625E+12
EXGR	1,65482E+12	IMGR	1,43242E+12
=		=	
XISH(CHINA)	0,953431823	MISH(CHINA)	0,974749737

EXGR-IMGR	2,224E+11
EXGR+IMGR	3,08723E+12
=	
	0,07203861
	1
=	
GL(CHINA)	0,92796139

Table 45: 2010 Russia values; calculated by the author.

EXGRI	4,0063E+11	IMGRI	2,48634E+11
EXGR	4,45513E+11	IMGR	3,22367E+11
=		=	
XISH(RUSSIA)	0,899255082	MISH(RUSSIA)	0,771276911

EXGR-IMGR	1,23146E+11
EXGR+IMGR	7,6788E+11
=	
	0,160372059
	1
=	
GL(RUSSIA)	0,839627941

Table 46: 2010 India values; calculated by the author.

EXGRI	2,26351E+11	IMGRI	3,50233E+11
EXGR	3,75353E+11	IMGR	4,49974E+11
=		=	
XISH(INDIA)	0,60303425	MISH(INDIA)	0,778339971

EXGR-IMGR	-74620847984
EXGR+IMGR	8,25328E+11
=	
0,090413589	-0,090413589
	1
=	
GL(INDIA)	0,909586411

Table 50: 2018 China values; calculated by the author.

				EXGR-IMGR	1,06707E+11
				EXGR+IMGR	5,20448E+12
				=	
EXGRI	2,4867E+12	IMGRI	2,13575E+12		0,02050295
EXGR	2,65559E+12	IMGR	2,54888E+12		1
				=	
XISH(CHINA)	0,936399522	MISH(CHINA)	0,837914687	GL(CHINA)	0,97949705

Table 51: 2018 Russia Values; calculated by the author.

				EXGR-IMGR	1,65826E+11
				EXGR+IMGR	8,54866E+11
				=	
EXGRI	4,43914E+11	IMGRI	2,48856E+11		0,193979034
EXGR	5,10346E+11	IMGR	3,4452E+11		1
				=	
XISH(RUSSIA)	0,869829873	MISH(RUSSIA)	0,722327178	GL(RUSSIA)	0,806020966

There is no current account deficit problem in Brazil, China and Russia. Brazil's GL index rate is close to Turkey's GL index.

Table 52: 2018 India Values; calculated by the author.

				EXGR-IMGR	-1,00378E+11
				EXGR+IMGR	1,17765E+12
				=	
EXGRI	3,24778E+11	IMGRI	5,14464E+11	0,085236015	-0,085236015
EXGR	5,38635E+11	IMGR	6,39013E+11		1
				=	
XISH(INDIA)	0,602964676	MISH(INDIA)	0,80509127	GL(INDIA)	0,914763985

Table 53: 2018 GL index comparison; calculated by the author.

					2018						
0,5 <	GL(RUSSIA)	<	GL(INDIA)	<	GL(CHINA)	<	GL(BRAZIL)	<	GL(TURKEY)	<	1

Among the 5 countries examined in 2018, the countries with current account deficit problems are Turkey and India. Turkey is the country with the highest trade volume in 2018 according to the GL index.

4.2.2.5. 2020

According to our calculation the share of merchandise goods in export value (XISH) is 0,823818407 in 2020 Turkey. Turkey's total exports and merchandise export value was used to achieve this result. The same transaction was made for the import values which is MISH. Share of merchandise goods in import value (MISH) in 2020 Turkey is 0,94253307.

Table 54: Share of merchandise goods in export value; calculated by the author.

$$XISH_c = \frac{EXGRI_c}{EXGR_c}$$

EXGRI	1,69482E+11
EXGR	2,05727E+11
=	
XISH(TURKEY)	0,823818407

Table 55: Share of merchandise goods in import; calculated by the author.

$$MISH_c = \frac{IMGRI_c}{IMGR_c}$$

IMGRI	2,19397E+11
IMGR	2,32774E+11
=	
MISH(TURKEY)	0,94253307

The merchandise sector has a great contribution to the total export figure.

Merchandise industry meets the 82,38'% share of Turkey's exports. This is a very serious figure for trade. Since only the year 2020 is calculated, it is seen that a single sector, just merchandise sector, is concentrated in 2020. When sectors other than merchandise is taken into account, there would be a huge difference between the share of import and export values. It is not desirable that the share of import value is higher

than the share of export value. However, in a single sector which is merchandise, the share of import value is greater than the share of export value, but the difference is very small like, 0,118714662. Turkey has put forward a single sector in foreign trade in 2020.

Table 56: Share of merchandise goods in total trade; calculated by the author.

$$TISH_c = \frac{EXGRI_c + IMGRI_c}{EXGR_c + IMGR_c}$$

EXGRI+IMGRI	3,88879E+11
EXGR+IMGR	2,32774E+11
=	
TISH(Turkey)	1,67063049

Share of merchandise goods in total trade (TISH) value in 2020 Turkey is 1,67063049. The TISH value is close to 1, indicating that its participation is sufficient for merchandise sector. It is a good value for global value chain. Participation in global value chain is high in the merchandise sector, as well as in other calculations (MISH& XISH) such as this one (TISH).

Table 57: Relative importance of the trade in merchandise goods; calculated by the author.

$$RITI_c = \frac{EXGRI_c + IMGRI_c}{GDP_c}$$

EXGRI+IMGRI	3,88879E+11
GDP	701101000
=	
RITI(Turkey)	554,6690135

With relative importance of the trade in merchandise goods (RITI), gross domestic product has come into play. Thus, empiric analysis will gain an interpretation in terms of the country's economy. With the 2020 GDP value (from World Bank Database), the import and export values of the merchandise sector do not balance each other. One of the reason for this situation, Turkey is just concentrated on merchandise as a sector

in foreign trade. There is no sectoral balanced approach in foreign trade. Foreign trade of other sectors other than merchandise remained in the background.

Table 58: Ratio of merchandise imports to exports analysis; calculated by the author.

$CRI_c = \frac{IMGRI_c}{EXGRI_c}$	IMGRI	2,19397E+11
	EXGRI	1,69482E+11
	=	
	CRI(Turkey)	1,294515052

Ratio of merchandise imports to exports analysis (CRI) shows the differences between merchandise imports and exports. If CRI is 1, it shows the equilibrium between import and export which is not desirable. The desired goal is to have more exports and less imports. This ratio of merchandise imports to exports analysis (CRI) shows that merchandise exports are less than merchandise imports in 2020 Turkey. Exports do not cover imports in merchandise sector. According to 2020 Turkey data, there is an account deficit of the merchandise sector which is the highest participation level in global value chain.

Table 59: Grubel Lloyd index Turkey; calculated by the author.

$$GL_{c,p} = 1 - \frac{\sum_{q \in \text{int}} |EXGR_{c,p}(q) - IMGR_{c,p}(q)|}{\sum_{q \in \text{int}} (EXGR_{c,p}(q) + IMGR_{c,p}(q))}$$

EXGR-IMGR	-27046418547
EXGR+IMGR	2,32774E+11
=	
0,116191853	-0,116191853
	1
=	
GL(TURKEY)	0,883808147

Turkey and China will be compared in this Grubel Lloyd index (GL). When the first Grubel Lloyd index of Turkey GL(TURKEY) is examined, the results (EXGR-

IMGR) for Turkey to be more than exports to imports so, it is shown in absolute values. Because Grubel Lloyd index could not be less than 0. In result of Grubel Lloyd index for Turkey GL(TURKEY) is 0,883808147. The result of GL(TURKEY) is greater than 0.5, close to 1. GL (TURKEY) result indicates that the high participation of Turkey's foreign trade, but it does not show the dependence of foreign trade which is exports are more than imports. So far, the results (XISH& MISH& TISH& RITI& CRI& GL) show that Turkey's global value chain participation is sufficient in 2020.

At this stage of our study, we will also compare Turkey's results with the BRIC countries separately.

Table 60: 2020 China values; calculated by the author.

				EXGR-IMGR	3,66145E+11
				EXGR+IMGR	5,08036E+12
EXGRI	2,59112E+12	IMGRI	2,05575E+12		
EXGR	2,72325E+12	IMGR	2,35711E+12		
XISH(CHINA)	0,951480984	MISH(CHINA)	0,872150945	GL(CHINA)	0,927929327

Turkey Grubel Lloyd GL (TURKEY) index when compared with China Grubel Lloyd GL (CHINA) seems to be much difference between them in 2020. The difference between the two countries is that China used exports more in foreign trade. On the other hand, in Turkey's foreign trade imports number are better than exports number.

Table 61: 2020 GL comparison between Turkey and China; calculated by the author.

0,5 <	GL(Turkey) <	GL(China) <	1
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Table 62: 2020 Brazil values; calculated by the author.

				EXGR-IMGR	20044428576
				EXGR+IMGR	4,67433E+11
				=	
EXGRI	2,09878E+11	IMGRI	1,66276E+11		0,042881904
EXGR	2,43739E+11	IMGR	2,23694E+11		1
=		=		=	
XISH(BRAZIL)	0,861077334	MISH(BRAZIL)	0,743317595	GL(BRAZIL)	0,957118096

Share of Brazil's merchandise goods in exports (XISH) figure is close to XISH Turkey. The volume of the merchandise sector in Brazil is higher than in total exports. The country is concentrated on the merchandise sector. Share of Brazil's merchandise goods in imports (MISH) value is more than XISH Brazil. In this case, it can be concluded that exports in the merchandise goods sector are high. As a merchandise sector, the total export in Brazil is more than the import. In this case, there is no sector-based current account deficit in the country.

Table 63: 2020 Russia values; calculated by the author.

				EXGR-IMGR	73630224853
				EXGR+IMGR	6,83641E+11
				=	
EXGRI	3,31748E+11	IMGRI	2,39748E+11		0,107702982
EXGR	3,78636E+11	IMGR	3,05006E+11		1
=		=		=	
XISH(RUSSIA)	0,876166378	MISH(RUSSIA)	0,786044523	GL(RUSSIA)	0,892297018

As a merchandise sector in Russia, the export volume is more than the import. If it is analyzed just merchandise sector, there is no current account deficit problem. Like Brazil, XISH Russia rate is better than MISH Russia rate. This is a desired condition.

Table 64: 2020 India values; calculated by the author.

				EXGR-IMGR	-8307246262
				EXGR+IMGR	9,56599E+11
				=	
EXGRI	2,76227E+11	IMGRI	3,7192E+11	0,008684146	-0,008684146
EXGR	4,74146E+11	IMGR	4,82453E+11		1
=		=		=	
XISH(INDIA)	0,582578025	MISH(INDIA)	0,770893462	GL(INDIA)	0,991315854

As in Turkey, there is a current account deficit problem in India as well. The GL India value is one of the closest values to 1. In this case, GVC India is one of the countries with high participation. However, the fact that imports are more than exports is not a desirable situation for the country's economy.

Table 65: GL values of BRIC countries and Turkey; calculated by the author.

GL(TURKEY)	0,883808147
GL(BRAZIL)	0,957118096
GL(CHINA)	0,927929327
GL(RUSSIA)	0,892297018
GL(INDIA)	0,991315854

Table 66: GL values comparison between BRIC countries and Turkey; calculated by the author.

0,5 <	GL(TURKEY)	<	GL(RUSSIA)	<	GL(CHINA)	<	GL(BRAZIL)	<	GL(INDIA)	<	1
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Table shows Turkey's, Russia's, China's, Brazil's and India's Grubel Lloyd index comparison in 2020 foreign trade. Global trade participation increases as the index value approaches 1. When the Grubel Lloyd index value is exactly 1, the optimum value is reached. If the index values are less than 0.5, it indicates that the global trade participation is very low.

Global value chain participation of countries are quite high. Brazil, China and Russia has concentrated on exports in global trade. Turkey and India seen that intensity on

imports in global trade. This situation raises the current account deficit problem.

Current account deficit is the situation where imports are more than exports.

According to the Grubel Lloyd indexes of countries, the country of India closest to 1.

In fact, the closer it is to 1, the higher the value can be called a GVC participation.

India is the country with the highest GVC participation compared to the countries surveyed by the Grubel Lloyd index. After India, the country with the highest GVC participation according to the GL index is Brazil. The difference of Brazil from India is that it is export-intensive in trade. In other words, it is a desired situation for the country's economy. Since India is import-intensive in trade, there is a current account deficit problem. However, since the important thing in the examined GL index is participation together with imports and exports, such cases are not dealt with in GVC participation.

According to the GL index ranking, China is in the middle of the 5 countries. When the XISH and MISH values of China and Brazil are compared, the XISH and MISH values of China are higher than Brazil. However, the reason why China is behind Brazil in the GL index is the difference between Brazil's XISH and MISH values. In total, China's import and export values are higher than Brazil, especially in export values. However, according to the GL index, the GVC participation volume shows that Brazil is more than China.

According to the GL index, the country closest to 0.5 is Turkey, followed by Russia. Being close to 0.5 is not desirable for GVC participation. According to this index, the country with the lowest participation rate is Turkey. At the same time, there is a current account deficit problem as in India. Like the country of India, Turkey is progressing in trade with an intensity of imports. When the comparison table is

examined in general, India is the best country according to the GL index, but the situation of the country is not desirable if it is examined in economic terms. Because even though India is a country with a high GVC participation volume, the area it concentrates on trade is imports.

As in 2020, Turkey has been the country in the 5th place according to the GL index. According to the GL index, Turkey is the country with the lowest participation in global value chain.



Table 67: Brief, created by the author.

2020	Share of manufacturing goods in exports(XISH)	Share of manufacturing goods in imports(MISH)	Grubel Lloyd Index(GL)
Turkey	0,823818407	0,94253307	0,883808147
Brazil	0,861077334	0,743317595	0,957118096
Russia	0,876166378	0,786044523	0,892297018
India	0,582578025	0,770893462	0,991315854
China	0,951480984	0,872150945	0,927929327
2018	Share of manufacturing goods in exports(XISH)	Share of manufacturing goods in imports(MISH)	Grubel Lloyd Index(GL)
Turkey	0,729416271	0,947487318	0,99560722
Brazil	0,852853701	0,690719902	0,986362625
Russia	0,869829873	0,722327178	0,806020966
India	0,602964902	0,80509127	0,914763799
China	0,936399522	0,837914687	0,97949705
2010	Share of manufacturing goods in exports(XISH)	Share of manufacturing goods in imports(MISH)	Grubel Lloyd Index(GL)
Turkey	0,691554409	0,936449149	0,831131665
Brazil	0,841288589	0,728273789	0,954285947
Russia	0,899255082	0,771276911	0,839627941
India	0,60303425	0,778339971	0,909586411
China	0,953431823	0,974749737	0,92796139
2000	Share of manufacturing goods in exports(XISH)	Share of manufacturing goods in imports(MISH)	Grubel Lloyd Index(GL)
Turkey	0,509308594	0,88414656	0,88466107
Brazil	0,82544897	0,718566469	0,900013728
Russia	0,917884461	0,718742488	0,705891813
India	0,696125427	0,79115027	0,966304119
China	0,984633697	1,003511993	0,939702655
1995	Share of manufacturing goods in exports(XISH)	Share of manufacturing goods in imports(MISH)	Grubel Lloyd Index(GL)
Turkey	0,640663651	0,865244574	0,81689338
Brazil	0,802934512	0,744229724	0,886560425
Russia	0,711435135	0,611238158	0,9384752
India	0,784000356	0,801206305	0,948419579
China	1,128327959	1,101610426	0,952502318

5. Conclusion

The main hypothesis in this thesis is to determine the effects of Turkey's participation in the global value chain on the country's economy. At the same time, Turkey's global value chain participation values were compared with BRIC countries.

Beginning in the 1990s, global value chains experienced accelerated growth following the opening of China, India, and other emerging economies that offer very cheap labor. Economic balances have changed with the global value chain. Certain poor countries got richer, rich countries got richer. The global value chain makes a great contribution to the national economies. Similarly, the development of telecommunications and information technology has strongly increased its growth, as it is possible to significantly reduce the costs of coordination worldwide.

Since the economic contribution of the global value chain to the countries is quite high, this commercial term is mentioned a lot. Many studies are carried out to analyze the global value chain well. The main goal in the global value chain is minimum cost, maximum benefit. Although there is no more complete global value chain measurement, since the global value chain covers all stages of a product or service, various types of measurement are assisted.

GVC participation was measured with the GL index. The important thing in the GL index is the foreign trade volume. There is no distinction made in the foreign trade volume as import or export. As a result, it enters a foreign trade in imports and exports. However, among the countries examined, countries with current account deficit problems have been identified in terms of variability over the years.

The sector in which Turkey concentrates most in its global trade is the merchandise sector. The merchandise sector meets 82,38% of Turkey's exports. This is a serious

rate. Turkey is concentrated in a single sector which is merchandise. There is an imbalance as Turkey progresses on a single sector basis in global trade. At the same time, this issue creates a current account deficit problem because of its high import rate. In general, Turkey's participation in global value chain is quite high, but this participation is concentrated on imports. This situation is seen to be influential on the national economy, through GDP. Countries should keep exports high for their own economy like China and Russia. China that has significantly raised the country's economic development level in a short time. China's foreign trade and the global value chain strategies have played an essential role in this success.

Global value chain participation of BRICS countries and Turkey are quite high. However, in this case, the difference between Turkey & India and the other countries like China is the style of trade. China is a country that keeps high production and exports higher than imports. At the same time, China produces products with high added value. In this case, China is in the position of a country that gains from global value chain. Production is essential for the development of countries and this production should be based on value-added products. The products with high innovation yield more to the countries.

Turkey and India should increase production in this regard. Turkey and India should reduce foreign dependency as much as possible. Incentive policies for production should be reviewed because there is not enough production to cover imports. The current account deficit problem is closed by increasing production, but value added products are needed for the country's economy to compete with developed countries. Brazil had a current account deficit problem only in 2000 and 2010 among the years studied (2020-2018-2010-2020). However, when it comes to the present, it is seen

that the current account deficit problem has been completed according to the data in 2018 and 2020. This has had a positive impact on the country's economy.

Global value chain participation is important for countries. Turkey and BRIC countries have shown a close global value chain participation in this regard. However, the important detail that is noticed is the direction of participation. Import and export are indispensable for global value chain. It is beneficial for countries to have more exports than imports in economic terms like China and Russia. Otherwise, countries are dependent on foreign countries when imports are more than exports. In this case, sufficient economic growth is not expected. The current account deficit brings about other problems than indirect problems. While participation in global trade produces different results when viewed at the economic level. Global trade is a large market with many opportunities and countries need to adapt to this market. China has now become the leaders of global trade with growing periodic different strategies.

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