

**T.C.
MARMARA ÜNİVERSİTESİ
AVRUPA BİRLİĞİ ENSTİTÜSÜ**

AVRUPA BİRLİĞİ İKTİSADI ANABİLİM DALI

**THE EFFECTS OF THE CUSTOMS UNION
ON MANUFACTURING INDUSTRIES
TEST OF IMPORT DISCIPLINE HYPOTHESIS
THE CASE OF APPLIANCE SECTOR**

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DISSERTATION SUBMITTED FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

IN ECONOMICS

By Zelha Altinkaya

SUPERVISED By
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LIST OF ABBREVIATIONS

BEYSAD	Beyaz Eşya Yan Sanayicileri Derneği (White Good Suppliers Association: WGSA)
CU	Customs Union
DTM	Dış Ticaret Müsteşarlığı(Under-secretariat of Foreign Trade)
EFTA	European Free Trade Area
EC	European Community
EEC	European Economic Community
EU	European Union
EU25	European Union with 25 Member States
GATT	General Agreement on Tariffs and Trade
IGEME	Türkiye İhracatı Geliştirme Merkezi (Export Promotion Center of Turkey)
IMF	International Monetary Fund
IRS	Increasing Rate of Return
H-O	Heckscher Ohlin
H	Herfindall
IMKB	Istanbul Menkul Kıymetler Borsası (Istanbul Stock Exchange (ISE))
ISO	Istanbul Sanayi Odası (Istanbul Chamber of Industry (ICI))
MC	Marginal Cost
MR	Marginal Revenue
N.A.	Not Available
PCM	Price Cost Margin
R&D	Research and Development
US	United States
USA	United States of America
UK	United Kingdom
TL	Türk Lirası
TCMB	Türkiye Cumhuriyeti Merkez Bankası (The Central Bank of the Republic of Turkey)
TÜİK	Türkiye İstatistik Kurumu (Turkish Statistical Institute (TSI))
TÜRKBESD	Türkiye Beyaz Eşya Sanayicileri Derneği (White Goods Industrialist Association) (WGIAT)
YTL	Yeni Türk Lirası

INTRODUCTION

The scope of this thesis is to analyse the impact of the Customs Union on Turkish Manufacturing Industry. In 1996, Turkey became a member of the Customs Union as a result of a long process starting with the Ankara Agreement. Although the European Union had already removed all tariffs in an earlier period than 1996, Turkey was just removing all tariffs and quantitative restrictions on the commodities imported from the European Union in 1996. The Customs Union is the final stage of the liberalization process starting on January 24, 1996. Turkey was also following a global wave of trade liberalization. The basic idea behind both the Ankara Agreement and trade liberalization was to raise the wealth of both Turkey and the European Union and it was based on the argument of traditional trade theory. According to traditional trade theory, if nations export the commodities that they have a comparative advantage in, both of the nations would benefit from trade. This is the Ricardian trade model. Although this idea goes back to Adam Smith, later, it was developed by Heckscher-Ohlin. Heckscher-Ohlin states that the comparative advantage is determined by the nation's factor endowment.

All models within the framework of traditional trade theory are based on the assumption of perfectly competitive markets. Nevertheless, perfectly competitive markets are rare in real life. Most of the traded goods are produced in imperfectly competitive markets. Especially, recent studies in international trade demonstrated that the largest part of international trade has been among similar countries. So, intra-industry trade gained importance as well as the concepts of industrial economies were introduced to international trade. Trade among imperfectly competitive markets was explained by the new trade theory. This was especially the inclusion of concepts of increasing returns to scale to the theory. This did not replace the concept of comparative advantage, but it is a fundamental change and it has an equal role with comparative advantage in explaining the source of trade in the new trade theory. The challenges in trade theory also bring challenges in policies. When the theory includes imperfectly competitive markets, the analysis and policy suggestion become more complex since the imperfectly competitive markets are

more dynamic and interaction among the parties makes the markets more sensitive to policy changes.

The new trade theory with its two essential ingredients of economies of scale and firms in the industry have market power that enables them to earn higher than normal profits, is the selective use of trade barriers and industry subsidies to provide opportunity to capture more of profits of foreign firms. Further, Levinsohn argued that import discipline the imperfect markets and provide more efficiency in those markets by removing excess profits. Starting Ann Krueger and Baran Tuncer, many analysts studied the effect of trade liberalization process in Turkey. Following Krueger and Tuncer, Foroutan and Levinsohn analyzed the Turkish case in early 1990s. Most of them agreed on that liberalization process was successful. Especially, on their study, Katırcıoğlu, Engin and Akçay found out that the price cost margin decreased in most of the manufacturing industries that were imperfect markets after trade liberalization policies in early 1980s.

Then, Cihan Yalçın measured the impact of liberalization for the period between 1980 and 1996. In this period, Yalçın found only in the paper and paper products industry, the concentration ratio decreased. On the other hand, the study made by Özcan, Voyvoda and Yeldan for the same period also states that the speed of adjustment of concentration was revealed to be very slow in spite of the import discipline and export penetration and the technological and institutional barriers to entry. So, although, persistent and active liberalization policies have been followed since 1980s, there were still highly concentrated industries in Turkish economy at the beginning of the Customs Union. Although, their concentration level decreased, this could not avoid them to be highly concentrated industries. Home appliance industry is also one of them. Due to technological innovation, large initial investment cost and well-organized after sales organization, home appliance sector is the highly concentrated industry. While, most of the products in the industry have been only produced by only one producer in Turkey for long time, the remaining part would be produced by two or maximum three producers. Before 1996, the market share of two leading producers in refrigerator market was around 90 %. Actually, the home appliance industry has the same industry structure all over the world. Most of the products are produced by only few producers. However, depending on

removal of tariffs and similar trade barriers through the Customs Union, it was expected that as one of the most highly concentrated industry, home appliance industry should be more competitive. Based on Levinsohn import discipline hypothesis, the case of home appliance industry will be analysed within the thesis.

After reviewing theoretical background of the trade theory within the first two chapters, firstly traditional trade theory then, the new trade theory and liberalization policies in Turkey will be overviewed in detail. The case studies on both Turkish economy in general and Turkish Manufacturing industry are analysed in detail, here also. Finally, the impact of the Customs Union on Turkish Economy and especially on manufacturing industry will be analysed by sampling four basic products of home appliance industry. The Price Cost Margin model of Levinsohn will be used in the model.

CHAPTER I

THE TRADITIONAL TRADE THEORY

1.1. ABSOLUTE ADVANTAGE

Adam Smith says “*Never to attempt to make at home what it will cost him more to make than to buy*” (Smith,1776:1936 p:200). The international trade provides the opportunity for an international division of labour that leads to better allocation of resources and greater productive efficiency in every country as well as the other advantageous of wider markets. Even if we consider an international trade is simply an extension of domestic trade; the international market is much larger than a single one country’s domestic market. Traditionally, the international trade is explained by the comparative advantage which constitutes a base for free markets. The free trade theory is an extension of the competitive economic theory as one of the most important themes in the literature of economics. This is known as the first theorem explaining the welfare of societies which emphasizes the non-intervention to economic transactions. The first theorem goes back to Adam Smith who argues *that* each Country ought to specialize in the product in which it has an absolute cost advantage over its trade partners. In this theorem labour was the only factor of production.¹ So, Adam Smith also argued the concept of specialization for the first time, as he did on the “laissez faire” policy.²

If Country A has higher productivity than Country B in producing commodity x while Country B produces commodity y in less time than country A, each one should concentrate in producing commodities in which they have an absolute cost advantage. Both countries obtain advantage of trade both of the goods in large quantities in the presence of free trade as compare to the absence of free trade.³ It was argued that trade enables countries to import, in exchange for their own products, those commodities which can be produced at home only at a greater cost than that prevailing abroad. As a consequence, all products would tend to be produced in those countries where the costs of producing them would be lower.

¹ Formula used by Adam Smith to calculate Labour productivity as follows :

- Labour Productivity : production / labour input
- Labour Cost : labour input / production

	y	x
Country A	2	10
Country B	4	8

(Gerber:2007:40)

² “Laissez faire” argues non government intervention to the economy

³ This is called “Absolute Cost Advantage”

1.2. COMPARATIVE ADVANTAGE : RICARDIAN MODEL

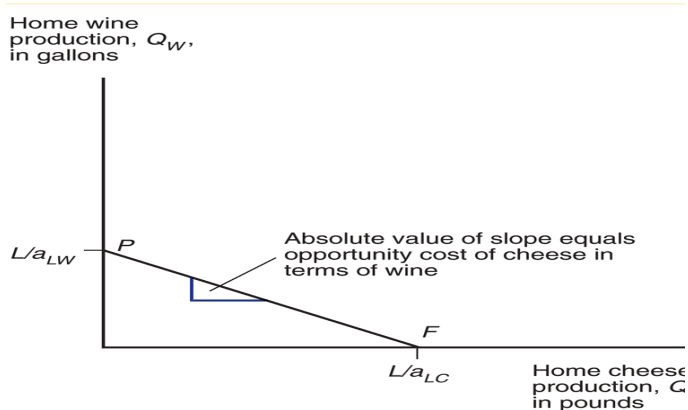
Do countries trade, even if a country does not have an absolute cost advantage in any line of production, while another is so well endowed that it has an absolute advantage with respect to every commodity it produces? This is most frequently asked question and Ricardo explains this by stating that trade can be carried on the basis of profitability between two countries even if one produces both commodities more efficiently than the other (Ricardo,1814,(1932;109)). If a country's productivity of labour is lower than that of the foreign competitor, then this cannot be considered as a disadvantage unless it is not compensated by a correspondingly lower wage level. Ricardo added to wages and productivity concepts to the absolute cost advantage in determination of competitiveness. Concerning two nations (Portugal and England)-two commodities (wine and cloth) example, trade would be beneficial even if Portugal held an absolute cost advantage over England in both commodities (Ricardo,1814(1932;111). The other important assumption of the Ricardo's comparative advantage model is that both of product markets are perfectly competitive in both countries.

The Ricardian model says differences in productivity of labor between countries cause productive differences and leads to gains from trade. Differences in productivity are usually explained by differences in technology (Krugman and Obstfeld,2006: 26). The Ricardian model uses the concepts of comparative advantage and opportunity cost.⁴ A country has a comparative advantage in producing a good if the opportunity cost of producing that goods is lower in the country than its is in other countries. A country with a comparative advantage uses its resources most efficiently while producing that good. In simple one factor Ricardian model, labor is the only important resource for production. Labor productivity only varies across countries depending on differences in technology. But labor productivity in each country is constant across time. The supply of labor in each country is constant. Only two goods are important for production and consumption. Labors receive competitive wage due to their productivity (Krugman and Obstfeld, 2006:26). Especially in the case of Ricardo case, the only factor of production is labour. The economy must sacrifice some production of another good since the economy has

⁴ The opportunity cost is the cost of not producing something else.

limited resources. These trade offs are illustrated graphically by a production possibility frontier which shows the maximum of good x and good y, once the decision has been made to produce any of these goods in certain amount⁵.

Figure 1.1 Production Possibility Frontier in Single Factor Economy



Source: Krugman and Obstfeld, 2006: 27

Krugman and Obstfeld (2006) used wine and cheese to explain production possibilities. When there is only one factor of production as Ricardo did it, the production possibilities frontier of an economy is a straight line. This type of production possibility frontier shows the opportunity cost of good a in terms of good y is constant.

In a competitive economy, supply is determined by the maximization of the earnings, so, in single factor case, the labor will determine the supply where he receives the maximum returns. The economy will specialize in the production of good x if the relative price of good x is less than its opportunity cost, it will specialize in the production of good y if the relative price of good y is less than its opportunity cost.

There are constant returns to scale in production; and labour moves freely between two domestic production sectors but does not move abroad. So, the benefits of higher productivity in one country can be transmitted from one country to another

⁵ The slope of the production possibility frontier equals to the opportunity cost. While production possibilities frontier (PF is here) AB gives various maximum combinations of goods (x and y) that a country can produce, given its technology and quantity of factors of production. The slope of production possibilities curve changes if the exchange ratios between goods x and y change. For example,

	Product y	Product x	Labour hours
Country A	2	6	600
Country B	4	8	1200

through trade. Therefore, movements of goods provide a substitute for movements of factors between countries. And each can employ its own resources where they are relatively most efficient or relatively least inefficient.

The quantity of both imported and exported goods actually depends on the demand for the two products in two countries in free trade so that the price ratio is determined by the intersection of world supply and demand. Country A should specialize on production and export of good x while the country B should specialize on good y . Perhaps, the comparative advantage is the most important concept in international trade theory. If country A can produce some set of goods at lower cost than Country B, and if the foreign country can produce some other set of goods at a lower cost than the country A can produce them, then, it would be best to trade the relatively cheaper goods.⁶ So both countries may gain from trade. In his example Ricardo imagined two countries, England and Portugal, producing two goods, cloth and wine, using labour as the sole input in production. Instead of assuming as Adam Smith did, Ricardo assumed that the productivity of labour varied between industries and across countries and that Portugal was more productive in both goods. Ricardo demonstrated numerically that if England specialized in producing one of the two goods and if Portugal produced the other, then total world output of both goods could rise. If appropriate terms of trade were chosen, both countries could end up with more of both goods after specialization and free trade than they had before trade.

Ricardo showed that each country should be specialized on production of good which they have cost advantage in comparison to other countries. Thus, England would have the comparative advantage in cloth production relative to Portugal if it must give up less wine to produce another unit of cloth than the amount of wine that Portugal would have to give up to produce another unit of cloth.

Although, England may be less productive in producing both goods relative to Portugal, it will have a comparative advantage in the production of one of the two goods. If Portugal is more productive than England in the production of both cloth and wine, if Portugal is twice as productive in cloth production relative to England but three times as productive in wine, then Portugal's comparative advantage is in wine, the good in which

⁶ This is called comparative advantage

its productivity advantage is greatest. So, Portugal should specialize and trade the good in which it is "the best" at producing, while England should specialize and trade the good in which it is "least worse" at producing.

Trade based on comparative advantage does not contradict Adam Smith's notion of advantageous trade based on absolute advantage. Advantageous trade based on comparative advantage covers a larger set of circumstances while still including the case of absolute advantage. Although, comparative advantage is the cornerstone of the original theory of international trade, it was not able not explain what goods would be exported and imported. Later, by introduction of the terms of trade⁷, comparative advantage provides the answer to problems of country's both growth and efficiency in resource allocation (Wexler, 1972:54).

The Ricardian Model - Assumptions

The Ricardian model assumes two countries produce two goods by using labour as the only factor of production. Since Ricardo assumes existence of perfectly competitive market, the basic conditions of perfectly competitive markets should also exist, like that goods are assumed to be homogeneous across firms and countries: Labour is homogeneous within a country but not identical across countries. Goods can be transported costless between countries. Labour can be reallocated costless between industries within a country but cannot move between countries. Labour is always fully employed. Production technology differences exist across industries and across countries and are reflected in labour productivity parameters, but technology is constant in the short run. The labour and goods markets are assumed to be perfectly competitive in both countries. Firms are assumed to maximize profit while consumers (workers) are assumed to maximize utility. The likely welfare effect of free trade, is that everyone in both trading countries benefit. At the very worst some individuals will be just as well off as in autarky. This result occurs for any free trade price ratio that lie between the autarky price ratios.

⁷ Terms of trade reflect the relation between the prices a country receives for its exports and the prices it must pay for its imports.

Free Trade

Under a system of perfectly free commerce, each country naturally devotes its capital and labour to such employments as are most beneficial to each. This pursuit of individual advantage is admirably connected with the universal good of the whole. By stimulating industry, by rewarding ingenuity and by using most efficaciously, the peculiar powers bestowed by the nature, it distributes labour most effectively and most economically: while by increasing the general mass of productions, it diffuses general benefit and binds together by one common tie of interest and intercourse, the universal society of nations throughout the civilized world (Ricardo;1814:(1932:114))

In no trade case (in autarky), each country will produce some of each good. And relative prices of the two goods will differ between countries because of the technological differences. The price of good with comparative advantage will be lower than the price of same good in the other country. If one country has an absolute advantage in the production of both goods (as assumed by Ricardo) then real wages of workers (i.e., the purchasing power of wages) in that country will be higher in both industries compared to wages in the other country. Workers in the technologically advanced country would get a higher standard of living than in the technologically inferior country since in the country that is more productive, workers get higher wages.

If trade is free, the initial differences in relative prices of the goods between countries in autarky will stimulate trade between the countries. Since the differences in prices arise directly out of differences in technology between countries, it is the differences that cause trade. Profit-seeking firms in each country's comparative advantage industry would recognize that the price of their good is higher in the other country. Since transportation costs are zero, more profit can be made through export than with sales domestically. Thus, each country would export the good in which they have a comparative advantage. Trade flows would increase until the price of each good is equal across countries. At the end, the price of each country's export good (it is comparative advantage good) will rise and the price of its import good (its comparative disadvantage good) will fall

The higher price received for each country's comparative advantage good would direct each country to specialize in that good. Therefore, labour would move from the comparative disadvantaged industry into the comparative advantage industry. So, the

industry at disadvantage would go out of business in each country. However, all of these workers are immediately employed in the other industry since the model assumes full employment and costless mobility.

In Ricardo's idea, technological superiority is not enough to continue the production of a good in free trade: A country must have a comparative advantage in production of a good, rather than an absolute advantage. Therefore, less developed countries may also gain from the trade even though, they are not superior in technology to the developed countries. The technologically superior country's comparative advantage industry survives while the same industry disappears in the other country, even though the workers in the other country's industry have lower wages.

The movement to free trade would improve welfare in both countries as individually and nationally. Specialization and trade will increase the set of consumption possibilities and consume more of both commodities in both countries. These aggregate gains are often described as improvements in production and consumption efficiency. Free trade raises aggregate world production efficiency because more of both goods are likely to be produced with the same number of workers. Real wages (and incomes) of individual workers are also shown to rise in both countries. Thus, every worker can consume more of both goods in free trade compared with autarky.

The Case Study on the Ricardian Model

MacDougall tested the Ricardian trade model by using data on labor productivity and export for 25 industries in the US and the UK for the years 1937, 1951 and 1952. (Salvatore,2007:50). Since wages were twice as high in the US as in the UK, MacDougall argued that cost of production would be lower in the US in those industries where American labour was more than twice as United States in those industries. MacDougall excluded trade between the US and the UK because tariffs varied widely from industry to industry, so, he would balance the differences in labor productivity between the two nations. Both nations faced generally equal tariffs in third markets. The exclusion of trade between the US and the UK did not bias these since their export to each other were less than 5 percent of their total exports. At the end, the empirical study just supported the comparative advantage. The actual pattern of trade seems to be based on the different

labor productivities in different industries in the two nations. Production cost other than labor cost, demand consideration are the source of the link between relative labor productivity and export shares (Salvatore, 2007:51).

1.3. THE HECKSCHER- OHLIN MODEL

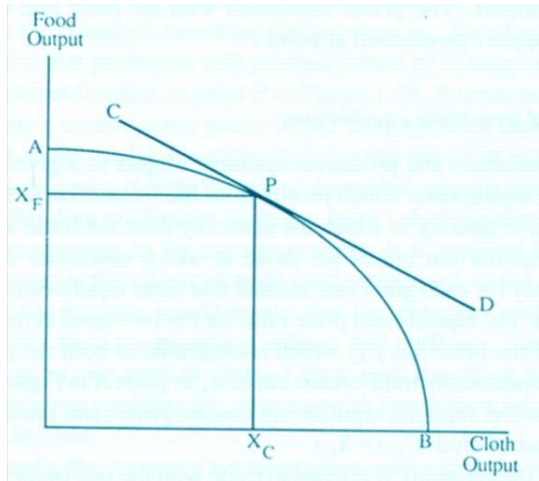
A more substantial explanation of the causes underlying trade has grown by H-O Model. Based on two essential assumptions that countries are differently endowed with productive resources and in perfectly competitive markets, H-O model argues that trading countries would benefit by exporting those goods that are relatively intensive in the country's abundant factor and import those goods that are relative intensive in the use of the country's scarce factor.

Neither natural nor man made resources are distributed equally throughout the world; each country may have supply of some resources abundant and scarce the others. The country's scarce factors and resources are used in different combination of production of goods. Under the assumption of competitive good and factor markets, constant returns to scale technology and diminishing returns; there are only two goods produced in an economy, one is capital intensive and the other one is labour intensive. When society decides to produce more of capital intensive good, they have to produce less of labour intensive good⁸.

Figure 1.2 illustrates the economy's production possibility frontier in H-O model. The concave form of the curve reflects the assumptions of the supply side of the model which states goods are produced in competitive market; and also factors's market are competitive; constant returns to scale technology with diminishing returns to each market and the additional assumption that the factor intensities (the ratio of capital/input to labour) are different in the two sectors.

⁸ Figure 1.1

Figure 1.2.: Production Possibility Curve In H-O Model



AB Production Possibilities Frontier

CD Price Line

X_F Maximum Amount of Good X

X_C Maximum Amount of Good Y

P The point where Production Possibilities Frontier AB tangent to CD line

Source: Vousden,1990:5

Then, the capital-intensive sector expands and the labour-intensive sector contracts, declining good x output releases relatively more labour and relatively less capital than the expanding good y (food) sector requires; this leads to an excess demand for capital and an excess supply of labour which makes the wage-rental ratio fall and thus reduces the unit cost of good x (cloth) and increases the unit cost of good y(food). This is the opportunity cost of an additional unit of good y rises. The 1.2 also demonstrates the determination of the economy's equilibrium output levels for the two goods. The slope of the line CD represents the relative price of cloth faced by producers. Under the assumption of competitive markets, production occurs at point P, where the price line CD is tangent to the production frontier. The tangency reflects the competitive equilibrium level for output of good x (cloth) and good y (food) cloth are X_F and X_C respectively where the relative price of good x(cloth) equals to the marginal rate of transformation⁹ of

⁹ Marginal rate of transformation (MRT) of X for Y refers to the amount of Y that a nation must give up to

good x into good y are equal (Vousden,1990:6).

The Heckscher-Ohlin (H-O) model says differences in labour, labour skills, physical capital and land between countries cause productive differences leading to gains from trade (Krugman and Obstfeld, 2006:51)

By taking into consideration all these facts, Ohlin explains firstly the inter-regional trade and then apply the explanations to international trade. In Ohlin's view everything which affects the demand is to be included among the fundamental principles which govern interregional trade. In supply side, it is assumed that the productive factors are not located in certain places but in certain districts and existence of natural border line between districts. The most typical case of this kind is one where the factors are confined entirely to a certain region are unable to flow over to another, whereas they are fully mobile within the region. Another important assumption relates to division of labour. The main question is why individuals trade with each other instead of each one producing his own requirements and why does the division of labour increase the total efficiency of production. Ohlin explains this under two headings: "varying ability" and "advantage of specialization" and gives an example that one region may have a lot of iron and coal but little land for wheat growing, while another has a lot of wheat lands but scarce of mineral resources. So, Ohlin argues that each region is best equipped to produce the goods which require large proportions of factors existing within its borders in small quantities or not at all (Ohlin, 1957: 12).

In Ohlin's explanation the theory of international trade represents the chief application of the general theory of interregional trade where the first condition of trade is that some goods can be produced cheaply in one region than in another. In each of them the cheap goods are those containing relatively great quantities of the factors cheaper than in the other regions. For the most important border lines for the movement of the industrial agents are the national frontiers and mobility within the various countries is no doubt considerably greater than international mobility (Ohlin, 1957:67).

In the theory, productive sources are considered as labour, land and capital. In application of inter-regional trade to international trade theory, one other simple assumption still remain valid that inter-regional transfers of factors will not be given up

produce each additional unit of X.

where the commodities move freely among the regions. Countries with large supply of labour with high technical skill will be able to produce many manufactured goods more cheaply than countries with a limited supply of the labour quality. If differences in wages between groups of workers in a country last for a sufficient period of time and influence the nature of the international division of labour, then these groups may be regarded as a separate productive factors, just as are different qualities of land. Labourers belonging to one trade may leave it and go another, without any preparatory training or after a short one, if requirements for skill are moderate. The supply of labour will adjust itself to the demand.

Ohlin, argue that the supply of all factors in a region that capital and various mineral resources and other factors are sometimes as important for the division of labour and trade as the supply of land per capita. Ohlin also criticises Smith for neglecting the region's equipment and saying that “ *It is a surprising fact that the United States with all its land and agricultural wealth has not become an important exporter of dairy products. As a matter of fact, the rich supply of all sorts of natural resources and capital per capital in the United States to each region's equipment as a whole in every analysis pretending to be more than an exemplification* ” (Ohlin, 1957: 27). Ohlin also describes capital as abstract capital not capital goods. Accordingly, the preference of capital owner for home investments determines the international mobility of capital where the commodity mobility is incomplete. Based on this representation, H-O model is assumed to produce two goods, product x and product y by using two factors of production, capital and labour. The factors are perfectly mobile between sectors. The factor mobility assumption is vital for the H-O Model. All factors in production should freely move from one sector to another as well as across countries. Basically, this assumption underlines the concept of “ free entry ” of the competitive markets. In these competitive markets, factors of productions are free to enter to the new industry as well as exit easily from the industry. Firms enter an industry either when they are newly formed or when an existing firm decides to move into a new sector.

Free entry and exit into and from the market ensures that there will be no pure profits in perfectly competitive markets. Firms earn just the amount enough to cover the costs and continue to stay in business. The firm cannot be impeded by entry barriers or

does not be subjected to great amount of sunk costs. One of the important determinants of supply side is the cost; and an important determinant of the cost is wage. Although, in the original trade theory, Ricardo considered labour as the sole factor of production, it was also assumed that the value of good is determined by its labour content, in the H-O model, the cost of production contains the cost of labour, capital and land. With regard to the assumption of Ricardo by transferring labour from one line of production to another, goods could be substituted for each other in proportion to their cost. The amount of labour required to produce different goods determines the rate of exchange between them. Ricardo suggested that if wages in the various sectors are the same throughout the country international competitiveness also depends on the labour cost in various sectors.

On the other hand, the most important cost is the initial investment cost. If the initial investment is so high that no body other than exists, can enter into the market, it means there is high barrier to enter to the business. Similarly, if the initial cost is high, the company may not go easily out of business. The sunk cost is also generally considered high barrier for everybody.

Free entry to and exit from the market conditions is also directly linked into the assumption of large numbers of buyers and sellers. By letting entry and exit free, the number of producers increase, the number of sellers and buyers becomes small relative to the size of the market, so that no one of them can determine the price by their ownself. Similarly, if there are "many small buyers," there is little opportunity for buyers to "fix the price" in their own favour. A higher level of community welfare can be translated into a higher level welfare for each individual in the community by means of appropriate transfers between individuals. Besides, insuring the competition among buyers, the competition among producers/sellers should also be provided. In the supply side, market supply is the sum of the output of each firm in industry. Each firm should produce only small percentage of total market output, therefore, none of the firms can exercise control over the market price. For example, it cannot restrict output by the hope of forcing the existing market price up.

The large number of producers should produce similar products and large numbers of consumers should demand completely identical commodities which are perfectly substitute. This leads firms being price takers and facing a perfectly elastic

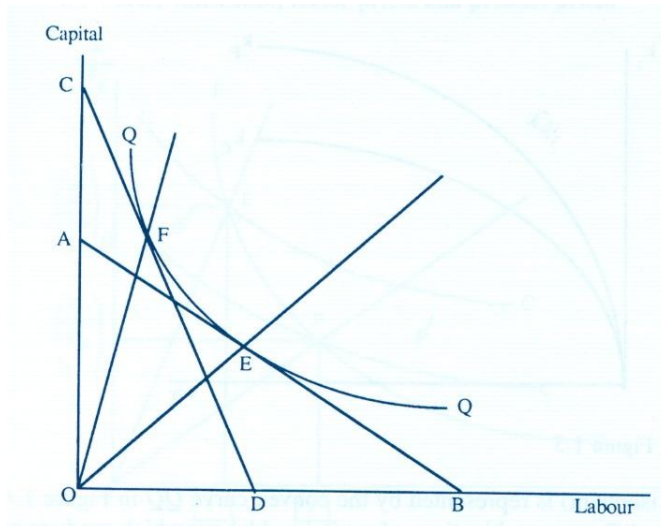
demand. If different sellers sold different products, then customers might be reluctant to switch suppliers when one supplier raises the price since they prefer to consume that commodity even at a higher price. Therefore, in providing perfectly competitive markets, the product should be homogeneous and perfectly substitutable.

One of the important assumptions, of perfectly competitive markets of having perfect information also rarely exists. It can hardly be assumed that people know everything that should be known. In practice, what is important is that each buyer and seller knows all about her or his opportunities to make deals and knows the terms on which other market participants will buy and sell. If the consumer did not know that they have alternatives, then even a very small seller might push prices up without losing many customers. Thus, the perfect information assumption complements the other assumptions. One example where increased information actually reduces welfare comes from the theory of coordinated oligopoly behaviour. More information exchange among sellers can facilitate coordination and causes to higher than competitive prices. In particular, extensive exchange of information among sellers may make it easier for parties that want to coordinate to find a set of prices and outputs on which they can implicitly or explicitly agree. It may also reduce any single firm's incentive to deviate from a competitive price once that is agreed on because others may be more likely to detect and respond to that deviation. Any firm's incentive to cut prices comes from expectation of increased sales. A seller that cuts price expects that some buyers will respond by switching from rival sellers. In addition, buyers as a group might purchase more, attracted to the market by the new, lower price. Nevertheless, perfect information does not exist, and cannot really exist due to the presence of deception (Baker, 1996:41). For example, used car salesman could sell a consumer a car that he knew was only going to last another 1000 miles, as a car that will last much longer. So, the seller has an advantage against the consumer. This knowledge of asymmetric information as the consumer does not have as good information about the cars as the seller does. Seller also may have intention not to sell high quality of car at a higher price since the consumer may not know much about the quality of car at a higher price. Some version of the "perfectly competitive market structure include "perfect knowledge" as one of its characteristics" but," perfect knowledge" may not exist.

Constant Returns to Scale

In addition to free movement of factors, “constant returns to scale” assumption is the other basic assumptions of competitive markets. It can be best observed in a typical firm where consists of large numbers of units doing the same thing, so that output can be expanded or contracted by increasing or decreasing the number of units. Using machinery can be an example. The number of machinery should be increased to be able to increase the output if it is determined that the volume of output can be increased by increasing the number of machinery and people who will use the machinery. Under the constant returns to scale, a given price ratio implies the same factor input ratio for all scales of output. A rise in the relative price of a factor causes that factor to be used less intensively in both sectors. This continues where the ratio of the factor prices equals the marginal rate of substitution of one factor for another. According to the H-O, wages will be relatively lower in the country well endowed with labour and this country will have comparative cost advantage.

Figure 1.3 : Choice for use of factor of production



AB The Isocost line

CD The Isocost line

QQ The isoquant for the output produced in an economy

E The ratio of the price of labour to the price of capital (the wage rental ratio)

F The cost minimizing ratio

Source: Vousden, 1991:9

Figure 1.3. illustrates the choice of input mix for either of the goods produced in the economy. If it is assumed that one unit of the good is produced, the isoquant¹⁰ for this output is represented by the convex curve QQ. This shows the different combinations of capital and labour which produce one unit of the good. The least combination of these factors is where the ratios of the factor prices equal to the marginal rate of substitution of one another. Point E is the one such tangency when the ratio of the price of labour to the price of capital is given by the slope of isocost line AB. The cost-minimizing ratio of capital to labour is given by the slope of OE.

When wage-rental ratio increases, this implies steeper isocost lines. At F, the isocost line tangent to the CD at a minimum point. For a constant returns to scale production function, a given factor price ratio implies the same factor input ratio at all scales of output. If country A is abundant in capital (C) and country B in labour (L), (it can also be stated like equations $L/C < L/C \rightarrow W/r > w/r$), then , it also assumed if country A produce good C which is capital intensive and country B produce good y which is labour intensive. Assume production of x is capital-intensive and production of y is labour intensive. ($L/C < L/C \rightarrow W/r > w/r$)

Country	Production factors in the country	
	Labour Hours	Capital
Country A	600	400
Country B	1200	400

Free Trade Equilibrium

The H-O model argues that equilibrium prices are those at which consumer demand equals producer supply for each good in situation of autarky in which the economy does not trade with the rest of the world. Figure 1.4.a shows the equilibrium under no trade case.¹¹ A is the equilibrium where consumer demands equals to producer supply. If the economy is free to trade with the rest of the world, the equilibrium price no

¹⁰ Isoquant is a curve that shows the various combinations of two factors, (e.g. capital and labour) that a firm can use to produce a specific level of output. Higher isoquants refer to larger output and lower ones to smaller output.

¹¹ The equilibrium price ratio for the economy limited to two good is given by the slope of the price line p_A , which is tangential to both the production frontier and the community indifference curve U_A at point. This separating price line supports equilibrium consumption and C_c

longer is determined so as to clear markets in the domestic economy. The relative prices adjust to equate world supply and demand for each good, if the country we are considering is small in the world market, its demand and supply do not affect the world price at all. If economy is on its balance, the economy's consumption must equal the value of its output (P) at world price line p^* through P. In figure 1.4, the economy's consumption point is at point C where community indifference curves (U_A and U_F) is tangential to p^* . In absence of any domestic distortions such as tariffs, taxes and subsidies, this equilibrium involves equality between relative prices, the marginal rate of substitution in consumption and the marginal rate of transformation in production. The economy produces X_C and X_F units of good x and good y at C_C and C_F .

Figure 1.4.a

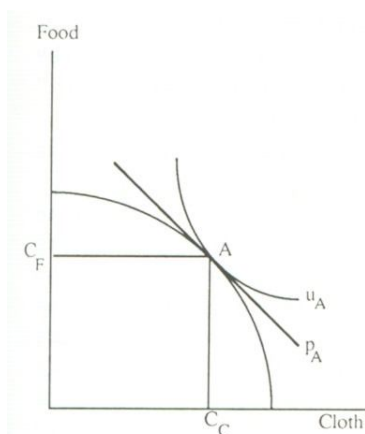
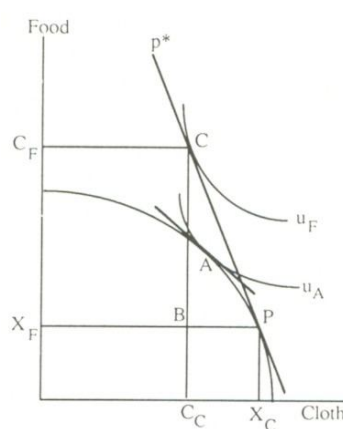


Figure 1.4.b.



- p^* Market Clearing Price Ratio
- p_A Autarkic Relative Price
- C_F Equilibrium for food consumption
- C_C Equilibrium for cloth consumption
- U_A Community indifference curve
- U_F Community indifference curve after free trade
- X_F Equilibrium for food production
- X_C Equilibrium for cloth production

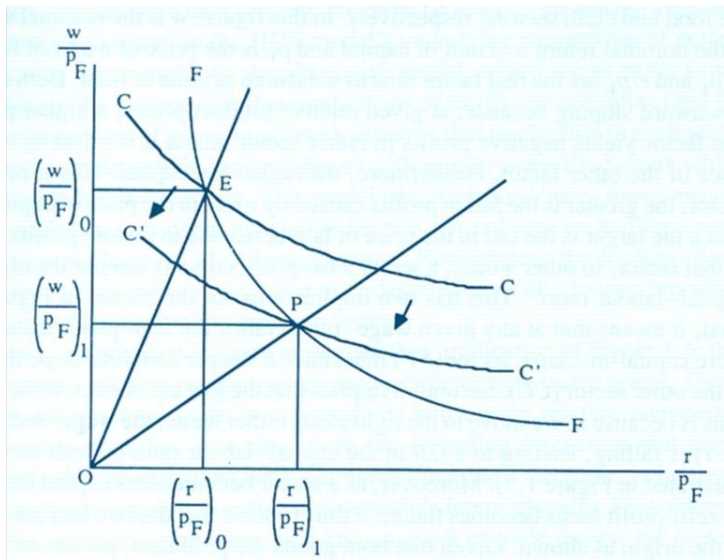
Source: Vousden, 1990:7

It exports its excess supply of good y ($X_C - C_C$) in return for imports equal to its excess demand for food ($C_F - X_F$). These exports and imports are also given by the trade triangle CBP where CB measures imports and BP measures exports (Vousden, 1990:7).

Although, there are agents who lose from moving to free trade as well as there are agents who gain, the movement from autarky to free trade is considered Pareto optimality for the economy. Redistribution between agents can be needed such that the losers are compensated by the gainers and in the final equilibrium no one is made worse off. Since, it is also assumed that there are no taxes and subsidies in the economy, there is question of how redistribution could be provided. By free trade, economy is not limited to consume exactly what they produce since they can import and export other goods. The economy enlarges production possibilities frontier. So, differences between factor endowments and differences in technologies are the other important determinants of international trade. The classical Ricardian model assumes that differences in technologies lead to trade and countries export goods, relatively efficient. The neoclassical H-O model on the other hand, assumes that countries have identical technologies but different factor endowments. Depending on the assumption of perfect competition, the economy's relative product prices uniquely determine factor prices. If it is assumed that free international trade in commodities will equate relative commodity prices across countries, factor prices will be equalized across countries, if the same technology is used. Only, tariffs or production subsidies may change the producer price of the good, if the product is protected. A rise in the relative price of a product due to a tariff on the other product may create positive profits in the first product. This attracts new firms into the sector. As long as production of first product expands and production of the second product contracts, relatively more capital is demanded in the sector producing the first product than the other sector. This requires an extra demand for capital and an extra supply of labour. The real return to capital must rise and the real return to labour must fall to have equilibrium in the factor markets. In other words, a rise in the relative price of product x is followed by an increase in the real return to the factor used intensively in the production of good. This is stated as the Stolper Samuelson

Theorem¹². Figure 1.5 illustrates the combination of real factor rewards that yield zero profits per unit in the sectors producing first and second products respectively. If the capital-labour ratio is higher, then, a greater fall is expected to restore profits to zero in that sector.

Figure 1.5 Real Factor Combinations



w is nominal wage rate

r is the nominal return to a unit of capital

P_F is the price of a unit of product x

w/P_F and r/P_F are the real factor returns measured in units of product x .

FF Real factor rewards expressed in terms of product x

CC Real factor rewards expressed in terms of product y

Source: Vousden, 1990:11

¹² Stolper Samuelson Theorem states that a rise in the price of a good will increase the real price of the factor used intensively in the sector and decreases the real price of the other factor. Suppose that the United States and Canada can make bread or steel, using capital and labour. Also suppose that bread is the labour intensive product, shown as follows: $K^b/L^b < K^s/L^s$

And that the United States is relatively well endowed with capital, compared to Canada

$$K_{Can}/L_{Can} < K_{US}/L_{US}$$

H-O model states that the United States will have a comparative advantage in steel which it will export in return for Canadian bread. As the US move along its Production Possibilities Curve, the change in the mix of goods produced leads to lower demands for labour and higher demand for capital. The steel industry will pick up some of the labour laid off the labour in the bread industry, but since it is not as labour intensive as bread, its increase in the labour demand is less than the fall in labour demand in the bread industry. The net result is that labour experiences a fall in demand, leading to a fall in wages and income earned. According to abundant factor that is used to determine comparative advantage and export is favoured and scarce factor sees decline in its income regardless of industry (Gerber; 2007:67).

Profits of product y will be negative unless the real return of factor falls since the real price of unit of product y has fallen while real profits measured in product x does not change. Thus, the CC shifts down and to the left position C'C', new equilibrium occurs at point P where C'C' intersects FF. In this case, the real wage has fallen from (w/P_F) to (w/P_F) while the real return to capital has risen from (r/P_F) to (r/P_F) regardless of how each factor allocates its spending between product x and product y; so capital is better off and labour is worse off as a result of the rise in the relative price of product x.

The Stolper Samuelson Model criticized the H-O model on the ground that the explanation of imposition of a tariff which raises the domestic relative price of the importable good, may be beneficial to the factor used intensively, and harms the other factor. So, this was considered as one of the drawback of H-O model, alternatively, the income distributional effect of tariffs and subsidies had been explained through the assumption that production in each sector combines a single mobile factor (labour) with industry-specific factors which are immobile between sectors.

The Stolper-Samuelson model is a starting point for understanding the income distribution effect of international trade (Gerber;2007:68). The crucial effects on income of an opening of trade depend on the flexibility of the affected factors. If the labor is fixed in one line of production and unable to move to the other sector, the damage would be more deepened than if it were completely flexible to move. Similar to this, many economist add the model to the H-O model describing the alternative for explaining the ability of factors to move between different output sectors is limited.

Unlike the Ricardian model, the H-O model predicts that factor prices will be equalized among the countries that trade. Factor prices are also equalized since the relative prices are equalized and the direct relationship between relative prices and factor prices. Trade increases the demand for goods produced by abundant factors, so the demand for the abundant factors themselves also raise the factor prices of the abundant factors across countries (Krugman and Obstfeld, 2006 : 56)

How changes in an economy's relative factor supplies would affect output in each sector at any given commodity price ratio was important issue in 1950's. Later, within the context of the H-O, the Rybczynski theorem explains the relationship between changes in national factor endowments and changes in the outputs of the final goods (Winters,

1991:39). According to theorem, an increase in a country's endowments of a factor will cause an increase in output of the good which uses that factor intensively and a decrease in the output of the other good. Therefore, countries may produce (and export) more of labour intensive goods. Nevertheless, under the assumption that relative product prices, factor prices and input ratios are fixed, it would be assumed factor can not be substituted.

One other extension of H-O model is to analyse the effects of international trade in the short run. It is called the specific factors model.

The Specific Factors Model

The ability of factors to move between different output sectors is more limited. If the severe competition among the world producers of one industry causes workers to reduction in salaries, some of the labour may lose their jobs. Although, in the long run they can find jobs in other sectors, but they are limited with cuts in their payments. In specific factor model, this situation is explained in the way that the specific factors are immobile and cannot move between sectors, while the variable factor(labor) is completely mobile between industries. The determinants of comparative advantage with a specific factors model are similar to the analysis with H-O model. When trade opens each country, it follows its comparative advantage and moves toward greater specialization. The shift in production changes the demand for the specific factor that is used in the industry. In each country, the specific factor in declining industry experiences a fall in income. The income distribution effects of trade on labor, the variable factor are undetermined. Since labor is mobile, workers laid off in the declining sector find employment in the expanding sector (Gerber,2007:72).

Even if factor prices have fully equalized across countries, the H-O model still holds that: countries tend to export goods representing the factors they own in abundance and import those products representing factors that are scarce in the nation. An assumption of constant availability of quantities of factors of production in the countries leads to a change in the distribution of the total income between labour and capital on them. However, in reality, the industrial nations of the world have been trading more similar products and large part of world trade is realized among the similar countries over the past decades. For example, very important part of world trade has been emerging among the OECD (Organization for Economic Co-operation and Development) countries

or trade among the EU countries. In addition, the products which are internationally traded are not only goods produced under the perfect competition conditions. Even, most of the good are produced in the imperfectly competitive markets. There are major export categories that are completely dominated by one developed country. For example, in 1985 Japan exported half of the world exports of colour TV receivers. An advantage resulted from economies of scale and trade strategy of Japan which is not competitive also influenced world trade of TV receivers. In addition, it has been also recognized that countries trade with each not only different goods but also similar goods. So, latest developments in 1970's industrial economics raised new arguments for analyzing trade policy under imperfectly competitive market conditions in contrast to the perfectly competitive conditions traditionally assumed (Baldwin,1992:804).

Although, the traditional general equilibrium approach to international trade is considered as powerful intellectual analytical structure explaining and providing many useful insights about a trading world economy, Helpman and Krugman (1985) explain four major subjects in which traditional trade theory seems to be inadequate in explaining the empirical observations: failure to explain the volume of trade, the composition of trade, the volume and role of intra-industry trade and direct foreign investment and the welfare effects of trade liberalization (Helpman and Krugman, 1985:2).

The traditional trade theory explains trade entirely by differences among countries, especially differences in their relative endowments of factors of production. This suggests a converse relationship between similarity of countries and the volume of trade between them. In practice, nearly half of the world's trade consists of trade between industrial countries that are relatively similar in their factor endowments. Further both the share of trade among the industrial countries and the share of this trade in these countries incomes rose for much of the post-war period, even as these countries were becoming more similar by most measures.

If differences between countries were the only source of trade, countries should export goods whose factor content reflects their underlying resources. But, in formal analysis, the actual trade patterns seem to include substantial two way trade in goods of similar factor intensity. This intra-industry trade could not be explained under the

traditional trade theory analysis. The studies of trade liberalization seem to suggest that traditional trade theory misses important aspects of the welfare effects of trade. Standard models associate trade with a reallocation of resources that increases national income in aggregate but leaves at least some factors with reduced real income (Helpman and Krugman,1985: 3).

Since there are many conditions necessary for application of traditional trade theory; if one of them fails, this also causes market fails. Market imperfections like monopoly, scale economies and product differentiation are persistent features of the real world. Since there are few firms in the market, although there may be large amount of buyer, only few firms earn profits above the rate of return earned in purely competitive industries. “In some cases, there may be little scope for government intervention” the government policies would restructure some of the adverse effects of these market imperfections (Stiglitz,1989:197). If commodity price are chosen properly to reduce the risks that producers may face, these price may lead to higher level of production and investment. Or government may also eliminate some taxes that worsen the risks facing firms. However, the government may play more positive role for economy through taxes and subsidies (Stiglitz,1989:197). Since, the H-O and Ricardian models designed to explain the case of only perfectly competitive markets; the need for alternative theories incorporating these features of the real world was unavoidable.

Dixit, Stiglitz are among the first economists to raise the issue of scale economies and product differentiation. James Brander, Barbara Spencer, Elhanan Helpman and Paul Krugman pointed out main arguments for trade policy intervention in imperfectly competitive markets. Main argument of new trade theory is that a country may increase its welfare through strategic trade-policy behaviour when its firms are competing in imperfectly competitive international markets (Baldwin,1992:806). If a firm in imperfectly competitive domestic market may behave strategically, the net gain from the international trading will be more than the net gain under the perfectly competitive market conditions. In some national markets, a few firms compete to control the whole nation’s industry. In such oligopolistic environments, firms clearly recognize the effect that their actions have on the behaviour of other firms and each firm must guess strategic games among themselves. Their choices for trade policy influence global market

decisions. This may even encourage cooperation by rival governments. Strategic economic conflict over markets and policy can involve threats and promises, commitments. There are familiar features of games, war and make for complex analysis. Their object is to influence the outcome for a conflict in one's own favour (Grossman and Richardson; 1985:3)

The new trade theory introduces new assumptions of imperfect competition and increasing returns to scale instead of perfect competition and constant returns to scale well as in modelling imperfect competition, the new theory has been able to incorporate many new features including differentiated products, strategic behaviour of firms, entry and exit of firms and even endogenous market structures. In the following chapter, the new trade theory has been analysed in detail.

The Empirical Test of the Heckscher-Ohlin Model

The first empirical test of the H-O Model was conducted by Leontief in 1951 using the US data for the year 1947 (Salvatore, 2007:145). Leontief was expecting to find that the US exported the capital intensive commodities and import labour intensive commodities since he was considering the US as the capital abundant country. For this test, Leontief utilized the input-output table of the US economy to calculate the amount of labour and capital in a ``representative bundle`` of \$ 1 million worth of the US exports and import substitutes for the year 1947 by using input-output table for the first time. Leontief estimated capital labour ratio for the US import substitutes rather than for imports since he could not access actual US import data. Even though the US import substitutes would be more capital intensive than actual imports, they should be less capital intensive than the US exports if the H-O model was true. The analysis concluded that the US import substitutes were about 30 per cent more capital intensive than the US exports. That is the US seemed to export labour intensive commodities and import capital intensive commodities (Salvatore, 2007:147)

Table 1.1 :
Capital and Labour Requirements per Million Dollars of
the US Export and Import Substitutes in Leontief Input Output Study

	Exports	Import Substitutes	Import/ Exports
(1947 input requirements, 1947 trade)			
Capital	\$ 2.550.780	\$3.091.339	
Labour (Worker year)	182	170	
Capital (Worker year)	\$ 14.010	\$ 18.180	1.30
(1947 input requirements, 1951 trade)			
Labour (Worker year)	\$2.256.800	\$2.303.400	
Capital (Worker year)	\$12.977	\$13.726	1.06
Capital /worker year, excluding natural resources			

Source: Salvatore; 2007:147

CHAPTER II

THE NEW TRADE THEORY

“Dostoevsky apparently once remarked that all Russian literature emerged from Gogol’s overcoat. It is at least as true that all pure theory of International Trade has emerged from chapter 7 of Ricardo’s Principle”(Cordella and Gabszewicz,1997:333). In the model, Ricardo, assumes that the world market works competitively. However, the empirical studies, since 1970s have been demonstrated that concept of market imperfections like monopoly, scale economies and product differentiation are main features of the real world. Most of the firms trading in international markets are price makers and they are not trading only homogeneous product but also differentiated products. Most of firms are trading those differentiated products in the same category as a result of advantageous of economies of scale. *While such trade is not excluded by the Heckscher-Ohlin and Ricardian models,they stress differences between countries as determinants of international trade* (Brander,1981:1). *This was especially true for Taussig who made differences in “effectiveness” of a labor a key factor in explaining relative differences in the economic development of different countries. Eli Heckscher placed proper emphasis on the significance of relative quantitative differences in the national supplies of different factors and resources. Ohlin instead of linking Heckscher’s emphasis on differences in relative quantities of factors, treated the new emphasis as demonstrating the illegitimacy of the old one* (Viner, 1952:27) Although Viner followed H-O for their emphasis on differences among countries’s relative supplies of the different factors, criticized H-O on neglecting the influence of regional differences in qualities of factors or in their “effectiveness”. Viner also argued that improvement is not merely a matter of more capital, or more acres or more mines in the ground but also of growth of effectiveness of management and of manua effort through better education, better health, better motivation and better political and social organization (Viner,1952:29).

So, it has been recognised that alternative theories incorporating these features of the real world to the traditional trade theory were necessary. Especially, since late 1960s and 1970s there were a number of studies focused on explaining these features of real life. Each

of them introduced new concepts and analysed the international trade and its theory from different perspectives. For example, Brander (1981) emphasized the intra- industry trade in identical commodities where Grubel and Lloyd(1975) paid attention to intra-industry trade in 1970s. Brander and Spencer (1981) introduced strategic actions to international trade theory while argued strategic action determines the increase in the wealth of both firm and nations. Dixit (1987) extended the Brander and Spencer model. Krugman (1979) showed that under increasing returns to scale, protection of a local firm in one market can shift the equilibrium to the firm's advantage in other markets by lowering its marginal cost of production. Although, each of these models explaining some part of the new theory, the later contributions by Dixit and Stiglitz provided the foundations for the growth of the literature dealing with other features like scale economies and product differentiation entry conditions, market size in a general equilibrium (Greenaway,1991:159). However, the most controversial suggestion was that government intervention can raise national welfare by shifting monopoly rents from foreign to domestic firms (Brander, 1981).

So, the new trade theorists focused on the importance of international trade factor other than the prevailing traditional arguments, such as differences in endowments of factors and the theory of perfect competition among different countries. Although, homogeneous goods and constant returns to scale are the basic assumptions of perfect competition, especially economies of scale, product specialization, strategic behaviour are the concepts of imperfect competition and this is the introduction of concepts from different discipline of economics and industrial organization theory into international trade. Introduction of new features has produced many new theoretical insights. Especially, although, basic concept of imperfect competition were generally considered as harmful to national welfare; in international context, they were accepted as important instruments for raising national welfare through gaining advantage of competition in product markets (Cowling and Sugden,1998:60). Foreign trade liberalization increases welfare of a country further under the imperfect competitive domestic market because it reduces the distortions created in the imperfect competitive markets. Also it expands market size, lowers the average cost by constructing efficient size firms and increased the division of labour in the context of the product differentiation and economies of scale. In new trade theory, the other important assumption and challenge to the traditional trade theory is the assumption of product

differentiation. While in the traditional trade theory, it is assumed that product which is subject to trade is completely homogeneous, under new trade theory analysis it has been assumed that products which are subject to international trade are differentiated product. Difference in consumer preferences across countries is the basis for international trade for differentiated commodities as well as it has influences on market structure under the case of economies of scale. In addition to scale economies and product differentiation, strategic interaction between producers located in different countries can influence trade independently of scale of product characteristics. So, for the new trade theorist, the basic subject became the imperfectly competitive markets, monopoly and oligopolistic market structure on where the stated features exist. After, analysing differences in assumptions, then details of new trade theory will be given in the following part.

2.1. BASIC ASSUMPTIONS OF NEW TRADE THEORY

When the traditional trade theory has been enlarged to include the imperfectly competitive markets, first of all, the basic assumptions relating to market structure are added. The basic features of imperfectly competitive markets are stated first, then the other assumptions are reconsidered. The existence of market imperfections may result from different reasons like the presence of increasing returns to scale or entry barriers like technological features, patent protection, the existing firm strategic behaviours government regulation, or the existence of large fixed costs; the existence of product differentiation due to different physical characteristics of goods or differing brand images due to advertising give a cost advantage or market power to the larger firms. In this section, each of these are analysed in detail

2.1.1. Product Differentiation

Differences in consumer preferences across countries are the basis for international trade for differentiated commodities, so, the product differentiation offers an important source of gains from trade. Although, product differentiation is not only the source of imperfect competition, it is essence of imperfection competition theory as well as it is important assumption new trade theory. What differentiates products are the characteristics that they each posses and so product differentiation involves making a particular firm product

either really or apparently different from that of its rival.

Although, differentiated goods mainly exist in a modern market economy and the literature on product differentiation developed greatly in the last decades; the term differentiated product was introduced into the literature by introduction of monopolistic competition literature by early this century. Then, after for a long time, Krugman was the first who studied on differentiated products and increasing returns to scale. Later, Ethier, Helpman and Levinsohn followed him.

Mostly, in assumption of product differentiation is related to monopolistic competition. If it is assumed that the equilibrium are determined by the size of the country, cost conditions, consumers preferences and there exist the zero profit condition in the monopolistic competition model, it was argued that firms provision is partly conditioned by environments, the degree of firm rivalry, entry conditions and government regulations. Under free trade, both the home and foreign countries consume all the varieties available in the world market. If consumers in both countries have identical preferences and if all varieties are equal in shares, a country offering more varieties may have higher shares in the foreign market as well as in the domestic market.

Firms in two different countries could produce different varieties of products, then, exchange them through trade and consume in both countries. This would also encourage intra-industry trade. With intra-industry trade in differentiated good sector, consumers in both countries benefit from the increased number of varieties available and from the price decrease resulting from economies of scale.

David Hummels and James Levinsohn(1993) studied trade among country groups by focusing on product differentiation and intra-industry trade. They found that intra-industry comprises only 0.5 percent of total trade for the data set consists of Brazil, Cameroon, Colombia, Congo, Greece, Ivory Cost, South Korea, Nigeria, Norway, Pakistan, Paraguay, Peru, Philippines and Thailand while the comparable result was 25.3 per cent for the OECD countries in the period within the same period. These results support the hypothesis that all trade is intra-industry and all countries have identical homothetic tastes in non-OECD countries. So, the data set countries with similar endowments tend to engage relatively in two way trade of similar products (Hummels and Levinsohn,1993:448). Following Hummel and Levinsohn, Brown (1995) analysed international trade on differentiated products for the

year 1880s. Brown (1995) observed that although, in the World War I period, countries were exporting what they had abundant, by the Second World War, the exports of manufactures by the eight industrialized countries of continental Western Europe doubled, one third of markets realized within the region. Recent study on French trade that covered about 60 per cent of French exports found that an aggregate Grubel Lloyd index more than doubled from the mid 1980s to the turn of the century. Despite protectionism and growing reliance on colonial markets, intra-industry trade at the end of nineteenth century was not much lower than during the time period in nowadays (Brown, 1995:497). Although, cotton textiles were accepted as homogenous bulk of goods in trade between Germany and Britain in 1880, they were differentiated products by their producers. This has been explained by trade among similar countries and monopolistic case by Brown and could not be explained under the H-O model.

Case Study on Product Differentiation 1: The United States Automobile Industry

Dixit (1988) analysed the US automobile industry to assess the effects of strategic trade policies on the US economy. Main question was the rising level of penetration for Japanese car in the US market. Following a high level recognition, Japan applied voluntary export restraint on Japanese cars. Dixit(1988) evaluated different trade policies where the positive elasticity of market demand is represented by the market share of this firm for the year 1979, 1980 and 1983. The actual data on price, quantity and market share were used. Dixit generalized the model by assuming that cars made in the US are differentiated from cars produced in Japan. However, all the US cars are homogeneous with all Japanese cars.¹³ Dixit considered the case where only a tariff is available as well as the case in which both a tariff on Japanese imports and the US production subsidy are available. He found that a considerably higher tariff than was actually in place on Japanese cars would have

¹³There are n American firms and n Japanese firms. Demand is linear. Where in a Cournot model, $\phi = dp/dx$, the slope of U.S. inverse demand for US cars. If the auto industry is not Cournot, then ϕ will differ from this slope. For example, under Bertrand competition $\phi = 0$. As in the homogeneous product case, market information can be used to calibrate ϕ . Dixit finds that the US industry is more competitive than implied by a Cournot model but less competitive than a Bertrand model would imply.

been welfare improving for the US¹⁴ and also an optimal policy would require a greater reduction in Japanese imports as well.

Case Study on Product Differentiation 2 : The United States Automobile Industry

Like Dixit, Krishna, Hogan and Swagel (1988) evaluated the US automobile market focusing on U.S. and Japanese producers. They analysed the period 1979-1985 which includes the three years already studied by Dixit. The major difference in the analysis is that Krishna Hogan Swagel wish to allow product differentiation within the US automobile market. Specifically, demand curve for automobiles is assumed to derive from a utility function. Krishna, Hogan and Swagel used the same cost data Dixit and very similar quantity data. However, they found that industry conduct for US producer is more competitive than implied by Bertrand competition¹⁵. The research findings in contrast to Dixit showed a shape of behaviour that is between Cournot and Bertrand.

With homogeneous products in the US industry as it was assumed by Dixit, Bertrand behaviour implies marginal cost pricing. Therefore, any excess of price over marginal cost indicated that behaviour is less competitive than Bertrand. However, with differentiated products in the United States industry as assumed by Krishna, Hogan, Swagel, Bertrand Competition implies a positive mark-up of price over marginal cost. Therefore, price may exceed marginal cost and still be consistent with conduct that is more competitive than Bertrand competition as found.

In addition, they found that the optimal the US policy should be carried on subsidizing Japanese imports. These finding was explained by the assumption of highly convex demand which tends to make an import subsidy optimal under imperfect

¹⁴ Using the years 1979 as base year, the actual tariff on an imported Japanese car was \$ 100 on a price of about \$ 4000 while the optimal tariff would have been \$570 in the absence of a subsidy and \$408 in combination with an optimal subsidy of \$ 611. The total US welfare benefit from this combined optimal tariff and subsidy would have been \$309 million which is small compared to total US surplus in the industry of \$33 billion

¹⁵ Under the Bertrand assumption the first firm, Firm A acts in the belief that the second firm, Firm B will maintain a its price level. So it makes its own price freely. The behaviour of Firm A under different assumption regarding to behaviour of the second firm, Firm B could be followed from ***the reaction curve of Firms A.***

competition because the gains in consumer surplus from lower prices are large relative to the subsidy cost. By changing just one of the major components in Dixit's analysis, they obtained qualitatively different results. In particular, where product differentiation is important in the industry, it is not clear that the functional forms differs in demand analysis (Krishna, Hogan and Swagel, 1989)

2.1.2. Economies of Scale

The models of comparative advantage presented in traditional trade theory were based on the assumption of constant returns to scale. However, in reality most of the industries are based on the economies of scale where increasing the input may increase output more than it increase. Grubel and Lloyd explained this as one of the important evidence beyond the new application of imperfect competition and observations of the effects of trade liberalisation (Grubel and Lloyd,1975:6)

Krugman (1983) also argues that increasing returns could be one of the reasons for trade between similar countries, trade might reflect a cover of increasing returns specialization on comparative advantage (Krugman, 1983:342). "Economies of scale" is the source of comparative advantage since economies of scale allows decreasing cost of production; and decreasing cost of production allows producers in different countries to specialize in different varieties/model ranges and thereby, gain comparative advantage in these varieties. The reason for economies of scale might be different, ranging from increasing returns to scale, to entry barriers. The extent of the scale economies are determined by the nature of production function and it has an important bearing on market structure. *"Production conditions thus dictate a small number of large producers of wide bodied, but a large number of small producer's running shoes"* (Greenaway, 1991). Assumptions of scale economies and product differentiation determine different market setting, the direction of trade flows and also the number of producers in the market. The number of producers also determines forms of imperfect competition; therefore, the analysis of each form differs in their applicability. So, the existence of scale economies diverts attention to the importance of imperfect competition and implication of new trade theory.

The role of economies of large scale production was a major subject in the work

of Ohlin, while the authors like Balassa also argued that scale economies play a crucial role in explaining the post-war growth in trade among the industrial countries (Krugman,1990:4). Nevertheless, formal trade theorist did not pay attention to increasing returns as a reason of trade, sufficiently since they assumed purely external economies which only internal economies of scale imply imperfect competition (Krugman,1992). In addition, the other reason for this ignorance would be the difficulties in implications of industrial organization concepts like market structure to the theory of trade. However, increasing returns would just change the pattern of comparative advantage. There are large number of studies on international trade theory where attention has been paid to the presence of Increasing Returns to Scale (IRS) in the production of final goods. Most of them concluded that the opening of trade in final goods may result in losses for the economy under the monopoly case (Ishikawa, 1992). Opening the economy to international trade in the intermediate good level may cause either in complete specialization or no production of the intermediate good. A few studies, such as those carried by Ethier and Markusen(1996) have introduced increasing returns to scale in the production of intermediate good into a general equilibrium trade model. They consider differentiated intermediate goods under Chamberlain monopolistic competition by introducing a fixed cost (Ethier and Markusen,1996: 12).

While, the economies of scale is an important reason of imperfect competition and existence of market failures: it is the secondary important assumption for supporting existence of strategic trade policies in Krugman's view. However, Krugman believes that this condition does not necessarily need to be fulfilled in comparison to the first requirement. On the other hand, if economies of scale are exist, then more likely, the policy will improve the welfare of the domestic economy. Economies of scale expand the gains from trade and this give rise to incentives to implement strategic trade policies (Krugman,1992:427) .

The traditional trade theories are built on the differences in resources among countries. In these models productivity of resources and factor endowments determine the product specialization in production and trade. Although, inter-industry trade reflects comparative advantage, the pattern of intra-industry does not reflect comparative advantage. Even if the countries had the same overall capital labor ratio, their firms

would continue to produce differentiated products and the demand of consumer for products produced abroad still may create intra-industry trade. So, it can be argued that the economies of scale may avoid countries from producing full range of product for itself; thus economies of scale can be an independent source of international trade itself (Krugman and Obstfeld; 2003:138). In contrast to comparative advantage, pattern of the intra-industry trade may not be predictable. The only thing it can be predicted that countries with similar capital output ratio are trading among themselves. About one fourth of world trade consists of intra-industry trade. Intra-industry trade plays a particularly large role in the trade in manufactured goods among advanced industrial nations, which accounts for most of world trade (Krugman and Obstfeld; 2003:140). Intra-industry trade tends to be prevalent between countries that are similar in their capital labor ratios, skill levels and so on. Thus, intraindustry trade will be dominant between countries at a similar level of economic development. Gains from this trade will be large when economies of scale are strong and products are highly differentiated.

Before Krugman, Ethier (1979) states the simplest explanation for economies of scale and intra-industry trade by using example of Swiss watch industry. Although, in classical example, an increase in watch output would allow the development of additional specialized crafts and generation of economies of scale and world production is thus the most efficient when world output of watches is concentrated in one country; in Ethier argument, economies of scale could only be succeeded if Swiss craftsmen concentrate on one part the watch and German craftsmen on another as by having two groups of Swiss concentrate on the two parts. The specialization need not be in industry level. According to Ethier (1979), this type of division is considered as the Adam Smith's division of labor, however, the difference should be on that division of production process and it should be dispersed into a large number of different operations rather than one single area (Ethier;1979:2). While neo-classical economists argue that economies of scale is the organic process and it is the result of learning by doing and communication between industry communication, Ethier argued that the dominant form of industrial organization is not the multinational corporation, arranging the stages of production on a global scale and internalizing relevant information flows at the end of 1970s, therefore, the large part of trade consists of intermediate industrial goods which can be classified as intra-industry

goods (Ethier; 1979:3).

The intra-industry trade allows countries to benefit larger markets and intra-industry trade produces extra gains from international trade over and above those from comparative advantage. By engaging in intra-industry trade a country can simultaneously reduce the number of products it produces and increase the variety of goods available to domestic consumers. By producing fewer varieties, a country can produce each at large scale with higher productivity and lower costs. Consumers can also benefit from consuming varieties of product.

So, what the new theorists did get away from “two-ness” of H-O, thus from making choice between comparative advantage and increasing returns. While comparative advantage continued to rule out the inter-industry trade by H-O, the intra-industry trade was ruled out by increasing rate of return and so by the new trade theory (Krugman;1992: 427)

2.1.3. Entry Barriers

Although in perfect competition markets, it is assumed that entering to the industry or to exit from the industry is easy and capital may also move easily from one industry to another as well the labour; in latest developments showed that there are barriers to entry in most of the industry. These barriers may be in the form of high initial investment cost or technological innovation or patent and similar intellectual property rights. Sometimes, in addition to these, economies of scale resulting from high technological capacity requirement may also be an important barrier to entry, just like to exit from the industry. Especially, if producer has to invest large amount of capital to large technical capacity at the beginning, the producer has to burden a large amount of sunk cost to exit from industry. So, these barriers may be reason of having low number of producers in each industry in a country, or even in international barriers. Latest empirical studies integrated these latest challenges to theory as imperfectly competitive markets and new trade theory.

Changing environment also change the structures of markets. One of the important assumptions of perfect markets and so the traditional trade theory is to access information perfectly. The consumer and producers can get necessary information

perfectly and decide easily and market gets equilibrium. Nevertheless, this was not the case for a long time, especially even when these traditional theories has been set. Although, development in information technologies and especially medium of media provide almost perfect information to related parties, latest development created new problems relating to perfect information in market structure. This is the problem resulting advances in information technologies raise the industrial concentration by increasing the optimal size of enterprises and decreasing the costs of organizing and utilizing hierarchies, for example long run planning, coordination costs, supervising and evaluating or carrying out quality controls (Pryor, 2001:301)

The information entry barriers faced by new entrant is also important aspect. A new entrants have to develop a relationship with consumers if they are going to enter into the industry which reputation effects are important: incumbents enjoy a competitive advantage over newcomers simply due to the fact that they entered sooner and were already able to establish a relationship with consumers (Raff and Kim, 1999:100). Informational barriers to entry are likely to be especially important in consumer goods industries, such as consumers electronics, automobiles, household appliances and personal computers.

2.1.4. Strategic Action

In the last decade, the traditional trade theory has been criticized on the ground that, it did not explain concepts such as intra-industry trade and high volume of trade between similar countries or increasing returns to scale, either. Therefore, the distinction is made clear between intra-industry trade, based on product diversity and scale economies and inter-industry trade explained by the usual factor endowment considerations. Firstly, Brander argued that there are reasons to expect such trade even if the goods in question are identical (Brander, 1981:14). So, features other than scale economies and product differentiation may also influence trade flows. For example, strategic interaction between producers located in different countries can result in trade independently of scale of product characteristics, the presence of multinational firms may also stimulate such trade, and the ability of firms to price discriminate may be relevant.

After introduction of imperfect competition into the trade theory, the analysis has been changed. Accordingly, although, monopolies or dominant firms are able to decide on their pricing and other policies without considering the reactions of any other, smaller, firms in the independent action, but are constrained by their rival firms to an extent which depend on among other things the number and size of the oligopolistic and the similarity of their product (Kenneth, G. Joll and Lyink, 1992). Even it is argued that “setting a trade policy also amounts to a kind of prisoner’s dilemma: in country in which each interest group gets the protection it wants, the net effect may be to make even the interest group themselves worse off than if there has been prior commitment to free trade (Krugman, 1993; p:365). The effect of trade policy changes each time as the assumption of the market structure changes. For example, if the firms in oligopolistic market gets equilibrium in Cournot rather than Bertrand, the results differ completely.

Since the oligopolistic market contains a small number of firms therefore the effect of any action taken by one of the firms will depend on how its rival will react. For instance, a price cut by one firm will result in a larger increase in sales if the other firms in the industry maintain their existing price than if they all follow price cut¹⁶. Interdependence between firms is an important factor and it should be considered as an important strategic hypothetical variable in trade policy. The interdependence is like a prisoner dilemma.¹⁷In the case of oligopoly, two firms, A and B have to make decision on alternatives of a low and a high output strategy. Each firm individually makes more profit by choosing a high level of output as long as the other firm produces a low output. However, if both firms choose the low output level and higher prices, higher level of profits will be obtained.

The profits accruing to firms A and B in every combination of the chosen strategies are given in the figure 2.1. If firm A thinks that firm B is going to produce a high output, there will be do better by also producing a high output level (with profit of 1)

¹⁶ Cournot Equilibrium

¹⁷ In prisoner’s dilemma, there are two suspects for a crime in a separate cell without any communication. The policies wish to secure a conviction and are a willing to forgive one prisoner if he turns state’s evidence, confess to the crime and informs against the other prisoner. If both of them confess, duration of their sentence will be reduced. If neither confesses they will both the prosecuted on a lesser charge. Each prisoner then has to decide independently whether or not to confess. The story is similar to the oligopolist’s situation. There is a conflict of interest among two parties, there is also common interest that they can both gain by cooperating and agreeing not to confess.

than if it went for low output (zero profit). If firm A thinks that firm B is going to choose low output, again it will do better to produce a high output (profit of 3) instead of low one (profit of 2). Therefore, it is better for A to choose a high output whatever it thinks B is going to do and in this case, high output is said to be dominant strategy. Exactly the same argument will apply to firm B's decision and therefore the non-cooperative solution to this game is that both firms choose to produce high output and make profits of 1.

Figure 2.1.: Prisoner Dilemma

		Firm B's output level	
		High	Low
Firm A's output level	High	1	0
	Low	3	2

Source: Brander, 1988:29

Although, prisoner dilemma is criticised on the ground that it is restricted to the case of once and for all strategy choice since this game repeated at regular intervals, this argument brings the game theory to the industrial organization and international trade theory (Brander, 1988:29)

Introducing strategic factors which are affecting international trade to model make it easy to explain real life. Using the instruments affecting market conditions such as structure of market, entry to the market and exit from the market, product differentiation and the strategic behaviour of the firms acting in the market enables to demonstrate the independency among trading partners. Brander, later on defines this as the policy of conditions between firms. This relationship between firms also brings mutually recognized interdependence (Brander, 1995). In presence of imperfect markets, even payment of profit by one firm must be directly affected by individual strategy choices of other firms. The analysis is getting more complex by introduction of each strategic variable. Under a perfectly competitive market conditions, each agent considers itself too small to influence market outcomes while governments presume that their policies affect market equilibrium but do not account for the way affect the behaviour of other governments (Richardson, 1986:257). However, in real life, small numbers of economic agents make interdependent decisions strategically; therefore, each makes choices

assuming that all rivals variables are given. The potential shifts in the cost of production in the market may increase the competitive pressure on domestic producers and may change the factors for strategic decision. This has also produced many new theoretical insights as well as new policy discussion. For example, not only differences but also similarities among countries are considered as a base for trade in traditional theory, because existence of increasing returns gives advantageous to these countries. Further, large states may lose from trade when monopoly sector in small states may expand (Vousden, 1990)

2.2. POLICIES OF THE NEW TRADE THEORY

Under these assumptions, it should be stated that the new trade theory may be considered as extension of traditional trade theory since it also covers also imperfectly competitive markets. The new trade theory also pay more attention to factor endowments as well not only the consumption side but also to supply side. Markusen(1983) argued that international trade theory has devoted more attention to commodity trade than to factor movements. Basic reason behind this argument has been explained that by two different reasons that this may be the results of relative importance of these in the volume of economic activity and the fact that trade in commodities and factor movements are substitutes. Markusen (1983) also explains this by stating that unequal factor endowments across countries and thus the tendency for factor movements to equalize endowments would cause a reduction in commodity trade. And also it could be considered that perfect factor mobility produce an international equilibrium in which factor prices and commodity prices were identical to those characterizing a free trade equilibrium in which factors were immobile. Thus, commodity trade and factor movements are substitutes in both a welfare sense and a volume of trade sense. The argument of Markusen (1983) can be considered as the basis for the new trade theory which is especially focusing on external economies while Brander and Spencer's analysis on export subsidies can be considered as the basis for strategic trade policies.

So, there has been a substantial literature in international trade theory which is

generally referred to as “strategic trade policy”. Krugman(1999) argued that Ohlin’s informal exposition of a theory of interregional and international trade contain the essence of what later known as “the new trade theory”. In his idea, *viewing the increasing returns in international trade, Ohlin suggested a sort of unified field theory of factor based and scale based trade that is clear precursor of the integrates economy approach that ended up playing central role in post 1980 trade theory* (Krugman, 1999:1).

The new trade theory analyses the welfare increasing conditions through government intervention to the imperfect market structures in which there are only few firms exist there. The direction foreign trade will improve the technological level, scale of the firm; so, the interdependent relationship among them gains more importance. According to Dixit(1986), in determining the policies, there should be answer of two critical questions: The first one is whether the social benefit-cost calculation differ from the private profitability calculation of participants in the market? The second one asks whether the policy being proposed the best way of solving the problem at hand or are there better measures available? (Dixit,1986:285)

Therefore, the governments generally look for “optimal” policies which are unilateral, best response choices to the policy choices of foreign governments. When countries follow such optimal policies together, they can get optimal equilibrium in policy variables. Special attention should be paid on optimisation and what the optimum means (Markusen, 2001). Trade policy can serve for a given country as a tool or obtaining as large a share of these international profits as possible. Brander states implementing strategic policies might” allow the country to capture rents that would otherwise go elsewhere” (Brander, 1988). So, the government should play more active role in international trade by following two basic policies

- Shifting rents
- Supporting more external economies

Although a large number of papers have been written on “strategic trade policy” in recent years, considerable uncertainty remains concerning the likely effects of employing trade policy in a particular industry. The economic case for trade policy has traditionally depended on the ability of governments to change the prices of imports and

exports on world markets to their national advantage. Helpman and Krugman (1999) defines the distinctive feature of trade policy under imperfect competition is that a trade policy may alter the markup price over the marginal cost in ways that are either beneficial or harmful to the country that initiates policy (Helpman and Krugman 1999:4). Under imperfect competition, trade policy may lead to potential gains through changes in the number of firms or the degree of competition in an industry. It may increase the scale at which firms operate and/or strengthen the competitive position of domestic in respect to foreign firms. The new trade theorists expected that the governments should apply trade policy more actively in international business and governments should also behave strategically with help of export subsidies, import restrictions, or other encouraging activities. So, two essential ingredients for strategic trade policy are that an industry has economies of scale and firms in the industry have market power that enables them to earn higher than normal profits. Therefore, strategic trade policy is the selective use of trade barriers and industry subsidies in order to capture some of the profits of foreign firms (Gerber,2007:103). So, there are two basic policies to follow. In “national champions” approach, the government can shift the economic activity from one sector or industry to the other. This is also the policy that may be followed as industrial policies. According to new trade theory, the high technology industries should be promoted. This is the first policy, in fact this is the policy what it is known as “infant industry protection policy” (Krugman, 1992) on the other hand, the second important policy is related to the trade policy.

If governments behave strategically with the help of export subsidies and import restrictions and shape the markets, this makes firms to gain rents in imperfectly competitive international markets. If the government is able to support such industry, where important rents are to achieve, then, the government can increase the national income this way. These are usually sectors where oligopolistic structures prevail. According to Krugman, some sectors with very important large-scale production and a steep learning curve may look unprofitable even though existing firms are making exceptionally high profit (Krugman, 1996:13). Therefore, the strategic trade policies would be a vital for some domestic industries to expand. The government can ensure the long-term viability of domestic companies by subsidizing the sunk costs of setting up

large operations with spare capacity. Such a way of subsidizing producer other than subsidy per unit of production, sales or export could be called direct protection of industry. Domestic companies could then be more resistant to foreign competitors because of being able to undercut their competitors prices and achieve lower units costs. If these producers could be successful, a higher profit can be achieved than it can be earned in other industries. If other governments do not retaliate, the rent can be shifted from the foreign producers to domestic ones. Although, the government's spending may increase by subsidizing firms, the gain from this rent shifting can be more than the spending.

Another benefit of strategic trade policies was seen in the potential to gain more external economies. It was argued that even other domestic firms might benefit from the activity of a supported firm, in spite of not being engaged in its activity. According to Krugman, the most apparent external economies might be the diffusion of knowledge generated in the supported firm to other firms and other sectors would be the most apparent benefit of the external economies. Different than the previous infant industry arguments, industries employing skilled workers, having advanced technology can become important source of technological spillovers. So, external economies, which can be generally considered as the reason of imperfect competition in one side of the analysis, are now considered as a policy for economy.

Policy determination regarding trade in oligopolistic industries is a difficult task, since developed and developing countries often have different interest. It is argued that governments may follow policies in favour of national firms over foreign rivals. In this case, protection enable the home country to capture some of this profit, either in the form of tariff revenues or by increasing home firms profits through subsidies (Dixit;1987:184) All forms of protection target improving the position of domestic producer relative to its foreign competitor. This can be done in variety of ways:

- By decreasing the costs of domestic producers. Generally, the cost of domestic producer can be decreased through subsidies.
- By restricting the access of foreign producers to the home market. Mainly, trade restrictions are used for this purpose.
- By increasing the home price of the foreign product. The most frequently used

instrument is the tariff.

In the following part, each of these instruments, especially, tariffs are analysed in detail. Import tariffs and export taxes or subsidies are directly applicable policies. While each of these policies decreases economic welfare with perfect competition, the effects of these policies are more complex under imperfect competition. The new trade theorists have made an important contribution by examining the welfare implications of alternative trade policies. When the assumptions of the perfect competition are removed, difference in industry and market structure seriously complicates formal analysis of the gains of trade. These relate to potential shifts in the cost of production - rising and falling profit margins-new product introduction, increased competitive pressure on domestic producers and changes in the parameters underlying strategic decisions. The interaction between these effects and trade policy can be quite complex.

2.2.1. Supporting External Economies

While infant-industry argument is one of the oldest argument; recently, by introduction of discussion on new trade theory the infant industry argument has also been updated. It has been the mostly used argument for protection in practice and it is the instrument of industrial policy. However it is justified under the new trade theory. The main idea behind this argument is the temporary protection of an industry in order to enable it to develop into an internationally competitive industry; the idea is restricting the a particular market, or subset of a market to certain firms helps those firms in other markets, or subset of a market, to certain firms helps domestic market from foreign firms in other markets (Brander, 1988:32). Protecting the domestic market from foreign firms helps domestic firms not only in the protected market from foreign firms helps domestic firms not only in the protected market but in export market as well (Brander,1988:32). The industries would grow fast and become more efficient, because of the protection. But the old argument would not consider the strategic behaviour that is incorporated into strategic trade policies. It might be argued that firms would always have an incentive to tolerate losses in order to make long-term profits. Dixit (1986) argued that protection will enable the industry to achieve dynamic economies of scale, to lower its costs, and to

become competitive in world markets.

The incentive to invest in such industry should exist even without the need for government assistance. In other cases, it would not be worthwhile to protect the selected industry (Brander, 1986:32). There are two additional reasons for the infant industries argument which require government's assistance due to domestic distortions: market failures like the imperfection of the information flow or the imperfection of the local capital market. Due to the protection of a domestic market, a domestic firm can raise its output in the domestic market. It shows that the protection of a domestic market against foreign firms helps domestic firms not only in the protected domestic market but in export markets as well.

Besides the existence of oligopoly profits, the presence of increasing returns of scale contributes to this strategic argument in Krugman's view ((Brander,1988:32 (Krugman,1983:)). When the cost of producing an extra unit of output, falls as total production by the firm rises and when there is a single domestic firm single foreign firm. In the absence of protection, one would expect both firms to operate in all markets, even if the firms produce identical products. If the market is closed to the foreign firm, the domestic firm would increase its output in the market. Therefore, the marginal cost of producing an extra cost would decrease since the marginal cost falls as output rises, and the market share of the domestic firm would increase.

The most of the markets would not have decreasing marginal cost. However, for the first time, the "learning by doing" case is introduced to the analysis. Learning by doing is explained by the idea that the firm learns how to do it as long as it produces more. This protection policy in home market allows the firms to produce more and learn more quickly than foreign rivals and compete more successfully with them. As a result, home firm would earn higher profits in export markets than it would be in previous case. Protected activity would become so competitive that it turns out as an exporter-something completely unimaginable before. This is called "protection as export promotion" by Krugman (Brander,1988:33).

In the national champion approach, governments can help developing internationally competitive industries by focusing resources in a few large companies which then benefit from economies of scale (Hollis, 2003:105). In the "competitive"

approach, firms only grow and become successful exporters when they face by many competitors. According to this protection policy based on learning curve concept is similar to the infant industry concept. Government may support the firms to shift to downward on learning curve with every kind of aid. Since movement on learning curve downward reduces the cost of production, firms have the chance to get more profit. If governments follow the policy of restricting free imports, it can also support the firms to get more profits from international markets. This policy only allows domestic firms in the national markets. If domestic markets are large enough to allow domestic firm to shift downward (through learning curve), protection of domestic markets through tariffs or quotas or similar instruments, may serve domestic firms to raise its competition power in export markets. So, these domestic firms get larger market share.

Domestic rivalry is one of the most important sources of international competitiveness since it creates an pressure on firms to improve and innovate. Domestic rivals benefit from spillovers of technology and learning as workers move between firms. In addition when industries are competitive at a domestic level, there is likely to be less counter-productive government intervention into the industry. Domestic consumers maybe also better off even when trade policy instruments like subsidies are used. Subsidies allow the domestic firm to capture a larger share of the market, and due to oligopoly rents. The subsidy may result more of what has been expected as compensation since subsidies are important form of protection, by decreasing the cost of domestic producers. Subsidies are generally considered as trade enhancing and they do more in improving world welfare than protection measures (Spencer,1986;70). Governments support their firms by subsidies; so they can make their domestic firms successful exporters in world markets. Especially, under imperfect competition and in certain circumstances an export subsidy can raise the national welfare .

The subsidies may be in the form of export subsidies, export credits, shipment credits, research and development(R&D) subsidies or loan guarantee. Export subsidies are very sensitive instruments in trade policy, although they are very practical. Sometimes, they may be welfare enhancing policy, sometimes they may not be. Especially, in industries producing strategic product, an export tax would be a welfare enhancing (Levinsohn, 1994:337). Among all kinds of subsidies, especially subsidies

allocated to R&D are the most frequently applied types in recent years. These kinds of subsidies cause domestic consumers to pay higher costs for consumption. They can be justifiable and raise the national welfare, only, in the case where an increase in profit is more than an increase in cost of subsidies. The influences of large amount of R&D spending are generally observed as an increase in Gross National Product(GNP) in countries like Japan, Germany and the United States (Dollar, 1983;431). American and European policy makers also support domestic firms legally, in favour of R&D cooperation among firms, since they believe domestic firm would achieve innovation faster and cheaper through R&D cooperation and it would easily overcome foreign rival competitive pressure and gain larger market (Rutsaert, 1994;5).

Since, subsidies are directly paid to the firm and they are direct cost to the government, for very long time, it is argued that subsidies distort the allocation of resources from market determined to less productive uses. Subsidies can only be justifiable where an increase in profit is more than an increase in cost of subsidies to the taxpayers (Spencer,1986). Or it may be justifiable, if it increases the welfare of nation. If the increase of domestic firm's profits is higher than the subsidies paid by the government, the welfare of the country might be raised. "If firms produce at price in excess of marginal cost, then welfare may be raised by using export subsidies to expand the output of domestic firms" (Markusen and Venables, 1988:299). The sale price should also exceed the opportunity cost of input determined without the subsidy if product innovation and development factors are not taken into considerations. Unless, there are high level of cost, capital or other kind of barriers to entry to the industry, subsidization may be beneficial initially and protection of profits for reasonable length of time. Traditional theory assumes that there are no barriers to entry so that an industry would consist of a large number of small firms earning only the normal profit required to remain in business. In such a purely competitive industry, price is equal to each firm's private marginal cost of production, so for example an export subsidy would cause price that is less than the real marginal cost of production. In this situation an export subsidy can only reduce domestic welfare, by giving subsidy to foreign consumers as a gift (Spencer, 1986). This requirement for profitability would exclude subsidization as a method to "save" unprofitable industries and still would help the country to benefit from this

situation. Some unprofitable industries might earn above normal returns from exports if the hidden returns in the form of wages and salaries above the opportunity cost are counted. So, the production subsidy to an import-competition industry would be inferior substitute for a monopoly–optimum tariff, while such a subsidy to an exporting industry would actually worsen the terms of trade (Dixit and Grossman, 1986:233)

The second condition for determining appropriate strategic trade policy is illustrated by increases in domestic exports. The export increased through subsidy must cause to a reduction in both output and price level of rival foreign firm's product. The domestic exports increased through subsidy should result in a fall in price by a sufficient rate will make the additional sales unprofitable. But, this cost should not cause a loss in sales of foreign firms (Spencer, 1986). This requirement clearly excludes intervention in the case of a monopoly where a domestic firm does not face competition or potential competition in export sales. A monopolist will have right to choose either price or investment choices to maximize its own profit.

If the target firm is in the oligopolistic market, the analysis of export subsidy will require the analysis of strategic interactions since foreign firms cut back output which depends on the nature of the oligopolistic rivalry between firms and on the nature of response, by foreign governments. In the case where the strategic reaction of rival firm or government associated with tacit collusion, if one firms raises prices by cutting back output, this may cause other firms to follow and also cut back output (Eaton and Grossman, 1986;384). This increases in prices, maximizes profit to monopoly level. On the other hand, a rise in exports by domestic firms brought about by an export subsidy which leads to an increase in output by other firms and a further fall in prices and reduces the profitability of the domestic industry¹⁸. Accordingly a firm assumes that when it changes its prices, other firms will maintain their price even if they will face reduction in their sales. In this case an export tax would be more appropriate to increase domestic profits through exports rather than a subsidy (Spencer, 1986).

Dixit in 1984, Brander and Spencer in 1985, Eaton and Grossman in 1986 analyzed this argument under the assumption of free entry and they concluded that the

¹⁸ This is known as Bertrand Equilibrium

export subsidy will attract new firms into the industry, so it may not expand the output of individual firms or change their average costs. The assumption of having a fixed number of firms in the industry is not valid any more.

The influence of export subsidies also changes whether international markets are segmented or not (Horstman and Markusen, 1986:227). Firms can set sales in domestic and foreign markets independently and the price of a product may be different in the two markets (Venables, 1985). In the integrated markets, firms control only their total world sales and the underlined quantities are allocated between countries, so, product prices are equalized in all markets (Markusen and Venables, 1988:300). When firms produce homogeneous products and simultaneously set quantities conditional to what they expect other firms to produce, export subsidies may be welfare enhancing if enough output is sold abroad. Generally, firms would like to produce more, since they can raise their profits. Nevertheless, they refrain from increasing their output in equilibrium, since the threat of rival firm to increase their production. However, there are not many examples of export subsidies in practices.

While a simple payment to a firm for each unit exported or produced is not a common practice, special tax, treatment in a particular industry, government subsidized R&D, special financing available for export credits, and governmental loans to firms that plan to export (Levinsohn, 1994). One important type of infant industry policy is to subsidize the R&D activities. As the other subsidies policies, basically government decides the optimal level of and the beneficiary industries of R&D subsidies. Especially, in recent years, there is remarkable tendency for supporting R&D activities. Rutsaert(1994) analyzed the efficiency of R&D cooperation as an industrial trade policy tool by using the strategic trade policy approach through partial equilibrium analysis. His objective was to determine the optimal degree of support for R&D for a domestic economy. First of all, government defines the extent to which domestic antitrust law allows cooperation in R&D and market collaboration, then, firms act. Three alternative policies are available: to forbid any joint activity; to allow only R&D cooperation; to allow R&D cooperation and the extension of the joint efforts to production and sales. The domestic firms invest in R&D in order to improve their production process and become more productive. Finally, foreign and domestic firms produce and compete for sale. So, government should

determine its R&D policy according to the industry characteristics like the intensity of market competition and the industry trade structure, in its policy decision (Rutsaert,1994:27).

Generally, modern, high technology sectors are large R&D outlays for new products, their cost decreases depending on learning by doing, risks of producing and marketing new products and knowledge spillovers. There should be only small few firms in the market since introducing new products and R&D expenses requires static and dynamic internal economies (Baldwin,1992;804).

Marshall argued that there were three main reasons why a group of firms may be more efficient than an individual firm in isolation: the ability of a group to support specialized suppliers; the way that a geographically concentrated industry allows labor market pooling and helps foster knowledge spillovers. These factors are still valid today. (Krugman and Obstfeld;2003:147)

Specialized Suppliers

In many industries, an individual company may not be large enough to provide market for the specialized equipment and support services which are necessary in the production of goods and services to keep the suppliers in business. However, a localized industrial group may bring many firms together and collectively provide large enough market to support a wide range of specialized suppliers as it is the case for software developer in Silicon Valley (Gerber; 2007: 68).

Labour Market Pooling

A second source of external economies is the way that a group of firms can create a pooled market for workers with highly specialized markets. Such a pooled market is to the advantage of both the producers and workers, as the producers would suffer less from labour shortages while the workers are less likely to become unemployed (Gerber,2007:68)

Knowledge Spillovers

In the modern economies, especially in highly innovative industries, knowledge is as important as any other factors of production like labour, capital or raw materials. Only,

a product design may be the major reason of a comparative advantage. Companies may get technology through either their own R&D efforts or they may learn from competitors by studying their products. An important source of technical know-how however is the informal exchange of information and ideas that takes place at a personal level (Gerber, 2007:68). So, if the industry is concentrated in small area and the employees of different companies mix socially and talk freely about technical issues, the diffusion of knowledge may be more effective.

A country gains from protectionist entry promotion whenever entry would occur with or without such a trade policy. Such protection for entry promotion is generally harmful to world economic welfare and counter measures by other governments that discourage entry-promoting protection that are beneficial. In contrast, subsidies of entry promotion may be desirable from a world perspective and successful countermeasures against them are harmful to world welfare (Dixit and Kyle, 1985:140).

Coe and Helpman (1995) analysed the relationship between the country's productivity level and domestic and foreign R&D capital stock. They use cumulative R&D expenditure as a proxy for stock of knowledge. In the model set, there were two variables, one for stock of knowledge based on domestic R&D and the other one foreign R&D expenditure. Coe and Helpman used 21 OECD countries and Israel, cross section data that both domestic and foreign R&D capital stocks. Their analysis put forward existence of close relationship exists between productivity and R&D capital stocks. Country's total factor productivity depends on not only to its own but also to their trading partner's research activity (Coe and Helpman, 1995:860).

If firms in industry generate knowledge that other firms can also use without paying for it, the industry is in effective production some extra output. Whenever the externalities are considered good for the others, there is a good case for subsidizing the industry. Krugman (2006) argued that at the abstract level the infant industry argument would be the same with the old argument, however, in advanced countries the argument has special characteristics since the generation of knowledge is the central aspects of the enterprise in those highly developed countries.

In addition to R&D encouragement policies, export subsidies such as attractive terms of credit for export sales have often been promoted on the basis that they might

allow domestic exporters to gain market share and profit at the expense of foreign rivals (Ishikawa and Spencer, 1999:220). In addition to the model developed by Brander and Spencer (1985) where subsidies for the final manufactured goods increase domestic welfare, Ishikawa and Spencer (1999) focused on the conditions where raise the domestic welfare via the subsidies on intermediate goods (Ishikawa and Spencer,1999: 200). In the Brander and Spencer (1985) model, the final good producers in both the domestic and foreign countries act as Cournot competitors and that all the final product is exported to a third market¹⁹. With the additional of the intermediate food market, strategic trade policy involves consideration of three kinds of rent-shifting, between foreign and domestic final good producer between foreign and domestic intermediate good producers and between final good producers and intermediate-good producers. If an export subsidy shifts rents to intermediate good producers, then, the policy implementation requires that these producers are foreign. Ishikawa and Spencer also argued that under the fairly demand conditions, in imperfectly competitive market, even an entirely foreign intermediate good industry may encourage to subsidize exports (Ishikawa and Spencer, 1985:201)

2.2.2. Profit Shifting Strategic Trade Policy

Abraham Lincoln summarizes his idea on foreign trade as follows: “*when I buy coat from England. I have to coat and England has the money. But when I buy a coat in America, I have the coat and America has the money*” (Dixit, 1986 :288). This argument states an important general principle which supplements the first question on determining policy whether proposed policy is relevant policy in both social desirability and opportunity cost²⁰. In mercantilist view, in perfectly competitive markets with free entry means no excess profit exists. Thus, Americans could not benefit from supplying Lincoln’s coat and since at the margin, producing just one extra coat may be matter of indifference as long as the price of coat equals to marginal cost of producing an extra coat

¹⁹ Cournot Competition is the special cases of domestic or foreign monopoly.

²⁰Opportunity cost: The cost of an input is the value of the forgone opportunity to put it to the next best available use. If markets are functioning efficiently, the prices of inputs will equal their opportunity costs

to the society as a whole. Therefore, Dixit does not evaluate this as mercantilist policy to encourage purchase of American coats to discourage to purchase of English coat (Dixit,1986:289). When the numbers of coats produced increase and diminishing returns might arise the cost of production above the price, this would be a loss making proposition for the American society as a whole. The losses could be compensated where the coat prices reduce all over the world. Under these conditions, an anti-mercantilist policy of export restraint would be required. In new mercantilist view, the basic model of the economy change to cover the imperfect competition. Firms operating behind the barriers would keep prices in excess of pure profits. Since, these can be thought of as scarcity values of the restricted positions in the industry, this is generally called as monopoly rents. The policy argument of the new trade theory covers this idea that the international trade and welfare of nations are affected from the profits or rents shifts, considerably. So, this is the general interest of home country's firms to get these rents instead of foreign ones. Dixit (1986) describes these trade policies under three different structures: 1) If a foreign firm is making profits in a monopolized market in the country, a tariff can be a tax on its profits. 2) If home and foreign firms are involved together in an imperfectly competitive market, a policy of import restriction can increase the home country's firm profit at the expense of foreign firm. 3) If home firm has monopoly position in the world market, foreign governments might support their firms and the home country's government could try to deter the other government's government reaction. In each these models, market structures differ. Depending on these different market structures and different assumptions, different trade policies are recommended and applied since the response of these markets to these policies also differs. So, there are two types of questions which policies and how these policies can be applied? In this case, Dixit (1986) asked this question to develop policy: in which markets the rents are higher (or above the normal level). Those basic questions will be analyzed in detail in this part. The basic profit shifting policies would be import protection or export promotion policies. Traditionally, protectionist trade policy is usually more concerned with import protection rather than export promotion, therefore, at the first stage tariffs are recommended since the threat of imposing tariffs to protect domestic production is typical of protectionist policies, and then, export-promoting subsidies are applied

(Krugman;1990).

If there are significant scale economies or dynamic learning economies from moving down the experience curve, the closing or partial closing of the domestic market to foreign competition could lower marginal cost of production which then promotes success in exports. Protection normally reduces world trade whereas subsidies are generally trade enhancing. Subsidy measures have a better chance of improving world welfare than do protection measures (Spencer, 1986:81). However, sometimes tariffs and quotas allow scale economies by domestic market in comparing protection with subsidy measures of industrial promotion, although this may be the loss of the consumer. Foreign subsidy may help domestic consumers, but if they reduce the profits earned by domestic producers, in many cases the economy will lose as a whole. Krugman supported such policies, which argues “import protection as export promotion” (Krugman,1990)

In new trade theory literature, every country follows the policy that their national firms can receive more of global profits. Although, these supernormal profits cause welfare losses for consumers, if government follows policy to retain the profit of the company within the nation, it is also a gain for the nation. Otherwise, the supernormal profit will be picked up by the other firms. So, firms should develop strategies and policies to try to get larger share from the world profit by taking into consideration other firms strategies and policies. Since each firm and each country follow policies maximising its profits, it seems there would be not conflicting targets among nations and firms. Since there may be cases where just firm behaviour may not be sufficient to shift the profit to the home country and there can also be a need for support of the home country's economy by the home firm (Dixit, 1987;187). So, the market share of firms should have been increased.

Trade policy can also be expected to influence market structure since trade alter the number of firms participating in an imperfectly competitive industry and the number of those that are going to be acting as domestic firms. Protection of a domestic market via tariff may induce a new domestic firm to enter the industry as well export subsidies. *Furthermore, a country with an incumbent in an industry might close off its home market to foreign firms in order to deter that would threaten its own oligopolists. Or it might threaten retaliation if a foreign government attempt to promote entry by subsidizing its own firms*

(Vousden, 1990).

On the other hand, if a domestic market is being supplied either entirely by a foreign monopolist or by imperfectly competitive foreign and domestic producers, a tariff or import subsidy introduced by the home government may raise national welfare. Or in these case, an optimal policy may change from an export subsidy to opposite case of an export tax when behaviour of firms changes. These could be considered as a motivation for interventionist trade policy (Baldwin, 1992: 804).

Tariffs and other trade policy measures can be justified under the condition of existence of domestic distortion, although, traditional trade theory argue for removal of tariffs and other trade policy instruments which are used as a restriction.

Strategic arguments for domestic market protection can be based on even looser conditions. Brander presents the situation in which marginal costs might be constant. Even in this case where a tariff could increase national welfare since domestic companies may lower their marginal costs by restricting domestic competition. So, they get the opportunity to make a profit in the international market. The tariff, serves to shift rents from foreign producers to a domestic firms and taxpayers (Vousden, 1990). Brander (1986) also presents a “neo- industry argument” in which the government can increase national welfare through tariffs even if there is no domestic producer. If the entrant’s costs are not high, the foreign competitor might be afraid of a possible entrant and might not increase prices even if tariff is imposed on its production. Then, tariff revenues become net welfare profits.

Dixit (1987) argues if there is not domestic distortion in the markets, small countries prefer free trade in absence of distribuional issues. Dixit (1987) interprets trade restrictions as the first best justification for a policy of departure from free trade, if the country improves its commodity terms of trade for the imperfectly competitive markets. Trade restriction may be considered as is an indirect method for partial correction of domestic distortions and for income redistribution but as production and consumption taxes or subsidies would be better solutions to the problem (Dixit, 1987).

The other important instrument of trade policy is the restriction of foreign producers accessing to the home market. Quotas are the most widely used instrument to limit the maximum quantity of a product that can be imported from a particular country

over a specific period. These policies also influence the domestic price and the size of the output; however, its influence change depending on time it is applied and the market structure.

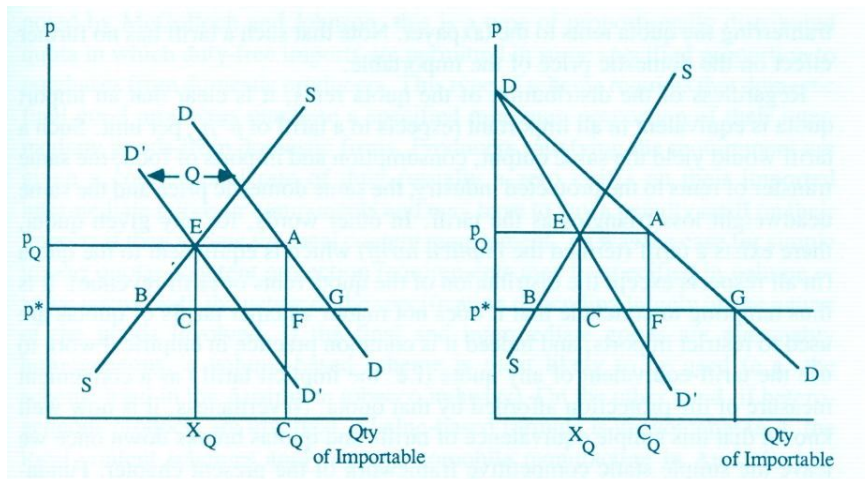
2.2.2.1. Quantitative Restrictions

The most frequently used form of non-tariff distortion to trade is direct quantitative restriction. This may take many forms: import quota, implicit marketing schemes and voluntary export restraints (VER)'s.²¹

The import quota has the same effect with the tariff under perfectly competitive markets. However, when the competition is imperfect, the effect of tariff differs. If import is restricted by quota, certain part of domestic demand has to be procured by domestic production. Letting domestic production and limiting supplying products at a lower world price cause the deadweight loss. The net outcome of a loss to consumers of is transferred to rents in the protected sector and the ultimate recipients of quota rents since the quantitative restrictions on imports pushes the equilibrium domestic price of imports above the world price. This can be followed easily by the figure 2.2. The equilibrium domestic price of food output (SS) occurs at point E whereas the domestic relative product x price would be at p_0 . The deadweight loss under the quota is given by the area EBC+AFG. This is the net outcome of a loss to consumers of $P_QAG_{p^*}$ of which $P_QEB_{p^*}$ is transferred to rents in the protected sector and EAFC is transferred from consumers to the ultimate recipients of quota rents. These rents arise because the quantitative restrictions on imports pushes the equilibrium domestic price of imports (P_Q) above the world price p^* , thus granting rents of p^*P_Q per unit on the holders of import licences.

²¹ An import quota imposes an upper limit on the home country's import of a particular commodity or group of commodities. Quotas may be in form of volume or value terms. Volume quotas are the most commonly encountered form of quantitative import restrictions.

Figure: 2.2. Quantitative Restrictions



- DD total demand by the resident for the importable good
- D'D' the demand curve after application of quota.
- X_Q domestic output
- C_Q economy's consumption of food
- P^* World Price
- P_Q domestic Price of imports

Source: Vousden, 1990: 39

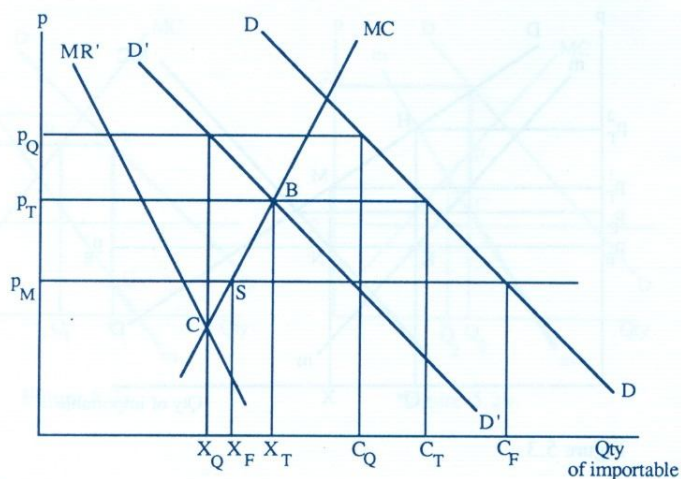
If import licences are given to the importers free of charge, then the importers capture the entire rents. On the other hand, licences may be distributed through tender by the government and the profits distributed in a non-distortionary manner in which case the wider community receives some or all of the rents. If the import licences are given to foreign country, this must be considered as a loss to the economy of country imposing the quota. However, the home economy may also capture the rents by imposing a tariff per unit on the good in question. This may be done as a means of transferring the quota rents to the taxpayer. Such a tariff has no further effect on the domestic price of the imported product. While in the short run an increase in the quota reduces the domestic price, in the long run as firms leave the industry, the price may rise (Buffie and Spiller, 1986:70). In other words, for any given quota, there exists a tariff (implicit tariff) which is equivalent to the quota. So, it does not matter whether tariffs or quotas are used to restrict imports. It

is common practice in empirical work to use the tariff equivalent of any quota (implicit tariff) as a convenient measure of the protection afforded by that quota.

Recently, as a result of the international agreement among most of the nations of world, many trade barriers has been removed, but other forms of protection measure have been emerged. Among these new measures are voluntary export restraints, product standardization, government procurement policies, or other forms of protection or specifying standards for certain products, justifying under health or environment. Although, the freedom of movement were restricted under legal clauses, because of valid considerations, like health of domestic consumers, or similar policies; it is also possible to use these regulatory barriers to limit imports intentionally. Another type of trade protection is dumping. Dumping is the sale of product in the foreign market at a lower price than the original company. It is related to antidumping law. While exact definitions of dumping vary across countries and even within a country over time. Yet, non-tariff barriers have minor importance as a trade policy instruments which is used in imperfectly competitive industries (Levinsohn, 1994: 337).

Thus, quota allows the monopolist unrestricted movement along his demand curve (the market demand curve net of importers) so that he is free to set price and output much as he would in a closed economy. The role of quota in the monopoly is the same as it is the case of increasing cost condition: The monopolist maximized profits were Marginal Revenue (MR) intersects Marginal Cost (MC) at C with output X_Q , price P_Q and consumption C_Q . This involves a lower output level than free trade ($X_Q < X_F$), so the quota has been anti-protective since the monopoly power conferred by the quota creates a tendency towards output contraction. In this case, MR could have intersected MC to the right of free trade point (S) in which case the quota would have offered some protection to domestic output. The anti-protective effect is more likely to dominate, the less elastic is the demand curve $D'D'$ faced by monopolist.

Figure: 2.3 Quotas under increasing cost condition



- DD Total Demand for Importable
- D'D' Demand Curve Monoplist Face
- MR' Marginal Revenue
- MC Marginal Cost
- X_Q Output level in application of the free trade
- X_F Output level after free trade
- X_T Output level in application of of tariff
- P_Q Price at application of quota
- P_T Price at application of quota
- P_M Price applied by monopoly
- C_Q Consumption in the case of quota
- C_T Consumption in the case of tariff
- C_F Consumption in the case of free trade

Source: Vousden, 1990:112

Quota can be considered as an award domestic firm to increase monopoly power by causing its demand curve less elastic. When there is decreasing cost conditions, quotas protect domestic industry without eliminating imports entirely. Under the economies of scale conditions, it may be difficult to generalize the results of the two policies

(Vousden,1990: 112). However, since, in this thesis, the main intention is to analyse the effect of tariffs on the real sector of the economy, the effects of quota has been analysed shortly.

2.2.2.2. Tariffs

Tariffs were originally imposed on goods and services entering a country from another country to raise government revenue, then, it became the most common form of protection to domestic producers and an important instrument of economic policies. Although, tariff generates significant revenues for the government, it produces higher prices for the imported good in general. However, in the case of imperfect competition since the price charged for a good exceeds the marginal cost of production, a country importing such a good usually pays monopoly rent to the rent exporting firm. Tax policy is the standard instrument for extracting monopoly rents from imperfectly competitive firms in a domestic circumstances (Brander and Spencer, 1981:372).

In fact, the idea that a country might be able to improve its welfare by imposing import tariffs or export taxes goes back to Bickerdike (Markusen and Wigle,1989: 365). Depending on different economical, political, institutional priorities, tariff policies differ over time and by commodities. While leading economists, Adam Smith, Ricardo argued for free trade, politicians would prefer which economic interest, have the most votes. So, they may prefer to use trade restrictions since they consider not only national welfare but also their supporters. Import tariffs and export taxes cause the economy as a whole to behave either as a monopolist or monopsonist in its international trade relation. In industries that produce similar but not strategic variable, an export tax might be welfare enhancing.

In most cases, the gains from trade, called “pro-competitive effects”, directly linked to conditions of scale economies and/or imperfect competition (Francois and Holst; 1996:14). In some other cases, when discrimination across is not allowed, trading off domestic monopoly welfare losses through monopoly profits from exports is the second-best policy. The existence of a competitive export opportunity can serve to limit the exercise of domestic monopoly power in such a setting. There is also situation where a tariff is introduced to counter the tariffs of a foreign government and tariff imposed

against imports from a private foreign firm (Vousden, 1990: 118).

Assumptions of scale economies and product differentiation determine different market setting, the direction of trade flows and also the number of producers in the market. The number of producers also determines forms of imperfect competition; therefore, the analysis of each form differs in their applicability. Here, following Vousden's partial analysis²², the pro-competitive of trade on monopoly in the cases in the presence of international trade and the case where the international trade is absent, will be analyzed. Pure monopoly²³ is the simplest case since it avoids game theoretic difficulties. The analysis covers the case of leadership where the residual demand curve is obtained by subtracting the supply of the price taking fringe sellers from total demand. The pure monopoly in trade is the most carefully studied case. This may also fall into several different categories. In the first case where a domestic monopolist is a price leader in an import competing industry, trade serves to limit the domestic monopoly power (Dixit,1987:187). In the absence of international trade, monopoly determines its price where its MR curve intersects its MC. This equilibrium is different from the competitive case since there is a range of prices (P_M to P_T) in which the monopolist faces the downward-sloping demand curve DD (and the associated marginal revenue curve mm). If there were no tariff, this would turn to the competitive case with the producer being forced to charge P_M . It is the protection provided by the tariff which provides the monopoly the market power it would have in the absence of imports. In this case, protection may be harmful and tariffs may be more harmful in comparison to quotas (Bhagwati, 1987:195)

If the tariff inclusive price (P_{M+T}) is gradually increased above P_M by raising the tariff, the reaction of the monopoly and the demand curve differs. If a tariff of $P_M P_T^1$ per unit is imposed. The firm maximizes profits where its MR curve cuts MC curve at point B. Q_1 amount of product is produced by monopoly at the price level p_1T and consumers demand C_1 and Q_1C_1 is supplied by imports. This is the same equilibrium which exists in the competitive industry. The tariff inclusive price is so low that domestic producer does

²² Partial equilibrium analysis means that the effects of policy actions are examined only in the markets which are directly affected. Supply and demand curves are used to depict the price effects of policies

²³ Where consumers act as price takers and their behaviour determines the monopolist economic environment of the demand curve

not use its monopoly power.

Figure 2.4.a. : Tariff in monopoly case

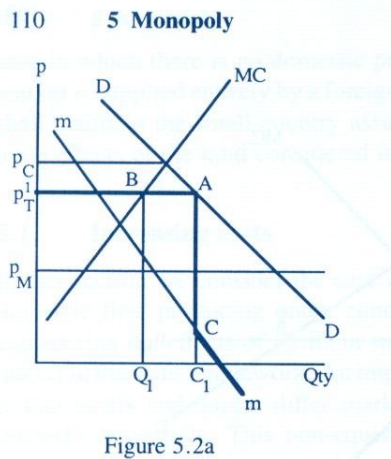


Figure 5.2a

P_C : Competitive price level

P_T^1 : Tariff inclusive price but tariff is at lower levels.

P_M : Monopolistic price level

mm : Marginal Revenue Curve derived from demand curve DD

MC : Marginal Cost

AC : Average Costs

P : Price

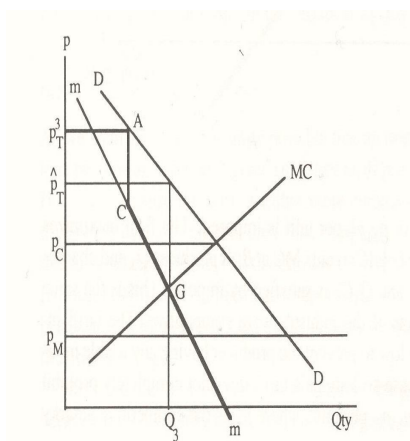
Qty : Quantity

Source: Vousden, 1990: 110

Domestic firms can only influence their price-cost margins to the extent that they control total supply to the market (Lyons, 1981: 276-277). When the tariff-inclusive price is increased above the competitive price (P_C), the monopoly produce for the whole market, the equilibrium exist at F where MC curve intersect vertical discontinuity in its MR Curve. It produces quantity (q_2) at price including tariff (p_2T). This amount of good to be traded is more than the previous equilibrium point. In this case the tariff is high enough to prohibit imports but not high enough to remove the threat of import

(Vousden,1990:109). If the tariff-inclusive price is, above the producer's unconstrained profit-maximizing price (P_0), the MC curve cuts the downward-sloping segment of the MR curve at G; at this point the production quantity is quantity q_3 and at price P_t .

Figure 2.4.b : Tariff in monopoly case



P_C : Competitive price level

P_M : Monopolistic price level

P_T^1 : Tariff inclusive price but tariff is at lower levels.

P_T^3 : Tariff inclusive price, tariff is at higher levels.

mm : Marginal Revenue Curve derived from demand curve DD

AC : Average Costs

MC : Marginal Cost Curve

P : Price

Qty : Quantity

Source: Vousden, 1990: 110

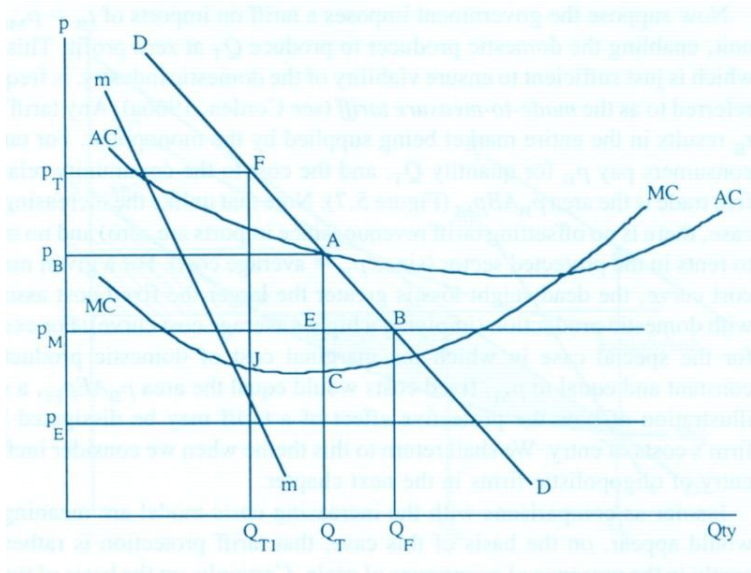
Figure 2.4.b illustrates the case in which the tariff inclusive price is P_T^3 above the producer's unconstrained profit maximizing price P_T . In this case, the MC curve cuts the downward sloping segment of the MR curve at G, resulting in production of Q_3 and a price of p_T . P_T, P_T^3 of tariff is unused or redundant protection. In this case, the tariff is sufficiently high to effectively remove any threats from imports so that the monopolist can act as if unconstrained. Any tariff above $P_M P_T$ per unit is unused. This contrasts the

case of a competitive industry in which any tariff above $P_M P_T$ per unit is unused. Monopolist can use more protection than an equivalent competitive industry because of tendency of monopolist to either restrict output or raise price relative to their competitive level (Vousden, 1990:110). As long as a tariff does not completely prohibit import, this is the equilibrium. When the tariff-inclusive price is above the producer's unconstrained profit-maximizing price, the MC curve cuts the downward sloping segment of the marginal revenue and result in equilibrium point. At this equilibrium point, the tariff is sufficiently high to effectively remove any threat from imports so that the monopolist can act as if unconstrained (Vousden, 1990:112)

A large amount of capital investment brings an important barrier to the entry into industry; especially monopoly where only one firm can earn positive profits and it is an extreme case under economies of scale. Although import competition affects the position of monopoly in industry, especially a natural monopoly in small economy may even earn profits at the price determined by perfectly elastic supply of imports. If a tariff is sufficiently high, the domestic firm may easily enter to the industry.

If natural monopoly working in scale economies has U shape average cost curve and produces a perfect substitute for the imported good. Here, it can be said that one of the important assumptions of perfect competition remains valid in the analysis of tariffs in imperfectly competitive markets. The homogenous product assumption also stresses the fact that firm makes a profit by producing some units of the good then when its average costs are reduced and its profits increased by producing all units of the good import may be completely or may be or may not completely. Or domestic market can be supplied totally by the foreign import and the domestic monopoly produces nothing for the domestic market. Under this assumption, in the absence of protection, the domestic industry will not produce anything at all. The import will supply to the whole domestic market at Q_F amount and at P_M price. If government imposes a tariff on imports of t_b as $p_M p_B$ per unit, the domestic producer continue to produce Q_T at zero profit. This optimum amount of tariff provides domestic producer to continue its production activity (Vousden,1991:118). Any tariff above T_B makes the domestic monopoly to be the only producer for the whole market.

Figure 2.5.: Tariffs in the presence of economies of scale



DD Demand Curve

AC Average Cost

MC Marginal Cost

P_B Price at quantity of domestic production at zero profits at tariff t_b

P_T Tariff Inclusive price

P_M Monopoly price

P_E f.o.b. export price

Q_{T1} Quantity of domestic monopolist after imposing tariff

Q_T Quantity of domestic production at zero profits

Q_F Quantity of imports supplied at price P_M

Source: Vousden, 1990: 117

In figure 2.5, it is assumed that the import price P_M (including cost, freight and insurance (c.i.f)) lies below the price at which the domestic firm would earn zero profits (this is the break even price, P_B) and both marginal cost and average cost are everywhere above the price free on board (f.o.b.), so, the producer will not be paid since it exports. Thus, in the absence of protection, the domestic industry will not produce at all. The domestic market is satisfied by Q_F units of imports supplied at price P_M if the government impose a tariff on imports of $t_b = P_M P_B$ per unit, then the producer produces Q_T at zero

profit. This tariff which is just sufficient to ensure the viability of domestic supplier. Any tariff above t_B results in the entire market being supplied by the monopolist. For tariffs t_B , consumers pay P_B for quantity Q_T and the cost to the community relative to free trade is the area $P_B A B P_M$. Unlike the increasing costs case, there is no offsetting tariff revenue and no transfer to rents in the protected sector. For a given marginal cost curve, the deadweight loss is greater the larger the fixed costs associated with the domestic production. For example, for the special case in which the marginal cost of domestic production is constant and equal to P_M , fixed costs would equal the area $P_B A E P_M$ (Vousden:1990:118).

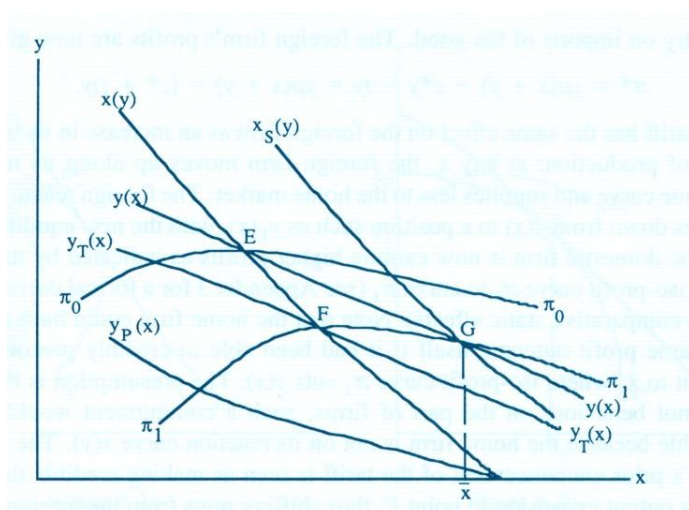
The static analysis for the comparison of tariff in the presence of economies of scale to the competitive case, demonstrates that the tariff causes monopoly to increase its monopoly power so as to reduce output and increase the price since it is not possible to apply.

Vousden (1990) set the basic framework of analysis for tariffs in the presence of monopoly where Brander and Spencer (1981) characterized the optimum tariff policy. Dixit (1987) also analysed to potential for incumbents to result in an increase of the capacity and sunk capital investments when threatened with entry (Dixit, 1987:156). Similar arguments exist for the incumbent's strategic choice of R&D, advertising and other forms of competitive tools.

In the strategic trade policy, each country should follow a policy to capture more of rents, in the presence of oligopoly. The oligopolistic market structures are more complex market structures to be analysed from the perspective of new trade theory. Depending on introduction of product differentiation, increasing returns to scale and game theory, the analysis of traditional trade theory changes. By the extension of game theory to the international trade theory, it could be easier to observe the role of tariff as an important strategic instrument of trade policy in shifting rent from foreign firms to domestic taxpayers (Vousden, 1990:128). If the domestic market is supplied by a foreign and a domestic firm, this is the oligopolistic market structure. Under the assumption that oligopolistic market structure exists; the domestic market is separated from foreign market; an industry's product is produced in both countries with a constant marginal cost and each firm behave in the Cournot–Nash equilibrium, higher sales by the foreign firm

reduce the home firm's marginal revenue and drive its marginal profits below zero; the home firm responds by reducing its sales.

Figure 2.6 : Tariff and Rent Shifting



$x(y)$ the domestic firms sales as the function of the foreign firm's sales

$y(x)$ foreign firm reaction curve

π_0 the iso-profit curve of the home firm

F output expansion due to increase in tariff

Source: Vousden, 1990:129

Figure 2.6 shows the tariffs and rent shifting conditions on oligopolistic market structure. At the equilibrium point E, $y(x)$ flatter than $x(y)$. Iso-profit countour for the home firms are upward sloping to the left of the home firm's reaction curve since a higher value of X increased profits. An increase in foreign firm's output level reduces profits to their original level. If a tariff at rate of t is imposed on the imports of foreign good by home country, it creates an effect as if there is an increase in its marginal cost of production. Since the MC of foreign firm increase, it supplies to the home market for any X value. The foreign reaction curves shifts down from $y(x)$ to a position such as $y_T(x)$ with the new equilibrium at F. So, the domestic firm earns more than before. The home firm could have realized the same profit outcome itself if it had been able to credibly pre-commit its output to point where $\pi_1 = y(x)$. The presumption is that on the part of firms

such a commitment would not be credible because it is the home firm's on its reaction curve $x(y)$ (Vousden;1990:128).

If the government announce the tariff, this would make the home firm's output expansion to point F credible. S, the rent is shifted from the foreign firm to the home firm. Since this is cost of tariff to domestic consumer, the domestic welfare must be maximized by setting the tariff to equate the marginal gain to the marginal loss.

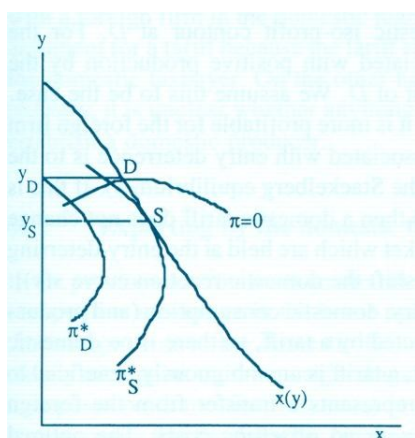
This analysis can be evaluated from two different perspectives, one is from the export subsidy side, the other one is from the tariff side. Brander and Spencer(1985) analysed the case that a foreign export subsidy would increase the foreign welfare by shifting profits from domestic to foreign firms. The subsidy commits the foreign firms to increase their exports to the domestic country. At the end, the domestic producer would reduce their output in the domestic country. However, Bhagwati (1985), Dixit (1988) argued that this analysis was based on the assumption that there is no retaliation on domestic country. Grossman (1986) and Bhagwati (1988) both countries would lose if the domestic country retaliate (Collie, 1991:309). Collie (1991) analyzed the trade policy modelling by multi-stage game. At the first stage, the foreign country sets its export subsidy to maximise its national welfare. In the second stage, the domestic country responds to the foreign export subsidy by setting its tariff and/or subsidy to maximise its national welfare. In the first case where the domestic country uses a tariff and production subsidy, then, the domestic country sets its tariff and production subsidy optimally, it will always gain from a foreign export subsidy. Then, the domestic response would be to increase tariff and to reduce the production subsidy. This is the case where retaliation does not negate the profits shifting argument for export subsidies. In the second case, where the domestic country uses only a tariff. When the governments only use tariffs to respond to foreign export subsidies, the possibility of retaliation with a countervailing tariff will negate the profit-shifting argument for export subsidies(Collie; 1991:323).

The Threat of Entrance

Brander and Spencer (1981) analysed the tariff under the threat of entrance from different perspectives. A tariff may be required by the domestic producer as a mean to secure entry when a domestic firm is a potential entrant into the industry. If it is assumed that the

foreign firm acts as Stackelberg²⁴ leader with the knowledge that if the domestic firm enters the market, it will follow Cournot behaviour²⁵ (Brander and Spencer,1981:372). Thus, at figure 2.7, if the domestic firm enters, the foreign firm maximizes its profits at point S. Where its iso-profit contour π^*_s is tangent to the domestic firm's reaction curve. However, it is possible that the foreign firm can earn higher profits than π^*_s by setting its sales to the home market at a level which would deter entry by the domestic firm. This entry-detering level of y (denoted y_D) is the value which drives domestic firm profits to zero and is thus determined by the intersection of the home firm reaction curve $x(y)$ and the zero-profits domestic iso-profit contour at D. For the Stackelberg equilibrium S is to be associated with positive production by the home firms (Vousden, 1990:132).

Figure 2.7.: Tariffs and Rent Shifting under Cournot behaviour



x_D the domestic firms sales as the function of the foreign firm's sales

y_s foreign firm reaction function

π_D profit of the home firm

π_s profit of the foreign firm

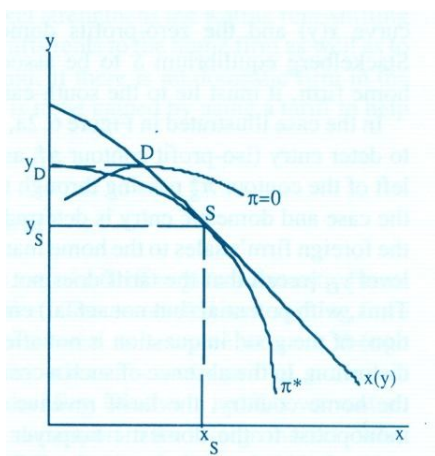
Source: Vousden, 1990: 131

²⁴ In Stackelberg model firms can choose whether to behave as followers or leader. A follower behaves as in the Cournot model and will therefore choose a profit maximising output level given its expectation about the other firm's output. However, a leader goes further towards recognising the nature of the interdependence between the two firms. Suppose home firm A is the leader. Firm A realises that firm B's operating along a reaction curve. Then firm A choose the point on B's reaction function where its own profit is maximised. This can most easily be illustrated by combining B's reaction function with A's profit curves (Carlton and Perloff, 2001:172).

²⁵ Under the Cournot assumption the first firm, Firm A acts in the belief that the second firm, Firm B will maintain a constant output level. The behaviour of Firm A under different assumption regarding to behaviour of the second firm, Firm B could be followed from the reaction curve of Firms A (Carlton and Perloff, 2001:157)

If a high tariff may force the foreign firm to abandon its strategy of entry deterrence, this may encourage domestic entry. Unless, domestic firm has entered to the market export and earn profit from its foreign operations, this has welfare improving influence. If the domestic competitor exports in spite of transportation costs and tariffs, this results that intra-trade occurs. This intra-industry trade is an important part of world trade, although, that is not well explained by standard competitive models (Brander and Spencer, 1987:156). Furthermore, if the existing firm believes that the domestic firm may enter both domestic and foreign markets, its entry deterring behaviour is affected. The domestic country can no longer extract rent from the foreign firm in a non-distorting way with a linear tariff. Nevertheless, at any tariff level, the domestic country is better off than it would be if the domestic firm threatened to enter only its home market.

Figure 2.8: Tariffs Shifting under Stackelberg Behaviour



y_D the domestic firms sales as the function of the foreign firm's sales

y_s foreign firm reaction function

π^* the profit of the home firm

Source: Vousden, 1990:131

In the case illustrated in figure 2.8. , it is more profitable for the foreign firm to deter entry, iso-profit contour π^*_D associated with entry deterrence is to the left of the contour π_{s^*} passing through the Stackelberg equilibrium S. If this is the case and domestic entry is deterred, then a domestic tariff does not change the foreign firm's sales to the home

market which is held at the entry deterring level Y_D . Thus, with potential entry, domestic consumption of the good in question is not affected by a tariff, so there is no domestic distortion. In the absence of such a cost, a tariff is certainly beneficial to the home country, the tariff revenue represents a transfer from the foreign monopolist to the domestic taxpayer with no offsetting costs. So, this is the tariff level which extracts all foreign monopoly rents (Vousden,1990:132) . Vousden argued the only difficulty with this level is that tariff affects the relative profitability of entry deterrence for the foreign firm because y_S is less than y_D , a higher tariff will cause a greater fall in profits at the entry-detering equilibrium D than at the post-entry Stackelberg equilibrium S because at S the tariff applies to a lower level of imports. So, at tariff rate t^* the foreign firm may be indifferent between equilibria S and D. If the tariff increase above the rate t , this would reduce the welfare of home country since the foreign profits to remain constant in the jump from D to S when $t+t^*$, $p(x+y)$ must rise.

Thus the domestic consumers are hurt by a small increment in the tariff above t^* . Whenever the import goes down from y_D to y_S , the tariff revenue also goes down. The foreign rent would be the same in both situations, but there is a further loss to the economy if it is more costly to produce output X_S at home than abroad as would be the case if there are significant fixed costs F . Thus unless domestic marginal cost is considerably less than foreign marginal costs, a small increment in the tariff above t^* will probably make the home economy worse off. Vousden argues that the gain from increasing the tariff up to t^* should be compared with any losses from increasing t above t^* to be able to determine the economy benefit from the tariff under the threat of entry of domestic firm (Vousden,1990:132).

So, it should be argued that the effects of trade policies are very dependent on the exact market conditions to which they are applied. Whether firms set prices Bertrand competition or quantities Cournot competition in markets will affect the sign of the optimal trade policy. If firms produce a homogeneous product and set quantities under the conditions where linear demand and constant returns to scale exist, economic welfare falls directly as industry concentration rises.

Brander and Spencer's model where different market settings have been taken into consideration would be considered as challenge to traditional theories but it also

confirmed them (Krugman,1999). “Brander and Spencer” model is as follows: There are two countries that both export some good to the rest of the world; there is only one firm in each country and there is no consumption in home country. Each firm faces with a given demand curve, and would restrict exports to the profit-maximising level. Each firm sets its output taking the other’s output as given. So, it has been assumed that they are following Cournot competition (Brander and Spencer, 1981). If the government does not intervene into the market, each firm would choose its output based on what it has experience on the other firm production ability, these optimal output decisions are summarized by two reactions functions and equilibrium is where two reactions functions intersected. If export subsidy applied by home country deters foreign competition, this would raise profit even net of the subsidy or equivalently or more than the subsidy. This would raise home national income at foreign expense (Brander and Spencer,1981).

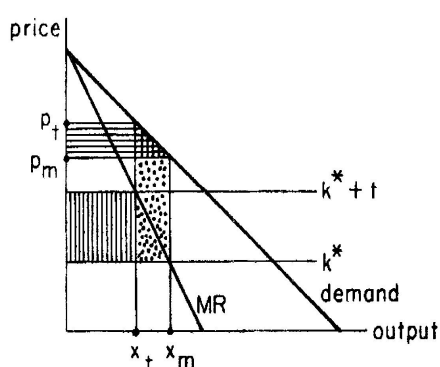
If both home and foreign countries play the strategic game policy, then the trade will generally result worse off for each country. So, this can be considered as prisoner dilemma in which countries have individual incentives to be protectionist.

If domestic producers act as price maker in highly concentrated industries, they recognize their mutual interdependence and they follow the price level that maximizes their profit. The short-run joint-profit maximizing policy for a group of producers is to set a price at which the quantity demanded is such that the marginal cost of production for each producer is equal to the marginal revenue for the producers as a group. Researchers also observed that if trade expands the variety of producer goods available, it could improve productivity in the related industries goods sectors as well (Grossman, 1986:59). The other important issue is increasing returns in intra-industry trade; this is especially important in producer goods, Feenstra found the use of intermediate goods has significantly improved productivity growth for a sample of Korean manufacturing plants (Feenstra, 1987: 205).

It is also argued that countries rivalry in tariff-setting will cause excessive protection (Dixit,1987:189). Protection shifts the duopoly equilibrium in the home market so that the home firm’s sales rise and the foreign firm’s sales fall. This lowers the home firm’s marginal cost and raises that of foreign firm. Then, the equilibrium in the foreign market also shifts in the home firm’s favour. Thus, import restriction can act as export

promotion. Nevertheless, the export promoting effect of tariffs applies only to intra-industry trade-exports of other industries, these will be discouraged (Dixit,1987). The R&D subsidies of government as the strategic variable given by the government to firms are also considered as an advantage in international competition (Brander and Spencer, 1981:371-389).

Figure 2.9: R&D Subsidies of Government



p_m Monopoly Price
 p_t Tariff inclusive price

Source: Brander and Spencer, 1981:373

In the case where there is a duopoly of the home and the foreign firm are unable to sustain collusion by themselves and home government impose an import quota. This makes home firm to raise its price somewhat with the assurance that the foreign firm will quota amount at a higher price (Krishna, Hogan and Swagel,1989). This can increase profits of both firms. The effect of the quota is to allow collusion.

Brander and Spencer (1985) have shown that a foreign export subsidy may increase foreign welfare by shifting profits from domestic to foreign firms. The subsidy commits the foreign firm to increase their exports to the domestic country.

Intra- Industry Trade

In analysis of trade policies, one of the important subject is the intra industry trade. The intra-industry trade would be mostly among similar economies. From a

normative viewpoint, such trade has the added mutual benefit of greater product variety, for fairly similar economies, this benefit can be strong enough to recompensate the distributional conflict arising from Stolper-Samuelson effects making free trade preferable for all with no need for transfers (Collie and Meza, 2002;2). This leads to the central game theoretic insight of strategic trade policy intervention to alter the strategic interaction between oligopolistic firms. This can be an important basis for trade policy (Collie and Meza, 2002;1). The intra-industry trade is one of the mostly studies area/ Helpman (1987) developed a simple model of intra-industry trade, it was based on a group of countries which trade similar goods. The result of test intra industry trade by Helpman was surprising: *“Every good is produced in only one country, all trade is intra-industry trade and all countries have identical homothetic preferences”* (Helpman, 1987). Krugman (1979) studied the intra industry trade among monopolistically competitive firms which produced differentiated products with increasing returns to scale and extended the model by analyzing intra-industry trade. Bloch (1974) was one of the other analysed the effect of trade policies on imperfectly competitive markets at the same time the relationship between Canadian and US Manufacturing Industry.

Case study on Intra-Industry Trade 1: Canadian and the US Manufacturing

Bloch (1974) explored the effects of tariffs and concentration on the prices, profits and cost of domestic manufacturing firms in Canada and U.S. Mainly, Bloch focused on interaction between foreign firms and domestic firms and asked whether the influence of concentration price, costs or profit depends on the level of tariff or not. The analysis concluded that the influences of tariffs and concentration on prices, or on costs are interdependent. The prices and costs tend to be high when both concentration and tariff are high, but exhibit no such tendency when either concentration or tariffs or both below. The basic reason behind this expectation was that the output of most Canadian manufacturing firms was so small in comparison to world total production and that each Canadian firm behaves as price taker with highly elastic supply and demand for their product under the assumptions. Also, there were no quota controls and international collusion in the form of market allocation. Under these condition firms determine the quantity of output in accordance with a level that maximizes the profit. Bloch measured

the influence of tariffs and concentration on prices by using the ratio of prices charged by Canadian manufacturers to the prices charged by their foreign competitors, and the relationship of this ratio to Canadian tariffs and concentration.

The analysis suggested that high Canadian tariffs and levels of concentration have an upward influence on Canadian prices relative to the prices of foreign competitors and relative prices are strictly interdependent. Neither high tariffs nor high concentration were associated with significantly higher prices in the absence of the other. Bloch interpreted the positive relationship between tariffs and direct cost per unit and he found that government policy determines the level of tariff protection for an industry by comparing per unit cost of domestic producers to that of foreign competitors. However, Bloch's finding rejected this assumption since there were a lack of positive relationship between direct cost per unit and tariffs in the low concentration industries. Nevertheless, Bloch explained a positive relationship between per unit cost and tariffs since in industries where economies of scale and large firms exist, high tariffs both at home and abroad may isolate home country's industry from foreign competition. So, the domestic firms may become too small to produce at minimum average costs. This analysis shows the high tariffs are associated with high per unit costs only in the high concentration industries (Bloch,1974).

2.3. TRADE LIBERALIZATION

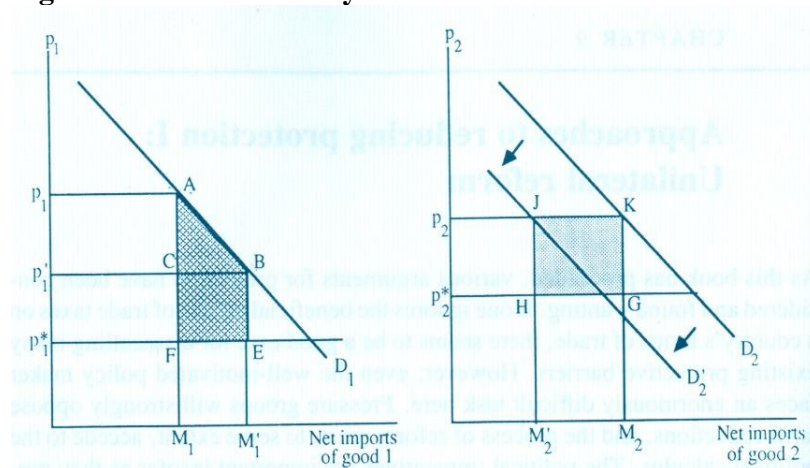
2.3.1. Removal of Tariff

Despite the beneficial effects of trade taxes on a country's terms of trade, the removal of barriers or reduced rate of taxes or tariff will have some other advantages that might help international trade and economies of many countries. Governments have to decide which level of taxes or tariffs are appropriate for welfare increase, the implications for welfare depend on demand and production relationship, between the markets in which distortions are being reduced. These considerations suggest piecemeal reforms that are welfare improving if more extreme distortions are reduced first or good whose rate is reduced first or a good whose tax rate is reduced has substitutes good with relatively low

tax rates and complements goods with relatively high tax rates. Mutual trade liberalization has been a major concern of industrial countries for last decades, as a result, import tariffs have been lowered through several rounds of multilateral negotiation under the General Agreement on Tariffs and Trade (GATT) and various non-tariff barriers have also been removed through multilateral as well as bilateral negotiations. Nevertheless, no international institution such as World Trade Organization (WTO) can force countries to keep the tariffs at a low, cooperative level, the countries which are member of EFTA; the EU, the CU with the European Union of the United States have already been succeed to lower the tariff level. However, tariff setting for two large countries usually involves a prisoner's dilemma problem. *Any individual country is always better off by setting a positive optimum tariff and if both countries set the optimum tariffs, both are worse off* (Furusawa, 1999)

The figure 2.10 shows the markets for two goods in a small economy which produces and consumes many goods. In this partial analysis, it is assumed that both goods are assumed to be imported and are subject to a tariff on imports and consumers in this economy have identical homothetic preferences.

Figure 2.10: Partial Analysis on Reduction in Tariff



- D_1D_1 represent excess demand for good A
- P_1 is the price of good A
- P'_1 is the price of good A after tariff reduction
- P^*_1 is the world price of good A
- D_2 represents demand for good B
- D'_2 represents demand for good **B after tariff reduction**

Source: Vousden, 1990:204

The figure on the left hand side shows the excess demands for the goods. At price level p_1 , good A is consumed at quantity M_1 . If the government decides to reduce the tariff on good A while the tariff for good B is hold constant, good B consumed at quantity M_2 at price P_2 . After tariff reduction, demand for good A will increase from quantity M_1 to quantity M_2 quantity at P_1 reduced price level. The excess demand will be supplied through an increase in import. This reduction in price causes an increase in welfare of consumers. This can be represented in the area $P_1ABP'_1$ (Vousden,1990:204).

If good B is a substitute for good A, reduction in the tariff applied to the good A causes excess demand for good A, this also causes a reduction in demand for good B from D_2 to D'_2 . Where the quantity demanded for good B reduced from M_2 to M'_2 , the tariff revenue decreases also.

The area which reflects the product distortion in market 2 as M_2 is reduced further below the free trade level, must be subtracted from $ABEF$ to determine a consumer surplus estimate of the welfare gain from the tariff reduction on good A.

Thus, the distortion in the market for good B reduces any welfare gain accordingly and may even cause to an overall loss from the reform, this is substance of the second best argument for a tax on a good which is a substitute for another taxed good.

If the tariff on good A is particularly high relative to other goods, then the component $CBEF$ of $ABEF$ in the figure above, tends to be higher, so net gain is more likely to occur in this case. In addition, if other goods with high tariff rates are complementary to good A (their excess demand rises when the price of good A falls), there will be relatively large increase in tariff revenue which make an overall gain higher than the previous situation.

If good B is a complement to good A, the demand curve shifts out from D_2' to D_2 with tariff revenue increasing by $JKGH$ ²⁶. This counterbalances losses in revenue for other commodities if the tariff rate on good B is high. If the complements for good A, have low tariff rates, the gains in tariff revenue are likely to be insufficient. If more extreme distortion occurs first and a good whose tax rate is reduced has goods with relatively low rates and as complements goods with relatively high tax rates. Piecemeal

²⁶ This amount must be added to $ABEF$

reforms may by welfare improving (Vousden,1990:203). If the tariff on good B is also reduced then the area JKGH is reduced and an additional consumer surplus gain will be opened up in the second market. If such a policy is extended to all markets in which there are distortions, it might be expected that welfare will be enhanced.

If the tariff on the good B is also reduced then consumer surplus will be gained in the second good market. If such a policy is extended to all the markets, welfare increases.

In accordance with the second best conclusion the best response to prevalent distortions may be the imposition of another distortion. If all goods are net substitutes for each other and if only distortions are tariffs on imports restricting trade below the free trade level; then welfare is maximized by imposing tariff or export subsidy on the traded goods which will increase imports of the other taxed goods(Vousden,1990).

There are mainly two alternatives for trade reform. One is proportional reduction of all trade taxes, the other one is reduction of selected trade taxes. The reduction of all trade taxes is more preferable since it is simple and provides equal implication of all the sectors. Since, all taxes are reduced in uniform basis, cross-effect losses are kept at minimum level and welfare increases supported. Community welfare may fall if reduction in one commodity causes a fall in demand for substitute with larger distortions. If the good with the highest tariff rate has a large number of complements then the low tariff rates and severely highly taxed substitutes then the reduction of the highest tariff rate may make the case worse. The good with the highest tariff rate be a net substitute for all the other goods in the economy may be a sufficient for welfare improvement. The good whose tariff is reduced is a net substitute for all goods with lower tariff rates and a net complement for all goods with higher tariff rate. It is also possible to raise welfare by increasing the lowest tariff rate if the good is a substitute for all others goods (Vousden,1990).

The protection policy on import should be treated by export promotion. This can be interpreted as once protection is given, the domestic firm is allowed to expand and get in the benefits of protection. On the other hand, if there are competition policies that place limits on the market share of the domestic firms in an industry, the domestic firm will not be permitted to get in the efficiency gains and import protection will not become export promotion (Levinsohn, 1994).

2.3.2. Global Tariff Reduction and Removal of Tariff Barriers

Although, development in technologies made communication and travel among the different parts of the world feasible and faster, analyzing the developments in world economy and trade from the long term historical developments concludes that these differences did not make radical impact on commerce and politics in the period between 1800 and contemporary times (Gerber;2006:3). Even Gerber argued that the technological changes in late 1800s may have greater impact on commerce and politics (Gerber;2006:3). Similarly, protection and trade liberalization policies also go back to 1800s and their impact has been analysed and negotiated in many analysis and international meetings.

Williamson (2003) computed the average tariff rate to explore the policy experience of 35 countries the world around between the 1860s and the World War II: the United States; 3 members of the EU industrial Core (France, Germany and the UK); 3 non-Latin European offshots (Australia, Canada, New Zealand); 10 from the industrially-lagging European periphery (Austria-Hungary, Denmark, Greece, Italy, Norway, Portugal, Russia, Serbia, Spain, Sweden); 10 from the Asia and Middle-East (Burma, Ceylon, China, Egypt, India, Indonesia, Japan, the Phillipine, Siam, Turkey) and 8 from Latin America (Argentina, Brazil, Chile, Colombia, Cuba, Mexico, Peru, Uruguay) (Williamson, 2003:1).

Import duties were typically specific until modern times, stated as pesos per bale, dollars per yard, or yen per ton. Under a regime of specific duties, sudden changes in price levels can change import values in the denominator, but not legislated duty in the numerator thus producing big percentage point changes in equivalent ad valorem tariff rates. The tariff rates in all six regions fell sharply between 1914 and 1919 due to the inflation. After the war, the tariffs rate increased immediately due to the post-war deflation and the partial resumption of prewar price levels. The price deflation after 1929 was even more spectacular and caused to further rise on duties (Williamson, 2003:4).

The second well-known world protection after 1865-1990 period was in the 1920s and 1930s. The pronounced rise in tariff was applied in all Latin America, in Latin European offshots and across European periphery. There was also enormous differences

in the levels of protection among the regions. In the richer new world European offshoots had levels of protection almost three times that of European core around the turn of the last century. When the US is shifted to the rich European offshoots club, the ratio of European offshoots tariffs to that of the core is more than three to one. In 1925, the European periphery had tariffs about two and a half times higher than those in the European part of the industrial core. In 1885 the poor but independent parts of Latin America (Brazil, Colombia, Mexico and Peru) had tariffs almost five times higher than those in the poor and dependent parts of Asia (Burma, Ceylon, China, Egypt, India and Phillipines) while the poor but dependent parts of Asia (Siam, Turkey and Japan) also had tariff rates about the same as the poor but dependent parts of Asia. Tariffs in Brazil and Colombia were almost ten times those in China and India. In the period between 1865 and 1914, the tariff variance between countries was more than twice that of the tariff over time. So, this variance may explain the tariff policy difference among the countries (Williamson, 2003: 5).

Tariffs increased in the interwar period in two stages. The first jump was in the 1920s and the second was in the 1930s. The second jump was explained as a consequence of aggressive beggar my neighbour policies. The largest interwar tariff increase in the industrial core were initiated by Germany, the UK, the US and France. Tariffs rose in most of the European periphery and everywhere in Latin America, except for two countries that had the highest pre-war tariffs, Colombia and Uruguay. In Egypt it rose by 36.7 percentage points between 1920-1939, in Siam it rose by 26.9 percentage between 1918 and 1936 and in Turkey, it rose 34.1% in 1923 and 1937. So much for free trading Third World periphery before their post-1950 policies.

Internationally coordinated tariff reduction as trade policy goes back to 1930 in the United States. In 1930 the US changed tariff law considerably and introduced high tariff rates. Depending on high tariff rates, the US trade fell sharply. Any tariff reduction would be opposed by those Congress members whose region had firms producing competing goods. The initial solution to this problem was to make bilateral trade agreements. However, it was not so much successful. Multilateral negotiations began after the end of World War II. In 1947, a group of 23 countries began to trade negotiations under the provisional set of rules that became known as the General

Agreement on Tariffs and trade (GATT). A large group of countries came together to negotiate a set of tariff reductions and other measures to liberalize trade. Eight trade round have been completed since 1946, the last of which completed in 1994 and established the World Trade Organisation. The first five trade rounds under the GATT took the form of parallel bilateral negotiations where each country negotiates pair-wise with a number of countries at once. The sixth multilateral trade agreement known as the Kennedy Round was completed in 1967. This agreement involved an across the board 50 percent reductions in tariffs by the major industrial countries except for specified industries to exempt rather than over the size of the cut for industries not given special treatment. The Kennedy Round reduced average tariffs by about 35 percent. The Tokyo Round of trade negotiations reduced tariffs by more complex formula than that of Kennedy Round. In addition, new codes were established in an effort to control the proliferations of nontariff barriers, such as a voluntary export restraints and orderly marketing agreements. In 1994 the Uruguay Round was completed. Starting in 1986 and ending 1994 and covering long discussions, negotiations, The Uruguay Round concluded two important groups of changes: trade liberalization and administrative reforms.

The Uruguay Round cut tariffs rates around the world about 40 %. Since the rates are not so high, the reduction provided only a small increase in world trade. The actual achievement was far more modest but still significant. The agreement required agricultural exporters to reduce the value of subsidies by 36 percent and the volume of subsidized export by 21 percent over a six year period. World trade in textiles and clothing has also been highly distorted by the Multi-Fibre Arrangement (Krugman and Obstfeld, 2006: 226-227). In addition to these, one other important discussion subject in the Uruguay Round was on R&D activities and the protection of and support of intellectual property rights through international negotiations (Alam,1994: 4). They were considered an important obstacle to free trade.

2.3.3. Import Discipline Hypothesis

It is claimed that foreign trade liberalization increases the welfare of a country further under the imperfectly competitive domestic markets because it reduces distortions

created in the imperfect competitive markets by removing of barriers. If there are a few domestic firms in a domestic market, the removal of barriers on international trade allow firms acting in industries to enjoy profits in a protected domestic market and force these firms to behave competitively. The effects of removal of tariffs or other trade restrictions are more active in the competitive markets. Levinsohn (1993) calls this situation as “imports as market discipline hypothesis” and defines this hypothesis as the hypothesis about how firms respond to a change in trade policy. Levinsohn`s hypothesis can be defined as derivation of the “Structure-Conduct-Performance” paradigm.

In Rodrik`s argument (1992), the welfare consequences of liberalization of trade restrictions in imperfectly competitive markets through four channels: the volume of trade effect; the excess profits effect; the scale efficiency effect and the technical efficiency effect (Rodrik,1992:99). The volume of trade effect refers that the import should expand in those sectors where the domestic price has been raised relative to the border price. This is explained as traditional gain of trade and can only be realized in perfectly competitive markets. However, the excess profits effect can only emerge through sectoral output expansion where the supernormal profits exist and the third effect requires that firm output increase in sectors with unexploited scale economies where average costs exceed marginal costs of production. Considering the first three channels together, whether domestic output should be reduced or expanded in import-competing sectors can be seen to depend on the relationship between world prices and domestic marginal costs(Rodrik,1992:100) .

In imperfectly competitive markets where prices above the marginal costs, firm with monopoly power has to compete by the products of foreign firm as a result of trade liberalization. Foreign competition would lower the domestic price to the level of imported good and as a result, welfare of consumer increase. The competition of imported goods also lowers the cost of production. If trade liberalization enlarges the domestic market, firms can use their scale economies more efficiently in large markets.

Whenever, the domestic firm faces international competition, it has to lower its product prices as well as lower their profit margins. By lowering the abnormal profit margin to the normal profit margin, quantity of production increase. Trade causes to restriction of production in perfectly competitive markets, since the profit obtained is at

normal level. A highly concentrated industry can have little effect on industry price, if imports represent a large production of domestic sales, either a competitively structured domestic industry or a substantial degree of foreign competition are substitutes in terms of the control of monopoly power. The volume of import in imperfectly competitive markets become equal to the level in competitive markets, since international trade causes firms in imperfectly competitive markets to behave like competitive firms, in these markets (Lyons,1981:276). More liberal trade policy makes application of new technologies possible and improves management of technologies as well as scale economies. As cost of production per unit decreases; supply curve shifts downward. In the case, under the assumption of small economies, static partial equilibrium analysis trade liberalization disciplines the imperfectly competitive markets through either prices or cost of production. In perfectly competitive markets, since the equilibrium price just only provides normal profit to the firms, there is nothing to discipline in the markets. However, in imperfectly competitive markets, since firm earns super-normal profits, an increasing import may discipline the markets. To have disciplinary effect of trade liberalization, a decrease in the price of good produced by highly concentrated firms should be more than the decrease in the cost of the production. Otherwise, profitability does not decrease, even it may increase.

In contrast to this argument there is also belief that when international firms benefit from monopolization and they compare the gains of joint monopoly with the gains from cheating, under the existent exogenous trade barriers. A cut in tariffs affect these gains in a complicated manner; it is not obvious that trade liberalization always promotes competition. If the cost of foreign producer is lower than the domestic producer, then, the economic integration promotes competition. If domestic producer is the low cost producer, then economic integration slows down competition “... *if the initial tariff is low, but still they promote competition if the initial tariff level is sufficiently high*”(Fung,1992:845). Rodrik argued that the import discipline hypothesis is only an argument in favor of tariffs rather than quota rents (Rodrik, 1992:98).

There are many empirical studies analysing the effect of liberalization. Most of the studies examined whether trade liberalization succeed to reduce price-cost margins. Among these studies, mostly by Tybout and Rodrik, cross-section data are used and

found a positive relationship between trade liberalization and reduction in price-cost margin (Tybout,1993). However, they were criticized on ground that they used the data only covering the early stage of the CU.

There were few studies in international trade prior to the new trade theory. Most of them were covering the cases which there are a small number of countries supplying a product; each country with a small number of firms or in which there are a large number of firms in each country, but each is producing a differentiated product. The analysis showed when comparing the two situations results in an oligopolistic market structure, government intervention is an avoidable (Baldwin,1992:804).

When considering the effects of competition policy, firms set either prices or quantities matters, in this respect, the interaction of trade policy and competition policy gains special importance. Especially, under the imperfectly competitive markets structures, this is more important. The case of a country that implements very restrictive competition policy can be considered as the first example of interactions between trade and competition policy. Firms that might have colluded or merged are now forced to compete. In a standard neoclassical economic framework, the severe policy, in the absence of returns to scale, learning, or other synergies, would increase economic welfare. Monopoly or oligopoly profits would shrink and a consumer surplus rise by a higher rate than the rate of decline in profits. If firms produce differentiated products, as is the case in most manufacturing industries and if they compete with each other by setting prices and export tax or import tariff has the effect of raising prices and profits at the expense of consumers. In an oligopoly, this trade policy has the effect of moving firms closer to collusive equilibrium. This is contrary to the restrictive competition policy target, if at a tariff or export tax is implemented as competition policy is strengthened. If trade policy is not considered when competition policy is made stricter, the consumer gains from competition policy reform are diminished (Levinsohn,1993). The assumption of Cournot competition was vital for the expected result: that if firms compete in prices instead of quantities, the optimal policy should be export tax (Eaton and Grossman:1986). In accordance with the strategic trade policy argument, if firms compete both in capacity or R&D rather than current output, Cournot effect becomes reasonable.

Many of the studies focused on the effects of trade policies on competition. While

some were on multiple models that generate monopolistically competitive industries, the others were in the other group of studies focused on change in the domestic price of manufactured goods and relationship between the domestic price and export-import price during trade liberalization. Here, only a few of them are analyzed in detail.

Case Study on Import Discipline Hypothesis 1: Korean Trade Liberalization

Yang and Hwang (1999) analysed the heavy and chemical industries during the trade liberalization in Korea. The import liberalization policy was implemented in two stages: one period was covering from 1980 to 1988; the other one was from 1989 to 1993. Import liberalization ratio has increased from 80.4%. The average Korean tariff rate for manufacturers declined from 22.6% in 1983 to 9.7 in 1993.

Yang and Hwang (1999) calculated the weighted average of import penetration ratios which has been regarded as an important measure of import penetration, they found that it was 3.2 per cent for Korean Manufacturing sector in 1983 and continued to decline to 1.9 per cent through 1990s, after increasing to 2.6 per cent, it reduced 2.0 per cent in 1993.

Table 2.1
Indicators of Import Liberalization in Korea, 1983-1995

Year	Import Liberalization Ratio	Average Tariff Rate	Average Tariff Revenue Ratio	Import Penetration Ratio
1983	80.4	22.6	10.6	3.2
1985	87.7	20.3	9.3	2.9
1988	95.4	16.9	7.5	2.8
1990	96.3	11.2	6.0	1.9
1993	98.1	9.7	5.5	2.6
1995	98.9	N.A	4.1	2.0

Source: Yang and Hwang (1999:10)

The analysis showed that there was a negative and restraining effect of import competition on the domestic prices in the Korean manufacturing sector. So, it can be generalized that the import competition both affect profit rates and price behaviour in developing countries and a 10 percent increase in the import penetration ratios will lower

the domestic price on average by 3 or 4 percent. In addition, the dampening effect of import competition appears to depend on the market structure of the industry. In general, the dampening effect of import competition is stronger in concentrated industries than in less concentrated industries (Yang and Hwang,1999:8) .

Case Study on Import Discipline Hypothesis 2: Concentration in Canada

Vaguan Dickson and Jan He (1997) analysed the optimal and actual concentration level in Canada. They calculated optimal concentration for 107 manufacturing industries where concentration is measured by Herfindhall (H) index²⁷. So, they compare optimal and actual value of H to actual value. Thereby, they defined and calculated a deadweight loss as the difference between total surplus as optimal value of H and total surplus at actual value of H. They introduced simulations of industry equilibrium based on estimated industry cost functions. The industry equilibrium was initially taken to be Cournot-Nash, later on, collusive outcomes also conducted. By expressing both industry price and costs as functions of value of H, they found that Cournot equilibrium and unitary demand elasticity of optimal concentration typically but not always exceeds existing concentration. Although, the average optimal H concentration ratio should be 0.147, the actual average H concentration ratio was 0.117. They argued that the basic reasons of this failure to be at optimal H is the existing of shipments and also higher elasticities of demand. So, greater scale economies lead to higher estimates of optimal H and higher deadweight losses. In addition, deadweight losses are considerably higher if one assumes control of pricing conduct is feasible. Dickson V. and J. He argued that controlling conduct is inherently more difficult than the controlling structure.

Case Study on Import Discipline Hypothesis 3 : Spanish Accession to the EC

Winter and Chang (2000) analysed the effects of Spanish accession to the EC on the prices of Spanish imports of finished manufacturers from major OECD sources: France, Germany, Italy, Japan, the UK and the US (Winters and Chang, 2000:364). These countries are the dominant suppliers for the years 1975, 1985 and 1993. They just supplied the almost 81 per cent Spain's imports of finished products. The USA supplied

²⁷ Herfindall Index (H)

10.5 per cent of the 160 commodities over the entire sample period while they were importing 24.2 per cent of total commodities from Germany, 16.3 per cent from France, 15.3 per cent from Italy and 9.4 per cent for the U.K.

The case study covered the period of 1970 to 1993. On accession, in 1986, Spain's tariffs were adjusted to the EC levels over 8 years in a series of equal steps, to zero on EC trade to the common external tariff on third countries.

Spain offered EC suppliers tariff preferences on most goods with discounts of 60 per cent and more commonly, 25 per cent of the Most Favoured Nation tariff in late 1970. Since the Spanish tariff roughly averaged 20 per cent before accession and the EC external tariff averaged roughly 5 per cent after accession the margin for EC suppliers often did not change very much. Model showed that for every 1 per cent reduction in EC costs including the tariff to US/EC post tariff price increased by 0.56 per cent and the Japanese/EC relative by 0.42 per cent. Winter and Chang (2000) suggested that the tariff reductions on EC exports to Spain reduced the pre-tariff prices of the US and Japanese exporters. The US coefficients of 0.56 per cent could reflect 56 per cent pass-through costs by EC suppliers and given their smaller market shares, it is expected that the US producers would react to partially follow EC price changes.

If the constant marginal costs were used, estimates would imply pre-tariffs price declines of 0.34 per cent for the USA for each 1 per cent decline in the tariff on EC exporters. For the commodities in the sample average tariff on EC suppliers fell from 7.14 in 1986 to 0 in 1993. Thus, estimates imply a US price fall of 2.4 per cent which applied to total US exports of finished manufacturers to Spain in 1993. They tested the model for the pairs of countries independently. Although, results were similar to the aggregate results, only the U.K. differs. They concluded that the regional integration affects both the pre and post tariff price relatives between members and non-members and have established a strong presumption that it reduces absolutely the export prices of non-members (Winter and Chang, 2000: 370).

Once it can produce at this lower marginal cost, the firm may now be competitive on international markets whereas below the protection level this is not possible.

In almost all the discussions and major studies of the economic effects of integration, it is assumed that trade liberalization increases the competitiveness of the

industries. In developing countries, the policy makers would follow the import competition policy as one of the main strategic policy in development besides the export promotion policies. The policy makers take care not only the effects of imports that are directly competitive with domestically produced goods, but also the effects of imports used as inputs in domestic production. Therefore, it may be asserted that imports can affect profitability in both directions of production. If the former type of imports are predominant, then the negative effect on domestic average PCM is expected to overwhelm the positive one. The ultimate effect will depend on the relative strength of the two effects (Katırcıoğlu, Engin and Akcay, 1994).

CHAPTER III

TRADE LIBERALIZATION IN TURKEY

3.1. TURKISH ECONOMY AND POLICIES BEFORE 1980

By the establishment of Republic, Turkey also changed radically her economic and social structure besides the political and administrative structure. Turkey preferred the policies between two powerful ideological of market economy system and planned economic system of Soviet Union at that time. While the planning system provided leadership in generations of capital, establishment of basic economic institutions of market economy. Togan(1998) called this mixed policies as “etatist” policies (Togan;1998:2). During the 1930s, the gross national product increased. The average annual rate of growth was about 2 percent in agriculture and 10 per cent in industry. During the 1940s, the development of the whole economy was stationary due to the Second World War. In January 1940, protection of national production and production was regulated as a law. So, the government was the sole responsible to manage the Turkish economy. This can be considered as approximation to national planning. Unfortunately, the effect of war was felt on Turkish economy due to high taxes besides the limited production possibilities. In 1950s, the Democrat Party had the power in government, more liberal policies were followed. The governance of Democrat Party can be analysed under the basic period: 1950-1954 period, 1955-1958 period and 1958-1960 period. In the first period, more liberal policies were followed (Togan, 1998: 2). Depending on the recovery all over the world in the post War period and the increase in agricultural output, Turkish economy also followed high growth rate. In the second part of the first period, the government followed policies based on industrial development and public sector again. The shortage in foreign exchange was dominant characteristics of the second period. Due to shortage and problems in the economy and reduced GNP growth rate, the government imposed surcharge to import and fixed foreign exchange rate. Since, the Türkiye Cumhuriyeti Merkez Bankası (the Central Bank) financed the public deficit, this pushed the inflation rate to upper levels. In 1959, for the first time, Turkish government cooperated with the IMF for stabilization and devaluation. At the end of 1959, the inflation was under the control. By the law introduced by 1961 constitution, the State Planning Organization was established. During 1960s, depending of State Planning Organization, the non-

inflationary and inward-oriented policies were followed. Non-durable goods were produced in domestic market, in mid 1960s, essentially. The next step of inward-oriented growth policies have been followed. This was the import substitution policies. Both the intermediate goods and durables goods were produced domestically during 1960 (Togan: 1998:3). The production of those highly capital intensive products required high initial capital, know-how and skilled labor. At the beginning, there were problems of capital accumulation, it was difficult to invest limited capital to manufacturing industry and to continue to production of a long time. These industries were protected by high import tariffs, quota and other kind of restrictions including, fixed exchange rate system.

The import substitution strategy heavily based on imported raw materials. Hence, Turkey's terms of trade have deteriorated following the first oil shock in the 1973-1974 period. This caused a enormous burden on the balance of payments, while the additional burden was compensated by short-term borrowing.

By the end of the 1970s, the foreign exchange shortage led to an intensification of import restrictions. Import restrictions were mainly classified into three lists: Quota List; Liberalized Lists I and Liberalized List II. In quota Lists, imports were subject to quantitative limits while goods in the Liberalized List I could be imported freely. All good, in the second List II, could be imported through license.

Importation of any good that were not put into either of these lists was prohibited completely. The importers also had to deposit guarantee to the Central Bank for import activities free of interest in advance. In 1979, deposit requirement rates were set at 20 per cent on the value of imports for industrial uses and 40 per cent for commercial purposes. In addition to tariffs and the other charges equivalent to tariffs, like municipal tax, stamp duty, production taxes were also imposed on imports (Tıktık,1991:15). Over the half of all products imported, the tariff equivalent was over 100 per cent and non-tariff barriers provided domestic producers with considerable additional protection (Levinsohn, 1993)

In 1977, problems appeared in the labour market. In addition to this, difficulties emerged on the supply side depending on the case that the required amount of import could not be realized on time. On the demand side, expansionary fiscal policy was maintained. Imbalances in the aggregate supply and demand accelerated the already increasing inflation. Inadequate measures taken to overcome the crisis, as well as the

negative effects of the second oil shock in 1979, deepened the crisis. Turkey's trade liberalization process was initiated to overcome the unresolved 1977-1979 balance of payments crisis in an environment of low domestic savings and investment (Ceritoğlu, 2002). Although, the policies followed before 1980 caused deep economic crisis, studies showed that interaction between trade policy and total factor productivity contributed to growth in large Turkish manufacturing industries and this was improved by significant and positive relationship between the mid-1960's to mid 1970 (Levinsohn,1993), (Kruger and Tuncer, 1982).

The 24th January 1980 Decisions were announced in order to reduce inflation, to fill in the foreign financing gap, and to attain a more outward-oriented and market-based economic system. Within the framework of these decisions, export subsidies were granted and exchange rates were allowed to depreciate in real terms to make Turkish exports more competitive, which would lead to the promotion of export-led growth.

Based on the Ankara Treaty, signed in 1963 with European Economic Community (EEC), Turkey was also responsible for fulfilling the obligations of the Agreement as the EEC should do too. The additional protocol was signed in November, 1970 and put into effect in January 1973. Additional Protocol determined the responsibilities of both parties and time schedule for the steps Turkey would take in the next years. One of the requirements of the CU Agreement was to reduce the customs tariff duties and quota and eliminate totally at the end of preparatory period, or in the other words, in the CU. So, both changing global economic condition, and particularly Turkish economic situation and the CU Agreement resulted in radical policy change.

3.2. THE FIRST STAGE OF TRADE LIBERALIZATION in 1980s

After following a development strategy based on import-substitution policies from 1960 to 1980, a series of radical change had been started in Turkish economy for transformation from an inward looking to an outward oriented open economy following the foreign exchange crisis of 1977-1980. The first stage of this liberalization took place in January, 24th, 1980. One of the most important reforms of those was the replacement

of fixed exchange rate system by flexible exchange rate system. The other most crucial change was on trade policy. Two basic instruments of trade policy had been actively used: quantitative restrictions and subsidization. Primarily measures encouraging exports have been developed. Then, quantitative restrictions were eliminated gradually and direct export subsidization was introduced to be able to promote of exports.

The economic program initiated in 1980 included export subsidies, a high devaluation and price increases for goods and services produced by the State Economic Enterprises. The exchange rate, interest rates and administrated public product prices were coupled. The IMF Stand-by and World Bank adjustment loans were rapidly arranged and disbursed in conjunction with additional debt relief operations.

The trade reform process was facilitated by three characteristics of the policy environment. Firstly, net foreign lending allowed the resumption of intermediate goods' imports and eased pressures on public finance. Industrial firms had a strong export response to the changing incentive structure. Secondly, the exchange rate depreciation was high but sustainable. Thirdly, in the initial period, real wages and agricultural incomes were decreased substantially and export expanded.

The most crucial change was on trade policy. The Program that will be followed on 1984 was announced in December 1983. This was an import liberalization program. The 1984 Import Program reduced both tariff and non-tariff barriers. Goods imported freely if they were not in restricted lists. Prohibitive quotas on specific consumer goods remained. They were listed in Prohibited List. A heavy levy for luxury items was in a special list. Non-tariff protection for Turkish manufacturing was listed in License List. 28 per cent of good were imported under the License List in 1984. Tariff reduction was almost 28 per cent in this list. The goods on this new list were subject to a specific dollar surcharge in addition to trade taxes (Levinsohn, 1993:5).

In 1985, the quantitative restrictions reduced to only 3 goods: weapons, ammunition and narcotics. The Prohibited List was abolished in 1985 and the goods on this list either became freely importable or were transferred to the License List which did not impose any quantity or value restrictions in 1985. 33 goods remained in import license in 1988. The list of goods subject to licenses was reduced to 16 items and tariff and levies on imports were reduced considerably in 1989.

In 1990, import guarantee deposit scheme and licensing were removed. A new list was introduced for investment good and customs duties and the Mass Housing Levies were consolidated in a single list. The reduction in customs duties and tariff continue until 1993. In 1993, all tariff and tariff equivalent charges other than customs duty and Mass Housing Fund charge were eliminated (Katırcıoğlu, Engin and Akçay, 1995).

Each of these radical changes influenced Turkish economy deeply. Three cycles of growth and economic crisis were observed in Turkey during the period from 1980 to 2000. The first lag was from 1980 to 1989. Basically, this was period of increased export orientation of the economy. The period 1981-1987 was manifested itself by liberalization in commodity trade and export promotion along with a price reform aimed at reducing the state's role in economic affairs. The system of fixed exchange rate administration was replaced by a flexible regime of crawling peg. Direct export subsidization was introduced. These were the main instruments for the promotion of exports and macroeconomic stability (Özcan and Yeldan, 2000). During the period, 1983-1987, export revenues increased at an annual rate of 10.8 per cent while gross domestic product rose at an annual rate of 6.5 per cent (Bulurak and Yeldan, 2003).

Import penetration and export ratio figures demonstrate that the degree of openness of the manufacturing industry arose considerably during the 1980s. Especially, after comparing these results with results in Ann Krueger's analysis for the period before 1980, the success of liberalization may be more explicit. She had estimated that for over half of all products imported, the tariff equivalent was over 100 per cent and there were non-tariff barriers provided domestic producers with considerable additional protection (Levinsohn, 1993).

It is generally expected that openness of the industry to international trade causes to increase in domestic competition and improved the efficiency of the manufacturing industry in Turkey (Katırcıoğlu, Engin and Akçay, 1995). In other words, import liberalization disciplines the domestic market by lowering costs and price cost margins of oligopolistic firms. In addition, it is claimed that import liberalization has contributed to the disappearance of the illegal trade and the black market created by trade barriers and has led to an additional capital inflow and technology transfer during 1980s (Katırcıoğlu, Engin and Akçay, 1995)

Although, gross fixed investments of the private sector increased by 14.1 per cent during 1983-1989, only a small portion of this amount was in manufacturing. The rate of growth of private manufacturing investments has been only 7.7 per cent per year. Until the end of 1989, it could not reach its pre-1980 levels in real terms. Mostly, housing and construction investments have been expanded by an annual average of 24.5 per cent during 1983-1987. This caused a significant deviation from the aim of industrialization as it was stated as an official target: in a period where outward orientation was directed to increase manufacturing exports through significant price and subsidy incentives, distribution of investment showed a declining trend for the sector. Özcan, Voyvoda and Yeldan (2000) interpreted this discrepancy between the stated foreign trade objectives towards manufacturing exports and the realized patterns of accumulation away from manufacturing as one of the main structural deficiencies of the export oriented growth strategy of the 1980s. Accordingly, this was also reason of failure of maintaining the export promotion programme as a sustainable strategy of development.

In 1990, import guarantee deposit scheme and licensing were removed. A new list was introduced for investment good and customs duties and the Mass Housing Levies were consolidated in a single list. The reduction in customs duties and tariff continue until 1993. In 1993, all tariff and tariff equivalent charges other than customs duty and Mass Housing Fund charge were eliminated (Katırcıoğlu, Engin and Akçay,1995) .

Studies on Turkish Economy for the period of 1980-1995

Levinsohn (1993) analyzed data of eight industries in Turkish economy to search whether prices were equalled, exceeded or less than marginal costs in certain periods. Levinsohn used the data provided from eight Turkish industries. In six industries, his findings showed that each firm supply more than 50 per cent of total output and only in six firms the supply was more than 36 per cent of the whole market in two industries. Before the change in trade policy was occurred, six industries were pricing at marginal costs, three above marginal costs and one below marginal cost. Levinsohn reached three different industry groups. The first group was comprised of imperfectly competitive markets industries in which trade was liberalized. The second group was comprised of the

two industries that experienced an increase in the level of protection. The third group was comprised of industries which priced at or below marginal cost and experienced an increase in the level of protection. The “ import disciplines market” hypothesis argues that firms in the first group of industries, those that were imperfectly competitive prior to liberalization should experience a decline in mark- ups with the set of liberalization (Levinsohn,1993).

Foroutan (1994) estimated the impact of the Turkish trade liberalization in the early 1980's on the productivity and competitive performance of the Turkish manufacturing firms both in the private and in the public sector; in 1991. His findings indicated that the Turkish experience of trade liberalization had a positive impact on the productivity of the private sector. In the regression analysis based on study, results demonstrated that the total factor productivity growth in the private sector was favourably affected by the rise in import penetration. In Foroutan's study that the major explanatory variable used for the total factor productivity changes was output growth, which reflected scale effects as well as shifts in capacity utilization. Nevertheless, Tıktık (1997) noted the data and related price deflator problems as noted by various studies, Maraşlıoğlu and Tıktık and Celasun on the total factor productivity estimates (Tıktık,1997:23). For example, Celasun has argued that the manufacturing output growth in Foroutan's analysis was much higher than official figures at constant prices. Foroutan reported that imported penetration in the concentrated sectors has caused to a reduction in the gross profit margins by using private manufacturing data over the 1977-1985 periods (Foroutan, 1991:5) .

Katırcıoğlu, Engin and Akçay (1995) examined the effect of import competition on the performance of the Turkish manufacturing industries in the late 1980's. The analysis was based on the import discipline hypothesis. Their research concluded that import competition has depressed price-cost margins(PCM) in concentrated industries after the implementation of a more liberal import regime in 1984. The disciplinary effects of import have not been realized across industries at the same rate since there were differences in the degree of import penetration in different industries. Katırcıoğlu, Engin and Akçay (1994) defined the industries which the average PCM was about 25 per cent during the studied period as “competitive” in the sample. In some concentrated industries

where the degree of import penetration was weak, the average PCM was greater than 30 per cent. Import penetration in these industries was so weak that they experienced that a negligible effect on their PCM after import liberalization. On the other hand, where there was strong competition from imports, the PCM in some concentrated industries was only one percent higher than the competitive industries PCM (Katırcıoğlu, Engin and Akçay, 1995). The effect of growth on the PCM was found to be positive and statistically significant for 1985 and 1989 as expected. This relation is not valid however, for 1982. It is also found that new firms using capital intensive technologies that were made cheaper by trade liberalization entered the markets, increased thereby overall capital intensity of manufacturing and simultaneously reduced the price cost margin through increased competition. Similarly, they found a positive relationship between import penetration and profit margins in the private sector, despite their expectation of competitive pressures on the mark-ups via the discipline of import penetration.

Yalçın (2000) tested the import discipline hypothesis by using panel data of four digit level Turkish manufacturing industries for the period of 1983-1991. At the beginning of the analysis, it was expected that the price cost margin should decrease in the market in which there existed market power. After analysing different industries concentration ratios, Yalçın found the paper and paper products industry was the only industry that the concentration ratio had shifted from 47.1 per cent to 22.6 per cent from 1980 to 1996. Nevertheless, Yalçın also observed that a competitive sector such as manufacture of wood products to increase its concentration level beyond the imperfectly competitive threshold of 30 per cent by 1996. Similarly some of highly concentrated sectors of private manufacturing industry. Yalçın (2000) concluded that mark-up ratios are directly and positively related with concentration ratios for sub-sectors of Turkish industry. In the period, the pressure on wage increases was basic instrument on decreasing production costs and in squeezing the domestic absorption capacity. The share of wage-labour in manufacturing value added decreased from its average of 35.6 per cent in 1977-80, to 20.6per cent in 1988 (Özcan,Voyvoda and Yeldan, 2000). The average mark up rate (profit margins) in private manufacturing has increased from 31 per cent to 38 per cent in this period.

Since hypothesis states that import liberalization would discipline domestic prices

and remove excess profits which reflect market power of domestic firms operating in oligopolistic markets, as a result of analysis, it would be expected that PCM should decrease in the concentrated markets. Nevertheless, while import liberalization caused to a decrease in price cost margins of the private sector, PCM in more concentrated sectors increase by import penetration. Yalçın interpreted this as the presence of a possible implicit collusion among domestic and foreign firms in more concentrated industries. The analysis was done for the public and private sectors separately. The regressions analysis of PCMs on foreign trade structure concluded that market power caused substantially different results for the private and public sectors and the domestic demand variable exercise a positive effect on PCMs significantly in the private sector than the public sector and import penetration results in a decline of access profits in more concentrated public sector industries. The PCM, as the measurement of performance and competitive level of the domestic industry; increased from 25.7 per cent in 1983 to 34.9 per cent in 1994. In the private sector, it has also increased from 24.0 percent in 1983 to 34.7 in 1994. Price-cost margin in chemicals, petroleum, coal, rubber and plastic industries increased as the fastest among the private sector industries, by a rate of 76 per cent during the period (Yalçın, 2000). The price-cost margins in whole public sector rose from 28.2 per cent to 35.7 during the period. They decreased substantially in textile apparel and leather industries of manufacture of wood and wood products including furniture of basic metal industries of fabricated metal products, machinery and equipment, transportation vehicle, scientific and professional measuring and controlling equipment and of other manufacturing industries whereas the price-cost margins of chemical and petroleum industries that are highly capital intensive and accounted for more than half of the total sale of the public sector.

In fact, the overall PCM of public sector has come from the large margins of chemical and petroleum industries. Both import penetration rates and PCMs have increased to certain level during the period. The increase in PCM was not consistent with the import discipline hypothesis, since it is considered that PCM would decrease under the pressure of imports. Yalçın interprets the result of this performance was an unexpected situation and states the following reasons as an explanation for this case.

- First of all, import penetration is not only factor that affects or determines PCM in

the industry, the variables such as concentration rate, capital intensity, advertising expenditures, market size and growth, play important role in determining of PCM.

- The increase in import penetration might result in mergers among the foreign and domestic firms in highly concentrated markets.
- The imports might lead to lower cost and higher PCM because of cheaper industrial inputs.
- The legal capital depreciation rate which is also included in gross profit increased from 6 per cent in 1980 to 17 percent in 1989.
- A steady decline in the share of the labour payment in value added might lead to increase in PCMs between years of 1980 and 1988. In fact, the average share of labour payments in value added decreased from 24.8 per cent in 1983 to 15.4 per cent in 1988.

Another measure of industrial competition is the seller concentration rate. The sale weighted average of the four firm concentration ratios has decreased gradually in six out of nine two digit industries during the period of 1983-1994. The most concentrated industries were mainly chemicals, chemical petroleum, coal rubber and plastic products whose concentration rate remained and around 80 per cent even though it has decreased gradually.

On the other hand, textile, wearing apparel and leather industries had the lowest concentration rate, 17 per cent on the average. At the four digit industry level, the four firm concentration rates of 42 industries have increased and the concentration ratios of 38 industries have decreased during the 1985-1994 period. The sale share of the former group increased from 40.0 per cent in 1985 to 42.5 percent in 1994. That is the market shares of industries whose concentration ratios has increased during the period have expanded.

Özcan, Voyvoda and Yeldan (2000) investigated the structural consequences of the post-1980s outward orientation on the market concentration, pricing behaviour and accumulation patterns in the Turkish manufacturing industries. They found out considerable evidence on the extent of monopolization and high concentration in the Turkish manufacturing industries with considering the other research on the subject. The

main indicators of the manufacturing industry were under the post 1980 adjustments. They used the rate of market concentration²⁸ to demonstrate the oligopolistic structure of the industry. Then the sectors are classified according to their concentration ratios by using data from Türkiye İstatistik Kurumu, İmalat Sanayi Yıllık Araştırması (Turkish Statistical Institute, Manufacturing Industry Annual Survey). If the CR4 ratio, above 0.30, it is considered as imperfectly competitive, and those having CR4 ratios below this threshold as competitive. They observed a tendency for higher mark-up rates within the imperfectly competitive block.

- petroleum refineries (353),
- soil products (361) and

non-metals have the highest mark-up rates over 1994=1996 with 1.07, 1.04 and 0.72 respectively. On the other hand, sectors 312, 323 and 324 yielded the lowest mark up. It was also noticed that growth in real wages has been consistently negative over the 1981-1988 and 1994-1997 episodes, while real wage costs have been on an upward trend under the financial de-regulation of 1989-1993. As of 1994-1997, the highest share of labour costs in value added is recorded in manufacture of

- footwear with 0.27.
- glass product with 0.25 and
- paper and paper products (341) with 0.24.

The dis-association between the real wage movements and labour productivity is visible over the classic export led manufacturing era, 1981-1988. Even though, real wages seem to have increase with real average labour products over 1989-1993, real wages follow a reducing trend in the period from 1994 to 1997.

The analysis showed that sectoral composition and nature of market concentration and behaviour of profit margins change little under the post 1980. The speed of adjustment of concentration was revealed to be very slow in spite of the import discipline and export penetration and the technological and institutional barriers to entry seem to

²⁸ The rate of market concentration is calculated by the shares of the four largest enterprises in the total sales (revenues) of the sector.

persist over the post 1980 reform era (Özcan, Voyvoda and Yeldan, 2000). They categorised sectors as “open” as long as their trade volume to a ratio of value added in each sector exceed 0.50. In contrast, sectors with ratio less than 0.50 are regarded as “inward–look”. They recognized that “openness” had not much impact on the levels of profit margins (mark ups) and on the behaviour of investments in each sector.

The econometric results reflected the mark up levels in Turkish manufacturing after a 16 year long period of trade liberalization adjustment. It can be concluded that the sectors resist to increased competition despite the import discipline brought by the post 1980 adjustments Özcan, Voyvoda and Yeldan interpret this as a result of relatively small effect of “openness” on gross profit margins. Those sectors which were classified as “inward–looking” in 1980 and became “open” by 1996 are called “trade adjusting” sectors and they display a positive response (+0.26) of profit margins via openness. Thus, Özcan, Voyvoda and Yeldan’s results suggest in the post- 1980 export orientation period did not provide the competitiveness in Turkish Manufacturing and strategy of “ export” led industrialization could not sustained as a viable strategy through increased investment (Özcan, Voyvoda and Yeldan,2000:). Profit margins are positively and significantly affected from concentration power and real wage cost increases. Thus, it can be considered that manufacturing sectors have responded to shocks of trade policy and real wage costs by increasing their original profit margins. Consequently, there has been statistically insignificant relationship with “openness” and significantly and positive responses to profit margins and real wages. Özcan, Voyvoda and Yeldan expressed the importance of the domestic demand factors in the Turkish industrial commodity markets and an “overall wage led growth pattern” with both profit margins and real wages acting as accelerations variables to stimulate fixed investments.

3.3. THE SECOND STAGE in TRADE LIBERALIZATION : THE CUSTOMS UNION

According to the Customs Union decision, all industrial goods started to circulate freely between the EU and Turkey as of January 1, 1996. Only the products which are subject to European Coal and Steel Community and which do not comply with the EC norms could not circulate. Turkey eliminated all the duties and Mass House Fund charges imposed on the EU and EFTA products, as well as all the quantitative restrictions and impose common customs duties for the third countries. The stages of the CU began with Ankara Agreement in 1961 and completed by the end of 1995. All duties and equivalent charges on imports of industrial goods from the EU were removed by the completion of the CU into force. Furthermore, Turkey has been harmonizing its tariffs and equivalent charges on the importation of industrial goods from third countries in accordance with the EU's Common Customs Tariff. It has changed regulation to a level that has made it possible to cope with the EU's commercial policy and preferential trade arrangements with third countries.

On the other side depending on the Tokyo Round negotiations of GATT, Turkey also agreed to eliminate export subsidies by 1989. While Turkey were eliminating most of the export incentives that were introduced during the 1970s and 1980s, the legal subsidies of GATT were introduced in 1995. These subsidies were R&D or subsidies to facilitate the adaptation of plants to new environmental regulations (Togan, Nebioğlu and Doğan,2005: 87).

The commercial rules related to monitoring and safeguarding measures on imports from both the EU and third countries were harmonized. As competition rules are concerned, subsidies through State resources in any form which distort or threaten to competition will be banned. A special Competition Board has been set up for this purpose. Turkey has also adjusted its legislation regarding state monopolies of a commercial nature. So, no discrimination should exist in the conditions under which goods are produced and marketed between nationals of Turkey and the EU Member States. Turkish legislation have been harmonised to that of the EU on intellectual, industrial and commercial property and laws for consumer protection were put in place.

Internal taxes as indirect protection mechanisms and from using tax rebates as export subsidies are forbidden for both parties.

As a result, after January 1st, 1996, protection rate on the EU and EFTA products decreased from 5.9 per cent to 0 per cent. In addition, the import protection rate imposed on third countries' products decreased from 10.8 percent to 6 percent. However, import duties on some specific goods (car, truck, leather, shoes, ceramics, etc.) were decreased gradually. Turkey lowered import duties on these goods in 1997 by 10 percent, in 1998 by 10 percent, in 1999 and 2000 by 15 percent and in 2001 by 50 percent. After January 1st, 2001, import duties on these goods for the third countries decreased to the common customs duties level imposed by the EU. As a result of these measures, Turkey's weighted rates of protection for imports of industrial products originating in the EU and EFTA member states have fallen from 5.9 per cent to 0 and from 10.8 per cent to 6 per cent for similar goods originating in third countries. The latter rates will further drop to 3.5 per cent when the EU fulfills its obligations under the World Trade Organizations negotiations. Although, basic agricultural products have been excluded from the initial package, a preferential trade regime for these products has been adopted on first of January in 1998.

After the CU, the import from the EU have risen by 39.4 per cent in comparison to 1995 and became US \$ 23.5 billion , while the value of export rose only 9 per cent and reached the total value of US \$ 12.097 million in 1996. The EU is the most important trading partner and its share in import was 52.9 per cent while it had 49.5 per cent share in total Turkish export markets in 1996. This trend continued in 1997 and 1998. Turkey's exports to the EU rose from US \$ 12.9 billion dollars in 1997 to US \$14.1 billion in 1998 and imports from the EU increased from 24 billion dollars in 1997 to 24.8 billion dollars in 1998. In 1997, the share of Turkish imports from EU in total imports increased further reaching 51.1 per cent and in 1998 52.5 per cent, also the share of EU exports in total exports increased from 46.6 per cent in 1997 to 50 per cent in 1998. Turkey's share in total EU exports which was 3.1 per cent in 1997, represents the significance of Turkey's potential as a growing market for the EU while Turkey's share in total EU imports was 1.8 per cent. Since the EU had already abolished its tariffs for imports from Turkey before the CU, the only trade barriers were quotas for textiles that could not be filled by

Turkey, the CU did not bring about a significant liberalisation for exports to the EU.

Table 3.1

Turkey's Foreign Trade Statistics and The Share of the EU in Turkey's Foreign Trade

Years	Export to the EU Million \$ (1)	Share of the EU %	Total Export Million \$ (1)	Change in Total Export %	Import from the EU Million \$ (1)	Share of The EU %	Total Import Million USD \$	Change in Total Import %	GNP Million USD \$ (2)	Growth Rate %
1990	6892	53.2	12959		9328	41.8	22302		150758	9,4
1991	7041	51.8	13593	4.89	9221	43.8	21047	- 5.6	150168	0,3
1992	7600	51.7	14714	8.25	10049	43.9	22871	8.6	158122	6,4
1993	7599	49.5	15348	4.31	13875	47.1	29429	28.6	178715	8,1
1994	8635	47.7	18105	17.96	10915	46.9	23270	-20.9	132302	-6,1
1995	11078	51.2	21637	19.51	16861	47.2	35707	53.4	170081	8,1
1996	11549	49.7	23224	7.33	23138	53.0	43627	22.2	183601	7,9
1997	12248	46.6	26261	13.08	24870	51.2	48559	11.3	192383	8,0
1998	13498	50.0	26973	2.71	24075	52.4	45921	-5.4	206552	3,8
1999	14348	54.0	26587	-1.43	21401	52.6	40671	-11.4	185171	-6,4
2000	14510	52.2	27774	4.46	26610	48.8	54503	34.0	201500	6,3
2001	16118	51.4	31334	12.82	18280	44.2	41399	-24.0	146100	-9,5
2002	18459	51.2	36059	15.08	23321	45.2	51553	24.5	180100	7,9
2003	24484	51.8	47252	31.04	31695	45.7	69339	34.5	239800	5,9
2004	34417	54.5	63167	33.68	45434	46.6	97539	40.6	300600	9,9
2005	38394	52.3	73476	16.32	49220	42.1	116774	19.7	361500	7,6
2006	47934	51.6	85534	16.41	53849	39.3	137032	17.3	400000	6,0

Source:(1)<http://www.dtm.gov.tr/dtmweb/index.cfm?action=detay&yayinID=376&icerikID=475&dil=TR>

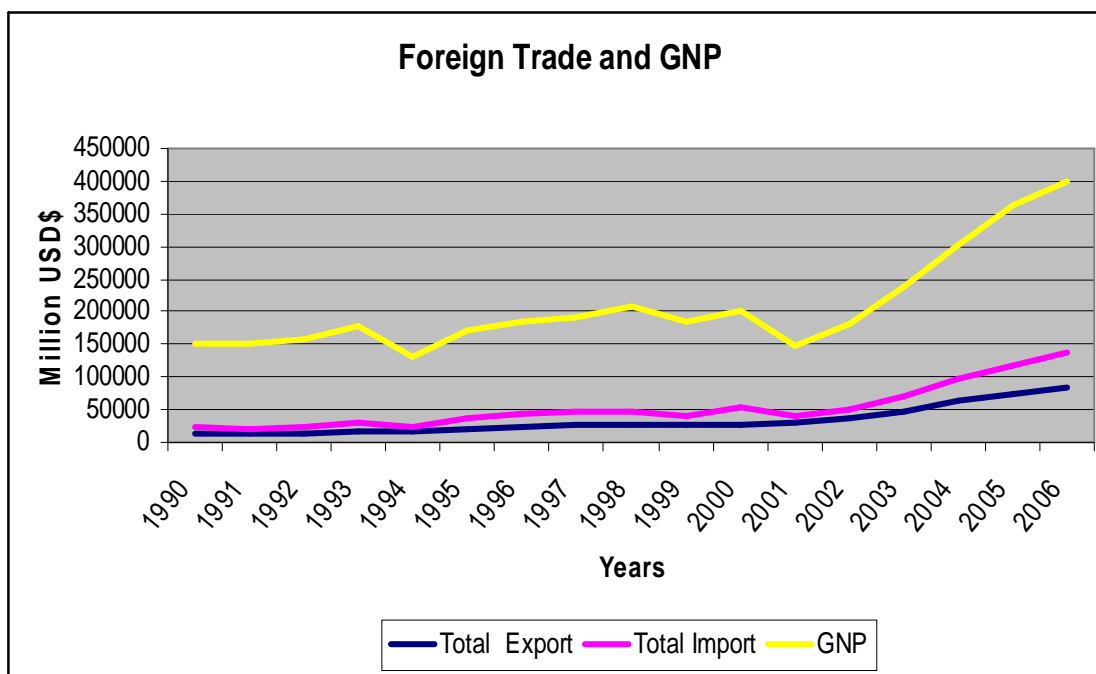
(2)http://www.tuik.gov.tr/veriBilgi.do?tb_id=12&ust_id=4/-2334953711906908517/xls
http://www.tuik.gov.tr/PreIstatistikTablo.do?istab_id=624.288525505701645550/xls921922183927937449
for the period 1996-2000 <http://www.tuik.gov.tr/disticaretapp/jsp/body/tumraporlar.jsp>
http://tuikrapor.tuik.gov.tr/reports/rwservlet?ulusalhesaplardb2=&report=uy_tablo1.RDF&p_tur=2&p_yil=1994&desformat=html&p_kod=1&ENVID=ulusalhesaplardb2Env

(3)for the data relating to import and export in the period 1990-1995
<http://www.tuik.gov.tr/disticaretapp/jsp/body/tumraporlar.jsp>

Turkey's exports to the EU are expected to rise with a return to higher growth rates in the Union. The domestic industry also adapted itself to the new competitive environment. The main economic indicators show that accession procedure of the CU did

not support the economic stability in Turkey for the first years of the economic program. Turkey witnessed two important economic crises before and after accession to the CU. In 1994, the Turkish economy depressed 14 per cent in comparison to previous year. The next year, the economy grew once more. But, since this growth is not regular, this caused many macro economic fluctuations as well as chaos in the economy. After completion of the CU process with EU, there has not been observed long term persistent growth rate in Turkey. Although, growth rate increased 7 per cent in 1996 in comparison to 1995, it did not continue for the following five years. After going down to deep in 2001, the Turkish economy experienced rapid growth in following five years. During the same period, the import also experienced similar fluctuations with growth rate since import directly related to foreign exchange rate fluctuations in Turkey. The share of import to EU in total import was fluctuating between 39.3 per cent in 2006 to 53 per cent in 1996. EU is the largest trading partner of Turkey both in import and export.

Graph: 3.1



This graph is arranged by the data given on the table 3.1

Table 3.2
Export of Turkey to the EU (Classified According to its Type)

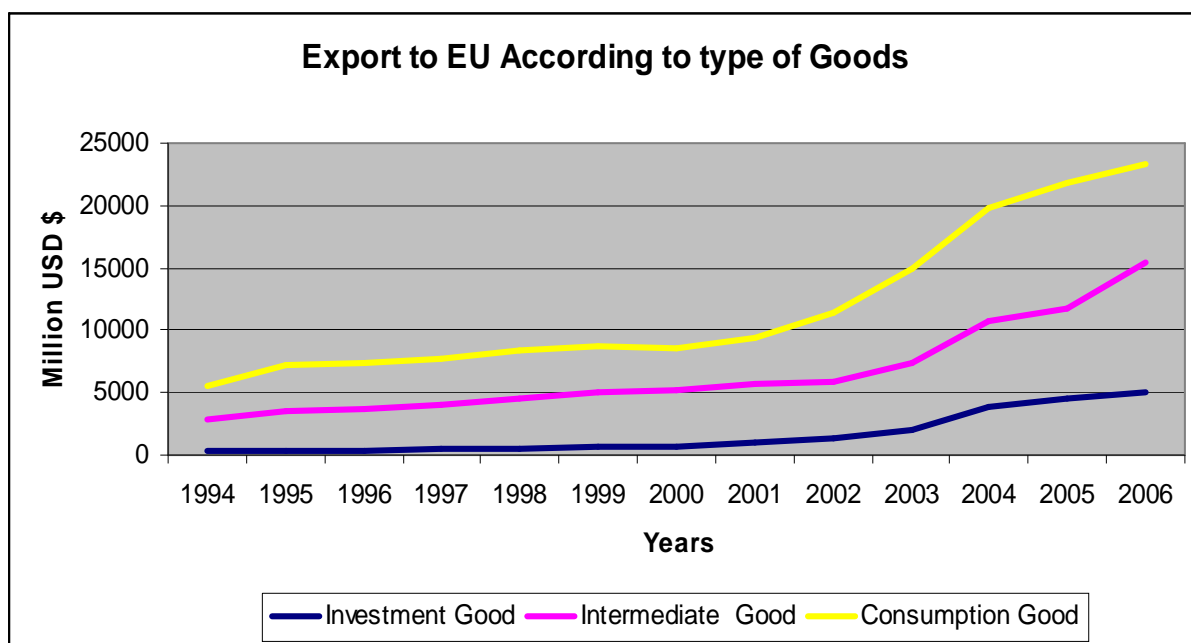
Million USD \$

Years	Investment Good			Intermediate Good			Consumption Good		
	Value	Share (%)	Change (%)	Value	Share (%)	Change (%)	Value	Share (%)	Change (%)
1994	252	2.9	-	2805	32.5	-	5577	64.6	-
1995	318	2.9	26.2	3528	31.8	25.8	7232	65.3	29.7
1996	396	3.4	24.5	3727	32.3	5.6	7425	64.3	2.7
1997	423	3.5	6.8	4105	33.5	10.1	7721	63.0	4.0
1998	489	3.6	15.6	4612	34.2	12.4	8397	62.2	8.8
1999	631	4.4	29.0	4981	34.7	8.0	8737	60.9	4.0
2000	666	4.6	5.5	5203	35.9	4.5	8631	59.5	-1.2
2001	960	6.0	44.1	5751	35.7	10.5	9359	58.1	8.4
2002	1274	6.9	32.7	5834	31.6	1.4	11330	61.4	21.1
2003	2077	8.5	63.0	7431	30.4	27.4	14929	61.0	31.8
2004	3776	11.0	81.8	10772	31.3	45.0	19759	57.4	32.4
2005	4561	11.9	20.8	11748	30.7	9.1	21883	57.1	10.7
2006	5081	11.6	11.4	15492	35.3	31.9	23250	52.9	6.2

Source: Dış Ticaret Müsteşarlığı (Undersecretariat of Foreign Trade, Foreign Trade Statistics of the EU-Turkey Relations, December 2007
<http://www.dtm.gov.tr/dtmweb/index.cfm?action=detay&yayinID=376&icerikID=475&dil=TR>

The analysis made on the export of Turkey to EU shows that the most important part of the import volume exist on consumption goods, average 60 per cent of the import was on consumption good, while the remaining 33 per cent of import is on intermediate goods. Although, the consumption good have had the largest share in total export, during the ten years analysis from 1996 to 2006, it is observed that this share decreased from 64.3 per cent to 52.9 percent in 2006. The volume of intermediate good export increased from US \$ 3.727 million to US \$ 15.492 million. Although, in 1997, only 3.5 per cent of Turkey export to the EU was on investment good, this increased to 11.9 per cent in 2005. The total value of investment goods export became US \$5 billion.

Graph :3.2



Source: This graph is arranged by the data given on the table 3.2

The analysis made on the import of Turkey from the EU in the period between 1994 and 2006 shows that the most important part of the import volume exist on intermediate goods, average 55 per cent of the import has been on intermediate good (or semi-finished goods), while the remaining 25 per cent of import on investment goods. Only, approximately 15 per cent of the import was on consumption commodities. However, it should also be said that the share of consumption commodities increased in contrast to investment commodities after the CU. Although, the share of consumption good was 8.8 per cent in 1995, it increased to 19 per cent in 2000 while the import of investment good was 28.7 per cent in 1995, it decreased to 19.5 per cent in 2000.

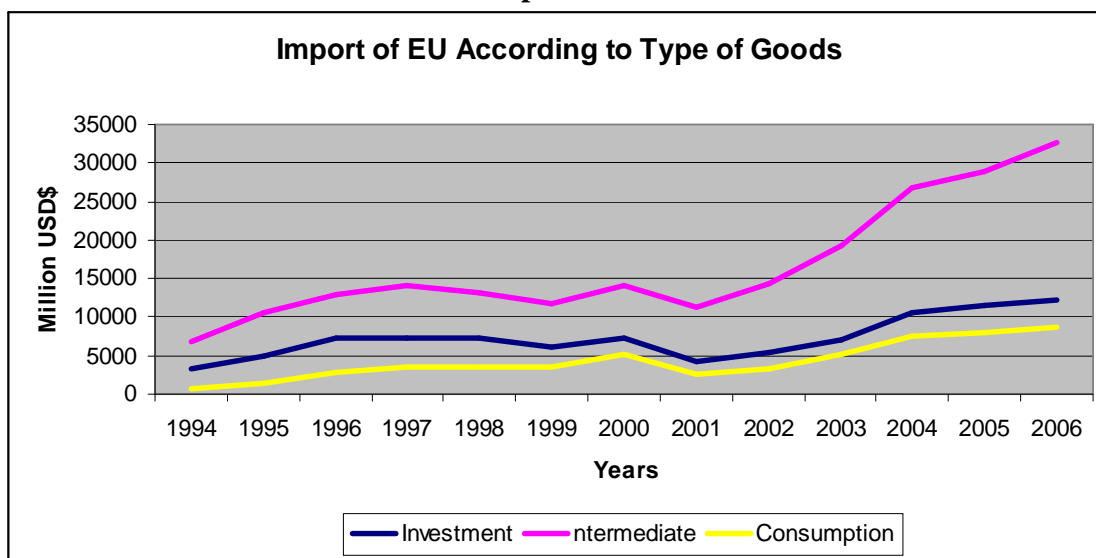
Table 3.3
Import of TURKEY from the EU (Classified According to its Type)

Years	Investment Good			Intermediate Good			Consumption Good			Total
	Value	Share (%)	Change (%)	Value	Share (%)	Change (%)	Value	Share (%)	Change (%)	Million USD \$
1994	3209	29.4	-	6912	63.3	-	795	7.3	-	10915
1995	4831	28.7	50.5	10539	62.5	52.5	1491	8.8	87.5	16861
1996	7387	31.9	52.9	12880	55.7	22.2	2870	12.4	92.5	23138
1997	7327	29.5	-0.8	14009	56.3	8.8	3535	14.2	23.2	24870
1998	7182	29.8	-2.0	13270	55.1	-5.3	3622	15.0	2.5	24075
1999	6069	28.4	-15.5	11823	55.2	-10.9	3525	16.5	-2.7	21401
2000	7254	27.3	19.5	14116	53.0	19.4	5114	19.2	45.1	26610
2001	4317	23.6	-40.5	11168	61.1	-20.9	2595	14.2	-49.3	18280
2002	5361	23.0	24.2	14417	61.8	29.1	3196	13.7	23.2	23321
2003	6999	22.1	30.6	19233	60.7	33.4	5147	16.2	61.0	31695
2004	10672	23.0	52.5	26819	59.0	39.4	7613	16.8	47.9	45434
2005	11587	23.7	8.6	29008	59.3	8.2	8044	16.4	5.7	48957
2006	12186	22.6	5.2	32567	60.5	12.3	8776	16.3	9.1	53849

Source: Dış Ticaret Müsteşarlığı, Dış Ticaret İstatistikleri, (Under-secretariat of Foreign Trade, Foreign Trade Statistics of EU-Turkey Relations, December 2007

<http://www.dtm.gov.tr/dtmweb/index.cfm?action=detay&yavinID=376&icerikID=475&dil=TR>

Graph.3.3



Source: This graph is arranged by the data given on the table 3.3

Togan, Nebioğlu and Doğan (2005) explained the reasons of the fact that the formation of the CU between Turkey and the EU did not increase the trade with the EU initially as follows: Firstly, the formation of the CU did not lead to considerable reductions in trade barriers on the EU side, because the EU had abolished the nominal tariff rates on imports industrial goods from Turkey on September 1, 1971. Secondly, Turkey did not arrange the internal legal order the EU instruments for removing technical barriers to trade that would allow Turkish industrial products to free circulation. The macro economic fluctuations influenced the volume of international trade also (Togan, Nebioğlu and Doğan, 2005:94)

Besides the gain obtained from liberalization of foreign trade, like increasing volume of trade or increase in GNP or other major economic indicators, one other important aspects of the CU was the decrease in tax income in budget and in GNP. Küçükahmetoğlu analyses the CU from different perspective and shows the share of taxes in Official Budget of Turkish Economy and evaluates the customs and foreign trade taxes on it (Küçükahmetoğlu, 2000:44). The analysis shows that the rate of foreign trade taxes decreased from 15.3 per cent in 1994 to 13.4 per cent in 1999. However, during period between 1995 and 1998, it continued to increase.

Table 3.4
Share of Taxes in Official Budget of Turkish Economy (per cent)

Source of Taxes	1994	1995	1996	1997	1998	1999
DIRECT TAXES	48.3	42.5	39.4	40.7	46.6	45.4
Income Taxes	42.0	40.2	38.6	40.0	45.9	44.2
Wealth Taxes	6.3	2.3	0.8	0.7	0.8	1.2
INDIRECT TAXES	51.7	57.5	60.6	59.3	53.4	54.6
Goods and Services	36.5	39.6	43.3	41.9	39.1	41.3
Foreign Trade	15.3	18.0	17.3	17.4	14.3	13.4
Total / 100%	100	100	100	100	100	100

Source: Küçükahmetoğlu, 2000 :44

Küçükahmetoğlu also analysed share of taxes in Official Budget of Turkish GNP and recognizes the share of taxes in GNP did not decrease in 1999 in comparison to 1995. Even it increased from 5.5per cent to 7.8. This may be interpreted that the trade from the non-EU countries also increase both in volume and value.

Table 3.5.
Share of Taxes in GNP %

Source of Taxes	1994	1995	1996	1997	1998	1999
Income Taxes	15.1	13.8	15.0	16.1	17.4	18.9
Wealth Taxes	7.2	5.7	5.8	6.5	8.0	8.4
Goods and Services	0.1	0.1	0.1	0.1	0.1	0.2
Foreign Trade	5.5	5.5	6.5	6.8	6.8	7.8
Total / 100%	100	100	100	100	100	100

Source: Küçükahmetoğlu, 2000: 44

Kotan and Saygılı (1999) modeled the import demand of Turkey which is based on domestic income, exchange rate and foreign exchange reserve movements. As a result, they find that in the short-run, exchange rate is the most effective policy tool, while domestic demand and stock of international reserves are the main

determinants of import demand function of Turkey, in the long-run.

In the research paper by Ceritoğlu (2002), mark-up ratios are estimated for manufacturing industry and its sub-sectors during the period between 1991 and 1997 periods annually. The estimation is carried out for two and three digit manufacturing industries according to the ISIC2 Classification²⁹. All the data covers all public and private firms that operate in the industry sector, which employ more than 10 workers annually, for the periods between 1991 and 1997 (Ceritoğlu, 2002:07). The share of wages in total value added of industry sector declines from 21.8 per cent in 1990 to 16.9 per cent in 1997 gradually. The main reason of this decline may be related the problems exist in private sector or it may due to the overwhelming effects of the financial crisis on the public sector budget.

Akgündüz (2005) estimate income and price elasticities of import demand of 9 EU countries by analyzing the period between 1987 and 2004. In the regression model, it is observed that the CU has not damaged Turkey's foreign trade balance in favour of the EU countries. This paper finds negative sign for the price variable in the long-run import demand function of Turkey from Germany, Belgium and Denmark unexpectedly. The real exchange rate does not affect import demand in the long-run from UK, Italy, Portugal and Denmark. This was surprising result either. Total export demand estimating results give unexpected positive sign for the price variable. Price elasticity of general export demand is found positive contrary to expectations. It is explained by the nature of the goods exported to Germany being high value industrial products and the high quality expectation as prices increase (Akgündüz, 2005)

Seymen and Utkulu (2006) analysed the level of price competitiveness of the Turkish firms in the EU Single market in aggregate level for the period 1963-2002. They were basically interested in possible effects of factors such as structural breaks, integration of markets, product innovation, supply and other variables as the income and price elasticities. They conclude that both the long-run price and income elasticities of Turkish Exports to the EU are significantly reduced after the Single Market. Although the income elasticity is significant and high, measure of import capacity lowers the price

²⁹ ISIC2 Classification: International Standard Industry Classification

elasticity (Seymen and Utkulu, 2006: 38)

Neyaptı and Taşkın and Üngör(2004) estimated import and export functions of Turkey with the EU and non-EU countries. They observed that the income elasticity of both imports and exports are lower for the EU countries, especially for the CU period. While the effect of real exchange rate on export is found to be stronger for the period of the CU. This is explained by the increased imports for during the periods of largely overvalued TL,especially for the period 1993-2000 (Neyaptı and Taşkın and Üngör, 2004).

Özkale and Karaman (2006) focused on general demand function first of all, then main trade commodity groups. They found out that the price changes do not have impact on the aggregated import demand function although the demand function has high income elasticity. They also compare the results with the sectoral level findings. Özkale and Karaman also used the demand function suggested by Neyaptı for the second level analysis. They investigated the differences with regards to volume and behavioural aspects for 19 EU countries and 16 non-EU countries for both during the period the year 2000 (Özkale and Karaman, 2006). Real import demand is considered as a function of domestic income and real exchange rate. Özkale and Karaman selected 2004 as the base year and first 10 importing chapters (85 chapter of these importing chapters is electrical machinery and including home appliances products). According to the estimation results of equations, after the CU imports from the non-EU countries decreased. They repeated the analysis using equations and found that the CU has not trade creation³⁰ and trade diversion effect. Additionally, Turkey's import demand is found to be income elastic and price inelastic. Özkale and Karaman interpreted that in case of a decrease in Turkey's GDP, she would give up imports from non-EU countries while imports from the EU countries became less responsive to price changes and imports from non-EU countries became more responsive. Import demand of electrical goods and machinery from the EU increased after the CU, the agreement made trade creative effect(Özkale and Karaman;

³⁰ Trade creation effect: Trade creation means that a free trade area creates trade that would not have existed otherwise. As a result, supply occurs from a more efficiency producer of the product. In all cases trade creation will raise country's national welfare.

Trade diversion effect: A free trade area diverts trade away from a more efficient supplier outside the FTA, towards a less efficient supplier within the FTA. In some cases, trade diversion will reduce a country's national welfare but in some cases national welfare could improve despite the trade diversion.

2006:16)

In their analysis, Erzan, Filiztekin and Zenginobuz (2007) tested the relationship between industry structure and trade variables. When industries are treated together without grouping them according to CR4, it was observed that increases in output concentration significantly hampered import penetration. In separate estimations carried out for high and low concentration industries, it is observed that the negative impact of concentration on import penetration persisted for high concentration industries while this effect disappeared for low concentration industries. When concentration is reduced in concentrated industries through new domestic entry, the share of imports in total consumption will increase. On the other hand, decreasing output concentration in competitive industries will not lead to increased flow of imports. The evaluation of the test results on the impact of industry structure was challenging: concentration reduced exports significantly. Erzan, Filiztekin and Zenginobuz also observed that the impact of Price-Cost Margin (PCM) on import penetration was qualitatively same as the impact of CR4 on import penetration. The result does not differ whether the sample was treated as a whole or segmented according to level of PCM. No significant impact of PCM on exports was observed when the whole sample treated as whole. PCM had no significant impact on export response for the high PCM industries, while there was a significant negative effect of PCM on exports other for the low PCM countries. When the study was considered from the import discipline hypothesis perspective, it was observed import penetration does not have any effect on market concentration. When industries were grouped according to their concentration levels, import penetration did not reduce concentration in concentrated industries, while for the less concentrated industries changes in import penetration had a mildly significant negative impact on market concentration. So, Erzan, Filiztekin and Zenginobuz argue that imports do not seem to serve a disciplining role on concentrated industries, but may give way to further competition in already competitive industries. As for export, no significant impact of exchanges in exports on industry structure was observed for either low or high concentration industries.

When all industries are taken together, it was observed that changes in import penetration did not have significant on price-cost margins(PCM) while changes in profit

margins in the previous period had a significantly positive at high PCM industries separately. So, Erzan, Filiztekin and Zenginobuz concluded that import do seem to provide discipline for either the low or high PCM industries.

Saatçi and Aslan (2007) also analysed disciplinary effects of import on Turkish manufacturing industry with two digits under the period starting from 1966 to 2001. Saatçi and Aslan used the panel data in this analysis. Since until that time, the most of the studies were covering different short term periods, they produced different results. Some of them were supporting the import discipline hypothesis and some of them were not. So, Saatçi and Aslan studied so long period of time for the first time on Turkish manufacturing industry. The study concluded that the relationship between import and Turkish manufacturing industry is positive and statistically significant. This conclusion approved that the import liberalization just decreased the profitability on Turkish manufacturing industry. Whenever Saatçi and Aslan focused on the relationship between export and price and cost, they also found negative and statistically significant relationship among them. Saatçi and Aslan explained this by stating that whenever the producers producing in the imperfectly competitive markets export to foreign countries, they would not discriminate the prices on domestic market and foreign markets and the increase in export inversely effected the price-cost margin on products like it is the case in import discipline hypothesis. The growth rate has been above the rate it was forecasted on the model, it is also positive and statistically significant. This means the capacity in manufacturing industry has been increased during this period and the increase in production capacity also reduce the price-cost margin in all manufacturing industries. They also conclude that the relationship between capital and price-cost margin has been negative and statistically insignificant which means increase in the volume of capital decrease the profitability of production in the analysis period. Similarly, the coefficient of intra-industry variable was positive and this is explained by stating that the domestic producers retards the the import pressure (Saatçi and Aslan, 2007;1-15).

CHAPTER IV

THE EFFECTS OF

THE CUSTOMS UNION on TURKISH

MANUFACTURING INDUSTRIES:

TEST OF IMPORT DISCIPLINE HYPOTHESIS

THE CASE OF

HOME APPLIANCE SECTOR

4.1. HOME APPLIANCE SECTOR

In any project where substantial amount have to be sunk into research and development, and only one or a few firms succeed and go on the production stage and these gets large monopoly profits. They would not have undertaken the investment without the prospect of such a reward. After successful firms have become organized in the industry, the sunk cost will constitute an entry barrier for new firms. There is usually free entry to the whole process. In the case where firm plans to make investment into R&D during the early stage of the industry's evaluation, there would be zero excess profit for the process as a whole, the profits of successful firms would just match the losses of the rest (Dixit, 1986:292). So, if the firms continue to have excess rents, the concentration ratio is a well organized measure of imperfectly competitive markets. Home appliance industry with its structures which require high initial cost and high R&D programs is the typical example of imperfectly competitive market. Even all over the world, the number of producers in the home appliance industry is so low that naturally the home appliance industry in each country has imperfectly competitive market structure. In Turkey, it is the same, home appliance industry has been one of the highly concentrated industries. In addition to the imperfectly competitive market structure, the high tariffs rates imposed on the import of home appliance industry, the industry was one of protected industry.

The Turkish home appliances sector started to its production activity as an assembly industry in the 1950's. The first Turkish made refrigerator was introduced to the market in 1960. It was produced by "Arçelik". The seventies were the first years that Turkey produced the other domestic home appliance products under its own trade mark again by Arçelik. Although demand for home appliance products was considerable, the production capacity was limited. This can be due to the technical difficulty. The large part of the domestic consumption was provided by domestic production. Especially, at the beginning of the 1970's, it is observed there was not import from the foreign countries, although, there were small amount of export. The home appliance industry was protected by serious amount of tariffs. In 1971, the average amount of production was

200.000 units annually (İGEME,1973:7). At that time, there were nine producers (including suppliers of auxiliary products) in refrigerator industry, all were members of Istanbul Chamber of Industry in 1970s. However, only five of them were effective producers and 54 per cent of total production were carried only by one firm. The 31 per cent of remaining part was also produced by the second firm in the industry. So, the 85 per cent of the total supply was provided by only two firms. Following table shows the detail of production capacity of leading firms in 1970s.

Table 4.1
Refrigerator Production Capacity in Turkey in 1970s

Firm	Annual Capacity		Current Production	
	1970	1971	1970	1971
A	70.000	108.000	106.210	116.056
B	45.000	45.000	52.210	66.839
C	24.780	25.000	13.725	19.838
D	12.500	12.500	5.489	10.617
E	7.000	7.000	800	857
Total	159.800	197.500	178.425	214.207

Source: İGEME, 1973 (Türkiye Cumhuriyeti Sanayi Bakanlığı ve İstanbul Sanayi Odası (Ministry of Industry of the Republic of Turkey and İstanbul Chamber of Industry),

In 1970s, Turkish home appliance industry with production of only one single production structure was typically oligopolistic market. There were limited number of producers and mainly two firms were producing the large part of industry. Although, there were nine producers, only five of them were active and 85 per cent of total production were produced by two firms (İGEME,1973: 4). The average amount of production per firm and total production by industry was limited. Therefore, they were able to charge very high prices to their product since they were operating in imperfectly competitive markets. The small scale firms also determined their price at a high level since they were protected by high customs duties, although, they were unable to increase their production level because of financial difficulties and improper production techniques. The profit cost margin of these firms were 30 per cent. Other firms which were producing in modern technology, management and organizations would produce at a lower cost and apply high prices.

In 1980s, although there were five producers producing refrigerator, ninety per cent of products were produced by Arçelik and Profilo. In 1985, the firms and their trade marks were as follows: Profilo Inc. had the highest capacity in refrigerator production in 1985. It was dominating 48 per cent of the whole market. Annual production capacity increased to 1.416.000 units per year. By trade liberalization program of 1980, home appliance sector also started to export leading growth. Although, since 1989, the industry faced more competition by the reduction the customs duties for the home appliance goods imported from the EU, it continued to grow, even in foreign markets. Therefore, this growth can be interpreted as the result of growing competition that caused improvement of quality standards in production, R&D investments and formulation of marketing and production strategies. During these decades, the production of refrigerator increased. Although, the increase was not regular, the total amount of production increased at a rate of 50 per cent by the end of 1989.

Table 4. 2
Production Capacity Four Major Home Appliance Products in Turkey

	Refrigerator			Washing Machine			Dish Washer			Vacuum Cleaner		
	1985	2000	2005	1985	2000	2005	1985	2000	2005	1985	2000	2005
Years →												
Firm ↓												
Arçelik	600	1400	3200		1150	3100	0	500	900	N.A	1000	1000
Profilo (1)	690	800	1550		450	450	0	0	0	N.A	0	0
Vestel	0	700	2750	0	0	2500	0	0	0	N.A	0	0
Presiz	100	0	0	0	0	0	0	0	0	N.A	0	0
Others	26											
Total	1416	2900	7500	0	1600	6050	0	500	900	N.A	1000	1000

(1) BSH Profilo

Source:

Beyaz Eşya Yan Sanayicileri Derneği ve Üretici Firmalar, White Good Suppliers Association and Companies: ³¹

Dayanıklı Tüketim Malları İhracat Pazar Araştırması, Durable Consumption Goods Export Markets Research, Türkiye İhracatı Geliştirme Merkezi, Export Promotion Center of Turkey, 1985

³¹ <http://www.arçelik.com.tr>, Annual Reports 1999,2000,2001, 2002,2003,2004,2005 N.A
www.bshp.com.tr,2002; www.bsh.com.tr
www.vestel.com.tr

By the year 2000s, in Turkish Home Appliance sector, all products of home appliance industry refrigerator, washing machine, dish washers, cooking appliances, vacuum cleaners, television were produced. Turkish home appliance sector was composed of two sub groups: white home appliance sector and brown home appliance sector. Recently, this classification of the home appliance sector were removed and both type of products have been called consumer durables. (But to keep consistency in the thesis, the “ home appliance” will be used here). After, the third largest firm, Vestel, invested for a large amount of production capacity in 2003, the total production capacity for refrigerator increased to 3.300.000 units per year. There were eight major producers, more than 50 medium scale manufacturing firms in the industry. Eight major producers are the members of the Türkiye Beyaz Eşya Sanayicileri Derneği (TÜRKBEŞD), (White Goods Industrialist Association of Turkey (TWGIA)).

Depending on the population, income and technology, the increase in demand of refrigerator also increase the production capacity. The total production capacity reached to 3.6 million units in 2000 and 7.5 million in 2005. Six firms were producing refrigerator during 2000s. Arçelik, Bosch-Siemens-Profilo, Vestel Beyaz Eşya and Merloni Elettrodomestic. In Turkey, the total production capacity for refrigerator of leading three home appliance producers became 7.5 million units by the year 2005 (Yüzal, 2006:1). During the 40 years period, Arçelik has maintained its leadership in Turkish home appliance sector. Arçelik became one of the fifth largest home appliances manufacturers in Europe with its significant investments and marketing and sales policies. Turkey.

Beginning with 1980s, the Turkish economy was running under the high inflation with 70 per cent and more, high interest rates, high levels of public sectors debt, and low foreign investments levels. Stability package which was anchoring TL to predetermined foreign exchange rate and offering strong fiscal discipline in 1999 pushed inflation down to 7.8 per cent in 2000. This was the lowest rate during the last 30 years. Although, this package was not successful for longer period than one year and it was interrupted by a deep economic crisis of 2001; the strong fiscal and monetary discipline pushed the Turkish economy from recession to recovery, output growth and disinflation. A positive macroeconomic environment, low inflation rate, low consumer credit interest rates and delayed demand during the economic crisis, in the year 2003 and 2006, the considerable

Table 4.3
Production and Domestic Sales of
Four Major Products of Home Appliance industry in Turkey (1000 Units)

Years	Refrigerator (1)		Washing Machine (1)		Dish Washer (1)		Vacuum Cleaner (2)	
	Production	Domestic Sales	Production	Domestic Sales	Production	Domestic Sales	Production	Domestic Sales
1990	960	913	758	734	63	85	261	244
1991	1040	909	837	886	140	169	312	308
1992	1087	1018	779	775	208	211	338	324
1993	1247	899	914	914	325	322	715	384
1994	1265	743	746	762	258	266	437	355
1995	1637	940	828	786	236	241	879	394
1996	1638	1129	993	1067	255	319	1055	508
1997	1849	1303	1454	1464	447	427	1297	725
1998	1875	1711	1375	1494	318	478	1172	810
1999	2139	1610	1219	1222	325	406	1066	743
2000	2446	1244	1343	1121	351	278	1173	866
2001	2483	1255	1029	614	223	158	591	762
2002	3318	1424	1684	721	346	195	785	829
2003	4286	1680	2459	949	399	156	768	893
2004	5308	2486	3963	1686	657	385	1563	1602
2005	5538	2140	4382	1675	783	412	1206	1289

Source: BEYSAD- WGSÄ Statistics, 2006: <http://www.beysad.org.tr/statistics>

(1) for the data from 1990 to 2002 TÜRKBEŞD

for the data from 2002-2003 Yüzal, 2005 www.igeme.gov.tr

for the data from 2003-2005 Esen 2007 www.igeme.gov.tr

(2) TÜİK, Üretim İstatistikleri Yıllıkları , Production Statistics, Yearly Data Base www.tuik.gov.tr

growth in home appliance goods have been observed in Turkey. These indicators also encouraged production capacity increasing investments. Rapid growth in construction sector also pushed the growth in housing establishments. So. The total production for refrigerators were for 6.7 million units, for washing machine 5.2 million units and dishwashers for 1.2 million units in 2006. 36 per cent of the total production was sold in

domestic market, and the remaining part, 64 per cent was exported to over 100 countries. While refrigerators production had the highest output units, dishwasher production had 52.2 per cent increases due to the low market diffusion in Turkey (Annual Report of Bosch-Siemens-Profilo,2007). With further capital investment the sector grew its production capacity, and factor output of large domestic appliances was up 6 per cent for the year. During the analysis period, rapid development in technology deeply changed the product models, while in 1970, the refrigerator with double doors may be considered as more luxury product, nowadays, refrigerators with energy saving specification are the new models; or washing machine with 15 minutes wash-cycles, dishwashers with anti-fingerprint were considered as luxury models(Annual Report of Arcelik, 2006). The high-technology used in the production process, the high importance in R&D activities have been the main features of Turkish home appliance industry.

Domestic market has also followed an expansionary trend for each home appliance product with the exception of the period of economic crises. There may be several reasons. The share of domestic producer may be so large that the quantity of refrigerator imported was not sufficient to limit the prices in the domestic market or only the products that cannot be produced domestically were imported. The imported products may have technological superiority over the domestic product, but since it was more expensive than the ordinary goods, the technologically superior good may be imported relatively in fewer amounts. The change in the technology may influence the prices.

The period between the years 1990-2001 was the most important period in home appliance sector. Although, an expansion in quantity of production, consumption and export was significant before the year 1996, after 1996, growth has not stopped. The production has increased significantly from 1990 to 2001. Nevertheless, since because of reduction in demand, production also reduced 8 per cent, a large amount of increase in export balanced the production in 2001. However, a significant increase was observed in 2002 and following years. The rapid growth in the domestic home appliance sector would be expected to continue in the following years. The population growth rate, the size of young population, the decrease in number of people per household and increase in the number of working women, low rate of ownership of home appliance products in comparison to rates in the EU also support this expectation(Annual Report Arcelik, 2006)

4.1.1. Export of Four Major Products

Exports of the Turkish home appliances sector have been increasing steadily. Refrigerator, washing machine, ovens-cooker and dishwasher are the leading export products of the sector. The large part of home appliance products were exported and the large parts of export has been made to the EU countries. Exports of home appliances were only \$25 million in 1990 and it increased to \$475 million in 2000, to 1947 million USD \$ by the year 2005 (İGEME, 2006).

Table 4.4

Turkey's Export in Home Appliances Industry

Years	Million \$ USD
1996	318
1997	377
1998	400
1999	456
2000	472
2001	574
2002	855
2003	1292
2004	1652
2005	1947
2006	2406

Source: For the period between 2002-2006 (Esen, 2007:4)[http:// www.igeme.gov.tr/bey2804azeszy](http://www.igeme.gov.tr/bey2804azeszy).

For the period between 2000-2001 (Yüzal,2006) [http:// www.igeme.gov.tr/beyazeszy](http://www.igeme.gov.tr/beyazeszy).

For the period between 2000-1999 (Yüzal,2005) [http:// www.igeme.gov.tr/beyazeszy](http://www.igeme.gov.tr/beyazeszy).

For the period between 1999-1996 www.igeme.gov.tr

The main export markets for the home appliance products are the EU countries. In 1993, 38 per cent, in 1994 46 per cent, in 1996 39 per cent, in 2000, 37 per cent, in 2004, 53 per cent, in 2005 62 per cent of total production were exported. In contrast to the imported products, generally, low quality products have been exported to both The EU and to the other countries at low prices 14 per cent to the United Kingdom, 11 per cent to Spain, 12 per cent to France, 64 per cent of the refrigerator was exported to EU countries, in 2005. Arçelik has the market share of 12 per cent in the refrigerator market of the UK.

Table 4.5

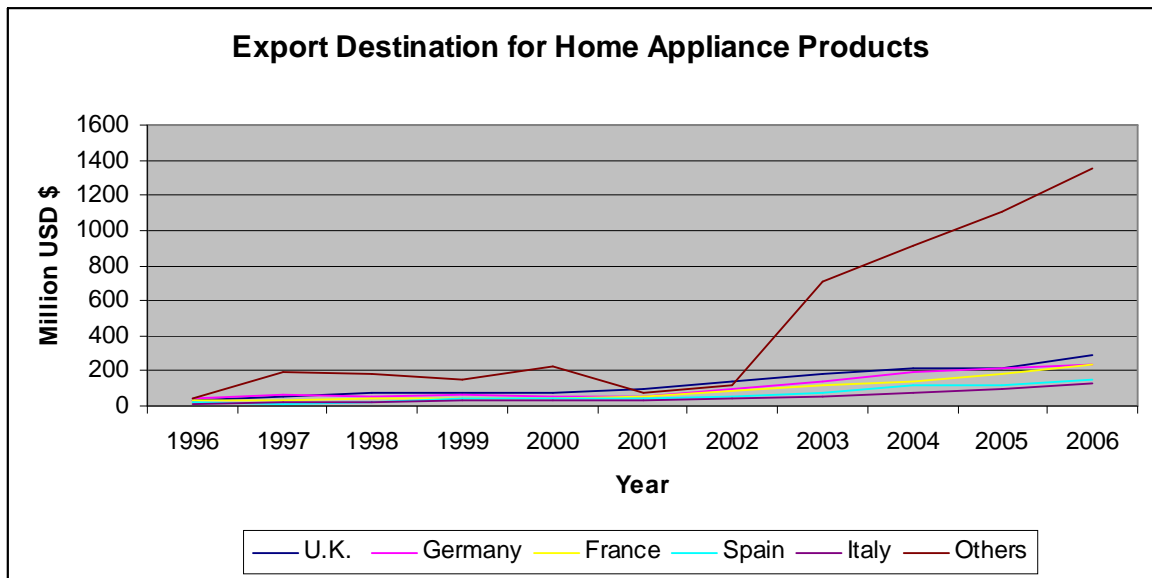
Turkey's Exports of Home Appliances By Destination (Million USA \$)

Country	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
U.K.	34	53	76	78	79	95	144	178	213	214	295
Germany	43	61	56	67	59	53	97	144	188	218	239
France	37	36	38	40	42	58	86	116	140	184	241
Spain	17	15	17	45	38	39	51	80	119	120	147
Italy	16	22	22	29	28	29	41	53	76	101	130
Others	45	189	183	148	226	78	115	711	916	1110	1354
TOTAL	318	377	400	456	472	574	855	1292	1652	1947	2406

Source: For the period between 2002-2006 (Esen, 2007:4) [http:// www.igeme.gov.tr/ beyazesy](http://www.igeme.gov.tr/beyazesy).
For the period between 2000-2001 (Yüzal,2006)) [http:// www.igeme.gov.tr/ beyazesy](http://www.igeme.gov.tr/beyazesy).
For the period between 2000-1999 (Yüzal,2005)) [http:// www.igeme.gov.tr/ beyazesy](http://www.igeme.gov.tr/beyazesy).
For the period between 1998-1996 www.igeme.gov.tr

Main export countries are EU countries. In fact, export of home appliances to the EU has an increasing trend. The major export market is the UK; the UK mainly imports refrigerators and deep freezers. The second important export market of the Turkish home appliances industry is Germany. About one third of Germany's home appliances imports from Turkey are electro-thermal appliances and refrigerators (Yüzal,2005).

Graph.4.1



Source: This graph is produced by data given on table 4.5

Table 4.6
Export Volume of Major Home Appliance Products in Turkey

Years	Refrigerator		Washing Machine		Dish Washer		Vacuum Cleaner		Total	
	V (1)	Q (2)	V (1)	Q (2)	V (1)	Q (2)	V (1)	Q (2)	V (1)	Q (2)
1990	21	127	1	2	0.02	0	3	46	25	245
1991	29	166	0.5	5	0.01	0	2	39	32	211
1992	49	279	1	4	0.01	0	2	33	53	315
1993	66	469	1	5	0.01	0	2	36	69	511
1994	85	572	3	27	0.01	0	2	53	90	652
1995	105	791	8	40	0.8	2	4	62	117	895
1996	106	642	11	51	2	7	6	89	125	788
1997	112	693	17	100	21	108	7	118	177	1019
1998	120	351	23	130	18	91	7	162	158	733
1999	147	852	31	181	18	98	11	189	207	1320
2000	142	912	42	271	14	85	13	194	211	1421
2001	178	1243	62	426	10	64	11	207	261	1941
2002	274	2247	139	989	23	99	17	119	453	3454
2003*	434	3035	249	1550	42	239	28	881	748	5701
2004*	520	3361	391	2236	51	288	38	1167	1004	7052
2005**	644	3640	475	2680	85	366	32	785	1255	7471

V(1) : Value (Million USD \$)

Q(2) : Quantity (000 Units) Export Volume of Four Major Home Appliance Products in Turkey

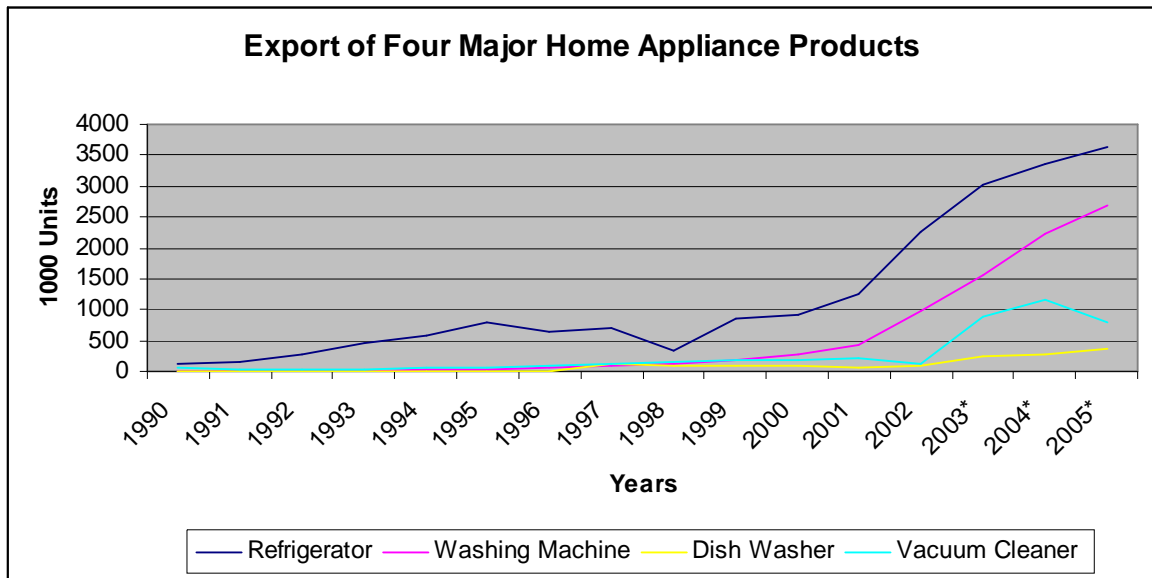
Source :for Quantity (000 Units): Türkiye İstatistik Kurumu, Bilgi Servisi(Data Procurement Service
for Value :

* Yuzal, 2006 <http://www.igeme.gov.tr/english/sectors/index.cfm?sec=sectors>

** Esen, 2007: p:1 <http://www.igeme.gov.tr/english/sectors/index.cfm?sec=sectors>

The export volume of all four leading home appliance products increased from US \$ 25 million to US \$ 1255 million while at the same time, the export quantity of refrigerator, washing machine, dish washer and vacuum cleaner also increased from 245.000 units in 1990 to 7.471.000 Units in 2005

Graph: 4.2.



Source: This graph is produced by the data given on table 4.6

4.1.2. Import of Four Major Products

Turkey's home appliances import also followed an increasing trend with the exception of economic crisis, especially, devaluation periods. In 1997, the volume of total of four leading home appliance products was just \$ USD 526 million, it was \$ USD 765 million in 2005. The effect of devaluation can be observed in 2001 and 2002 dramatically. The decrease in comparison to previous year was a 49 per cent in 2001. The reason for such large decrease was devaluation in TL in that year. Decrease in import continued in 2002. It was 12,7 per cent in comparison to the preceding year. By the recovery in Turkish Economy, the import has also increased from 2002 to 2006.

Table 4.7
Import of Four Major Home Appliance Products³²

Years	Million USD \$
1997	526
1998	562
1999	505
2000	589
2001	286
2002	258
2003	389
2004	584
2005	765
2006	916

Source: Esen,2007:4

In the last decade, the South Korea was the main country of origin for the imported products. Italy and Germany were the other leading countries from where Turkey imported goods into. These figures also demonstrate that the firms located in Turkey import products of their home country products, in other words, a trade exchange for home country took place between the two destinations.

³² These products are refrigerator, washing machine, dish washer and cooking appliances.

Table 4. 8
Turkey's Imports of Home Appliances By Country of Origin
(Million USD\$)

Country	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
China	24	21	35	72	53	44	95	163	286	327
South Korea	86	106	107	126	43	22	21	23	30	42
Italy	125	109	78	87	41	45	62	72	69	85
Germany	79	104	74	84	38	41	51	87	109	112
France	27	49	43	49	25	27	38	62	54	50
Japan	44	48	41	36	19	10	7	11	17	22
Thailand	10	16	30	39	13	9	7	12	19	41
Poland	-	-	-	-	-	-	4	11	19	28
Others	129	122	93	91	45	43	85	109	131	210
TOTAL	526	562	505	590	287	250	363	550	734	917

Source: Türkiye Dış Ticaret Müsteşarlığı, Dış Ticaret İstatistikleri . www.dtm.gov.tr

(Turkish Under-secretariat for Foreign Trade, Foreign Trade Statistics)

The total amounts of import of the four leading home appliance products which are used in the case study in this thesis were also doubled in 1997, then, it continued to increase until 2001. It decreased to 772 units, because of economic crises in Turkish economy, in 2001. Especially, the import of refrigerator continued to decrease until 2006. The level of import went down beyond the level existed in pre-CU period within this period. Although, the total import value of refrigerator increased to USD \$116 million, in 1998, it decreased again to 18 in 2002. The other most frequently imported product was washing machine. The total import value was USD \$99 million in 1997, it decreased to USD \$35 million in 2002. Then, it followed an increasing tendency depending on more favourable foreign exchange policies in addition to rapid growth in Turkish Economy. It is also observed that there is an increasing tendency to import more of consumption goods.

Table 4.9
Import Volume of Four Major Home Appliance Products in Turkey³³

Years	Refrigerator		Washing Machine		Dish Washer		Vacuum Cleaner		Total	
	Q (1)	V (2)	Q (1)	V (2)	Q (1)	V (2)	Q (1)	V (2)	Q (1)	V (2)
1990	21	6	41	14	57	23	16	1	135	45
1991	35	28	55	16	76	27	17	1	183	72
1992	43	19	46	15	37	2	27	-	153	37
1993	109	48	57	19	33	11	98	9	297	88
1994	57	25	51	17	18	6	72	8	381	57
1995	68	29	76	22	21	77	152	23	317	82
1996	133	59	233	65	80	25	350	45	796	197
1997	147	90	284	99	112	40	609	65	1152	298
1998	186	116	317	77	211	55	449	44	1163	304
1999	323	84	231	49	183	45	505	37	1242	223
2000*	214	75	359	75	220	49	573	37	1366	251
2001*	187	31	173	33	105	23	307	17	772	107
2002**	51	18	159	35	99	22	300	9	659	85
2003**	41	19	191	38	102	28	533	21	867	106
2004**	44	23	187	42	177	49	854	37	1264	151
2005**	63	26	113	83	200	55	1433	65	1809	229

V(1) : Value (Million USD \$)

Q(2) : Quantity (000 Units) Export Volume of Four Major Home Appliance Products in Turkey

Source :

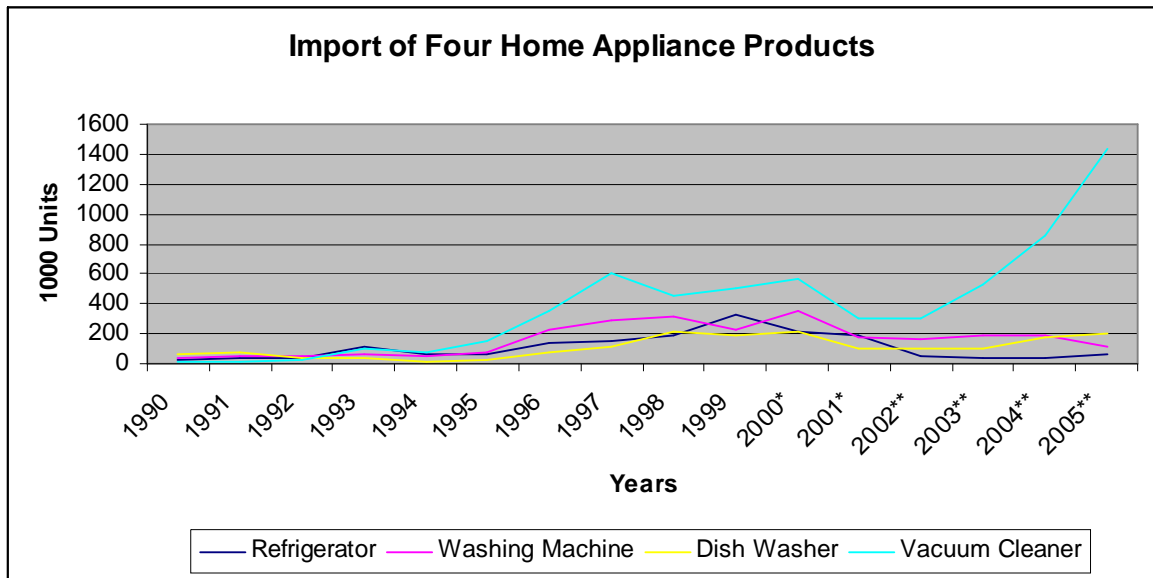
for Quantity (000 Units): **Türkiye İstatistik Kurumu, Data Procurement Service**

for Value (USD \$) : * Yuzal, 2006 <http://www.igeme.gov.tr/english/sectors/index.cfm?sec=sectors>

** **Esen, 2007: p:1** <http://www.igeme.gov.tr/english/sectors/index.cfm?sec=sectors>

³³ The data show the total value of the import of the product chosen for the econometric model in this thesis.

Graph: 4.3



Source: This graph is prepared by the data given on the table 4.9

The tariff rate and the other customs duties applied to the products imported from the EU decreased gradually from 1985 to 1996. Although, 40 per cent tariff rates and 150\$/units customs duties were applied for refrigerator in 1985, only 3 per cent for the products imported from the EU in 1995. Similarly, the tariff rate applied to washing machine and dish washer imported from the EU was 25 per cent and the customs duties was 100 \$ units per unit in 1985. The tariff rate applied to the washing machine imported from EU reduced to 3 per cent for the EU countries and 10.6 per cent for non-EU + 35\$ per unit. The import tax applied to vacuum cleaner was 40 per cent and 1\$ per unit in 1985.

Table 4.10.**The Customs Duties and Import Tax for Home Appliance Products in Turkey**

Years	Refrigerator	Washing Machine	Dish Washer	Vacuum Cleaner
1985(1)	40%+150\$/unit	25%+100\$/Units	25%+100\$/unit	40%+1\$/unit
1992(2)	9 % for the EU 20 % for non-EU + 92 \$/Units- 46 \$/units	6.5 % for the EU 15 % for non-EU + 16 % of CIF	2% for the EU 5% for non-EU 155\$/units	8 % for the EU 18 % for non-EU 20\$/units
1993(3)	6 % for the EU 14 % for non-EU 35\$/units- 45\$/units	6 % for the EU 15 % for non-EU + 35\$ /Unit	1% for the EU 3.5 % for non-EU + 17% of CIF value	6% for the EU 13.2% for non EU 20\$ /units
1994(4)	3% for the EU 9.4% for non-EU 35\$/units-45\$ units	3 % for the EU countries 10.6 % for non-EU + 35\$ per unit	1,9% for the EU 4,9 % for non-EU 75\$/units	3 % for the EU 9.3% for non-EU
1995(5)	Free of Charge for the EU 3.8% for non-EU	Free of Charge for the EU	Free of Charge for EU 2.8 % for EU	Free of Charge for the EU 3.3% for non EU

(1) Türkiye Cumhuriyeti Resmi Gazetesi dated on December 31, 1985, issue 18970 pp: 98,102,124

(2) Türkiye Cumhuriyeti Resmi Gazetesi dated on December 31, 1992, issue 21452 pp:65,194,

(3) Türkiye Cumhuriyeti Resmi Gazetesi dated on December 31,1993, issue 21805 pp: 219

(4) Türkiye Cumhuriyeti Resmi Gazetesi dated on December 31,1994, issue 22158 pp: 238, 249

(5) Türkiye Cumhuriyeti Resmi Gazetesi dated on December 31,1995, issue 22510 pp:194,620

4.2. DATA FOR EMPIRICAL STUDY

Before deciding on home appliance sector, there was a time period for researching the most suitable industry to test the import discipline hypothesis. The automotive industry, especially the automotive parts branch of the industry was one of them. Although, a quite much time has been devoted to market research and to collect data for the time series for econometric model; all necessary data were not obtained since the leading firm did not give their special data. If we obtained data, we could access all information related to the branch.

When we could not obtain from the automotive parts branch in automotive industry, we changed the industry for the econometric analysis. The home appliance industry has chosen since we believed that this industry would be well organized and we can access all information. However, first of all, we could not access data on monthly basis. None of the firms have given such kind of information, although they were trying to help us in general information. Although, in most of time, there were only two main producers in home appliance branch, we could not access same kind of information in order for both of the firms. Therefore, mostly, we have to use the data obtained from Türkiye İstatistik Kurumu (Turkish Statistical Institute). Here, the problem was that there were no export and import price data for home appliance products. Whenever, the average prices calculated by dividing total value of import (or export) to the total quantity, a large deviation from the each price levels have been recognized. Therefore, after working for these data, we had to change, the data base once more and we use the domestic price and import and export quantity of the four major products for the six years period before and after the CU. However, the data for the period before 1996 (before the CU) did not produce statistically significant results. Finally, the analysis period only covers the ten years after the CU.

4.3. THE TEST OF IMPORT DISCIPLINE HYPOTHESIS in TURKISH HOME APPLIANCE SECTOR

As it is argued in the theoretical approach and in order to observe the effects of import liberalization on domestic prices, Turkish Home appliance sector has been chosen. Since, there are a few producers in the market, the home appliance sector is considered as an oligopolistic market. There are studies made previously on measuring competitiveness of appliance sector. It was proved that Turkish home appliance sector had oligopolistic market structure. However, after the CU it was expected that home appliance sector would become more competitive industry in accordance with the “import discipline hypothesis in strategic trade policy. Therefore, the effect of import prices both on domestic prices has been tested. Main four products of home appliance sector; refrigerator, washing machine, dish washer, vacuum cleaner are chosen to be used in econometric model.

4.3.1. The Hypothesis and the Model

The “*import discipline hypothesis*” argues that after the CU, the domestic price of home appliance products will decrease since import of home appliance products increase. In the model, three basic variables have been used for each product. The domestic price, quantity of produce imported and exported.

The domestic price is **the dependent variable**.

Import and export quantities of home appliance products are the **independent variables**.

y represents the domestic price of product measured by Turkish Lira (TL)

x represents the quantity for imported product

x1 represents the quantity for exported product.

x2 represents the monthly inflation rate in Turkish Economy

ε is error term

The estimated equation is as follows

$$y = \alpha + \beta_1 x + \beta_2 x_1 + \beta_3 x_2 + \varepsilon$$

“L” prior to each variable refers that the variable is logarithmically converted while “M” shows the corrections of seasonality. The seasonality of the variable is corrected by differential of 12th degree.

4.3.2. Data

The frequency of data is between 1996 and 2005 on monthly basis. All data obtained from the Türkiye İstatistik Kurumu. The relationship between these four variables during 1996-2005 periods has been tested. The period covers the 10 years after the beginning of the CU. The data on import and export of the home appliance product is obtained from Türkiye İstatistik Kurumunun Dış Ticaret İstatistikleri Bölümü (Foreign Trade Statistics Department in the Türkiye İstatistik Kurumu). The data related to domestic price of products are obtained from web page of the Türkiye İstatistik Kurumu www.tuik.gov.tr. For the regression model, E-views software programme has been used.

4.3.3. The Model

4.3.3.1. Refrigerator

When the yearly data for refrigerator has been analysed, it can be observed that The production of refrigerator has been followed an increasing trend since 1990. While the quantity of import and consumption is very sensitive to the general economic crisis in 1994 and 2001, the production has not ben so sensitive since the producer also followed very succesful export strategy. So, even at the time of deep economic crises in Turkey, the volume of production and export increased

Table 4.11

Turkish Home Appliance Industry Refrigerator Market Figures (1000 Units)

Years	Production (1)	Export (1)	Import (1)	Consumption (1)	Import Penetration % (2)	Domestic Price \$/Unit	Change in Domestic Price %
1990	965087	127331	21045	792899	2,65	501	0
1991	1040127	166203	35282	909206	3,88	490	-2
1992	1087416	278732	43223	796715	5,43	468	-4
1993	1247016	469420	109275	927180	11,79	453	-3
1994	1265135	571704	56713	750144	7,56	402	11
1995	1637309	790962	67773	833775	8,13	512	27
1996	1638019	641771	132822	969350	13,70	522	2
1997	1849513	784651	200446	1230743	16,20	497	-6
1998	1875079	350865	186477	1407145	13,25	499	0
1999	2139259	852111	322932	1257749	25,68	491	-2
2000	2445852	912394	213836	1467539	14,57	534	9
2001	2483421	1228367	186748	1255054	18,35	444	-17
2002	3317712	1893590	50842	1424122	2,26	455	2
2003	4285507	2605268	35475	1680239	2,0	535	18
2004	5307828	2821799	45456	2486029	2,0	400	-25
2005	5537992	3409754	52496	2140283	2,0	646	61
2006	6740000	4796000	242000	2393827	10,2	472	27

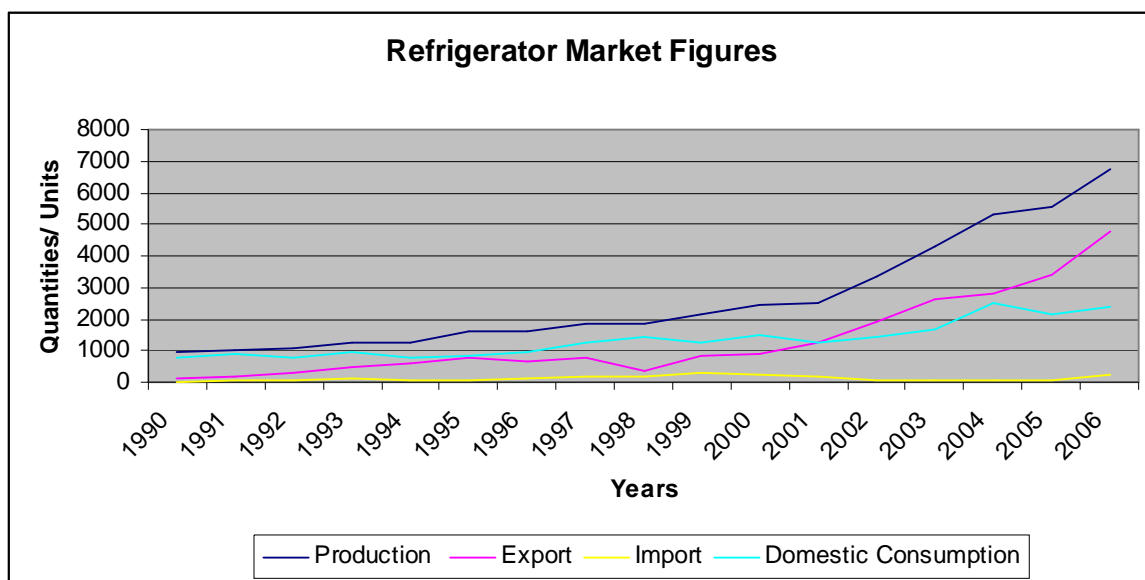
Source: (1) The data for the period between 1986-2002 was obtained from TÜRKBEŞD

(2) The data for the period between 2002-2005 was obtained from TÜRKBEŞD

(3) Import Penetration ratio has been calculated by the ratio import quantity over the consumption quantity.

Sometimes, the increase in the quantity of export has not been followed by the value of export. Mainly, producers preferred to “low price strategy” to be able to introduce themselves and to get market share. Anyone can easily see the impact of this successful policy by looking at quantity of production. Although, the quantity of production has been increasing tremendously, the domestic sales have been behind the level of production. The export volume has been substantially increased during the period between 1990 and 2006. Especially, after 1996 the export market has been enlarged. If it is considered that large part of export has been to the EU, it can be stated that the CU is quite much beneficiary for the exporters.

Graph: 4.4



Source: This graph is produced by the data given on the table 4.11.

Table 4.12.**Refrigerator Production of Producer Companies in Turkey (1000 Units)**

Years	Arçelik (1)	Share of Arçelik % (2)	Bosch Siemens Profilo (3)	Share of B-S-P % (4)	Vestel (5)	Share of Vestel % (6)	Total Production
1990	537	56	416	43	0	0	965
1991	554	53	394	38	0	0	1040
1992	569	52	334	31	0	0	1087
1993	710	57	307	25	0	0	1247
1994	630	50	323	26	0	0	1265
1995	901	55	N.A.		0	0	1637
1996	984	60	524	32	0	0	1638
1997	1140	62	601	33	0	0	1849
1998	1454	78	598	32	0	0	1875
1999	1375	64	656	31	0	0	2139
2000	1219	50	654	27	235	10	2446
2001	1343	54	460	19	429	17	2483
2002	1500	45	520	16	723	22	3318
2003	1900	44	672	16	1139	27	4286
2004	N.A	N.A	903	17	1415	27	5308
2005	N.A	N.A	1.029	19	1718	31	5538

Source: IMKB, (Istanbul Stock Exchange), Financial Reports of The Companies

(1) (3) Taken from Year Book of the Companies Stated in IMKB

<http://www.imkb.gov.tr/bilanco/mtablodonem.htm>

(1) Annual Reports of Arçelik <http://www.arcelik.com.tr/YatirimciIliskileri/ImkbArçelik/?MENUID=2>

Annual Reports of BSP <http://www.profile.com.tr>; <http://www.bosch.com.tr>; <http://www.bosch.com>

Annual Report for 2005.

(5) Annual Reports of Vestel <http://www.vestelyatirimciiliskileri.com/>

<http://www.vestelyatirimciiliskileri.com/reports/pdf/2006/VestelElektronik2006FR.pdf>

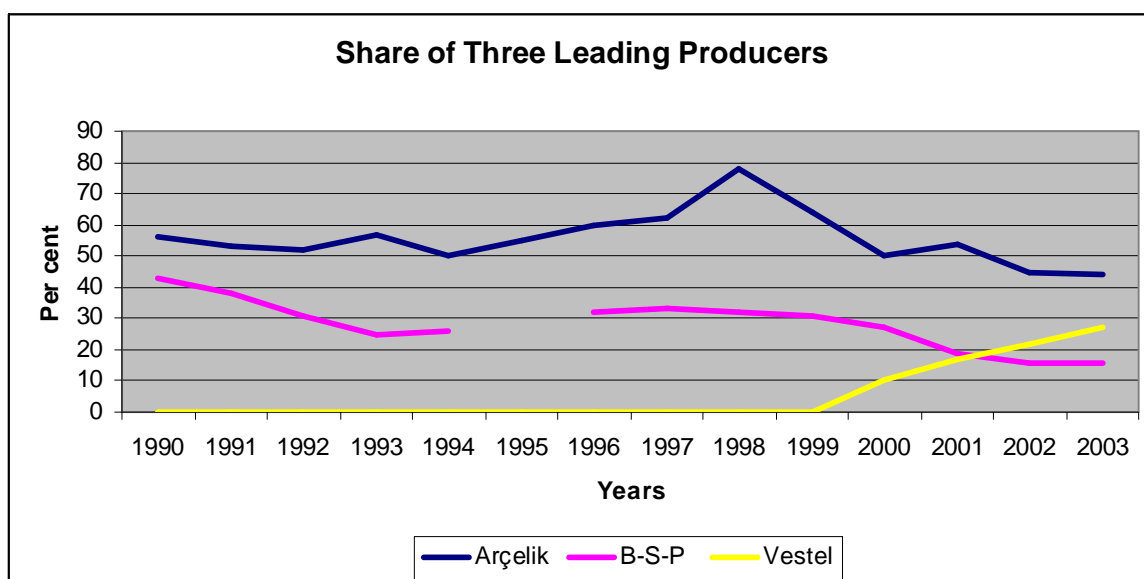
(2) The share of Arçelik is calculated by dividing production quantity of Arçelik to total production

(4) The share of B-S-P is calculated by dividing production quantity of B-S-P to total production

(6) The share of Vestel is calculated by dividing production quantity of Vestel to total production

In this rapidly growing market, there were only two producers for a long time until the third company started to production in 2000. Arçelik is the first one, the other one is the Bosch -Siemens-Profilo. Arçelik is the leader company and B-S-P has been following Arcelik. Arçelik produced the 45 per cent of all refrigerator production in Turkey, in 2002 where the total refrigerator sales by the same companies were 1.514 million units. Although its market share was 60 per cent in 1996, it decreased to 48 per cent in 2002. There are important influences causing reduction in the market share of Arçelik. Although, import may be evaluated as one of the important factor, the investment carried out by Vestel with high production capacity may also be one the other important reason.

Graph: 4.5

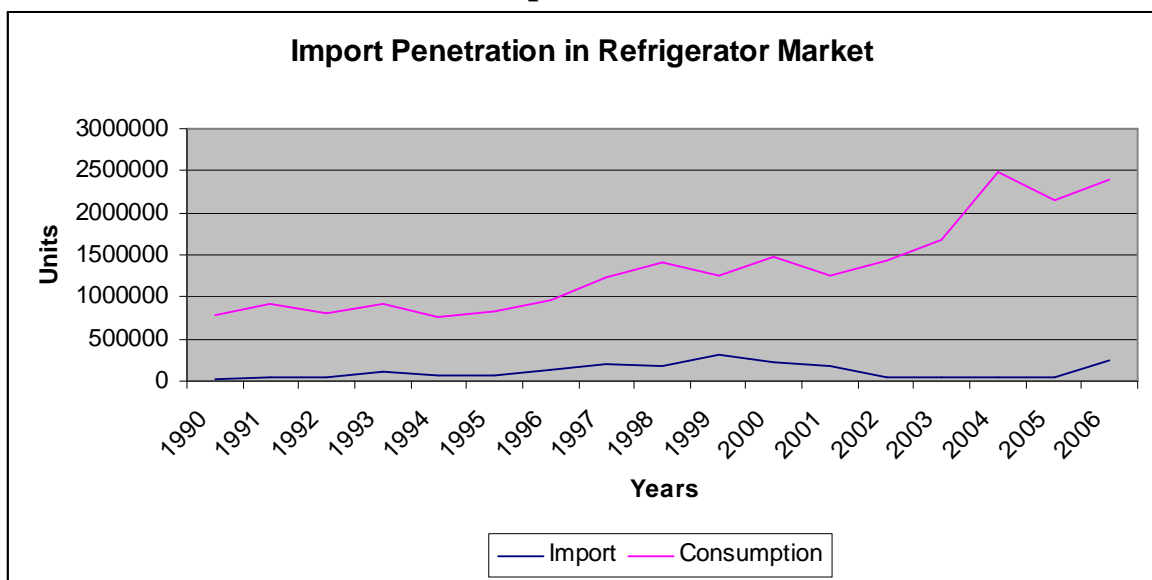


Source: This graph is arranged by the data given on the table 4.12

Refrigerator import has been fluctuated depending on foreign exchange value. In 1993, refrigerator import increased 153 per cent depending on appreciated value of TL over foreign exchange, it just increased just 19 per cent in 1995, 109 per cent in 1996. The increase in 1996 was depending on the reason that customs duties for the imports from the EU Member States removed and import got cheaper 7 per cent in this year. The refrigerator import only increased 32 per cent in 1997, 74 per cent in 1998. Nevertheless,

it reduced by 34 per cent in 1999 and 13 per cent in 2000. Besides, the factors relating to general economic conditions, introduction of new products by Vestel's refrigerator facilities. Following technical developments in industry, the import reduced 55 per cent in 2001. Total demand has been procured via import as an 8 per cent in 1996, 13 per cent in 1997, 23 per cent in 1998, 17 per cent in 1999; 13 per cent in 2000; 6 per cent in 2001; 2 per cent in 2002, per cent 3 in 2003.

Graph 4.6



Source: This graph is arranged by the data given on the table 4.14

Although, it was expected that there should be significant decrease in refrigerator prices depending on the CU, this has not been observed in the period between 1996 and 2002. Even, there is almost no change in price level. However, if the price emerged in 1990 is compared to the price emerged in 2002, 2 only per cent price change can be observed. The price of imported product is almost three times higher than the price of exported product. So, this can be interpreted as the imported products are more luxury model of refrigerators. In the early period between 1998- 2001, Vestel introduced product which it has imported by itself. Therefore, prices were down. However, it started to rise again by 2002. Depending on large fluctuations in foreign exchange, the domestic prices in USD \$ also fluctuates largely on yearly basis. However, in Türk Lirası (TL) domestic

prices changes paralel to inflation. Domestic prices have been obtained from TÜİK. There are two categories of prices in the data; one is for the refrigerator with one door; the other one is for the refrigerator with two doors. The domestic price used in this analysis shown in table is the average of these two types.

Table 4.13.
Refrigerator Prices in Turkey (USD \$)

Years	Export Price (1)	Change in Export Price %	Import Price (2)	Change in Import Price %	Domestic Price (3)	Change in Domestic Price %
1990	177	10	320	35	501	
1991	211	19	445	39	490	-2
1992	174	-18	456	2	468	-4
1993	150	-14	448	-2	453	-3
1994	151	1	448	0	402	11
1995	157	4	451	1	512	27
1996	195	24	437	-3	522	2
1997	200	3	474	8	497	-5
1998	204	2	359	-24	499	0
1999	236	16	385	7	491	-2
2000	174	-26	382	-1	534	9
2001	166	-5	360	-6	444	-17
2002	182	10	392	31	455	-15
2003	164	10	430	9,6	535	17,5
2004	181	9	440	2,3	400	25,2
2005	187	3	490	11,3	646	61,5

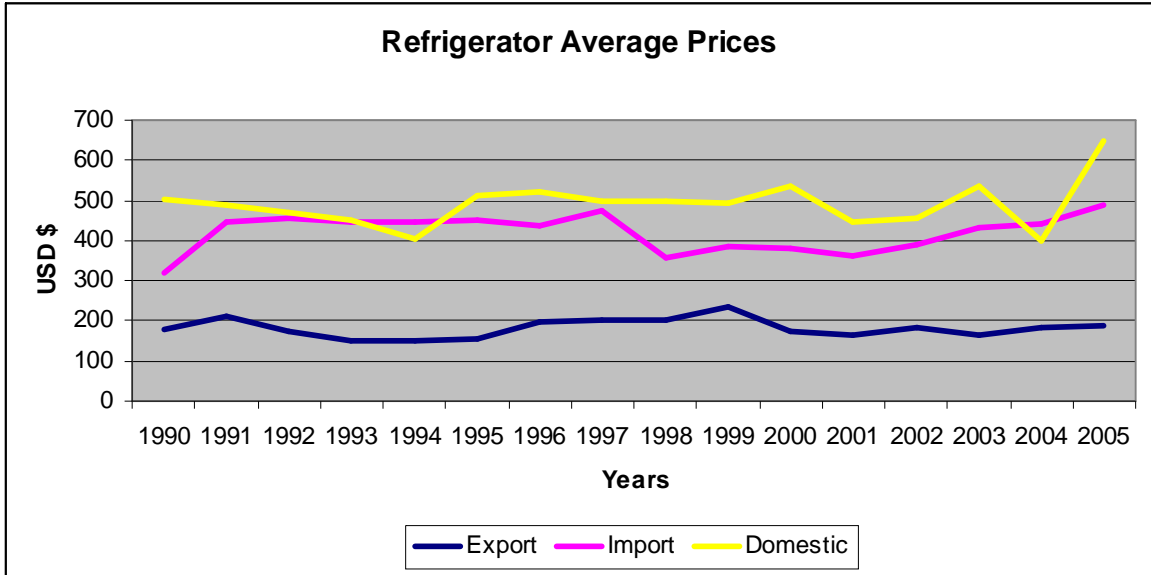
(1) These are the average prices. They are calculated by division of the export income over export quantity
(2) These are the average prices. They are calculated by division of the import expenditure over import quantity.

(3) The data obtained from TÜİK, Price Statistics, Consumer Price Indexes, then they have been converted to \$ USD by using Foreign Exchange Value declared by TCMB.

Source: TÜİK, Price Statistics, Monthly Database; Foreign Trade Statistics from Information Department

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_fiyat_2003.RDF&desformat=html&p_baz=2003&p_tur=0&p_yil1=2006&p_yil2=2006&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=999&p_kod1=0531101

Graph 4.7



Source: This graph is arranged by the data given on the table 4.13

For the econometric analysis, monthly data has been obtained from Türkiye İstatistik Kurumu; there was not difficulty in obtaining data necessary for this research, since the TUIK keep them in chronological order. However, there was a difficulty on classifying data related to refrigerator models. Data has been chosen according to model which was most frequently imported on the period of observations. The most commonly imported refrigerator changed to refrigerator used in household, with compressor - 250LT<volume=<340 lt. It was stated under the heading 841821990000. Refrigerator used in household, with compressor volume >340, was stated under the heading 841821100000 in Common Customs Tariff. The quantity of refrigerator imported (exported) each month has been used while compositing the data set for each month. The data related to quantity has been directly obtained by adding the amount stated under two headings. The study showed the following results;

Table 4.14
Data Used in Econometric Model for Refrigerator

	REFTL	BMQ	BEQ	INF
1996:01:00	38269	9274	19975	259.5
1996:02:00	34023	6391	17435	271.2
1996:03:00	37200	5541	26838	286.4
1996:04:00	37200	8967	23749	305.6
1996:05:00	39050	14419	35822	319.4
1996:06:00	39050	10370	35133	327.5
1996:07:00	42100	9499	33811	334.5
1996:08:00	42100	28070	23278	350.4
1996:09:00	46100	14651	29164	371.9
1996:10:00	49350	4660	20651	396.0
1996:11:00	49350	11195	17873	416.5
1996:12:00	53250	11519	11835	430.7
1997:01:00	58600	6947	26307	456.0
1997:02:00	58600	3581	15580	481.8
1997:03:00	65350	1718	27400	507.8
1997:04:00	65350	2401	17329	541.4
1997:05:00	68900	18588	34498	566.8
1997:06:00	68900	16598	28124	583.1
1997:07:00	75300	20611	27362	619.6
1997:08:00	78825	25384	26159	658.0
1997:09:00	82350	27692	18047	706.1
1997:10:00	90750	18451	26645	764.9
1997:11:00	90750	29551	25492	815.6
1997:12:00	101500	15095	26015	857.5
1998:01:00	111900	9909	24681	919.4
1998:02:00	111900	33094	13698	960.0
1998:03:00	120000	19282	23109	1001.3
1998:04:00	120000	20949	12929	1048.0
1998:05:00	120600	31722	34584	1084.7
1998:06:00	125650	30782	26503	1111.1

Source: Data for export and import quantities obtained from Bilgi Talebi Department bilgi@tuik.gov.tr

Data for Inflation figures:

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_genel.RDF&desformat=html&p_baz=1994&p_yil1=2004&p_yil2=1996&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=99999

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_harcama_2003.RDF&desformat=html&p_baz=2003&p_yil1=2005&p_yil2=2005&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=999&p_kod1=0

<http://www.tuik.gov.tr/tufeapp/Baslal.do> Dynamic Research

Data for Domestic Prices: http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/1994=100 Base Year Price Indexes- Average Product http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/58911922178142/xls. 2003=100 Base Year Consumer Price Indexes- Average Product Prices, September 09, 2007

Table 4.14
Data Used in Econometric Model for Refrigerator

	REFTL	BMQ	BEQ	INF
1998:07:00	133600	48972	32716	1148.4
1998:08:00	133600	39883	29159	1193.8
1998:09:00	140000	24091	26509	1274.0
1998:10:00	140000	16471	28223	1351.1
1998:11:00	149900	21694	25046	1409.1
1998:12:00	154400	14722	28960	1455.4
1999:01:00	168150	4738	18914	1525.3
1999:02:00	168150	6652	40063	1573.7
1999:03:00	179400	14280	41973	1637.5
1999:04:00	189450	23183	34336	1717.2
1999:05:00	195300	24946	42432	1767.7
1999:06:00	202100	29277	55812	1825.2
1999:07:00	210450	24105	45950	1894.9
1999:08:00	210450	11038	38600	1974.6
1999:09:00	232400	22244	38501	2092.8
1999:10:00	232400	17716	38942	2225.2
1999:11:00	234500	15561	35359	2318.7
1999:12:00	234500	9411	29616	2456.6
2000:01:00	302600	5630	27285	2575.9
2000:02:00	302600	6449	36941	2671.3
2000:03:00	302600	14134	34827	2749.3
2000:04:00	308700	15376	42512	2813.2
2000:05:00	315500	23282	42761	2875.6
2000:06:00	315500	38564	55053	2895.1
2000:07:00	344419	21843	55175	2960.1
2000:08:00	344419	20792	67783	3024.4
2000:09:00	362450	12454	50599	3117.4
2000:10:00	362450	7509	46856	3214.0
2000:11:00	377850	9079	33921	3333.3
2000:12:00	377500	6778	33965	3415.5

Source: Data for export and import quantities obtained from Bilgi Talebi Department bilgi@tuik.gov.tr

Data for Inflation figures:

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_genel.RDF&desformat=html&p_baz=1994&p_yil1=2004&p_yil2=1996&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=99999

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_harcama_2003.RDF&desformat=html&p_baz=2003&p_yil1=2005&p_yil2=2005&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=999&p_kod1=0

<http://www.tuik.gov.tr/tufeapp/Baslal.do> Dynamic Research

Data for Domestic Prices:http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/1994=100 Base Year Price Indexes- Average Product http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/58911922178142/xls. 2003=100 Base Year Consumer Price Indexes- Average Product Prices, September 09, 2007

Table 4.14
Data Used in Econometric Model for Refrigerator

2001:01:00	391525	10046	24859	3501.1
2001:02:00	405200	4481	38717	3564.1
2001:03:00	405200	4507	37496	3780.5
2001:04:00	423650	8219	51706	4171.2
2001:05:00	435850	7479	78316	4382.0
2001:06:00	551600	3721	68488	4519.3
2001:07:00	573500	6056	68118	4627.5
2001:08:00	615500	4139	64827	4763.5
2001:09:00	670050	2514	43445	5044.0
2001:10:00	670050	2957	48398	5350.3
2001:11:00	632700	4689	49384	5576.4
2001:12:00	632700	4960	54423	5756.2
2002:01:00	730400	2110	49030	6062.4
2002:02:00	730400	4033	65800	6168.7
2002:03:00	738800	1641	59462	6242.1
2002:04:00	738800	1266	89035	6370.4
2002:05:00	744600	2865	96525	6407.3
2002:06:00	762400	2456	82978	6444.7
2002:07:00	830000	2548	96867	6537.6
2002:08:00	830000	4117	91300	6680.4
2002:09:00	830400	1409	79787	6912.7
2002:10:00	830400	3003	82633	7139.9
2002:11:00	830400	1857	79626	7347.8
2002:12:00	767200	1272	83081	7468.6
2003:01:00	704000	1067	70860	7661.9
2003:02:00	760200	2500	59893	7834.9
2003:03:00	813500	3546	84608	8077.8
2003:04:00	813750	2516	98096	8246.5
2003:05:00	822000	3975	118890	8377.0
2003:06:00	830250	3975	131630	8362.6

Source: Data for export and import quantities obtained from Bilgi Talebi Department bilgi@tuik.gov.tr

Data for Inflation figures:

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_genel.RDF&desformat=html&p_baz=1994&p_yil1=2004&p_yil2=1996&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=99999

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_harcama_2003.RDF&desformat=html&p_baz=2003&p_yil1=2005&p_yil2=2005&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=999&p_kod1=0

<http://www.tuik.gov.tr/tufeapp/Basla1.do> Dynamic Research

Data for Domestic Prices:http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/1994=100 Base Year Price Indexes-Average Product http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/58911922178142/xls. 2003=100 Base Year Consumer Price Indexes- Average Product Prices, September 09, 2007

Table 4.14

Data Used in Econometric Model for Refrigerator

2003:07:00	830250	4760	158972	8331.4
2003:08:00	830250	1260	146857	8344.3
2003:09:00	830250	1450	127590	8502.6
2003:10:00	830250	3506	139826	8623.6
2003:11:00	830250	2947	97214	8762.6
2003:12:00	830250	3432	122090	8839.5
2004:01:00	830250	2126	103193	8904.7
2004:02:00	830250	2899	80824	8953.9
2004:03:00	830250	1748	130041	9033.3
2004:04:00	582300	2802	147973	9086.2
2004:05:00	582300	4413	149864	9120.9
2004:06:00	550000	1606	154145	9109.4
2004:07:00	568750	5768	194092	9129.0
2004:08:00	572500	2204	128642	9181.8
2004:09:00	572500	1817	132857	9268.2
2004:10:00	572500	3356	134297	9474.2
2004:11:00	557500	5499	111994	9620.3
2004:12:00	557500	4293	120916	9663.3
2005:01:00	599320	2946	82967	9747.64
2005:02:00	616720	5547	90226	9781.17
2005:03:00	614890	3981	149255	9820.72
2005:04:00	613810	5854	181107	9926.39
2005:05:00	613810	4783	176318	10033.32
2005:06:00	636930	3294	233299	10079.60
2005:07:00	619230	2422	238447	10065.43
2005:08:00	635900	2017	239568	10168.74
2005:09:00	612290	4496	175552	10308.92
2005:10:00	622300	2327	167522	10505.42
2005:11:00	634120	2566	147473	10634.65
2005:12:00	639460	2588	205849	10680.72

Source: Data for export and import quantities obtained from Bilgi Talebi Department bilgi@tuik.gov.tr

Data for Inflation figures:

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_genel.RDF&desformat=html&p_baz=1994&p_yil1=2004&p_yil2=1996&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=99999

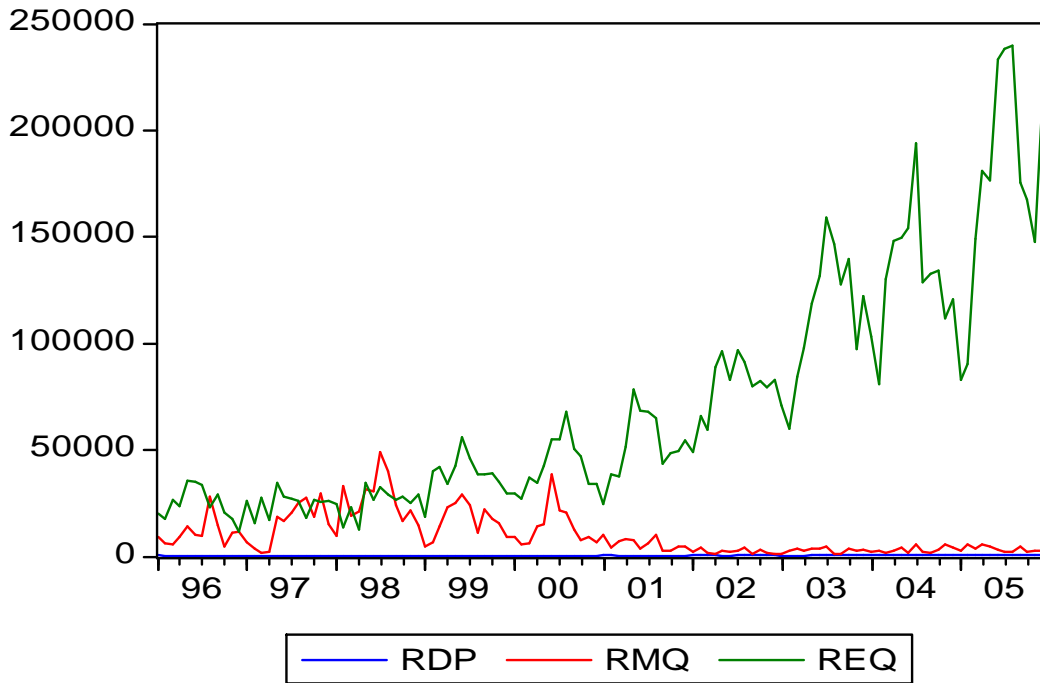
http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_harcama_2003.RDF&desformat=html&p_baz=2003&p_yil1=2005&p_yil2=2005&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=999&p_kod1=0

<http://www.tuik.gov.tr/tufeapp/Basla1.do> Dynamic Research

Data for Domestic Prices:http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/1994=100 Base Year Price Indexes-Average Product http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/58911922178142/xls. 2003=100 Base Year Consumer Price Indexes- Average Product Prices, September 09, 2007

Graph:4.8

Test of Import Discipline Hypothesis on Refrigerator Market



Source: This graph is produced by the data given on the table 4.14

Dependent Variable: LREFTL
 Method: Least Squares
 Sample (adjusted): 1998M01 2005M12
 Included observations: 96 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.535107	0.311196	24.21338	0.0000
MLBMQ	-0.084499	0.021450	-3.939317	0.0002
LBEQ	-0.275600	0.057228	-4.815861	0.0000
LINF	1.009360	0.052164	19.34971	0.0000
R-squared	0.932076	Mean dependent var		12.96658
Adjusted R-squared	0.929861	S.D. dependent var		0.639998
S.E. of regression	0.169496	Akaike info criterion		-0.671203
Sum squared resid	2.643054	Schwarz criterion		-0.564355
Log likelihood	36.21773	F-statistic		420.8165
Durbin-Watson stat	0.365035	Prob(F-statistic)		0.000000

As a result of analysis, the relationship among Domestic Price of Refrigerator (REFTL) and import quantity of refrigerator (BMQ) and export quantity of refrigerator (BEQ) Inflation (INF) is as follow

$$LREFTL = 7.5351 - 0.0845 MLBMQ - 0.2756 LBEQ + 1.009 LINF$$

s.e. (0.3112) (0.0215) (0.0572) (0.0522)

- The relationship between domestic price and quantity of import is statistically significant. At the beginning of the analysis, it was assumed that the sign of the relationship is negative. The result of the test has been negative. This means that an increasing amount of import caused reduction in domestic price of refrigerator as it is stated under the import discipline hypothesis.
- The relationship between domestic price and quantity of export is statistically significant. Although, at the beginning analysis, it was assumed that the sign of the relationship should be positive, the sign of the relationship between domestic price of refrigerator and export quantity of refrigerator is found negative. This can also be explained by an effect of increasing returns. When the refrigerator producer started to produce large amount of refrigerator to export, the economies of scale also reduce the domestic price of refrigerator.
- The domestic price of refrigerator was following inflation closely. When inflation rate is low, the domestic price of refrigerator is also low; when the inflation rate is high, the domestic price of refrigerator is high. The sign of the relationship between inflation and the domestic price of refrigerator is positive.

4.3.3.2. Washing Machine

Washing machine's supply and demand has been increasing since 1990 with the exception of deep economic crises periods. Domestic sales have been increased 36 per cent in 1996, 37 per cent in 1997. Then, it decreased 20 per cent in 1998 depending on recession in Turkish economy. Although, domestic sales increased for 20 per cent in 2000 in comparison to previous year of 1999 when there was deep impact of earthquake;

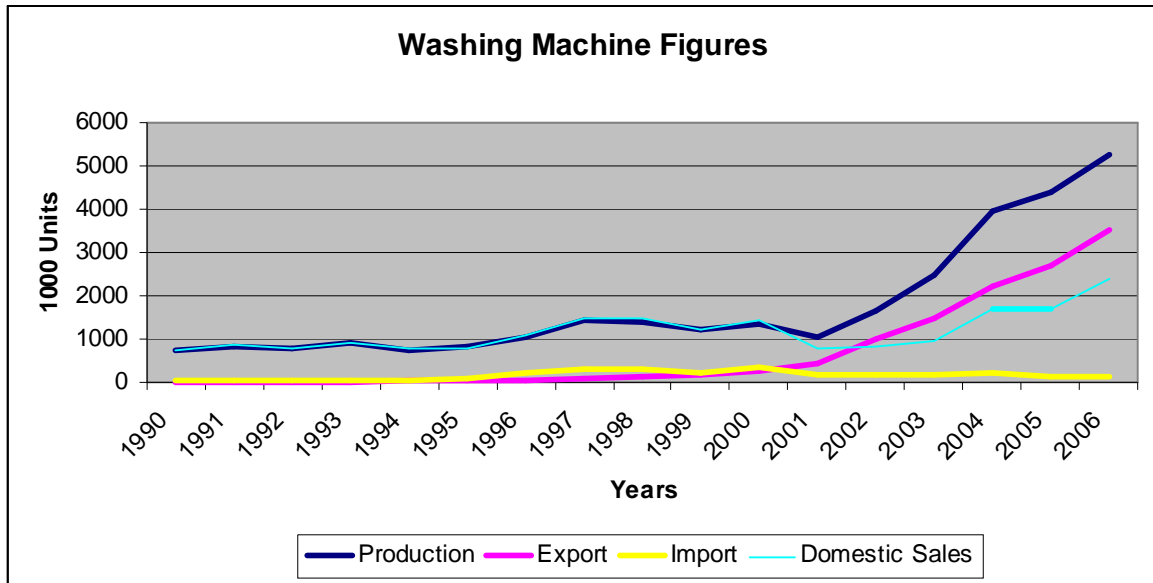
the financial crises in 2001 decreased sales 45 per cent once more. In 2002 and following years, sales of washing machine increased until 2005. In this period, the domestic sales increased average 7.4 per cent

Table 4.15
Washing Machine Market Figures in Turkey (Units)

Years	Production	Export	Import	Domestic Sales	Import Penetration %	Domestic Prices USD \$	Change in Domestic Price %
1990	757483	2479	41346	733960	5,63	626	
1991	836986	5256	54707	886437	6,17	666	6.0
1992	779636	3943	46164	774718	5,96	628	-5.0
1993	914490	5093	57268	914378	6,26	577	-8.0
1994	746360	26738	51323	762429	6,73	599	3.7
1995	827621	39899	76228	785794	9,70	570	-4.8
1996	1051000	50657	232937	1067306	21,82	570	0
1997	1454006	99576	284327	1464279	19,42	522	-8.0
1998	1375163	129641	317137	1493863	21,23	569	9.0
1999	1219338	180756	231324	1222201	18,93	548	-3.8
2000	1342710	270807	359461	1416528	25,38	595	5.6
2001	1029421	426413	173369	795324	21,80	513	-11.3
2002	1654103	988601	159437	823926	19,35	570	11.1
2003	2459082	1458310	164109	949646	17,28	526	-7.7
2004	3963401	2232544	206022	1686246	12,2	524	-0,03
2005	4381701	2680000	124657	1675186	7,4	563	7.4
2006	5277000	3527000	139000	2397275	5,7	570	1.2

Source: TÜİK, Production Statistics, Foreign Trade Statistics

Graph: 4.9.



Source: This graph is arranged by the data given on the table 4.15

Arçelik was the only member of Türkiye Beyaz Eşya Sanayicileri Demeği (White Good Industrialist Association) who produces dish washer until 2005 since all domestic production of this item has been produced by only Arçelik. Arçelik has 900.000 units dish washer production capacity in 2005. The BSH, as an international company, was introducing dishwashers into domestic market by importing from its own production units in different countries. The number of production increased significantly. Although, there have been large fluctuations depending on economic crisis, the demand elasticity of dishwasher is income sensitive and consumer easily sacrifices the demand for dishwasher.

Table 4.16.
Washing Machine Production of Producer Companies in Turkey (1000
Units)

	Arçelik	Share of Arçelik %	B-S- P	Share of BSP %	Vestel	Share of Vestel	Total
1990	509	67	214	28	0	0	757
1991	680	81	334	40	0	0	837
1992	552*	71	-		0	0	780
1993	654*	67	295	30	0	0	914
1994	500*	64	246	32	0	0	746
1995	626*	72	N.A.	N.A.	0	0	827
1996	742*	71	251	24	0	0	1051
1997	1061*	72	393	27	0	0	1454
1998	937*	67	448	33	0	0	1375
1999	855*	70	370	30	0	0	1219
2000	949**	71	395	28	81`	1	1343
2001	799**	78	230	22	39`	0.05	1029
2002	1300**	80	344	19	75`	0.05	1654
2003	1900**	77	482	20	71`	0.05	2459
2004	2195**	55	747	19	712	26	3963
2005	2066**	47	796	18	1021	35	4382

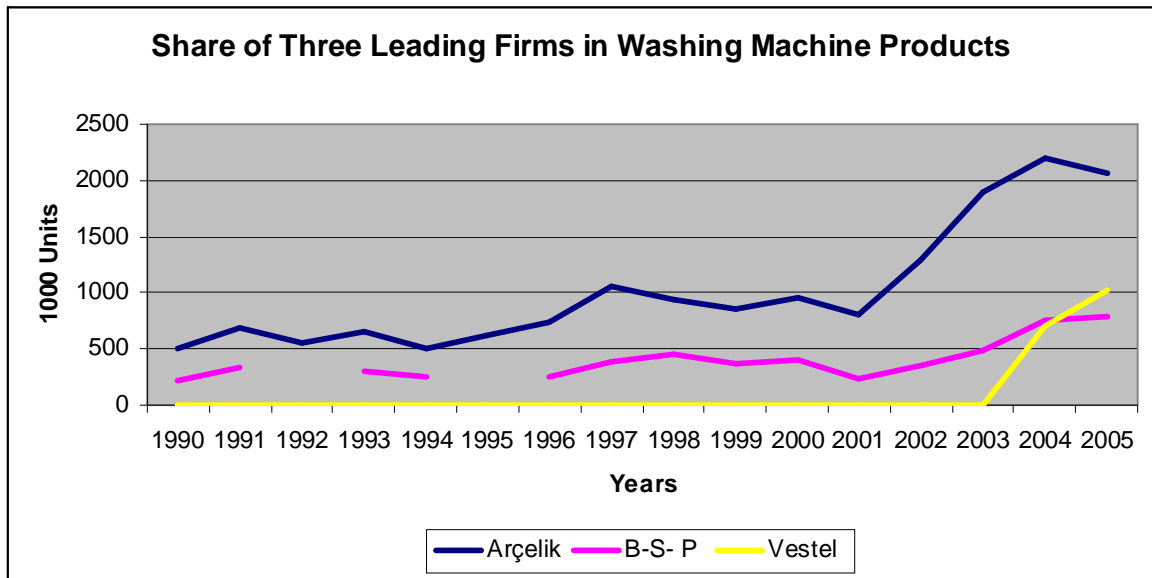
`Not recorded in BEYSAD (WGSA) records

Source: TÜİK, BEYSAD

* Taken from Year Book of the Companies Stated in IMKB
<http://www.imkb.gov.tr/bilanco/mtablodonem.htm>

** Annual Reports of Arçelik <http://www.arcelik.com.tr/YatirimciIliskileri/ImkbArcelik/?MENUID=2>
Annual Reports of BSP <http://www.profile.com.tr>; <http://www.bosch.com.tr>; <http://www.bosch.com>
Annual Reports of Vestel <http://www.vestelyatirimciiliskileri.com/>
<http://www.vestelyatirimciiliskileri.com/reports/pdf/2006/VestelElektronik2006FR.pdf>

Graph: 4.10



Source: This graph is prepared by the data given on the table 4.16

Although, the volume of export was low at the beginning of 1990, then, the export of washing machine increased rapidly. In 1994, it increased 232 per cent, in 1995, 140 per cent, 156 per cent in 1997. The total quantity of export became 2.709.00 units in 2005. Although, the volume of export was 5per cent in 1996, the ratio increased to 62 per cent in 2005. The major export markets are Germany (20 per cent), France (12 per cent), the UK (7 per cent) in 2005. The volume of washing machine import changes depending on fluctuations on YTL over foreign exchange rate over. In 1995, the 8 per cent of domestic sales was procured by import. This year the major importing area was Italy, the 53 per cent of the washing machines were imported from Italy; 30 per cent of import was from Germany and 17 per cent of import was from Spain. Total amount of import were from EU countries. Generally, the luxury models were imported. Although, at the beginning of 1990, the import penetration level was about 5,63 per cent, then it increased up to 25, 38 per cent in 2000 after the CU. It decreased to 19.35 per cent in 2002 because of the influences of the economic crises. This ratio increased to 17 per cent in 1997; 21 per cent in 1998; 18 per cent, 1999; 23 per cent in 2000; 20 per cent in 2001; 18 per cent in 2002; 16 per cent in 2003; 11 per cent in 2004 and 7 per cent in 2005. In 2005, the

major source country for import was Italy; 23 per cent was from Spain and 11 per cent from Germany.

Table 4.17

Washing Machine Figures Including Member of TÜRKBESD in Turkey/ Unit

Year	Production Volume	Import by TÜRKBESD	Total Import	Share of Domestic Producer in Import %	Domestic Sales	Import Penetration	Domestic Prices USD \$	Change %
1990	757483	N.A.	41346		733960	5,63	626	
1991	836986	N.A.	54707		886437	6,17	666	6.0
1992	779636	2920	46164	6	774718	5,96	628	-6.0
1993	914490	7059	57268	12	914378	6,26	577	-8.0
1994	746360	10646	51323	21	762429	6,73	599	3.7
1995	827621	6452	76228	8	785794	9,70	570	-4.8
1996	992753	114319	232937	49	1067306	21,82	570	0
1997	1454006	164354	284327	58	1464279	19,42	522	-8.0
1998	1375163	253061	317137	80	1493863	21,23	569	9.0
1999	1219338	207741	231324	90	1222201	18,93	548	-3.8
				82				5.6
2000	1342710	294652	359461		1416528	25,38	595	
2001	1029421	169351	173369	98	795324	21,80	513	-11.3
2002	1654103	N.A.	159437	N.A.	823926	19,35	570	11.1
2003	2459082	N.A.	164109	N.A.	1133199	16,00	526	-7.7
2004	3963401	N.A.	206022	N.A.	1892298	11,00	524	-.003
2005	4381701	N.A.	124657	N.A.	1799519	7,00	563	7.4

^Not recorded in BEYSAD records

*Import Penetration Ratio is calculated by the ratio of quantity of import to quantity of domestic consumption

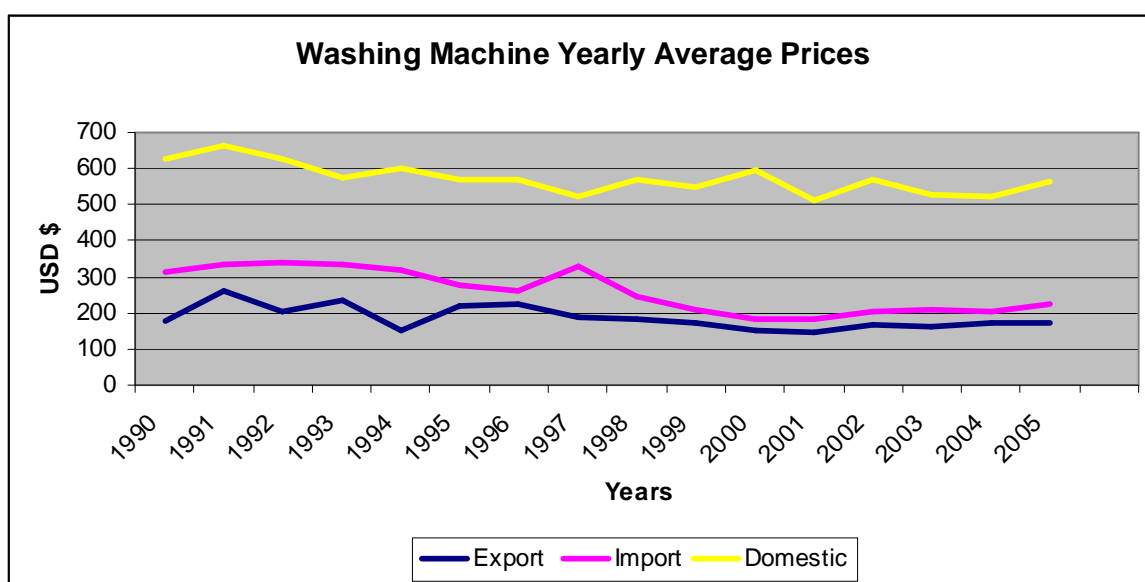
Source: IMKB and BEYSAD

* Taken from Year Book of the Companies Stated in ISE <http://www.imkb.gov.tr/bilanco/mtablodonem.htm>

** Annual Reports of Arcelik <http://www.arcelik.com.tr/YatirimciIliskileri/ImkbArcelik/?MENUID=2>
Annual Reports of BSP <http://www.profile.com.tr>; <http://www.bosch.com.tr>; <http://www.bosch.com>
Annual Reports of Vestel <http://www.vestelyatirimciiliskileri.com/>

When the data for import by member of TÜRKBESD is compared to the data for import made by the importers from all over Turkey (consists of all imports data declared by TÜİK), it is observed that especially after 1996 the large part of import has been made by members of TÜRKBESD. This means that large part of import has been done by the firms who have already been producers of washing machine.

Graph: 4.11



Source: This graph is prepared by the data given on the table 4.17

In comparison to domestic prices both import prices and export prices are low. Although, in the early 1990 the exchange value of Turkish Lira to USD \$ was lower than the value in 2000, the lower level of domestic prices can easily be observed. Similarly, someone also observe the high import prices. This can be explained as follows: the volume of luxury products and the products which are rarely demanded are mostly imported.

Table 4.18
Washing Machine Prices in Turkey (USD \$)

Years	PRICE			CHANGE %		
	Export (1)	Import (2)	Domestic (3)	Export	Import	Domestic
1990	177	314	626			
1991	264	332	666	49	6	6
1992	202	338	628	-23	2	-6
1993	236	336	577	17	-1	-8
1994	150	318	599	-36	-5	4
1995	220	278	570	47	-13	-5
1996	224	263	570	02	-5	0
1997	189	330	522	-16	25	-8
1998	184	243	569	-3	-26	9
1999	172	207	548	-7	-15	-4
2000	153	185	595	-11	-11	9
2001	148	184	513	-3	-1	-14
2002	167	202	570	13	10	11
2003	164	208	526	-1.7	2.9	-7.7
2004	171	205	525	4.2	-1.4	-.001
2005	174	223	562	1.7	8.7	7

(1) Prices are average prices calculated by dividing Total value of Export to total quantity for selected products

Prices are average prices calculated by dividing Total value of Import to total quantity for selected products

(2) Domestic prices are obtained from Consumer Price Indexes- Average Product Prices

Source: TÜİK, Foreign Trade Statistics,

<http://www.tuik.gov.tr/tufeapp/Basla1.do> Dynamic Research

http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/1994=100 Base Year Price Indexes- Average Product Prices, September 09, 2007

http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/58911922178142/xls.2003=100 Base Year Consumer Price Indexes- Average Product Prices, September 09, 2007

One of the other most frequently used and produced home appliance products is washing machine. The most commonly imported washing machine used in this analysis was washing machine with capacity between 6 kg and 10 kg. This is stated under the heading 845011900000 in Common Customs Tariffs. The other one is washing machine loadable from front side. This is stated under the heading 84511110000 in Common Customs Tariffs.

Table 4.19
Data Used in Econometric Model for Washing Machine

Observation	WDTLP	WMQ	WMEQ	INF
1996:01:00	48900	11782	587	259.5
1996:02:00	48900	9087	1618	271.2
1996:03:00	50250	17032	4296	286.4
1996:04:00	50250	12479	4294	305.6
1996:05:00	52550	22491	2614	319.4
1996:06:00	52550	16615	2626	327.5
1996:07:00	55500	13845	5558	334.5
1996:08:00	55500	13680	2562	350.4
1996:09:00	64850	13485	4314	371.9
1996:10:00	64850	17729	7069	396.0
1996:11:00	64850	22847	4890	416.5
1996:12:00	69400	32466	7917	430.7
1997:01:00	76700	29500	4102	456.0
1997:02:00	76700	44280	5059	481.8
1997:03:00	83300	49630	6561	507.8
1997:04:00	83300	26620	8013	541.4
1997:05:00	88700	50376	7010	566.8
1997:06:00	88700	33908	4522	583.1
1997:07:00	94950	21411	8510	619.6
1997:08:00	99250	21743	7139	658.0
1997:09:00	103550	29097	7717	706.1
1997:10:00	117250	32917	8700	764.9
1997:11:00	117250	31128	8416	815.6
1997:12:00	117250	39260	8023	857.5
1998:01:00	146250	15177	9401	919.4
1998:02:00	146250	29011	8851	960.0
1998:03:00	146250	35856	17119	1001.3
1998:04:00	161000	26724	10743	1048.0
1998:05:00	164300	22832	4553	1084.7
1998:06:00	164300	23305	9698	1111.1

Source: Data for export and import quantities obtained from Bilgi Talebi Department bilgi@tuik.gov.tr

Data for Inflation figures:

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_genel.RDF&desformat=html&p_baz=1994&p_yil1=2004&p_yil2=1996&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=99999

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_harcama_2003.RDF&desformat=html&p_baz=2003&p_yil1=2005&p_yil2=2005&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=999&p_kod1=0

<http://www.tuik.gov.tr/tufeapp/Basla1.do> Dynamic Research

Data for Domestic Prices:http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/1994=100 Base Year Price Indexes- Average Product http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/58911922178142/xls. 2003=100 Base Year Consumer Price Indexes- Average Product Prices, September 09, 2007

Table 4.19**Data Used in Econometric Model for Washing Machine**

Observation	WDTLP	WMQ	WMEQ	INF
1998:07:00	175000	37504	10966	1148.4
1998:08:00	175000	30364	8256	1193.8
1998:09:00	191000	21475	9468	1274.0
1998:10:00	191000	31127	8159	1351.1
1998:11:00	201900	24904	12121	1409.1
1998:12:00	201900	18858	12141	1455.4
1999:01:00	214200	30510	10236	1525.3
1999:02:00	214200	12562	7146	1573.7
1999:03:00	214200	18175	11808	1637.5
1999:04:00	237600	24038	7479	1717.2
1999:05:00	240750	20180	12244	1767.7
1999:06:00	247200	19471	10264	1825.2
1999:07:00	276975	15009	10622	1894.9
1999:08:00	276975	17599	17279	1974.6
1999:09:00	316600	16987	21996	2092.8
1999:10:00	316600	26549	26401	2225.2
1999:11:00	316600	23293	23347	2318.7
1999:12:00	316600	32666	16742	2456.6
2000:01:00	361550	12515	15578	2575.9
2000:02:00	361550	30322	27007	2671.3
2000:03:00	361550	37631	18239	2749.3
2000:04:00	368850	33507	21706	2813.2
2000:05:00	373250	41434	20023	2875.6
2000:06:00	373250	43031	14762	2895.1
2000:07:00	376491	30676	21097	2960.1
2000:08:00	376491	23055	22321	3024.4
2000:09:00	397800	17623	23767	3117.4
2000:10:00	397800	33825	26659	3214.0
2000:11:00	435000	22211	32808	3333.3
2000:12:00	435000	18350	30668	3415.5

Source: Data for export and import quantities obtained from Bilgi Talebi Department bilgi@tuik.gov.tr

Data for Inflation figures:

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_genel.RDF&desformat=html&p_baz=1994&p_yil1=2004&p_yil2=1996&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=99999

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_harcama_2003.RDF&desformat=html&p_baz=2003&p_yil1=2005&p_yil2=2005&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=999&p_kod1=0

<http://www.tuik.gov.tr/tufeapp/Basla1.do> Dynamic Research

Data for Domestic Prices: http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/1994=100 Base Year Price Indexes- Average Product http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/58911922178142/xls.2003=100 Base Year Consumer Price Indexes- Average Product Prices, September 09, 2007

Table 4.19**Data Used in Econometric Model for Washing Machine**

Observation	WDTLP	WMQ	WMEQ	INF
2001:01:00	425300	9947	15406	3501.1
2001:02:00	425300	24330	25438	3564.1
2001:03:00	425300	8562	42043	3780.5
2001:04:00	476500	6562	29204	4171.2
2001:05:00	476500	17784	25884	4382.0
2001:06:00	567350	12117	26861	4519.3
2001:07:00	590400	11618	28416	4627.5
2001:08:00	663500	12591	31566	4763.5
2001:09:00	718650	15686	37877	5044.0
2001:10:00	718650	14502	57386	5350.3
2001:11:00	718650	10567	50875	5576.4
2001:12:00	718650	12949	45167	5756.2
2002:01:00	857000	5041	45814	6062.4
2002:02:00	857000	10910	49238	6168.7
2002:03:00	857000	8277	53553	6242.1
2002:04:00	867200	10961	53666	6370.4
2002:05:00	870400	14728	51401	6407.3
2002:06:00	897000	14035	64364	6444.7
2002:07:00	897000	15949	69417	6537.6
2002:08:00	897000	10285	106277	6680.4
2002:09:00	960000	15468	91171	6912.7
2002:10:00	960000	16863	115166	7139.9
2002:11:00	960000	18984	115261	7347.8
2002:12:00	960000	15766	92964	7468.6
2003:01:00	855000	10467	74709	7661.9
2003:02:00	897450	10486	93241	7834.9
2003:03:00	897450	14681	116307	8077.8
2003:04:00	897600	11094	108151	8246.5
2003:05:00	897998	18502	105968	8377.0
2003:06:00	897998	17928	117625	8362.6

Source: Data for export and import quantities obtained from Bilgi Talebi Department bilgi@tuik.gov.tr

Data for Inflation figures:

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_genel.RDF&desformat=html&p_baz=1994&p_yil1=2004&p_yil2=1996&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=99999

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_harcama_2003.RDF&desformat=html&p_baz=2003&p_yil1=2005&p_yil2=2005&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=999&p_kod1=0

<http://www.tuik.gov.tr/tufeapp/Basla1.do> Dynamic Research

Data for Domestic Prices: http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/1994=100 Base Year Price Indexes-Average Product http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/58911922178142/xls, 2003=100 Base Year Consumer Price Indexes- Average Product Prices, September 09, 2007

Table 4.19**Data Used in Econometric Model for Washing Machine**

Observation	WDTLP	WMQ	WMEQ	INF
2003:07:00	913220	22431	110929	8331.4
2003:08:00	928550	15449	117486	8344.3
2003:09:00	928550	14356	172284	8502.6
2003:10:00	928550	18634	133075	8623.6
2003:11:00	928550	17759	136251	8762.6
2003:12:00	928550	11778	172284	8839.5
2004:01:00	928475	4922	133075	8904.7
2004:02:00	928475	15274	160048	8953.9
2004:03:00	928475	14422	184630	9033.3
2004:04:00	748500	12916	174878	9086.2
2004:05:00	748500	20441	182044	9120.9
2004:06:00	715000	31374	139182	9109.4
2004:07:00	725000	17784	172233	9129.0
2004:08:00	715000	27660	159233	9181.8
2004:09:00	710000	22839	205552	9268.2
2004:10:00	710000	9029	227783	9474.2
2004:11:00	655000	17725	242681	9620.3
2004:12:00	655000	11666	251345	9663.3
2005:01:00	689300	6017	141463	9747.64
2005:02:00	717250	9287	184337	9781.17
2005:03:00	716890	13285	189053	9820.72
2005:04:00	726980	9012	218502	9926.39
2005:05:00	730750	7862	161295	10033.32
2005:06:00	756920	14398	174521	10079.60
2005:07:00	718420	14051	212926	10065.43
2005:08:00	740890	12094	251523	10168.74
2005:09:00	724930	10180	251523	10308.92
2005:10:00	759130	10385	300564	10505.42
2005:11:00	738810	8283	282313	10634.65
2005:12:00	761510	9803	341442	10680.72

Source: Data for export and import quantities obtained from Bilgi Talebi Department bilgi@tuik.gov.tr

Data for Inflation figures:

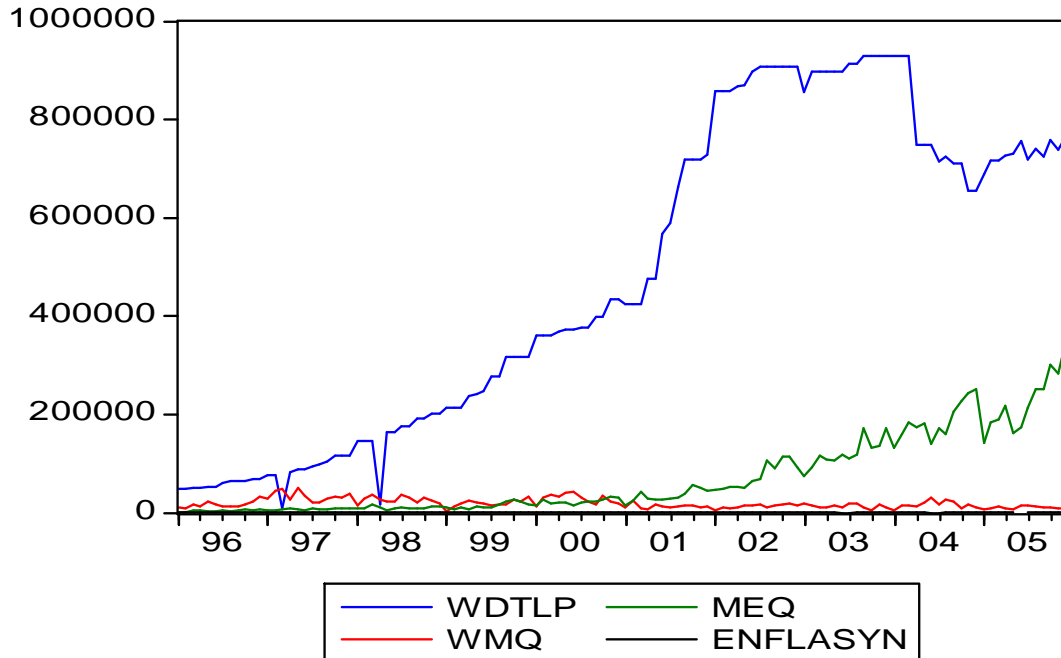
http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_genel.RDF&desformat=html&p_baz=1994&p_yil1=2004&p_yil2=1996&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=99999

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_harcama_2003.RDF&desformat=html&p_baz=2003&p_yil1=2005&p_yil2=2005&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=999&p_kod1=0

<http://www.tuik.gov.tr/tufeapp/Basla1.do> Dynamic Research

Data for Domestic Prices: http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/1994=100 Base Year Price Indexes-Average Product http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/58911922178142/xls. 2003=100 Base Year Consumer Price Indexes- Average Product Prices, September 09, 2007

Graph 4.11
Test of Import Discipline Hypothesis On Washing Machine Market



Source: This graph is arranged by the data given on table 4.19

Dependent Variable: MLWDTLP
 Method: Least Squares
 Sample (adjusted): 1998M01 2005M12
 Included observations: 96 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.206880	0.640225	6.570939	0.0000
LWMQ	-0.129432	0.047963	-2.698602	0.0083
MLWMEQ	0.212766	0.053914	3.946433	0.0002
LINF	-0.331937	0.029952	-11.08222	0.0000
R-squared	0.618727	Mean dependent var		0.255860
Adjusted R-squared	0.606294	S.D. dependent var		0.292007
S.E. of regression	0.183223	Akaike info criterion		-0.515456
Sum squared resid	3.088489	Schwarz criterion		-0.408608
Log likelihood	28.74188	F-statistic		49.76570
Durbin-Watson stat	0.439257	Prob(F-statistic)		0.000000

As a result of analysis, the relationship among Domestic Price of Washing Machine (WDTLP) and quantity of Washing Machine Import (WMQ) and quantity of washing machine export and inflation is as follow

$$MLWDTLP = - 0.1294 LWMQ + 0.2128 MLWMEQ - 0.3319 LINF + 4.2069$$

s.e) (0.0479) (0.0539) (0.0299) (0.6402)

- The relationship between domestic price and quantity of import is statistically significant. The sign of the relationship is negative as it was expected.
- The relationship between domestic price and quantity of export is statistically significant. At the beginning analysis, it is assumed that the sign of the relationship should be positive. The result of the model is also is positive. This means that domestic price is affected by the quantity of export.
- The domestic price of washing machine was not following inflation closely. When inflation rate is low, the domestic price of washing machine is high; when the inflation rate is high, the domestic price of washing machine is low.

Although, the analysis period was covering the data from January 1996 to December 2005, the data for washing machine in the econometric model could only produce statistically significant results on the period between 1998 and 2005. This can be interpreted that during two years period starting from 1996 to 1998, the size of import of washing machine does not effect on prices of washing machine prices.

4.3.3.3. Dish Washer

The third product analysed in this research is the dish washer. It has been stated under the heading 84221100000 in the Common Customs Tariffs since 1996. The quantity of domestic consumption of dish washer has been quite much more than the quantity of production. This means that large part of consumption has been supplied by

import. The import penetration ratio was 68 per cent in 1990. This ratio decreased to 7 per cent in 1994. But after the CU, the import penetration ratio increased to 45 per cent in 1999.

In 2001 economic crises, the total quantity of dish washer production were only 223.000 units. Then, after 2002, especially rapid expansion in export market also increased the production. In 2003, the number of production increased to 339.000 again. An increase in domestic demand was supplied by only Arçelik, in 2005. The production capacity was 900.000 units. Bosch- Siemens Profilo, the second market leader, imports and sells. Similar to the other products, dish washer also affected from large fluctuations of Turkish Economy, in 1994, in 2001. It has the highest market figure in 1997, and the number of product sold was 447.000 units. In addition to sensitivity to macro-economic changes in Turkish economy, demand of dish washer is also highly elastic depending on other factors, such as income level of families, habit of Turkish consumers and it is still considered as luxury good. Especially, depending on instalments raised the production level 657.000 units. In 2005, the dish washer production were 783.000 units

Table 4.20
Dish Washer Market Figures (Units)

Years	Production (1)	Export (2)	Import (3)	Domestic Consumption (4)	Import Penetration % (5)	Domestic Price USD \$ (6)
1990	63486	67	57458	84915	68	944
1991	139731	290	76513	169048	45	942
1992	207553	204	37498	211425	18	843
1993	324687	683	33127	322317	10	698
1994	258354	214	17707	266588	7	645
1995	236036	2303	20613	241087	9	578
1996	255275	6943	80218	318811	25	596
1997	447348	108372	111784	426804	26	516
1998	318320	91117	210516	477597	44	555
1999	325499	97619	182971	403663	45	579
2000	351217	85481	220337	498542	44	636
2001*	223110	64429	104548	263235	40	591
2002**	345800	98807	148905	289742	33	692
2003**	399113	243094	105493	261512	40	632
2004**	656753	271287	183481	568947	32	583
2005**	783273	372019	207722	619359	33	584

Source: TÜİK, www.tuik.gov.tr

* Yuzal, 2006 http://www.igeme.gov.tr/Arastirmalar/ulke_sek/sektor.cfm?sec=ara

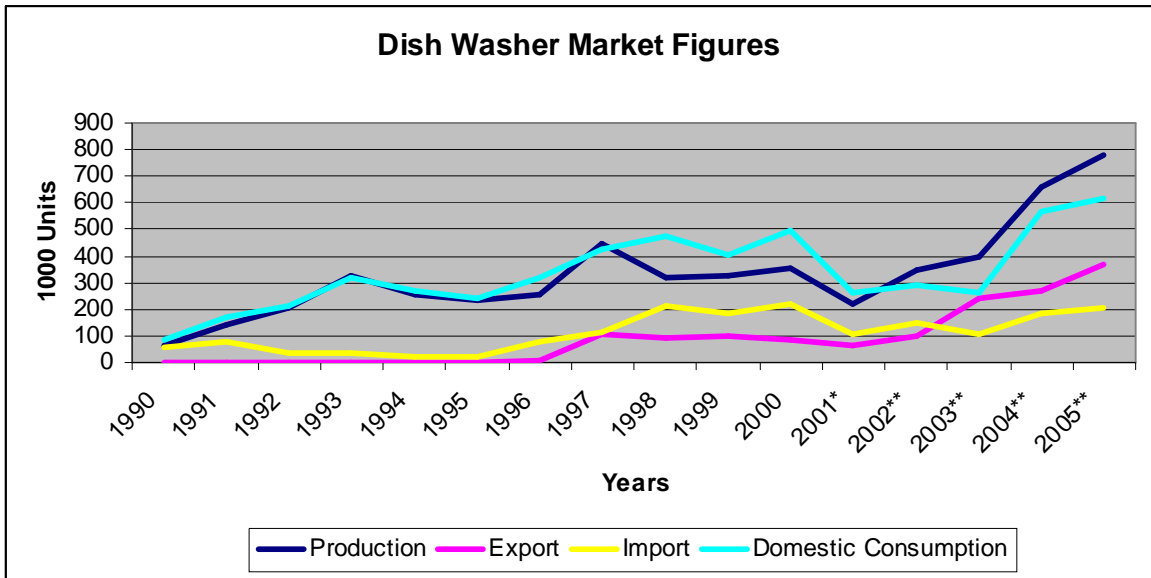
** Esen, 2007 http://www.igeme.gov.tr/Arastirmalar/ulke_sek/sektor.cfm?sec=ara

***Türkiye Sınai Kalkınma BAnkası(TSKB), Research Center, June 2007

(5) Import Penetration have been calculated by dividing import quantity to quantity of domestic consumption

(6) Domestic Price is average of prices declared by TÜİK in TL then they have been converted to USA \$

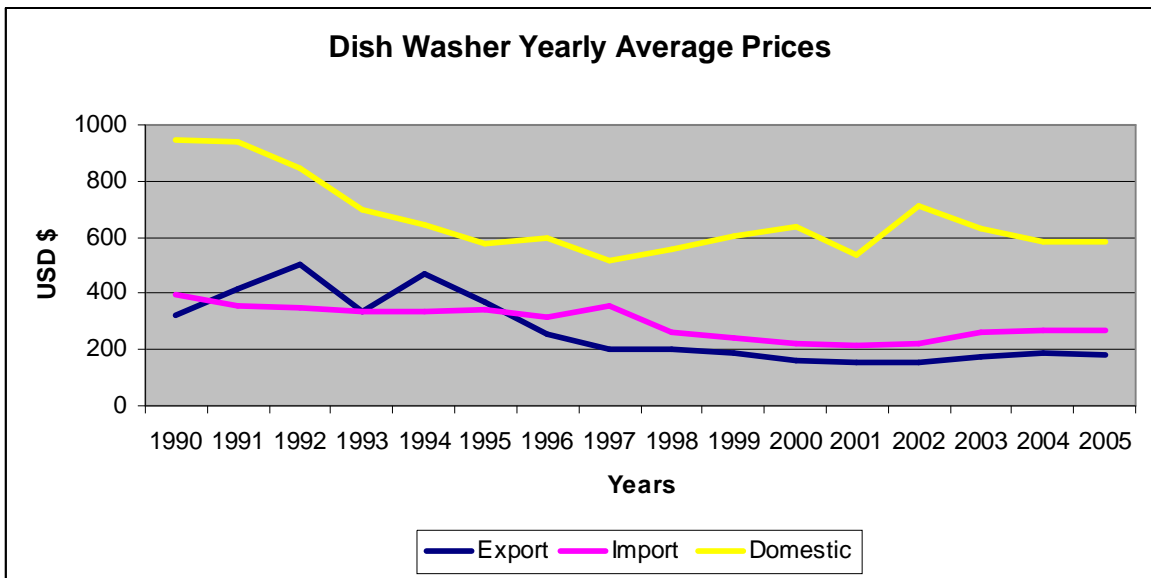
Graph 4.13



Source: The graph is arranged by the data given on the table 4.24.

Graph 4.14

Dish Washer Prices / \$



Source : This is arranged by the data given on the table 4.21

During ten years period, the import and domestic price of dish washer decreased. But the main decrease was in the period between 1990 and 1995. The domestic price decrease 38 per cent during this period and especially, 25 per cent in the period between 1990 and 2002. The influences of deep economic crisis of 2002 can not be observed in prices, although, it can easily be seen in quantity. The rapid growth in economy also increases the production and trade volume of the commodities.

Table 4.21
Dish Washer Prices USA \$

Years	Prices			Change %		
	Export (1)	Import (2)	Domestic (3)	Export	Import	Domestic
1990	324	399	944			
1991	413	354	942	27	-11	0
1992	506	350	843	23	-1	-11
1993	337	338	698	-33	-3	-17
1994	467	337	645	39	0	-8
1995	368	340	578	-21	1	10
1996	253	314	596	-31	-8	3
1997	198	355	516	-22	13	-13
1998	199	263	555	1	-26	8
1999	185	244	603	-7	-7	9
2000	163	222	636	-12	-9	5
2001	157	216	537	-4	-3	-16
2002	153	221	713	-4	-2	30
2003	174	263	632	13	19	11
2004	188	271	582	8	3.0	7.9
2005	180	266	584	-4	1.8	3.4

(1) Prices are average prices calculated by dividing Total value of Export to total quantity for selected products

(2) Prices are average prices calculated by dividing Total value of Import to total quantity for selected products

(3) Domestic prices are obtained from Consumer Price Indexes- Average Product Prices

Source: <http://www.tuik.gov.tr/tufeapp/Baslal.do> Dynamic Research

http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/1994=100 Base Year Price Indexes- Average Product Prices, September 09, 2007

http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/58911922178142/xls.2003=100 Base Year Consumer Price Indexes- Average Product Prices, September 09, 2007

Table :4.22**Dish Washer Figures Including Member of TÜRKBEŞD (WGIAT) / Units**

Years	Production Units (1)	Import by TÜRKBEŞD Units (2)	Total Import Units (3)	Share of TÜRKBEŞD in total import % (4)	Domestic Consumption Units	Import Penetration % (6)	Domestic Price USA\$/Unit (7)
1990	63486	N.A.	57458	N.A	84915	68	944
1991	139731	38742	76513	51	169048	45	942
1992	207553	15267	37498	40	211425	18	843
1993	324687	3650	33127	22	322317	10	698
1994	258354	1158	17707	6.5	266588	7	645
1995	236036	2917	20613	14	241087	9	578
1996	255275	61156	80218	76	318811	25	596
1997	447348	111784* ³⁴	111784	100	426804	26	516
1998	318320	197870	210516	98	477597	44	555
1999	325499	182971*	182971	100	403663	45	579
2000	351217	220337*	220337	100	498542	44	636
2001	223110	104480	104548	99	263235	39	591
2002	345800	98807	148905	66	289742	51	692
2003	399113	N.A.	105493	N.A	261512	40	632
2004	656753	N.A.	183481	N.A	568947	32	583
2005	783273	N.A.	207722	N.A.	619359	33	584

Source:

(1) TÜİK, Dayanıklı tüketim malları üretim istatistikleri www.tuik.gov.tr

(2) For the data between 1992-2002 TÜRKBEŞD,

For the data between 2002-2005, DTM When the data for import made by member

(3) TÜRKBEŞD istatistikleri

(4) Share of TÜRKBEŞD's import on total import quantity is calculated by dividing import of TÜRKBEŞD to total Import Quantity

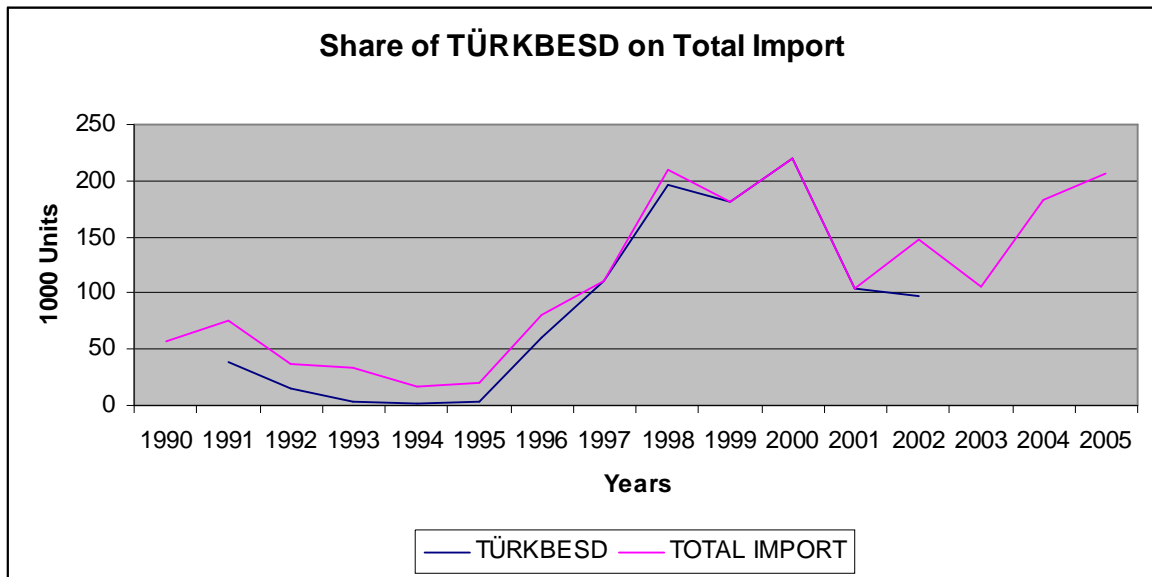
(5) TÜRKBEŞD

(6) Import Penetration Ratio is calculated by the ratio of quantity of import to quantity of domestic consumption

(7) Domestic Price is average of prices declared by TÜİK in TL then they have been converted to USA \$

³⁴ * These figures are changed in accordance with the figures of State Institute of Statistics
117.943 to 111.784
184.836 to 182.971
224.329 to 104.548

Graph. 4.15



Source: This graph is produced by the data given on table 4.22

The import decreased from 76.513 units to 20.613 units from 1991 to 1995. In 1996, the 20 per cent of domestic demand was supplied by import. Then this figure increased to 44 per cent in 1998, then, it decreased 20 per cent in 1999. The largest decrease, 53 per cent, was in 2001. In 2002, the quantity of imported dish washer decreased 9 per cent once more. The largest increase, 74 per cent was in 2004; in 2005 increase in import was 13 per cent. 56 per cent of import was from Germany, 23 per cent was from Italy, 17 per cent Poland.

When the data covering imports of TÜRKBESD import is compared to the total import made by the importers from all over Turkey (consists of all imports data declared by TÜİK), it is observed that especially after 1996 the large part of import has been made by members of TÜRKBESD. This means that large part of import has been done by the firms who have already been producers of dish washer as the washing machine.

Table 4.23**Data Used in Econometric Model for Dishwasher**

Observation	DTLDP	DMQ	DEQ	INF
1996:01:00	42700	6053	24	259.5
1996:02:00	42700	3918	86	271.2
1996:03:00	45300	7483	178	286.4
1996:04:00	45300	5856	76	305.6
1996:05:00	47100	6346	31	319.4
1996:06:00	47100	8439	133	327.5
1996:07:00	49900	4648	35	334.5
1996:08:00	49900	3085	63	350.4
1996:09:00	54600	5858	31	371.9
1996:10:00	56800	4960	136	396.0
1996:11:00	56800	10232	916	416.5
1996:12:00	59000	13340	5234	430.7
1997:01:00	63400	11340	5625	456.0
1997:02:00	63400	10550	7683	481.8
1997:03:00	69500	16850	8163	507.8
1997:04:00	69500	13810	8680	541.4
1997:05:00	73700	12204	10704	566.8
1997:06:00	73700	7790	9713	583.1
1997:07:00	80800	14352	8941	619.6
1997:08:00	83850	9642	6874	658.0
1997:09:00	86900	8851	9802	706.1
1997:10:00	97800	12715	11127	764.9
1997:11:00	97800	18016	12342	815.6
1997:12:00	97800	22959	8718	857.5
1998:01:00	119200	10787	8005	919.4
1998:02:00	119200	17300	7679	960.0
1998:03:00	119200	21365	6841	1001.3
1998:04:00	131100	12186	5710	1048.0
1998:05:00	133400	25189	7811	1084.7
1998:06:00	138100	10920	6801	1111.1

Source: Data for export and import quantities obtained from Bilgi Talebi Department bilgi@tuik.gov.tr

Data for Inflation figures:

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_genel.RDF&desformat=html&p_baz=1994&p_yil1=2004&p_yil2=1996&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&ver1=9999

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_harcama_2003.RDF&desformat=html&p_baz=2003&p_yil1=2005&p_yil2=2005&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=999&p_kod1=0

<http://www.tuik.gov.tr/tufeapp/Basla1.do> Dynamic Research

Data for Domestic Prices:http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/1994=100 Base Year Price Indexes-Average Product http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/58911922178142/xls. 2003=100 Base Year Consumer Price Indexes- Average Product Prices, September 09, 2007

Table 4.24**Data Used in Econometric Model for Dishwasher**

Observation	DTLDP	DMQ	DEQ	INF
1998:07:00	148800	13933	9697	1148.4
1998:08:00	148800	20305	3162	1193.8
1998:09:00	156700	18666	8915	1274.0
1998:10:00	156700	24430	7446	1351.1
1998:11:00	169200	19495	8988	1409.1
1998:12:00	169200	15941	10062	1455.4
1999:01:00	189500	13228	3211	1525.3
1999:02:00	189500	12529	9747	1573.7
1999:03:00	189500	15665	1067	1637.5
1999:04:00	215400	13097	5553	1717.2
1999:05:00	222900	19061	7382	1767.7
1999:06:00	230700	14478	7532	1825.2
1999:07:00	259900	10676	7289	1894.9
1999:08:00	259900	10350	6836	1974.6
1999:09:00	298900	12410	9415	2092.8
1999:10:00	298900	18440	9435	2225.2
1999:11:00	298900	21567	11419	2318.7
1999:12:00	298900	21470	9130	2456.6
2000:01:00	345200	8706	6441	2575.9
2000:02:00	345200	19810	8907	2671.3
2000:03:00	345200	17808	8755	2749.3
2000:04:00	352200	25458	7937	2813.2
2000:05:00	353200	21469	6944	2875.6
2000:06:00	353500	15725	5710	2895.1
2000:07:00	371175	18867	7841	2960.1
2000:08:00	371175	24348	7712	3024.4
2000:09:00	418600	9198	6352	3117.4
2000:10:00	418600	19320	3829	3214.0
2000:11:00	461000	25308	6793	3333.3
2000:12:00	461000	14320	8260	3415.5

Source: Data for export and import quantities obtained from Bilgi Talebi Department bilgi@tuik.gov.tr

Data for Inflation figures:

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_genel.RDF&desformat=html&p_baz=1994&p_yil1=2004&p_yil2=1996&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=99999

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_harcama_2003.RDF&desformat=html&p_baz=2003&p_yil1=2005&p_yil2=2005&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=999&p_kod1=0

<http://www.tuik.gov.tr/tufeapp/Basla1.do> Dynamic Research

Data for Domestic Prices:http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/1994=100 Base Year Price Indexes-Average Product http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/58911922178142/xls. 2003=100 Base Year Consumer Price Indexes- Average Product Prices, September 09, 2007

Table 4.24**Data Used in Econometric Model for Dishwasher**

Observation	DTLDP	DMQ	DEQ	INF
2001:01:00	459750	6251	3882	3501.1
2001:02:00	430500	19692	4293	3564.1
2001:03:00	430500	7057	3395	3780.5
2001:04:00	512400	12107	3648	4171.2
2001:05:00	512400	6136	5064	4382.0
2001:06:00	602000	6258	6995	4519.3
2001:07:00	626400	4857	4329	4627.5
2001:08:00	704000	8461	4799	4763.5
2001:09:00	759600	5775	7178	5044.0
2001:10:00	759600	7057	7678	5350.3
2001:11:00	851400	8828	7394	5576.4
2001:12:00	851400	12069	5774	5756.2
2002:01:00	851400	6236	5705	6062.4
2002:02:00	851400	6504	6382	6168.7
2002:03:00	851400	4283	7585	6242.1
2002:04:00	851400	9486	12230	6370.4
2002:05:00	851400	12520	12223	6407.3
2002:06:00	851400	7537	11144	6444.7
2002:07:00	851400	13621	13859	6537.6
2002:08:00	851400	6355	15856	6680.4
2002:09:00	851400	6256	16548	6912.7
2002:10:00	851400	4383	14703	7139.9
2002:11:00	851400	7165	15167	7347.8
2002:12:00	851400	9541	19607	7468.6
2003:01:00	953200	7805	18925	7661.9
2003:02:00	953200	7083	17370	7834.9
2003:03:00	953200	7142	17222	8077.8
2003:04:00	953200	3932	19498	8246.5
2003:05:00	953200	6227	18868	8377.0
2003:06:00	953200	7966	21063	8362.6

Source: Data for export and import quantities obtained from Bilgi Talebi Department bilgi@tuik.gov.tr

Data for Inflation figures:

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_genel.RDF&desformat=html&p_baz=1994&p_yil1=2004&p_yil2=1996&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&ver1=99999

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_harcama_2003.RDF&desformat=html&p_baz=2003&p_yil1=2005&p_yil2=2005&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=999&p_kod1=0

<http://www.tuik.gov.tr/tufeapp/Basla1.do> Dynamic Research

Data for Domestic Prices:http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/1994=100 Base Year Price Indexes-Average Product http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/58911922178142/xls. 2003=100 Base Year Consumer Price Indexes- Average Product Prices, September 09, 2007

Table 4.24**Data Used in Econometric Model for Dishwasher**

Observation	DTLDP	DMQ	DEQ	INF
2003:07:00	953200	9094	20743	8331.4
2003:08:00	953200	8101	19963	8344.3
2003:09:00	953200	11652	19112	8502.6
2003:10:00	953200	13791	27780	8623.6
2003:11:00	953200	12613	23474	8762.6
2003:12:00	953200	10092	19249	8839.5
2004:01:00	953200	8028	21148	8904.7
2004:02:00	953200	15137	17401	8953.9
2004:03:00	953200	20145	19556	9033.3
2004:04:00	905000	18110	23186	9086.2
2004:05:00	905000	18240	25325	9120.9
2004:06:00	750000	11358	22792	9109.4
2004:07:00	800000	18434	22471	9129.0
2004:08:00	760000	13905	17378	9181.8
2004:09:00	750000	15395	22833	9268.2
2004:10:00	750000	17536	29623	9474.2
2004:11:00	725000	14752	26951	9620.3
2004:12:00	725000	12441	22661	9663.3
2005:01:00	766540	15503	20638	9747.64
2005:02:00	804170	8966	28278	9781.17
2005:03:00	806740	11757	23748	9820.72
2005:04:00	792260	19572	29004	9926.39
2005:05:00	792260	17124	26211	10033.32
2005:06:00	804540	18542	22879	10079.60
2005:07:00	783010	19974	30550	10065.43
2005:08:00	791850	11570	24893	10168.74
2005:09:00	761450	27226	41387	10308.92
2005:10:00	787230	23240	40394	10505.42
2005:11:00	761450	18853	38378	10634.65
2005:12:00	764680	14772	45835	10680.72

Source: Data for export and import quantities obtained from Bilgi Talebi Department bilgi@tuik.gov.tr

Data for Inflation figures:

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_genel.RDF&desformat=html&p_baz=1994&p_yil1=2004&p_yil2=1996&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=99999

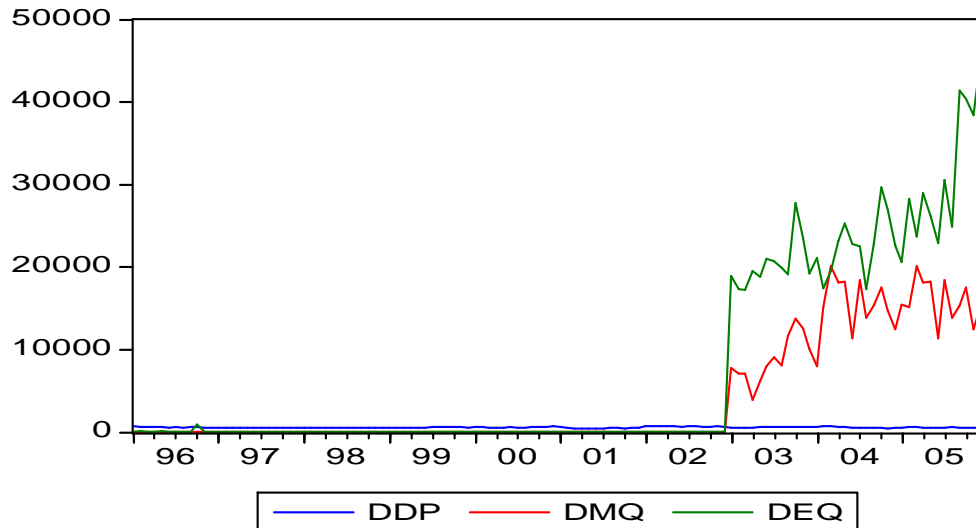
http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_harcama_2003.RDF&desformat=html&p_baz=2003&p_yil1=2005&p_yil2=2005&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=999&p_kod1=0

<http://www.tuik.gov.tr/tufeapp/Basla1.do> Dynamic Research

Data for Domestic Prices:http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/1994=100 Base Year Price Indexes-Average Product http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/58911922178142/xls. 2003=100 Base Year Consumer Price Indexes- Average Product Prices, September 09, 2007

Graph 4.16

Test of Import Discipline Hypothesis On Dish Washer³⁵



Source: Produced by the data given by table 4.24

Dependent Variable: LDTLDP
 Method: Least Squares
 Sample: 1997M01 2005M12
 Included observations: 108

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.949800	0.286916	27.70772	0.0000
LDMQ	-0.138179	0.026695	-5.176267	0.0000
LDEQ	-0.152655	0.022320	-6.839318	0.0000
LINF	0.940976	0.016138	58.30713	0.0000
R-squared	0.981495	Mean dependent var	12.92363	
Adjusted R-squared	0.980961	S.D. dependent var	0.859994	
S.E. of regression	0.118662	Akaike info criterion	-1.388739	
Sum squared resid	1.464394	Schwarz criterion	-1.289400	
Log likelihood	78.99188	F-statistic	1838.724	
Durbin-Watson stat	0.766807	Prob(F-statistic)	0.000000	

³⁵ DDP : Dish Washer Domestic Price
 DEQ : Dish Washer Export Quantity

DMQ : Dish Washer Import Quantity
 Nflation : Monthly Consumer Price Inflation Rate

The relationship among domestic price of dish washer (DTLD), import quantity of dish washer (DMQ), Export Quantity of Dish Washer (DEQ) and inflation (INF) is as follow

$$LDTLDP = - 0.1382 LDMQ - 0.1527 LDEQ + 0.9409 LINF + 7.9498$$

s.e. (0.0267) (0.0223) (0.0161) (0.2869)

- Depending increase in volume of import, the domestic price of the dishwasher decreases. Although, the large part of domestic production has been supplied by import for long period of time, starting to produce in Turkey have not changed the results. The relationship between domestic price and quantity of import is statistically significant. And the sign of the relationship is negative as it was expected.
- The relationship between domestic price and quantity of export is statistically significant. It was assumed that the sign of the relationship should be positive, but the test results negative sign.
- The domestic price of dish washer was following inflation closely. When inflation rate is low, the domestic price of dish washer is also low; when the inflation rate is high, the domestic price of dish washer is high.

4.3.3.4. Vacuum Cleaner

The fourth product analysed in this research is the vacuum cleaner. The vacuum cleaner is stated under the heading 850910100000 in the Common Customs Tariff. In the period between 1995 and 2002, it is observed that the quantity of consumption was more than the quantity of production after the CU. There are large numbers of producers. Arçelik also has large capacity in production. Especially, the production is made by assembling different parts produced in different companies. Although, in Turkey, there is large capacity of vacuum cleaner production; the significant volume of quantity is also supplied through import. When the parts imported from East Asia, are assembled in Turkey, the number of producers and trade-marks increases sharply. Especially, in the recent years, import from China is very important reason of decrease in price level and profitability of the producers. Although, the number of producers is higher than the other segment of the home appliance industry, Arçelik, BSH and Vestel have the higher market

share also.

Table 4.25
Vacuum Cleaner Market Figures in Turkey (Units)

Year	Production	Export	Import	Consumption	Import Penetration % (1)	Domestic Price USD \$ (2)	Change in Domestic Prices %
1990	261	46	16	244	6.67	176	12.5
1991	312	39	10	308	3.23	180	2.0
1992	339	33	27	324	8.49	171	-5.0
1993	715	36	98	384	25.48	153	-1.0
1994	437	53	72	355	20.19	160	5.0
1995	879	62	156	394	39.59	168	4.6
1996	1055	89	350	508	68.00	187	21.8
1997	1297	118	609	725	84.05	158	-19.3
1998	1173	162	449	810	55.47	167	3.7
1999	1066	189	502	743	67.60	165	55.8
2000	1174	194	573	866	66.60	187	-31.9
2001	591	207	307	762	60.81	205	21.7
2002	785	119	300	829	32.91	232	5.2
2003	768	881	533	893	59.68	155	-33.1
2004	1563	1167	854	1602	53.32	145	-6.4
2005	1206	785	1433	1289	N.A.	154	6.2

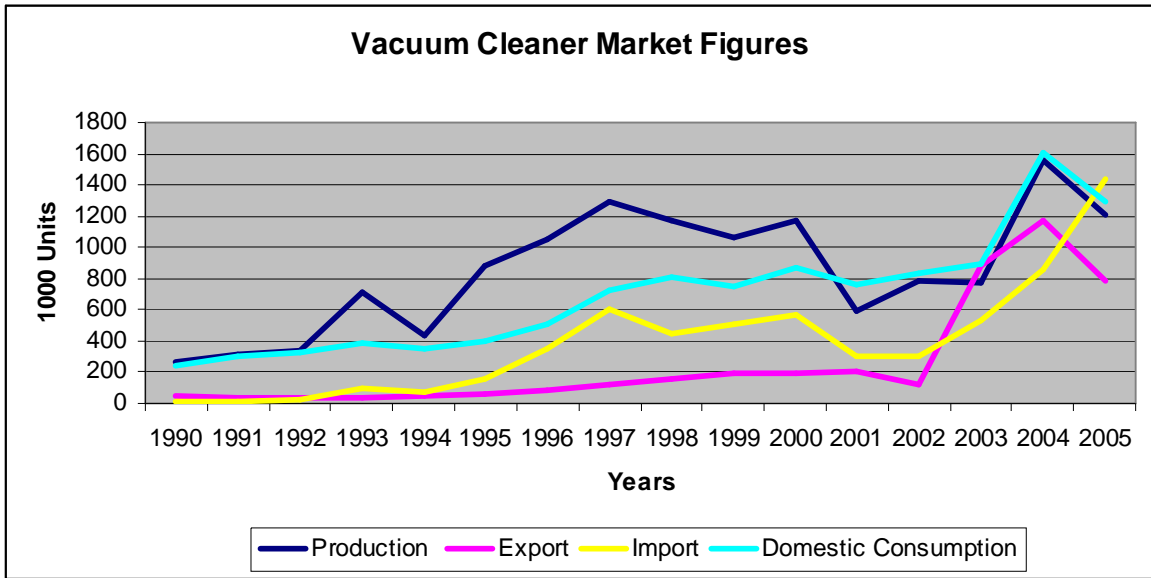
(1) Import penetration is calculated by dividing Import Volume to Consumption Volume

(2) Domestic Price is taken from by division of TL prices of vacuum cleaner to the current value of USD/TL

Source: Türkiye İstatistik Kurumu, Production and Foreign Trade Statistics, Yearly Database

Since the large amount of vacuum cleaner was supplied through import, before and after the CU, there was not a large difference in domestic prices declared by TSI. However, the reason of price increase during the year 1996 should be analysed in detail.

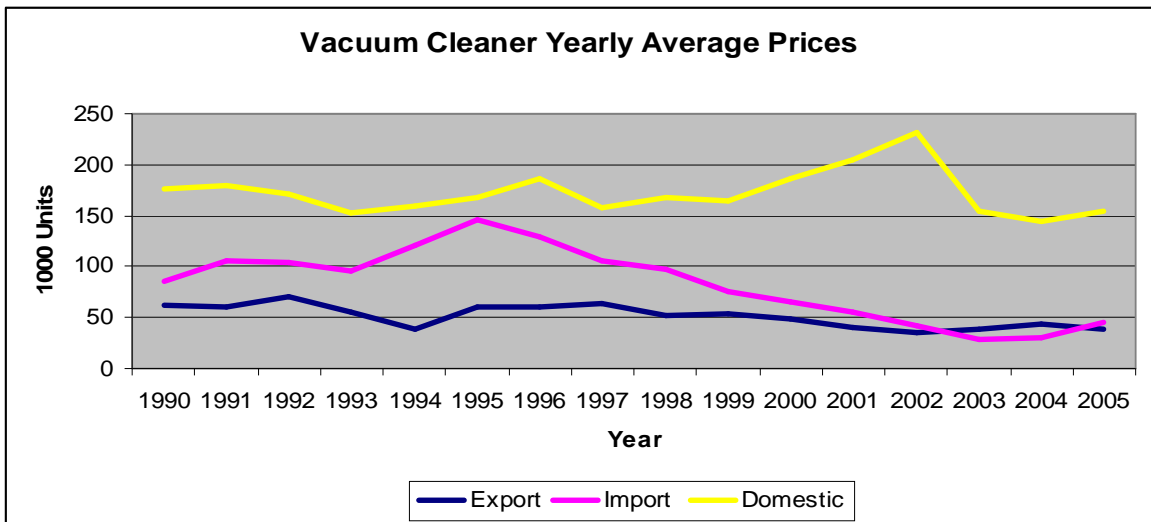
Graph: 4.17



Source: This graph is arranged by the data given on table 4.25

An increase in the domestic price level should also be analysed for the year 2001 and 2002; since in these years, both export and import prices has been decreased, but the domestic prices increased 10 per cent, and 13 per cent respectively. This increase may be due to the increase in cost of production resulted from an increase imported raw materials or intra- goods.

Graph: 4.19



Source: This graph is produced by the data given by 4.25

Table 4.26
Vacuum Cleaner Average Prices in Turkey / USD \$

Years	Prices			Change %		
	Export (1)	Import (2)	Domestic (3)	Export	Import	Domestic
1990	62	86	176			
1991	60	105	180	-3.2	22.0	2.0
1992	70	104	171	16.6	-1	-5.0
1993	56	95	153	2.0	-8.6	-11
1994	38	120	160	-32.1	26.3	5
1995	60	146	168	57.8	21.6	5
1996	60	129	187	0	-11.6	11
1997	63	106	158	5.0	-17.8	-16
1998	52	98	167	17.4	-7.5	6
1999	53	75	165	1.9	-23.4	-1
2000	48	65	187	9.4	-13.3	-1
2001	41	56	205	-14.5	-13.8	10
2002	36	42	232	-12.1	-2.5	13
2003	39	28	155	8.3	-3.3	-33
2004	43	30	145	10.2	7.0	-6
2005	39	46	154	9.3	5.3	6

(1) Prices are the average prices calculated by dividing total value of export to total quantity for selected products

(2) Prices are the average prices calculated by dividing total value of import to total quantity for selected products

**Domestic prices are obtained from Consumer Price Indexes- Average Product Prices

Source: http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/1994=100 Base Year Price Indexes- Average Product Prices, September 09, 2007

http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/58911922178142/xls.2003=100 Base Year Consumer Price Indexes- Average Product Prices, September 09, 2007

Table 4.26

Data Base Used in Econometric Model for Vacuum Cleaner

Observation	VTLDP	VMQ	VEQ	INF
1996:01:00	17500	19904	10231	259.5
1996:02:00	17500	14532	7406	271.2
1996:03:00	17500	40123	4753	286.4
1996:04:00	17500	19035	3296	305.6
1996:05:00	17500	18980	10531	319.4
1996:06:00	17500	22363	8846	327.5
1996:07:00	18000	43547	12097	334.5
1996:08:00	18000	13055	3834	350.4
1996:09:00	19520	31651	5887	371.9
1996:10:00	20300	64134	7741	396.0
1996:11:00	20300	34409	5480	416.5
1996:12:00	21400	27907	8751	430.7
1997:01:00	22500	43180	1629	456.0
1997:02:00	22500	49497	10766	481.8
1997:03:00	24200	67207	6899	507.8
1997:04:00	24200	39221	12560	541.4
1997:05:00	25500	42198	9575	566.8
1997:06:00	25500	31502	7793	583.1
1997:07:00	26900	63846	8785	619.6
1997:08:00	27650	59211	15500	658.0
1997:09:00	28400	74461	9564	706.1
1997:10:00	30500	37597	11165	764.9
1997:11:00	30500	46527	11006	815.6
1997:12:00	33500	55033	12680	857.5
1998:01:00	37300	16190	11364	919.4
1998:02:00	37300	44546	12896	960.0
1998:03:00	41500	43206	17669	1001.3
1998:04:00	41500	39979	11911	1048.0
1998:05:00	42500	57783	20463	1084.7
1998:06:00	42900	45601	14733	1111.1

Source: Data for export and import quantities obtained from Bilgi Talebi Department bilgi@tuik.gov.tr

Data for Inflation figures:

http://tuikrapor.tuik.gov.tr/reports/rwervlet?fiyatdb2&report=tufe_genel.RDF&desformat=html&p_baz=1994&p_vil2=1996&p_av1=1&p_av2=2&p_av3=3&p_av4=4&p_av5=5&p_av6=6&p_av7=7&p_av8=8&p_av9=9&p_av10=10&p_av11=11&p_av12=12&yer1=99999

http://tuikrapor.tuik.gov.tr/reports/rwervlet?fiyatdb2&report=tufe_harcama_2003.RDF&desformat=html&p_baz=2003&p_vil1=2005&p_vil2=2005&p_av1=1&p_av2=2&p_av3=3&p_av4=4&p_av5=5&p_av6=6&p_av7=7&p_av8=8&p_av9=9&p_av10=10&p_av11=11&p_av12=12&yer1=999&p_kod1=0

<http://www.tuik.gov.tr/tufeapp/Basla1.do> Dynamic Research

Data for Domestic Prices: http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/1994=100 Base Year Price Indexes- Average Product http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/58911922178142/xls.2003=100 Base Year Consumer Price Indexes- Average Product Prices, September 09, 2007

Table 4.27**Data Base Used in Econometric Model for Vacuum Cleaner**

Observation	VTLDP	VMQ	VEQ	INF
1998:07:00	45900	23671	12654	1148.4
1998:08:00	45900	33920	12638	1193.8
1998:09:00	49900	37688	6507	1274.0
1998:10:00	49900	36533	14123	1351.1
1998:11:00	53500	36575	16752	1409.1
1998:12:00	57800	33594	10041	1455.4
1999:01:00	57800	18453	12177	1525.3
1999:02:00	57800	51972	17133	1573.7
1999:03:00	61500	87677	17960	1637.5
1999:04:00	65000	40152	7343	1717.2
1999:05:00	65600	40723	14159	1767.7
1999:06:00	66200	22068	13377	1825.2
1999:07:00	68500	45361	15529	1894.9
1999:08:00	68500	36300	15258	1974.6
1999:09:00	72700	29438	15588	2092.8
1999:10:00	72700	37142	14676	2225.2
1999:11:00	78900	53795	32447	2318.7
1999:12:00	78900	39371	13667	2456.6
2000:01:00	94900	19914	15567	2575.9
2000:02:00	94900	44936	13307	2671.3
2000:03:00	94900	57399	16417	2749.3
2000:04:00	96800	65797	12640	2813.2
2000:05:00	100500	41304	14951	2875.6
2000:06:00	100500	33500	10230	2895.1
2000:07:00	112800	66869	13825	2960.1
2000:08:00	112800	58415	17999	3024.4
2000:09:00	112800	41554	18601	3117.4
2000:10:00	112800	36297	24619	3214.0
2000:11:00	117700	52200	16762	3333.3
2000:12:00	117700	54747	19321	3415.5

Source: Data for export and import quantities obtained from Bilgi Talebi Department bilgi@tuik.gov.tr

Data for Inflation figures:

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_genel.RDF&desformat=html&p_baz=1994&p_yil1=2004&p_yil2=1996&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&ver1=99999

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_harcama_2003.RDF&desformat=html&p_baz=2003&p_yil1=2005&p_yil2=2005&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=999&p_kod1=0

<http://www.tuik.gov.tr/tufeapp/Basla1.do> Dynamic Research

Data for Domestic Prices:http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/1994=100 Base Year Price Indexes-Average Product http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/58911922178142/xls. 2003=100 Base Year Consumer Price Indexes- Average Product Prices, September 09, 2007

Table 4.26**Data Base Used in Econometric Model for Vacuum Cleaner**

Observation	VTLDP	VMQ	VEQ	INF
2001:01:00	124500	42663	9964	3501.1
2001:02:00	126500	66614	17529	3564.1
2001:03:00	126500	9018	8962	3780.5
2001:04:00	217000	37828	18517	4171.2
2001:05:00	217300	21957	16046	4382.0
2001:06:00	273700	14632	15097	4519.3
2001:07:00	284900	13922	13848	4627.5
2001:08:00	311500	9380	19968	4763.5
2001:09:00	328300	24913	18549	5044.0
2001:10:00	328300	25232	23469	5350.3
2001:11:00	310800	23362	22837	5576.4
2001:12:00	310800	17833	22089	5756.2
2002:01:00	352800	10600	22772	6062.4
2002:02:00	352800	16412	29104	6168.7
2002:03:00	352800	40934	30237	6242.1
2002:04:00	372000	52086	16673	6370.4
2002:05:00	372000	40547	25635	6407.3
2002:06:00	374800	14944	24196	6444.7
2002:07:00	396800	13994	20767	6537.6
2002:08:00	396800	20373	51166	6680.4
2002:09:00	396800	19011	43616	6912.7
2002:10:00	396800	22728	30515	7139.9
2002:11:00	396800	39692	40309	7347.8
2002:12:00	396800	24448	32224	7468.6
2003:01:00	396800	19939	43842	7661.9
2003:02:00	396800	22170	68711	7834.9
2003:03:00	396800	43984	65056	8077.8
2003:04:00	409800	46065	40875	8246.5
2003:05:00	409800	34966	42181	8377.0
2003:06:00	409800	38661	48266	8362.6

Source: Data for export and import quantities obtained from Bilgi Talebi Department bilgi@tuik.gov.tr

Data for Inflation figures:

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_genel.RDF&desformat=html&p_baz=1994&p_yil1=2004&p_yil2=1996&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=99999

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_harcama_2003.RDF&desformat=html&p_baz=2003&p_yil1=2005&p_yil2=2005&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=999&p_kod1=0

<http://www.tuik.gov.tr/tufeapp/Basla1.do> Dynamic Research

Data for Domestic Prices:http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/1994=100 Base Year Price Indexes-Average Product http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/58911922178142/xls. 2003=100 Base Year Consumer Price Indexes- Average Product Prices, September 09, 2007

Table 4.26

Data Used in Econometric Model for Vacuum Cleaner

Observation	VTLDP	VMQ	VEQ	INF
2003:07:00	409800	55961	70176	8331.4
2003:08:00	409800	33504	81150	8344.3
2003:09:00	409800	42624	142424	8502.6
2003:10:00	409800	31897	13522	8623.6
2003:11:00	409800	61805	71392	8762.6
2003:12:00	409800	102327	73642	8839.5
2004:01:00	409800	51343	46269	8904.7
2004:02:00	409800	86709	46375	8953.9
2004:03:00	409800	94145	118326	9033.3
2004:04:00	389900	76488	92780	9086.2
2004:05:00	389900	54374	95824	9120.9
2004:06:00	320000	67441	69846	9109.4
2004:07:00	325000	79085	111735	9129.0
2004:08:00	290000	62989	114825	9181.8
2004:09:00	290000	61770	125207	9268.2
2004:10:00	290000	50238	136666	9474.2
2004:11:00	275000	53575	119845	9620.3
2004:12:00	275000	115824	90031	9663.3
2005:01:00	207860	49334	64022	9747.64
2005:02:00	209270	59325	78225	9781.17
2005:03:00	231150	91537	51556	9820.72
2005:04:00	234650	101912	72467	9926.39
2005:05:00	225920	142111	69148	10033.32
2005:06:00	223920	134460	66552	10079.60
2005:07:00	214950	207381	51424	10065.43
2005:08:00	225460	164824	45771	10168.74
2005:09:00	215470	153104	81983	10308.92
2005:10:00	218300	86336	69184	10505.42
2005:11:00	209280	108209	76583	10634.65
2005:12:00	209280	134734	58255	10680.72

Source: Data for export and import quantities obtained from Bilgi Talebi Department bilgi@tuik.gov.tr

Data for Inflation figures:

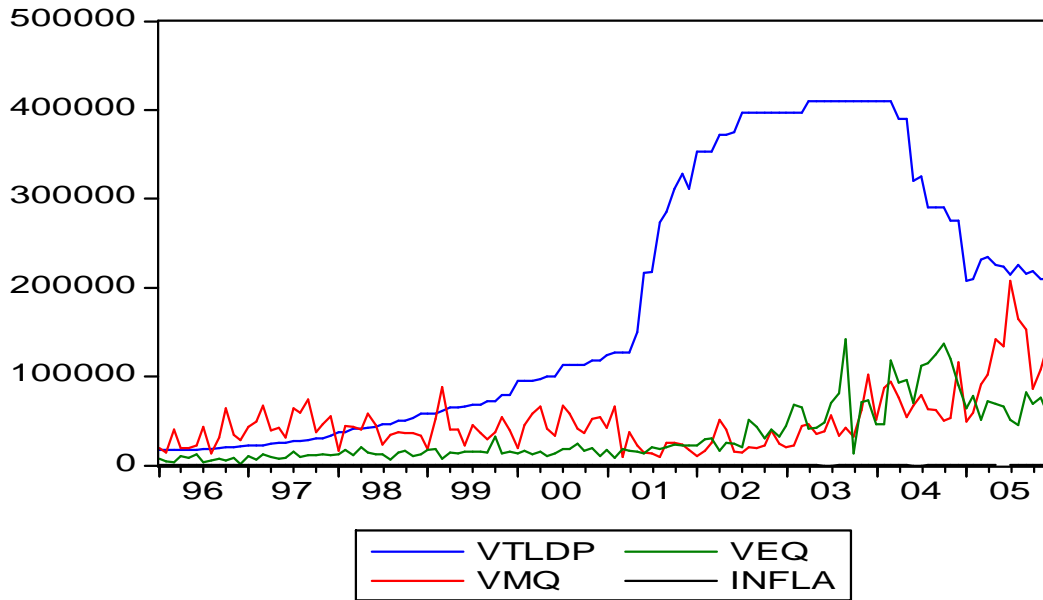
http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_genel.RDF&desformat=html&p_baz=1994&p_yil1=2004&p_yil2=1996&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=9999

http://tuikrapor.tuik.gov.tr/reports/rwservlet?fiyatdb2&report=tufe_harcama_2003.RDF&desformat=html&p_baz=2003&p_yil1=2005&p_yil2=2005&p_ay1=1&p_ay2=2&p_ay3=3&p_ay4=4&p_ay5=5&p_ay6=6&p_ay7=7&p_ay8=8&p_ay9=9&p_ay10=10&p_ay11=11&p_ay12=12&yer1=999&p_kod1=0

<http://www.tuik.gov.tr/tufeapp/Basla1.do> Dynamic Research

Data for Domestic Prices:http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/1994=100 Base Year Price Indexes-Average Product http://www.tuik.gov.tr/VeriBilgi.do?tb_id=17&ust_id=6/58911922178142/xls. 2003=100 Base Year Consumer Price Indexes- Average Product Prices, September 09, 2007

Graph 4. 18
Test of Import Discipline Hypothesis On Vacuum Cleaner³⁶



Source: Produced by data given by table 4.26

Dependent Variable: LVTLDP
 Method: Least Squares
 Sample (adjusted): 1998M01 2005M12
 Included observations: 96 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.564427	0.394010	16.66056	0.0000
LVMQ	-0.316494	0.036344	-8.708332	0.0000
MLVEQ	0.120193	0.040346	2.979064	0.0037
LINF	1.052893	0.029970	35.13151	0.0000
R-squared	0.932661	Mean dependent var		12.06669
Adjusted R-squared	0.930465	S.D. dependent var		0.800104
S.E. of regression	0.210983	Akaike info criterion		-0.233303
Sum squared resid	4.095281	Schwarz criterion		-0.126455
Log likelihood	15.19852	F-statistic		424.7395
Durbin-Watson stat	0.870833	Prob(F-statistic)		0.000000

³⁶ VTLDP : Vacuum Cleaner Domestic Price VMQ : Vacuum Cleaner Import Quantity
 VEQ : Vacuum Cleaner Export Quantity INFLA : Inflation

The relationship among domestic price of Vacuum Cleaner (VTLDP) and import quantity of Vacuum Cleaner (VMQ) and export quantity of Vacuum Cleaner (VEQ) and inflation (INF) is as follow

$$VTLDP = -0.3165 VMQ + 0.1202 VEQ + 1.0529 INF + 6.5644$$

$$(s.e.) \quad (0.0363) \quad (0.0403) \quad (0.0299) \quad (0.3940)$$

As a result of the test of import discipline hypothesis on domestic price of vacuum cleaner in Turkey during the period of January 1998 to December 2005 shows that there is direct relationship between import quantity and domestic prices. In monthly basis, in the period between 1998 and 2005, the increasing quantity of vacuum cleaner depressed domestic prices of vacuum cleaner

- The relationship between domestic price and quantity of import is statistically significant. The sign of relationship is negative as it was expected.
- The relationship between domestic price and quantity of export is statistically significant. The sign of the relationship is positive as it was expected.
- The domestic price of vacuum cleaner was following inflation closely. When inflation rate is low, the domestic price of washing machine is also low; when the inflation rate is high, the domestic price of vacuum cleaner is high.

4.3.4. Concluding Remarks

At the beginning, the aim of this research was to test whether volume of import restricts the domestic price increases in imperfectly competitive markets in relation to the “import discipline” hypothesis. We have just selected four major products in the home appliance market and set a model showing the relationship between domestic price and quantity of import and export.

Table 4.27
Relationship Between Domestic Price and Quantity of Import and Export For Four
Major Home Appliance Product *

		Import Quantity	Export Quantity	Inflation
Refrigerator				
	Coefficient	- 0.084499	- 0.275600	1.009360
	T statistics	- 3.939317	- 4.815861	19.34971
	Probability	0.00002	0.00000	0.000000
Washing Machine				
	Coefficient	-0.129432	0.212766	-0.331937
	T statistics	-2.698602	3.946343	-11.08222
	Probability	0.0083	0.0002	0.0000
Dish Washer				
	Coefficient	-0.138179	-0.152655	0.940976
	T statistics	-5.176267	-6.839318	58.30713
	Probability	0.0000	0.00000	0.00000
Vacuum Cleaner				
	Coefficient	-0.316494	0.120193	1.052893
	T statistics	-8.708332	2.979064	35.13151
	Probability	0.0000	0.000037	0.000000

Source: The results of the econometric models analysed on the thesis

T test produced statistically significant results for four models. R^2 is high and this means the independent variables explain the changes in dependent variable. F test also produced statistically significant results. As a result of test whether the domestic price of four main products of home appliance industry has been affected from the impact of the increasing import quantity, it is found that the domestic price of all major products of home appliance industry has been affected from the impact of increasing quantity of import. Each model set for the relationship between domestic price and quantity of import and export and inflation are tested via the model set by Levinsohn's import discipline model. The current Turkish Lira domestic price of the refrigerator, washing machine, dish washer and vacuum cleaner decreases depending on the increasing volume of the import. This was expected. At the beginning analysis, negative relationships were expected between these two variables. So, it can be concluded that the import decreased the concentration ratio in Turkish home appliance industry and produced more competitive environment for the Turkish consumers of home appliance products. Indeed, especially in the period between 1996 and 1999, the volume of import has been increased

considerably. While before 1996, the trading companies were just importing products which could only be produced with high technology or large scale production capacity, after 1996, the domestic producer also imported products just for extending their product variety. On the other hand, import for raw material or semi- finished products also increased depending on reduction in the custom duties. Until 2001, an increasing tendency of import can easily be observable almost in each segment of home appliance sector. Nevertheless, by 2001 crisis, the import volume has been reduced as well as import penetration ratio of home appliance products. The import penetration ratio was just only for 2 per cent for refrigerator; 7 per cent for washing machine, 33 per cent for dish washer in 2005. So, depending on the CU and removal of customs duties, the volume of both imported products and domestic sales increased in the first five years of CU, but challenge depending on the CU could not avoid influences of changes in Turkish Economy. Large fluctuations in supply and demand in the home appliance market depending on large fluctuations in Turkish economy and global economy resulted both opportunities and drawbacks for the home appliance sector as well the other industries and the change the structure of home appliance market. Especially, the oligopolistic structure of industry made companies to extend their markets to abroad as well attracting new international companies to the market. The basic features of the home appliance industry has been analysed here in detail.

In the period between 1991-1997, mostly the luxury products with high qualification and high prices which could not produced at home market have been imported, in contrast to the export products with low prices. Even though, Vestel launched refrigerator production with high capacity at 2002, before starting production in Turkey, Vestel introduced its trade mark into the market by a large amount of imported products. So, marketed products imported from different countries all over the world. In the year 2005, in the refrigerator import market, 43 per cent of import from South Korea, 14 per cent from Thailand, 11 per cent of USA, 9 per cent of Germany, 8 per cent from Mexico, 8 per cent from Slovenia and 2 per cent Italy were realized³⁷. So, the CU increasing volume of import of home appliance products decreased the market share of

³⁷ The data is taken from TÜİK

the largest companies from very high level to more considerable level. However, home appliance industry has still oligopolistic structure in Turkey as all over the world. Especially, major appliances such as refrigerators, dishwashers needs to domestic consumers. All these companies have well designed after- sales services, so the final consumers rely on the products. If we consider, the products are consumer durables, this is more important than the case in the other consumer products sectors. Hatay and Tuncer (2003) also considered this is as an important factor for the explanation of large market share of domestic based firms in Turkey, in his case study made in corporation with Koç University (Hatay and Tuncer, 2003). Even, Hatay and Tuncer(2003) extended this explanation that there is the need to incorporate local requirements in the design of home appliance products. Refrigerators should be designed to accommodate the need of a Turkish home. The large logistics costs for importation is another important factor affecting low level of import penetration. For example, the additional cost may equal to 10-13 per cent to the cost of product. Since Arçelik is the market leader and had large market share before the CU, imported products could not have opportunity to sell in the market. The market specific reasons can be stated as follows, “after sales service”; “financing”; “brand management”

After Sales Services: Companies need to have an extensive after-sales service in order to serve the consumers and thus, gain the market’s trust. Having only 10-20 service points may not be enough in an environment where a company like Vestel has over 600 service points throughout Turkey while BSH has 350 and Arçelik has 600 (Arçelik, 2007.) (BSH, 2007).

Financing: Especially after, economic crisis in 2001, selling with a large number of instalments constitutes the basic factor increasing the sales. However, the dealers need same financial facilities backward to the producers to be able to continue to this selling strategy. So, the main company should have sufficient financial support to finance large finance burden of dealers. In Turkish home appliance sector, the seller finances 85 per cent of its own sales (Hatay and Tuncer, 2003). Even it could be argued that the home appliance sector would work as a bank financing small business.

Brand Management : In Turkey, leading companies in the industry use the same brand name for different type of product. For example, Arçelik is one of the most frequently

recognized trade marks among different categories of product in Turkey (Akşam, 2005). Although, it produces different products, brand name has priority over the other qualification of the product. Producers especially prefer this kind of brand management policy due to the large amount of revenue channelled from the communication and advertising of single brands instead of large numbers of brands.

Dealer Channel: In Turkey, each home appliance goods company supports around 1000 dealers, through franchising type agreements, a significant proportion of total sales occur through the dealer channel (Hatay and Tuncer, 2003). Dealers develop good customer relationship and they have significant role in customer relationship management. Also, these dealers act as credit point. By the year, 2005, Vestel has 1500 dealers but 100 exclusive shops (Hatay and Tuncer, 2003) where BSH has 5000 and Arçelik has 4500 dealers (BSH, 2006) (Arçelik 2007)

At the beginning, besides, the qualified features of product, the network of companies for sales, sales methods, brand, name were very important factor, during the last five years, domestic firm became multinational companies by acquisitions or direct investment. Domestic competition in this market is concentrated by both local and global well known competitors like Beko, Profilo, Siemens, Bosch and Philips. The home appliance industry in Turkey was not market where for globally successful companies to compete and succeed in. Although, Bosch has been one of the most popular trade market brand with good reputation could not achieved high market share in Turkey as Arçelik has. Bosch acquired Profilo, then merged with Siemens by late 1990s, and after cooperation with Gagennue got large market share. Similarly, in Turkey, leading company, Profilo Telra merged with Bosch Siemens Hausgerate Company, so both of the companies enjoyed the merging activities. BSH Ev Aletleri Sanayi ve Ticaret A.Ş is the subsidiary of Europe's leading Home Appliances company, BSH Bosch und Siemens Hausgerate GmbH established in 1967 as a joint venture between Robert Bosc GmbH Stuttgart and Siemens AG Munich, BSH Bosch und Siemens Hausgerate GmbH is a multinational group. It operates 45 factories in 15 countries and has more than 70 affiliated companies in Europe, Asia, North America, South America, North America, the Middle East and Australia. Bosch Siemens Profilo Telra had 6 per cent market in share all over the world, 20 per cent in Europe and 25 in Turkey in 2004. Although, Philips is

also one of the most popular trademark and produce many products all over the world, in Turkey it has very low level of market share. Although, leading company, Arçelik is the first company who has national private capital in Turkey, under the influences of globalization Arçelik become one of the leading multinational company. By, 2006 Arçelik A.S. acquired the Blomberg plant and brand in Germany, Leisure and Flavel brands in England, and the Elektra Bregenz and Tirolia brands in Austria. The company became the largest refrigerator manufacturer in Middle and East Europe by acquiring Romanian refrigerator brand Arctic after the operations in Germany, England and Austria (Annual Report of Arcelik, 2006). In 2002, international sales of Arçelik covered more than 80 countries, and with a growth rate of 146 per cent, have reached Euro 725 million. International sales of refrigerators exceeded million units(Annual Report of Arcelik, 2003)Total sales were 34 billion Euro in Europe, 35 billion Euro in America and 32 billion Euro in Far East and as total, 101 billion Euro in the world in 2004. According to sales volume, Whirlpool is the largest company in the World, in 2004 where Electrolux is the second and BSH the third following Whirlpool.

Table 4.28
Leading Companies Sales in Home Appliance
Industry All Over the World in 2004

Company	Sales Volume Million Euro
Whirlpool	10.6
Electrolux	9.5
BSH	6.8
General Electric	4.8
LG	4.3
Maytag	3.6
Haider	3.3
Indesit	3.2
Samsung	2.3
Miele	2.2

Source: Home Appliance Industry Market Report, BSH 2005
http://www.bsh.com.tr/yatirimci_iliskileri/yi.asp?navigationID=38&subnavigationID=98

Arçelik had 7.6 per cent market share in Europe and 2.6 percent in the World. So, it can be ranked as ninth leading company in the world in 2004.

Table 4.29
Sales of Leading Home Appliance Producer Companies in Europe

Company	Sales Volume Billion Euro
BSH	5.8
Electrolux	4.7
Indesit	3.0
Arçelik	2.6
Whirlpool	2.5
Miele	1.9
Candy	0.9
Elco-Brandt	0.9
Miele	2.2

Source: Home Appliance Industry Market Report, BSH 2005 www.bsh.com.tr

Since, the producer units are multinational firms; they are still managing important part of domestic markets. The concentration ratios are still high in home appliance manufacturing sector in Turkey. Different countries have different tastes for goods within broad product groups. Each country tend to have a comparative advantage in producing for the home market and exports results from foreign demand which is not catered for by that country s own producers. Similarly, imports result from domestic demand for less mainstream goods not produced at home.

Table 4.30

Import Penetration Ratio * % (The Data Declared by Members of TÜRKBESD)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Refrigerator	2,6	3,8	5,4	11,8	7,6	8,1	13,7	11,9	13,2	25,7	14,6	16,35	2,26
Washing M.	5,6	6,1	5,9	6,3	6,7	9,7	21,8	19,4	21,2	18,9	25,4	21,80	19,35
Dish Washer	6,8	4,5	18	10	7	9	25	26	44	45	44	39	87
Vacuum C.	6,6	3,2	8,4	25,4	20	39,6	68,0	84,0	55,4	67,6	66,2	60,81	32,91

*Import Penetration Ratio refers to the ratio quantity of import to total output

Source : TÜRKBESD (WGIAT), 2003

In refrigerator, washing machine and dish washer markets, the leading company has a 60 per cent market share in each market. The same firm also has very important market share in small home appliances. Although, there are few other important producers and import competition in the market, the large capacities of the main two firms cause high rate of concentration.

The results of test for “import discipline hypothesis” are well fitted to the Levinsohn model which based on “Price-Cost Margin” as it was assumed at the beginning. There are direct relationship between domestic price of four main home appliance products and the quantity of import. Depending on the increase on import quantity, the domestic price of the four products decreased.

Besides, sector specific reason, the macroeconomic development may also have influences on the market condition and econometric model. Economic growth and the expansion in trade volumes would slow down, inflation rates would rise slightly, interest rates would increase significantly compared to previous years. The global economy, which grew 5.1 per cent was estimated to have grown 4.3 per cent in 2005. Exchange rate fluctuations in world markets became even more unpredictable. The US current account deficit and its influence on the dollar started to threaten the global economy. In January 2004, YTL was introduced by removing six zeroes from the TL, inflation fell to single digit levels, 8 per cent target by the end of 2005. Tight fiscal and monetary policies proved to be effective anti-inflationary measures and resulted in stable growth supported by increases in productivity.

Eroğlu and Özdamar (2006)’s analysis also supports this view that competitiveness of Turkish manufacturing industry depends factors not only internal dynamics of the company like cost, management, marketing, productivity; R&D but also to the factors on the inflation, foreign exchange and political stability. They measured the competitiveness of the Turkish Home Appliance Industry. In this approach, the model is set by using the data after trade and by assuming that international trade depends not only cost but also factors other than cost and price. There are two different measurements: relative import and export ratio (RCA1³⁸) and RCA2: Relative export performance measurement. After removing limitation on the model, the comparative advantage could be measured. If $RCA > 1$, then this means the good or the industry has comparative advantage. Eroğlu and Özdamar found that washing machine and drier has comparative advantage for 3 and 4 years, respectively; dish washer, for 2 years although, refrigerator has comparative advantage for a long time (Eroğlu and Özdamar, 2006)

³⁸ RCA : Revealed Comparative Advantage

Table 4.31

4 Firm Concentration Ratios in Manufacturing for the Home Appliance Sector*

Years	Concentration Ratios
1985	50.6
1987	51.1
1989	51.0

* Home Appliance Sector is classified as Electrical Machinery Group

Source : Tıktık, 1997: 24

Demir calculated the concentration ratios for home appliance sector for the year 1997. CR4, CR8 and HR Index demonstrated high concentration in the appliance sector. CR4 was 62, 93. CR8 was 82. H- Index was 0,1208 (Demir, 2001).³⁹ Since these ratios have demonstrated that the four leading firm are dominating the home appliance sector. Especially, the first firm controlled the 60% of the whole market in 1997, although, this ratio decreased to 54% by the year 2002. Therefore, it is important to analyse these two leading firm's profit and production capacities, what it can be observed that the market share of domestic producer decreased. In addition to this, Demir also calculated profit cost margin as 27.6 per cent, import penetration ratio as 9.9 per cent in electrical appliances.

On the other hand, there are also law cases against the leading producers of the home appliance sector for abuse of their dominant position. The decision of Competition Authority with decision number 00-39/436-242, dated with 17.10.2000 also confirms Arçelik and Bosh Profilo are the two producers in washing machine segment of the home appliance industry. So, this segment of the market is duopolist and highly concentrated market. However, the final decision of Competition Board decision states that there is not abuse of its dominant position by Arçelik (Rekabet Kurulu (Competition Board of Turkey, 2005).

Gross profit for some companies have been analysed for the period after the CU.

³⁹ Herfindall Index calculated by summing the square of all firm's market share. It takes value from 0 to 1. If it is calculated to close to 0, then there is low level concentration. If it is calculated as close to 1, there can be more level of concentration ratios. CR 4 is calculated for the first four leading firms in the sector while the CR8 shows the concentration ratio for the eight leading firms.

0-30 indicates low level of concentration

31-50 indicates medium level of concentration

71-100 indicates high level of concentration.

Demir analysed the gross profit margin by excluding payment to labour from value added. This analysis pointed out that the gross profit margin did not decrease until 1997. Demir argued the reason of this could be that well preparation of firms in management before the CU period (Demir, 2001). In the research, the net profit margin was calculated by net profit of firms over net sales for the period between 1991 and 2002. It was observed that net profit margin of domestic firms was larger than the net profit margin of international firms. Also, the net profit margin for the firms did not decrease after the completion of the CU. The comparison of consolidate sales of leading world wide multinational companies and domestic firms are given in the following table. Arçelik has been following the highest net profit margin (Net profit/Sales) since 1991, before and after the CU. Even the local value of BSH has been also higher than the ratio of Whirlpool Incorporation. The following table shows the tendency of net profit margin of three leading home appliance companies in Turkey and Whirlpool which is an international company and not producing in Turkey.

Table 4.32
Net Profit Margin %

Years	Whirlpool (1)	Arcelik (2)	BSH Profilo (3)	Vestel (4)
1991	2.1	9		N.A.
1992	2.5	8	2	0.7
1993	3.5	8	4	1.7
1994	1.8	4	1	0.16
1995	2.5	6	4	0.9
1996	1.8	10	4	8.5
1997	-0.5	11	4	9.5
1998	3.0	9	5	6.5
1999	3.3	11	5	7.1
2000	3.6	7	5	7.2
2001	0.3	-14.9	-2	2.2
2002	2.4	2.3	2	1.8
2003	3.4	4.5	4.4	2
2004	3.0	5.9	4.5	2
2005	2.9	6.1	6.3	2
2006	2.3	4.7	7.1	1.6

Source: Companies and Istanbul Menkul Kıymetler Borsası

(1) for the figure relating to Whirlpool:

http://media.corporate-ir.net/media_files/nys/whr/reports/whr_980101_200_120.pdf
http://media.corporate-ir.net/media_files/irol/97/97140/WHR_AR05/WHR_2005AR.pdf
http://media.corporate-ir.net/media_files/irol/97/97140/2006ar/whr_section5.pdf

(2) for the figures relating to Arçelik

for the year between 1992-1998: <http://www.imkb.gov.tr/bilanco/mtablo92-97.htm>

for the year between 1999-2004: <http://www.imkb.gov.tr/bilanco/mtablodonem.htm>

for the year 2005: <http://www.arcelikas.com.tr/NR/rdonlyres/8AAADFDA-E8F6-A996-919E091ECBBE/17139/ARCELIKFR05.pdf>

for the year 2006 : <http://www.arcelikas.com.tr/NR/rdonlyres/9D2E387C-5462-482D-92CD-4C581D9D23A/17140/ARCELIKFR06.pdf>

(3) For the figures relating to BSH Profilo

for the year between 1992-1998: <http://www.imkb.gov.tr/bilanco/mtablo92-97.htm>

for 1999 <http://www.imkb.gov.tr/bilanco/1999/12/tbshev.zip>

for 2000 <http://www.imkb.gov.tr/bilanco/2000/12/tbshev.zip>

for 2001 <http://www.imkb.gov.tr/bilanco/2001/12/tbshev.zip>

for 2002 <http://www.imkb.gov.tr/bilanco/2002/12/tbshev.zip>

for 2003 http://www.bsh.com.tr/assets/pressroom/pi_assetname_13.pdf

for 2004 http://www.bsh.com.tr/assets/pressroom/pi_assetname_15.pdf

for 2005 http://www.bsh.com.tr/assets/pressroom/pi_assetname_17.pdf

for 2006 http://www.bsh.com.tr/assets/pressroom/new_pi_assetname_200751014829265179.pdf

(4) For the figures relating to Vestel

for the year between 1992-1998 : <http://www.imkb.gov.tr/bilanco/mtablo92-97.htm>

for the year between 1999-2006 : <http://www.imkb.gov.tr/bilanco/mtablodonem.htm>

<http://www.vestelyatirimciiliskileri.com/reports/pdf/2006/VestelElektronik2006FR.pdf> Market leader

CONCLUSION

The aim of the thesis was to evaluate the impact of the Customs Union on Turkish Manufacturing Industries. The basic idea behind the Customs Union is to utilise the benefits of free trade among the trading parties. Although, this is the basic argument of traditional trade theory, the latest developments in international trade required inclusion of imperfectly competitive markets into theory. Depending on the challenges in theories, the policy arguments have also been changed. Especially, development in industrial economics and the arguments for the structure conduct performance paradigm and game theory put forward the policies which can also be effective in international trade. While within the argument of structure –conduct-performance paradigm, it is argued that structure of the markets determines the conduct of the firms in the market, the conduct of the firms also determines the performance of the firms. Mostly, in competitive structure, firms get normal profits, industries with economies of scale and market power get higher profits than the normal. While trade liberalization would remove trade barriers and make markets more competitive, changes in the market structure from concentrated markets to competitive markets would also change the conduct of the companies, companies would start to behave more competitively and reduce prices and the extraordinary profits. The selective use of trade barriers and industry subsidies in order to capture the profits handled by foreign firms is only one of these policies. The effective trade and industry policies, especially import policies would discipline the markets which are highly concentrated. In these markets, import disciplines the extraordinary profits of the firms. Home appliance industry in Turkey is also one of these highly concentrated industries. For a long time, there was only one producer in most of the home appliance markets and even in recent years, it has features of oligopolistic market structure. At the beginning of the study, it was considered that the home appliance would be one of the appropriate branch of industry to analyse the impact of the trade liberalization policies applied during the Customs Union adoption process. Within the framework of Levinsohn's import discipline hypothesis, the impact of the pressure of import penetration on domestic price of four basic home appliance industry products has been analysed.

Before this study, there are many studies evaluating the implication of liberalization policies in Turkey since 1980. After Krueger and Tuncer, Foroutan is the second who analysed the process, Foroutan pointed out that import penetration in the highly concentrated private sectors reduced the gross profit margin in Turkey within the period 1977-1985. Similarly, Katircioğlu, Engin and Akçay and Yalçın are the others who tested the price-cost margins by using least square estimation method on panel data of Turkish manufacturing industries over 1983-1994. The main task of the analysis was whether the import penetration due to foreign trade liberalization of the 1980s was sufficient to remove the excess profits of the oligopolistic domestic firms.

In accordance with the hypothesis, the expected result of the Customs Union was the decreasing price cost margin on home appliance sector. Although, at the beginning of the study, it was tried to gather all data necessary for PCM equation, the data could not be obtained on monthly basis. Especially, it was not possible to find data for either cost of each product or profit margin of the producer companies on monthly basis. Therefore, we could set the equation only with domestic price and import and export quantity of the products. In the case of liberalization of trade through the CU, the first effect should be measured on the level of prices of appliances. The analysis was conducted for the period between 1996 and 2005 which has been covering 10 years after the CU. The monthly data base was used where domestic price, quantity of import and export for four basic products of home appliance sector were the variables in the model developed. The least square method has been used in the model and it is concluded that an increasing amount of import had a decreasing effect on prices of four main products of refrigerator, washing machine, dish washer and vacuum cleaner. The result is as it was expected in accordance with the hypothesis of import discipline hypothesis. Finally, the study concludes that trade liberalization in Turkey enjoyed a serious improvement since 1980, its speed has been accelerated tremendously through the Customs Union. However, we still have high profit cost margin in home appliance sector and it should be analysed in further research. Here, in this thesis, the impact of the CU on Turkish manufacturing industry via finished home appliance industry has been analysed. In addition to this thesis the impact of the CU could also be analysed through the intermediate goods.

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