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IMPORT DEPENDENCE OF THE TURKISH ECONOMY

(2000-2021)

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(2000-2021)

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ACCEPTANCE AND APPROVAL

This study, titled **IMPORT DEPENDENCE OF THE TURKISH ECONOMY: 2000-2021 YEARS**, prepared by the **ULAŞ BERKAY CİHAN**, was deemed successful with the **UNANIMOUS/MAJORITY VOTING** as a result of the thesis defense examination held on the 17.07.2023 and approved as a **MASTER'S DEGREE THESIS** by our jury.

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IMPORT DEPENDENCE OF TURKISH ECONOMY

ABSTRACT

I describe the import dependency character of the Turkish economy. In this study, I am examining Turkey's post-1980 foreign trade data along with commodity groups and general macro data. During this period, I am analyzing the real exchange rate policy and customs incentives that influenced the foreign trade structure. As a model that increases import dependency, I find that the Inward Processing Regime has increased the level of import dependency with the data regarding its impact. It affects the total realized exports by 40% as of 2021. From the 2000s onwards, I observe that exchange rate volatility and new forms of trade have exacerbated the problem of production being dependent on imports. I am examining the dependency of production on imports since the 2000s using the 2002 and 2012 Input-Output Tables. Additionally, using data from the World Input-Output Table for the 2000-2014 period, I demonstrate Turkey's tendency of import dependency. When examining both tables, I find that the manufacturing sectors of chemicals and chemical products, primary metals, motor vehicles, and machinery and equipment have the highest import input ratio.

Keywords: import dependency, foreign trade, current account deficit.

TÜRKİYE EKONOMİSİNİN İTHALAT BAĞIMLILIĞI

ÖZET

Türkiye ekonomisi'nin ithalat bağımlılık karakterini tanımlamaya çalışacağım. Bu çalışmada Türkiye'nin 1980 sonrası dış ticaret verilerini mal grupları ve genel makro verilerle birlikte inceliyorum. Bu dönemde dış ticaret yapısını etkileyen reel kur politikasını ve gümrük teşviklerini inceliyorum. İthalat bağımlılığını arttıran teşvik modeli olarak Dahilde İşlem Rejimi'nin etki düzeyine dair verilerle bu rejimin ithalat bağımlılığını artırdığını buluyorum. Dahilde İşlem Rejimi'nin toplam gerçekleştirilen ihracatı 2021 yılı itibari ile %40 oranında etkilediğini buluyorum. 2000'li yıllardan itibaren döviz kurlarındaki oynaklığın ve yeni ticaret biçimlerinin üretimin ithalata bağımlı olma sorununu şiddetlendirdiği bulmaktayım. 2000'li yıllardan beri üretimin ithalata bağımlılığını 2002 ve 2012 Girdi-Çıktı Tabloları ile inceliyorum. Ayrıca 2000-2014 dönemi için Dünya Girdi-Çıktı Tablosundan elde ettiğim verilerle Türkiye'nin ithalata bağımlılık eğilimini gösteriyorum. Kimyasal ve kimyasal ürünlerin imalat, ana metaller, motorlu araçlar ve makine ve teçhizat sektörlerinin her iki tablo incelediğinde en yüksek ithal girdi oranına sahip olduğunu buluyorum.

Anahtar Sözcükler: ithalat bağımlılığı, dış ticaret, cari açık

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CHAPTER 1: INTRODUCTION

There are debates on the reasons for import dependency due to sudden increases in the exchange rate. There are sectoral studies on import dependency, which is among the causes of the foreign trade deficit, which has a great impact on the current account deficit.

In order to understand the transformation in the economy and foreign trade structure in Turkey, the long-term growth trend of the Turkish economy and the relationship between growth and current account deficit are important (Voyvoda and Taymaz 2023). Following the implementation of robust export incentives in the early 1980s, there was a partial decline observed in the current account deficit. Additionally, the liberalization of capital movements in 1989 resulted in an acceleration of capital inflows to Turkey, including portfolio investments and foreign direct investment. During the 1990s, as the proportion of foreign capital increased, a tenuous yet positive association between the current account deficit and the GDP growth rate emerged. In years of economic expansion, the current account deficit exhibited a partial increase. However, during periods of economic crises such as 1994 and 2001, when the economy contracted, a current account surplus was feasible. Subsequent to the 2001 crisis, the relationship between the current account deficit and economic growth became more pronounced and robust. In periods of economic growth, the current account deficit expanded. Nevertheless, even in the face of the 2009 crisis, a current account surplus did not materialize, indicating that the current account deficit became a chronic phenomenon. In the post-2009 crisis era, the current account deficit reached levels almost on par with the growth rate.

These developments in the Turkish economy have also led to significant structural changes in the Turkish economy. Imported intermediate input dependency has been examined in different studies using Input-Output tables for 1998, 2002, and 2012 prepared by the Turkish Statistical Institute (Dineri and Işık 2021). Yükseler argues that while 1998 reflects the effects of the 1994 crisis and the customs union with the EU in 1996, the rising current account deficit of 2012 reflects the effects of international liquidity abundance and the appreciated domestic currency on the economic structure. Input-Output tables are important to measure the impact of this changing trade route on import dependency (Yükseler 2019). Studies have been carried out in different years on

how import dependency has changed in different periods, throughout the economy, and in the sub-sectors of different branches of industry (Savacı 2019).

I make two contributions to this extensive literature.

Firstly, as Input-Output tables of 2002 and 2012 have been used in various studies to measure the degree of dependency on imported intermediate goods, I replicate the previous studies using these tables. I attempt to reach a conclusion regarding the degree of dependency on imported intermediate inputs by reaching the forward and backward linkage coefficients of the sectors. Yükseler (2019) and Aydın (2020) studies used 2002 and 2012 Input-Output Tables to measure the import dependency coefficients of the manufacturing industry. I contribute to these studies from one point. I examine the shares of the sectors with high import dependency in the total intermediate input and in the total added value.

Secondly, I use world input-output tables and other structural analysis (STAN) data in OECD databases. Imported input dependency in Turkey's basic industrial industries was calculated using the tables of the World Input-Output Database (WIOD) between 2002 and 2014 (Ünal 2018). I replicate these calculations and divide them into sectors and share the coefficients for the interpolation dependency. While analyzing the relationship between domestic value-added and imports in exports, domestic value-added ratios are reached in different manufacturing industry sectors by using OECD-TIVA data (Özmen 2015). I prepare a view of the data of imported intermediate input requirements in exports and the trend over the years based on sectors.

1.1 Content of study

In this section, an analysis of the foreign trade of the Turkish economy since 1980 is conducted. Turkey's evolving foreign trade structure is examined, and foreign trade distribution is investigated based on different characteristics using foreign trade classifications. The study examines the changes in the national income, foreign trade, and employment shares in Turkey's agriculture, industry, and services sectors from 1980 to 2021. Throughout this examination, it becomes evident that fluctuations in the exchange

rate significantly impact the trade structure of the Turkish economy, resulting in a foreign trade deficit that poses a comprehensive challenge to the entire economy.

The second chapter focuses primarily on Turkish literature and explores the issue of dependency on imported inputs in developing countries.

Moving to the third chapter, the study delves into data related to Turkey's production structure, domestic and import input-output tables, and its foreign trade, which are analyzed using the world input-output table. Specifically, foreign value added in sectoral exports and domestic added value are meticulously analyzed by breaking them down into 16 distinct components. Turkey's production structure is closely scrutinized through the examination of the domestic input-output table prepared for the years 2002 and 2012. Moreover, the import input-output table is used to identify sectors heavily reliant on imports for production. Both domestic and import input-output tables were sourced from TURKSTAT. In addition, the world input-output table for the year 2014 is utilized to examine the proportions of local and foreign value-added in exports and imports. The world input-output table, essential for this analysis, is obtained from the World Input-Output Database (WIOD).

Furthermore, by constructing international production chains for various sectors, the study assesses the positions of Turkey and other countries within the production chain, drawing on foreign trade data and indices. In sectors constituting the final goods of these chains, the global structure of the chains is explored using the back participation index, which quantifies the import input ratio in the exports of countries, and the forward participation indices, which indicate the utilization of the exports of countries in the exports of third countries.

Lastly, the sixth part of the study presents the concluding remarks and findings derived from the comprehensive analysis conducted throughout the study.

CHAPTER 2: BRIEF HISTORY OF FOREIGN TRADE AFTER 1980

In this chapter, an in-depth exploration of the historical development of foreign trade in Turkey will be undertaken.

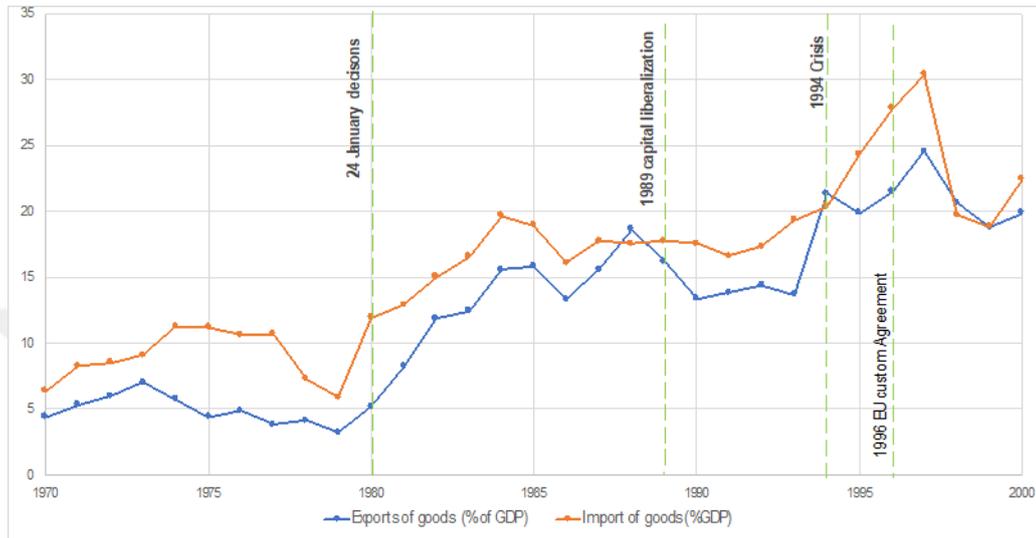


Figure 2.1: Export and Import of Goods (% of GDP) and years of breaking points

Source: World Bank

I will make 3 different periodizations: 1980-1989, 1990-1999, and 2000-2021. I will explain the public and monetary policies developed in the field of foreign trade in Turkey during these periods.

2.1 Trade Policy

2.1.1 1980-1989

The 1970s witnessed a tumultuous period in the global economy, characterized by significant challenges and transformations. The collapse of the Bretton Woods system, which relied on a fixed exchange rate system backed by gold and the US dollar, occurred in the aftermath of the Vietnam War. Subsequently, the world faced the twin issues of inflation and stagnation, exacerbated by a sharp escalation in oil prices during this era. In response to this economic crisis, prominent leaders such as Margaret Thatcher in England

and Ronald Reagan in the United States embraced a departure from Keynesian interventionist approaches in both domestic and international economic policies. Seeking alternative strategies to steer their economies out of the crisis, these leaders championed policies that placed greater emphasis on market mechanisms.

The shift towards market-oriented policies gained momentum, leading to the reduction of public expenditures, the move away from welfare state policies, the privatization of state-owned enterprises, and the relaxation of public control over various sectors. Consequently, both state intervention in macroeconomic policies and state regulation in individual markets started to wane (Pamuk 2016). During this period, international institutions such as the International Monetary Fund (IMF) and the World Bank played a significant role in advocating for these pro-market policies, commonly referred to as the Washington Consensus. Developing countries were encouraged by these institutions to move away from import substitution and state interventionism, and instead, embrace market mechanisms and open up their economies to the global market (Akyüz 2007).

It is the liberalization of foreign trade carried out between 1980-89. In this process, foreign trade legislation was changed, and obstacles to free foreign trade, especially import bans, and quotas, were removed to a large extent. Customs duties have been reduced within the framework of the General Agreement on Tariffs and Trade (GATT) and the European Union (EU), exchange rates have been made more flexible in order to provide an international competitive advantage, emphasis has been placed on determining commodity and factor prices in the market, and incentive and credit channels have been expanded for the development of foreign trade.

According to Güngen (2017), the economic policy orientation following the January 24 decisions encompassed several key elements. These included a foreign exchange policy that aligned with real devaluations, an import regime focused on gradual liberalization, prioritizing exports and providing support through incentives and subsidies such as expensive foreign exchange, low-interest loans, and tax refunds. Additionally, macroeconomic policies aimed at eliminating price controls and subsidies on essential goods and reducing domestic demand played a significant role.

While companies supported the liberalization in the field of imports, groups based on import substitution, as well as large holdings that produce durable consumer goods and automotive, put pressure on the continuation of protectionist policies. However, in the following years, selective incentives and support practices on the basis of the sector of the import substitution period were largely eliminated. While imports were liberalized more and more, the industry turned to exports (Rodrik, 1990). Boratav argues that there is an increase in exports in this period on three factors. The first factor is the real exchange rate. An increase in the exchange rate more than the relative difference between domestic and foreign inflation means real devaluation and normally encourages exports. The second factor is real wages. If the cost of labor rises less than all other prices, real wages will fall and the industry's competitiveness will increase. The third factor is labor productivity. It is clear that the increase in labor productivity will increase the competitiveness of the industry, even if the exchange rate and wages do not change (Boratav 2019). According to Yentürk, between 1980 and 1988, the factors listed above affected competitiveness positively. Due to the 52% increase in the real price of the dollar, the TL depreciated greatly in real terms. The rapid erosion of real wages in 1980 followed a slower pace until 1988; however, it reached a size approaching 10%. The average labor productivity in the industry, which started from a very low level in 1980, was able to increase at an annual average rate of 8%.

I will discuss this period over two different factors: exchange rate policy, and incentives.

Turkey switched to the floating exchange rate regime, in which the exchange rates were determined in the market within the framework of the decisions taken on January 24, 1980, but directed by the Central Bank's constant interventions (Yentürk 2000). Şükrü and Kürşat (1988) indicate that the exchange rates started to be determined by the Central Bank every month, the TL was devalued by 32.7 percent against foreign currencies and the value of the dollar increased from 47.1 TL to 70 TL.

With the Decision No. 30 on the Protection of the Value of the Turkish Currency issued in 1984, a step was taken towards liberalization in the foreign exchange regime. Decision No. 30 formed the basis of the foreign exchange regime until 1989. With the Decree No. 30, the possession of foreign currency by residents has been abolished since 1984, and it

has been allowed to buy and sell foreign currency and to open accounts in foreign currency at banks (Güven 1998).

Within the economic model, incentives were made to increase exports. This situation did not lead to a reduction in the amount of imports. This situation has been tried to be created by the amount of foreign exchange usage and newly opened credit mechanisms. Ünay (2013) argues that new incentives have been put into practice in order to increase the competitiveness of export products in foreign markets and to increase the share of industrial products in exports. Import of inputs to be used in production for export is exempted from customs duty. An “Export Incentive Fund” was established at the Central Bank, and exporters who received incentive certificates were provided with loans from this fund. As of May 1981, the daily exchange rate application was initiated. The tax refund system was expanded to enlarge the export area. Tax refund amounts in exports increased after 1980. As Maşa (1983) argues; the share of exports subject to a tax refund in total exports was 24.6% in 1980, while it approached 60% in 1987. In order to expand the foreign trade volume in Turkey, changes were made in export credit practices. Togan (1999) talks about the ‘Central Bank Export Rediscount Credit’ application was started in 1986. Later, this method was transferred to Eximbak in 1987. This loan mechanism has been opened to those who export 100 million dollars in a year. Karluk (1997) determines that while the share of total export credits in total credits was 6.9% in 1980, it increased to 21.3% in 1983. Between 1980 and 1984, export incentives were applied intensively. In this context, tax refund rates began to be gradually reduced in 1984 and were abolished in 1989. Hatipağaoğlu (2014) mentions that although our exports were more favorable to foreign countries with the incentives and devaluations made in this period, imports increased rapidly with these liberalization policies. The fact that Turkey meets its need for raw materials, intermediate goods, and investment goods from abroad emerges as a distorted problem where exports are based on imports.

Years	Export Commitment (Million \$)	Currency Usage (Million \$)	Currency Usage / Export Commitment (%)
1980	1.810	186	10.3
1981	3.303	425	12.3
1982	3.957	586	14.8
1983	5.205	905	17.4
1984	4.318	1.396	32.3
1985	4.937	2.054	41.6
1986	7.567	2.816	37.3
1987	6.903	2.971	43.0
1988	7.751	3.146	40.6
1989	9.331	3.479	37.3

Table 2.1: Hatipağaoğlu, Aziz Murat, Structural Transformation in Turkey's Foreign Trade (1990-2011)

* Data are based on the data of the Ministry of Development and Ministry of Economy by Hatipağaoğlu and Murat.

Table 2.1 shows the export commitment - based on ease of import with the exception of customs duty - and the amount of foreign currency usage. Export commitment increased more than 5 times, from \$1,810 million in 1980 to \$9,331 million in 1989. While the use of foreign currency was 186 million dollars in 1980, it increased rapidly to 3,479 million dollars in 1989 and the rate increased to 18 times. The fact that the total export was 11.625 billion dollars in 1989 and the export commitment was 9.331 billion in this year shows that 80% of the total export was realized with export commitment. This commitment is a structural problem that reveals the import dependency of exports, with the foreign exchange usage rate, that is, the import rate, as 37.3% (Hatipağaoğlu 2014).

After 1980, the export-oriented industrialization strategy played a decisive role in foreign trade. In order to increase foreign trade, as in the section I mentioned above, monetary support, reduction of customs duties, and removal of restrictions on exchange rates were used. As seen in Table 2.2, there has been an increase in exports and imports since 1980.

Exports increased from 2,910 million dollars to 11,625 dollars in 1989. At the same time, exports increased significantly in 1981 and rose to 4,703 million dollars. As Boratav (2001) argues; after the stagnation trend observed in our exports in 1983 with the effect of the decrease in the export of agricultural products, it entered a development process

again in 1984 and 1985. As Kılıçbay (1991) states; there was a decline in exports in the post-1987 period. In the post-1980 period, there were significant increases in imports, especially as a result of the liberalization and rapid economic growth initiated in 1984. As can be seen in Table 2.2, imports, which were 7,909 million dollars in 1980, increased to 15,792 million dollars in 1989.

Years	Export	Import	Foreign Trade Balance	Export-Import Coverage Ratio	Export/GDP (%)	Import/GDP (%)
1980	2.9	7.9	-5.0	36.8	5.1	11.6
1981	4.7	8.9	-4.2	52.3	8.2	12.8
1982	5.7	8.8	-3.0	65.0	11.8	15.2
1983	5.7	9.2	-3.5	62.0	12.4	16.4
1984	7.1	10.7	-3.6	66.3	15.7	19.6
1985	7.9	11.3	-3.3	70.2	16.1	18.3
1986	7.4	11.1	-3.6	67.2	13.4	16.4
1987	10.1	14.1	-3.9	72.0	15.6	17.5
1988	11.6	14.3	-2.6	81.4	18.7	17.4
1989	11.6	15.7	-4.1	73.6	16.3	17.7

Table 2.2: Developments in Foreign Trade Indicators, Export and Import (Billion \$)

Source: Turkstat

The ratio of exports to GDP increased from 5% in 1980 to 14% in 1989 in the same period. With this increase, the ratio of imports to GDP increased from 13.6% in 1980 to 19.6% in 1989. The ratio of exports to imports increased from 36.8% in 1980 to 73.6% in 1989. We can see that the increase in product and market diversity in exports increases the quantity of exports.

Years	Agriculture	Agriculture/ Total Import (%)	Mining (Billion)	Mining/Total Import (%)	Manufacturing (Billion)	Manufacturing /Total Import (%)
1980	0.05	0.6	3.2	40.4	4.6	59.1
1981	0.1	1.6	2.4	31.2	5.3	67.2
1982	0.1	2.3	3.7	42.3	4.9	55.7
1983	0.1	1.5	3.4	37.3	5.6	61.2
1984	0.4	3.9	3.6	33.9	6.6	62.2
1985	0.3	3.3	3.6	32.3	7.3	64.7
1986	0.4	4.1	7.1	13.3	8.5	76.6
1987	0.7	5.5	3.0	21.4	10.3	73.4
1988	0.5	3.5	2.8	20.4	10.9	76.5
1989	1.0	6.6	2.9	18.4	11.8	75.2

Table 2.3: Distribution of Imports by Main Sectors, ISIC Rev. 4 series (Billion \$)

Source : Turkstat

Table 2.3 shows that the most important sector in the sectoral distribution of imports in Turkey is the manufacturing sector. The share of manufacturing, which was 59% of the total imports in 1980, reached 75% in 1989. It is observed that the import share of the mining sector, which was 40% in 1980, decreased to 13% in 1989.

Years	Agriculture	Agriculture/ Total Import (%)	Mining (Billion)	Mining/Total Import (%)	Manufacturing (Billion)	Manufacturing /Total Import (%)
1980	1.0	57.4	0.9	40.4	1.0	59.1
1981	2.0	47.2	0.8	31.2	2.3	67.2
1982	2.0	37.2	0.9	42.3	3.4	55.7
1983	1.0	32.8	0.8	37.3	3.6	61.2
1984	1.0	24.5	0.8	33.9	3.1	62.2
1985	1.0	21.6	0.8	32.3	6.0	64.7
1986	1.0	25.3	0.9	13.3	5.3	76.6
1987	1.0	17.1	0.8	21.4	7.1	73.4
1988	2.0	20.1	0.7	20.4	8.9	76.5
1989	2.0	18.2	0.6	18.4	9.0	75.2

Table 2.4: Distribution of Export by Main Sectors, ISIC Rev. 4 series (Billion \$)

Source: Turkstat

As can be seen in Table 2.4, exports have shifted from an agricultural-based structure to a manufacturing-based structure. The share of exports of agricultural products in total exports decreased from 57.5% in 1980 to 18.3% in 1989. The share of industrial product exports increased from 36% to 78.2% in the same years. The share of the mining sector in total exports, like the agricultural sector, has decreased continuously since 1980. Akder (1993) argues that the increase in exports in the 1980-1988 period was mostly realized by directing the existing production capacities to the foreign market.

2.1.2 1990-1999 Years

In August 1989, the Decree No. 38 was enacted, liberalizing the foreign exchange regime, removing the restrictions on foreign capital inflows and outflows as well as foreign borrowing of the state. As a result of the freedom of capital movements, the increase of 21% in the real price of the dollar in two years and the increase of 51% in real wages were decisive. The 8.8% improvement in labor productivity in two years could not compensate for these negative factors and the competitiveness suffered a dramatic deterioration of 50% in this short period of time (Boratav 2019).

Kepepek and Yentürk (2007) argue that the real appreciation of TL, which is seen with the liberalization of capital movements, is one of the most prominent developments of the period. The real appreciation of the domestic currency means that the prices of tradable and non-tradable goods change in favor of the non-tradable. This situation causes a decrease in the competitiveness of the sectors oriented to the foreign market and competing with imports.

Şahin (2000) says that at the beginning of the period, we see a very stagnant export and high import growth. Exports reached the natural growth limit in the early 1990s due to the decrease in the shares allocated to productive sectors from fixed capital investments. However, this is not the only reason for the slowdown in exports. Exchange rate policy, expansion of domestic demand, and relaxation in export incentives also slowed the pace of exports.

In 1993, the government announced that one of its short-term economic goals was to reduce interest rates, which put pressure on the public budget. Thus, until 1993, in addition to the appreciation of TL against \$, two nominal anchors were formed in the economy when high interest rates were aimed to be lowered. The public deficits eventually reached such a point that the increase in demand led to an increase in aggregate demand and real growth rate. The volatile economic conditions resulting from fluctuations in the growth rate over the years have led to internal imbalances. However, the growing demand has also contributed to a deterioration in the external balance. Anticipating a devaluation, excessive liquidity in the market shifted towards foreign currency in early 1994. This triggered an acceleration in exchange rates, with the difference between the official and free exchange rates surpassing 23% at the beginning of 1994 (Keyder 2000). In response to these developments, the Turkish lira (TL) was devalued by approximately 14% on January 26, 1994. This devaluation resulted in a nominal value increase of the TL against the dollar by 172% between January and April (CBRT). Following the 1994 crisis, the well-known April 5 decisions were implemented. The primary objectives of these decisions can be summarized as rapidly reducing inflation, boosting exports and curbing imports, limiting foreign debts, increasing public revenues, reducing public expenditures, and implementing reforms in agriculture, social security, and privatization (Güloğlu and Altunoğlu 2002).

The most important of the institutional transformations that took place in the 1990s is the Customs Union agreement signed with the EU in 1995. With the entry into force of the agreement, Turkey abolished customs tariffs in the trade of manufactured goods with the EU, and it was agreed to reduce the customs tariffs applied to imports from third countries to the levels applied by the EU. With the “Temporary Agreement” in 1971, the EU had already lifted tariffs and other restrictions on industrial goods imported from Turkey, except for textiles and some petroleum products. However, export quotas in textiles and tariff quotas in petroleum products continued. With the signing of the Customs Union, the EU abolished these restrictions on textiles and petroleum products originating from Turkey (Seyidođlu 2003).

Yükseler argues that the economic crisis, which has deepened since the second half of 1998, documents that, on the one hand, external shocks such as the 1998 Asian and Russian crises, on the other hand, the foreign-dependent, artificial growth strategy and distorted social distribution and accumulation mechanisms maintained throughout the 1990s are now blocked. The state, especially in the post-1990 years, completely lost its function of directing the national economy, and instead of re-establishing macroeconomic stability with an all-out reform strategy, the state preferred to base the accumulation priorities of the economy directly on the encouragement of short-term foreign capital inflows and short-term and artificial growth gains. This preference has made the national economy completely dependent on cyclical and external phenomena and has caused the economy to be put into short-cycle, mini-growth-crisis-stability spirals. In this process, the public sector debt service burden has reached unsustainable dimensions. At the same time, the public sector has become unable to save and invest. By 2000, macro imbalances in the public sector were increasing. The government decided to implement a new stabilization program with support from the IMF. The IMF’s insistence on a fixed exchange rate, which prioritized securing the money of international creditors, created a crisis again (Kepenek and Yentürk 2010). The program was started by lowering the interest rates in 2000, but it was not successful. The government abandoned the currency peg and left the TL to fluctuate. Thus, the Turkish lira had to accept the halving of its value against major currencies. While the GDP decreased by 6 percent in 2001, there

were significant decreases in production and employment in all sectors, starting with the banking sector (Akyüz and Boratav 2003).

Table 2.5 shows that the ratio of exports to imports, which rose to 81.4% in 1988, declined to 58.1% in 1990. This is due to the fact that the large increase in imports could not be met by a similar increase in exports. Liberalization in the financial markets since 1989 has facilitated the access of importing companies to foreign exchange and has led to an increase in the amount of imports. Ercan (2001) mentions that in line with the Export Financing Decision Regarding the Development and Support of Exports put into effect in 1991, direct support of exports with monetary incentives was abandoned, and an incentive system was adopted at the production stage, manufacturer-exporter multi-partner foreign trade companies and foreign trade companies can benefit from export credits (Ercan 2001). The exchange rate movement in 1991 also supported exports. In this way, the ratio of exports to imports was realized as 64.6% (TOBB 1991).

Years	Export	Import	Foreign Trade Balance	Export-Import Coverage Ratio	Export GDP (%)	Import GDP(%)
1990	12.9	22.3	-9.3	58.1	13.4	17.3
1991	13.5	21.0	-7.4	64.6	13.9	16.6
1992	14.7	22.8	-8.1	64.3	14.4	17.3
1993	15.4	29.4	-14.0	52.1	13.7	19.4
1994	18.1	23.2	-5.1	77.8	21.4	20.4
1995	21.6	35.7	-14.0	60.6	19.9	24.2
1996	23.2	43.6	-20.4	53.2	21.5	27.7
1997	26.2	48.5	-22.2	54.1	24.6	30.4
1998	26.9	45.9	-18.9	58.7	20.7	19.7
1999	26.5	40.6	-14.1	65.4	18.9	21.7

Table 2.5: Developments in Foreign Trade Indicators, Export and Import (Billion \$)

Source : Turkstat

Table 2.6 shows that exports increased by 7.3% in 1996 compared to the previous year and reached 23.2 billion dollars. In 1997, exports increased by 13.1%. However, due to the lower rate of increase in imports, a small improvement was observed in the ratio of

exports to imports. Yükseler argues that 1998 was a year in which the economic growth rate decreased due to the Russian crisis and accordingly imports declined.

Years	Agriculture /Total Export (%)	Manufacturing /Total Export (%)	Mining/Total Export (%)	Agriculture /Total Import (%)	Manufacturing /Total Import (%)	Mining/Total Import (%)
1990	17.3	79.8	2.5	5.0	75.9	18.9
1991	19.0	78.6	2.0	3.2	80.9	15.8
1992	14.5	83.4	1.8	4.0	81.3	14.6
1993	14.9	83.3	1.5	4.6	83.9	11.4
1994	12.7	85.7	1.4	3.7	81.7	14.4
1995	9.8	88.2	1.8	5.3	83.1	11.4
1996	9.2	88.3	1.5	4.9	80.7	11.6
1997	8.9	88.7	1.5	4.9	81.9	10.5
1998	8.7	89.2	1.3	4.6	84.9	8.1
1999	7.7	90.1	1.4	4.0	83.4	10.4

Table 2.6: Distribution of Turkey's Imports and Exports by Major Sectors (%)

Source: Turkstat

The relative share of agricultural products in export revenues declined in line with the incentive policies followed after this date and the adjustments in exchange rates, and fell below 10% in 1995. When Table 2.4 and Table 2.6 are examined together, the share of industrial products increased from 36% in 1980 to over 90% in 1999. Seyidođlu (2001) says that policies encouraging the export of industrial products, adjustments in exchange rates and measures aimed at directing industrial production to foreign markets by reducing domestic demand have been effective in this increase. When Table 2.4 is examined, the share of industrial products in imports in 1980 is 59.1%, the share of mining products is 39.8%, and the share of agricultural products is around 1%. When Table 2.6 is examined, the share of industrial products in total imports has increased to 80% since the 1990s; While the share of mining products in total imports decreased to 15%, the share of agricultural products in total imports decreased to 3-4%. When the distribution of Turkey's imports by sectoral groups is examined in general, it is seen that the most important sector is the industrial sector. While the ratio of imports of industrial products to total imports was 60% at the beginning of the 1980s and around 75% at the

beginning of the 1990s, this ratio was realized as 82.5% in 2004. When the data from 1991 to the present are taken into consideration and analyzed, it can be said that the share of manufacturing sector imports in total imports has not fallen below 80%.

2.1.3 2000-2021 Years

The 2001 program differed from other programs implemented with the assistance of the IMF and in line with the Washington Consensus after 1980. Instead of solely relying on market forces and macroeconomic balances, the program acknowledged the potential negative outcomes that markets could generate and advocated for their regulation and control to a certain extent. The relationship between the market and the state was redefined in theoretical terms, emphasizing the need for regulation and supervision of market operations. New institutions were established to oversee market functioning, intended to operate autonomously from political interference. As a result, the program necessitated a series of structural reforms and the implementation of new laws. Some of these legislative changes aimed to prevent governments from utilizing the public sector and public banks for short-term goals. Simultaneously, the program aimed to restrict or limit the central bank's lending to the Treasury. In essence, the program sought to enhance the autonomy of the Central Bank (Öniş and Şenses 2005; Sönmez 2011).

In the Transition to a Strong Economy Program, which came into effect after the February 2001 Crisis, some policies were introduced in the context of foreign trade policies. It has been decided to increase Eximbank loans, which provide important financing to exporters, to accelerate VAT refunds, to enact the law on international arbitration in order to facilitate the entry of foreign capital, and to reduce bureaucratic obstacles in export incentives. It is seen that increasing exports with these decisions have an important place in this program.

The early years of AKP rule was a period when financial balances improved and economic growth took place in the Turkish economy. This only enabled the AKP government to pursue a more active foreign policy. There was no longer any need for the IMF's or other international institutions' loans as before. However, AKP's economic policies did not go beyond the institutional arrangements and fiscal discipline in the 2001

package. A long-term industrialization, growth, and employment perspective could not be established. (İzmen 2009; Taymaz and Voyvoda 2012). Controlling inflation was given priority, but more prudence was exercised in terms of growth and employment growth. The tight monetary policies implemented since 2005 and the inflow of hot money have led to the appreciation of the Turkish Lira. Thus, slowdowns occurred in the economy, causing exports to lose competitiveness in terms of price. The appreciation of the Turkish lira also led to factors such as an increase in imported inputs in export products and a shift in production abroad (Pamuk 2014).

The global crisis that started in 2008-09 took place in Turkey when the economy was in a slowing trend. The first blow of the global crisis was triple. In the first months, there were great decreases not only in exports but also in investments and consumption. After the 2001 crisis, the supervision process in the banking sector increased. The impact of the crisis was limited as the banking sector remained strong. In order to alleviate the impact of the crisis, it was possible to loosen not only monetary policy but also fiscal policies, albeit for a while. Thus, although not in exports in 2010, pre-crisis levels were achieved in production and employment. The share of the European Union in total exports reached 50 percent before the crisis. However, due to the deepening of its problems in the following years and the spread of economic stagnation, the Turkish economy was also adversely affected (Boratav 2012).

In the last quarter of 2008, the CBRT lowered the short-term interest rates, while aiming to relieve the congestion in the credit market with its balancing liquidity policy. Since November 2008, the policy rate has been reduced by 1025 basis points for one year. The first response to the crisis, that is, the first group of measures, was in the form of support to institutions that had liquidity problems and were on the verge of bankruptcy. The crisis, which spread from the financial sector to the real sector at the end of 2008, had a significant impact on the markets and created a contraction in demand. Therefore, the second group of measures is aimed at eliminating the contraction in demand. The government has turned to reductions in value-added tax and special consumption taxes in some selected sectors (Çınar et al. 2010).

While foreign direct investments decreased after the onset of the crisis in 2008, it became possible to finance external deficits with hot money thanks to the increased liquidity and falling interest rates in the world markets as a result of the efforts of the central banks. The banking sector was able to find record amounts of loans in international markets, some of these loans were transferred to the private sector, and some were directed towards financing private consumption (Boratav 2011).

Along with the crisis, private-sector investment expenditures decreased. In addition, the public sector focused on reviving the shrinking private investment expenditures, implementing policies to increase exports and employment, and increasing public expenditures in this direction (Pamuk 2019). The support payment made in 2009 was at the level of 566 million TL, the highest support made compared to previous years (TİM 2012).

After 2010, there was a recovery in foreign markets with a partial recovery and improvement of the markets in the global context. In this context, the rate of change in exports, which decreased by 22.6% in 2009, was 11.5% in 2010 and 18.5% in 2011. In 2012, the targeted growth could not be achieved due to the fact that the EU was in crisis and geopolitical risks negatively affected the real sector and the financial sector. In this period, a soft landing was targeted in the Turkish economy, so stopping the increase in inflation, keeping the current account deficit under control, and ensuring financial stability were prioritized overgrowth (Yükseler 2019).

With the end of the monetary expansion policy of the US Federal Reserve in 2014, the Turkish Lira depreciated and increased pressures on interest rates emerged. Due to these reasons, the government turned to savings and wanted to prevent excessive and borrow consumption expenditures. With the measures taken, private consumption and investment expenditures decreased. The Central Bank also supported the tendency to increase savings by increasing interest rates in line with these developments. Again, this year, the Presidential and local elections, the Russia-Ukraine conflict, and the problems created by the war process in Syria negatively affected the economic and commercial developments and led to stagnation (Akçay and Güngen 2019).

In 2015, the world trade volume was adversely affected due to the parity effect, geopolitical problems hindering trade and the decline in oil-goods prices adversely affecting the export cost. These effects were also reflected in Turkey. Global economic developments also p capital outflows from the country, depreciation of TL, and interest increases. The UK's decision to leave the EU on a global scale in 2016, with the election of Donald Trump as a result of the presidential elections in the United States, caused the Turkish economy to be adversely affected due to the increase in the dollar and the decrease in confidence in the markets. While the Turkish Lira continued to depreciate, interest rates and inflation increased. Oil barrel prices reached 76 USD in 2018. In addition, the exchange rate, which started to rise in March, reached its highest level by seeing 7.20 in August. This situation destabilized the general level of prices, leading a decrease in purchasing power, and price increases in raw materials, petroleum, imported industrial products, and consumer products. (Akçay and Güngen 2019).

The fact that the current account deficit and the need for short-term external financing were too high and the foreign exchange reserves held by the Central Bank were not high enough, made the TL vulnerable to speculative attacks. The decrease in the amount of foreign capital entering Turkey in 2018 and the outflows especially in short-term investments in the last months caused the TL to begin to lose value. With this loss of value in TL, the target of increasing export rates with the 'competitive exchange rate' approach has been put forward.

With the effect of globalization, liberalization movements in international trade, technological developments, developments in the field of logistics, and facilitation of buying and selling from foreign markets lead dependence on the foreign trade structure of the countries. İnançlı and Konak (2011) argue that the open policies implemented have been necessary to adapt to the global structure and have brought about increases in the imports of raw materials and intermediate goods in developing countries. However, while exports are increasing, there are changes in the structure of exports due to the high use of imported inputs in the production of products subject to export. This situation affects the dependence of exports on imports.

I discuss the issue over two issues that create the import dependency condition. First, I will talk about the real exchange rate and then the inward transaction regime.

Many studies found a long-term relationship between the real exchange rate and imports of intermediate. These studies reveal that the current account balance problem is not only due to the exchange rate but also to other structural problems. One of the main reasons why the exchange rate does not influence increasing exports and reducing imports is due to our high import dependency on energy resources. Although it has a reducing effect on consumption goods and investment goods in the long term, the effect of the decrease in total imports cannot be evident due to the industry's need for intermediate goods and the increase in energy resources bills. Real devaluations were made to increase exports in Turkey in the 1980s, and this situation fueled inflation. With the transition to convertibility in 1989, the anchor system began to be used in the exchange rate. After the 1994 and 2001 crises, the floating exchange rate system was introduced. However, due to the abundance of liquidity and inflation-targeting practices, interest rates remained higher compared to other countries, and the exchange rate was undervalued due to high foreign capital inflows. This situation was reflected as a loss of competitiveness to the companies that turned to exports and competed with imports. The sectors that lost their competitiveness with the increase in real exchange rates tried to regain their losses using high technology and new production techniques (Kazgan 2006). After 2002, economic growth accelerated and this increase affected exports, but the effect on imports was much greater. The current account deficit was financed by foreign capital. It was aimed to fight inflation by keeping real exchange rates high, but this encouraged imports and had a negative impact on domestic production and employment.

The rise in import shares has led to an increase in import dependency. The structure of production, the reliance of production and exports on imports, as well as the degree of vertical specialization in international trade, all have an impact on the real exchange rate, production, and the elasticity of foreign demand. Globalization, both in terms of trade and finance, has facilitated the emergence of different areas of specialization in production processes and trade structures among countries. The globalization of production has allowed companies to incorporate components produced in various countries into the final product, rather than completing all stages of production within a single country. This

results in countries specializing in specific stages of production, leading to a phased production process for the final product. Consequently, a country may import inputs to produce goods for export, and the import-export chain spans across multiple countries until the final product is completed. This phenomenon, referred to as vertical integration in international trade, intensifies the dependence of exports and production on imports while reducing the elasticity of the real exchange rate for foreign trade components (Saygılı and Saygılı 2011; Saygılı et al. 2010; Yükseler 2010; Yükseler and Türkan 2008).



Figure 2.2: Real Exchange, Import, Export and Export to Import Ratio (Thousand \$)

Source: IMF World Economic Outlook and EVDS

Between 2002 and 2022, net foreign capital inflows amounted to 802.1 billion dollars (EVDS, 2023). It is seen that the growth character of the Turkish economy in the 2000s depends on foreign capital inflows (Erdem 2010). Foreign capital inflows increase the prices of financial and real estate assets. Thus, the total net wealth in the economy rises. As a result, this process leads to credit expansion (Akyüz 2021). However, the abundance of domestic liquidity created by foreign capital inflows causes interest rates to fall and is a factor that enlarges the credit mechanism (Orhangazi 2020).

The most important factor that directs the idle capacity to production and initiates the expansion process is foreign capital inflows. Thanks to these foreign capital inflows, there is an expansion of demand with the expanding credit mechanism and the appreciation of the Turkish Lira. And the domestic demand pool becomes more dependent on imported consumption products and the production structure on intermediate goods imports, and this process results in a current account deficit (Boratav 2018).

Figure 2.2 gives the ratios of imports, exports, real exchange rates, and exports to imports during the 2000-2021 floating exchange rate regime period. For ease of comparison, exports, imports, and real exchange rates are indexed as 2015=100. Before the 2009 global financial crisis, the real value of the TL increased systematically in the 2002-2008 period and in 2010. The real exchange rate increase in the 2002-2008 period was around 30 percent. Despite the real exchange rate increases, real exports increased by 160 percent and real imports by 175 percent in the same period. Since both exports and imports increased in this period of real exchange rate increases, it may be more informative to look at the ratios of exports to imports to examine the effects of real exchange rates. In the 2002-2006 period, it is observed that real exchange rate increases increased imports more, thus the ratio of exports to imports decreased. It is observed that the ratio of exports to imports increased in 2007, when real exchange rate increases were realized, in 2008, when there was no significant change, and in 2009, when there was a rapid decline, the global financial crisis. In 2010 and 2011, when the economy was in the process of exiting the crisis, it is seen that imports increased much faster than exports and the ratio of exports to imports decreased rapidly. In 2012, when TL gained value, exports increased more than imports, so the ratio of exports to imports increased. The decline in the real exchange rate as of 2013 caused a simultaneous decline in import and export figures. In 2017, the export figures reached the level of 2013 again, and this increase is also seen in the import figures. In this period after 2013, the ratio of exports to imports increased from seventy percent to eighty percent. While export data decreased due to the slowdown in world trade caused by the COVID-19 epidemic in 2020, import figures increased in this period. However, despite the decline of more than 100 percent in the real exchange rate, it is observed that the export index did not increase at the same level.

The data presented in Graph 2.2 shows that real exchange rate increases affect the foreign trade deficit negatively by increasing imports more than exports both in real terms and in terms of GDP. This result suggests that real exchange rate increases do not affect the foreign trade deficit, consistent with the Mundell-Fleming proposition. In this context, positive global liquidity conditions cause capital inflows and real exchange rate increases as a result of the pull of national economic conditions. While these dynamics support economic growth, they lead to an increase in the current account deficit as a result of increases in investment and consumption. In order to interpret the effects of real exchange rate changes on foreign trade, examining the developments in sub-sectors will provide useful information.

The figure 2.2 shows that in the 2001-2008 real exchange rate increase period, real investment goods exports (300 percent) and imports (200 percent) increased rapidly, the contraction in exports was deeper in the crisis year 2009, and imports increased at a higher rate after this year. The depreciation of the real exchange rate, which started in 2013, decreased the quantity of imports. In the same period, the quantity of exports remained stable. Real exports of intermediate goods, on the other hand, continued to increase rapidly in the 2001-2008 period, regardless of the real exchange rate. It is observed that real imports of intermediate goods tend to increase significantly, except for the 2009 crisis year. Although the ratio of exports to imports in intermediate goods increased in the 2003-2008 period despite the real exchange rate increases and increased from 40 percent in 2003 to 50 percent in 2012 after the crisis, it is around 40 percent on average. Intermediate goods imports continued to increase, albeit intermittently, despite the depreciation in the real exchange rate. Exports and imports of real consumption goods increased continuously, except for the year 2000-2013. As a result of the fact that real imports increased at a much higher rate than real exports, the import coverage ratio of consumer goods exports decreased significantly during the 2000-2011 period. We can say that the imports of consumer goods decreased gradually as of 2013. In the same period, we can observe that the quantity of exports increased by nearly 40 percent. The figures suggest that real exchange rate increases increase both real imports and real exports, and support the proposition that there is a strong positive relationship between exports and imports of investment, intermediate and consumer goods and the real exchange rate.

IPR took its place in the Ministry of Commerce legislation with the Inward Processing Regime Decision as part of the entry into the Customs Union. It was published in the Official Gazette dated 31/12/1995. Inward Processing Regime Communiqué was published in the Official Gazette dated 27/01/2005 in order to draw the framework of conditional implementation procedures and principles.

According to the Customs Law No. 4458, the customs regime determines the mode of movement of the goods entering the Customs Territory of Turkey (TİM, 2019). The Inward Process Regime (IPR) is one of these forms of action. In IPR, the import value required for a unit export is calculated with the help of the foreign exchange utilization rate (EUR). The EUR is obtained by dividing the expected imports by the expected exports. A high EUR indicates that the import requirement for unit exports has increased. In other words, the dependence on exports on imports is increasing (Başkol 2016).

The Inward Processing Regime is implemented through conditional exemption and refund systems using inward processing measures. The conditional exemption system allows non-Community goods to be temporarily imported into the Turkish Customs Territory without being subject to customs duties and trade policy measures, provided that they are re-exported as processed products without undergoing any changes in the customs territory and with the payment of a security. The refund system, on the other hand, is based on the principle of refunding the import duties paid at the time of entry into free circulation of goods that have been used in the production of products within the scope of the inward processing regime when they are subsequently exported.

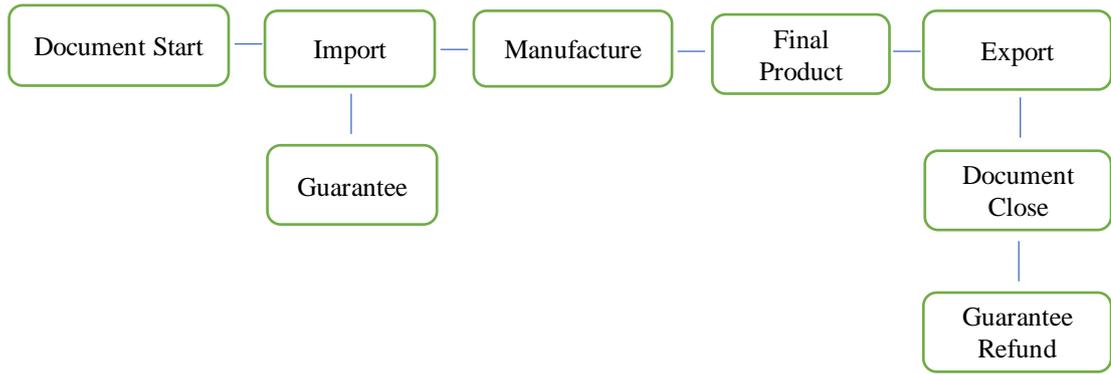


Diagram 2.1: The Implementation Stages of Inward Processing Regime

Source: Ministry of Trade, created by the author

The main difference between the conditional exemption and refund systems lies in whether the goods subject to the inward processing regime enter into free circulation or not. By using Diagram 2.1, which illustrates the operation of the conditional exemption and refund systems, we can explain this fundamental difference as follows: A company importing threads, dyes, fabrics, and buttons to be used in sewing suits through the conditional exemption system will not have to pay customs duties and other taxes at the time of importing these inputs since they have not yet entered free circulation. Instead, the company will deposit a security equal to the amount of these taxes. After exporting the suits, the company will be refunded the securities deposited during the importation of inputs. On the other hand, if the company imports these inputs using the refund system, the inputs have already entered free circulation. As a result, the company can only claim a refund of the customs duties and taxes paid at the time of importing these inputs after the export of suits has taken place (Başkol 2016).

To benefit from the Inward Processing Regime, it is necessary to obtain an inward processing permission document. The inward processing permission is granted by the relevant customs administration within the framework of the implementation principles determined by the Ministry of Customs and Trade. The applications for inward processing permission are evaluated based on certain criteria:

1. The possibility of determining that the imported goods are used in obtaining processed products,

2. The processing activity should create added value, increase production capacity, and contribute to enhancing the competitiveness and export potential of the processed product,
3. The performance of companies within the scope of inward processing permission.

To effectively benefit from the Inward Processing Regime, companies must adhere to the timeframes specified in the inward processing permission document (Canitez 2008: 143). The duration of the inward processing permission document varies depending on the sector but is generally limited to a maximum of twelve months. However, for products with production processes exceeding twelve months, such as shipbuilding and defense industry projects, the duration of the inward processing permission document is determined based on the project period. In case of justifiable and force majeure circumstances, additional time may be granted for the inward processing permission document.

There are different approaches to the effect level of the Inward Transaction Regime on budget and foreign trade deficits.

Eşiyok (2012) says that the negative impact of IPR on the macro scale is not only manifested in the budget deficits but also in the current account balance. As a matter of fact, IPR is shown as one of the factors contributing to import dependency in Turkey and thus causing an increase in the current account deficit through external deficits. It has been criticized that IPR, which started to be implemented with the Customs Union, increased dependency on imports and caused an increase in external deficits. Because in the IPR system, exports are dependent on imports. Thus, the added-value in exports decreases and the use of imported intermediate goods is encouraged (Eşiyok 2012). Contrary to Eşiyok's approach, Eryüzlü (2013) says that the increase in exports by IPR creates positive developments on a macro scale. An increase in exports may be positive in terms of balance of payments. However, considering that the export data is kept together with the import data in the balance of payments, if the increase in imports is higher than the increase in exports despite the increase in exports, the balance of payments may also deteriorate (Eryüzlü 2013).

Takım and Ersungur (2010) state that the DIR system leads to malicious use. In the study, it is stated that IPR increases imports and thus foreign trade deficit. This situation negatively affects production and employment. Sayılğan and Şenol (2010) emphasize that public revenues are given up due to IPR, which has positive effects on foreign trade. In addition, due to the encouragement of the import of the goods to be used in the production of export products, this creates a negative effect on the producer operating in the fields.



Years	Export under Inward Processing (Billion \$)	Share of Inward Processing Regime in Total Exports(%)	Import under Inward Processing Regime (Billion \$)	Share of Inward Processing Regime in Total Imports (%)	IPR Import/IPR Export (%) Foreign currency usage rate
2000	11.8	42.5	5.4	10.1	462
2001	13.9	44.6	6.5	15.8	46.8
2002	19.3	53.6	8.6	16.7	41.6
2003	27.2	57.5	12.7	18.4	46.9
2004	33.9	53.7	16.4	16.8	48.4
2005	37.8	51.4	17.3	14.8	45.6
2006	43.6	50.9	18.8	13.5	43.1
2007	52.2	48.6	24.3	14.3	46.5
2008	62.8	47.6	30.8	15.2	49.1
2009	46.4	45.4	21.4	15.2	46.1
2010	53.7	47.2	26.1	14.1	48.4
2011	64.2	47.6	30.9	12.8	48.1
2012	65.3	42.8	31.6	13.4	48.4
2013	68.1	44.9	32.1	12.7	47.1
2014	68.6	43.5	31.6	13.1	46.1
2015	58.8	40.9	26.2	12.6	44.5
2016	58.2	40.8	24.5	12.4	42.1
2017	65.0	41.4	28.4	12.2	43.7
2018	74.9	41.6	33.0	14.8	44.1
2019	74.7	41.3	27.2	12.9	36.8
2020	69.6	41.1	25.9	11.8	37.4
2021	91.0	40.4	31.5	11.6	35.3

Table 2.7: The share of exports and imports within the scope of IPR (Inward Processing Regime) in total exports and imports

Source: It was compiled from the sources of the Ministry of Commerce (b) and the Ministry of Commerce (c) and arranged by the author.

When the shares of domestic processing regime in Turkey's foreign trade are examined in Table 2.7, it is seen that the share of exports within the scope of domestic processing regime in the total trade between 2000-2021 was 40.4%. The share of imports within the scope of inward processing regime in total imports was 11.6%. In the inward processing regime, the import value required for a unit export is analyzed with the help of the foreign

exchange rate. The increase in the use of foreign currency points to an increase in the imports required for exports, and thus the import dependency of exports. It was observed that the rate of use of foreign currency between 2000-2021 decreased from 46.04% to 35%. This rate means that 35% of the exports made within the scope of the inward processing regime for 2021 are realized through import processes. It also reveals the fact that 35% of export revenues are transferred out again due to imports in the use of inputs.

Takım and Ersungur (2010) and Özçalık (2007) say that the inward processing regime performance should be evaluated not by the number of documents issued, but by the number of documents closed. In the inward processing regime, the import value required for a unit export is analyzed with the help of the foreign exchange rate. The foreign exchange rate is the ratio of imports to exports. The high rate of use of foreign currency indicates that the import requirement for unit exports has increased and thus, exports have become more dependent on imports. As can be seen in Table 2.7, it is seen that this rate was over % 46.2 in the 2000s. As the imports made under the inward processing regime increase, it can be said that Turkey exports less and less value-added goods, and therefore, the value-added in the country as a result of exports gradually decreases. It can be said that the inward processing regime, which constitutes the main axis of exports, contributes to the dependence of exports on imports and that 46.2 dollars or more were imported for 100 dollars of industrial product exports in the 2000s. It is observed from Table 2.7 that it is 35.3% with the year 2021. In short, the level of dependency on imports in Turkey is approximately 35.3%. levels can be said.

To summarize Table 2.7, I think that exports and imports under DIR increase over the period, but within general exports and imports, exports and imports under DIR fall. Despite the tax advantages, it is thought that this situation is caused by the fact that international trade companies want to continue their activities without applying to DIR due to the problems experienced on a micro scale. When the share of imports in unit exports is analyzed, it is seen that Turkey's dependence on imports in exports is around 35%. This rate does not support the argument that DIR increases import dependency.

I examine the foreign trade data of the Turkish economy. Then, I discuss the effect of the inward transaction regime and real exchange rate index data on the foreign trade structure.

Turkey's foreign trade volume has increased over the years. However, this is a foreign trade volume mostly dependent on imports. According to Table 2.8, despite the crisis in 1994, with the devaluation, exports increased by 18% compared to the previous year and reached 18 billion dollars. This situation lasted for a short time, followed by a large increase in imports. From 1994 to 1995, imports grew by 54% and reached 35 billion dollars. With the Russian Crisis in 1998, there was a decrease in the growth of export values. The 1999 Marmara earthquake decreased the foreign trade volume (Yükseler 2019).

Despite the crisis in 2001, imports lost value by 24% with the measures taken. Exports increased in the post-crisis years and reached 61 billion dollars in 2004. With the appreciation of the Turkish Lira in 2005, imports rose to 116 billion dollars. Since 2007, the effects of the global crisis have been reflected in foreign trade values. Exports, which grew by 28% in 2008, dropped by 22.6% in 2009 as the markets suddenly contracted. The same development was also observed in imports, which decreased by 30.2%. Parallel to such a decrease in imports, the foreign trade deficit decreased to 38 billion dollars. In this period, Turkey's important commercial partner, the EU, was in crisis, which also contributed to the decrease in exports. The formation of export and import values in 2014 and 2015, geopolitical risks, decrease in commodity prices and shrinkage in demand in the world economy decreased Turkey's exports to 143 billion dollars and imports to 207 billion dollars. The depreciation of TL and the decline in oil prices were effective in the decrease in imports in 2015. In 2016, the protective measures in the economy and the depreciation of TL were again decisive in imports. Imports decreased by 4.6% in 2018 due to the high exchange rate. The rapid decline in the value of TL continued. The quantity of imports increased rapidly as of 2021. Insistent policies on cheap TL have seriously increased the foreign trade deficit (Kundak and Aydaoğuş 2018 and Akat 2019).

Years	Export	Import	Foreign Trade Balance	Export-Import Coverage Ratio	Export GDP (%)	Import GDP(%)
2000	27.7	53.5	-25.8	51.9	19.8	22.5
2001	32.3	40.3	-8.0	80.0	27.2	22.6
2002	35.0	52.5	-17.5	66.7	25.1	22.9
2003	46.2	68.5	-22.3	67.4	23.1	23.3
2004	61.1	96.5	-35.4	63.3	23.7	25.3
2005	72.4	115.8	-43.4	62.5	21.9	24.3
2006	84.5	138.5	-54.0	61.0	22.4	26.3
2007	108.2	170.0	-61.8	63.7	21.9	26.1
2008	131.0	201.9	-70.9	64.9	23.6	27.0
2009	101.1	140.9	-39.8	71.8	23.4	23.4
2010	114.8	185.5	-70.7	61.9	19.3	26.3
2011	133.8	240.8	-107.0	55.5	20.9	31.1
2012	151.3	236.5	-85.2	64.0	22.2	29.1
2013	152.4	250.8	-98.4	60.8	22.9	29.8
2014	156.5	241.1	-84.6	64.9	24.3	29.6
2015	140.9	203.6	-62.7	69.2	23.8	27.5
2016	139.2	194.1	-54.9	71.7	22.4	26.1
2017	154.4	228.7	-74.3	67.5	25.3	30.8
2018	167.1	221.1	-54.0	75.6	30.2	33.1
2019	170.8	200.3	-29.5	85.3	32.2	31.1
2020	159.6	209.5	-49.9	76.2	30.2	37.3
2021	214.3	261.4	-47.1	81.9	36.4	38.5

Table 2.8: Development of Exports and Imports Between 2000-2021 (Billion US\$)

Source: World Bank

As seen in Table 2.8, despite the crisis in 2001, imports lost value by 24% with the measures taken. After the crisis, the increase in exports in 2002, 2003 and 2004 was due to the contraction in the domestic market and rose to 63 billion dollars. With the appreciation of the Turkish Lira in 2005, imports rose to 116 billion dollars. Since 2007, the effects of the global crisis were reflected in foreign trade values, and exports, which grew by 28% in 2008, dropped by 22.6% in 2009 with the shrinkage of the markets. The same development was also observed in imports, which decreased by 30.2%. Parallel to such a decrease in imports, the foreign trade deficit decreased to 38 billion dollars. The trade values realized in 2012, on the other hand, bear the effect of the increase in gold

exports and then the sharp decline in 2013. The fact that our important commercial partner, the EU, was in crisis during this period was also a factor in the decrease in exports. Our exports decreased to 143 billion dollars and our imports to 207 billion dollars, due to the formation of export and import values in 2014 and 2015, due to geopolitical risks, the fall in commodity prices, and the contraction in demand in the world economy. The depreciation of TL and the decline in oil prices were effective in the decrease in imports in 2015. Exports, on the other hand, were affected by geopolitical developments. In 2016, the protective measures in the economy and the depreciation of TL were again decisive in imports. Imports decreased by 4.6% in 2018 due to the high exchange rate. However, by 2021, there was a rapid increase in the quantity of imports and exports.

Due to the inadequate domestic production of raw materials and intermediate goods necessary for manufacturing and exports, Turkey relies on imports to meet its production needs. Insufficient domestic production of intermediate goods leads to a heightened dependence on imports in industrial production. The underlying reasons for the insufficient production of necessary inputs in Turkey are twofold. Firstly, local companies have been unable to acquire the required skills and technology, resulting in a lack of competence. Secondly, factors such as the overvaluation of the Turkish lira, along with price and quality advantages, have further contributed to the increasing reliance on imported inputs, making import dependency a structural characteristic of the Turkish economy (Taymaz, Voyvoda, and Yılmaz 2011).

In various studies on the development trajectories of global economies, it has been observed that “latecomer” economies tend to specialize in the labor-intensive stages of the production process, while advanced economies continue to make positive contributions to the trade balance in the capital and technology-intensive stages (Lemoire and Unal-Kesenci 2004). Therefore, monitoring the contribution indicator to the trade balance over time, followed by sectoral-level analysis using the vertical decomposition of production processes, is crucial in understanding the position of the Turkish economy within the global division of labor and its own development path.

In order to observe the changing structure of foreign trade in Turkey since 1980, it is important to make a foreign trade analysis according to the country's production processes. Foreign trade analysis, which is devoted to production processes, is useful in terms of giving an overview of the changes in the international division of labor and trade structure of economies. The United Nations (UN) General Economic Groups Classification was used for this analysis. Since 1980, Turkey's foreign trade is analyzed by dividing it into five basic production processes. In the production process, the vertical classification method was carried out as in the study of Lemoine and Ünal (2004). This method divides the UN's tripartite classification of essential goods, intermediate goods and final goods into five categories. These categories are; basic goods, intermediate goods-semi-finished products, intermediate goods-parts and components, final consumer goods and final capital goods. Table 2.9 shows the sectors in each category.

3 stages	5 stages	Code BEC	Title BEC
Basic goods		111	Food and beverages mainly for industry
		21	Industrial supplies. n.c.c., primary
		31	Fuels and lubricants, primary
Intermediate goods	Semi-finished goods	121	Food and beverages. processed, mainly for industry
		22	Industrial supplies. n.c.c., processed
		321	Motor spirit
		322	Other processed fuels and lubricants
	Parts & components	42	Of capital goods. except transport equipment
		53	Of transport equipment
Final goods	Capital goods	41	Capital goods except transport equipment
		521	Other industrial transport equipment
	Consumption goods	112	Food & beverages, primary, mainly for household consumption
		122	Food & beverages. primary, processed, for house, consumption
		51	Passenger motor cars
		522	Other non-industrial transport equipment
		61	Durable consumer goods n.c.c.
		62	Semi-durable consumer goods n.c.c.
		63	Non-durable consumer goods n.c.c.

Table 2.9: General Classification According to Production Processes

Source: Lemoine and Ünal, 2004

The aggregated export and import values according to Table 2.9 are presented in Table 2.10 and Table 2.11 in order to see how the goods that are mainly involved in the foreign trade of Turkey are traded in which production process and how this structure has changed between 2000-2021. With the outward industrialization, the biggest change in Turkey's exports took place in basic goods.

Years	Basic Goods (%)	Intermediate Goods		Final Goods	
		Semi-Finished Goods (%)	Part and Component Goods (%)	Capital Goods(%)	Consumption Goods (%)
2000	15.66	40.09	13.67	21.87	8.34
2001	15.96	44.53	13.78	16.99	7.90
2002	16.14	42.23	14.00	17.11	9.31
2003	15.64	41.87	13.38	17.25	11.15
2004	14.03	40.52	13.91	18.65	12.37
2005	14.58	41.53	12.86	18.48	12.03
2006	14.98	42.45	12.58	18.00	11.59
2007	8.52	47.24	13.34	18.47	11.96
2008	10.73	48.02	12.27	16.60	11.96
2009	9.13	44.91	13.16	17.50	14.76
2010	10.01	45.30	12.12	17.78	14.44
2011	10.58	46.20	11.24	18.05	13.58
2012	10.25	48.13	11.23	17.21	12.70
2013	8.46	49.53	11.25	17.03	13.43
2014	8.89	48.32	11.73	17.35	13.48
2015	8.57	44.29	12.80	18.99	15.11
2016	8.02	42.53	14.77	19.59	14.85
2017	9.72	42.53	14.54	15.54	12.94
2018	11.42	48.85	13.75	14.64	10.93
2019	11.85	49.38	13.95	14.45	10.04
2020	9.92	44.51	11.64	14.75	10.26
2021	12.23	42.09	13.06	18.62	14.00

Table 2.10: Distribution of Total Imports by Production Process (percent)

Source: Calculated using TURKSTAT data, Foreign Trade (BEC) by BEC Classification, Sectors were examined according to the classification in Table 2.9

* The other part is not included in the table. The average of this part is 0.53

Table 2.10 shows the distribution of imports by production processes between 1980-2021. Among the five production processes examined, the stage with the highest share in imports between 1980 and 2021 is semi-finished intermediate goods. While the share of semi-finished intermediate goods imports in total imports was 36,5 percent in 1980, it was realized as 42,2 percent in 2021. The distribution of imports between the five production processes between 2000 and 2021 shows that Turkey's import structure

remained unchanged. Turkey's foreign trade structure is evaluated over production processes. It shows that after the 2000s, there is an import-based structure in basic goods, and exports are given weight, although the import rate is not low in final goods. The share of intermediate goods exports in total exports is over 40 percent, more than half of imports consist of intermediate goods. It can be said that the aim of 1980 was to reduce the share of basic goods in exports and imports, to reduce the imports of intermediate goods and final goods, and to move away from the position of becoming an exporter. Sectoral structure of exports on a product basis in the Turkish economy; consists of the agricultural sector, the industrial sector and the mining sector. Thanks to the distribution of the sectors that make up the export data, which is of great importance for the country's economy, it can be seen in which sector the country is more advanced and which sector contributes more to the country's economy.

Years	Basic Goods	Intermediate Goods		Final Goods	
		Semi-Finished Goods (%)	Part and Component Goods (%)	Capital Goods (%)	Consumption Goods (%)
2000	4.56	31.00	6.43	7.83	50.01
2001	3.80	32.31	7.05	8.48	48.21
2002	3.04	31.59	7.01	7.74	50.22
2003	2.80	30.04	7.25	9.19	50.11
2004	2.47	32.54	7.05	10.34	47.31
2005	2.59	32.68	7.44	10.88	45.92
2006	2.98	34.91	7.95	11.02	42.52
2007	2.79	36.02	8.69	12.82	39.29
2008	2.60	42.34	8.07	12.67	33.95
2009	2.93	39.26	7.71	10.88	38.67
2010	3.70	38.54	8.59	10.34	38.47
2011	3.24	39.85	9.21	10.52	36.77
2012	3.10	44.7	8.31	9.01	34.45
2013	3.73	38.18	9.25	10.27	38.14
2014	3.33	36.59	9.23	10.22	39.84
2015	2.91	36.97	9.13	10.70	39.69
2016	2.94	35.92	9.28	11.15	40.10
2017	3.21	35.48	9.16	11.69	40.01
2018	3.13	35.59	9.63	11.82	39.37
2019	2.84	35.63	9.68	11.90	39.32
2020	2.83	34.10	9.31	11.63	40.25
2021	3.12	39.83	8.72	10.93	37.4

Table 2.11: Distribution of Total Exports by Production Process (percent)

Source: Calculated using TURKSTAT data, Foreign Trade (BEC) by BEC Classification, Sectors were examined according to the classification in Table 2.9

* The other part is not included in the table. The average of this part is 0.49

The figures in Table 2.11 show an increase in exports of semi-finished intermediate goods since 1980. The exports of semi-finished intermediate goods, which cover 18 percent of total exports, show a steady increase to 40 percent in 2021. This production process is also encouraged during the import substitution industrialization period. Although it is known that export-oriented industrialization has doubled its share in exports in the first five years. The highest shares were 42.3 percent in 2008 and 44.8 percent in 2012. Among

semi-finished intermediate goods, exports of processed raw materials for industry have a high weight.

2.2 Main changes of trade policy (1980-2021)

Before 1980, Turkey implemented an import-substitution strategy aimed at meeting domestic demand with local production through protective and incentive measures. However, after 1980, a new strategy was adopted to stimulate industries with export potential and encourage exports, aiming to resolve balance of payments issues and achieve macroeconomic stability. As a result of the shift towards an export-oriented growth model through industrialization, the share of agriculture in Turkey's exports declined, while the share of industrial exports rapidly increased. The government implemented export incentives such as direct monetary payments, exceptions, and low-interest credits to support industries deemed competitive in the global market.

The implementation of export incentives had a significant impact on labor-intensive sectors like textiles. During the 1980s, the share of textile exports continued to rise and surpassed the share of agriculture and food exports by the late 1980s. The growth of labor-intensive sectors resulted in a decline in the relative importance of medium-tech sectors that had developed during the import-substitution industrialization period. The reduced role of state entrepreneurship and the privatization of state-owned enterprises further contributed to the decline of medium-tech sectors. During this period, the share of state-owned enterprises in manufacturing value-added decreased from 40.7% in 1980 to 20.1% in 1999.

Over the next 20 years, starting from the mid-1980s to the mid-2000s, Turkey increasingly specialized in textile product manufacturing. In the late 1990s, machinery and transportation equipment exports became the most important export products. This transformation shifted the export structure from raw material-based to labor-intensive products, and later to medium-tech products. The real exchange rate had an impact on Turkey's trade structure. Before 1994, a strong Turkish Lira negatively affected exports but increased imports. However, with the introduction of export incentives, efforts were made to maintain the export structure. In the 2000s, a global increase in liquidity and a

rise in financial inflows to Turkey appreciated the Turkish Lira, which led to a shift in the trade structure. Many sectors started to rely more on imports to satisfy domestic demand rather than domestic production. This increased Turkey's import dependence, especially in intermediate goods, which reached a share of 55% of total imports.

After the 2001 crisis, there was a shift in private sector investments, with a significant focus on the construction and energy sectors, as shown in "Annex A Table A4." This shift led to the characterization of the post-2000 period as a period of "construction-led growth." One of the most defining features of the Turkish economy in the 2000s, in terms of growth dynamics, was the central role of the construction sector. During this period, the construction sector's growth was accompanied by increased imports in the subsectors of basic metals such as iron-steel and cement, as well as the furniture sector. Global liquidity abundance and the subsequent decrease in real interest rates played a crucial role in the expansion of the financial sector, construction, and real estate sectors. This led to an increase in supply in these sectors, driven by the availability of cheap credit, which fueled the growth of the construction and real estate industries (Voyvoda and Taymaz 2011).

As a result, the construction and real estate sectors experienced significant growth during this period, which also had ripple effects on related industries such as basic metals and furniture. However, this "inflation-led growth" model also brought some challenges, such as increased import dependency in certain sectors and potential risks related to the financialization of the economy.

It is important to note that while the construction-led growth model contributed to economic expansion, it also had implications for economic stability and resilience, as it made the economy more vulnerable to external shocks and changes in global financial conditions. Therefore, it was crucial for policymakers to strike a balance between promoting growth in specific sectors and ensuring overall economic stability.

According to the sectoral distribution of imports in Turkey in 2021, the top three sectors were, in order, chemical products and manufactured goods, mining and quarrying, and basic metals. Additionally, the share of the industrial sector in total imports exceeded

76%, rising from 59% in 1980. On the other hand, the share of imports in the agriculture sector increased from about 1% in the 1980s to 4% in 2021, indicating a growing reliance on imported agricultural products, even for essential commodities.

Over the years, approximately 80% of Turkey's imports have been directed towards the manufacturing sector, around 10% towards mining and quarrying, and the remaining 10% have been allocated to the services and agriculture sectors. With the establishment of the Customs Union, from 1995 to 2017, Turkey mainly imported raw materials and machinery and equipment from the manufacturing sector.

The increase in the share of the industrial sector in imports can be attributed to various factors, including the development of the manufacturing industry, the shift towards export-oriented production, and the expansion of Turkey's industrial capabilities. However, the growing import dependency in the agriculture sector might raise concerns about food security and the sustainability of agricultural production in the long run.

The heavy reliance on imported raw materials for the manufacturing sector could also pose challenges, as it makes the Turkish economy susceptible to fluctuations in global commodity prices and exposes it to external supply chain risks. Diversifying sources of raw materials and encouraging domestic production could help mitigate these risks and enhance Turkey's economic resilience.

CHAPTER 3: LITERATURE REVIEW

Import dependency becomes a more important issue in the Turkish economy and on the basis of developing countries, especially in times of crisis, because imports are very sensitive to changes in foreign currency and determine the country's production structure. I focus on the arguments that the issue is not limited to numerical observations in the import rate, but that it is an international process that designs the sovereignty relationship with the change in the production structure of the country. However, Turkey's position in the global value chain is changing the country's production structure and has significant effects on labor and capital. In addition, a causal relationship between growth and import has been tried to be established in the import dependency analyses made on the basis of developing countries. Finally, I state my ideas about the field that I see lacking in the literature and to which I contribute.

3.1. Import dependency in the sectoral context in Turkey

Studies on import dependency focus on the production phase of a good in a sectoral sense. While examining the transformation process of an intermediate good into a final good, it focuses on how much of the good is produced in the country and how much is produced abroad. In the first place, I make a literature review on studies using the 1998, before of 1998 and 2002 TURKSTAT Input-Output tables.

Yükseler and Türkan (2006) investigated the imported input dependency of the manufacturing industry in their studies. In the study, the input-output table of 1998 was used. Sectors with high dependency on imported inputs; base metal, furniture, coke, petroleum products, chemistry, medical-precision optical devices, electrical machinery, plastic and rubber manufacturing sectors. The sectors with low dependency on imported inputs were determined as food-beverage, other non-metallic mineral products, and tobacco products sectors. According to the calculations, it has reached the conclusion that the use of directly imported inputs in the manufacturing industry sector is 14.75%.

Ersungur and Kızıltan (2007) have attempted to measure the import dependency of sectors in Turkey by using input-output tables for the years 1973,1979,1985,1990,1996, and 1998. According to the results they obtained, it was determined that the import dependency was high in the sectors in the manufacturing industry in the post-1980 period. Özçalık (2007) applied Granger causality test to quarterly data in order to measure the import dependency of exports between 1989-2006. In the analysis, imports of intermediate goods, foreign trade deficit, ratio of exports to imports, foreign trade volume, total domestic industrial production, gross national product at constant prices, exports of manufacturing industry, exports of consumer goods, imports of investment goods, ratio of imports of intermediate goods to total imports, the data of the ratio of manufacturing industry exports to total exports are used by seasonally adjusted. As a result of the examinations made, relations were found between imports of intermediate goods, exports of manufacturing industry, exports of consumer goods and total industrial production, and contrary to what was thought, it was concluded that imports of intermediate goods were more dependent on exports of consumption goods than exports of the manufacturing industry. According to the results of the analysis, as a result of one unit increase in the import of intermediate goods, it causes an increase of 0.26 units in the exports of consumption goods. With an effect of 0.49, imports of intermediate goods and exports of the manufacturing industry increase in the same direction (Özçalık 2007).

Füsunoğlu and Yücel (2008) determined the manufacturing industry sectors that were effective on exports and imports between 1998-2002 using panel data analysis. In the model, a dummy variable measuring the import of a country from another country, the gross value added of the importing country, the capacity utilization rate, the real exchange rate index and the effect of the customs union was used. Sectors that have an impact on imports; wood products, printing and publishing, basic metal, paper products, processed metal products, transportation vehicles and equipment sectors determined. Esiyok (2008), as a result of the analysis, he made using the input-output tables of 1973, 1979, 1985, 1990, 1996, and 1998, he revealed that the export-oriented sectors in the Turkish economy tended to import in terms of supply of raw materials and raw materials. The import rates of these sectors increased over the years.

The above studies give the opportunity to look at the studies in general and compare the pre-1980 and post-1980 period. When I evaluate these two periods in general, it is seen that foreign dependency is high for both periods in Turkey. In addition, the foreign dependency of the sectors follows a highly volatile course over the years. This result is especially important in terms of ensuring stability in prices and exchange rates and controlling other factors that will affect imports. While dependence on imports decreased gradually in Turkey before 1980, this dependency increased until 1996 after 1980, but decreased again in 1998. The fact that sectors with high dependence on imports constitute key sectors for the Turkish economy, especially in terms of the level of industrialization, shows that the industrial structure is also weak. However, after 1980, this correlation first decreased and then started to increase.

Saygılı, Hamsici and Cihan (2009) investigated the factors that increase the use of imported inputs in the manufacturing industry in their study. In the study, a survey was conducted with 145 large-scale companies. As a result of the survey analysis, the insufficient amount of domestic production in some basic and intermediate goods, the cheaper supply of these goods from countries such as China and India, the foreign trade regime, the development of the exchange rate, the need to use quality intermediate and investment goods, the organizational structures of foreign capital companies and It was concluded that foreign credit facilities affect import dependency. In addition to the questionnaire, input and output tables were also used. It has been determined that the use of imported inputs in fast-growing sectors such as motor vehicles, other transportation vehicles, basic metals and electrical machinery is higher than traditional labor-intensive sectors. While the share of imports in raw materials and materials in the textile, clothing and leather sector was 45.5% in 2002, it was observed that this rate increased to 50.5% in 2007.

Voyvoda, Yılmaz, Taymaz (2011) analyzes the changes in foreign trade of 34 different sectors under a vertically fragmented structure according to the production process. The findings of the study indicate that Turkey has specialized in agricultural products in the 1970s, in labor-intensive sectors such as textiles and clothing in the 1980s, and in products such as machinery and automotive, which can be defined as medium technology since the mid-1990s. Although Turkey's competitiveness in medium-technology products such as

machinery and land vehicles is a positive development, it is emphasized that it is far from contributing to the strengthening of its position in the international economy, as it specializes in the production of these products using more standard technology (Voyvoda, Yılmaz and Taymaz 2011).

İnançlı and Konak (2011) examined the import dependency of exports in terms of the automotive sector with the help of data obtained from input-output tables directly, total backward and forward linkage, direct and total vertical specialization. In the study, changes in foreign exchange rates, an unstable economic structure, energy costs, insufficient investment in the private sector, increases and decreases in interest rates and the structure of exports are listed as the causes of foreign dependency. According to the results of the analysis, it was observed that the dependency level of exports on imports increased in the automobile and related sectors between 1995-2002, continued to increase in the 2003-2007 period, and entered a stagnant course after 2008 due to the crisis (İnançlı and Konak 2011).

Özlale and Karakurt (2012) analyzed the sectoral import dependencies of the manufacturing industry sectors over imported intermediate and investment goods used in production. Sectoral import dependency ratio was researched for the period 2008-2011. Import dependency ratio is 72% in fertilizer production, 69% in iron and steel sector, 67% in computer and data processing machines, 56% in chemicals, 51% in other metals and products, 51% in motor vehicles, 49% in aircraft, 45% in rubber and plastics, 43% in the manufacture of textiles, optics, medical, instruments and measuring devices, 41% in paper and pulp, 40% in white goods and consumer electronics, 38% in the manufacture of leather and fur, 37% in the manufacture of medical and pharmaceutical products and electrical machinery and devices, mineral and mineral It was observed as 20% in the manufacture of products, 19% in ready-made clothing, 11% in furniture and 8% in tobacco products. Özlale and Karakurt (2012) also established three different models in their study to explain the import dependency of the manufacturing industry. In the first of these models, the change in the import dependency ratio of the manufacturing industry is explained on a monthly basis. The nominal exchange rate, total sales, and the change in the ratio of consumer loans to GDP were used as explanatory variables in the model. It has been concluded that the decrease in the value of the Turkish Lira reduces import

dependency. As a result of the TL depreciation, the price of imported intermediate and investment goods will increase and the cost of import will increase. This will lead the manufacturing industry to use more domestic and investment goods. Exchange rate and total sales elasticity of the imported input amount were calculated. For this purpose, the regression model was created by taking the logarithmic values of the variables used. He concluded that 93% of the change in the quantity of imported inputs can be explained by the variables used in the model and that the increase in the lagged value of the imported input negatively affected the imported input in this period. He concluded that a 1% valuation in Turkish Lira increased the quantity of imported inputs by 0.38% and the amount of imported inputs was not flexible against the exchange rate. He concluded that the 1% increase in total sales increased the imported input by 1.79% and the total sales elasticity of the imported input was high.

Kundak and Aydoğmuş (2018) examined the import dependency of the manufacturing industry and its sub-sectors with a dynamic panel data method. In the long run, increases in fixed capital investments, exchange rate, and GDP increase the dependency on imports, and in the short run, the exchange rate is dependent on imports.

Yükseler (2019) analyzed the changes in the economy by using the Input-Output tables of 1985, 1998, and 2012. He examined the change in the import dependency of the manufacturing and sub-sectors throughout the Turkish economy. He determined the dependence of exports on imports. The directly imported input/production ratio in the economy was 7.1 percent in 1985. It was 7.8 percent in 1998 and 10.6 percent in 2012. The most significant rise in manufacturing occurred in the energy and mining sectors. With the appreciation of the Turkish Lira and the disinflation period after the 2001 crisis, the tendency to import has increased, gaining a position in the international production chain. This import-dependent structure has some characteristic features. Developing countries are involved in this production chain, especially by importing intermediate goods.

Alkın (2020) uses World Input-Output Database between 2002 and 2014. These input-output tables mention the domestic value-added and foreign value-added ratio of Turkey's exports in the agriculture, manufacturing industry, and services sectors are

calculated in the context of bilateral trade between 2000 and 2014. In these calculations, Wang, Wei and Zhu decomposition methods were used. In this method, the sector develops a decomposition method that allows for the separation of intermediate input trade data into value-added and double-count components in its works that allow bilateral trade-sector-based studies. The results of the study show that the rate of domestic added value is higher in the exports of the agriculture and services sector and that the exports of the manufacturing industry contain higher foreign added value compared to other sectors. Between 2000 and 2014, the domestic added value in the agriculture and services sector exports is around 85%. While the rate of foreign added value in the manufacturing industry was approximately 16% in 2000, it was 22% in 2014.

Dineri and Işık (2021) cause the transfer of added value abroad due to manufacturing production through the import of intermediate goods and capital goods. In this case, using the data for the period of 2007-2018, the relationship between manufacturing industry production and imports of intermediate goods was determined by the ARDL method.

Authors	Data used/Sectors	Method	Major findings
Çakar (1999)	1990 I-O	Import inverse matrix	It is observed that the total use of intermediate inputs increased in the manufacturing industry, agriculture, construction, transportation and communication, personal and vocational services and housing ownership sectors in 1995.
Çivi and Çakar (2000)	1985 and 1990 I-O	Import inverse matrix	It has been concluded that inter-industry links are weak due to the fact that key sectors in the manufacturing industry in Turkey are highly dependent on imports.
Aydın (2001)	1973, 1979, 1985 and 1990 I-O	Import inverse matrix	Wood-cork and furniture, paper products and printing-publication, chemistry, rubber-plastic, metal main industry and transportation vehicles industry were investment priority (key) sectors and despite the different industrialization strategies applied.; It has been concluded that the investment priority (key) sectors for the economy have not changed.
Yükseler and Türkkan (2006)	1998 I-O	Import inverse matrix	Sectors with high dependency on imported inputs; basic metal,furniture,coke and petroleum products, chemistry,electrical machinery ,plastic and rubber manufacturing sectors. The sectors with low dependency on imported inputs were determined as food-beverage, other non-metallic mineral products and tobacco sectors.
Ersungur and Kızıltan (2007)	1973, 1979, 1985, 1990, 1996 and 1998 I-O	Import inverse matrix	In the manufacturing industry, which has a key position in the economy, dependence on imports is high both before and after 1980, and this level continues to fluctuate.
Yılancı (2008)	1998 I-O	Import inverse matrix	It was concluded that agriculture, trade, transportation-communication and personal service sectors are key sectors of the economy.
Saygılı,Çihan,Yalçın and Hamisici (2010)	Survey 145 companies and 2002-2007	Panel data analysis	It has been shown that there has been an increase in the rate of imported inputs used in production in most of the industrial sectors, and the share of imports in the total raw materials and materials, which was 56,5% in 2002 in the manufacturing industry, increased by around 10% in a short period of 5 years and reached 61,8% in 2007..
Gökioğuşa and Akgül(2011)	1998 and 2002 I-O	Import inverse matrix	It was concluded that the basic metal industry for 1998 and the public services, services and other activities sector for 2002 were the key sectors. Wood and cork products for 1998, and clothing manufacturing sectors for 2002 were sectors with high production multipliers.

Authors	Data used/Sectors	Method	Major findings
Ersungur, Takım and Ekinçi (2011)	2002 I-O	Import inverse matrix	While the sectors with the highest backward linkage effect are "crude oil and natural gas extraction and related service activities", "office, accounting and information processing machinery manufacturing", "forestry, logging and related service activities", the sectors with the highest forward linkage effects are: "Manufacture of chemicals and products", "Basic metal industry", "Manufacture of machinery and equipment", "Manufacture of coke, refined petroleum products and nuclear fuel" sectors.
Kılıçkırımcı (2011)	2002 I-O	Import inverse matrix	It has been stated that in the key sectors, 22 EU member countries and Turkey show great similarity, and the Basic Metal Industry and Petroleum and Chemicals sectors are in the first two places in both Turkey and EU member countries. Considering the Rasmussen categories, it is understood that 5 out of 33 sectors in the Turkish economy are key sectors.
Fişmanoğlu and Yıcel (2012)	1998 and 2002 I-O	Panel data analysis	Sectors that have an impact on imports: wood, printing, basic metal, transportation vehicles sectors
Duman and Özgizer (2013)	1998 and 2002 I-O	Import inverse matrix	The import dependency levels in wholesale and retail trade, motor vehicles and household goods sectors are higher than in the manufacturing sectors
Çolak, Tokpunar and Uzun (2014)	1998-2012 I-O	AMG Estimator (Extended Average Group)	The highest sectoral import production are metal, motor vehicles, electrical machinery and textile
Bayrac and Doğan (2017)	2003:1 and 2012:12 TURKSTAT, ISIC Rev.3-2-digit sectoral import data	AMG Estimator (Extended Average Group)	It has been found that motor vehicles, machinery and equipment, basic metal sectors have the highest impact on the increase in import
Sönmeler, Akduğan and Gündüz (2017)	2003-2015 BEC classification data and real exchange rate	ADF Unit Root Test	A long term relationship was found real exchange rate and import of intermediate goods
Dinert and Işık (2021)	2007-2018 Turkish manufacturing industry data and capacity utilization rate	ARDL (Autoregressive Distributed Lag) and Hatemi-J asymmetric causality	As a result of the decrease in the real exchange rate, it has been concluded that companies import cheaper raw materials and increase their intermediate goods.

Table 3.1: Import dependency on Turkey – Empirical Literature Table

3.2 Global value chain and subcontracting

The concept of the global value chain (GVC) is a concept that covers all processes starting from the first thought stage of a good or service, including its design and delivery to the final consumer through different production stages, and after use, including after-sales support services, and explains how added value emerges at each stage. It can be defined as a production model (Kaplinsky and Morris 2000).

In the 1970s, macroeconomic problems such as the oil crisis, current account deficit and foreign exchange deficit emerged in many countries. As a solution to these problems, it has been put forward that liberal economic policies should be implemented, and an export-oriented industrialization strategy should be adopted instead of the import substitution industrialization strategy applied in the said period as an industrialization strategy. Thus, the pressure exerted by both international organizations and multinational companies to implement neo-liberal policies, especially in developing countries, has gradually increased. Thus, multinational companies aimed to expand their markets both locally and globally, as well as to increase their profitability by providing cost reductions (Jiang and Liu 2015)

Multinational companies restructured production on a world scale to overcome the crisis of the 1980s. As a result of the restructuring of capital, the change experienced in the internationalization and organization of production took place in different dimensions. The first dimension is foreign direct investment and mergers and acquisitions by multinational companies based on vertical integration. The second dimension is subcontracting practices, where production is spatially fragmented and certain parts are taken out of the company. With the acceleration of technological developments, an arrangement is created in the field of labor and terms of profit distribution to divide production processes into parts, in other words, to strengthen control by dividing production spatially (Kurtulmuş and Tanyılmaz 2014). Participation in the GVC shows how much that country contributes to the value produced globally. A country integrated into the global economy both uses imported inputs and supplies the inputs that other economies need to export. Thus, countries participate in global value chains in two ways.

These two forms of participation are expressed in the literature as backward and forward participation or links. In this context, domestic value added in gross exports of countries is called forward participation (DVA), and foreign value added in gross exports is called backward participation or links (FVA). The backward linkage of a sector shows the dependence of the sector on imported inputs in its production processes. Forward links are those for the export of that country to continue the production of other countries. In other words, backward linkage is when a country or firm imports raw materials or low-processed products; the forward link is when a country or firm makes the processed or finished product ready for distribution in world markets (Efogo 2020).

It is emphasized that the increase and tendency in the practices of internationalization of production and shifting it to developing countries is a distinctive feature of today's globalization or imperialism. It is stated that trade occurs with a well-organized and increasingly sophisticated value chain based on the center importing more goods and services from low-income countries (Dicken 2003).

In order to examine the changes in the organization of production and the spatial distribution of production, it is necessary to analyze certain stages of the commodity chain: (1) the input-output structure of the chain (the process of transformation from raw material to final product), (2) geographical scope, (3) governance structure, (4) institutional context, (5) promotion in the chain (Grefffi 2011). Governance analysis provides an understanding of how to control the chain when certain actors in the chain have more power than others (Grefffi 1994). A typology called producer-directed and buyer-directed is developing to describe the power relations within the chain. Another issue emphasized in the chain approach is the possibilities for companies to shift towards activities that produce higher added value within a certain chain. It includes spreading production towards developing countries by changes in the organization and geographical distribution of production. It includes the approaches that there may be developments in the country's development with the 'promotion' of the companies in the chain. How the economic progress of promotion in the chain determines the import dependency process of the country, along with the changes in the exchange rate and other institutional areas, the approaches about the country's debt level and the difficulties to be experienced in reaching the commodity have not received enough attention. However, there is no

evidence that promotion in the chain causes promotion in working conditions and social rights, on the contrary, it is seen that the natural structure of this process is shaped in this direction (Kurtulmuş and Tanyılmaz 2014).

The chain is defined as raw material, labor, and the links between them, observed when the production stages are followed backward until the inputs of a final consumable product are reached. Countries involved in production in the commodity chain form a hierarchical structure according to the added value they add to production; commodity chain analysis aims to understand how the hierarchical structure of the global capitalist economy is reproduced. The geographical position of the countries included in the commodity chain and the structural status of commodity production are essential points in observing the change in the international division of labor (Wallerstein 2000).

The position in the global value chain affects the development levels of the countries, and according to the specialization of the countries, a product can be in the first, middle or last stage of participation in the global value chain. While the economies that specialize in the first stages of production carry out raw materials or intangible assets such as design and research in the first stage of production, the countries that specialize in the last stage operate in the assembly of the final product or the marketing of the obtained product. In addition, countries that specialize in the middle stage of production carry out classical labor-intensive manufacturing industry activities (Çelik 2016).

Global Value Chains represent a type of labor division occurring within production networks, regardless of whether they are directly managed by transnational corporations. In these networks, geographically dispersed entities contribute to the creation of a product. Value chains involve the integration of “incomplete commodities” to form finished goods, which are subsequently sold and used beyond the chain. A product is considered an incomplete commodity if its value realization outside the chain is lower than within it. The assortment of products circulating within a value chain gains greater value through their combination, surpassing their individual worth due to their complementary nature. This complementarity underscores the significant role of various command mechanisms employed by lead firms in shaping the labor process (such as technology and labor standards) within the network. The frontier of a particular value

chain is reached when price mechanisms become detached from the control over production parameters, leading the product to transform into a commodity. (Smichowski Durand and Knauss 2016). Leading actors in the global value chain control labor and continue to regulate the geographically dispersed production area in order to centralize profits or remain in the Northern geography. The existence of labor and means of production in the value chain is not evenly distributed. Leading actors maintain profits with a vertical organization. In this transnational structure, these points seem to be the main driving force as unequal factor endowments between countries and institutional environment are affected by the feedback loop of the same dynamics (Smichowski Durand and Knauss 2016).

Alkın (2020) use the World Input-Output Database (WIOD) between 2000 and 2014. The ratio of domestic value- added and foreign value added of Turkey's exports in agriculture, manufacturing industry, and services sectors is calculated in the context of bilateral trade between the years 2000-2014. The results of the study show that the rate of domestic added value is higher in the exports of the agriculture and services sector and that the exports of the manufacturing industry contain higher foreign-added value compared to other sectors. Between 2000 and 2014, the domestic added value in the exports of the agriculture and services sector is around 85%. While the rate of foreign-added value in the manufacturing industry was approximately 16% in 2000, it was 22% in 2014. In this study, the World Input-Output Database (WIOD) was used between 2000-2014.

Gündoğdu and Saracaoğlu (2016) conducted an analysis of Turkey's involvement in Global Value Chains (GVCs), specifically focusing on backward integration (the foreign component of value added in exports) between 1995 and 2011 using the World Input-Output Database (WIOD). Their research reveals an increase in Turkey's foreign content of value added in exports during the specified period. When examining the sectoral patterns in manufacturing based on technological classification, it is evident that Turkey experienced a faster growth in the foreign content of value added in mid-high and high-tech sectors compared to mid-low and low-tech sectors, particularly in the 2000s. Among individual partner countries, Germany, China, Italy, and France play significant roles in contributing foreign value added to Turkey's exports. While Germany maintained the largest contribution until 2010, China became the top contributing country in 2010.

However, it is noteworthy that China's contribution primarily stems from low-tech industries such as textiles, which may not necessarily facilitate Turkey's advancement in GVCs. In this regard, integration into GVCs through technology-intensive sectors by leveraging technology imported from developed countries could potentially enhance Turkey's position in global markets.

I think that there are two points in the evaluations in Turkey. First of all, it is concluded that import dependency will be reduced with some incentives due to the lack of evaluation of Turkey's position in the international division of labor. Secondly, it is the emergence of different value-added intensities in the production stages of the product within the international commodity chain. While developed countries develop new products with high added value and specialize in producing these products, the specialization of countries like Turkey in products with standardized technology but which can be competitive based on low cost do not contribute to the structural transformation in foreign trade. However, it is far from changing the relative position in the international economy. Secondly, due to globalization, different stages of production chains can be moved to different countries, and specialization gains importance instead of specialization in individual products (Taymaz Voyvoda and Yılmaz 2011).

3.3. Import-dependency in developing countries

When exports expanded with rapid import growth, imports became more controversial for economic growth for developing countries. Therefore, both should be evaluated together. Thus, evaluating exports and imports together is extremely important in order to reach more accurate findings and give appropriate policy recommendations. Developing countries have attempted to reduce the import of goods and strengthen domestic firms with the import substitution strategy in the 1960s. It has been difficult for import substitution policies to be sustainable due to quantitative limitations and changes in the foreign exchange structure. The narrowness of the local markets of the developing countries and the lack of organization in the production structure could not improve the quality and diversity of the produced goods structure.

Arize (2002) examines the relationship between imports and exports in 50 countries during the 1973-1998 period with cointegration and structural break tests. Exports are dependent on imports by 57% in low-income countries, 58% in developing countries and 75% in developed countries. In other words, as the level of development of the countries increases, the dependence of exports on imports also increases. Cuihong and Jiansuo (2007) examined the dependence of China's exports on imports. The 2002 input-output table was used for the analysis. According to the results of the analysis, it was determined that the shares of direct vertical specialization and the shares of total vertical specialization were 66.6% and 71.4%, respectively. Compared to other countries, it is stated that the dependency ratio of China's exports to imports is high, while the direct and total vertical specialization rate of the USA was only 6.7% and 10.3% in 2002. It was emphasized that this phenomenon shows that China is still only an assembly base, not an independent producer of high-tech products (Cuihong and Jiansuo 2007). Alam (2012) questioned the relationship between final product exports, capital goods imports, and economic growth in Latin American countries, Mexico and Brazil, with cointegration analysis and found a very strong interaction between the variables.

Smachev et al. (2016) examined the dependence of Russian industrial companies on imports by applying a questionnaire to company managers of 658 technology-oriented manufacturing industry companies in September-October 2015. According to the results obtained, quantitatively, they stated that the import dependency in the manufacturing industry in Russia is quantitatively relatively small, especially compared to the levels of Western Europe. It has been concluded that approximately two-thirds of the companies participating in the survey are dependent on imports, mainly machinery and equipment imports, and that the main reason for imports is that similar products are not produced in Russia or that their quality is low, if any, and that they are not technologically sufficient.

Gandoy (2017), in his study on the import content of the global demand components in the Spanish economy for the period 1995-2011, emphasized that the import content experienced a serious decrease during the 2009 global crisis, but showed a significant increase in general between the 1995-2011 periods. It has been emphasized that the import dependency in the Spanish economy is higher than in many European countries, especially in high-tech sectors. Likewise, in the study, it has been argued that the reason

for the high import dependency in the Spanish economy is due to the participation of especially multinational companies in global value chains.

Overall, empirical studies are concentrated mainly on the quantity of goods imported by sectors. These studies include calculations on which sectors are import intermediate goods dependency and at what stage, and as a result, these imported goods are made up of propositions about the production of baskets within the country. Import intermediate goods dependency characteristics of developing countries are similar to Turkey. In general, export capacity is increasing by importing intermediate and capital goods.



Reference	Focus	Sample & Years	Data used	Major findings
Fujii (2000)	import dependency(Mexico)	1980-2000	input-output tables and import/export rates	import-growth in the context of developing countries, the fact that most of the exporting companies in Mexico focus on the assembly line prevents it from establishing a strong link between exports and the backlinks of the economy
Hayashi (2004)	import dependency (Indonesia)	1990-2003	input-output tables and import/export rates	He found that after the crisis, the dependence on imports decreased due to the decrease in growth factors other than export demand and the sharp decline in the rupiah value.
Rakotoarisoa, Iaffrae and Paschall (2011)	import dependency(Africa)	1960-2007	input-output tables and import/export rates	The core finding is that population growth, low and stagnating agricultural productivity, policy distortions, weak institutions and poor infrastructure are the main reasons for food import
Kumari (2015)	import dependency(India)	2014	input-output tables and import/export rates	For the Indian economy, the primary growth factor has been identified as increases in imported consumption rather than exports.
Banga (2016)	import dependency and Global Value Chain (India)	2015	input-output tables and import/export rates	He concluded that in sectors within the global value chain of India, high forward-linked sectors did not increase employment, while domestic workers were displaced in low backward-linked sectors
Chisari, Mastroiardi and Romero(2019)	import dependency(Brazil)	2017	input-output tables and import/export rates	Brazil would be the less affected by falls of commodities prices because its economy is more diversified and the manufacturing sector could be benefitted by reductions of prices of imported inputs. An increase of prices of imported commodities could have a negative impact on the economy.

Table 3.2: Empirical Literature on other DEEs

CHAPTER 4: DATA AND METHODOLOGY

4.1 Data Tables

Data source	Which Industries?	Which years?
Turkey input-output tables	All	2002 and 2012
World input-output tables	All	2000-2014
OECD	All	2000-2018
Comtrade	All	2000-2018
Turkstat and EVDS	import/export/GDP rates, composition of import	2000-2020

Table 4.1: The data used in thesis

4.2 Methodology

In this study, the input-output method was used to determine the imported input dependence of the Turkish economy after 2002. Input-output tables published by TURKSTAT were used as the data set. Input-output tables of 2002 and 2012 were analyzed comparatively in terms of imported input dependency, thus revealing the structural changes in imported input dependency over a 10-year period. The developments after 2012 are also analyzed within the framework of these trends. The production system is not considered as a whole in the input-output model. The economy is divided into sectors, and the possible results of the activities of each of the elements in the production system are revealed by showing the mutual links between these sectors. In this framework, determining the degree of import dependency of each sector by revealing the import structure of each sector separately constitutes a unique output of this study. With the input-output method introduced to the literature by Leontief, their direction and degree can be analyzed with inter-industry connections. Thus, demand projections and forward forecasts related to the economy can be made. In addition, in planning studies, it becomes possible to determine each sector's production level and clearly reveal its connections with other sectors. The input-output analysis examines the intermediary goods exchanges between these sectors based on sectors. The basic assumptions of the

input-output model are that sectors have constant input coefficients and that production exhibits constant returns to scale.

With Input-Output models, both direct and indirect imported intermediate-input quantities required by one unit of final demand for the products of a sector can be calculated. If the domestically produced part of the product of sector i , which is directly required for a unit production in any sector j , is denoted by a_{ij}^d and the imported part is denoted by a_{ij}^m , the total intermediate inputs provided by sector i from sector j ;

$$a_{ij} = a_{ij}^d + a_{ij}^m \quad (1.1)$$

can be expressed as. Here, a_{ij} ; It represents the element of matrix A (total (domestic + imported) input coefficients matrix) a_{ij}^d which is with domestic input coefficients; It can be calculated as follows to be represented by X_j , which is the production amount of sector j , and D_j , which is the amount of domestic input used in production:

$$a_{ij}^d = \frac{D_j}{X_j} \quad (1.2)$$

The imported input coefficients a_{ij}^m are; The production amount of sector j can be calculated as X_j and the amount of imported input used in production is shown as M_j as follows;

$$a_{ij}^m = \frac{M_j}{X_j} \quad (1.3)$$

The matrix A (Leontief matrix or technology matrix) in this equation can be divided into domestic and imported components using matrix notation. The reverse import matrices, which are created with the information that can also be obtained from Turkey's Input-Output tables, serve to measure the dependence of the economy on imports. The inverse import matrix for any year; it is calculated by multiplying the imported input coefficients matrix of that year with the inverse of the domestic input coefficients matrix of the same year. According to this;

$$A_T = A_M + A_D$$

A_T = total input coefficients matrix,

A_M = imported input coefficients matrix,

A_D = displays the native input coefficients matrix. (1.4)

If it is the reverse import matrix of and year;

$R = A_M \cdot [I - A_D]^{-1}$ total input coefficients matrix,

is displayed as.

The formula above is used to find the total imports of industries. According to this, total import values are obtained by adding end-use imports to an industry's imported intermediate input amounts. However, for the purpose of this study, the final demand and all other factors that will affect it are excluded. Column sums of the inverse import matrix;

$$R_j = \sum_{i=1}^n r_{ij} \quad (j = 1, 2, \dots, n) \quad (1.5)$$

Returns the sum of the import requirements for the output of all industries, directly and indirectly, when final demand for industry goods increases by one unit. In other words, it gives the sum of the number of imported inputs that industry j will purchase from all industries in order to produce one more unit. These totals represent the backward linkage effects of industries on imports, and as R_j increases, the dependence of the economy on imports increases, while in the opposite case, dependency on imports decreases.

The row sums of the reverse import matrix are;

$$R_i = \sum_{j=1}^n r_{ij} \quad (j = 1, 2, \dots, n) \quad (1.6)$$

It is shown as, and when the final demand for the goods of all industries increases by one unit, it shows how much industry imports will be required for the production to meet this demand increase. In other words, row totals reflect the forward linking effects of imports. Thus, when there is a general increase in final demand, R_i will show how much of which industrial goods will have to be imported.

CHAPTER 5: ANALYSIS FINDINGS

I will explain the analysis findings in 3 different stages. First of all, I work on imported intermediate input dependency using the Input-Output tables announced by TURKSTAT in 2002 and 2012. I reached the same results with the forward and backward correlation coefficient obtained from the 2002 Input-Output table used by İnançlı, Konak (2011) and Füsunoğlu and Yücel (2008). There are only partial differences due to the conversion from current values to real values, but the trend is the same. I reached similar results with the coefficients obtained based on the 2012 Input-Output table used by Yükseler (2019).

Secondly, I will analyze Turkey's tendency towards imported intermediate input dependency between 2000 - 2014 using World Input-Output tables. I used the data for each year between these years. Only 2000, 2007, and 2014 data were used by Ünal (2020).

Third, I will determine the position of Turkey in the global value chain. Then I will use external value-added data in Turkey's total exports by using TIVA data published by OECD. As a result, I will learn the share of foreign added value and have orientation knowledge on imported input dependence. I update this study, which was carried out by Akat (2019) until 2015, with newly disclosed data.

According to the Import Input-Output Table of 2012, of the total imports of 448.3 billion TL, 312.5 billion TL goes to intermediate input use and 135.8 billion TL goes to final use. Accordingly, the share of intermediate input use in total imports was 69.6% and the share of final use was 30.4%. In 2002, the share of intermediate input use in total imports of 84.5 billion TL was 63.7% and the share of final use was 36.5%. It is possible to say that the distribution of imports between intermediate input and final use has changed in favor of the use of intermediate inputs. The row and column sums of the import inverse matrix form a general measure in terms of imported input dependence. Presenting the coefficient data as in Table 6.1 also gives important clues about the structure of imported input dependency. Thus, it can be easily seen which sectors are more dependent on imported inputs. It is also possible to say that the sectors mentioned in the supply industry part of the table are the fields that are the source of imported input dependence.

Sectors	Backward	Forward	Backward	Forward	Sectors	Backward	Forward	Backward	Forward
	Indices (2002)	Indices (2002)	Indices (2012)	Indices (2012)		Indices (2002)	Indices (2002)	Indices (2012)	Indices (2012)
Products of agriculture, hunting and related services	0.012	0.004	0.002	0.022	Other non-metallic mineral products	0.009	0.015	0.015	0.018
Products of forestry, logging and related services	0.002	0.000	0.000	0.001	Basic metals	0.324	0.238	0.129	0.178
Mining and quarrying	0.054	0.005	0.014	0.075	Fabricated metal products, except machinery and equipment	0.014	0.045	0.040	0.014
Food, beverages, tobacco products	0.012	0.020	0.052	0.037	Electrical equipment	0.013	0.009	0.038	0.017
Textiles, leather and related products	0.001	0.001	0.074	0.075	Machinery and equipment n.e.c.	0.054	0.065	0.098	0.086
Wood and of products of wood and cork	0.016	0.025	0.066	0.064	Wood, textiles, rubber and semi-finished	0.136	0.142	0.181	0.177
Paper and paper products	0.145	0.129	0.176	0.187	Other transport equipment	0.045	0.048	0.068	0.063
Coke and refined petroleum products	0.023	0.056	0.055	0.040	Furniture and other manufactured goods	0.002	0.018	0.018	0.012
Rubber and plastic products	0.015	0.039	0.054	0.025	Electricity, gas, steam and air conditioning	0.001	0.006	0.011	0.005
Chemicals and chemical products	0.216	0.164	0.296	0.345	Land transport and pipeline transport services	0.012	0.010	0.004	0.001
Printing and recording services	0.001	0.018	0.015	0.001	Water transport services	0.062	0.063	0.013	0.002
Financial services (excluding insurance and private pension)	0.000	0.002	0.000	0.002	Air freight services	0.002	0.005	0.026	0.009

Table 5.1: Sectors with high backward and forward linkage coefficients for imports

Source: TURKSTAT, 2002 and 2012 Input-Output Tables

Although “basic metals” was the sector with the highest level of both coefficients in 2002, it draws attention with the decrease in both backward and forward linkage coefficients in 2012. “Chemicals and chemical products”, on the other hand, was the second sector with the highest correlation coefficients in 2002, and rose to the first rank in 2012 with the increase in both coefficients. In 2012, both coefficients increased in “paper and paper products” and “Motor vehicles, trailers (trailer) and semi-trailers (semi-trailer)” sectors numbered , which are among the other sectors with the highest import linkage coefficients. Although the coefficients in the “textile, clothing, leather and related products” sector were relatively high, they remained at approximately the same level for the two periods.

The backward linkage coefficient of the sector “Insurance, reinsurance and pension fund services, excluding compulsory social security”, which has the second highest increase in the linking coefficients of imports, from 0.0008 to 0.1038; the forward link coefficient increased from 0.0017 to 0.1013. The findings in Table 6.1 show that, in the 10-year period, there has been an increase in the import dependency in the Turkish economy primarily due to the increase in the backward linkage coefficients of imports, and that the production of the sectors that make up the manufacturing industry has become increasingly dependent on imports.

Imported Intermediate Input Ratio						
Sectors	The Share of total imported intermediate (%)		The Share of Total Production Value (%)		The share of imports in the intermediate sales of the sectors (%)	
	2002	2012	2002	2012	2002	2012
Products of agriculture, hunting and related services	6.8	14.7	2.3	5.1	6.5	12.2
Products of forestry, logging and related services	4.7	9.8	0.6	1.5	13.6	11.7
Mining and quarrying	13.1	18.5	5.1	7.1	63.5	74.6
furniture and other manufactured goods	41.8	21.2	31.4	13.1	27.2	28.4
Textiles, leather and related products	17.7	18.6	12.9	12.3	11.6	14.5
Wood and of products of wood and cork	24.1	21.7	17.9	13.9	8.7	19.6
Paper and paper products	24.9	40.1	18.1	26.8	23.4	33.9
Motor Land Transport	24.7	38.5	18.6	29.4	43.2	56.7
Coke and refined petroleum products	62.4	83.8	50.4	68.3	26.5	51.7
Chemicals and chemical products	27.1	48.3	18.8	32.4	46.8	62.3
Rubber and plastic products	30.4	40.9	22.2	28.7	15.1	18.8
Basic metals	30.1	39.6	22.8	31.5	41.5	33.8
Other transport equipment	24.1	31.9	12.8	17.6	36.5	55.9
Water Transport	24.8	16.8	9.6	8.5	37.6	1.5

Table 5.2: The share of total intermediate (%), the share of total production value (%), total share of imports in the intermediate sales of the sectors

Source: Turkstat Input-Output Table (2002 and 2012)

I will describe import dependence using three different columns. It is based on the Input-Output Table.

The first column represents the extent of a sector's direct import requirements, indicating the level of import dependence in terms of imported inputs. It is calculated by dividing

the column sum of the import coefficient matrix by the column sum of the input-output coefficient matrix.

The second column represents the share of imported inputs in the total production value of each sector. It indicates the proportion of input imports in the overall output of a sector. This column is equal to the column sum of the import coefficient matrix.

The third column represents the portion of inputs provided by each sector to other sectors that is met through imports. It shows the extent to which a sector relies on imported inputs to fulfill its inter-sectoral supply of inputs.

Based on the first column, it is possible to analyze the import dependence of sectors in terms of inputs. In 2012, compared to 2002, except for the wood and wood products and furniture sectors within the manufacturing industry, there has been an increase in the import dependence ratios in other manufacturing sectors. This indicates an overall increase in import dependence in the manufacturing industry.

In 2012, the top three sectors with the highest share of imported inputs in the total input were petroleum and petroleum products (83.8%), chemicals and chemical products (48.2%), and rubber and plastic products (40.8%). It can be observed that the chemicals and chemical products sector consistently ranks among the sectors with the highest share of imported intermediate inputs and the highest import dependence ratio in both periods.

When examining the second column, which shows the share of imported inputs in the total production of sectors, it can be observed that in 2012, the sector with the highest share of imported inputs is the petroleum and petroleum products sector, accounting for 68.2% of its production. Following the petroleum and petroleum products sector, the sectors with the highest use of imported inputs in their production are chemicals and chemical products (32.4%), primary metals (31.4%), and motor vehicles (29.5%).

The third column represents the proportion of inputs provided by each sector to other sectors that are met through imports. The increase in imports by these sectors is driven by both increased demand for their own products and increased demand in sectors that

heavily rely on imported intermediate inputs. In 2002, the sectors that provided the highest share of imported intermediate inputs were listed in order, starting with chemicals and chemical products. Accordingly, the chemicals and chemical products sector primarily used the imported intermediate inputs in its own production, followed by the sectors of rubber and plastic products and wood products.

2002		2012	
The sectors that provide the most imported intermediate input	The sectors that receive the most imported intermediate inputs	The sectors that provide the most imported intermediate input	The sectors that receive the most imported intermediate inputs
Chemicals and chemical products	Chemicals and chemical products, Rubber and plastic products, Wood and of products of wood and cork	Machinery and equipment n.e.c.	Machinery and equipment n.e.c., Motor Land Transport, Other transport equipment
Basic metals	Basic metals, Fabricated metal products, Furniture and other manufactured goods	Mining and quarrying	Coke and refined petroleum products, Mining and quarrying, Electricity, gas, steam and air conditioning
Mining and quarrying	Coke and refined petroleum products, Electricity, gas, steam and air conditioning, Mining and quarrying	Chemicals and chemical products	Chemicals and chemical products, Rubber and plastic products, Paper and paper products
Motor Land Transport	Motor land transport, Construction, Land Transport	Motor Land Transport	Motor land transport, Machinery and equipment nec, Other transport

Table 5.3: The share of imports in the intermediate sales of the sectors (%)

Source: Turkstat Input-Output Table (2002 and 2012)

In 2002, the sectors that provided the highest share of imported intermediate inputs were listed in order, starting with chemicals and chemical products. Accordingly, the chemicals and chemical products sector primarily used the imported intermediate inputs in its own production, followed by the sectors of rubber and plastic products and wood products. In 2012, among all the sectors providing inputs to other sectors, the sector with the highest share of imported intermediate inputs was the “machinery and equipment” sector. The

imports conducted by this sector were primarily used in its own production. The sector that demanded the most imported intermediate inputs from the “mining and quarrying” sector, ranked second, was the “petroleum refining” sector. Therefore, sector-level industrial policies aimed at reducing imports should focus on the “petroleum refining” sector, which is the primary sector that actually demands these imported intermediate inputs, rather than the “mining and quarrying” sector that conducts the imports. However, it is important to note that except for imports resulting from the inadequacy of a country’s natural resources, support should be given to production processes that can be produced domestically and may be more profitable compared to imports. In this study, the imported input dependency of the Turkish economy after 2002 was analyzed. In the analysis made with the input-output model, the three sectors with the highest import backlink effect are; coke and refined petroleum, plastics and rubber are the main metal sectors. After 2012, the imported input dependency of the coke and refined petroleum sector decreased slightly. The three sectors with the highest forward linkage effect are; chemistry, basic metals sectors, and machinery and equipment. In other words, the dependency on imported inputs arises mostly from the demand for the inputs of these three sectors. These results seem to be compatible with the study of Yükseler and Türkan (2006).

The basic metal sector is in a position with both forward and backward linkage effects. Therefore, investments to be made in this sector will have a reducing effect on imported input dependency. In this way, the dependence on imported inputs of the wood-cork-furniture and fabricated metal industries, which demand intensive input from the basic metal sector, will be reduced. Results related to these sectors also support the study of Füsunoğlu and Yücel (2008). Another source of imported input dependency is the chemical industry. The forward linkage of the chemical industry tends to increase from 2002 to 2012. However, imports of the chemical industry tend to stabilize after 2012, but this effect needs to be reduced. The increase in domestic production of the chemical industry will reduce the dependence on imported inputs of rubber-plastic and textile-clothing-leather industries, which use intensive inputs from the chemical industry.

Years	Chemicals and chemicals product	Basic Metals	Motor Vehicles and trailers and semi-trailers	Machinery and equipment nec.
2000-2009 (Average)	4.9	13.8	9.2	4.2
2010	4.8	12.1	8.6	4.3
2011	4.8	13.5	8.6	4.4
2012	5.2	13.3	7.5	4.4
2013	5.1	12.4	7.8	4.3
2014	5.1	12.1	7.8	4.2
2015	5.2	11.3	8.8	4.3
2016	5.1	11.2	9.2	4.3
2017	5.5	12.2	10.1	4.4
2018	5.6	13.1	9.9	4.3
2019	5.8	11.2	9.6	4.2
2020	6.2	11.3	9.4	4.7
2021	6.6	14.2	8.1	4.6
2022	6.6	12.8	7.8	4.5

Table 5.4: The share of the first four sectors with high import dependency in the total economy (%)

Source: Turkstat

The information regarding the shares of sectors in the total economy based on the value of sales is presented in Table 5.4. I have examined the share of sectors, namely chemicals and chemical products, basic metals, machinery and equipment nec., and motor vehicles, in the total economy according to the forward linkage indices of the 2002 and 2012 Input-Output Tables, focusing on their high import of intermediate inputs.

According to this analysis, it can be observed that the sectors of basic metals, chemical products, and motor vehicles, which are highly dependent on imported intermediate inputs, have significant shares in the overall economy. This situation indicates a high reliance on imported intermediate inputs, which, in turn, increases the demand for imported intermediate goods. Additionally, it leads to an increase in the current account deficit, contributing to the country's overall trade imbalance.

5.1 Intermediate input dependence of Turkish economy sectoral production (with World Input Output Tables)

In this section, the National Input-Output Table (NIOT) of Turkey, which is part of the World Input-Output Database (WIOD), was utilized. The World Input-Output table is constructed based on three sources: national accounts statistics (NAS), supply-use tables (SUTs), and international trade statistics (ITS). In some instances, although SUTs for a specific year were available, they were not used due to numerous errors or inconsistencies that rendered them unreliable. Additionally, for certain non-EU countries, SUTs were unavailable, and only IOTs (Input-Output Tables) were accessible. For these countries, a conversion from IOT to SUT was performed by assuming a diagonal supply table at the product and industry levels of the original national table, which often provides more detailed information than the WIOD list. Time series of SUTs are derived using two price concepts: basic prices and purchasers' prices. Basic price tables reflect the costs associated with production borne by the producer, whereas purchasers' price tables represent the amount paid by the purchaser. Only NAS and ITS data are available, and based on this data, the input-output tables are extended up until 2014.

Data for the period 1995-2014 was collected for various series, including total exports, total imports, gross output at basic prices for 35 industries, total intermediate usage by 35 industries, final expenditure at purchasers' prices (private and government consumption and investment), and total changes in inventories. This data was sourced from National Statistical Institutes, as well as OECD and UN National Accounts statistics. National SUTs are denominated in national currencies and need to be standardized for the WIOT (World Input-Output Tables). This is accomplished by using official exchange rates from the IMF. Bilateral international trade data in goods is obtained from the UN COMTRADE database, which includes bilateral exports and imports categorized by commodity and partner country at the 6-digit product level (Harmonized System, HS). The calculations used for constructing the international USE (Use tables) are based on import values.

There are two different types of input-output tables as compiled in WIOD in Release 2013 and compiled in Release 2016. The input-output tables compiled in 2013 consist of 35 sectors and cover 40 countries for the years 1995-2011. The input-output tables compiled

in 2013 are classified according to ISIC Rev.3. The input-output tables compiled in 2016 consist of 56 sectors and cover 43 countries for the years 2000-2014. Input-output tables compiled in 2016 are classified according to ISIC Rev.4 (Timmer et al. 2015: 577-580).

The sectoral import requirement ratios calculated for the Turkish economy by using the input-output tables are given in Table 13. The sectoral import requirement ratio is derived from the sum of the import inverse matrix (R) columns and also shows the total backward linkage effect.



Years	Food products, beverages and tobacco products	Textiles, wearing apparel and leather products	Coke and refined petroleum products	Paper and paper products	Chemicals and chemical products	Rubber and plastic products	Basic metals	Machinery and equipment n.e.c.	Manufacturing of computers, electronic and optical products	Motor vehicles, trailers and semi-trailers
2000	0.12	0.16	0.38	0.2	0.23	0.23	0.24	0.19	0.29	0.25
2001	0.12	0.17	0.38	0.22	0.24	0.23	0.25	0.21	0.29	0.24
2002	0.11	0.18	0.41	0.22	0.25	0.25	0.25	0.22	0.31	0.29
2003	0.12	0.19	0.44	0.22	0.26	0.27	0.27	0.24	0.28	0.31
2004	0.13	0.19	0.45	0.23	0.26	0.27	0.31	0.25	0.33	0.33
2005	0.13	0.2	0.48	0.23	0.28	0.29	0.35	0.26	0.35	0.36
2006	0.15	0.21	0.49	0.24	0.29	0.31	0.36	0.29	0.38	0.38
2007	0.16	0.22	0.51	0.25	0.33	0.34	0.38	0.32	0.41	0.41
2008	0.16	0.21	0.52	0.26	0.33	0.28	0.44	0.31	0.44	0.39
2009	0.17	0.22	0.51	0.25	0.33	0.31	0.41	0.3	0.44	0.39
2010	0.17	0.22	0.49	0.26	0.34	0.32	0.41	0.32	0.45	0.4
2011	0.18	0.23	0.47	0.26	0.33	0.33	0.42	0.32	0.43	0.41
2012	0.18	0.23	0.46	0.26	0.34	0.34	0.43	0.33	0.42	0.4
2013	0.19	0.24	0.44	0.27	0.34	0.35	0.42	0.32	0.43	0.41
2014	0.19	0.24	0.43	0.28	0.34	0.38	0.42	0.33	0.42	0.41
Percentage (%) change between 2000-2014	58.3	50.1	13.5	40.2	47.8	65.2	75.1	73.6	66.6	64.1

Table 5.5: Import Requirement Ratio of Sectoral Production in Turkey

Source: 2000-2014 World Input-Output Tables

According to Table 5.2, sectors with high import requirement rates after the manufacturing industry: basic metals, rubber and plastic products, electrical equipment, machinery and equipment.

In 2002, for one US dollar of product, the value of imported intermediate goods required was USD 0,11. This value increased to USD 0,19 in 2014. The textile industries' dependency on intermediate goods was 0,18 in 2002. Dependency on imported intermediate goods raised to 0,24 in 2014. The textile sector, which is a labor-intensive sector, was an important place among those targeted by the state in the latest development

plans to reduce the import rate. Accordingly, although dependency rate increased in textile sectors, it was lower than those of the medium and high-tech industries.

Low and medium-tech sectors showed a significant reliance on imported intermediate goods, particularly in the medium and high-tech industries. For the chemical and chemical products industries, each US dollar of product required USD 0.25 worth of imported intermediate goods, which increased to USD 0.34 in 2014. The computer and electronic sectors exhibited the highest dependency on imported intermediate goods, with a notable change of around 4% between 2000 and 2014. In the machinery industries, the import dependency for intermediate goods rose from USD 0.28 to 0.33 between 2002 and 2014.

The automotive industry holds a vital position in the economies of industrialized countries, acting as a driving force due to its close connection with various sectors. It serves as the main purchaser in fundamental industry branches such as iron-steel, petro-chemistry, and rubber, while also fostering technological advancements within these sectors. In Turkey, the automotive industry, which encompasses motor vehicles, trailers, and semi-trailers, is one of the most dynamic sectors. Historically, the industry developed through import substitution industrialization until the 1980s. The Turkish automotive industry occupies a significant role in global automotive production but exhibits import dependency on intermediate goods. In 2002, the production of one US dollar of product required USD 0.28 worth of imported intermediate goods. Import dependency in the industry reached record levels during the period of 2002-2007, peaking at USD 0.41 and further increasing to USD 0.42 between 2007 and 2014.

In this section, by using the national input-output tables of Turkey for the years 2000-2014 in the WIOD, the import-intermediate input dependence of sectoral production in the Turkish economy is analyzed with input-output models. According to the findings obtained from the input-output analysis, the sector with the highest import dependency on intermediate inputs in 2000 and 2008 was the manufacturing of coal and refined petroleum products. While the need for imported intermediate inputs in this sector was 0.38 in 2000, this ratio was 0.53 in 2008. By 2014, the import intermediate input requirement ratio of this sector decreased to 0.29. Therefore, the need for imported intermediate inputs in this sector has decreased significantly. In 2014, the sector with the

highest dependency on imported intermediate inputs was the manufacturing sector of computers, electronic and optical products. While the import intermediate input requirement ratio of this sector was 0.30 in 2008, this ratio increased to 0.43 in 2014 with a serious increase. When the findings obtained as a result of the analysis are evaluated in general, the sectors with the highest rate of imported intermediate input requirement are the sub-sectors of the manufacturing industry and the need for imported intermediate input in the manufacturing industry has increased throughout the period. According to this study, the sub-sector with the lowest need for imported intermediate inputs in 2000, 2008 and 2014 is forestry and logging sector. The rate of import intermediate input requirement in this sector was 0.02 in 2000, 0.03 in 2008 and 0.03 in 2014. The sectors with the lowest need for imported intermediate inputs were agriculture and service sectors throughout the period. In general, in the context of the main sectors, the sectors with the highest need for imported intermediate inputs are the manufacturing industry, energy and construction sectors. When the findings obtained in this study, which was conducted to examine the import intermediate input requirement ratio of sectoral production in the Turkish economy, are evaluated in general; In the Turkish economy, it has been observed that the import dependency in capital and medium-high technology-intensive qualified sectors is higher than in other sectors and the import dependency increases throughout the period. Similarly, the sectors with high forward linkage effects are the capital and medium-high technology-intensive sub-sectors of the manufacturing industry. In agriculture and services sector, both backlink effects and forward linkage effects are lower than other sectors.

5.2 The Effects of the global value chain on Turkey's import level and production structure

Traditional foreign trade statistics and analysis methods are insufficient to observe the changes in trade flows due to global value chains and vertical specialization. The most important reason for this is that if a country exports a good that includes intermediate goods imported in the said statistics, the said imported inputs are included in the calculation twice in both the import and export of the country. Therefore, many goods that seem to be exported from a country actually include the value of intermediate goods

imported by that country in other countries, that is, foreign added value. This double calculation error can exaggerate net exports, both the import and export data of countries are far from reflecting domestic and foreign added values, and it makes it difficult for us to see how much domestic added value contributes in the definition of goods with a comparative advantage. In order to prevent this situation, it is necessary to determine the comparative advantage of the countries at every stage of the global value chain, from the raw material to the final product of the production process of a good, and to decompose the added value added. In order to reduce the double calculation error in trade statistics and to observe who produces what to whom in the world economy, new analysis methods and statistical indicators that separate the domestic and foreign value-added content of each country's exports are needed. OECD-WTO TIVA (Trade in Value Added) data helps us in this situation. In order to analyze the effects of global value chains on Turkey's foreign trade and production structure, the Value Added in Trade (TIVA) and Global Value Chains Indicators databases created in cooperation with OECD and WTO were used in this study. The TIVA database was created based on a multi-country and multi-sectoral input-output model for 61 countries and 34 sectors. Regarding the extent to which a country is integrated into its production networks, the GVC participation index reveals the importance of vertical specialization and the extent to which a country is involved in a vertically fragmented production process, while the length of global value chains is a complementary indicator showing the average number of production steps required to produce a product. (OECD, 2021). The index of length of GVCs makes it possible to analyze trade patterns in more depth as well as a country's gains from trade. In order to determine the position of the Turkish economy in global value chains, a reference country group with different characteristics has been formed in order to make a comparative analysis. The said group includes the average of developed countries (USA, Germany, United Kingdom), Latin American country (Brazil), Asian countries (India, Korea), Transition economies (Hungary, Greece) and OECD countries' average rate.

For a more in-depth analysis of Turkey's role in global value chains, indicators specific to global value chains such as "Forward and Backward Participation Index to Global Value Chains" and "Distance to Final Demand" are used in this study. The index of forward and backward participation in global value chains, which is the first of these

indicators, is used to describe the extent to which a country is integrated into global value chains. Countries are involved in global value chains both as users of foreign inputs and as suppliers of inputs used in exports of other countries, and both of these elements are included in the index.

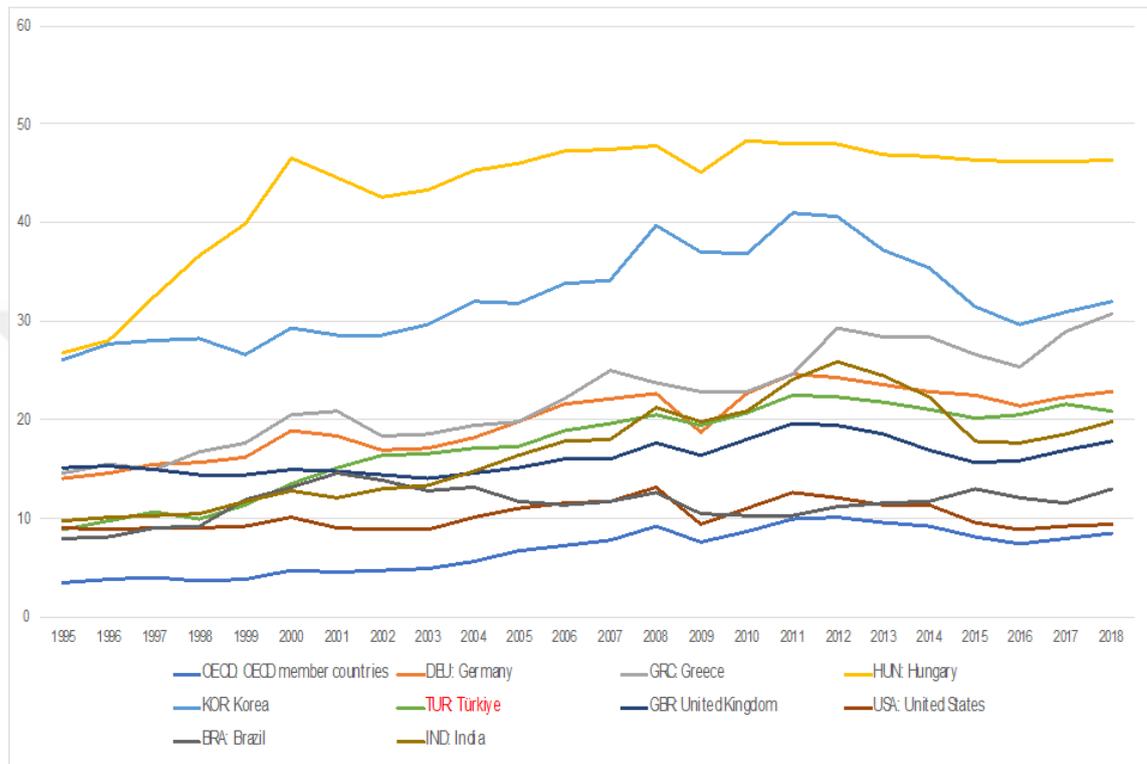


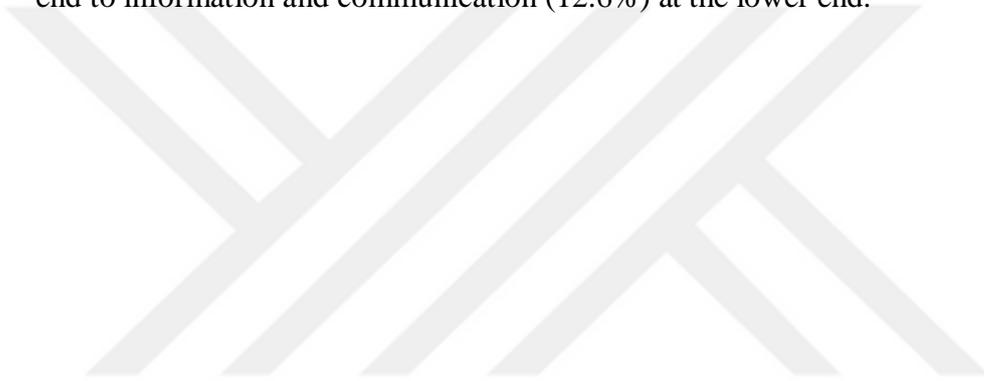
Figure 5.1: Backward participation in GVCs: Foreign value-added share of gross exports, by value added origin country

Source: OECD-TIVA

According to Figure 5.1 the share of imported inputs used in Turkey’s exports, that is, the level of vertical specialization, has changed significantly from 8.82% in 1995 to 20.9% in 2018. Within this period, 2012 had the highest rate with 22.6%. A continuous increase was experienced between 1995 and 2012. However, after 2012, there has been a decrease, albeit at a partial level. In other words, while the national value-added ratio in Turkey’s exports has decreased since 1995, the foreign value-added ratio has increased. This ratio remains relatively low when compared to the average of OECD countries. The most important reason for the relatively higher increase in the retrospective participation rate is the significant increase in the share of imported inputs used in exports, thus the foreign

value-added ratio. The last TIVA indicators recognize that there has been a slowdown in global value chain integration since 2008 financial crisis but, in general, foreign value added in trade increased between 2016 and 2018. During this period, the foreign content of Turkey's export is determined to have increased from 20.5% to 20.9%. The foreign content of export in 2018 was 0.4 % points higher compared to 2008. Besides, the average foreign content of OECD is estimated around 27.9%.

This figure 5.2 shows that Turkey's domestic value added was driven by foreign final demand in 2008 around 18%. Then, This rate increased to 22.8% in 2018. By industry, the shares ranged from motor vehicles (74.6%) and basic metals (60.3%) at the higher end to information and communication (12.6%) at the lower end.



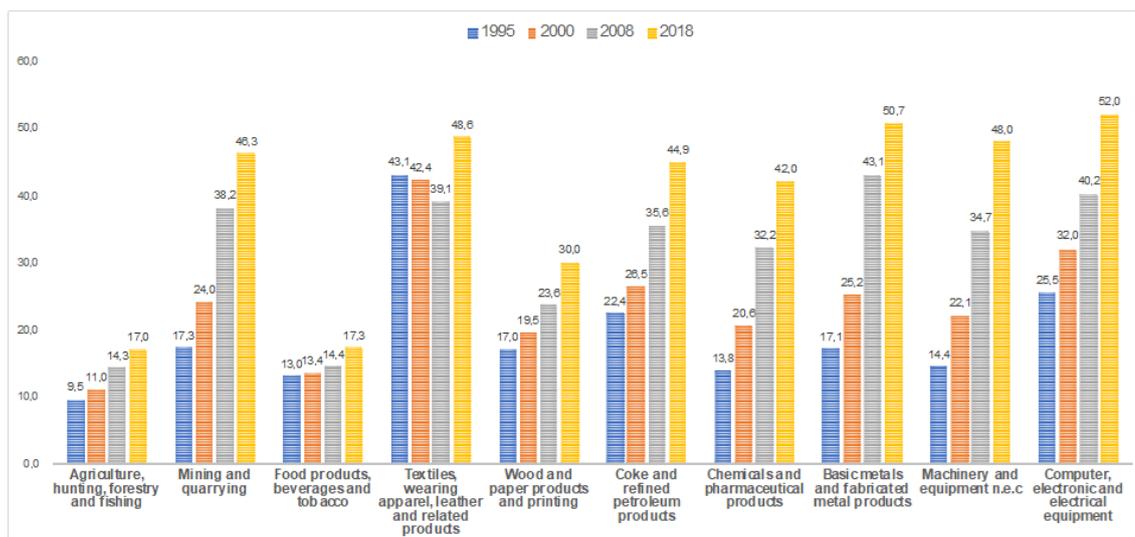


Figure 5.2: Turkey-domestic value added in foreign final demand

Source: OECD TIVA

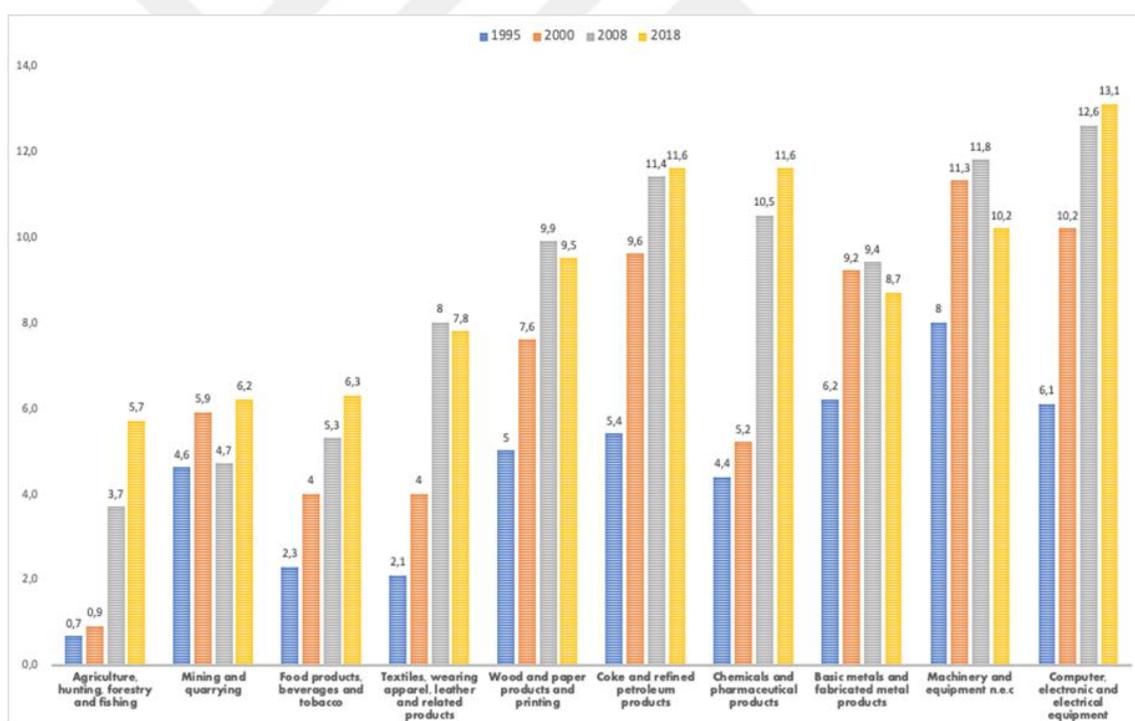


Figure 5.3: Turkey foreign value-added content of gross export

Source: OECD TIVA

Coke and refined petroleum products (64.3%), electrical equipment (35.2%) and motor vehicles (31.6%) were the most foreign value-added industries. Wholesale and retail trade

generated the greatest source of domestic value-added content of export in 2018, accounting for 10.7% of gross exports, followed by transport and storage (10.3%) and textile and apparel (9.9%). The most foreign content in total export occurred from motor vehicles (3%).

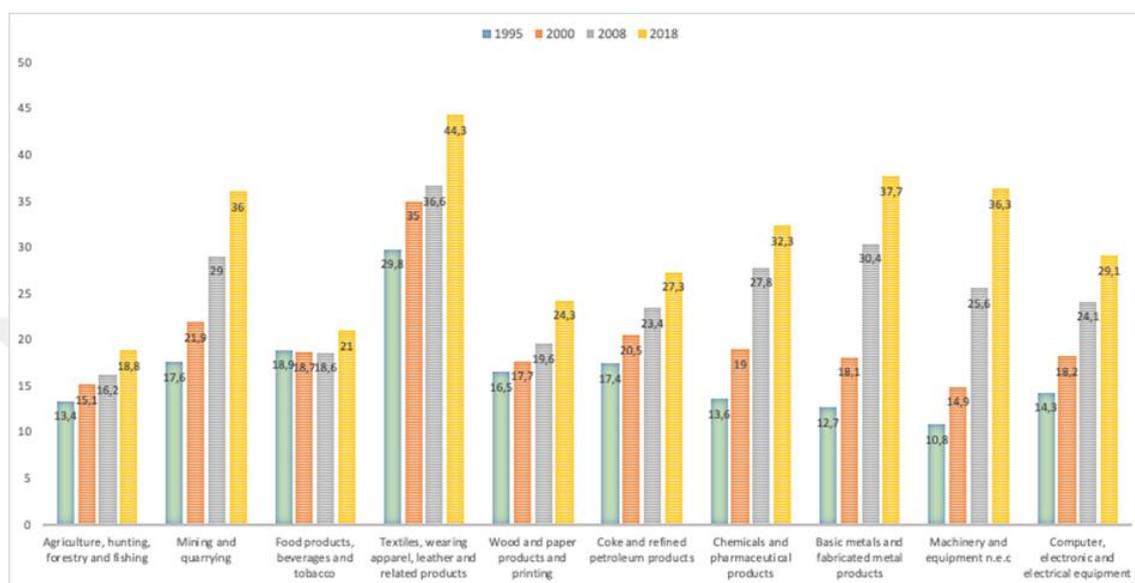


Figure 5.4: Turkey imported intermediate inputs used for export, by industry-origin of import

Source: OECD TIVA

Total value of Turkey's import of intermediate goods and services was embodied in export around 32.2% in 2018, significantly below the OECD average of 47.9% and above the share in 2008 (27.1%). The highest shares of intermediate imports used in Turkey's exports were motor vehicles (60.7%), textiles and apparel (44.3%) and basic metals (40.2%).

Turkey utilizes inputs or intermediates from foreign countries to produce partially exported output, forming backward linkages. Additionally, Turkey's exported inputs are utilized by its direct partners to produce their own exports, indicating forward linkages. These trade flows are closely intertwined with Global Value Chains (GVCs) as they involve the exchange of intermediates among GVC firms located in different countries, specializing in specific stages of production rather than the entire process of a good's creation (UNCTAD 2013). In 2015, Turkey's combined backward and forward linkages

with its trading partners accounted for 30 percent of gross exports. Backward GVC participation represented nearly 17 percent of gross exports in 2015, declining from 20 percent before the Great Recession but increasing from 10 percent in 2000. Turkey’s forward GVC participation contributed to 13 percent of gross exports in 2015, exhibiting gradual growth in recent years. The slight decrease in backward GVC intensity since the Great Recession aligns with global trends and reflects the maturation of GVCs to some extent. However, Turkey’s remarkable dynamism in backward participation during the 2000s indicates active engagement of Turkish firms in joining new GVC networks at that time. (OECD 2020).

Years	Added Value in Imports in Exports (%)
2005	17.3
2006	19.0
2007	19.6
2008	20.5
2009	19.4
2010	20.7
2011	22.6
2012	22.4
2013	21.7
2014	21.1
2015	20.1
2016	20.5
2017	21.6
2018	20.9

Table 5.6: Value-Added in Imports in Exports

Source: OECD

The Table 5.3 shows the data on the share of value added of imports in exports calculated by the OECD. It is shown how dependent Turkey is on imports in exports. Accordingly, approximately 20.9 US dollars of Turkey’s exports of 100 US dollars in 2018 is dependent on imports. In other words, the added value of 79.1 units of production of 100 units is obtained from domestic sources.

5.3. Developments in imports after 2014

The developments in imported input dependency between 2002 and 2012 were examined and the findings were compiled in the previous section. I brought my research year to 2014 by examining the World Input-Output Tables to examine the post-2012 trends in imported input dependence. However, for the developments after 2014, it has been compiled from the Import Tables by Economic Activities (ISIC, Rev.4) published by TURKSTAT (2022). The data here reflect the total imports of each sector, not the inputs that each sector imports from other sectors. In this respect, although net dependency relations are not revealed as in the input-output analysis, it is meaningful in terms of showing the import tendency of the sectors. Imports by sectors after 2014 are presented in the Table 6.5.

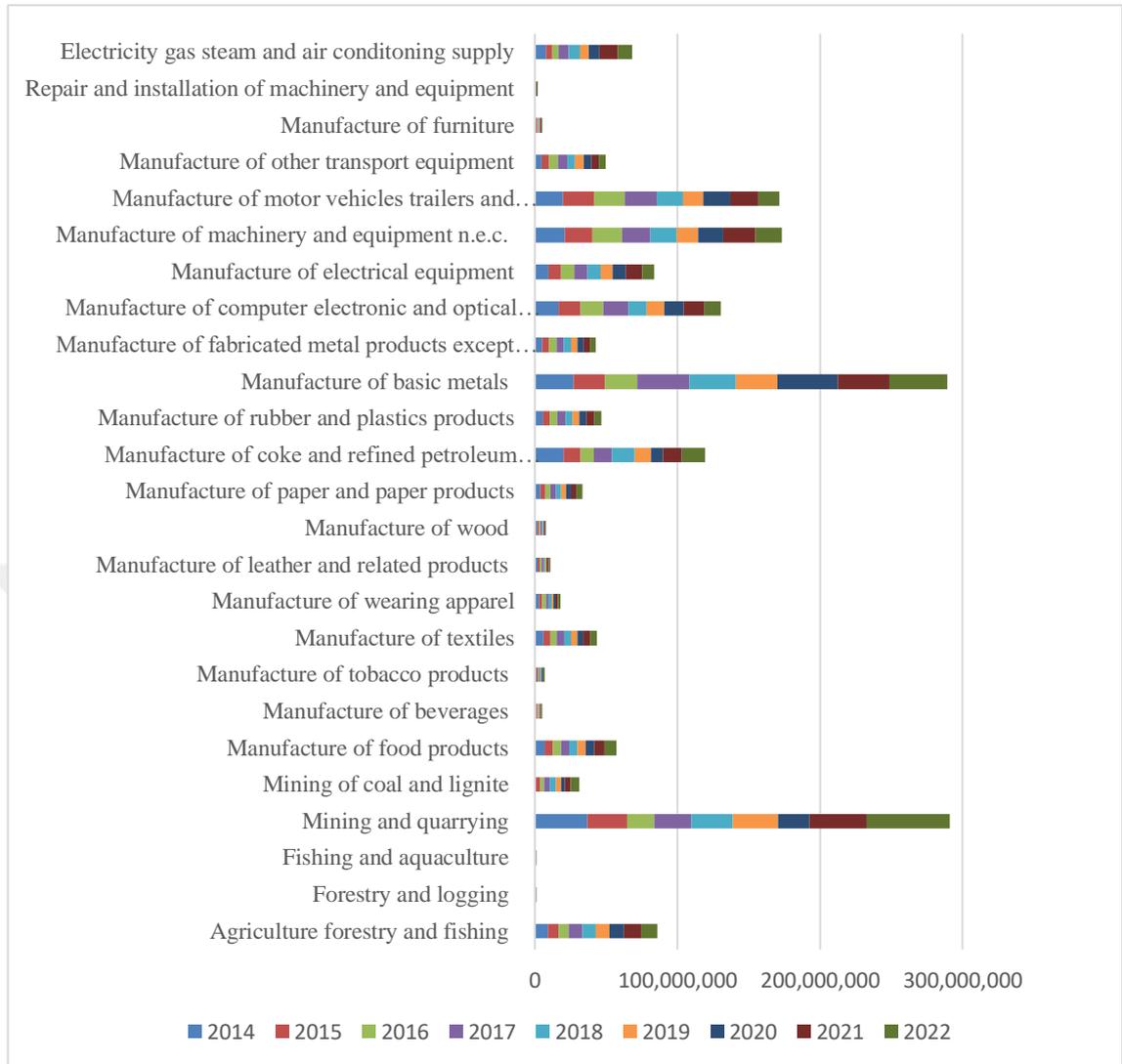


Figure 5.5: Import by Sectors(Thousand USD)

Source: Turkstat

In the analyzes made with the input-output model, the sectors with the highest forward linkage effect are found to be the main metal, mining, and chemical sectors. In other words, in order to increase the total production by one unit, there is a demand for the imported inputs of these sectors the most. Therefore, the trend of imports made by these sectors can be a clue for the course of import dependency. As can be seen in the figure 5.5, the imports of the basic metal sector number 16 increased by 40% in 2021 compared to 2014. In this case, it can be said that the import dependency of the sectors that use the inputs imported by the basic metal sector in their production at a high rate has increased. In the figure 5.5, these sectors; It can be said that wood-cork-furniture, fabricated metal,

and again the main metal sector itself. It is observed that the import input dependency of these sectors increased after 2014. Again, no significant change is observed in the imports of the chemical industry, which has a high forward linkage effect, after 2014. In other words, it can be concluded that there is no big change in the dependence on imported inputs of the sectors that need imported inputs of the chemical sector in order to produce. The first three of these sectors are respectively; rubber-plastic, chemistry, textile-clothing-leather sectors. After 2014, there has been no significant change in the import input dependency of these sectors. Another sector with a high forward linkage effect is mining. A significant decrease is observed in the imports of the mining sector between 2014 and 2020. However, after 2020, an increase in import value is observed. In general, it can be said that the import input dependency of the sectors that use the imported inputs of the mining sector has decreased. These sectors are; coke and refined petroleum, other non-metallic mineral products, and base metal sectors. The reduction in imported input dependency of the coke and refined petroleum sector, which has a high backward linkage effect, is significant. A similar trend was detected in the input-output model used when analyzing the change in imported input dependency between 2002 and 2012. Thus, it has been determined that the imported input dependency of the coke and refined petroleum sector has been on a decreasing trend since 2002. The situation of the basic metal sector is interesting. While the dependency of the basic metal sector, which uses heavily imported inputs from the mining sector and its own sector, to mining is decreasing, its dependence on the basic metal sector is increasing. Therefore, it still seems to be a sector with high dependency on imported inputs.

CHAPTER 6: CONCLUSION

The Turkish economy has undergone serious structural changes after 1980, leaving the import substitution industrialization strategy and started to follow open policies. Accordingly, there were rapid increases in foreign trade figures. However, the dependence of the Turkish economy on imports is increasing day by day due to the liberalization process in trade and the low exchange rate effect applied recently. Even the import of raw materials and intermediate goods cannot be met with the exports made in the current economic structure. As a result, any increase in exports is reflected in imports. In other words, instead of creating new investments, the increase in exports increases the capacity use with the increase in intermediate imports, and this creates negative effects on the external deficit. As a result, while the external deficit increases, the increase in exports in our country is reflected in the production and employment processes of other countries.

Industries with high forward linkage effects are industries that offer inputs that are used extensively in other sectors and are important in terms of reducing dependency on foreign resources. As a result of the study, the industries with the highest forward coupling effects were determined as “manufacture of chemicals and products”, “main metal industry”, “manufacture of machinery and equipment”, “manufacture of coke, refined petroleum products, and nuclear fuel”. According to the 2012 Input-Output table, the total use of imported inputs throughout the manufacturing industry increased by about 10 points compared to the 2002 Input-Output table. This increase was 46.2 points in the coke-refined petroleum products sector and 16.6 points in the paper-paper products sector. The highest rate of total imported inputs in 2012 belongs to the coke-refined petroleum products industry with 70.4 percent. This sector is followed by basic metals (44 percent), motor land vehicles (43.3 percent), rubber-plastic products (40.7 percent), chemical products (39.7 percent), and paper-paper products (36.8 percent) followed by industry.

In the 2002-2012 period, an increase was observed in the import input intensity of final demand elements, especially exports. While the import input intensity of exports was 14 percent in the 1980s, this rate increased to 29.7 percent in 2012. In the manufacturing

industry exports, the total imported input usage rate was calculated as 34.7 percent in 2012.

These export increases achieved in the 1980-1989 period, which we can describe as the first phase of opening up, were largely achieved through keeping the value of the local currency low and providing export incentives. Due to the relaxation in incentives, the rate of increase in exports slowed down. It indicates that the limits of export-based industrialization have been reached. In the years following 1989, domestic and foreign debts increased rapidly, and the desired increases in exports could not be achieved due to the increasing interest rates and the appreciation of TL due to capital inflows. On the contrary, with the deterioration of expectations due to escalating external deficits and deteriorating public finances with increasing imports, capital flight was experienced and the 1994 crisis was experienced. Therefore, in 2001, a new stabilization program was launched. The new program called the Transition to a Strong Economy Program, stands on three pillars with its fiscal policy including primary surplus, monetary policy based on a floating exchange rate system, and structural adjustment measures. The program has achieved its targets, excluding the current account deficit forecasts. Considering the foreign trade developments in this period, very high increases in exports draw attention. In the 2000-2005 period, exports grew by 164%. However, imports also grew very rapidly during the period due to the valuable TL, relatively stable environment, high growth, and increasing consumer financing. Rising energy prices also contributed to this trend. As a result, the highest current account deficit figure of all time, reaching 6.5% of GDP, has been reached. The foreign-dependent nature of the Turkish economy brings along an increase in exports of raw materials and intermediate goods imports, which became cheaper with the overvaluation of TL. However, the increases in other cost elements (energy, etc.) made the sustainability of the increase in exports difficult.

It has been determined that exports and imports within the scope of DIR have increased over the years. Despite this, the share of DIR in overall exports and imports is decreasing. This situation is thought to be caused by the micro-scale problems explained in the study. When the imports are analyzed within the scope of DIR, the rate of approximately 40% stands out. Similarly, when the value-added foreign trade announced by the OECD is examined, it is seen that Turkey's dependence on imports is 20%. The fact that the

companies operating mainly in imports prefer DIR can be shown as the factor that causes the difference. The findings show that the hypothesis examined in the study is not valid. In summary, DIR does not create dependency on imports in Turkey.

It is clear that the economic policies implemented after 2001 would not be sustainable. Southern countries such as Turkey has joined to the industrialization area of Northern countries in labor-intensive sectors. Policies created by Southern countries such as Turkey in the capital-intensive sector increase the dependency on imported inputs as a country. When there is a problem in exports for various reasons and the imports cannot be financed with exports, imported input dependency is one of the most important causes of the current account deficit. In this context, the foreign exchange deficit destabilizes the money markets and the economic structure becomes fragile. During the period, although there was an increase in investments in sectors with high added-value in foreign trade, in Turkey, which has historically had a production structure based on imports, these sectors, which have higher capital intensity, come to the fore in exports, and intermediate goods increase more. The fact that sectors with high capital intensity come to the fore in exports leads to an increase in the use of imported inputs in exports.

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APPENDIX A:

	Agriculture	Mining	Manufacturing	Energy	Transportation	Tourism	Housing	Education	Health	Other Service	Total
1998	2,631,641	447,358	767,479	4,781,862	10,256,095	144,068	347,416	3,147,809	1,469,924	5,571,142	29,564,793
1999	2,778,011	460,787	750,958	4,462,663	11,322,760	140,928	441,373	3,573,934	1,194,205	5,049,981	30,175,600
2000	3,353,636	413,326	971,941	5,073,070	12,501,180	163,458	318,947	4,167,063	1,668,797	6,255,870	34,887,290
2001	3,146,088	385,109	1,031,951	3,858,176	8,390,728	145,414	282,514	3,332,905	1,438,724	5,160,605	27,172,214
2002	3,161,710	217,842	954,377	6,089,660	8,596,524	244,924	269,153	3,802,189	1,672,595	5,602,542	30,611,516
2003	2,235,300	259,088	663,025	4,265,010	7,265,390	202,777	301,128	3,776,287	1,553,910	5,777,450	26,299,364
2004	2,369,272	370,009	632,762	3,153,030	8,258,864	167,135	253,379	3,288,795	1,266,748	4,506,128	24,266,123
2005	2,641,127	484,949	558,103	3,972,750	11,212,538	149,074	552,844	3,752,008	1,891,918	7,266,832	32,482,143
2006	2,289,256	648,108	694,571	3,376,567	11,035,393	135,010	457,281	3,755,926	1,947,220	8,707,224	33,046,557
2007	3,144,025	722,869	369,931	3,919,575	10,734,759	161,139	541,721	4,525,596	2,434,957	10,629,701	37,184,272
2008	3,207,545	646,154	367,899	3,725,920	14,736,770	146,949	535,418	3,890,860	2,132,929	10,069,155	39,459,599
2009	5,019,905	822,696	445,819	3,718,007	11,715,349	120,065	605,054	4,843,068	2,683,984	9,198,699	39,172,647
2010	4,408,421	868,359	385,783	3,097,153	20,229,263	235,054	668,381	4,837,924	2,180,144	9,791,046	46,701,530
2011	4,308,973	1,056,697	300,706	2,620,267	18,637,676	272,463	753,854	5,518,421	2,210,920	9,592,936	45,272,912
2012	5,100,944	1,069,953	408,700	3,052,138	18,948,516	340,605	623,142	7,075,254	2,569,819	10,781,206	49,970,277
2013	5,614,224	890,587	566,793	2,847,236	23,153,256	397,300	707,229	8,679,230	2,983,218	14,337,099	60,176,170
2014	4,788,610	893,868	409,639	3,198,986	21,072,451	262,933	542,411	9,027,287	3,104,859	13,062,581	56,363,625
2015	5,605,460	1,043,981	416,512	2,758,468	23,785,886	485,094	465,156	8,015,596	3,563,953	15,508,146	61,648,251
2016	5,566,273	561,784	351,158	2,163,644	22,270,560	315,044	511,313	7,588,049	3,456,331	20,684,483	63,468,640
2017	6,203,841	688,886	312,056	2,374,309	24,100,418	320,042	894,530	7,928,447	3,685,865	22,152,578	68,660,971
2018	5,847,734	1,709,660	248,894	2,364,695	27,608,323	419,115	736,753	6,783,359	3,159,308	19,701,963	68,579,802
2019	3,273,771	1,903,432	266,175	3,318,868	17,579,636	154,403	635,843	6,569,250	2,493,133	13,248,300	49,442,811
2020	2,942,514	1,580,579	214,803	3,328,421	20,023,244	88,603	509,934	4,991,374	2,605,916	11,755,204	48,040,591
2021	3,754,164	2,366,799	209,470	3,210,815	18,049,858	87,360	464,592	5,835,791	2,575,929	12,715,011	49,269,791

Table A1: Gross Fixed Capital Formation (Total) by Sectors (Public), (2009=100 Chained Volume, Thousand Turkish Lira)

Years	Agriculture	Mining	Manufacturing	Energy	Transportation	Tourism	Housing	Education	Health	Other Service	Total
1998	7,892,243	1,973,544	26,415,231	10,586,409	33,603,556	4,171,794	36,440,127	4,130,166	5,375,605	10,174,169	140,762,844
1999	5,355,706	1,918,295	21,910,354	8,427,168	30,262,325	4,917,811	29,053,746	5,169,283	4,029,729	9,395,239	120,439,654
2000	6,591,221	1,542,894	27,421,186	8,892,871	44,746,356	5,035,879	30,124,244	6,099,031	5,389,005	10,983,510	146,826,197
2001	4,535,012	1,475,933	17,404,033	10,369,409	29,187,108	4,423,399	21,501,526	4,650,507	4,173,077	9,448,575	107,168,579
2002	4,633,977	1,651,414	25,885,064	9,303,605	26,729,221	5,640,097	31,155,537	5,020,003	4,878,076	11,370,118	126,267,112
2003	4,590,928	2,337,767	35,565,987	6,996,863	31,053,108	8,025,777	39,684,230	5,287,595	5,281,885	11,931,454	150,755,593
2004	7,669,436	2,968,358	52,987,204	5,338,513	51,427,136	9,945,885	45,732,684	4,921,007	6,485,913	11,398,612	198,874,749
2005	7,676,283	3,343,133	65,058,777	7,360,247	65,315,951	11,883,574	47,847,972	5,465,831	9,198,749	14,641,790	237,792,306
2006	8,079,685	3,563,455	76,805,366	8,457,813	69,712,406	12,456,235	63,005,100	5,606,855	10,130,871	16,561,554	274,379,342
2007	7,486,847	3,492,449	78,002,941	10,017,070	71,473,473	9,402,058	73,333,330	6,450,562	10,864,117	18,939,583	289,462,429
2008	6,030,379	3,138,776	71,013,939	10,433,164	82,736,504	9,665,095	64,090,750	6,008,323	10,056,340	18,420,587	281,593,856
2009	6,431,322	3,066,056	48,131,895	11,766,701	66,067,671	8,876,760	48,148,270	5,901,800	9,022,713	16,297,415	223,710,604
2010	7,513,539	4,233,399	64,761,987	12,111,691	81,641,441	14,245,766	49,767,862	7,167,133	13,589,855	17,812,596	272,845,268
2011	10,208,696	6,036,956	89,139,867	9,651,606	100,471,059	15,390,020	64,774,713	9,594,537	13,734,729	18,440,705	337,442,888
2012	9,230,750	7,046,264	84,983,581	9,520,970	99,988,847	16,969,918	75,596,400	12,985,622	11,097,438	19,682,062	347,101,851
2013	9,744,030	7,464,528	76,684,186	8,992,626	129,897,710	17,026,613	95,736,210	15,476,153	12,193,046	23,326,963	396,542,067
2014	8,505,436	7,796,507	80,332,901	9,221,468	125,473,813	16,060,781	117,377,742	16,367,964	12,590,981	22,286,182	416,013,776
2015	9,768,305	8,153,698	81,778,393	8,118,477	153,837,468	12,649,436	125,315,922	16,090,341	13,903,827	25,008,455	454,624,323
2016	9,229,576	6,960,530	85,048,876	7,041,253	155,118,377	8,221,867	133,989,879	15,194,458	13,279,211	30,564,805	464,648,834
2017	10,130,903	7,548,342	91,277,405	7,505,553	169,516,217	7,831,524	145,908,368	16,234,646	14,117,763	32,941,888	503,012,610
2018	9,578,442	8,569,115	90,941,347	7,136,752	169,013,501	9,057,319	146,518,680	15,574,225	14,304,227	31,088,462	501,782,071
2019	6,855,251	8,694,294	90,958,629	8,057,521	137,363,017	10,520,248	123,004,095	15,412,861	13,782,936	24,532,321	439,181,172
2020	6,810,512	8,061,097	89,093,407	8,305,428	164,593,110	4,234,940	140,526,418	13,315,865	14,136,191	22,478,409	471,555,378
2021	8,059,247	9,639,885	105,086,223	9,413,659	173,937,989	4,026,381	141,506,234	14,728,845	16,554,082	23,495,049	506,447,595

Table A2: Gross Fixed Capital Formation (Total) by Sectors (Private)- (2009=100 Chained Volume, Thousand Turkish Lira)

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