T.C.
MARMARA ÜNİVERSİTESİ
SOSYAL BİLİMLER ENSTİTÜSÜ
İKTİSAT (İNG) ANABİLİM DALI
İKTİSAT (İNG) BİLİM DALI

THE THEORY OF GLOBAL VALUE CHAINS AND GLOBAL COMMODITY CHAINS: AUTOMOTIVE INDUSTRY IN TURKEY

M.A. Thesis

Mehmet Alper Dinçer

İstanbul, 2007

T.C.
MARMARA ÜNİVERSİTESİ
SOSYAL BİLİMLER ENSTİTÜSÜ
İKTİSAT (İNG) ANABİLİM DALI
İKTİSAT (İNG) BİLİM DALI

THE THEORY OF GLOBAL VALUE CHAINS AND GLOBAL COMMODITY CHAINS: AUTOMOTIVE INDUSTRY IN TURKEY

M.A. Thesis

Mehmet Alper Dinçer

Prof. Dr. Nesrin Sungur

İstanbul, 2007

Marmara Üniversitesi
Sosyal Bilimler Enstitüsü Müdürlüğü

Tez Onay Belgesi

İKTİSAT Anabilim Dalı İKTİSAT (İNG.) Bilim Dalı Yüksek Lisans öğrencisi MEHMET ALPER DİNÇER nın THE THEORY OF GLOBAL VALUE CHAINS AND GLOBAL COMMODITY CHAINS: AUTOMOTIVE INDUSTRY IN TURKEY adlı tez çalışması ,Enstitümüz Yönetim Kurulunun 19.07.2007 tarih ve 2007-8/30 sayılı kararıyla oluşturulan jüri tarafından oybirliği/~~oyçokluğu~~ ile Yüksek Lisans Tezi olarak kabul edilmiştir.

	Öğretim Üyesi Adı Soyadı	İmzası
Tez Savunma Tarihi :	27.07.2007	
1) Tez Danışmanı :	**PROF. DR. NESRİN SUNGUR**	.....
2) Jüri Üyesi :	**YRD. DOÇ.DR. MUSTAFA NEDİM SÜALP**	.....
3) Jüri Üyesi :	**DOÇ. DR. ESTER RUBEN BİTON**	.....

ABSTRACT

The global economy has transformed in very important ways during the past several decades and the mere extension and geographical spread of economic activities across national border is replaced by functional integration of internationally dispersed activities. During this period of time interconnectedness of global economy vastly increased while international trade, investment and finance have become the hallmark of this change. This profound integration mainly organized by TNCs encompasses the manufacturing of goods in cross border value adding activities which conducts to the need of re-analyzing manufacturing processes within national borders.

Since 1980s Turkey gradually takes part in this transformation process of global economy and manufacturing industries in Turkey more or less integrate into global manufacturing industries. Throughout these past decades automotive industry in Turkey stands out with its ongoing capacity expansions and ascending share in manufactured exports. This dissertation evaluates automotive industry's role in Turkey's integration to global economy and questions the emergence of a more value added manufacturing and export regarding automotive industry in Turkey.

ÖZET

Küresel ekonomi geçtiğimiz on yıllarda pek çok açıdan önemli bir dönüşüm geçirdi ve ekonomik aktivitelerin ulusal sınırlar arasındaki derin olmayan coğrafi dağılımı yerini işlevsel olarak bütünleşmiş uluslararası yayılmış aktivitelere bıraktı. Bu süreçte küresel ekonomide karşılıklı bağımlılık önemli ölçüde arttı ve bu döneme uluslararası ticaret, yatırım ve finans damgalarını vurdular. Çok uluslu şirketlerce organize edilen bu derin bütünleşme ulusal sınırlar için imalat sanayilerinin yeniden incelenmesi ihtiyacını doğuracak biçimde mallara sınır ötesi değer katan aktiviteleri içermektedir.

1980'lerden beri Türkiye kademeli olarak bu bütünleşme sürecine dâhil olmaktadır ve Türkiye'deki imalat sanayileri az veya çok küresel imalat sanayi ile bütünleşmektedir. Bu geçmiş on yıllar süresince Türkiye'de otomotiv sanayi devam eden kapasite artırımları ve imalat sanayi ihracatında yükselen payı ile öne çıkmaktadır. Bu tez Türkiye'nin küresel ekonomi ile bütünleşmesinde otomotiv sanayinin rolünü değerlendiriyor ve Türkiye'deki otomotiv sanayinde daha fazla katma değerli imalat üretimi ve ihracatının yapılıp yapılmadığını sorguluyor.

PREFACE

With a profound sense of thankfulness, I wish to express my honest gratitude to my thesis supervisor; Prof. Dr. Nesrin Sungur for her endless guidance, support, and tolerance all through the preparation of my thesis.

I would specially like to thank Assistant Prof. Mustafa Nedim Süalp and Assistant Prof. Ester Ruben for their comments and productive criticism during my oral defence.

I am deeply grateful to all faculty members in Economics department for their assistance during my master's education. I would like to thank all members of the Department of Economics for their help and support whenever needed.

Lastly, I would like to express my gratitude to my family for their continuous support. I owe a lot to my mother, father and sister.

TABLE OF CONTENTS

Page

ABSTRACT i

ÖZET ii

PREFACE iii

TABLE OF CONTENTS iv

LIST OF TABLES vii

LIST OF FIGURES ix

LIST OF ABBREVATIONS x

CHAPTER 1 1

INTRODUCTION 1

CHAPTER 2 4

A NEW DIVISION OF LABOUR 4

2.1 Dispersion of Manufacturing 8

2.2 Intensification of Trade 11

2.3 One Way of Understanding the Nature of This Change 15

CHAPTER 3 17

GLOBAL COMMODITY\VALUE CHAINS 17

3.1 Emergence of the Concept 17

3.2 Essentials of GCC/GVC 19

3.3 Governance and Governance Structures 24

3.3.1 Producer and Buyer Driven Commodity Chains 26

3.3.2 Recent Efforts for a General Governance Theory 32

3.4 Critique of GCC/GVC Approach 35

3.4.1 GCC and GVC....36
3.4.2 The Problem of Linearity and Level of Analysis....38
3.4.3 The Institutional Lacuna....42
3.4.4 A Contribution to the Critique....45
CHAPTER 4 49
GLOBAL AUTO INDUSTRY 49
4.1 Birdseye View of the Industry....52
4.1.1 Production 52
4.1.2 Trade....56
4.1.3 Overcapacity and the Dynamics of Demand....59
4.2 A Model for Assembler Value Chain....62
4.3 The Features of Evolved Supply Chain....65
4.3.1. Follow Sourcing and Design 65
4.3.2 Tools for Follow Sourcing and Design 69
4.3.3. Capability Definitions of Assemblers and Suppliers 73
CHAPTER 5 76
AUTOMOTIVE INDUSTRY IN TURKEY 76
5.1 CBU Model: Absence of Domestic Motor Vehicle Production....76
5.2 Import-substitution period....79
5.2.1 Introducing CKD Model: A Primitive Value Chain (1954-1964) 79
5.2.2 Assembly Industry Decree: Introducing CKD With Increasing Local Content 83
5.2.2.1 Launching of Passenger Car Manufacturing....86

5.2.2.2 BEM (Big Emerging Market) Type Investments and Government's Measures....88
5.2.2.3 The Role of Tofaş and Renault....91
5.2.2.3.1 Subsidiaries in the Periphery....91
5.2.2.3.2 Low Market Demand and Low Volume of Production....93
5.2.2.4 Commercial Vehicle Producers in Assembly Industry Decree Era 96
5.2.2.5 Outsourcing and Developing Supplier Base in 1970s....99
5.2.3 Global Suppliers Takes the Stages....102
5.3 Crisis: 1977-1980....105
5.4 Export orientation....109
5.4.1 Industry Responses....113
5.4.2 Passenger Car Producers' Adjustment....114
5.4.3 Commercial Vehicle Producers' Adjustment....119
5.4.4. Suppliers in 1980s....121
5.5 Integration Takes Off: New Assemblers Investing in Turkey....126
5.5.1 Competition Arrives Domestic Market....128
5.6 Customs Union....131
5.6.1 Global Suppliers Follow Assemblers....136
5.7 A Brief Theoretical Assessment....142
CONCLUSION....148
APPENDICIES....150
References....152

LIST OF TABLES

	Page
Table 2.1 Growth of Manufacturing Value Added, percentage per annum	9
Table 2.2 Growth of Manufactured Exports	12
Table 3.1 Comparison of Governance Structures	31
Table 3.2 Forms of Coordination in Value Chains and Their Determinants	34
Table 4.1 World Motor Vehicle Production (1000 units)	54
Table 4.2 Leading exporters of automotive products, 2004	56
Table 4.3 Leading importers of automotive products, 2004	57
Table 4.4 World Automotive Sales Figures (1000 units)	58
Table 4.5 Average Inception Dates of Assembly and Supplier Plants	66
Table 4.6 Automotive Exports by Finished Products and Parts and Components	72
Table 5.1 GNP Per Capita, 1950-1960 (US$)	78
Table 5.2 Local Content Requirements Regulation in Latin America & Turkey	84
Table 5.3 Total Production Figures of Several Manufacturers (Units)	85
Table 5.4 Local Content Ratios through Developing Countries	91
Table 5.5 The Number of Persons per Car in Latin America (1970)	93
Table 5.6 Evaluation of the demand for automobiles in 1970s	94
Table 5.7 Automobile Production Figures (Units) of Renault & Tofaş	96
Table 5.8 Total Production Figures of Several Manufacturers (Units)	98
Table 5.9 Growth of GDP and Industrial Sector of Turkey (1971-1983)	107
Table 5.10 Production Figures (Units) of Turkish Automotive Industry	108
Table 5.11 Growth of GDP and Industrial of Turkey (1983-1987)	111

Table 5.12 Revitalization of Automobile Demand in 1980s 115

Table 5.13 Production Figures (Units) of Passenger Car Industry (1981-1989) 116

Table 5.14 Productivity Figures in 1989 (hours per car) 118

Table 5.15 Production Figures (Units) of Commercial Vehicle Industry 121

Table 5.16 Demand, Production and Trade of Passenger Cars (units) 129

Table 5.17 Foreign Trade of Automotive Industry, 1992-1995 (million US$) 130

Table 5.18 Import Penetration in Turkey (units), 1996-2006 133

Table 5.19 Foreign Trade of Automotive Industry, 1992-2005 (million US$) 135

Table 5.20 Companies with International Capital by Sector 138

Table 5.21 Empirical Works on Assembler Supplier Relations 144

Table 5.22 Internal Processing Allowances 146

LIST OF FIGURES

	Page
Figure 2.1 The growing interconnectedness of the world economy	7
Figure 2.2 The map of world manufacturing production	8
Figure 2.3 Developing Regions' Share of Global Manufacturing Value Added	11
Figure 2.4 The map of world merchandise exports	14
Figure 3.1 The Extended Value Chain with Inputs	23
Figure 3.2 Producer Driven Commodity Chains	28
Figure 3.3 Buyer Driven Commodity Chains	30
Figure 3.4 Value Chain Governance Types	35
Figure 3.5 The Problem of Linearity	40
Figure 3.6 Various Dimensions in Global Economy	41
Figure 4.1 Automotive Supply Thread	51
Figure 4.2 Regional Distribution of Motor Vehicle Production (1000 units)	55
Figure 4.3 Regional shares in world trade in automotive products, 2004	61
Figure 4.4 Sharing of design and procurement process in 1960s	63
Figure 4.5 Evolved Supply Chain in 1990s	64
Figure 5.1 Automotive Products Value Chain Before in Turkey (before 1960s)	79
Figure 5.2 Commercial Vehicle Value Chain in Turkey (1955-1964)	80
Figure 5.3 Changing Structure of Domestic Automotive Value Chain in Turkey	101
Figure 5.4 Changing Structure of Domestic Automotive Value Chain in Turkey	125
Figure 5.5 Components Exports of Turkey	140
Figure 5.6 Automotive Sector of Turkey in Global Automotive Value Chain	141

LIST OF ABBREVATIONS

BEM – Big Emerging Market

CKD – Completely Knocked Down

GCC – Global Commodity Chain

GDP – Gross Domestic Product

GNP – Gross National Product

GVC – Global Value Chain

LEMA – Large Existing Market Area

MVA – Manufacturing Value Added

PLEMA – Periphery to Large Existing Market Area

SPO – State Planning Organization

TNC – Transnational Corporation

CHAPTER 1

INTRODUCTION

During the last quarter of the past century production paradigm of global economy experienced a change and this trend still goes on: Since 1980s productive processes in manufacturing industries exhibit a more decentralized model which is called as segmentation or fragmentation of production in the literature. Without doubt this change in tendency towards dispersion of manufacturing activities triggers several effects on developing countries all around the world and this draws attention and the topic stands out as an attractive field to study.

Following early 1990s this challenge has been welcomed by different thought of schools and a diversified pool of studies concerning globalization of manufacturing industries emerged cumulatively. The path and determinants of change in developing countries coping with globalization of manufacturing stood out as the main topic of most of these works. In that regard my work focuses on automotive industry in Turkey.

Turkey's automotive industry has presented a climbing movement during the last two decades and this period witnessed a tremendous increase in production figures which also accompanied by on going capacity expansions. Not surprisingly this ascend was corresponded to a jump in export figures of automobiles, commercial vehicles and automotive parts. My work questions this evolution of automotive industry in Turkey and tries to understand its story regarding integration to global automotive industry.

How does automotive industry in Turkey integrate into global automotive industry? Is it possible to observe certain paths explaining the integration process? Additionally what is the quality of this course? Does the integration process cause a more value added automotive production and exports in Turkey? These are the main questions which I tried to answer while working on this thesis.

There are many approaches claiming to provide plausible explanations for the changing role of developing countries' role in global manufacturing activity however in drawing a skeleton as how to handle the topic and present the trajectory of automotive industry in Turkey I referred mainly to global value chain approach. This approach served me the opportunity to depict the general lines of historical change of automotive industry because global value chain approach demonstrate a more general perspective emphasizing dynamic and interactive relationships between large and

small units of production which proves to be an essential feature while analyzing dispersed nodes of productive units.

CHAPTER 2

A NEW DIVISION OF LABOUR

Contemporary industrialization leads nations to specializing in different departments of manufacturing and in different stages of production within specific industries. This fragmentation of production means that production capacity is dispersed to an extraordinary number of developing and industrial countries. However these cannot be assessed as a simple extension of economic activities across national borders. In addition to an *internationalizing process* global economy also involves in a *globalizing process* that can be defined as the functional integration of internationally dispersed activities (Gereffi and Korzeniewicz, 1994a: 96). Then one may conclude that the world confronts a qualitative change of economic activities rather than a quantitative change.

The distinction between these two processes can be briefly explained as follows: World economy carries an international character for centuries. For instance,

most spices and exotic goods have a long established trade. Moreover the diffusion of industrialization has also accompanied internationalization since 18th century. The feature of this process was the organization of the production performance primarily within national boundaries. Since late 1970s we see a contrasting picture. National boundaries no longer act as 'watertight' containers of production process (Dicken, 2003: 9).

Even though I should stress that in this work globalization is not considered as a new economic order. It may be misleading to describe a world where states are insignificant agents or economic entities and consumer tastes and cultures are homogenized and met with standardized global products created by transnational corporations that do not exhibit any national loyalty. The position taken in this work is that globalization is not a single, unified phenomenon nor an end-state, but a complex of interrelated processes.

Until the explosion of World War II the long established global economic map was stable. The most "developed" nations in the world were the most industrial ones. Manufacturing production was not dispersed but rather heavily concentrated. 71 per cent of total manufacturing were based in only four countries and trade between industrial and non-industrial geographies was mainly consist of an exchange of manufactured products against primary products. In 1939 the destination of 65 percent of manufactured exports of industrial countries was non-industrial countries

and industrial countries consumed 80 percent of non-industrial countries' primary products (Dicken, 2003: 32). Thus one may conveniently suppose that during the pre-war period there was an obvious international division of labour.

However, this picture began to evolve into a much more complex structure after the World War 2. The need to rebuild the devastated industrial base with during the war improved and refined industrial technologies initiated a new start and the period between 1950 and 2005[1] has been a total achievement of world economy. This incident is also stressed by Maddison:

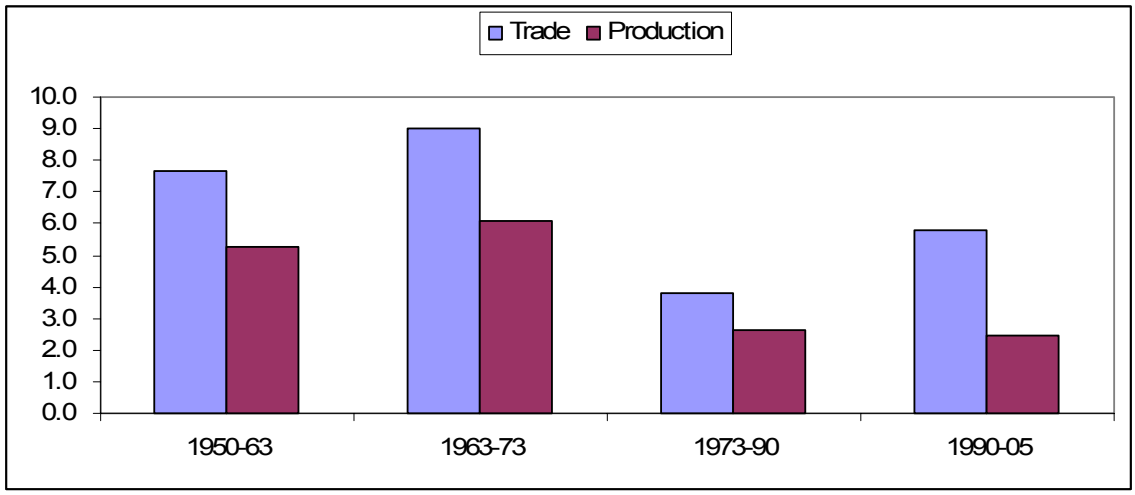
> *The world economy performed better in the last half century than at any time in the past. World GDP increased six-fold from 1950 to 1998 with an average of 3.9 per cent a year compared with 1.6 from 1820 to 1950, and 0.3 per cent from 1500 to 1820.*
>
> *Part of the acceleration went to sustain faster population growth, but real per capita income rose by 2.1 per cent a year compared with 0.9 per cent from 1820 to 1950 and 0.05 per cent from 1500 to 1820. Thus pr capita growth was 42 times as fast as in protocapitalist epoch and more than twice as fast as in the first 13 decades of our capitalist epoch.* (Maddison, 2001, p.125)

Amazing growth rates were especially high between 1950 and 1973. Referring to this specification this period is also called "Golden Age". In early 1970s this continuous growth came to an end and growth rates became much more variable

[1] According to www.earth-policy.org world GDP increased more than seven times and per capita world GDP increased more than two times between 1950 and 2005 (http://www.earth-policy.org/Indicators/Econ/2006_data.htm#table1) (accessed 27 July 2007).

than that of the 1950-1973 period. But during the whole post-war era another interesting characteristic is more explaining for my analysis. The faster expansion of trade than of production was a consistent feature of the post-war era. This can be appraised as an indication of greater interconnectedness of world economy. Between 1950 and the end of the 20th century, world merchandise trade increased almost twenty fold while world merchandise output increased just over six-fold. (Dicken, 2003: 35)

Figure 2.1: The growing interconnectedness of the world economy: the widening gap between trade and production

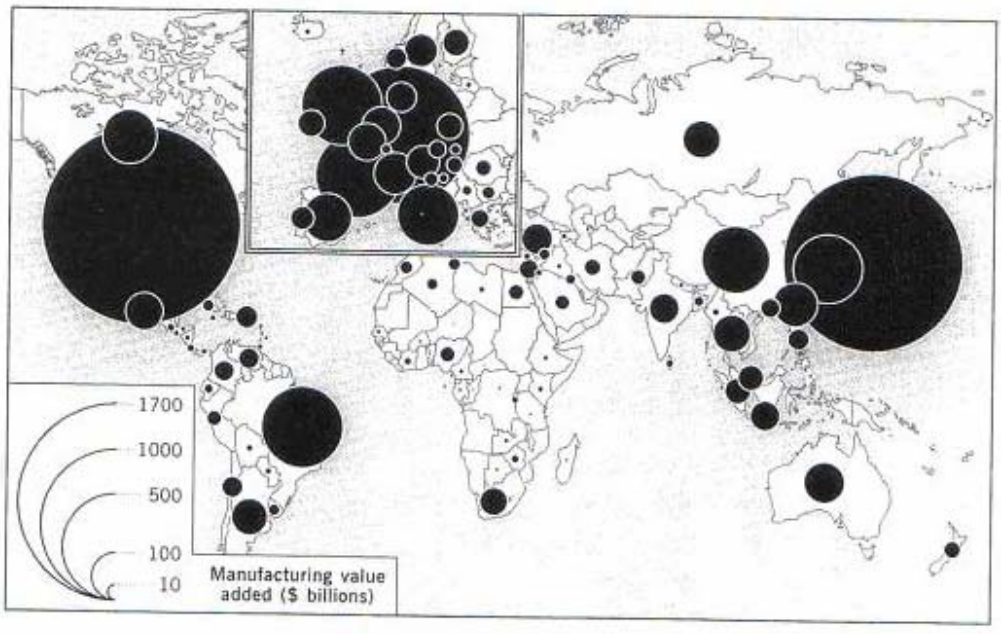


Source: http://www.wto.org/english/res_e/statis_e/its2006_e/its06_longterm_e.htm

2.1 Dispersion of Manufacturing

Gereffi (1994b: 217) notes that manufacturing has been the cornerstone of development in East and Southeast Asia as well as Latin America whereas Dicken (2003: 36) agrees by underlying the importance of manufacturing production as the primary driver of the global economy.

Figure 2.2: The map of world manufacturing production



Source: Peter Dicken, Global Shift, 2002, p.36

The figure exposes that majority of manufacturing production is concentrated in a relatively small number of countries, even though the current picture is different if it is compared with pre-war distribution of manufacturing production. The core experienced a decline in world share of manufacturing output from 95 to 77 percent between 1953 and 1997 while developing countries filled this expanding void with an increase from almost nothing to 23 percent in the same period (Dicken, 2003: 34). The summary data for 1980-2000, reported by Lall (2004), gives a more accurate picture of evolution of manufacturing production. For this period the growth rate of manufacturing value added (MVA) is more than twice in developing countries than that of in industrialized countries which is also true for every branch, resource based, low technology and medium & high technology manufacturing value added.

Table 2.1: Growth of Manufacturing Value Added, percentage per annum, 1980-2000

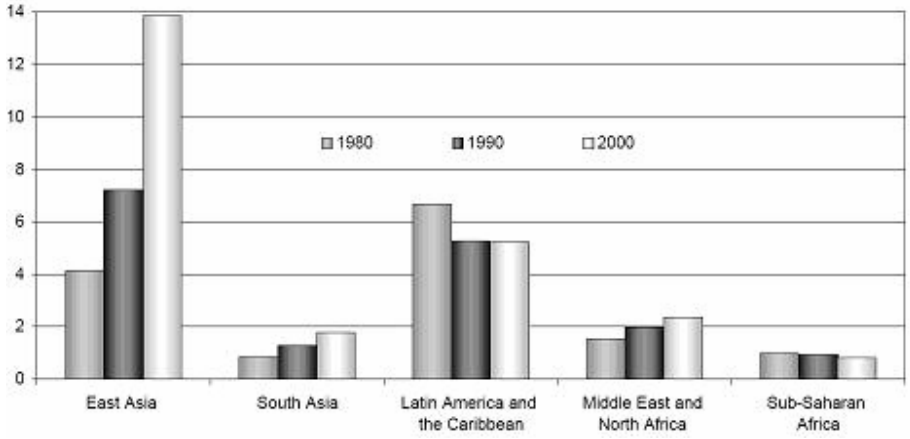
Activity	World	Industrialized countries	Developing countries
Total MVA	2.6	2.3	5.4
Resourced Based MVA	2.3	1.8	4.5
Low Technology MVA	1.7	1.4	3.5
Medium & Hi-tech MVA	3.1	2.6	6.8

Source: Sanjaya Lall, Reinventing Industrial Strategy: The Role of Government Policy in Building Industrial Competitiveness, 2004, p.3

Notwithstanding expansion in manufacturing production in developing countries does not mean a homogenous increase in all developing countries. I have to underline that only a few developing countries have become significant producers. Although developing world's performance was better than that of developed world and developing countries' share in total MVA rose by 10%, from 14% to 24% with an annual increase of 5.4% between 1980 and 2000, Lall stress' that it may be misleading directly establishing a connection between liberalization\globalization and development:

> *Since this was a period of trade expansion, globalized production and liberalization, it may seem that globalization and liberalization were conducive to development. This is not so. Success in the developing world was very concentrated. East Asia dominated; raising its world share from around 4 per cent to nearly 14 per cent exactly the 10-point rise for the developing world as a whole.* (Lall, 2004, p.5)

Figure 2.3: Developing Regions' Share of Global Manufacturing Value Added



Source: Sanjaya Lall, Reinventing Industrial Strategy: The Role of Government Policy in Building Industrial Competitiveness, 2004, p.7

Gereffi also remarks that these differences in performance are corroborated over time and manufacturing sector evolved much greater in East and Southeast Asia than anywhere else in the Third World (Gereffi, 1994b: 218).

2.2 Intensification of Trade

Total exports of developed and developing countries are both invaded by increasing proportions of manufacturing. However the ascending in exports of

manufactured goods of developing countries is particularly strong. While manufacturing weighed for 20 per cent of developing country total export in 1960, its share raised to more than 50 per cent today. Since 1970s developing countries have been exporting more manufactured goods than raw materials (Dicken, 2003: 38)

Table 2.2: Growth of Manufactured Exports

Actvity	World	Industrialized countries	Developing countries
Total Exports	7.6	6.6	12
Resourced Based Exports	5.6	5.2	6.7
Low Technology Exports	7.4	8.4	11.4
Medium & Hi-tech	8.4	7.3	16.5
Hi-tech Exports	11.5	9.9	20.2

Source: Sanjaya Lall, Reinventing Industrial Strategy: The Role of Government Policy in Building Industrial Competitiveness, 2004, p.3

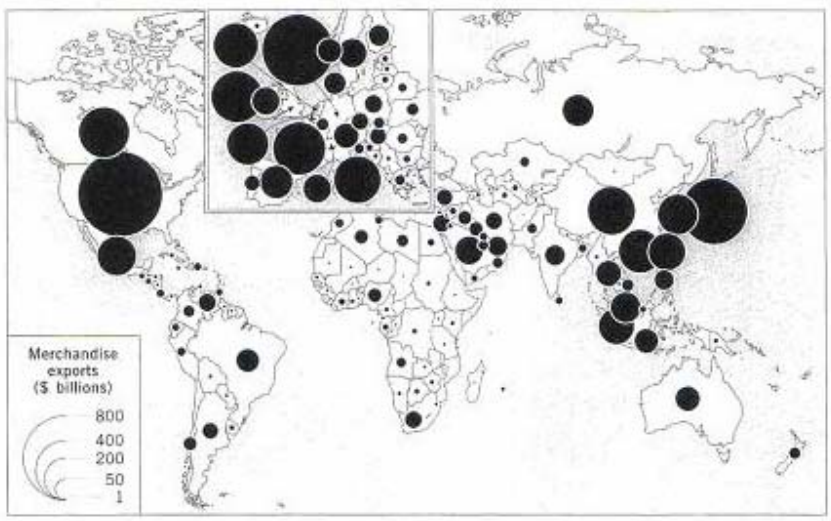
The comparison of Table 2.1 and Table 2.2 reveals that over the past two decades exports have increased stronger than manufacturing. Moreover complex activities (Medium & Hi-tech Exports and MVA) have become the fastest category. This fact is a simple presentation of what one might call intensification of trade.

There are two essential points which should be noted: Firstly, Figure 2.2 shows that there are virtually no countries without at least some manufacturing activity and the there is a wide spectrum of Third World countries which are involved in manufactured goods exports.

This expansion in the quantity and the quality of Third World's export capacity, particularly for manufactured goods, embraces such a diverse array of countries that it appears to be part of a general restructuring in the world economy. (Dicken, 2003: 80)

Thus the general impression stemming from rough facts of distribution of manufacturing and trade approves the idea that the world economy has been encountering a new phenomenon. It is clear that there is no more a relatively simple international division of labour. A complex, multi-scalar structure has been taken its place. Dicken (Dicken, 2003: 81) describes the global economy as a mosaic of unevenness in a continuous state of flux.

Figure 2.4: The map of world merchandise exports



Source: Peter Dicken, Global Shift, 2003, p.39

My focus does not underestimate the importance of service sector. Service sector forms the basis for geographical and transactional connections. Moreover it integrates and coordinates stand-alone production processes and transforms them into globalized ones (Rabach and Kim, 1994: 123). However premium on exportable manufacturing has been significantly improved in line with economic globalization. As presented above developing countries had the chance to develop much faster than former antecedents such as Britain during Industrial revolution, the United States in late 19th century and Europe in post-war era. Explaining this fact Rodrik stresses the

importance of world markets with near-limitless demand for manufactured exports from developing countries.

> *An expansion of non-tradables is self-limiting, as the domestic terms of trade eventually turns against non-tradables, choking off further investment and growth. And there are natural limits to export-led growth based on primary products, as country after country discovered. Developing countries exporting manufactured products do not face such limits as long as they can latch on to new activities which face dynamic demand in rich countries' markets* (Rodrik, 2006, p.1-2).

However UNCTAD's 2002 Trade and Development Report points out another significant characteristic regarding manufactured exports and manufactured value added in developing countries:

> *Although developed countries now have a lower share in world manufacturing exports, they have actually increased their share in world manufacturing value added over this period. Developing countries, by contrast, have achieved a steeply rising ratio of manufactured exports to gross domestic product (GDP), but without a significant upward trend in the ratio of manufacturing value added to GDP. Accordingly, the increase in the shares of developing countries in world manufacturing exports has not been accompanied by concomitant increases in their shares in world manufacturing value added* (UNCTAD, 2002, p.5).

2.3 One Way of Understanding the Nature of This Change

In the previous sections I tried to give a brief presentation of the facts about the globalizing process of world economy. The characteristics of this process are in

the centre of my concern because it undermines the ground for traditional, state-centred forms of social science (Bair, 2004; Coe et al., 2002). Examinations capable to study globalization and its consequences, the shorthand of my concerns, require the elaboration of analytical frameworks.

As a result of this, since 20 years an excess of studies has come into being in order to explain the nature of this change by using concepts of chains or networks. Analysis of different stages such as transnational, national and sub-national and the power relations between actors in these structures have been the most emphasized attributes of these approaches.

Therefore it can be said that a social network analysis takes the stage and economic action is redefined, or let's say embedded in networks of ongoing social relations. With this course the idea of embeddedness, networks and chains has strongly influenced the analysis of global economy.

In line with these efforts, Global Commodity\Value Chains and Global Production Networks became the basic frameworks to response to the challenges in understanding global economy. In the following section I am going to give a detailed examination of these approaches.

CHAPTER 3

GLOBAL COMMODITY\VALUE CHAINS

3.1 Emergence of the Concept

Countries in global economy struggle to occupy distinct export roles and thus industrial upgrading is evaluated to be a key strategy. Under these conditions the notion of an increasingly integrated global economy can be effectively understood through the conception of global commodity chains. This notion assess' the segmentation of operation of production as an important component of globalization and therefore it becomes very distinctive to understand the dynamics of qualitative changes in world economy.

The design of a 'commodity chain' stems from world systems theory of Wallerstein. In order to discuss the specifications of various international chains for

agricultural products prior to 1800 Wallerstein and Hopkins (1986: 159) describe it as a *"network of labour and production processes whose end result is a finished commodity"*.

In addition to this, Arrighi and Drangel (1986: 11) have enhanced the idea of commodity chains and stated that world economy can be understood in terms of *"economic activities structured in commodity chains that cut across state boundaries"*. According to them these chains are consist of core and peripheral activities and a country's position in the world system is regulated by the composition of core and peripheral activities firms in national economy perform.

This approach as it has appeared in the works of world system theoreticians can be conductive for our understanding of how the formation of the core, periphery and semi-periphery changes over time. However their discussion about the relation between the core and peripheral activities and the inter-mode mobilities is premature.

This is exactly the point where global commodity chain framework makes its contribution. GCC applications analyze sectoral activities and identify high and low value added links in specific commodity chains. Thus core and peripheral activities of the chains can be investigated in detail (Bair, 2002: 32-34).

However, I should underline that GCC framework simply cannot be regarded as a continuation of world system theory. There are many contrasting areas between these lines of thinking. Although there is an association between GCC and world system theorists, GCC theorists are especially concerned with industrial chains and focus on the beginning of a new global manufacturing system as noted in the previous sections. Therefore it can be claimed that GCC has shifted away from long-range historical and macro-institutional elaboration of the world system school and evolved into a network based, organizational framework (Bair, 2004) Ergo GCC approach goes beyond international trade in raw materials and final products to cover centrally governed but geographically dispersed production of many activities (Raikes et al., 2000)

3.2 Essentials of GCC/GVC

Gereffi et al. define GCC as an *"inter-organizational network clustered around the commodity or product linking households, enterprises and states to one another within the world economy"* (Gereffi et al., 1994a: 2).

From this point of view, each compartment of a productive process is a specific node or box and the whole network is consisting of all boxes in the network. The specifications and size of nodes are related with the complexity of the products

and the method of control over the total process exercised by transnational corporations. A wide social structure is composed by several sub-structures. Each node corresponds to an actor performing in sub-structures with different territories.

In this sense, the concept of commodity chain turns out to be noteworthy. As Gereffi:

> *The GCC perspective thus highlights the need to look not only at the geographical spread of transnational arrangements, but also at their organizational scope (i.e., the linkages between various economic agents – raw material suppliers, factories, traders and retailers) in order to understand their sources of both stability and change* (Gereffi, 1994a, p.96).

In this fashion, GCC framework presents a road to map the progressively elaborate and dispersed spatial and organizational scopes of production and distribution in a global capitalist economy. For that purpose, the perspective maintained by Gereffi (1999) is that GCC involve four main dimensions:

- An input – output structure which defines the process of transforming raw materials into final products: A set of products and services linked together in a sequence of value adding economic activities

- A territoriality, which implies the identification of specific geographical areas where production takes place and the location of the markets for the goods: A spatial dispersion or concentration of production and marketing networks, comprised of enterprises of different sizes and types

- A governance structure, describing the power relations that are exercised along and through the chain: Authority and power relationships that determine how financial, material and human resources are allocated and flow within a chain

- An institutional structure through which national and international conditions and policies, such as legal and commercial frameworks, shape the globalization process at each stage in the chain.

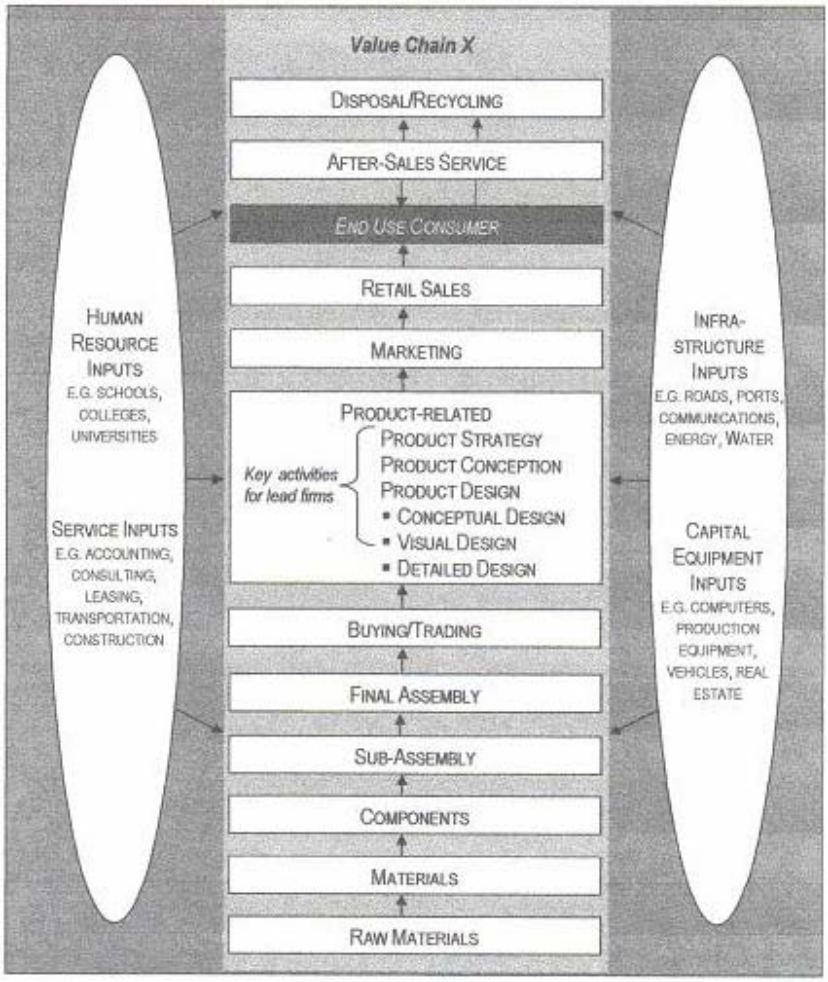
The input – output structure and the territoriality of GCCs have been used generally descriptively to outline the composition of the chains and the institutional structure is used to cover the circumstances under which dominant agents incorporate subordinate agents via their control over market access and information. Other aspects of institutional structure will be handled within the critiques of GCC/GVC approach in the next section.

The governance structure has been the most examined dimension of GCC approach because this is where the fundamental notion of barriers to entry and chain

management appears in analytical framework and where the main tendencies by which international enterprises are organized are introduced.

Indeed this categorization of dimensions of global commodity/value chains goes beyond Wallerstein and Hopkins' definition by introducing governance and institutional levels. Sturgeon (2001) goes for a more generalized reasoning and roughly underlines that at the most basic stage input-output structures are sustained within human resources, infrastructure, relevant equipment and services. The following figure developed by Sturgeon represents such a broad value chain covering these features.

Figure 3.1: The Extended Value Chain with Inputs



Source: Timothy J. Sturgeon, How Do We Define Value Chains and Production Networks, IDS Bulletin, vol. 32, No. 3, 2001

While noting this figure does not include an explicit representation of governance dimension it can be stated very roughly that human resources, services,

capital equipment and infrastructure inputs are components of institutional platform whereas steps between raw material and disposal/recycling constitutes input-output path.

3.3 Governance and Governance Structures

The governance of value chains has been at the centre of commodity chain research since 1994, Gereffi's paper. The reason behind this emphasis on the governance dimension lies in the background in the GCC framework. Because of its connection to dependency and world system theories GCC approach stresses the importance of power relations within value chains.

In the GCC approach, governance of a value chain is consisting of four levels (Kaplinsky and Morris, 2000: 66-75):

- setting rules
- supporting other actors in the chain in order to be able to adhere to the rules
- monitoring adherence to the rules

- imposing sanctions where rules are violated

However going beyond these rough levels and giving a detailed explanation can be useful. The conception of governance is designed to examine the linkages between formally independent firms. The contractual linkages can appear as out sourcing of previously integrated activities of TNCs or contractual subordination of suppliers that are previously linked through open market transactions (Raikes et al., 2000). While the most influencing motivation behind out sourcing to developing countries is seen as low wages, Gereffi (1994a: 102) following Porter (1990: 79) underlines the importance of organizational flexibility for dominant agent rather than low wages.

With this perspective the organizational basis of participation in world trade and efforts by firms to develop their positions in relevant chains is constituted mainly by the conception of governance. The power of key agents and their ability to absorb less powerful agents to perform in lower value added compartments or exclude them and the struggle for enhancing supply bases and industrial upgrading become the most important areas to investigate. From this angel the global commodity chains approach posits the existence of two main movements by which transnational enterprises are organized (Raikes et al., 2000).

3.3.1 Producer and Buyer Driven Commodity Chains

Gereffi characterizes producer driven commodity chains as follows:

> *Producer driven commodity chains refers to those industries in which transnational corporations or other large integrated industrial enterprises play central role in controlling the production system (including its backward and forward linkages)* (Gereffi, 1994b, p.219).

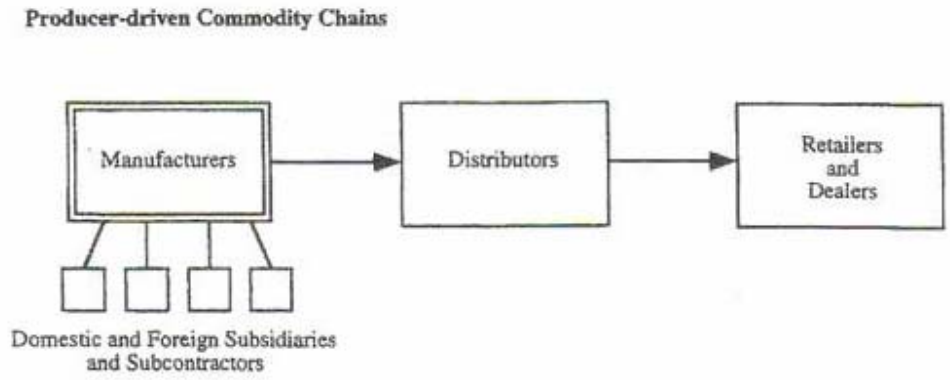
Producer driven commodity chains are constituted by industrial capital in sectors such as aircraft, heavy machinery, automobiles and computers. The spatial distribution of these capital and technology intensive industries is transnational however the number of countries in different producer driven commodity chains and their stage of development are varied. It is frequent for transnational firms active in these industries to build international subcontracting mechanisms for their labour-intensive compartments. In addition, strategic alliances between international rivals are also common. The control performed by the administrative headquarters of the TNCs is the distinguishing feature of producer driven production systems (Gereffi, 1994b: 219).

In these industries barriers to entry are positioned in large scale high technology production facilities which require heavy investment with scale of economies. In this fashion manufactures remain as key agents (Gereffi, 1994b: 221).

Computer industry offers a classical illustration of a producer driven chain with multilayered production systems that involve thousands of firms. Until 1990s computer industry were a vertically integrated sector with non-interchangeable product of different firms such as IBM, Apple and DEC. For example, the products of IBM were designed to operate with DOS and its derivatives whereas Apple did the same with MOS[2]. However since 1990s the sector has been experiencing an evolution from vertical integration towards horizontal integration. This evolution is accompanied with the conduction of Intel and an increasing dispersion in manufacturing of almost every part (Dikmen, 2000). It will not be an exaggeration to say that the shift towards horizontal integration transformed the computer market into an "Intel inside" market. Since then the life span of any product has been becoming strongly affected with the life span of products of Intel. Same structure can be found in automobile and bicycle industry (Dikmen, 2000).

[2] For another interpretation of computer industry regarding governance see Gereffi, 2001, p.37.

Figure 3.2: Producer Driven Commodity Chains



Source: Gary Gereffi: International Trade and industrial upgrading in the apparel commodity chain, 1999b

On the other hand Gereffi defines another governance structure, buyer driven commodity chains:

> *Buyer driven commodity chains refer to those industries in which large retailers, brand named merchandisers and trading companies play the pivotal role in setting up decentralized production networks in a variety of exporting countries, typically located in the Third World* (Gereffi, 1994b, p.220-221).

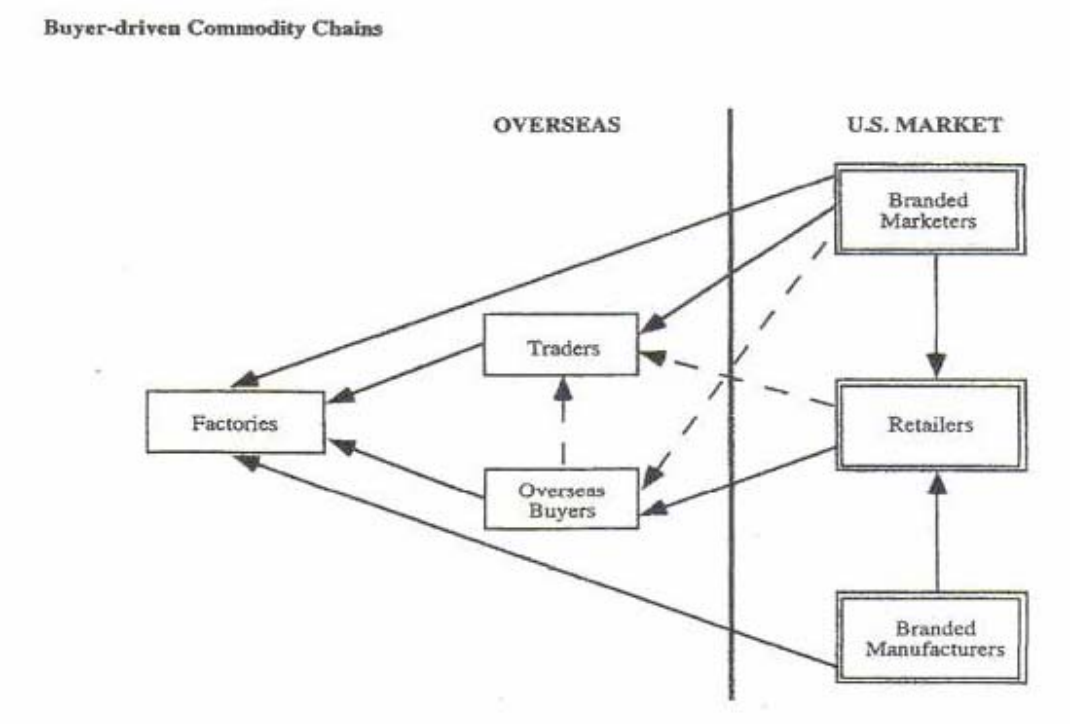
This motif of industrialization has become frequent in labour intensive, consumer goods industries such as garments, footwear, toys, household goods,

consumer electronics and a wide range of hand crafted items (Gereffi, 1994a: 104). The buyers and the branded companies which design the good supply the specifications to a manufacturer in Third World which can be called as an OEM, original equipment manufacturer. This type of manufacturer makes finished goods rather than components or parts (Gereffi, 1994a: 97).

Low barriers to entry in manufacturing are a distinctive characteristic in buyer driven commodity chains. Thus, manufacturers are subordinated to the dominant agents who command on design and marketing. International brand names and retailing are the nodes where barriers to entry are high and profits concentrated (Gereffi, 1999b).

For instance, Nike is a fine example for buyer driven commodity chain. Without owning a single factory Nike has the ability to produce and sell 300 different types of sport shoes (Korzeniewicz, 1994: 249). Similarly many firms located in Turkey are manufacturing sites for world wide known brands and thus these firms are integrated into global economy via buyer driven commodity chains (Dikmen, 2000).

Figure 3.3: Buyer Driven Commodity Chains



Source: Gary Gereffi: International Trade and industrial upgrading in the apparel commodity chain, 1999b

While giving a brief summary of these governance structures in Table 3.1 it should be also underlined that Kaplinsky's rent based approach (Kaplinsky, 1998) could also be assessed as noteworthy in distinguishing producer and buyer driven commodity chains. In that sense producer driven chains feed from monopolistic right to use of product and process technologies and know-how behind mass production and mass customization. These can be named as technological and organizational

rents. Conversely buyer driven chains exhibit relational rents stemming from inter-firm relationships, trade-policy rents thorough abandoning of trade avoiding quotas and brand name rents via product differentiation.

Table 3.1: Comparison of Governance Structures

	Producer Driven Commodity Chains	Buyer Driven Commodity Chains
Core of Coordination	Industrial Capital TNCs controlling the centralized production system(including its backward and forward linkages)	Commercial Capital large retailers, brand named merchandisers and trading companies setting up decentralized networks
Type of Industry	capital technology intensive industries like autos, computers, aircraft, electrical machinery	labor intensive consumer goods industries such as garments, footwear, toys, consumer electronics, house wares and a wide range of hand crafted items
Dominant Network Structure	vertical	horizontal
Common Practices	international subcontracting, strategic alliances	international contract manufacturing (OEM)
Typology of Rents	technology rents, organizational rents	relational rents, trade-policy rents, brand name rents

Source: Young-Ja Bae, Globalization, Institutions and Industry Development, A Case Study of the Personal Computer Industry in Korea and Taiwan, Unpublished Dissertation, 1998, p.29.

3.3.2 Recent Efforts for a General Governance Theory

This differentiation developed by Gereffi between two kinds of value chains has frequently confronted with critiques as being overly simplified and inadequate. However this distinction is generally maintained in the literature with some exception such as Gereffi's (2001) 2001 paper where he discusses the effects of the internet on value chains and exposes questions about the existences of a new governance structure called as infomediary driven commodity chains.

Following this work in 2005 Gereffi, Humphrey and Sturgeon (2005) broadly improved the governance framework by assessing governance as a form of value chain coordination within a spectrum of pure market relationships and hierarchy (as it has appeared in vertical integration). They detailed this notion by defining three different constructions of value chains:

- Modular value chains: Suppliers of products that exhibit modular architecture are bound with customer's specifications. Nevertheless they take full responsibility regarding the whole manufacturing process including process technologies, generic machinery, materials etc.

- Relational value chains: In these networks complex interactions between buyers and sellers lead to the creation of mutual dependence and asset specificity. These networks are managed through reputation, family and ethnic ties. Spatial proximity can play a role by enhancing and consolidating such chains.

- Captive value chains: Small suppliers are heavily dependent on big customers. The possibility of switching between small suppliers would incur prohibitive costs and therefore suppliers become captive. Such networks are commonly characterized by a high degree of monitoring and control by lead firms.

The prevailing of the above-explained coordination forms depends essentially on three factors (Gereffi et al., 2005):

- The complexity of transactions: Complex customer specific products produced by different firms can lead to high transaction costs because of possible coordination problems.

- The ability to code information and knowledge and to transfer it effectively without high transaction costs

- The available competence level of suppliers: Higher existing competence level leads to a cut in learning cost of lead firm which at the end conducts to the delegating decisions to the upstream actors in the chain.

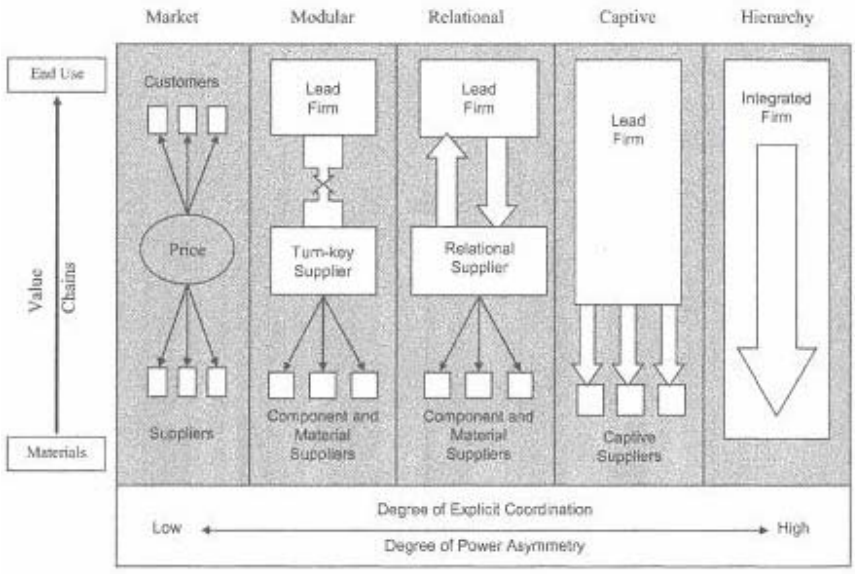
Table 3.2: Forms of Coordination in Value Chains and Their Determinants

Forms of Coordination	Complexity of Transactions	Ability of Codification	Competence Level of Suppliers
Market	Low	High	High
Modular	High	High	High
Relational	High	Low	High
Captive	High	High	Low
Hierarchy	High	Low	Low

Source: Gereffi et al., The Governance of Global Value Chains, 2005.

The elaboration of governance approach in such a fashion has two important advantages in comparison with producer – buyer driven commodity chains perspective. Forming a continuum scheme for possible coordination forms permits a more comprehensive description of the complex reality of global economy. Moreover it presents theory led hypotheses as an explanation of variously structured value chains.

Figure 3.4: Value Chain Governance Types



Source: Gereffi et al., The Governance of Global Value Chains, 2005.

3.4 Critique of GCC/GVC Approach

In this section of my work I am going to concentrate on several critiques developed mainly by global production networks and business systems literature.

3.4.1 GCC and GVC

It will not be an overstatement to say that the most driving and coherent efforts to achieve advancement in the chain concept as an analytical framework within we can understand the global economy has been made by the American sociologist, Gary Gereffi. Moreover in several papers that have published since 1990s Gereffi has claimed that the global commodity chain serves as the best tool to answer the question of *what is the appropriate organizational field to use in studying economic globalization* (Coe et. al., 2001, p.97).

However, the global commodity chain paradigm is not alone in this field of academic research. Besides GCC framework there are other chain-based approaches which examine economic globalization. Other research programs have been conducted with several different approaches such as Ernst's international production networks, Dicken's global production networks, Milberg's global production systems and Jessop and Raikes' French filiere concept (Bair, 2004).

In 2003 this diversity of approaches has led to an evolution into a common terminology of "value chain analysis" in order to promote a research community consist of comprised scholars examining production networks in the global economy.

Gereffi, Humphrey, Kaplinsky and Sturgeon (2001) explain this compromise between scholars over a common terminology that the value chain concept was adopted over several widely used alternatives because it was perceived as being the most inclusive of the full range of possible chain activities and end products while noting that each of the contending concepts has particular emphasis that are important to recognize for a chain analysis of the global economy.

This revision of the terminology, moving from GCC to GVC can be considered as an establishment of a shared language among scholars working on global industries which paves the way for the recognition of analogous developments across distinct sectors that may be overlooked by nominal differences in terminology (Bair, 2004).

Gereffi, Humphrey and Sturgeon's 2005 paper on global governance structures can be evaluated as a result of this shift from GCC to GVC. They summarize the intellectual effect of this change in his recent work clearly:

> *For us, the starting point for understanding the changing nature of international trade and industrial organization is contained in the notion of a value added chain, as developed by international business scholars who focused on the strategies of both firms and countries in the global economy* (Gereffi et al., 2005, p.79).

Therefore the shift in the language cannot be solely interpreted as a matter of mere nomenclature. The contribution of value chain research can be lively seen on fields of categories such as value chain governance and its results on industrial upgrading possibilities. As explained in the previous section the theory of value chain governance claims that the relationship between dominant firms and suppliers can be different across sectors because of the specific features of the production process and the organization of the industry. The elaboration and the scarcity of the technology, emergence of technical and process standards, turnaround time to market can be the determinants of the organization of the industry[3].

Thus it can be said that the evolution in the terminology of the field explored the simplicity of a producer or buyer driven commodity chain conception and led to new work and research on value chain governance.

3.4.2 The Problem of Linearity and Level of Analysis

Before exposing the discussion on the role of the institutional context in GVC I am going to present two other points of controversy in this literature. Both of these criticisms stem from economic geography school which puts more emphasis on the specifications of specific territorial ensembles and regional institutions.

[3] For an extensive discussion in comparison with world system theory one may consult on Bair's 2004 work.

Thus scholars from this school of thought argue that although presumably not intended, the conception of GCC approach is in the essence a linear process (Coe et al., 2001). If one takes Figure 3.1 and producer- and buyer driven commodity chains presented in the previous chapters into consideration some notion of this criticism can be caught. In several papers and a groundbreaking book, Dicken (2003) underlines that the GCC approach is a linear one rather than in which the flows of materials, semi-finished products, design, production, financial and marketing services, finished products are organized vertically, horizontally and diagonally in complex and dynamic configurations.

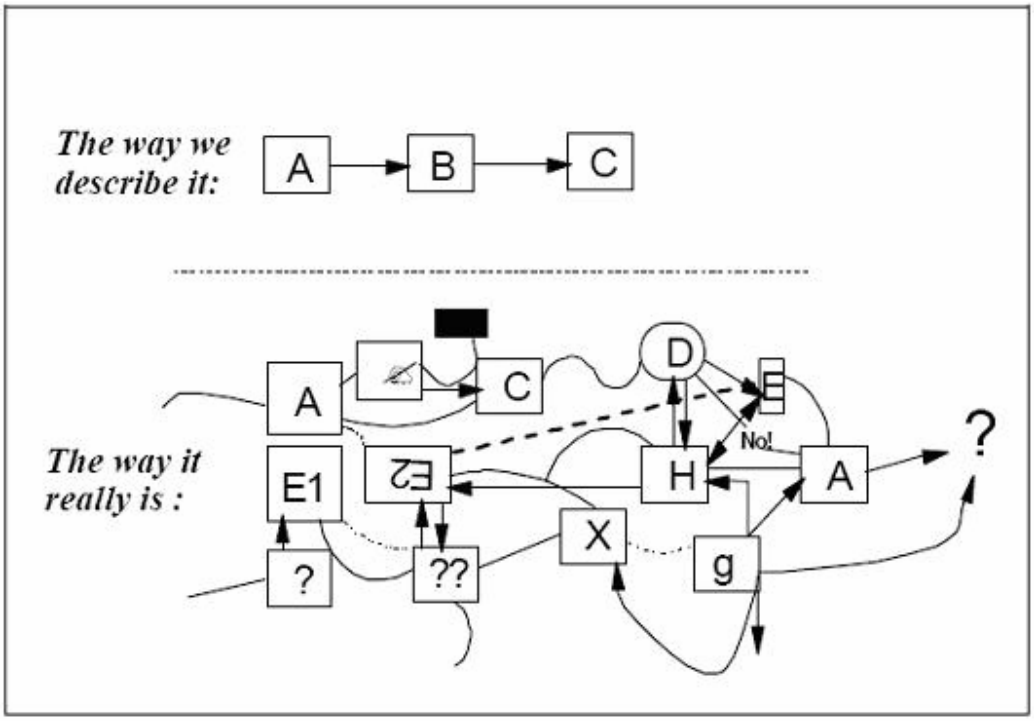
Thus the criticism focuses on the unidirectional feature of GVC approach and its lack in the elaboration geographical qualities. Ergo these scholars stress' the importance of focusing and broadening the research on value chains as multi dimensional and scale transcending global production networks. For a comparison of GVC approach and economic geography approach I present a figure developed by Dicken and published in Global Shift (Dicken: 2003) in order to underline the significance of various dimensions and scales.

The controversy about linearity mainly stems from a certain quality of GVC approach: The GVC theory is structured on firm-level and therefore exhibits explicit linear specifications because every productive activity a firm performs locate in an input-output chain. However GVC research is mainly done on sectoral level and on

this level GVC researchers implicitly go beyond this theoretical limitation because sectors can be conceptualized as tight networks of input-output chains. In that sense Dicken's critique is relevant in terms of GVC theory rather than research.

The handbook of GVC research also highlights the same problem through an explaining figure:

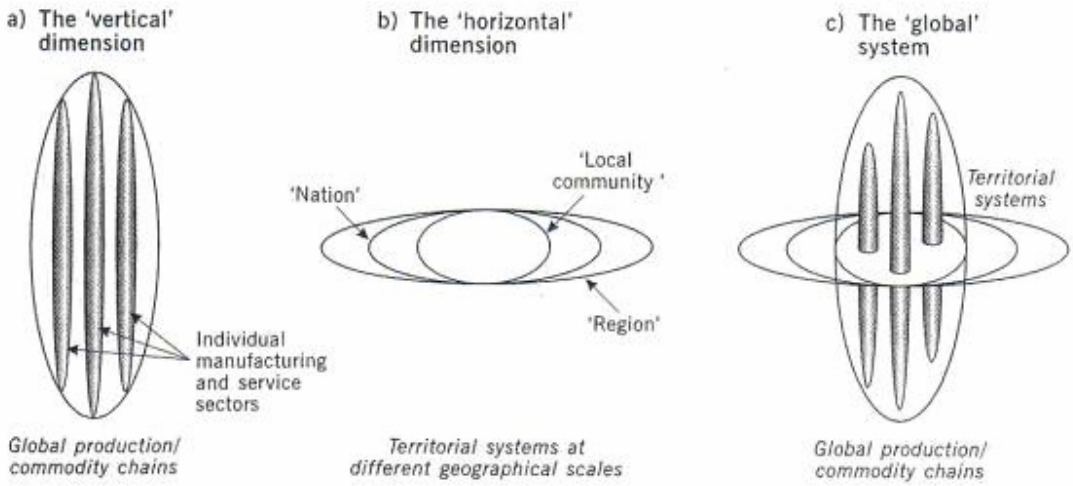
Figure 3.5: The Problem of Linearity



Source: Kaplinsky and Morris. A Handbook for Value Chain Research, 2000

As an extension of this criticism the geographical level of analysis has been also a subject of controversy. While accepting that the world is not thought to fall into neat core and peripheral geographical compartments within the GVC conception, it is claimed that this approach is preoccupied with nation state as the elementary geographical level of analysis. This quality proves to be true especially Gereffi's work about industrial upgrading where he refers to the *"competitive dynamics of nations, firm and industries"* (Gereffi, 1999b, p.37) and defines industrial upgrading as *"improving the position of firms and nations in*

Figure 3.6: Various Dimensions in Global Economy



Source: Dicken, Global Shift, 2003, p. 22.

international trade networks" (Gereffi, 1999b, p.39*).* As a conclusion other academicians argue that the GCC analysis has surprisingly little to say about regional and sub national processes, because of the focus on the international dimensions of commodity chains and global divisions of labour (Smith et. al., 2002).

3.4.3 The Institutional Lacuna

Unlike the criticisms about the linearity and level of analysis the controversies about the existences of a lack of attention given to institutions in commodity chains literature are not only from a specific school of thought but this discussion can be found almost in every academic publishing that include a survey about GVC. In the following the essence of this controversy can be summarized as follows:

Richard Whitley (1996), in his 1996 paper, while discussing whether business systems and GCC framework are complementary or not, defines privileging of the sector as the analytical focus of GCC. Thus in this perspective the heart of the GCC research is evaluated as explorations of specific shapes of economic organization in different industrial sectors or the identification of industry specific commodity chains. He goes further and notes that for these global chains to

> *constitute separate coordination and control systems of economic activities, they would need to establish distinctive ways of organizing firms and markets on a worldwide scale which differed significantly from purely national and regional ones. Particular kinds of economic actors, inter-firm relations and work organization systems would have to develop and be reproduced at the international level for GCCs to become novel forms of economic organization* (Whitley, 1996, p.416).

Whitley (1996) develops this idea through remarking the importance of national institutional differences as a determinant of international structure of economic activities.

In that sense Dicken (2001) claims by exposing traces from a 1996 dated Gereffi's paper which is produced in reply to Whitley's work that Gereffi appears to subscribe to the convergence school of analysis. In this paper Gereffi notes that

> *globalization .... tends to diminish the influence of national origins on business systems and to highlight the role of design, production and marketing core competencies and strategic capabilities within and between economic actors. The way firms do business in the global economy thus is determined to an increasing extent by their position in GCCs, not their national origins* (Gereffi, 1996, p.433).

Whitley argues this perspective with two relevant points. First he notes that characterizing an entire sector with a single type of firm (as in producer- or buyer driven commodity chains) can be very problematic. The differences between coordination systems and firms can be exacerbated by the cross-national nature of GCCs, so that various firm types in same sector can emerge. Second, dominant firms

often pursue different strategies and promote different roles. The reason for these differences should lies in their idiosyncratic histories and institutional contexts.

Thus Dicken's criticism in his 2001 paper finds its ground solidly on this controversy. While he praises the GCC approach that this approach helpfully decentres the nation state as a locus of economic analysis, he also notes that it also privileges the role of the industrial sector and marginalizes the ongoing significance of state regulation (Dicken et al., 2001). In that sense institutional context appears to a missing link in commodity chains analysis.

However, I should once again state that this is an unsolved discussion in the literature because in their 2005 paper Gereffi, Humphrey and Sturgeon note as follow:

> *While there are a multitude of factors that affect the evolution of the global economy, we feel confident that the variables internal to our model influence the shape and governance of global value chains in important ways; regardless of the institutional context within which they are they are situated* (Gereffi et al., 2005, p.85).

3.4.4 A Contribution to the Critique

In the above lying sections I have given a brief exposition of prevailing discussion clustering around the chain or networks models trying to serve as an analytical framework to investigate global economy and economic globalization. However in addition to this discussion there is one more point that has been less discussed and maybe downplayed in this literature.

While discussing the features of governance schemes it can be said that there has been a breakthrough in the literature especially in line with the shift from GCC to GVC perspective. But there is little if any argument about this breach in the approach and conversely this point has to be emphasized because it represents a move in general interests involved in global value chain research.

The governance conceptions matured in GCC approach, producer and buyer driven commodity chains, have their aim in explaining the power relations between actors in he chains and to construct special or ideal forms where one actor can govern the whole input-output flow directly or indirectly. Thus the firms controlling most profitable and strategic nodes that exhibit high barriers of entry have great influence of development outcomes of any region that is involved into this global production

networks. In that sense one can see the effect of dependency and world system theory on GCC and its conclusions about development trajectories of developing world.

On the other hand the recent efforts to design a general governance theory change the focus of governance perspective through substituting producer and buyer commodity chains with modular, relational and captive forms of coordination to a much more business related field and it is assumed that the concepts of coordination and governance can be used interchangeable. However the forms of coordination remind the coordination schemes elaborated in another chain perspective, French filiere approach and convention theory, more than ideal forms with dominant actors and implications on development outcomes.

A basic assumption of convention theory is that a common language is necessary to overcome the problems stemming from information asymmetries. Thus the well functioning of the market cannot be achieved. The languages prevail as various criteria during the execution of trade. There are four distinguishable mechanisms by which quality demands are coordinated:

- Domestic coordination: The product quality is guaranteed on the basis of trust, long-term relationships and through the use of informative designations of origin.

- Industrial coordination: The product quality is guaranteed by common norms and standards that are set and monitored by third parties.

- Market coordination: The product quality directly reflects to the price and price differences are equated with quality differences. This take simple and transparent quality features for granted.

- Civic coordination: Some actors gather around common values and this leads to an intrinsic motivation to prevent possible conflict.

These categories are developed by convention theorists and mainly used in filiere researches that aim to achieve a structured understanding of the economic processes within a production and distribution system and the basic goal was to observe and identify the flows of goods and actors. Through this process the entire cycle is fragmented into segments that include input, transformation and output steps. In that sense filiere turns out to be an instrument with which to describe decentralized and organized production, the elements of which

> *can be understood as a sequence of various meso-economic institutions such as markets and industrial sectors, the coordination and control of which cannot be guaranteed through hierarchy (as in firms)* (Shamp, 2000, p.30).

Thus the modular, relational and captive forms of coordination seem to serve as a very similar tool to such ideas flourished in convention theory and filiere approach. However the filiere approach has very different epistemological origins and the concepts is mainly worked out to analyze transformation processes in food industry. Therefore its conception such as domestic, industrial, market and civic coordination can be used only to investigate the input-output structure of an agricultural commodity chain as a transformation process. Ergo "coordination" cannot be a proper path to distinguish different "governance" structures.

In the context of GCC approach, governance points the power relationships between actors involved in the chain and determines to some extent the allocation of profit. However coordination points the management of delivery of mostly tangible goods between different segments of a chain. Thus coordination can be regarded as implementing the rules and monitoring their adherence while governance can be understood as setting the rules. In line with this point of view, Kaplinsky and Morris' categorization defines coordination only one part of a whole governance scheme.

Consequently while recent efforts on governance and modular, relational and captive forms override the oversimplification of a producer and buyer driven commodity chain approach it becomes less explaining and fuzzy in serving as a proper model for power relations and development outcomes of this chains.

CHAPTER 4

GLOBAL AUTO INDUSTRY

The premise discussed in previous chapter is an ambitious effort to form a theoretical framework to analyze global industries and their trajectories. In line with this approach my work tries to assess whether global auto industry fits in this theoretical framework.

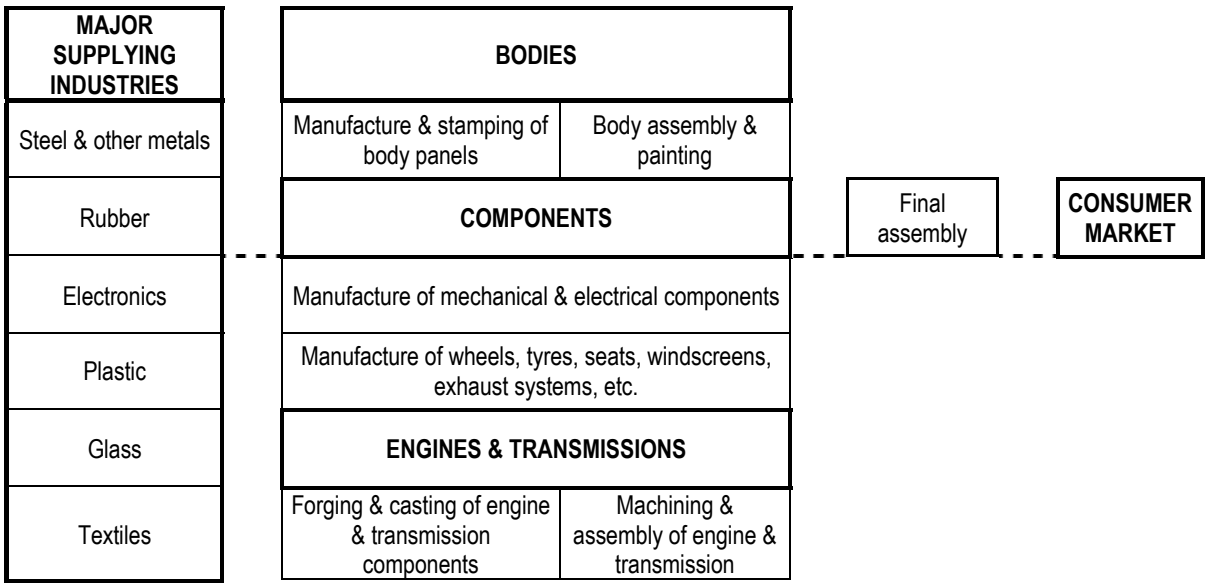
Working on a survey on global automotive industry is attractive because the industry presents several opportunities to study inter mode mobilities. In recent decades several countries in the semi periphery have moved forward extensively and their positions in the world system has changed. During this process they have improved their technological basis to manufacture more value added goods. Automotive industry was one of the industries subject to this transformation and therefore it indicates the possibility of upward mobility in the world system. The industry is characterized with its capital and technology intensive feature implying high barriers for entry which offers limited room concerning any comparative advantage for low-income/labour-abundant countries. However the last two and a

half decades has been a period in which some of the semi peripheral countries have been successful in their aggressive export strategy (Lee and Cason, 1994: 223).

Additionally and maybe more importantly, the nature of the industry offers the chance of organizational, operational and geographical fragmentation of individual production processes. Within the past twenty five years while varying considerably the separation of productive sequence has been advanced to a great extent (Dicken, 2003: 355). Therefore any approach putting an emphasis on chains and networks captures the main organizational feature of the industry. Thus while analyzing global automotive industry global value chain approach may be a proper path to follow.

The following figure gives a very rough picture of a stylized supply thread regarding automotive industry:

Figure 4.1: Automotive Supply Thread



Source: Dicken, Global Shift, 2003, p.356

Obviously automotive industry is not a stand alone sector and it cooperates with other industries intensely. Hence its contribution to employment including suppliers and its immense spin-offs effects through its linkages to other industries cannot be belittled.

The total employment figures created by automotive industry is very tough to estimate because its performance expand in numerous areas of economic activities such as gas stations, advertisement and insurance services, car renting, transportation, auto park services, spare part services etc. However Bedir (2002) states that one new job in assemblers corresponds to five new jobs for the national

economy whereas according to Dicken (2003: 355) 3-4 million workers are employed in assemblers and 9-10 million are employed by suppliers. Moreover these figures do not include selling and services sector. Dicken estimates the total number (together with selling and service sectors) around 20 million. Ergo the industry is at the focus of governments with developmental aims. This is another central important motive of research attempts regarding automotive industry.

4.1 Birdseye View of the Industry

4.1.1 Production

The first modern automobile with an internal combustion engine had been first manufactured by Karl Benz and Gottlieb Daimler in 1886. After that date automobile industry gradually radiated Europe and seven years later internal combustion engine technology had made its continental jump towards USA. In 1893 similar productive activity started in USA and the consumption and production of automobiles has been going ahead in those markets. In the last quarter of 19th century total number of automobile manufacturers had risen from 8 to 500 (Bedir: 2002).

However the expansion of the industry gained a significant impetus applying Fordist scheme and as shown in the following table total motor vehicle production

has been reached 9000 units in 1900 to more than 1000000 units in 1915. During this process the industry experienced 37% annual average growth rate.

Historical production figures point out several important trends. Firstly, until 1950 the champion of the industry was by far USA. Even in 1950 USA had conducted 75% of world motor vehicle production. After 1950 European producers (Germany with %12.5, United Kingdom 11% and France 8.3%) took their place to from a solid presence in production shares. During the period between 1960 and 1980 the industry had witnessed the amazing emergence of Japan as a key actor. Japan's share in production has increased from 4.9% in 1960 to 28.6% in 1980. However since 1990s all of these industrialized geographies have not been improving their automobile production base and unit production figures and production have been declining. Countries such as South Korea, China, India, Brazil, Turkey and South Africa have been greatly contributing to world motor vehicle production and their share in production has been in ongoing rise in last twenty five years.

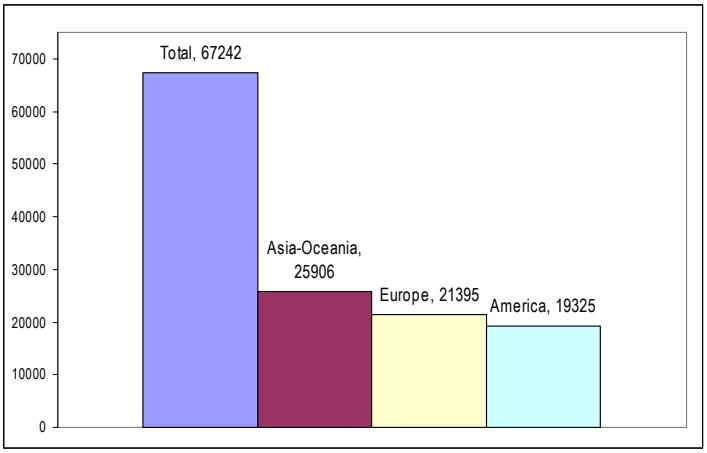
Table 4.1: World Motor Vehicle Production (1000 units)

	Germany	France	Italy	UK	USA	Japan	Others	Total
1900	2	3	0	0	4	0	0	9
1905	16	22	0	0	25	0	0	63
1910	13	38	0	14	187	0	3	255
1915	0	0	15	0	970	0	30	1.015
1920	0	40	21	0	2.227	0	94	2.383
1930	71	230	46	237	3.363	1	186	4.133
1940	72	0	0	134	4.513	51	172	4.942
1950	306	358	128	784	8.006	82	914	10.577
1960	2.055	1.37	645	1.811	7.905	814	1.889	16.488
1970	3.842	2.75	1.854	2.099	8.284	5.289	5.301	29.419
1980	3.879	3.378	1.612	1.313	8.01	11.043	9.33	38.565
1990	4.977	3.769	2.121	1.566	9.783	13.487	12.852	48.554
1991	5.035	3.611	1.878	1.454	8.811	13.245	12.895	46.928
1992	5.194	3.768	1.687	1.540	9.702	12.499	13.699	48.088
1993	4.032	3.156	1.277	1.569	10.898	11.228	14.626	46.785
1994	4.356	3.558	1.535	1.695	12.263	10.554	15.54	49.500
1995	4.667	3.475	1.667	1.765	11.986	10.196	16.227	49.983
1996	4.843	3.589	1.545	1.924	11.799	10.346	17.286	51.332
1997	5.023	2.577	1.815	1.94	12.131	10.975	20.544	55.005
1998	5.727	2.954	1.693	1.981	12.003	10.050	19.191	53.599
1999	5.688	3.180	1.701	1.976	13.019	9.985	20.986	56.535
2000	5.198	3.351	1.738	1.817	12.810	10.145	22.479	57.539
2001	5.692	3.629	1.580	1.685	11.425	9.777	22.602	56.390
2002	5.469	3.702	1.428	1.823	12.279	10.258	24.589	59.548
2003	5.506	3.619	1.321	1.847	12.113	10.285	26.603	61.294
2004	5.570	3.665	1.143	1.856	11.990	10.511	30.463	65.198
2005	5.758	3.549	1.039	1.802	11.980	10.799	32.315	67.242

Source: www.ccfa.fr and www.osd.org.tr/cata2006a.pdf

A snapshot of the industry in 2005 gives a clear picture of three distinct regions which covers 99% of the productive activity. Around 59% of this figure belongs to European Union, USA and Japan. Therefore the industry carries an essential regional characteristic. However this share is steadily decreasing and the weights of other geographies are growing continuously.

Figure 4.2: Regional Distribution of Motor Vehicle Production (1000 units)



Source: www.osd.org.tr/cata2006a.pdf

Germany produced 34% of EU's total motor vehicle output with 5.7 million units whereas Japan's 2005 production figures, 10.8 million units, exceed %40 of Asia-Oceania region and USA leads America region with almost 12 million units, implying a %62 share in America. Again these numbers indicates the presence of concentration within the region but these concentrations are eroding. During 2002 and 2005, for example, Turkey has increased its motor vehicle output by 154% and these growth rates are well above %70 for Romania, Poland, Argentina, Thailand, India, China and Iran. Additionally Italy, UK, Spain and France have contracting output level for the same period.

4.1.2 Trade

The powerful concentration of motor vehicle production also affects the geography of trade. Top 15 exporters listed below accounted for 98% of total automobile exports in 2004. Japan, United States and Canada are the leaders of this group however their market shares are in constant decline. On the other hand the following five countries have increased their export share with an exception, Mexico. South Korea, Brazil, Turkey, China and Thailand have improved their role in export market extensively.

Table 4.2: Leading exporters of automotive products, 2004

	Value ($bn)	Share in world exports/imports			
	2004	1980	1990	2000	2004
Exporters					
European Union (25)	470.79	-	-	49.9	55.6
extra-EU (25) exports	125.89	-	-	12.4	14.9
Japan	115.73	19.8	20.8	15.3	13.7
United States	76.42	11.9	10.2	11.7	9.0
Canada	63.66	6.9	8.9	10.5	7.5
Korea, Republic of	32.32	0.1	0.7	2.6	3.8
Mexico	31.56	0.3	1.5	5.3	3.7
Brazil	8.68	1.1	0.6	0.8	1.0
Turkey	8.10	0.0	0.0	0.3	1.0
China	6.27	0.0	0.1	0.3	0.7
Thailand	5.71	0.0	0.0	0.4	0.7
Taipei, Chinese	3.74	...	0.3	0.4	0.4
South Africa	3.70	0.1	0.1	0.3	0.4
Australia	3.09	0.2	0.2	0.4	0.4
Russian Federation	2.21	-	-	0.2	0.3
Argentina	2.19	0.1	0.1	0.4	0.3

Source: http://www.wto.org/english/res_e/statis_e/its2005_e/its05_bysector_e.htm

On the import front the most prominent aspect is that United States soaks up almost one quarter of all imports. Indeed it appears to be an improvement for United States because the figure was even more striking in 2000. That time United States imports were approaching to 30% of all imports. In a nutshell United States trade deficit exceeds 120 billion dollar in automotive products while Japan and European Union has trade surplus of 102 and 73 billion dollar respectively.

Table 4.3: Leading importers of automotive products, 2004

	Value	Share in world exports/imports			
	2004	1980	1990	2000	2004
Importers					
European Union (25)	397.44	-	-	41.9	46.2
extra-EU (25) imports	52.54	-	-	5.5	6.1
United States	197.00	20.3	24.7	28.9	22.9
Canada	52.85	8.7	7.7	7.9	6.1
Mexico	21.60	1.8	1.6	3.4	2.5
China	14.43	0.6	0.6	0.6	1.7
Australia	13.35	1.3	1.2	1.5	1.6
Japan	12.80	0.5	2.3	1.7	1.5
Turkey	11.51	...	0.4	1.0	1.3
Russian Federation	10.50	-	-	0.4	1.2
Switzerland	8.10	1.8	1.9	1.1	0.9
Saudi Arabia	6.72	2.7	0.9	0.6	0.8
South Africa	5.65	...	...	0.4	0.7
United Arab Emirates	5.64	0.4	0.3	0.5	0.8
Norway	4.58	0.6	0.4	0.4	0.5
Thailand	3.87	...	0.8	0.4	0.4

Source: http://www.wto.org/english/res_e/statis_e/its2005_e/its05_bysector_e.htm

Production and trade figures point out two important features. Initially USA and later to some extent Europe dominated industry have experienced a change during 1970s and 1980s and Japan has emerged as a leading automobile producer. Dicken while underlining that Japan structured the most extensive export network of all major producing states that the main driver behind this evolution was growth of production in Japan, Japanese exports and growing amount of Japanese automobile production located outside Japan, specially in USA and UK (Dicken, 2003: 359).

Table 4.4: World Automotive Sales Figures (1000 units)

Region/Country	2005	2006	Change(%)
Europe	20,858	21,395	2.6
EU-15	16,890	17,006	0.7
EU-exl.-15	886	926	4.5
Eastern Europe	2,327	2,819	21.1
Turkey	755	644	-14.7
America	22,375	22,413	0.2
NAFTA	20,246	20,027	-1.1
MERCOSUR	2,129	2,386	12.1
Asia	16,885	18,125	7.3
Japan	5,841	5,741	-1.7
China	5,916	7,356	24.3
India	1,492	1,755	17.6
Republic of Korea	1,136	1,167	2.7
Thailand	738	708	-4.1
Iran	919	992	7.9
Other Asian Coutries	843	406	-51.8
Others	6,297	6,708	6.5
Total	66,415	68,641	3.4

Source: http://www.osd.org.tr/2006yilidegerlendirme.pdf

Secondly, three major global regions control a great segment of world trade in automotive products. The fast growth of Brazilian automotive sector and Mexico and Canada's continued importance explain North America's prevailing trade share whereas the emergence of Spain, former Soviet bloc countries and Turkey as significant producers contributes Europe's trade share. Lastly Asia's trade share is heavily supported by South Korea's performance and with limited developments in China, Taiwan, Thailand and Malaysia (Dicken, 2003: 361).

4.1.3 Overcapacity and the Dynamics of Demand

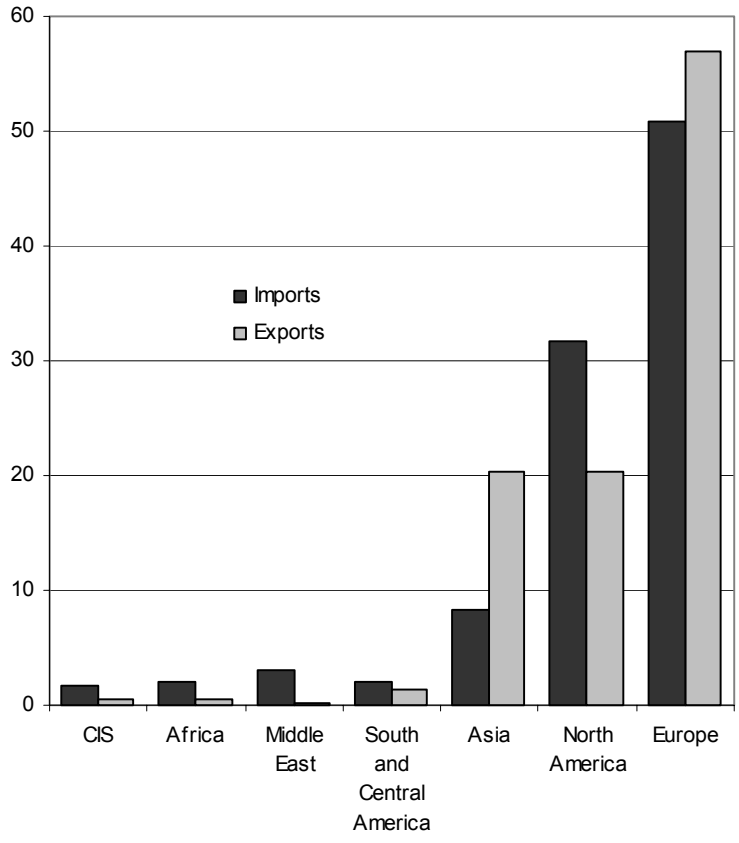
In North America, Japan and Western Europe the automotive industry is fully grown and has been heavily overwhelmed by overcapacity (Humphrey and Memedovic, 2003: 2) due to irrational decisions of investment location undertaken by giant assemblers. Especially investments by North American assemblers have been done in areas where capacity utilization was already at low levels (Sturgeon, 1997). As of 2003 overcapacity in the industry was about 27% (above 30% in Europe and around 25% in USA) (Stokes, 2003, Dicken, 2003: 362) and sluggish sales growths in triad economies (only 0.6% between 1990 and 1997) triggers additional problems, namely cost pressure and low profitability (Humphrey and Memedovic, 2003: 2). Updated data also reveals the same trend. Sales growth in triad region is close to zero whereas Eastern Europe, China and India have experienced eccentric growth of sales in recent year (Table 4.4).

On the contrary the stagnation witnessed in triad regions has been accompanied by growth of the industry in terms of production and sales in the rest of the world especially after 1990s. As noted above while production and sales figures went on to be concentrated in triad regions the growth of production and sales of motor vehicles in the rest of the world have been greater than that of triad economies. Between 1990 and 1997 change in sales figures for the rest of the world was 3.8 million units whereas the same figure for triad economies was only 0.23 million units. Moreover for the same period change in production growth in the rest of the world was 5.1 million units. This number for triad regions remained at 1.7 million units (Humphrey and Memedovic, 2003: 2).

Demand for automobiles can be defined generally in two categories: new demand and replacement demand. Swift growth in demand such as in developing markets may be considered as new demand. However with time market reaches to its saturation level and growth in new demand slows down while replacement demand takes off. Dicken notes that in 2003 replacement demand's share in matured markets (broadly can be regarded as triad region) were around 85% (Dicken, 2003: 363). When compared with new demand nature of replacement demand can be considered as slower growing and more volatile because of postponement flexibility of consumers.

In summary we can say that there has been a structural change in demand in matured markets. Demand in triad economies is not likely to arrive at the level of demand in developing markets because of market saturation and the characteristic of replacement demand and demand in developing economies is likely to sustain high growth rates.

Figure 4.3: Regional shares in world trade in automotive products, 2004



Source: http://www.wto.org/english/res_e/statis_e/its2005_e/its05_bysector_e.htm

Excess capacity conditions and matured market conditions are forcing giant assemblers to provide a solution. Hence it is not so surprising that the focal point of the auto industry is the potential of the developing markets to get rid off the stagnation and overcapacity problems via obtaining amplified scale economies and spreading the costs of developing new models (Humphrey and Memedovic, 2003: 3)

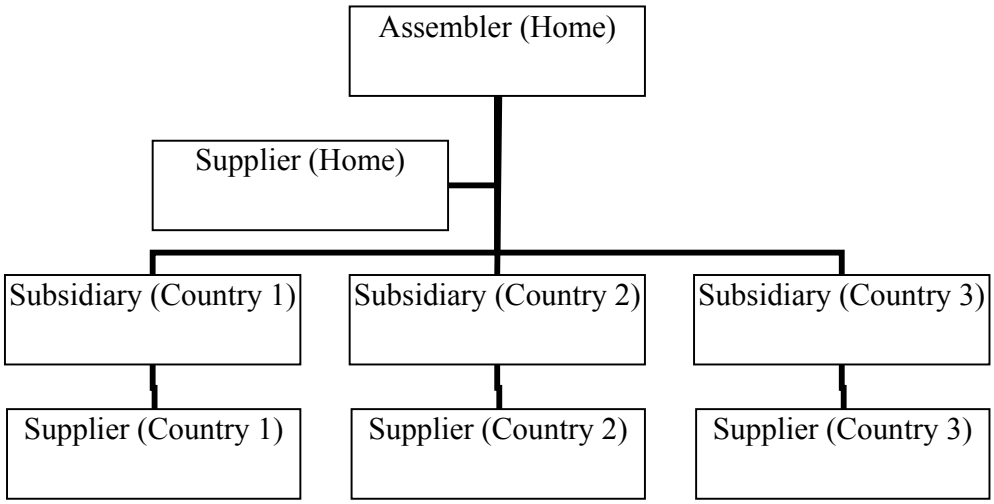
4.2 A Model for Assembler Value Chain

The bird eye view presented above directed giant assemblers to reduce the risk of over-investment by developing common platforms, simplifying final assembly processes and modularization. These measures ultimately led them to outsource more activity and concentrate more on central headquarters regarding development and control (Sturgeon, 1997).

In the 1960s the assemblers were much more responsible in designing and manufacturing a large part of the car. Comprehensive drawings would have been given to suppliers which are chosen from a pool of possible suppliers based on cost criteria. In order to extend the size of this pool the ordered components were relatively simple. Otherwise most of the possible suppliers would not meet the necessary capability. Contracts are finalized separately by parent company (assembler

in home country) and its subsidiary (assembler in foreign country). Figure 4.4 gives a rough depiction of this process.

Figure 4.4: Sharing of design and procurement process in 1960s

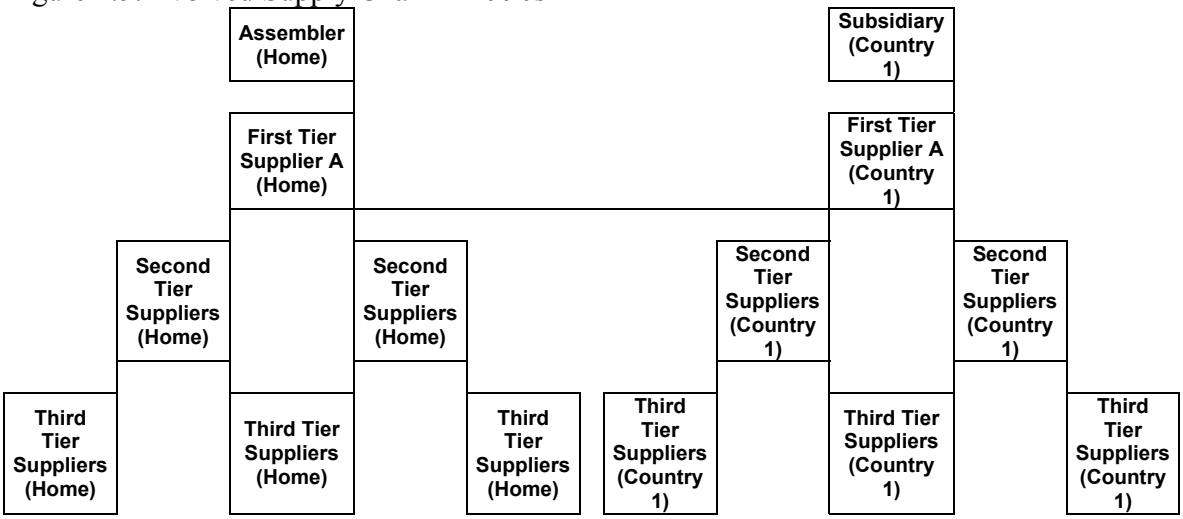


Source: Derived from Humphrey, Memedovic (2003: 27) and redesigned

Assemblers forced to change this pattern of organization to cope with problems mentioned above and last twenty years has witnessed a mounting role for suppliers. During this period they have taken increasingly more responsibility concerning manufacturing, logistics and design (Lynch: 1999).

In 1960s short term, cost minimizing contracts was the preferred pattern. The assembler-supplier relationship was distant in functional and to some extent geographical terms. However this rigid approach has evolved into a flexible one in last twenty five years. The relationship between suppliers and assemblers has become closer and assemblers started to favour long term trust based contracts. The total discretion of assemblers on design of parts has been partly dissolved and design process also started to be carried out with the close cooperation of suppliers. In this new model assemblers limited the number of suppliers that they are directly in contact with and chose a number of suppliers which became also responsible for the remaining part of the supply chain, namely second and third tier suppliers.

Figure 4.5: Evolved Supply Chain in 1990s



Source: Summarized from Humphrey, Memedovic (2003: 27) and redesigned

4.3 The Features of Evolved Supply Chain

4.3.1. Follow Sourcing and Design

Humphrey and Salerno (2000: 150) defines follow sourcing as u*sing one supplier for a particular part or system across all the markets, where it is required.*

Assemblers with the aim of ensuring uniform quality in different geographies and avoiding the cost associated with changing suppliers requested suppliers located in home country to follow their investment decisions in areas where assembler already had invested. This triggered the emergence of multinational suppliers (shown as First Tier Supplier A in Figure 4.5). These relatively new appearances pushed for the joint ventures in developing countries or to establish wholly owned subsidiaries (Eskiyentürk, 2006: 25).

The 1990s witnessed mergers and acquisitions created global first tier suppliers. They became in charge for designing systems and delivering them to geographically scattered regions. In many situations the license of designs belongs to component manufacturer and they govern the way for transferring designs to another node in the chain which could be a partner, subsidiary, affiliate or licensee. Additionally they also get the control of organizing the rest of the chain (i.e.

managing second tier suppliers and elaborating supply systems in different countries) (Humphrey and Memedovic, 2003: 22). Noting that only biggest suppliers with significant financial, organizational and technical capabilities can carry out these tasks this strategy forced former first tier suppliers to survive only as second tier suppliers (Humphrey and Salerno, 1997; Eskiyentürk, 2006: 29) because without designs there is no way for developing country firms to win procurements.

Table 4.5: Average Inception Dates of Assembly and Supplier Plants

	Assembly Plant	Supplier Plant
Home	1958	1969
LEMA	1969	1980
PLEMA	1979	1981
BEM	1986	1988

Source: Sturgeon: 1999; p.15

In Table 4.5 Home, LEMA, PLEMA and BEM stand for geographical categories. If an assembler (or supplier) of LEMA (Large Existing Market Areas) builds an assembly (or supplier) plant in its home country this corresponds to Home. If this assembler (or supplier) builds an assembly (or supplier) plant in another LEMA this corresponds to LEMA. If this assembler (or supplier) builds an assembly (or supplier) plant in PLEMA (Peripheries of Large Existing Market Areas) this corresponds to PLEMA. If this assembler (or supplier) builds an assembly (or supplier) plant in BEM (Big Emerging Market Areas) this corresponds to BEM.

LEMA includes countries such as USA, Germany, Japan and Canada. PLEMA includes countries such as Mexico, Spain and Turkey. BEM includes countries such as Brazil, China and India. These locational typologies are invented by Sturgeon (1999).

The data of Table 4.5 have been deducted from widespread pool of 201 assembly plants and 269 supplier plants. The info derived from this survey is important because it exposes evidence of the diffusion of supplier industry towards peripheral areas and additionally it also presents empirical data about follow sourcing strategy. The inception dates of assembly and supplier plants both originated from LEMA in PLEMA and BEM is much closer than that of Home and PLEMA which can be interpreted as supplier's tendency towards following assemblers in those areas.

Valeo's global expansion is an outstanding example of the emergence of global first tier suppliers. Humphrey and Memedovic summarize the success story of Valeo as follows:

> *In 1986, half of Valeo's factories were in France and further 30 per cent were in the rest of Europe… By 1997, the company had greatly extended its coverage in Europe, acquired 26 new plants in the Americas and developed manufacturing capability in Asia. By 1997, only one quarter of its plants was in France. In the clutch division, for example, Valeo had plants in Algeria, Argentina, Republic of Korea, Turkey, the United States and Western Europe. In 1997, it was in the process of setting up clutch operations in Brazil, China, India and Poland* (Humphrey and Memedovic, 2003, p.24)

However another story should be also mentioned concerning former first tier suppliers which are being replaced continuously with global first tier suppliers. Freios Varga, once a leading Brazilian component manufacturer, started manufacturing brake parts for replacement market in 1950s and expanded business in 1960s via being an OEM for Volkswagen with the help of import quotas and local content requirements. In 1971 the company had concluded an alliance with Lucas based on technology upgrading at the expense of 34 per cent of the company. After this alliance the business improved further Freios Varga managed to export to American market in ever increasing amounts. However in late 1990s Lucas merged with Varity, a global mega supplier operating also for North American market. As a result Varity bought the remaining 66 per cent of Freios Varga during the mergers and acquisitions wave and the family which built up the company has lost its control over the company which lasted more than 40 years (Humphrey and Memedovic, 2003: 30).

Though follow sourcing is a reasonable path for assemblers in some cases global suppliers do not follow them. They may perceive risky to create a new business in uncharted regions and concern about the potential volume of production in developing countries (Eskiyentürk, 2006: 30). But this cannot be regarded as good news for local suppliers because the alternative generally becomes another multinational supplier with operations locations in target country (Humphrey and Memedovic, 2003: 23).

4.3.2 Tools for Follow Sourcing and Design

Assemblers trying to lose weight regarding manufacturing activities decided to reduce their non-core activities and concentrate on main businesses, i.e. design and assembly. Hence the next step they took was to outsource almost every part with exceptions of strategic components which are essential on appearance and performance. Eskiyentürk (2006: 31) notes that assemblers outsource about 70-80% of components (Table 4.6). This strategy has created an opportunity for developing country suppliers to export more parts and integrate into the global supply chain.

In order to realize this agenda assembler developed several new concepts. For this purpose assemblers formulated the concept of platform. Platform can be broadly defined as the basis of an automobile, inaccessible by the end user, carrying external body panel, internal grim and power train (http://cars.about.com). External body panel, internal grim and power train is essential components of a car because they characterize car's model. With the help of the notion of platform assembler maintain model variety by lowering research and development costs and more importantly not at the expense of economics of scale.

Humphrey and Memedovic summarize corporate strategies targeted at exploitation of idea of platform as follows:

> *VW and PSA use the same platform for different brand names within the company. Following their tie-up, Nissan and Renault moved in then same direction. Ford and GM have also been developing common platforms for vehicles produced not only by their long established brands, but also for more recently acquired brands, such as Jaguar and Saab. Spreading platform designs across various models significantly reduces costs, which are further reduced by maximizing the number of common models. The logical extension of this process is to maximize the number of common models across all markets, including developing countries. This not only reduces design costs, but also increases the speed with which new models can be introduced in non core markets* (Humphrey and Memedovic, 2003, p.17).

Another attempt was the overture of world car. World car program was a highly marginal version of platform idea. It can be more or less defined as selling the same or very similar vehicle in different markets. Eskiyentürk (2006: 27) states that the world car strategy has its roots deep in 1970s when Japan exports invaded the American market and American assemblers forced to shrink in a variety of markets however in 1990s Ford and GM once again pursued this strategy materialized as Ford Fiesta. In addition to Ford Fiesta Fiat Palio and Fiat Uno were also other unsuccessful preventatives of world cars (Camuffo and Volpato, 1999). In another source Camuffo highlights the problems with Palio project as follows:

> *..... the robustness of this strategy decreases as the international scope and time span of the "global" project increase. In the Fiat Palio case, in fact, the project complexity a) tremendously increased as it began touching significantly different countries, like India; b) required product customization and conspicuous local adjustment in technologies, organizational structures and management practices, especially in existing, brown field plants* (Camuffo, imvp.mit.edu/papers/0001/camuffo1.pdf, accessed 20 July 2007).

Humphrey and Memedovic (2003: 18) give five reasons while explaining this elusive project:

- Income: Consumer in high-income countries are willing to pay for more elaborated vehicles.
- Countries differ with regard to regulatory matters such as safety, emission standards, recycling etc.
- Driving conditions vary significantly between developed and developing countries.
- Consumer preferences change depending on the specific characteristics of societies and path dependency
- Taxation policies can have significant impact on vehicle demand.

In a nutshell one can conclude that assembler's agenda converge into two broader paths. Firstly, they prefer to build vehicles where the market is available and secondly their plan is based on platform idea rather than world car (Florida and Sturgeon: 1999).

Another innovative idea to overcome assembler's shortcomings is modularity. A module can be summarized as a team of parts that could be directly assembled onto the vehicle in the assembly line. The word "team" should not be

confusing though. A module is allowed to be a functional group but it may also be not a functional group. It is distinguished by its ease of assembly (Freysennet et al. 2003).

Table 4.6: Automotive Exports by Finished Products and Parts and Components

			Value (US$ billion)		World Market Share (%)		Growth Rate (%) 1990-2000
			1990	2000	1990	2000	
Automobiles	**Finished products**	**World**	208.5	371.4	100	100	5.9
		Developed	185.8	317.3	89.1	85.4	5.5
		Developing	6.3	44.7	3	12	21.7
	Parts and Components	**World**	82.4	141	100	100	5.5
		Developed	73.7	120.7	89.5	85.6	5.1
		Developing	6.2	16.3	7.5	11.5	10.1
Car Engines	**Finished products**	**World**	16.5	33.2	100	100	7.3
		Developed	14.6	26.6	88.3	80	6.2
		Developing	1.9	3	11.3	9	4.9
	Parts and Components	**World**	13.2	24.8	100	100	6.5
		Developed	12.2	20.5	92	82.9	5.4
		Developing	0.8	3.5	6.4	14.1	15.3

Source: Lall, Albaladejo and Zhang: 2004, p.427

Assemblers prefer to work with modules because it reduces assembly time, testing time and design time. That's why because module suppliers are partly responsible for testing and design procedures. Lung (2000) notes that modular supply helps assemblers minimizing the risk of an initial investment in emerging markets which are characterized by fluctuating demand. Modular supply is a great tool to

achieve this objective because it gives the assemblers the flexibility to leave the country if expected demand fails to realize.

Modular supply necessitates cooperating with assemblers in very tight tandem and facilitating in suppliers parks near assembly plants. A modular supplier should have the capability of high engineering. Additional it has the extra responsibility of organizing part suppliers (second and third tier suppliers). These are not good news for developing country suppliers lacking know-how and high engineering skills. Furthermore they are also in need of financial means to invest in research and development. Therefore the role of modular supply is mostly acted by global suppliers (Eskiyentürk, 2006: 34).

4.3.3. Capability Definitions of Assemblers and Suppliers

Assemblers hold their innovation and design capabilities as core assets (Humphrey and Memedovic, 2003: 22) partly because they value the prime mover advantage in BEMs (Sturgeon, 1999: 12). Additionally companies such as Ford and Fiat (Dicken: 2003) have a heavier emphasis on branding and finance whereas Toyota keeps its focus on perfectionism in manufacturing and competence (Humphrey and Memedovic, 2003: 22). Therefore assemblers' decisions still vary regarding how to define their core activities.

First tier (global) suppliers' main activity is to source major systems to the assemblers. Humphrey and Memedovic (2003: 22) wish to label them as 0.5 suppliers instead of first tier suppliers because they are between former first tier suppliers and assemblers. However indeed they are the new first tier suppliers and the former ones have been pushed down. Therefore I do not see any reason to label these relatively firms as 0.5 suppliers. As mentioned above these companies played the main role in follow sourcing then hence they are expected to serve globally.

First tiers suppliers are strong enough to revise the balance of power between assemblers and suppliers (Lynch: 1999). Lynch also notes as follows:

> *Indeed the complexity and scope of the tasks now performed by suppliers suggest that they can virtually make vehicles or at the very least, that their competence and range of customers attenuates their previous dependency* (Lynch, 1999, p.14).

Even though current changes ongoing in the supply sector reflect the emergence of a more stable and independent industry arrangement in which suppliers' responsibility area expands but do not exceed the limits of key assembler functions such as design, marketing and assembly. This situation looks similar to the structure in computer industry where Intel and AMD acts as global sourcing brands and assemblers such as HP, Dell and IBM perform marketing activity. However auto industry's evolution is premature.

Second tier suppliers' obtain designs from first tier suppliers (Humphrey and Memedovic, 2003: 22) and directly supply them. They are expected to have elaborated process engineering skills and meet specific quality requirements. ISO 9000 series quality certificates have became a non sine qua non requirement for suppliers in 1990s. However there are also certificates particularly active in automotive industry such as TS 16949. Additionally global suppliers also undertake their own supplier assessment processes (Eskiyentürk, 2006: 24).

Third tier suppliers manufacture non complex, basic products. Hence they do not need to maintain specific engineering skills. In line with this skill levels and training budgets are limited in this sector. At this point of the supply thread firms compete heavily on cost reduction (Humphrey and Memedovic, 2003: 22).

Lastly it should be also mentioned that second and third tier suppliers mainly operate in one market. They have limited export capability. In order to gain export shares companies operating in this part of the chain have to meet much stricter quality requirements (Terdudomtham, 2003). Thus TS 16949 turns out to be must for suppliers with export strategy. Moreover for third tier suppliers ISO 9000 series is becoming a necessary requirement as a distinctive feature beyond price advantage (Eskiyentürk, 2006: 24).

CHAPTER 5

AUTOMOTIVE INDUSTRY IN TURKEY

5.1 CBU [4] Model: Absence of Domestic Motor Vehicle Production

As discussed in the previous section motor vehicle production had already initiated in some countries as early as the last quarter of 19th century. But the first courses of action in this path occurred in Turkey in 1950s, to be more specific after 1954. The most significant cause behind this delay was likely the unsatisfactory physical infrastructure, which can be regarded as a non sine qua non for the establishment of a base for extensive transportation with automobiles.

After the foundation of the Republic of Turkey in 1923 government's main perspective towards transportation was improving and developing the railway system

[4] An idealized sequence of development in the automobile industry is given by Dicken (2003: 356) and could be helpful in understanding the concept of CBU and CKD:
Stage 1: Import of completely built-up (CBU) vehicles by local distributor: Tends to be limited in scale due to high transportation costs and possibly by government restrictions
Stage 2: Assembly of completely knocked down (CKD) vehicles: Vehicles are imported from the home plants of world manufacturers. Permits transportation cost savings and provides the opportunity to make minor modifications for the local market
Stage 3: Assembly of CKD vehicles but with increasing local content: Depends upon, and encourages, the development of a local component industry. Strongly favoured by the national governments
Stage 4: Tends to be restricted to a small number of countries than stage 2 and 3. It is by no means inevitable that countries at the stage 3 will then move to full-scale local manufacture. Countries may even regress from the status of a full-scale local manufacturer to that of a mere assembler

and highways did not considered as a serious alternative. However this policy started to change after the end of WW2 and because of American Marshall Plan the highway system in Turkey gradually expanded and it gained primary focus concerning national transportation.

The data reveals clearly how the policies towards railway and highway network development evolved between 1950 and 1960. During this period the total length of railroads increased by 3% whereas the same figure for highways was 31%. As the outcome of this policy change highways' share in total transportation increased from 50% in 1950 to 73% in 1955 and railways' share dropped from 42% in 1950 to 24% in 1955 (Aksoy, 1990: S40-41)

Nevertheless shortcoming of infrastructure cannot be evaluated as the sole reason behind the changing role of highways. There were also additional factors, which reflected the need of an improved highway network system. Marshall Plan triggered the rapid mechanization of agricultural production, which conducted to a period of mass relocation from countryside to city centres. This phase of mass migration amplified the demand for inter-city and intra-city transportation. Additionally the period also witnessed a rapid increase in income levels[5]. Between 1950 and 1960 the annual average growth rate corresponded to 6.3% and per capita income growth figure came out around 3.4% for the same period. Income per capita rose from 138$ in 1947 to 286$ in 1955 and 584$ in 1959. Furthermore climb in income levels accompanied by relatively low price of oil (Okur: 1994; p.55). Of

[5] The grounds of the increase in personal income levels covering the period between 1950 and 1960 are a debated topic of Turkish economics and are beyond the scope of this work.

course low prices led to cheap highway transportation. Lastly it can be claimed that Democrat Party government, which came to power in 1950, was more market friendly than CHP and their policies favoured a more liberalized import regime, which helped the expansion of foreign vehicles in the Turkish market.

Table 5.1: GNP Per Capita, 1950-1960 (US$)

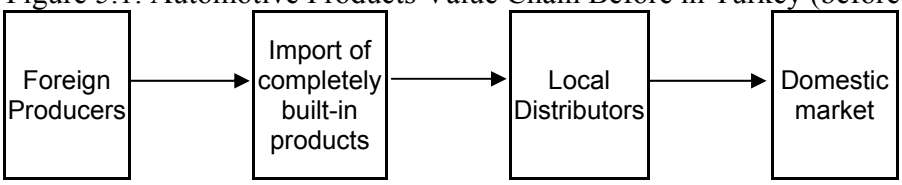
	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
Per capita GNP (US$)	166.5	194.3	217.4	246.6	245	285.7	322.7	413.7	480.8	584.1	358.7[6]

Source: http://www.tuik.gov.tr

Aksoy (1990: 43) notes that between 1950 and 1955 the motor vehicle park that was completely composed of imported products increased more than twice. The passenger car park rose by 124%, the truck park by 127% and bus/minibus park by 162%. The total number of cars increased from 13400 to 30000 units and bus/minibus park ascended from 3750 to 9850. In 1955 these figures corresponded to 803 persons per car. The data arranged by Okur (1994: 56) gives us the opportunity for a rough comparison: At that time this figure for US was 3 persons per car, 16 in France, 64 in Italy, 141 in Brazil, 60 in Argentina and 105 in Mexico.

[6] The fall in per capita GNP in 1960 was mainly due to devaluation. In 1959 1 US$ was equal to 2.8TL but in 1960 1 US$ was equal to 4.7 TL.

Figure 5.1: Automotive Products Value Chain Before in Turkey (before 1960s)



5.2 Import-substitution period

5.2.1 Introducing CKD Model: A Primitive Value Chain (1954-1964)

The very first assembly function in Turkey launched in 1929 via a government-backed contract between local entrepreneurs and Ford Motor Company. The plant located in Istanbul went on operation until 1934 and at that date ceased production because of international economic conditions signalling the approaching World War II (Wasti, 2001: 6).

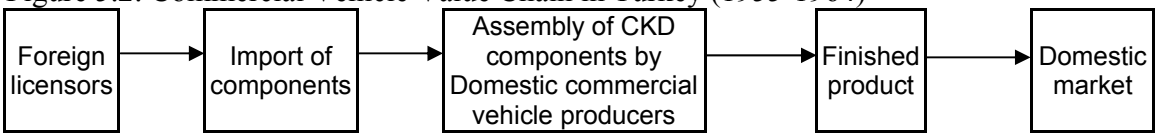
In the period of 1950-1961 a few number of assemblers launched their operations in Turkey concentrating on completely knocked down and semi knocked down manufacturing[7] of commercial vehicles. The second venture was built in 1954 when Turk Willys-Owerland Ltd. Partnership was established to manufacture army vehicles such as military jeeps and pick-ups (Okur, 1994: 57)[8]. The following years has been witnessed an increase in the number of automotive factories in Turkey

[7] Knocked down kit: A group of subassemblies used in assembly of a vehicle. Using this group avoids the manufacturing of components.
[8] However in 1970 this factory has been bought out by the Ministry of Defence and also stopped manufacturing (Wasti, 2001: 6).

because of protectionist measures taken by the government (Aksoy, 1990: 42-44). Until 1960 the number of automotive factories in Turkey added up to 5 (Okur, 1994: 57) including Federal Turkish Trucks Factory[9] in Gebze in 1954 and Otosan as an alliance of Koç Trading Co. and Ford Motor Co. in 1959 (Wasti, 2001: 6) manufacturing Ford Thames lorries and Ford Consul passenger cars. All of these companies were functioning with foreign license or as joint ventures with foreign companies. With the exception of Ford Consul the main product line was commercial vehicles (lorries, trucks, light trucks) targeting solely domestic market. Their operations were constituted of assembling completely knocked down units (CKD) and they were all low volume assemblers (Aksoy, 1990: 42-44).

Commercial vehicle producers' efforts covering this initial period can be evaluated as a primitive domestic value chain (Figure 5.2). It did not include a global link except component imports, which is the basic feature of CKD type production model. All of them imported the parts and with labour intensive production method manufactured the finished motor vehicles:

Figure 5.2: Commercial Vehicle Value Chain in Turkey (1955-1964)



[9] Later named as TOE-Turkish Automotive Industries

In 1961 government ordered the production of an automobile with several limitations such as using only available public sector facilities and domestic components. Hence the first Turkish prototype automobile, Devrim, was manufactured in 1961 in Eskişehir[10]. The manufacturing course was based entirely on labour intensive principles and the four prototypes were never developed into a mass production form (Wasti, 2001: 6). On the other hand the total cost of this project was around 3600000 TL while a mass-produced American car cost only 27000 TL that year (Aksoy, 1990: 45).

Contradictive with government's focus on domestic passenger car production plans the first 5-Year Development Plan covering 1963-67 did not foresee the construction of a passenger car factory among targets. The reasons were obvious: Domestic demand was too low and Devrim was an unsuccessful effort presenting remarkable inadequacies of domestic production. The conditions were not appropriate for passenger car production with acceptable costs and at an optimum minimum scale. However between 1963 and 1967 ten more factories[11] were established under foreign license and as joint ventures for light & heavy truck, pick-up, bus and minibus manufacturing. These efforts resulted in oversupply and inactive capacity condition (Aksoy, 1990: 48-49).

Nevertheless the Koç Group took several steps to utilize the existing facilities of Otosan for the manufacturing of passenger cars. Hence the first mass produced

[10] The distributor and carburettor of Devrim were imported (Okur, 1994: 58).
[11] Unver Otobüs Karöseri San. A.Ş. in 1963 (later known as Otokar Karöseri San. A.Ş.) for Magirus buses; a minivan factory in 1964 under Land Rover and Chrysler license; other licensors were General Motors (1964), BMC (1966), Peugeot (1966) and Mercedes Benz (1968) (Küçükerman, 2004).

domestic car, Anadol, was manufactured in 1966. Anadol was an interesting project of Turkish idea and attempt. The car was designed by British engineers and had fibreglass instead of a steel body. The main reason behind this decision was cost because producing steel bodied cars requires investing on metal stamping which was proved to be too expensive for Koç Group at the time. Therefore they preferred the less capital-intensive method of fibreglass automobile production (Eskiyenentürk, 2006: 55). Additionally it had a second interesting feature: It was not based on a foreign model, but particularly designed for Turkish market. Contrarily in 1960s common assembly operations in developing countries was based on the production of the existing foreign models (Okur, 1994: 60).

Anadol's production technology was adopted from Reliant Motor Company of U.K. and Ford Motor Company of U.S supplied engines and transmissions. As explained above Koç Group favoured a labour intensive path and in the end total annual production figure never exceeded 7200 units. Otosan cancelled the project in 1982 when total production figure reached 87000 (100000 unit including pick-ups) units because of Anadol's severe shortcomings against competitors. Hence Anadol took its part in the history as the first and the last mass-produced Turkish passenger car (Nahum, 1988: 120-141; Küçükerman, 2004).

5.2.2 Assembly Industry Decree: Introducing CKD With Increasing Local Content

In 1964 a directive for assembly industries was ratified aiming to replace CKD model with local manufacturing of motor vehicles. Government's target was promoting domestic industrialization via primarily focusing on automotive industry (Bedir, 2002: 26). However one should also note that the decree encompassed the production of typewriters, radios, calculators, elevators, refrigerators, automatic telephone stations and tape recorders and record players in addition to motor vehicles.

Government seeking ways to minimize the reliance on imported components and lessen the expenditure of foreign currency imposed significant local content requirements on the automotive industry. The merit of this requirement was foreign currency saving ratios (FCSR) detailed in the decree. Okur states situation as follows:

> *By the time the decree was issued, the FCSR did not exceed 23% in commercial vehicle production which means that a locally produced /assembled vehicle saved only 23% in foreign currency expenditure by manufacturing the product in Turkey* (Okur, 1994, p.61).

The decree foresaw that the FCSR is to be increased gradually to 45-65% by 1967, 55-75% by 1970 and 75-85% by 1980.

Table 5.2: Local Content Requirements Regulation in Latin America & Turkey in 1950 and 1960s

Country	Date	Definition of Local Content Requirement
Brazil	1956	% share of domestic parts in total weight of the vehicle
Mexico	1962	% share of domestic parts in total direct costs of a vehicle
Argentina	n.a.	% share of C.I.F value of a vehicle
Turkey	1964	(F.O.B value - F.O.B value of all imported parts, materials and necessary payments due to license, technical assistance etc.)/F.O.B value

Source: Summarized from Jenkins (1987).

Moreover with the Decree government also established a list of importable/non-importable parts. This was a positive list, which means that only parts in the list allowed being imported. This list was subject of renewal as local content rose by each year. Hence the items included by the list increased every year.

Keeping in mind that the government allocated the foreign currency to domestic firms to import any required parts, the list of importable/non-importable parts appeared as a powerful policy tool for the government by the time. Hence government provided foreign currency to domestic firms based on this list and companies that did not match the local content criteria (the required FCSR level) were not provided foreign currency by the government (Eskiyenentürk, 2006: 54; Okur, 1994: 62).

At the end of 1968 government closed down four commercial vehicle producers that could not realize the required FCSR level and in general the commercial vehicle producers failed to meet the local content criteria after the First Five Year Plan (Okur, 1994: 62).

The rationale of this outcome can be given as follows: All of the commercial vehicle producers were operating with particularly low capacity levels. Aksoy (1990: 45-90) notes that the truck capacity in Turkey was between 600 and 8000 and bus capacity between 150 and 1000 per annum. He gives the data of optimum capacity levels for truck factories as 15000-20000 units and 5000-6000 units for bus factories. As of 1967 output figures ranged between 150 and 1800 for trucks and 40 and 220 for buses (Table 5.3).

Table 5.3: Total Production Figures of Several Manufacturers (Units) between 1963 and 1970

	Anadolu Isuzu	Askam Kamyon	BMC Sanayi	Ford Otomotiv	M.A.N	Mercedes Benz	Otokar Otobüs	Otoyol Sanayi	Genoto General	T.O.E Türk
1963				1767			12			1401
1964		321		1533			56			2273
1965		862		1829			122		120	1098
1966	932	3229	463	1330			426		804	1994
1967	1834	2261	2382	3656	212		332	193	1224	1565
1968	1874	2407	3976	5443	421	73	249	207	981	1642
1969	1968	2627	4680	6658	528	211	373	412	1383	1899
1970	2279	2066	2937	6034	394	254	308	255	1080	1553

Source: http://www.osd.org.tr/1963-2006.pdf

Under these conditions the question which should be asked is how manufacturer with low levels of output and capacity can invest on expensive requirements needed to produced engines and transmissions. In line with this argument Okur also underlines the same fact:

> *Given the extremely low output levels in Turkey, therefore, it was almost impossible for any of the firms to manufacture the power-train (i.e. engine & transmission, author's note) in-house which had it been done, would have significantly raised the local content level. The firms in Turkey did not have the alternative to purchase their power train from outside suppliers, either, because there were no engine or transmissions manufacturers in Turkey by that time* (Okur, 1994, p.63).

Although most of the commercial vehicle producers were unsuccessful in adapting to changing environment formed by Assembly Industry Decree, this decree also paved the way for the emerging of an artisanal and labour intensive sector of suppliers. Thus the domestic commercial producers forced to cooperate with domestic suppliers. Hence we can roughly say that the decree modified the structure of the domestic value chain and some of the vehicle producers succeeded in importing less CKD units and instead buying locally manufactured components. This development led the expansion of diversified supplier base, which will gain impetus with the introduction of passenger car factories of Renault and Tofaş.

5.2.2.1 Launching of Passenger Car Manufacturing

After the experiences with Devrim and incapable commercial vehicle producers between 1954 and 1968 government searched for the support of partnerships with existing foreign assemblers in order to make use of their know-how. In line with this aim The Second Development Plan (1968-1972) included the construction of a passenger car factory.

This decision was in line with market conditions. Pekarun (1977: 10) notes that total car park has jumped from 45800 in 1960 to 125400 in 1968 and the number of persons per car has decreased from 600 to 268 in the same period. This change can be assessed as significant if one considers that population increase for the same period was around 22%.

Okur (1994: 65) also justifies government's decision towards the initiation of a passenger car factory construction with some additional data: The national highway network comprehended from 106442km in 1963 to 150000km in 1968. Gas stations considerably expanded all over the country and car repair workshops increased in number. All of these changes accompanied with increasing automobile demand, which met with imports.

The first joint venture for passenger car production was formed between Turkish Koç Group and Fiat of Italy under the name of Tofaş in 1968. Koç Group owned 22.5% of shares while Fiat held the 41.5% of the venture while a Turkish state company controlled a share of 25% and a Turkish Bank had 10% of shares (Aksoy, 1990).

The second venture set up in 1969 was between Army Mutual Aid Association (OYAK) and Regie-Renault Motor Company of France. OYAK joined

the venture with 56% of shares while the remaining part owned by Renault (Aksoy, 1990)[12].

Following the establishment contracts the assemblers launched construction activities in Bursa Organized Industrial District and at the end of 1971 investments were completed and factories started production (Bedir, 2002: 27). Bursa was an optimal choice because that division of Turkey was relatively underdeveloped and at the same time it was close enough to Istanbul, Ankara and İzmir so that the geographical selection did not avoid easy carrying and contact with mercantile and manufacturing centres of the country.

5.2.2.2 BEM (Big Emerging Market) Type Investments and Government's Measures

The phase of 1960-1968 was an expansion period for multinational auto assemblers. Including directly owned factories, joint ventures and license agreements there were 170 investments in 42 countries in 1960. Not surprisingly as discussed in the previous chapter this figure jumped to 430 investments in 70 countries in 1968 (Okur, 1994: p.66). Sturgeon provides us a rough reasoning of this surge in cross border investments as follows[13]:

> *BEMs provide automakers with opportunities to participate in growing markets. Where market penetration is low and populations are large (e.g. China, India, and Vietnam) the potential for growth in BEMs is huge. The*

[12] Details about contracts can be found in Aksoy (1990).
[13] Sturgeon's categorization carries importance for my work since MNCs' approach is one of the most determining forces behind the integration of domestic producers into the global value chains.

> *intent of locating new plants in BEMs, then, is to establish an early market presence in high-potential emerging economies as a way to ensure participation in the automotive market as it develops* (Sturgeon, 1997, p.5).

Therefore multinational assembler's strategy was in parallel with government's Second Development Plan. Turkish motor vehicle market was an appropriate target for BEM type investment. Car ownership in Turkey was very low compared to developing countries' average and it was expected to grow.

Furthermore the market was protected with the Assembly Industry Decree and therefore there was no threat of imports[14]. The market structure was convenient for high profit margins without any concerns regarding international competition.

Fiat and Regie-Renault engagement in Turkey can be explained with the help of BEM type investment; however they were also imposed some limitations by government: Consequently details of the founding agreements of Tofaş and Renault indicate traces of several restrictions towards Tofaş and Renault. These can be evaluated as the price of forming a perfect duopoly acquiring 85% of market demand (Özşahin, 2000: 32):

- Tofaş and Renault had to have a production capacity of minimum 20000 units
- Tofaş had to start the in-house manufacturing of power train after commencing production as late as 4.5 years

[14] Pekarun (1977; 29) notes that import figures for cars in 1968 was 16143 units where as these figure was as low as 3401 units in 1971.

- Renault had to start the in-house manufacturing of body after commencing production as late as 4.5 years[15]
- Within the 18 months following the commencing of production or after reaching a production volume of 12500 units FCSR had to catch 67%
- After 5 years of production the FCSR had to catch 85%.
- Prices of the final products will controlled by the government which guarantees an average profit margin of 16.5% over ten years.

Additionally both companies did not attain any concessions regarding the Assembly Industry Decree. List of importable/non-importable parts and foreign currency allocation setting were binding for Tofaş and Renault. However in the case of complying with the above mentioned restrictions they were to be granted some concessions:

- Certain investment incentives
- Importation of CKD parts, capital equipment and raw materials would be subject to 80% tariff exemption

These measures were common in almost all developing countries by the time. Governments took significant roles in shaping the conditions of production for assemblers. These contract details can be assessed as a part of a general trend of

[15] This condition is different for Tofaş and Renault because Tofaş's plan was to begin in-housing building of the body and Renault's plan was to begin in-house building of the power train.

public policies aiming to encourage domestic manufacturing of automotive products. However these provisions and incentives display some differences among countries.

Table 5.4: Local Content Ratios through Developing Countries regarding Passenger Cars

Country	Local Content Ratio	Date
Argentina	> 90%	1959
Brazil	> 90%	1956
Korea	> 90%	1962
Philippines	62.5%	1973
Mexico	60%	1962
Venezuela	40%	1963
Malaysia	35%	1971
Peru	30%	1963
Turkey	45%	1967

Source: Summarized from Okur (1994)[16]

5.2.2.3 The Role of Tofaş and Renault

5.2.2.3.1 Subsidiaries in the Periphery

On the above lying sections I tried to give a brief presentation of government's courses of action towards automotive manufacturing in Turkey. First and Second Development Plans, Assembly Industry Decree and establishing contracts of Tofaş and Renault included traces of government's direct intervention. On the other hand these initiatives could not be solely determining on automotive industry's trajectory.

[16] Okur quoted to Tolentino and Ybanez (1983), Lim and Onn (1983), Kim and Lee (1983).

The effect of corporate strategies towards local subsidiaries or branches cannot be ignored in this context. Hence the relationship between parent companies and subsidiaries should be given some emphasis in this regard. In that sense Tofaş and Renault were founded as branch factories and were completely depending on these global assemblers in almost every aspect of productive process. Okur describes their situation as follows:

> *When we look at the terms of endearment of Tofaş with Fiat, and Renault with Regie-Renault, in fact, we see that they almost carry the characteristics of the relationships between a domineering "centre" and a subordinate "periphery", leaving little scope of autonomy for the latter to pursue a genuine line of development* (Okur, 1994, p.78).

The superior-subordinate connection between Turkish manufacturers and their parent companies can be detailed in three perspectives:

- Factories in Turkey were allowed only to make minor changes regarding product specifications. All necessary information was given by headquarters in fine points.
- Headquarters were responsible for the utilization of technology, organizing the work groups and factory layout.
- Parent companies were to decide whether the subsidiary will engage in exports or not

Once again we cannot say that the story of Turkish factories was deviated from factories in other developing counties. It could be stated that dominant corporate

approach is unfriendly towards innovation and it is the main obstruction to the developmental success of subsidiaries or branches. Sturgeon and Florida's widespread field survey (Sturgeon and Florida, 2000: 86) also supports this argument. They note that the global assemblers' are the determining force behind the trajectory of BEM type investments. Additionally Dicken (2003b) also stress' the same point while comparing BMW's investments in Germany and Thailand. More or less Turkish case overlaps with these examples concerning corporate strategies.

5.2.2.3.2 Low Market Demand and Low Volume of Production

Although there has been a swift increase in imports regarding passenger cars in 1960s Turkish market was still far away from saturation. In 1970 total car park was around 130000, which corresponded to 258 persons per car.

Table 5.5: The Number of Persons per Car in Latin America (1970)

Argentina	15
Venezuela	16
Uruguay	24
Mexico	41
Brazil	43
Chile	56
Peru	60

Source: Summarized from Jenkins (1987)

These figures reveal that in Turkey car ownership of the middle income division was very low when compared with other developing countries (Table 5.5)

and the aggregate demand can be called as homogenous and being constituted mainly by the demand for family cars (Okur, 1994: 80). Therefore product sophistication was not an immediate concern for passenger car manufacturers. Additionally in 1970 income per capita was merely 383$. Hence uniformed demand was also rather low.

Although between 1971 and 1976 demand grew progressively. Increasing per capita income growth accompanied with motor vehicle ownership and as a result percentage of automobiles in total demand also rose. In 1976 demand and production figures reached their peaks and could not be exceeded until 1983.

Table 5.6: Evaluation of the demand for automobiles in 1970s

Years	Demand (units)	Annual Change
1970	7.060	
1974	72.267	
1975	80.317	11%
1976	81.945	2%
1977	66.604	-19%

Source: Özşahin: 2000; p.33

The jump in demand of automobile demand in Turkey between 1970 and 1974 can be assessed as the evidence of the successful market penetration of Renault and Tofaş. In 1974 annual production figures of Tofaş and Renault almost reached to 52000. With the absence of exports this passenger cars heavily dominated the

domestic market[17]. As alone passenger car producers in the protected Turkish market during that period these factories achieved great expansion and in that sense they can also be regarded as successful BEM factories.

However expansion of demand was not sufficient in 1970s and in general low and homogenous demand profile had a major impact on the production strategies of Tofaş and Renault. Tofaş and Renault were planed by MNCs as low volume producers due to low level of domestic demand. Both companies' opening capacity was only 20000 cars per annum[18]. Not surprisingly low production capacity triggered its own problems (Okur: 1994; p.82):

- Passenger car production requires high volume production to achieve scale economies
- Low volume production avoids innovative development of the product
- Low volume production restricts the efficient use of existing technology

By that time it was well known that Japanese producers overcame these problems of low volume production via their technique of lean production. Lean production methods were capable of incorporating lower scale production with innovation, high productivity and quality. But Tofaş and Renault's partners were Fiat and Regie-Renault and they were equipped with mass production technologies rather than that of lean production.

[17] Passenger car sales of Anadol in 1974 were 8033 units.
[18] Jenkins (1987; 70) reports that the world optimum regarding production capacity in 1970s was between 400000 and 2000000.

Table 5.7: Automobile Production Figures (Units) of Renault & Tofaş

	Renault	Tofaş
1971	1514	7835
1972	7529	17609
1973	14795	24918
1974	23033	28840
1975	30675	29725
1976	30060	25931
1977	33668	19212

Source: http://www.osd.org.tr/1963-2006.pdf

MNCs' perspective and domestic partners position can be set into a governance framework. In that sense corporate strategies forced Tofaş and Renault to be established as low volume producers solely targeting domestic market. Hence in 1970s Tofaş and Renault mainly remained in the domestic value chain and did not get integrated into the global automotive value chain via CBUs or CKDs exports. The trajectory of these factories shaped by the world manufacturers; therefore even in the early stages we can say that we see the traces of producer driven value chain in the passenger car value chain of Turkey.

5.2.2.4 Commercial Vehicle Producers in Assembly Industry Decree Era

As discussed in previous sections commercial vehicle manufacturers were not able to manufacture engine and transmission in-house in mid 1960s hence these parts constituted significant import items for these firms. In addition before 1970s commercial vehicle producers were manufacturing the body parts of the vehicle in-house. Unlike the manufacturing of body of passenger cars, manufacturing of body of

commercial vehicles was not a significant cost item particularly if the body was made of fibreglass with labour intensive method, which was the common case among commercial vehicle manufacturers. Thus their improvement regarding local content as intended by Assembly Industry Decree was limited (Okur, 1994: 95).

Because of their production characteristics many firms in the industry could not achieve the targeted local content levels (i.e. 45%-65% for 1967, 55%-75% for 1970) and government stopped production of four of the commercial vehicle manufacturers in 1968. However this negative outlook started to change in 1970s. The manufacturers, which could not outsource engine and transmission but produce the low value added body parts in-house in mid 1960s, did not feel the need to cooperate with subcontractor sector. Nevertheless this attitude towards suppliers commenced to change into a much more cooperative framework. Commercial vehicle producers spend much more effort to provide technical assistance and financial support to create a subcontractor base.

Okur (1994: 95) gives a reasonable explanation for the changing approach of commercial vehicle manufacturer towards supplier sector: He claims that commercial vehicle manufacturers were stimulated by the especially by the achievement of passenger car industry and Tofaş and Renault became *role models* for the commercial vehicle industry concerning assisting and cooperation with domestic supplier base.

The outcome of this transformation during 1970s was the improvement in product quality and increase in local content levels. In 1976, Pekarun's study (1977:

149) covering commercial vehicle producers reports that local content was between 70%-77% in buses, 60%-66% in trucks, 54%-70% in minibuses and light trucks.

Table 5.8: Total Production Figures of Several Manufacturers (Units) between 1963 and 1970

	Anadolu Isuzu	Askam Kamyon	BMC Sanayi	Ford Otomotiv	M.A.N	Mercedes Benz	Otokar Otobüs	Otoyol Sanayi	Genoto General	T.O.E Türk
1971	916	2676	2738	2944	449	322	137	100	444	1456
1972	2100	2792	5846	5149	922	531	150	270	1236	2300
1973	2385	4392	8354	7654	1214	790	234	317	1070	3765
1974	2533	5248	7364	8565	1042	917	438	359	2111	3017
1975	2811	7869	9969	13443	1242	1046	522	1203	2088	4670
1976	3409	8247	11487	16286	1331	1103	405	2142	3492	5630
1977	655	6597	9990	16087	841	109	523	2783	3828	4072
1978	1171	1499	4163	10919	1434	667	629	1796	1644	3006

Source: http://www.osd.org.tr/1963-2006.pdf

Hence following the passenger car manufacturer's path commercial vehicle producers outsource many low value added activities such as fibreglass body manufacturing and concentrate heavily on other operations. For example upon the requirement of the government commercial vehicle producers were importing their engines as CKD units in 1970s (Okur, 1994: 95) which means that commercial vehicle producers were assembling engines instead of importing the whole engine as one unit. Okur (1994: 95) claims that replacing of in-house fibreglass body production with sub assembling motor vehicle in-house and outsourcing fibreglass body production to subcontractors played a significant role in raising local content of commercial vehicle industry. Ergo commercial vehicle producers should be busy in-

house with more value-added in 1970s because otherwise outsourcing would not trigger an increase in local content.

5.2.2.5 Outsourcing and Developing Supplier Base in 1970s

Both companies' establishment contracts forced them to attain a certain level of FCSR (i.e. 67% in 18 months, 85% in five years). Hence Tofaş and Renault were obliged to operate with domestic component suppliers. Thus in 1975 Tofaş and Renault were working with about 100 suppliers (Okur, 1994: 84) and in the same year both companies attained the required local content level of 85% (Eskiyenentürk, 2006: 56).

However Tofaş and Renault's eagerness to cooperate with domestic suppliers was not solely based on their obligations stemming from their establishment contracts. The conditions of low volume production led them to out source every eligible activity to domestic suppliers.

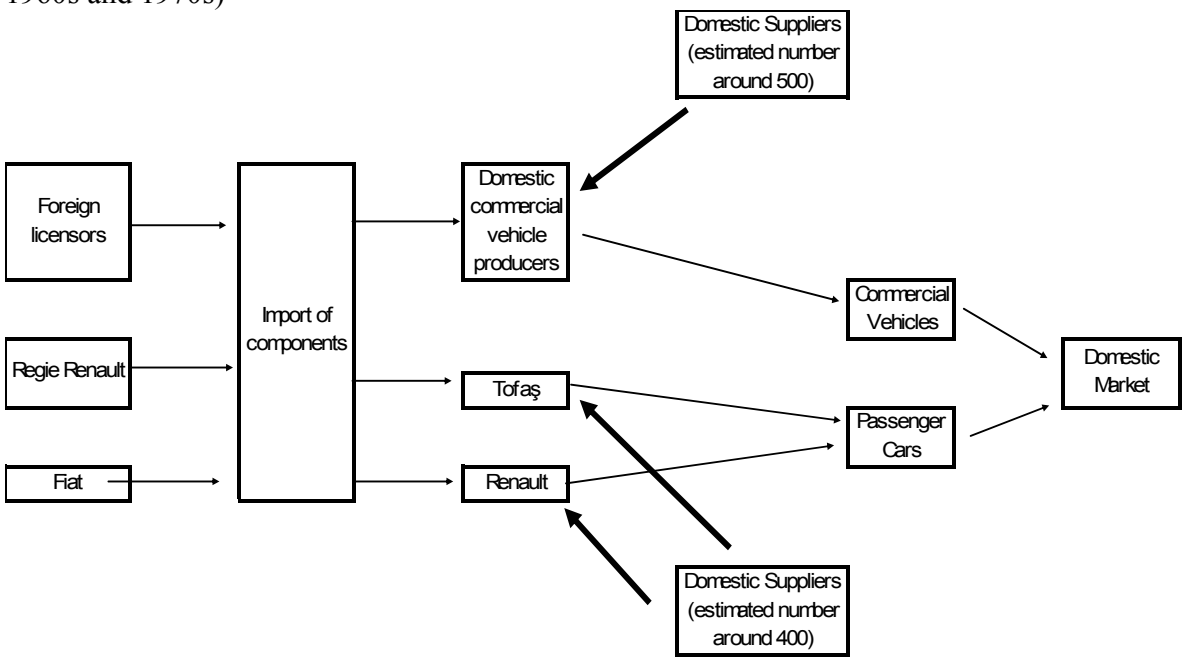
The major concern for the producers was costs of production (Okur, 1994: 88) and they searched ways to ensure cost savings by consolidating their labour and capital structure as much as possible. Tofaş and Renault started production with significant investment. In Tofaş's case the investment aimed at manufacturing the body in-house and in Renault's case it was the power train. Both companies sought ways to keep the rate of return on fixed investment high and reduce the time for

amortization. Hence they decided to outsource as much as possible and not to increase the level of capital for in-house production.

Outsourcing should also help assemblers from another perspective. It will not be an exaggeration to assume that a large share of small component suppliers were operating as artisanal producers and were heavily functional on the limits of informal economy. Although there isn't any data that allows us to compare labour costs of assemblers and suppliers it could be claimed that wage levels in supplier segment were much lower than that of assembler segment[19]. Additionally it would be severely optimistic to take for granted that workers in supplier segment enjoyed the benefit of social security system. As a result cooperating with a large pool of small and diversified supplier base must have enabled significant labour cost savings. Okur (1994: 84) notes that *by 1978 approximately 50% of the total cost of locally produced components was accounted for by purchases from suppliers whose total number had reached up to 150-200 per firm.* On the other hand Aksoy (1990: 56) roughly calculates the total number of suppliers operating in the automotive industry as 900. However I should note that this figure includes passenger car and commercial vehicle producers.

[19] Okur (1994: 90) notes that average wage level was around 13800 TL in large entreprises and 6000 TL in artisanal establishments in 1970.

Figure 5.3: Changing Structure of Domestic Automotive Value Chain in Turkey (mid 1960s and 1970s)



In Figure 5.3 arrows from domestic suppliers towards were thicker than that of arrows from imported components because as of 1975 both Tofaş and Renault attained 85% FCSR level and commercial vehicle producers were bounded with Assembly Industry Decree. Hence their relationship with domestic suppliers intensified from mid 1960s to the end of the 1970s.

Even so by the early 1970s the number of capable suppliers was constrained. Roughly speaking a passenger car is composed of more than 4000 different parts and most of these parts exhibit particular elaboration to produce and develop. Hence assemblers paid essential effort in order to upgrade the capability of informal artisanal supplier base to some extent.

With the help of the engineers assigned by Fiat and Regie-Renault Tofaş and Renault selected some artisanal suppliers and taught them how to make use of new technologies, production planning, improving the quality of production etc. (Okur: 1994: 91-92). After some period of trial they promoted some of these trained suppliers as subcontractors and supported them further with advance payments and technological infrastructure assistance. Once assemblers became satisfied with subcontractor's performance they aborted the importation of relevant components and localize its production. Tofaş and Renault followed this process throughout the 1970s and substituted imports.

Okur notes a crucial point of this assembler-supplier cooperation. Pursuing this process of supplier upgrading depended on a cost-benefit analysis:

> *... investing in the available infrastructure of the small firms by way of technical assistance and advanced payments (which were no doubt paid back) must have cost assemblers much less than it would have had hey engaged in building their own facilities in-house* (Okur, 1994, p.92).

5.2.3 Global Suppliers Takes the Stages

Technical assistance and promotion policy towards suppliers had its limits. As explained above the main motive between assembler-supplier cooperation were the assembler's concerns regarding cost and return on capital. However artisan suppliers were by definition small and hence they were not capable of undertaking more elaborate tasks such as cast iron, engine blocks, bearings, radiators etc. which emerge

as important cost items. Therefore the assembler supported selected suppliers further so that assemblers could outsource more activity and consolidate their cost structure.

Mako, Döktaş and Cevher Döküm can be presented as the outcomes of these efforts. With the endeavour of Koç Group, Fiat's global suppliers Magneti Marelli and Teksid, another global supplier operating for various assemblers, these companies established a firm place in supplier industry. Mako is a standard example of follow supply engagement launched at 1971 simultaneously with the start of production in Tofaş. Magneti Marelli owns 43% of its capital (Balcet and Enrietti: 2000). The case of Döktaş is somehow different. Behind the establishment and evolution of Döktaş as a capable supplier Koç Group's role and initiative was the major factor without any direct foreign ownership (Okur, 1994: 93). On the other hand Cevher Döküm stands as a hybrid type of these suppliers. The company founded in 1955 in İzmir as a family business and it developed over time with the cooperation of assemblers in Turkey. In 1994 Teksid bought 30% stake of the company. Balcet and Enrietti (2000) define Teksid's responsibility in this joint venture as the transfer of technology and purchase of components. However it should be noted that despite the significant involvement of assemblers and global suppliers these suppliers have a diversified client portfolio. Döktaş's business covers Renault, Tofaş and many commercial vehicle producers whereas GM, Teksid, Renault, Tofaş and many others minor producers stands out as Cevher Döküm's clients. However Mako operates heavily for local market with a small share of exports not exceeding 10% of its total sales (Balcet and Enrietti: 2000).

Global suppliers' presence in Turkey corresponded with the launching time of manufacturing in Tofaş and Renault before supplier base in Turkey was not capable enough to meet the demands of domestic passenger car manufacturers. Therefore for global suppliers' products the clients were ready and indeed Tofaş and Renault were demanding the presence of global suppliers. Hence Magneti Marelli and Teksid's entrance can be called as follow supply, which was a general trend in global automotive value chain. On the other hand most of the domestic suppliers were small and medium enterprises with an artisan history and their engagement in the business was more or less related upon the request of Tofaş and Renault.

Domestic suppliers' general incapability can be explained with the perspective of government polices which characterizes the import substitution period. We do not meet a specific technological criterion in government policies. A perspective of technological upgrading[20] mechanism seems to be neglected in Assembly Industry Decree, List of importable/non-importable parts and Tofaş and Renault's establishment contracts. Additionally both assemblers stayed behind as quasi dependent on foreign parent companies. The locally manufactured cars remained as extensions of models generally outdated and their production went on with minor changes for long periods of time. Hence domestic suppliers with some exception such as Döktaş did not see the necessity to invest in higher technologies in order to be more competitive and capable. Like Tofaş and Renault their main concern also remained as cost during the import substitution period.

[20] This work excludes the theory of technological upgrading and hence does not present a detailed analysis of this topic.

Lastly there are some words to say about the effect of entrance of global supplier in domestic market on domestic suppliers: Global suppliers' should have replaced some of the local suppliers in the first tier, especially the ones with limited capability and labour intensive production technology. Most of these suppliers should have continued operation in the second tier where competition is much higher and value-added is lower. On the other hand some of the domestic suppliers such as Döktaş and Cevher Döküm succeeded in surviving in the first.

5.3 Crisis: 1977-1980

At the end of 1977 import substitution policy started to demonstrate its adverse effects on country's foreign exchange position. Although economic activity was still very moving, the traces of the approaching change in the economic structure could be found at 1977.

Unfortunately the economic vitality in Turkey in 1970s was not the outcome of a sustainable healthy economic system. Indeed it was based on short sighted political decisions. Although in this decade world witnessed two serious oil crises the Turkish GDP data does not give a hint of these adverse developments until 1977 (Boratav, 2006: 139-144). The main reason of this picture can be summarized as follows:

OPEC countries' oil embargo decision in 1973 did not have an instant effect on Turkish consumers because governments of this period chose to subsidize oil prices in Turkey without any change in oil imports. While oil and its derivatives' prices increased three times in the world markets there was almost no change in the Turkish market.

Additionally State Economic Enterprises had been used as an instrument of supplying cheap inputs to economic enterprises. This was achieved through heavy subsidizing.

Lastly and most importantly there was no explicit policy choice towards increasing exports earnings. Governments relied upon ascending amount of foreign debt. Indeed with the lack of balancing export earnings there was no other way to pursue such policies. Following these policies foreign debt steadily climbed to 11,419 million USD in 1977 from 1,960 million USD in 1970 (Krueger and Aktan, 1992: Appendix Table 17).

Government's attempts in 1977 were not successful in changing the direction of sinking ship: In 1977 a devaluation of 30% was announced and it had some impact on exports such that the growth of exports reached to 30.5% and imports fell by 21% in 1978. The suspension of transfers of currency abroad and limitations on imports on private sector companies (a planned 45% reduction in imports of industrial establishments) (Okur, 1994: 116) did not help much either. Operating at its limits government's applications to IMF did not provide additional credit because

government was hesitant to accept the standard conditions offered by IMF such as abolishing agricultural subsidies, forming market price system and contracting aggregate demand via monetary tightening because imposing these policies were equal to political suicide from government's perspective (Boratav, 2006: 142). At the end Turkey reached the margins of its borrowing capacity and foreign lenders declined the requests regarding further loans.

As a result economy posted negative growth rates in 1979 and 1980 as -0.62% and -2.45% and industrial production contracted by in these years by 4.98% and 3.64% respectively. Additionally inflation continuously increased during 1970s and reached to three digit level in 1980 (Table 5.9).

Table 5.9: Growth of GDP and Industrial Sector of Turkey (1971-1983), 1987 constant prices

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
GDP	5.57	7.43	3.26	5.59	7.17	10.46	3.41	1.50	-0.62	-2.45
Industrial Sector	8.89	10.61	12.01	7.06	9.07	8.85	6.60	3.12	-4.98	-3.64
WPI	15.9	18	20.5	29.9	10.1	15.6	24.1	52.6	63.9	107.2

Source: http://www.tuik.gov.tr

The effect of these developments on automotive sectors can be described as severe. Renault's production dropped by 9% in 1978 and %37 in 1979. Between 1976 and 1978 Tofaş was changing its models (Okur, 1994: 116). Therefore its production increased during this period with the help of a huge base line effect. Overall

employment in the sector declined by 23% from 1976 to 1979 (SPO: 1987; p.29) and total motor vehicle production damaged severely by a tightening of %28. While entering 1980 there was no additional investment plans.

Table 5.10: Production Figures (Units) of Turkish Automotive Industry (1974-1980)

	Total Motor Vehicle Production (*)	Change (%)	Passenger Car	Change (%)	Commercial Vehicle	Change (%)	Tofaş	Change (%)	Renault	Change (%)
1974	85193		59971		25222		28840		23033	
1975	105221	24%	67291	12%	37930	50%	29725	3%	30675	33%
1976	108286	3%	62992	-6%	45294	19%	25931	-13%	30060	-2%
1977	98752	-9%	58243	-8%	40509	-11%	19212	-26%	33668	12%
1978	78011	-21%	54084	-7%	23927	-41%	19912	4%	30638	-9%
1979	72103	-8%	43808	-19%	28295	18%	21597	8%	19225	-37%
1980	51622	-28%	32531	-26%	19091	-33%	13300	-38%	17600	-8%

* excluding tractors

Source: http://tcmbf40.tcmb.gov.tr/cbt.html and http://www.osd.org.tr/1963-2006.pdf

For 1978 and 1979 Özşahin reports that the growth of automobile demand in Turkey was negative (Özşahin, 2000: 33). However there are no explicit figures available. On the other hand this outcome seems to be probable because the main characteristic of the period of 1977-1980 was instability realized through high inflation, tax increases in automobiles and high interest rate on consumer credits (Özşahin, 2000: 33).

5.4 Export orientation[21]

24 January 1980 represents a break point in Turkey's economic history. On that date an economic package consisting of new measures revealed by the fresh minority government. The aim of this decree was to convert the inward oriented, government controlled and import subsitutionist economic system into an open market economy targeting export earnings and heading outer world. The list of the measures can be listed as follows:

- Interest rate liberalization[22]
- Controlled wages increases and reduced subsidies to agricultural sector
- Prices are left to float freely in the market
- Abolishing subsidies to state economic enterprises and removing control on state economic enterprises product prices
- Gradual elimination of protectionist policies and liberalization of foreign trade regulations
- More openness to foreign capital investments by granting new incentives

Obviously these measures were signalling the cancellation of the established system of economic management. Starting with January 1980 oil prices jumped around 400%. SEE (state economic enterprises) products prices also increased

[21] If otherwise not mentioned the paragraphs summarizing general economic conditions of 1980-1983 period is mainly taken from Krueger and Aktan, 1992: 39-47 and Boratav, 1989: 121-124.
[22] The policy of controlling interest rates was pursued for 1960s in order to supply cheap money to expanding industries

heavily and Turkish Lira faced a devaluation of 49%. This news followed by government's decrees aiming to increase export revenues. Export industries were given several concessions including tax rebates, tariff reductions for import goods related with these industries and cheap credit. Furthermore government also launched its agenda for supporting foreign capital investments. Lastly the borrowing and lending rates of commercial banks left to float freely in July 1980.

These developments assessed by the international finance centres as positive news and IMF settled a standby with Turkey, which exceeded Turkey's quota six times and reached SDR 1.25 billion. However before observing the outcome of the IMF backed new economic package the second increase in oil prices hit the economy and almost all economic indicators turned their heads down.

Worsening economic situation accompanied with rising political tension and chaos and Turkish military army suspended the parliament and announced itself as the sole authority of the country on 12 September 1980. Mr. Özal, the brain behind the 24 January package, was assigned as the Minister of State in charge of economic matters and new administration fully pursued the implementation of package of 24 January. While IMF and other international finance centres supported the policies with new and extended credits the administration did not hesitate to suppress the organized labour and wage levels. Also a fall in public spending and tight monetary policy were witnessed. In addition to these measures Central Bank of Turkey were given the authority to set the exchange rate on a daily basis, which led to a controlled devaluation.

In 1981 as a result of this policy industrial output increased by 9.88% and growth of GDP realized as 4.86% (Table 5.8) and both of these figures went on posting positive growths in the subsequent years.

Table 5.11: Growth of GDP and Industrial of Turkey (1983-1987), 1987 constant prices

	1981	1982	1983	1984	1985	1986	1987
GDP	4.86	3.56	4.97	6.7	4.2	7.0	9.5
Industrial Sector	9.88	5.06	6.69	10.5	6.5	13.1	9.2
WPI	36.8	25.2	30.8	62.0	40.0	26.7	39.0

Source: http://www.tuik.gov.tr

Following the end of the militaristic administration in Turkey Mr. Özal formed the government and the policies in line with 24 January package gained impetus on track. As the first action the new government announced that the concept of importable parts list was to be subject to revision. Two new lists were introduced: One of them was a direct substitute for importable parts list however it encompassed a much larger number of parts and the other list was the so called “fund list” which includes parts which were subject to specific import (fund) taxes. Additional fund taxes were in charge for the parts in the “fund list”. Parallel to this development tariffs were decreased by 20% on average (Krueger and Aktan, 1992: 50).

Government went on with this perspective in the coming years. In 1985 the restrictions on local content requirements were abolished (Okur, 1994: 137) and with two new lists there remained almost no parts, which were non-importable. But

government also tried to help the local suppliers via “fund list” by imposing quasi-prohibitive fund taxes.

The rate of protection of automotive industry significantly dropped in 1984. Eskiyenentürk (2006: 59) notes the relevant figures as 142.7% for before 1984 period and 52.9% for 1984. It should be also noted that at the beginning of that year government also removed the prohibition of import of used cars however the pressure from domestic assemblers forced them to impose an additional high tariff rate for those products (Okur, 1994: 37).

Until 1986 government kept the restrictions on foreign direct investment. Multinational corporations were able to enter the market via only a partnership with a local firm and could obtain only a share of 49% at most. This constraint abolished in 1986 and the control of foreign direct investment was given under the discretion of State Planning Organization (Nedimoğlu, 1991). SPO were authorized to discuss particular conditions regarding the contracts of MNCs wishing to invest in Turkey.

Government’s constant efforts targeting liberalization were significant signals to domestic producers to revise their manufacturing base and thus Renault and Tofaş took some steps to face the approaching foreign competition.

5.4.1 Industry Responses

Motor vehicle production started to recover in 1982. Even though in 1983 total production figures were much lower than that of in 1977. Aksoy (1990: 70) notes that capacity utilization was between a range of 25-55% in 1981. However commercial vehicle and passenger car producers achieved high production increases in the following years and industry regained its vitality and once again after 1976 total production figure was close to 100000 units (Table 5.10). But after 1980 the producers were in a different environment if compared with pre-1980 period and this change in environment forced them to restructure their relationship with suppliers and market strategy in general.

Automotive industry in Turkey started to consider exporting as a serious option as early as 1984. Domestic market was very unstable and 24 January package presented new incentives for exporters. Thus although small in numbers, exports in 1981 became three times higher than that of in 1979. 5651 passenger cars and 1371 commercial vehicles exported mainly to North African and Middle East countries in 1981 (Aksoy, 1990: 71). Furthermore manufacturers also started to export components. Component exports in value reached more than $15 million dollars in 1981 (Okur, 1994: 122).

Okur (1994: 110-127) also notes that Tofaş and Renault and commercial vehicle producers experienced a major shift in their perspective towards automotive industry. After 1980 these companies became much more sensitive on issues such as

personal efficiency, finances, energy consumption, well-organized inventories and standardization of supplier production. Model variation took its place on the agendas and for instance in this period Tofaş introduced station wagon versions of Murat 131.

5.4.2 Passenger Car Producers' Adjustment[23]

With the introduction of new import regime Renault and Tofaş's outdated models were under threat. Renault and Tofaş pursued different strategies to overcome this problem:

Renault initiated its investments for the production of new models at the beginning of 1984. One year later Renault's new model, Renault 9 was on the production line. Two years later another new model Renault 11 took its place in the market.

More interestingly although Renault's strategy was based on securing its share in domestic market Renault 9 and Renault 11 models also became successful in export markets. By the end of 1989 12% of Renault's total production was to meet exports markets and one quarter of its workers was occupied with export-related production. During this period Renault succeeded in exporting CBUs to Bulgaria, Yugoslavia and Portugal and components to Spain and Argentina.

[23] This and the next two section covers Renault's and Tofaş's responses towards export orientation policy and roughly summarized from Okur's work (1994: 139-156).

Considering the recovery in the demand Renault decided to expand its capacity by late 1983. In the next five years Renault was engaged with capacity increasing investments and by 1988 its annual production capacity reached 60000 units, two times larger than its initial capacity.

Table 5.12: Revitalization of Automobile Demand in 1980s

	1979	1980	1981	1982	1983	1984	1985	1986	1987
Passenger Car Demand (Units)	55372	21901	23852	30023	42385	59975	69399	84010	107368

Source: Özşahin: 2000; p.35

Parallel to Renault's strategy Tofaş was also encouraged by the revitalization of the economy and they were also occupied with an investment schedule covering 1985-1988. The total expenditures for these investments aiming capacity expansion was around US$ 58 million and at the end of this time period Tofaş's annual production capacity climbed from 30000 units to 75000 units.

Table 5.13: Production Figures (Units) of Passenger Car Industry (1981-1989)

	Passenger Car	Change (%)	Tofaş	Change (%)	Renault	Change (%)
1981	46490	-10%	12247	-8%	12700	-28%
1982	57557	24%	15248	25%	15540	22%
1983	75863	32%	20652	35%	21556	39%
1984	54282	28%	28683	39%	26096	21%
1985	60353	11%	30149	5%	29190	12%
1986	82032	36%	42116	40%	32943	13%
1987	107185	31%	53796	28%	43057	31%
1988	120796	13%	60016	12%	49188	14%
1989	118395	-2%	60393	1%	51781	5%

Source: http://tcmbf40.tcmb.gov.tr/cbt.html and http://www.osd.org.tr/1963-2006.pdf

Additionally Tofaş was also concerned about imports and hence like Renault they were also considering the development of new models. However unlike Renault they preferred to keep the existing model Murat 131 in the market but the company introduced a new version of the model. The new version of the model with a completely new body design was made public in 1988 and proved to be successful.

This difference between Renault and Tofaş mainly found its ground on their relationship with their partners. Renault had the ability to introduce new models because Regie-Renault regarded Renault as an exporter subsidiary whereas Fiat did not impose such strategy during 1980s. Hence Tofaş remained as a local market player.

Similar with pre-1980 period the MNCs' attitudes towards local subsidiaries proved to be significant once again. However this time Regie-Renault and Fiat, parent companies of Renault and Tofaş respectively, choose to give different task for their

subsidiaries in Turkey. Hence this fact presents an example showing that MNCs' power became determining in the trajectory of local subsidiaries development. In the case of Renault and Tofaş, Renault started to produce cars for the world market earlier and hence integrates the world market earlier due to Regie-Renault's role assignment concerning Renault in Turkey. On the other hand Fiat did not assign such a role for Tofaş and therefore Tofaş's main target remains as local market. These different strategies will also affect other nodes in the passenger car industry value chain in Turkey which will be discussed later.

Okur (1994: 143) reports that Tofaş was also in the way of quality of productivity improvements. By the end of 1989 because of the investments regarding quality and productivity concerns such as purchasing new stamping presses Tofaş was able to setup the machinery in 45 minutes. In early 1980s setup time was around 90-120 minutes. In general Okur summarize the outcome and reason of the quality and productivity improvements in Tofaş and Renault as follows:

> *For example, that while the productivity target in terms of hours/car was 80.2, for 1990, what was actually achieved was 78 hours, the increase in productivity owing completely to the quality circles though the practice yet encompassed a small portion of the workforce. We should immediately note here that similar experimentations with labour relations on the shop floor were undertaken at Renault factory, as well* (Okur, 1994, p.144).

Following the militaristic administration and Özal's government country's economy once again started to ensure its stability and aggregate demand also showed signs of recovering. In 1980 automobile demand in Turkey dropped to minimum

since 1970 and with gradual increase it caught its 1976 level in 1986 corresponding to 84010 units (Özşahin, 2000: 33).

As a summary it can be said that in the years following the 24 January package and regarding the liberalization efforts of the government in charge Tofaş and Renault tired to solve the problem of low production capacity. To some extent both companies achieved the expansion of existing production capacity. Secondly they pursued to increase their productivity and quality management, generally speaking, via lean production methods which were much coherent with low production capacities. Nevertheless the extent of these improvements was limited because even after the productivity and quality improvement both companies were unproductive in world standards.

Table 5.14: Productivity Figures in 1989 (hours per car)

	Best Plant	Worst Plant
Japan	13.2	25.9
North America	18.6	30.7
Europe	22.8	55.7

Source: Womack, Jones and Roos: 1990; p.85

In addition to this data Womack et al. (1990: 85) also notes that the weighted average of four developing countries (Brazil, Mexico, Taiwan and Korea) was 41 hours/vehicle. The difference between the Tofaş's revised productivity and world

standards were significant and hence cannot be explained through low production conditions.

As mentioned above the militaristic administration kept the labour unions under heavy pressure and suppressed wage levels remained for a serious period of time. Ulagay (1987: 249) notes that the cost of labour decreased throughout the 1980s. In 1979 the average daily wage in organized sector was US$ 8.41 whereas the same figure in 1986 was US$ 3.28. Furthermore by the beginning of 1987 real minimum wage was 45% of its 1963 level.

Therefore it should be reasonable to assume that Tofaş and Renault were relying excessively on man power and simultaneously both companies were trying to revise their production technology. This should have played also a significant role in keeping productivity levels below world standards.

5.4.3 Commercial Vehicle Producers' Adjustment

Commercial vehicle producers were also concerned about the approaching agenda of import motor vehicles. Thus they were also regarding quality improvements and presenting new models. Form the data presented by OSD (http://www.osd.org.tr/1963-2006.pdf) we may conclude that particularly in mid-1980s many new brands and modified versions of outdated models were in the market. Okur (1994: 157) emphasizes two points in this regard: Brand new models

were directly adopted from the parent companies abroad and modified versions of the outdated models were in higher product quality and design.

Additionally Tezer (1989: 87-88) reveals another point which led commercial vehicle manufacturers to product specification. In 1985 the Traffic Law were subject of change and the updated regulations imposed changed vehicle dimensions and gross vehicle weights. Hence the restrictions forced by law appeared as an opportunity for the commercial vehicle producers to renew their product spectrum and engage in design and quality based improvements. Therefore Tezer reasonably claims that the change in the law enhanced the general trend in commercial vehicle sector.

According to SPO's 1987 report (1987: 18) commercial vehicle made in Turkey were quite similar to those of manufactured in advanced countries concerning product quality. The same report also notes that at the end of 1980s commercial vehicle producers were functioning at finest capacity levels (SPO, 1987: 55). However as of 1987 there were eleven competitors in commercial vehicle market (only three in the passenger car industry at the same date) and therefore capacity utilizations remained as a problem of the sector during 1980s. SPO report gives the capacity utilization figures for 1986 and 1987 as 34% and 35% respectively.

Table 5.15: Production Figures (Units) of Commercial Vehicle Industry (1981-1989)

	Total Motor Vehicle	Change (%)	Commercial Vehicle	Change (%)
1981	46490	-10%	21349	12%
1982	57557	24%	26362	23%
1983	75863	32%	33354	27%
1984	91065	20%	36783	10%
1985	97628	7%	37275	1%
1986	114056	17%	32024	-14%
1987	138710	22%	31525	-2%
1988	149933	8%	29137	-8%
1989	146487	-2%	28092	-4%

http://www.osd.org.tr/1963-2006.pdf

Lastly although observed capacity expansion, product specification and improvements in design and quality, SPO's report's summarizes commercial vehicle industry in 1980s as labour intensive (SPO, 1987: 18). The reason of general usage of labour intensive production method in commercial vehicle industry can be explained via sustaining low capacity utilization levels. However maybe more importantly we should note that during 1980s labour was very cheap which made the labour intensive method preferable.

5.4.4. Suppliers in 1980s

This period of time witnessed a change of relationship between supplier and assemblers in Turkey. Starting with the emergence of passenger car and commercial vehicle producers pursued a supportive way towards their suppliers because of several reasons discussed above. The scope of this cooperation was variable and it included both financial assistance and technical consultancy in 1970s.

Okur's interviews with suppliers presented firm evidence that the state of affairs started to adjust to the conditions of the new macroeconomic model launched via 24 January package. With the initiation of export orientation policy financial support from assemblers step by step diminished and in time advance payments were substituted by payment on credit or even postponement in payments. Furthermore these postponements did not cause any improvement on the payment according to the inflation rate. Hence delivery and payment schedules exhibited a volatile pattern. The time between these actions (i.e. delivery and payment) extended to 45 days whereas the same period for payment on credit reached to 90 days. Additionally starting with 1980 suppliers carried the burden of increasing production costs instead of reflecting these costs to the prices of their products (Okur, 1994: 124-126).

It should be a reasonable interpretation that interest liberalization blocked the opportunity of obtaining cheap credit and thus assemblers cancelled their supportive financial approach towards suppliers after 24 January package. The money was not cheap for assemblers anymore and they preferred to use suppliers as a new way of financing via delay in payments and payment on credit methods. Hence they diverted the financial risk of production to suppliers. Thus we may conclude that this aspect of assembler supplier relation reversed after 24 January package.

This observation also gives us an opportunity to make an important theoretical inference. Domestic suppliers were captive, directly depended to producers and their client portfolio was not diversified because they were not in engaged in exports. Hence producers were able to govern that part of chain. Therefore the change in the

environment exposes clearly the producer driven quality of automotive value chain in Turkey.

Renault abandoned its conventional supplier strategy in 1980s. Instead of cooperating with a large pool of suppliers Renault began to work with a small number of suppliers which are capable of competing with on the threshold foreign products. In this context the cooperation was much tighter than that of 1970s. In 1970s Renault were working with around 300 suppliers. This number decreased to 160 in 1989[24].

In line with this advance Renault initiated a supplier auditing and technical assistance program so that the supplier would be able to meet the Renault's demand regarding higher quality, lower cost and precision delivery. With this purpose Renault established an office in Istanbul for technical assistance services and formed a formal supplier training institute. Additionally Renault's abolished the strategy of laying off some of the suppliers in volatile times and instead reduce the volume of its orders.

On the other hand Tofaş and commercial vehicle producers did not follow this strategy and they went on with mass supplier base. The data also verifies Tofaş mass production strategy via multiple sourcing. The number of Tofaş's suppliers continued to grow in time and reached to 400 in 1990. During that period Tofaş preferred to play one supplier against the other with cost concerns. As a result Renault appeared to be more demanding and careful about quality than its rival, Tofaş and commercial vehicle producers.

[24] Although in 1989 40% of Renault's suppliers were small scale ones.

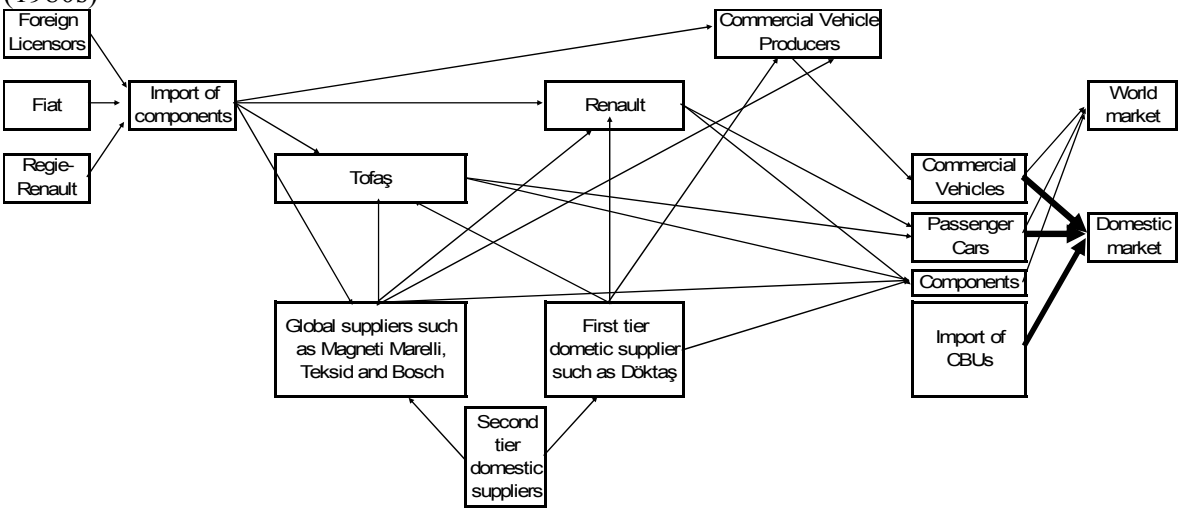
Once again this difference can be explained through different perspective of partner firms. Renault products were manufactured targeting export markets which was not the case for Tofaş. Thus foreign competition was a reality for Renault even before 1990s. Hence Renault's concern of enhancing competitiveness in export markets could also be evaluated as the major factor determining its relationship with the suppliers. Therefore it can be said that foreign competition was a significant dynamic in shaping Renault's capability and became a major motivation in accelerating progress.

For the suppliers the financial problems went on intensified however. Supplier continued to have troubles in reflecting production costs to product prices and small suppliers faced severe discrimination against large suppliers. Okur's (1994: 157) interviews indicate a 20% difference between prices for identical components produced by small and larger suppliers. Moreover delay in payments also prevailed so that assemblers succeed in transferring the burden of inflation to the suppliers. All in all we can conclude that while on the technical assistance front the cooperation between assembler and suppliers intensified the suppliers weakened comprehensibly on financial conditions.

Okur (1994: 104) describes the motor vehicle production in *as an eclectic combination or unification of different paradigms of production* (mass production and lean production paradigms; author's note) *at the same time.* In that sense in 1980s motor vehicle production industry in Turkey was in transformation in their in-house operations. During this period of time passenger car and commercial vehicle

producers continuously outsourcing low value added compartments of production to supplier industry and by approaching to lean production methods which were much more proper for low capacity assemblers, tried to increase productivity and quality of products. Therefore assemblers were struggling to enhance value added of in-house production. Hence with the given capacity levels it was not possible to improve productivity and quality via mass production methods. In that sense Renault went further and also adopted this approach while managing its relationship with suppliers.

Figure 5.4: Changing Structure of Domestic Automotive Value Chain in Turkey (1980s)



During 1980s producers' in Turkey were still focus on the domestic market and therefore in that decade integration into the global automotive chain remained very limited. However in that decade with the change of government policy, automotive industry started to integrate into the global automotive chain and

exporting of CBUs and components, although small in numbers, commenced in that decade.

5.5 Integration Takes Off: New Assemblers Investing in Turkey

The time interval between late 1980s and 1995 witnessed several important events in the industry. Firstly, Turkish passenger automobile industry welcomed a third venture. Originally a commercial vehicle producer, Otosan, after the unsuccessful Anadol project, launched the Ford Taunus project under the American Ford license. The construction of the facility started in 1983 and first Ford Taunus was in the market in 1985. The initial capacity as 10000 and thus Otosan never became a serious rival for Tofaş and Renault (Okur, 1994: 150-170). Secondly, following the government's steps targeting a more liberal foreign capital investment policy, in 1989 Opel and in 1990 Toyota revealed their decisions regarding passenger car production in Turkey (Wasti, 2001).

Government granted several concessions to assemblers in 1990 and 1991 with the aim of attracting greenfield investments. Companies would be subject to a tariff exemption regarding CKD kids for a period of five years if they build a plant with the capability of minimum 100000 units of annual production (Eskiyenentürk, 2006: 60). Hence following the announcement by late 1989 Toyota-sa was formed in 1990,

Hyundai-Assan in 1991 and Anadolu-Honda in 1992. These companies launched production in 1995, 1997 and 1998 respectively.

These investments cannot be regarded as BEM Type investments. At that time government's policy towards liberalization and more openness concerning foreign trade was clear and therefore Turkey was no more a big emerging closed market where high returns are guaranteed. Indeed Toyota, Hyundai and Opel should have planned on exporting rather than heavily concentrating domestic market.

New assembler's entrance to Turkey can be assessed as PLEMA (Peripheral to Large Existing Market Areas) type investment. Sturgeon explains the reasoning behind PLEMA type investments as follows:

> *The principal strategic role of PLEMA locations such as Mexico and Spain is to provide a proximate low-cost environment from which to supply large existing markets. While such locations do not provide the same political or consumer payoffs that LEMA locations do, they do provide trade benefits because they share, or are expected to soon share, common markets with LEMA economies (e.g. NAFTA and the EU)* (Sturgeon, 1997, p.5).

There are general differences between BEM and PLEMA type investments which we should explain and requires attention because investment type becomes determining in the future path of the investment and industry. As mentioned above BEM type investments targets domestic markets which does not reach saturation yet but expected to expand swiftly. MNCs prefer BEM locations to manufacture outdated model with labour intensive methods. Hence value added remains low in BEM

locations and product quality and diversity does not stand out as major problems. On the other hand PLEMA locations target existing markets where market is highly saturated and competition is at the top. Thus production in PLEMA locations may present a much more advanced method and in PLEMA locations technology in practice may be close to that of LEMA (Large Existing Market Areas such as U.S.A, Japan and Germany). Moreover MNCs may prefer to test and develop new technologies in PLEMA locations because they appear as greenfield investment and may be suitable to experience new developments which cannot be tested in LEMA locations.

Turkey's prospects of joining Customs Union in late 1980s should have attracted new assemblers to the country. Thus new assemblers' should have evaluated Turkey as a PLEMA location rather than a BEM location. Hence automotive industry's integration into global automotive chain accelerated and intensified at the time new entrants started production in Turkey.

5.5.1 Competition Arrives Domestic Market

In the meantime government reduced the protection rate of automotive industry to 35% in 1990 (Eskiyenentürk, 2006: 59) and import duties were lowered from 72-150% in 1989 to 39% in 1993 (Duruiz, 2000). The natural outcome was an increase in imports which is also heavily observed.

Table 5.16: Demand, Production and Trade of Passenger Cars (units), 1989-1995

Year	Demand	Production	Imports	Exports	Import/ Demand	Export/ Production
1989	125408	118314	7094	n/a	6%	n/a
1990	232946	167556	65390	5533	28%	3%
1991	229225	195574	33651	5791	15%	3%
1992	318660	265245	60134	8996	19%	3%
1993	441133	348095	101070	6852	23%	2%
1994	229163	212651	28216	12804	12%	6%
1995	216611	233412	21651	33163	10%	14%

Source: http://www.osd.org.tr/

As the data reveals the jump in the imports of passenger cars is huge. Passenger car imports in 1989 were 7094 units and 65390 units in 1990. At the end foreign competition became a reality for the automobile sector. Additionally government also liberalized the imports for vehicle parts in 1990 (Okur, 1994: 166). However while imports share in demand steadily arose supplier industry succeeded in surviving. Noting that exports of components were rare in those years, the only reason explaining the survival of supplier industry can be given as follows:

> *Many motor vehicles produced in Turkey were redesigned versions of rather old models whose production was already terminated in the countries of origin. Hence even if the assemblers preferred to do import the parts of these vehicles, they would not be able to do so. More important than that, however, is the fact that vehicle parts produced by domestic suppliers were still cheaper than foreign compatibles given the availability of cheap labour in Turkey* (Okur, 1994, p.167).

However as mention above product diversity and quality were gaining importance in Turkey hence suppliers' obtained only a buffer time. Once the new

products were in market import of components would be inevitable. Therefore assemblers' and suppliers' market share were under threat by imports.

As a result of tariff reduction we observe an instant jump in imports there are no signs of an immediate increase in exports. Motor vehicle exports remained at 2-3% of total production until 1994. However with the intense penetration of import to domestic markets assemblers located in Turkey forced to extract every possibility to target world markets rather than domestic market. Hence trade liberalization also pushed the industry to integration into the global automotive chain.

Table 5.17: Foreign Trade of Automotive Industry, 1992-1995 (million US$)

	1992	1993	1994	1995
Imports	2604.9	3351.3	1324.0	3145.7
Exports	569.6	558.7	794.6	1246.0
Balance	-2035.3	-2792.6	-529.4	-1899.6

Source: http://www.osd.org.tr/disticaret2005.pdf

1993, a year of great expansion for automobile industry, was followed by a year of another severe financial crisis, 1994. The country witnessed a 30% devaluation (Özşahin, 2000: 34) and a steep descend in real wages experienced. Naturally demand for automobiles dropped to 229 thousand units in 1994 from 441133 units in 1993 and parallel to this fall production and import figures also contracted by dramatic portions (i.e. for production from 348095 to 212 651 units, for

imports from 101070 to 28216 units). Because of the heavy devaluation exports almost doubled from 6852 to 12804 units.

5.6 Customs Union

On 6 March 1995 Turkey and EU Association Council agreed on 1/95 Decision which means that customs Union would be in force on 1st January 1996. This date was another milestone for Turkish economic history because of the coverage of this decision.

The Customs Union can be defined as the removal of all import and export duties and charges having equivalent effect on goods traded between EU and Turkey. Quotas on imports, i.e. quantitative restrictions, and other instruments having corresponding outcome are also abolished (Kutay, 1995: 37).

Turkey, under its obligations stemming from Article 12 of 1/95 Decision, was expected to adopt Common Customs Tariff (CCT). These rates are in effect towards imports from 3RD countries outside the Customs Union. But Turkey cut another deal with EU Association Council which encompasses exemption regarding CCT. This deal, 2/95 Decision, included a list of goods subject to exemption. The period of exemption was five years and 10, 10, 15, 15, and 50 percent reduction was to be done in subsequent five years. When 1st January 2001 arrives tariff for 3rd countries would be in line with CCT (Kutay, 1995: 38). Motor vehicles were included in this list and

the inclusion of motor vehicles were very significant if on considers imports from 3rd countries such as Japan and South Korea. Moreover government replaced customs duties with Private Consumption Tax in 2001 (Bedir, 2002: 32) hence protection from imports sustained to some extent (Duruiz, 2004: 93). We should emphasize that Kutay (1995: 37-39) underlines that Turkey succeed to get concessions regarding exporting Japanese cars to Europe.

Turkey received another important concession regarding importation of used vehicles. With the concession Turkey allowed to prohibit importation of used cars unilaterally (Kutay, 1995: 37-39). However later government permitted the importation of used cars. But importers should deposit DM50 million at the Central Bank for one year (Duruiz, 1998).

Additionally we should also note that parallel to accession to the Customs Union Turkey has adopted a new import regime. This regime foresees that importer in Turkey should keep inventories concerning aftermarket parts and should have service facilities in the seven geographical regions of Turkey (Duruiz, 2000: 94). The target behind this regime is the prohibition of imports of vehicles with inadequate service and spare parts.

Lastly and maybe more importantly it should be emphasised that the 1/95 Decision required Turkey to come in line with EU ruling regarding competition, protection of intellectual and industrial rights and protection of consumer rights (Kutay, 1995: 39, Duruiz, 2000: 93-94). In these areas the problem goes beyond

legislation and adaptation of EU regulation also required the establishment of institutions. Eskiyenentürk (2006: 63) notes that Turkey has successfully setup the institutions and took necessary steps regarding legislation so that regulations are mostly parallel today.

Table 5.18: Import Penetration in Turkey (units), 1996-2006

	Passenger Car Market				Commercial Vehicle Market			
	Demand	Local	Imports	Imports/ Demand	Demand	Local	Imports	Imports/ Demand
1996	239718	182239	57479	24%	131205	94214	36991	28%
1997	344835	219810	125025	36%	195299	100503	94796	49%
1998	315590	204054	111536	35%	217396	137398	79998	37%
1999	288667	157452	131215	45%	123686	76850	46836	38%
2000	466726	207739	258987	55%	231166	142087	89079	39%
2001	131438	59179	72259	55%	75662	50555	25107	33%
2002	90615	35519	55096	61%	102028	69670	32358	32%
2003	227036	73267	153769	68%	210317	130865	79452	38%
2004	451209	139541	311668	69%	219938	89594	130344	59%
2005	438597	136708	301889	69%	377367	229302	148065	39%
2006	373219	117725	255494	68%	348137	206039	142098	41%

Source: http://www.osd.org.tr/

In general industry's approach towards the Customs Union was very hesitating. Duruiz summarizes the trouble very briefly:

> *The industry faces major difficulties in adjusting to the demands of global market since there was no explicit technology policy during the protection period to promote the development of the industry to internationally competitive levels. The industry described itself as being too vulnerable for immediate liberalization* (Duruiz, 1998, p.92).

The same point is underlined by Özşahin. The author quotes from a report of The Automobile Manufacturers Association:

> *In the agreement that is signed on March 6, 1995, factors that are thought to have strong negative impact and too risky for the Turkish Automobile Industry are considered. As a result, the committee decided that some unspecified time is necessary for the adaptation of the industry* (Özşahin, 2000, p.35).

These fears proved to be well grounded as the imports and imports share in demand figures reveal. Between 1996 and 2006 passenger car imports continuously increased with the exception of 2001 and 2002 and increased its market share during this period without exemption. However struggling with foreign competition was not the worst of all:

1997 Asian and 1998 Russian crisis triggered fluctuations in demand (Eskiyenentürk, 2006: 64); on 17 August 1999 a disastrous earthquake hit Marmara region which had a significant negative impact on car production (Table 5.18) if one considers that the automotive industry is concentrated mainly on the İstanbul–Kocaeli-Bursa line in the Marmara region (Duruiz, 2000: 97). In 2000 IMF backed stabilization program finished with a political crisis which led to 80% devaluation of Turkish lira through a course of two subsequent major crisis in November 2000 and February 2001 (Eskiyenentürk, 2006: 64). These were not good news for the industry when passenger cars demand fall to 131438 in 2001 from 446726 in 2000 and to 90615 units in 2002. 2002 domestic sales figures were below 1987 figures, 107368 units (Özşahin, 2000: 35). Similar to 1994 because of the heavy devaluation imports

decreased from 258987 in 2000 to 72259 units in 2001 and exports jumped from 81874 in 2000 to 142288 (Table 5.18) so that 2000 and 2001 appeared to be the distinguished years when Turkish automotive industry generated a trade surplus.

Table 5.19: Foreign Trade of Automotive Industry, 1992-2005 (million US$)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Imports	4361	6287.5	6649.3	4992.7	8275.9	2573.8	3908.2	7345.4	13278.2	13946.7
Exports	1372	1250	1675	1999	3275	3475	4319	6095	9906	11399
Balance	-2989	-5038	-4974	-2994	-5001	901	411	-1250	-3372	-2548

Source: http://www.osd.org.tr/disticaret2005.pdf

Since 2002 political and economic atmosphere in Turkey has been consistent and Turkey succeeded in pulling down inflation even to one digit level which led to a relative stability if compared with past years. As Table 5.18 presents starting with 2003 recovery in demand appears significant. As of 2006 total motor vehicle production almost reached 1000000 units (i.e. 987580) (http://www.osd.org.tr/2006rapor.pdf) and domestic demand realized around 700000 units (i.e. 699604).

The new government that came to power in 2002 became more foreign direct investment friendly than previous ones and announced a new directive in 2003 which extents the rights granted to foreign investors such that foreign investors will also have the privileges owned by domestic companies in addition to their particular concessions.

5.6.1 Global Suppliers Follow Assemblers

As of June 2007 there are 18 assemblers in Turkey (Appendix 1). 16 of these assemblers operate under foreign license and 11 of these assemblers have foreign shares. All of the passenger cars assemblers have foreign licenses and foreign shares. In case of Toyota and Honda Turkey the share of foreign capital reaches to 100%, in Oyak Renault %51 and in Tofaş 37.8%.

The picture of suppliers is not much different from assemblers. Suppliers also operate under foreign licenses (Appendix 2) and with the contribution of foreign capital. The estimation of TAYSAD (The Association of Parts and Components Manufacturers) regarding the number of OEM manufacturers located in turkey is around 350 and they also guess that there are 350 suppliers producing for aftermarket. On the other hand OSD and Export Promotion Centre (IGEME) calculates the number of total suppliers between 1100 and 1300 (Eskiyenentürk, 2006: 77).

As explained above suppliers in Turkey encountering foreign competition in early 1990s succeeded in surviving because of the prevailing production of out dated models in Turkey. However through mid 1990s assemblers in Turkey also revise their product range and proceeded to replace the outdated models with updated models. Assemblers were also in a situation of struggling foreign competition via imports and furthermore other established assemblers were also investing in Turkey. Hence

Renault and Tofaş were forced to abandon the production of outdated models. Okur summarizes this process of transformation briefly:

> *Tofas decided on Fiat's Tempra model, which was a brand new car not released to the market, yet, even in Italy. Renault, on the other hand, decided on Renault 21, which was a little older model than Tempra, but a more modern car compared to Renault's existing model range. Unlike their previous models, however, both companies decided to initially import all parts of the new models from their parent companies to assemble in Turkey, and subsequently proceed with the new-model oriented investments* (Okur, 1994, p.162).

Definitely these were not good news for domestic suppliers and after the adjustment Renault and Tofaş experienced they were also in a similar process where they had to restructure their production capability and target exports. Eskiyenenturk describes this process of transformation:

> *In the brave new world, suppliers who can integrate with the regional and global operations of the assembler, and who can meet the larger demand at required quality level would survive. Smaller suppliers slowly started to disappear, change sector, or move to 2nd tier. The larger suppliers, on the other hand, started to make modernization investments to switch from labour-intensive production techniques to capital-intensive ones. Hence, late 1980s and early 1990s marked the beginning of a transformation in the supplier sector, to larger company size, higher automation, and improved quality. During same years, increased focus of suppliers on exports can also be clearly observed* (Eskiyenentürk, 2006, p.61).

In addition to the changing preference in Tofaş and Renault newcomers were also not eager to work with domestic suppliers. Wasti made the reasoning as follows:

> *These permissions (i.e. for investment permissions for Toyota, Hyundai, Honda etc., author's note) initiated the production of models that*

> *did not have a local supplier base in Turkey. Automakers preferred to import from multinational supplier firms that could reach economies of scale and thus have lower prices. Local suppliers were pushed towards exporting their products and also getting quality certifications required in the European market* (Wasti, 2001, p.7).

Some of these suppliers expanded their business and grew significantly via investing in quality, capacity development and high tech manufacturing equipment. Particularly during the last 15 years assemblers targeting export markets forced suppliers to attain several international certifications such as ISO 9000 series and TS 16949. Eskiyenentürk (2006: 78) states that as of 2004 131 members of TAYSAD have ISO 9001/9002, 63 members have TS16949 and 32 members have ISO 14001 certifications. In line with this development foreign investment list at Turkish Treasury website reports that there are 200 foreign partnerships in motor vehicle manufacturing industry (includes components sector) in Turkey.

Table 5.20: Companies with International Capital by Sector

	1954-1999	2000	2001	2002	2003	2004	2005	2006	2007	Total
Manufacture of motor vehicles, trailers and semi-trailers	96	13	11	6	16	18	21	14	5	200

Source: http://www.hazine.gov.tr/english/forinvest.htm

Global suppliers follow the PLEMA type investments in Turkey and the above lying table presents the data as firm evidence. With occasionally as greenfield investments and mostly as joint venture global suppliers played a huge role in components' sector in Turkey. Hence between 2000 and 2007 foreign capital

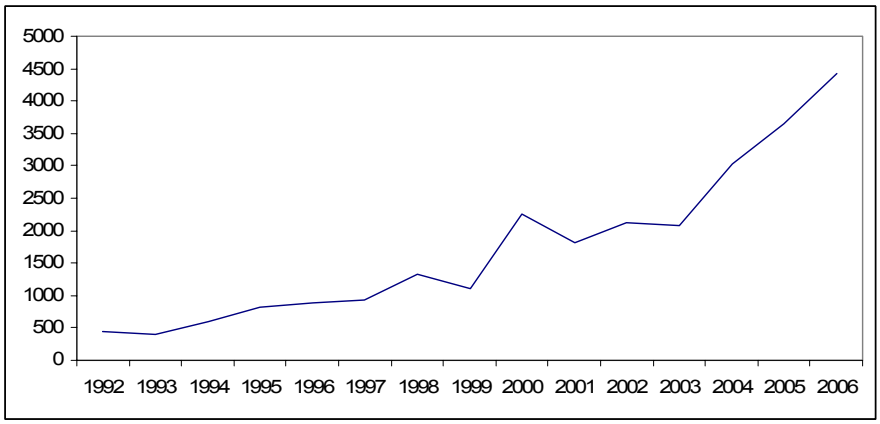
increased heavily. Until 1999 number of companies was with international capital as 96. This number climbed to 200 in May 2007.

New factories established in early 1990s and started production after mid-1990s wished to work with their global suppliers. This was exactly the case when Tofaş wished to Magneti Marelli and Teksid. However this time global suppliers were much eager in investing Turkey because as discussed above their clients were PLEMA investments targeting not only domestic market. Hence global suppliers realized sonly that demand for highly quality components in Turkey will be expanding. Instead of greenfield investment most of these suppliers choose to establish joint ventures. Döktaş and Standard Profil[25], two established first tier domestic supplier, were bought by global supplier with value more than $200 million.

The changing structure of the supplier sector led the successful companies to gain exports markets and since 1992 supplier's exports are continuously rising. However entrance of global suppliers following MNCs' investments in Turkey also should have helped exports of components. Indeed the acceleration after 1999 is because of global suppliers founding joint ventures in Turkey.

[25] Indeed Standart Profil was bought by a private equity firm. This firm is targeting to develop the business of Standart rofil and market the firm to another global supplier.

Figure 5.5: Components Exports of Turkey

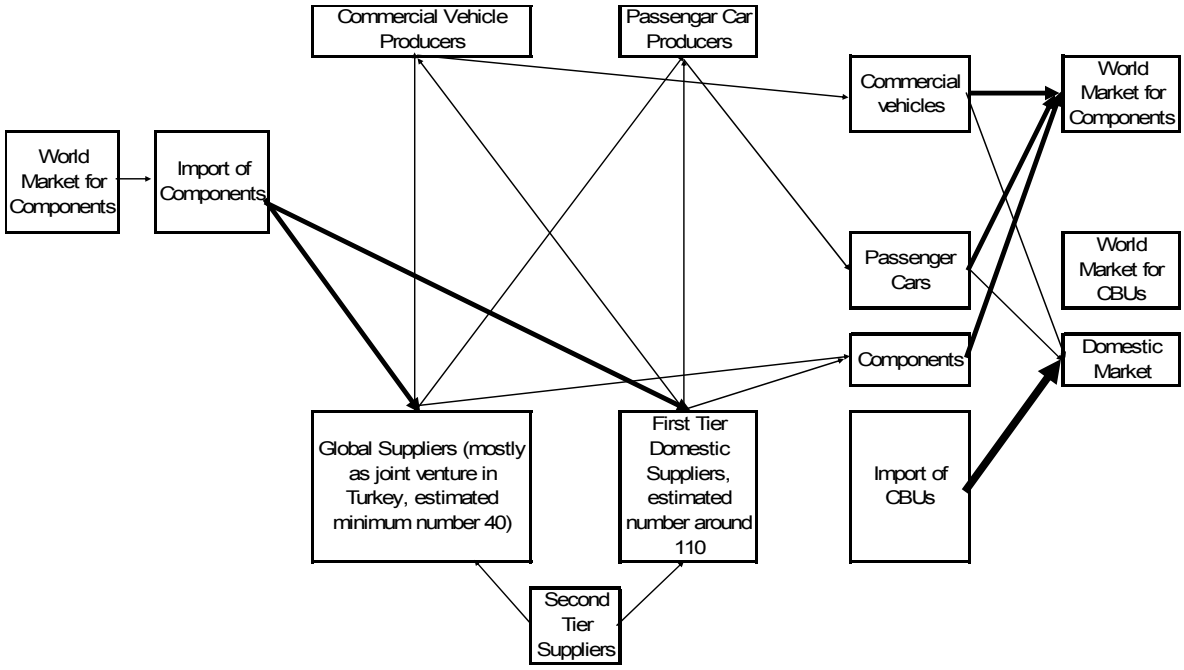


Source:http://www.osd.org.tr/disticaret2005.pdf, http://www.osd.org.tr/2006rapor.pdf

As of today in motor vehicle production sector and components sector Turkey presents a globally integrated picture. While posting consistently negative trade balance figures except 2001 and 2002 total trade volume of the automotive industry in Turkey approaches $30 billion (more than $25 billion in 2005). However as Sturgeon (1997) pointed MNCs' main concerns regarding cross border investments remain as cost advantages and particularly lower labour wages. Turkey was the target of PLEMA type investments in early 1990s because it was close to EU, a large existing market area (LEMA), and it has important cost advantages. Therefore Turkey's integration to global automotive value chain carries a labour intensive quality at the assemblers' front. However the situation in global suppliers' front is different. Global suppliers surge to Turkey cannot be valuated as cost concerned course of action. Global suppliers' main aim is to follow their client (world manufacturers such as Toyota, Hyundai and Opel). Therefore I guess that in the first

tire global supplier segment some domestic companies with foreign partnership succeed in a more value-added integration to global automotive value chain[26].

Figure 5.6: Automotive Sector of Turkey in Global Automotive Value Chain after 2000



[26] Orhan Holding, one of Ford's domestic suppliers in Turkey, has bought Dana Corporation's several factories located in Europe for $70 million. Similar cases are common in components industry. Many Indian and Chinese component suppliers are in talks to buy their European competitors.

5.7 A Brief Theoretical Assessment

Firstly automotive industry in Turkey fits the concept of a value chain (Figure 3.1: The Extended Value Chain with Inputs). There are clear evidences which show that the manufacturing process of automotive products in Turkey exhibits a multi-noded, segmented model. There are many assemblers and suppliers which cooperate to produce a final product.

Secondly automotive industry in Turkey also goes well with the governance conception of Gereffi. Hence we can conclude that the Turkish automotive industry is a producer driven commodity chain. The industry was based on industrial capital and it was capital intensive. The network structure was vertical and subcontracting was an intense practice applied by suppliers. It could be roughly said that Renault and Tofaş exercised their power to maximize technological rents (i.e. sole automotive assemblers in Turkey controlling 85% of the market) and organizational rents (sole clients of suppliers, governing a large pool of suppliers aiming to minimize costs).

Thirdly in accordance with Gereffi's theory TNCs were in control of central production. Renault's emergence as an exporter in mid-1980s and Tofaş's focus on domestic market rather than export markets were directly managed by TNCs. Furthermore there are two more examples which exhibit TNCs role on domestic assemblers: Balcet and Enrietti (2000) tell the story of Tofaş's resistance against Fiat's plans on Siena and Palio production in Bursa. The launching of production for

these models were planned on 1996 however it was delayed two years because of serious conflicts between Tofaş and Fiat. Fiat's idea was to produce its global cars, i.e. Siena and Palio in Bursa and then export. However Tofaş was strongly oriented to a domestic, highly protected market. Hence the transition required deep technological and organizational change. Fiat's plan was to integrate Tofaş into its global production network. Therefore Fiat was in demand of more control on industrial processes and international flows which Koç Group rejected to share. Balcet and Enrietti tell the end of story as follows:

> *During negotiations with Koç, the work of a Tofas team in the 178 platform in Turin was stopped. The conflict went to an end in January 1998, when Fiat obtained a degree of control considered satisfactory through an Italian general manager of Tofas Oto Ticaret AS, new capital shares in the joint ventures and side agreements between partners. Technical cooperation started again in the 178 platform, Palio and Siena production was launched in Bursa plant, and Tofas was involved in the global sourcing strategy, supported by an information system, called "world material flows."* (Balcet and Enrietti, 2000, p.82).

The second example is the conflict between Toyota and Sabancı Holding. Both companies established Toyota Turkey in 1990 with equal share and the company were named as Toyota-sa. Later, in 2000, when economic crisis hit Turkey partners could not agree on the operational and technological strategy about the company and at the end Sabancı Holding sold its share to Toyota.

Supplier assembler relationships also fit with Gereffi's conception (Table 3.2: Forms of Coordination in Value Chains and Their Determinants). During the import substitution period the assembler supplier relations exhibits a captive supplier pattern

when suppliers were totally under governance of assemblers. A recent empirical work (Wasti, Kozan and Kuman, 2006) gives a picture of assembler supplier relations in Turkey and in comparison with global results obtained through surveys on assemblers and suppliers.

Table 5.21: Empirical Works on Assembler Supplier Relations

Captive Buyer	**Strategic Partnership**
US: 42% Japan: 15%	US: 25% Japan: 19%
Turkey (buyers): 0% Turkey (suppliers): 0%	Turkey (buyers): 35.3% Turkey (suppliers): 40.3%
Market Exchange	**Captive Supplier**
US: 25% Japan: 31%	US: 8% Japan: 35%
Turkey (buyers):23.5% Turkey (suppliers): 18.1%	Turkey (buyers): 41.2% Turkey (suppliers): 38.9%

Source: Wasti, Kozan and Kuman: 2006; p. 960

The results show that 41.2% of buyers in Turkey (assemblers) believe that they are working in a captive supplier environment and suppliers thinks that this figure is 38.9%. The second strong proposition for the assembler supplier relationship appears as strategic partnership with results of 35.3% for buyers and 40.3% for suppliers. Market exchange is a less likely type of relationship (23.5% buyers, 18.1% suppliers) and none of the participant of this survey evaluates assemblers as captive.

The results confirm the dominant buyer environment in general:

> *In the Turkish case, both in the buyer and supplier samples, the suppliers are reported to be making higher relationship-specific investments (as shown by the mean values), which supports our findings of*

> *a dominant buyer environment and less payoff equity and satisfaction on the part of the suppliers* (Wasti, Kozan and Kuman, 2006, p.959).

Furthermore Wasti, Kozan and Kuman guess that suppliers overestimate their own value in term of strategic importance to the buyer:

> *This can be seen as an example of the "perception gap" between buyers and suppliers, when factors considered by the buyer as critical for an effective outsourcing partnership are significantly different from those perceived by the suppliers* (Wasti, Kozan and Kuman, 2006, p.959).

Lastly they conclude that the trajectory of assembler supplier relations in Turkey is not much different from global trends:

> *On the other hand, since the Turkish automakers are mostly joint ventures with foreign automaker companies (mostly Western), their supplier management practices have been, to a large extent, imported. Hence, the global trend towards higher levels of outsourcing, strategic partnerships, and integration with larger and technologically sophisticated suppliers has been adopted in the Turkish case as well* (Wasti, Kozan and Kuman, 2006, p.959).

Considering the work of Wasti, Kozan and Kuman we can roughly set the picture in the framework of Gereffi depicted: In Turkey between assemblers and suppliers complexity of transactions and ability of codification are high which means that assemblers do not let suppliers to engage into co-design activities. This result is also supported by the field survey of Eskiyenentürk (2006: 198). On the other hand competence level of suppliers is improving and thus many suppliers regard the relationship with the assemblers as strategic partnership. Therefore to some degree

the relationship goes beyond captive supplier environment and reaches to a relational form of coordination. This assessment is also parallel to the increasing client portfolio of Turkish suppliers and increasing attractiveness of the sector for foreign suppliers.

All in all it seems plausible to explain the development of the Turkish automotive industry in terms of global value chain approach to some extent.

But we cannot directly comment on the developmental effects of integration into global automotive value chain. How much does automotive industry in Turkey add value? This remains as a significant question which we can comment on limited with available data. However a rough picture can be depicted with the internal processing data reveal by Undersecretaries of Foreign Trade:

Table 5.22: Internal Processing Allowances by Undersecretaries of Foreign Trade (million USD)

	Motor Vehicles				Textile and Apparel			
	Export	Import	Net Export	Net Export/Export	Export	Import	Net Export	Net Export/Export
1996	626	239	387	62%	2060	746	1314	64%
1997	730	321	409	56%	3976	1433	2543	64%
1998	817	366	451	55%	4020	1288	2732	68%
1999	988	317	671	68%	3186	1733	1452	46%
2000	1556	653	902	58%	3766	1472	2294	61%
2001	2124	870	1254	59%	3825	1410	2414	63%
2002	3654	1562	2092	57%	4715	1581	3134	66%
2003	6068	2800	3268	54%	5913	2031	3882	66%
2004	4747	2266	2481	52%	4922	2960	1963	40%
2005	1223	408	815	67%	1204	488	716	59%

Source: http://www.dtm.gov.tr/

The data presented above gives the export and import volumes subject to internal processing regime Undersecretaries of Foreign Trade. This program allows producers located in Turkey to import intermediary goods with tariff exemptions in order to generate export revenues. Hence net exports figures can be roughly evaluated as domestic value added.

The net export volumes and net export/export ratio of automotive industry does differ much from that of textile and apparel industry. We does not observe steep climb in net export/export ratio of automotive industry and this ratio oscillates around 60% during the last decade and this figure is almost the same of textile and apparel industry for the same time period. Thus we cannot conclude that integration into global automotive value chain directly conducts to more value added export. Consequently integration cannot be assessed as a shortcut to development.

CONCLUSION

During the past five decades automotive industry in Turkey has been subjected to a significant transformation and the determinants of this transformation can be roughly summarized as follows:

In early stages as well as late stages government polices played a great role in shaping the industry. In the import substitution period government's attempts towards increasing local content gave birth of a diversified supplier base. During the export orientation and integration period government's steps aiming liberalization also became determining in shaping suppliers' and assemblers' strategies concerning coping with globalization of automotive industry.

On the other hand MNCs' role cannot by underestimated. They became influential on local subsidiaries in Turkey in import substitution period particularly on passenger car producers. In late stages their influence gained strength and many other assemblers established factories in Turkey which led to the increasing joint ventures and partnerships of domestic suppliers and global suppliers.

In both stages Turkey's overall profile does not differ much from other developing countries regarding automotive industry. Hence we observe similar developments in Turkey which are in line with the general trends of global automotive industry. But particularly after 1990s Turkey's share regarding in world export markets started to increase in expense of developed countries exports and in that sense Turkey's performance concerning automotive products presents a more intense integration with global automotive industry. My work mainly explains this fact with the increase in PLEMA type investment; follow supply activities following liberalization efforts of governments which led to the incorporation of domestic automotive and parts producers to global automotive value chain.

It is tough to present the direct developmental effects of integration into global automotive industry. The data regarding internal processing allowances does not appear as a supportive evidence of the existing of increasing value added production in Turkey and Eskiyenentürk's field work also underlines the absence of design and co-design activities. Hence with limited data we can roughly conclude that the automotive industry in Turkey does not operate mainly on more value added nodes of global automotive value chain.

APPENDICIES

Appendix 1: Assemblers operating in Turkey

Firms	The Production Place	Starting Year Of Production	Licence	Foreign Cap. (%)
A.I.O.S.	KOCAELİ	1966	ISUZU	29.74
ASKAM	KOCAELİ	1964	DAIMLER-CHRYSLER / HINO	0.00
B.M.C.	İZMİR	1964		0.00
FORD OTOSAN	ESKİŞEHİR KOCAELİ	1983 / 2001	FORD	41.00
HATTAT TARIM	TEKİRDAĞ	2002	VALTRA, UNIVERSAL, HATTAT	0.00
HONDA TÜRKİYE	KOCAELİ	1997	HONDA MOTOR EUROPE. LTD.	100.00
HYUNDAI ASSAN	KOCAELİ	1997	HYUNDAI MOTOR COMP.	70.00
KARSAN	BURSA	1966	PEUGEOT	0.00
M.A.N. TÜRKİYE	ANKARA	1966	MAN	99.90
M.BENZ TÜRK	İSTANBUL AKSARAY	1968 / 1985	MERCEDES BENZ	85.00
OTOKAR	SAKARYA	1963	DEUTZ / LAND ROVER / FRUEHAUF / AM GENERAL	0.00
OTOYOL	SAKARYA	1966	IVECO	27.00
O.RENAULT	BURSA	1971	RENAULT	51.00
TEMSA	ADANA	1987	TEMSA / MITSUBISHI	0.00
TOFAŞ	BURSA	1971	FIAT	37.80
TOYOTA	SAKARYA	1994	TOYOTA	100.00
T.TRAKTÖR	ANKARA	1954		37.50
UZEL	İSTANBUL	1962	M. FERGUSON	0.00

Source: http://www.osd.org.tr/cata2007.pdf

Appendix 2: TAYSAD Members with Foreign Share

#	SUPPLIERS	FOREIGN PARTNER	COUNTRY	(%)
1	A RAYMOND BAĞLANTI ELEMANLARI SAN. VE TİC. LTD.ŞTİ.	A Raymond	France	100
2	AKA OTOMOTİV SANAYİ VE TİCARET A.Ş.	Aka Automotive Srl	Romania	
3	ASSAN HANİL OTOMOTİV SAN. TİC. A.Ş.	Hanil E Hwa	Korea	40
4	AUTOLIV CANKOR OTOMOTİV SAN. VE TİC. A.Ş.	Autoliv	Sweden	100
5	BANDO KOÇKAYA KAYIŞ SAN. TİC. (TÜRKİYE) A.Ş.	Bando Chemical Industries Ltd.	Japan	51
6	BELTAN VIBRACOUSTIC TİTREŞİM ELEMANLARI SAN.VE TİC. A.Ş.	Vibracoustic	Germany	25
7	BORÇELİK SAN. VE TİC. A.Ş.	Arcelor Auto	France	40
		International Finance Corporation - IFC		12
8	BOSAL MİMAYSAN METAL İŞLEME SAN. VE TİC. A.Ş.	Bosal Holding BV	Belgium	73
9	BOSCH FREN SİSTEMLERİ SAN. VE TİC. A.Ş.	Robert Bosch GmbH	Germany	80
10	BOSCH SAN. VE TİC. A.Ş.	Robert Bosch GmbH	Germany	100
11	CEVHER DÖKÜM A.Ş.	Teksid	Italy	18
12	DENSO OTOMOTİV PARÇALARI SANAYİ A.Ş.	Denso Corporation	Japan	100
13	DOW TÜRKİYE KİMYA SAN. VE TİC. LTD. ŞTİ.	Dow Europe Holding N.V.	Holland	100
		Dow Interbranch B.V.		0
14	EGE FREN SAN. VE TİC. A.Ş.	ArvinMeritor	USA	49
15	FAURECIA POLIFLEKS OTOMOTİV. SAN. VE TİC. A.Ş.	Faurecia	France	100
16	FEDERAL MOGUL İZMİT PİSTON VE PİM ÜRETİM TES. A.Ş.	Federal Mogul	USA	43
17	FEDERAL MOGUL SAPANCA SEGMAN-GÖMLEK ÜRT.TES.A.Ş.	Federal Mogul	Michigan	50
18	FONTANA PIETRO KALIP SAN. VE TİC. A.Ş.	Fontana Pietro SPA	Italy	95
19	HP PELZER PİMSA OTOMOTİV A.Ş.	HP Chemie Pelzer GmbH	Germany	51
20	KAYNAK TEKNİĞİ SAN. TİC. A.Ş.	Lincoln Elektrik France SA	France	50
21	MAJOR SKT OTO DONANIM SAN. VE TİC. A.Ş.	Johson Controls Inc.	USA	50
22	MAKO ELEKTRİK SAN. VE TİC. A.Ş.	Magneti Marelli Spa	Italy	100
23	MATAY OTOMOTİV YAN SAN. VE TİC. A.Ş.	Magneti Marelli Spa	Italy	28
24	MAYSAN MANDO OTOMOTİV PARÇA SAN. TİC. A.Ş.	Mando Corp.	Korea	50
25	MECAPLAST OTOMOTİV ÜRÜNLERİ SAN VE TİC. A.Ş.	Mecaplast SAM	Monaco	100
26	NURSAN ELEKTRİK DONANIM SAN. VE TİC. A.Ş.	Valeo Electronics&Connective Systems	France	40
27	ORTADOĞU RULMAN SAN. VE TİC. A.Ş.	ORS Bearings Inch.	USA	3.4
28	PİMSA POLİÜRETAN İMALAT SAN. VE TİC. A.Ş.	HP Chemie Pelzer	Germany	8.2
29	RÖZMAŞ CHUO OTOMOTİV YAY SANAYİ A.Ş.	Chuo Spring Co. Ltd.	Japan	50
30	SANGO OTOMOTİV ÜRÜNLERİ SAN VE TİC. A.Ş.	Sango Co Ltd	Japan	100
31	SEKİSO OTOMOTİV SANAYİ VE TİCARET A.Ş.	Sekiso Corporation	Japan	100
32	SİKA YAPI KİMYASALLARI A.Ş.			100
33	TEKERSAN JANT SAN. A.Ş.	Michelin Kronprinz	Germany	100
34	TKG OTOMOTİV SANAYİ VE TİCARET A.Ş.	Jean Pierre Martin	France	5
35	TOYOTA TSUSHO EUROPE S.A. ISTANBUL BRANCH OFFICE	Toyota Tsusho Europe S.A.	Belgium	100
36	TOYOTETSU OTOMOTİV PARÇ. ÜRETİM VE TİC. A.Ş.	Toyoda Iron Works	Japan	100
37	VALEO OTOM. SİSTEMLERİ END. A.Ş.	Valeo	France	100
38	ZATEL PRES DÖKÜM SAN. VE TİC. A.Ş.	TMCI AG	Switzer.	25
		Dirilgen Holding AG	Switzer.	8
39	ZF LEMFÖRDER AKS MODÜLLERİ SAN. TİC. A.Ş.	ZF Lemförder	Germany	100
40	ZF TÜRK SAN. VE TİC. A.Ş.	ZF Friedrichshafen AG	Germany	100

Source: http://www.taysad.org.tr/

References

Aksoy, T., 1990. *Ortak Pazarla Muhtemel Bir Entegrasyon Isiginda Turk Otomotiv Sanayii Yatirimları,* OSD Yayinlari, Istanbul, 1990

Arrighi, G., Drangel, J., 1986. "The Stratification of the World-Economy," *Review*, Vol.1, pp.9-74.

Bae, Y., 1998. Globalization, Institutions and Industry Development, A Case Study of the Personal Computer Industry in Korea and Taiwan, PhD Dissertation, Department of Political Science, University of North Carolina.

Bair, J., 2002. *Is Mexico sewing up development? NAFTA and the North American apparel industry*, PhD Dissertation, Department of Sociology, Duke University.

Bair, J., 2004. "From Commodity Chains to Value Chains and Back Again?," Draft Work, < http://www.csiss.org/events/meetings/time-mapping/files/bair_paper.pdf> (accessed 24 January 2007)

Balcet, G., Enrietti, A., "Partnership and Global Production: Fiat Strategies in Turkey", *Actes du GERPISA*, no.34, 2000.

Bedir, A., 2002. "Türkiye'de Otomotiv Sanayii Gelişme Perspektifi," T.C. Başbanlık Devlet Planlama Teşkilatı İktisadi Sektörler ve Koordinasyon Genel Müdürlüğü, http://ekutup.dpt.gov.tr/imalatsa/otomotiv/bedira/gelisme.pdf (accessed 5 April 2007).

Boratav, K. , 2005. *Turkiye Iktisadi Tarihi 1908-2005*, Gercek Yayinevi, Istanbul.

Camuffo, A., "Rolling Out a "World Car": Globalization, Outsourcing and Modularity in the Auto Industry," imvp.mit.edu/papers/0001/camuffo1.pdf, accessed 5 April 2007.

Camuffo, A., Volpalto, G., 1999. "From Lean to Modular Manufacturing, the Case of Fiat 178 World Car," *IMVP Globalization Research Report*, MIT, Cambridge.

Coe, N. M., Hess, M., Yeung, H. W., Dicken, P., Henderson, J., 2004. "'Globalizing' regional development: a global production networks perspective," *Transactions of the Institute of British Geographers*, Vol.29, Number 4, pp.468-484.

Dicken, P., Kelly, F. H., Olds, K., Yeung, W., 2001. "Chains and networks, territories scales: towards a relational framework for analysing the global economy," *Global Networks*, Vol.1, Number 2, pp.89-112.

Dicken, P., 2003. *Global Shift*, Fourth Edition, Sage Publications, Trowbridge, Wiltshire.

Dicken, P., 2003b. 'Globalizing' Regional Development: A Global Production Networks Perspective," *GPN Working Paper*, May 2003.

Dikmen, A. A., 2000. "Küresel üretim, moda ekonomileri ve yeni dünya hiyerarşisi," *Toplum ve Bilim*, No.86, pp.218-302.

Duruiz, L, "Any Lean System in Turkish Car Industry? Case of Toyotosa", *Actes du GERPISA,* no.24, 1998.

Duruiz, L., 2004. "Challenges for the Turkish Car Industry on its Way to Integration with the European Union", in J Carrillo, Y Lung and R Van Tulder (eds.), *Cars, Carriers of Regionalism?*, Palgrave MacMillan, London.

Eskiyenentürk, O., 2006. *Determinants of Inter-Segment Performance Differences: the Case of Automotive Suppliers in Turkey*, unpublished PhD thesis, Stanford.

Freysennet, M., Shmizu, K., Volpato, G., (eds.) 2003. *Globalization or Regionalization of European Car Industry?*, Palgrave-MacMillan, London and New York.

Gereffi, G., 1994a. "The Organization of Buyer-Driven Global Commodity Chains: How U.S. Retailers Shape Overseas Production Networks," in Gereffi, G., Korzeniewicz, M. (Eds.) *Commodity Chains and Global Capitalism*, Praeger, Westport, pp. 95-122.

Gereffi, G., 1994b. "The International Economy and Economic Development," in Smelser, N. J., Swedberg R. (Eds.) *The Handbook of Economic Sociology*, pp. 206-233.

Gereffi, G., 1996. "Global commodity chains: new forms of coordination and control among nations and firms in international industries," *Competition and Change*, Vol.1, pp. 427-439.

Gereffi, G., 1999a. "A Commodity Chains Framework for Analyzing Global Industries," < http://www.ids.ac.uk/ids/global/pdfs/gereffi.pdf> (accessed 24 January 2007)

Gereffi, G., 1999b. "International trade and industrial upgrading in the apparel commodity chain," *Journal of International Economics*, Vol.48, pp.37-70.

Gereffi, G., 2001. "Beyond the producer-driven/buyer-driven dichotomy: the evolution of global value chains in the internet era," *IDS Bulletin*, Vol.32, Number 3, pp.30-40.

Gereffi, G., Humphrey, J., Sturgeon, T., 2005. "The governance of global value chains," *Review of International Political Economy*, Vol.12, Number 1, pp.78-104.

Gereffi, G., Humphrey, J., Sturgeon, T., Kaplinsky, R., 2001. “Introduction: Globalisation, Value Chains and Development," *IDS Bulletin*, Vol.32, Number 3, pp.1-12.

Gereffi, G., Korzeniewicz, M., 1994a. “Introduction: Global Commodity Chains,” in Gereffi, G., Korzeniewicz, M. (Eds.) *Commodity Chains and Global Capitalism*, Praeger, Westport.

Hopkins, T., Wallerstein, I., 1986. “Commodity chains in the world economy prior to 1800," *Review*, Vol.1, pp.157-170.

http://cars.about.com

http://tcmbf40.tcmb.gov.tr/cbt.html

http://www.earth-policy.org/Indicators/Econ/2006_data.htm#table1

http://www.hazine.gov.tr/english/forinvest.htm

http://www.osd.org.tr/1963-2006.pdf

http://www.osd.org.tr/2006rapor.pdf

http://www.osd.org.tr/disticaret2005.pdf

http://www.wto.org/

Humphrey, J., Lecler, Y., Salerno, MS., (eds.) 2000. *Global Strategies and Local Realities: The Auto Industry in Emerging Markets*, Macmillan, London.

Humphrey, J., Memedovic, O., 2003. “The Global Automotive Industry Value Chain: What prospects for developing countries?," *Sectoral Studies Series*, UNIDO, Vienna.

Humphrey, J., Salerno, MS., 1997.“Globalization and Assembler-Supplier Relations: Brazil and India,” *Actes du GERISPA*, No.25, Janvier.

Jenkins, R.O., 1987. *Transnational Corporations and the Latin American Automobile Industry*, Univ. of Pittsburg Press, Pittsburg, PA..

Kaplinsky, R., 1998. “Globalisation, Industrialisation And Sustainable Growth: The Pursuit Of The Nth Rent," *IDS Discussion Paper*, Number 365.

Kaplinsky, R., Morris, M., 2000. “A Handbook for Value Chain Research,” *MIT IPC Globalization Working Paper 00-010*, Report Prepared for the IDRC , < http://www.ids.ac.uk/ids/global/pdfs/VchNov01.pdf> (accesed 24 January 2007)

Kim, C.K and Lee, C.H., 1983. "Ancillary Firm Development in the Korean Automobile Industry", in Odaka, K. (ed) *The Motor Vehicle Industry in Asia, A Study of Ancillary Firm Development*, Singapore Univ. Press.

Korzeniewicz, M., 1994a. "Commodity Chains and Marketing Strategies: Nike and the Global Athletic Footwear Industry," in Gereffi, G., Korzeniewicz, M. (Eds.) *Commodity Chains and Global Capitalism*, Praeger, Westport.

Krueger, A.O. and Aktan, O.H., *Swimming Against the Tide: Turkish Trade Reform in the 1980s*, ICEG Press, San Francisco, CA.

Kucukerman, O., 2004. "Centuries of History: Transition from Carriage to the Automotive Industry in Anatolia", *Turkish Time*, online article, <http://www.turkishtime.org> (accessed 20 July 2007)

Kutay, P., 1995, "1/95 Sayili Ortaklik Konseyi Karari Qergevesinde Gurnruk Birligi ve Otomotiv Sanayii", *Proceedings of the 4th Automotive and Suppliers Symposium*, 3-4 November, Istanbul.

Lall, S., 2004. "Reinventing Industrial Strategy: The Role of Government Policy in Building Industrial Competitiveness," *G-24 Discussion Paper Series*, No.28, pp.1-34.

Lall, S., Albaladejo, M., Zhang, J., "Mapping Fragmentation: Electronics and Automobiles in East Asia and Latin America," *Oxford Development Studies*, Vol.32, No.3, September 2004, pp. 407-432.

Lim, C.P. and Onn, F.C., 1983. "Ancillary Firm Development in the Malaysian Motor Vehicle Industry", in Odaka, K, (ed) *The Motor Vehicle Industry in Asia, A Study of Ancillary Firm Development*, Singapore Univ. Press.

Lung, Y., 2000. "Is the Rise of the Emerging Countries as Automobile Producers an Irreversible Phenomenon?," in Humphrey, J., Lecler, Y., Salerno, MS., (eds.) *Global Strategies and Local Realities: The Auto Industry in Emerging Markets*, Macmillan, London

Lynch, T., 1999. "Globalization in Motor Vehicle Industry: Final Conference Summary," MIT Industrial Performance Centre*, Special Working Paper Series*.

Maddison, A., 2001. *The World Economy: A Millennial Perspective*, OECD, Paris.

Naeyoungi, L., Cason, J., 1995. "Automobile Commodity Chains in the NICs: A Comparison of South Korea, Mexico and Brazil," in Gereffi, G., Korzeniewicz, M. (Eds*.) Commodity Chains and Global Capitalism*, Praeger, Westport, pp. 223-243.

Nahum. B., 1998. *Koc'ta 44 Yilim: Bir Otomotiv Sanayii Kuruluyor*, Milliyet Yayinlari, Istanbul.

Nedimoglu, F., 1991, “Post-1980 Restructuring Trends in the Turkish Automobile Industry”, *Proceedings of the 3th Automotive and Suppliers Symposium*, 12-16 November, Bursa.

Okur, SA., 1994, *The Role of the Small Scale Suppliers within the Dynamics of the Turkish Automotive Industry: A Historical Perspective*, unpublished PhD thesis, MIT, Cambridge.

Özşahin, OS., 2006. *A Study of the Turkish Automobile Industry: A Game Theoretical Approach*, unpublished PhD thesis, Texas.

Pekarun, I., 1977. *Otomotiv Sanayi Arastirmasi*, Turkiye Sanayi Kalkinma Bankasi Yayinlari, Istanbul.

Porter, M., 1990. *The Competitive Advantage of Nations*, Harvard Business School Press, Boston.

Rabach, E., Kim E. M., 1994a. “Where is the Chain in Commodity Chains? The Service Sector Nexus,” in Gereffi, G., Korzeniewicz, M. (Eds.) *Commodity Chains and Global Capitalism*, Praeger, Westport, pp. 123-142.

Raikes, P., Jensen, M. F., Ponte, S., 2000. “Global commodity chain analysis and the French filière approach: comparison and critique," *Economy and Society*, Vol.29, Number 3, pp.390-417.

Rodrik, D., 2006. “Industrial Development: Stylized Facts and Policies,” Research Paper, (Industrial Development for the 21st, U.N.-Desa, prepared for), <http://ksghome.harvard.edu/~drodrik/industrial%20development.pdf> (accessed 24 January 2007)

Schamp, E., 2000. *Vernetze Produktion – Industriegeographie aus institutioneller Perspektive*, Darmstadt.

Smith, A., Rainnie A., Dunford M., Hardy, J., Hudson, R., Sadler, D., 2002. “Networks of value, commodities and regions: Reworking divisions of labour in macro-regional economies," *Progress in Human Geography*, Vol.26, Number 1, pp.41-63.

SPO (State Planning Organization), 1987. *AET Karsisinda Turk Kara Nakil Araclari Sanavii*, Ozel Ihtisas Komisyonu Alt Komite Raporu.

Stokes, B., 2003. “A Potholed Path for U.S. Auto Industry," *National Journal*, 8 March 2003.

Sturgeon, T., 1997. “Globalization and the Threat of Overcapacity in the Automotive Industry", Globalization and Jobs in the Automotive Industry.

Sturgeon, T., 1999. “Globalization and Jobs in the Automotive Industry: A Locational Typology", Globalization and Jobs in the Automotive Industry.

Sturgeon, T., 2001. “How Do We Define Value Chains and Production Networks?,” *MIT IPC Globalization Working Paper 00-010*, < http://ipc-lis.mit.edu/globalization/globalization%2000-010.pdf> (accessed 24 January 2007)

Sturgeon, T., Florida, R., 1999 “The world that changed the machine: globalization and jobs in the automotive industry final report to the Alfred Sloan Foundation,” MIT, Cambridge.

Tezer, E,, 1989. "Gelisen Otomotiv Sanayiinde Guncel Sorunlar", paper presented at the 2nd, *Automotive and Allied Industries Symposium*, Bursa.

Tolentino, A. and Ybanez, R., 1983. "Ancillary Firm Development in the Phillipine Automobile Industry", in Odaka, K. (ed) *The Motor Vehicle Industry in Asia, A Study of Ancillary Firm Development*, Singppore Univ. Press.
Tredudontham, T., 2003 “Thai Policies for the Automobile Sector: Focus on Technology Transfer,” in Busser, R., Sadoi, *Y., Production Networks in Asia and Europe: Skill Formation and Technology Transfer in the Automobile Industry*, Routledge, London and New York.

Ulagay, O., 1987. *Ozal Ekonomisinde Paramiz Pul Olurken Kim Kazandi Kim Kaybetti, Bilgi Yayinevi*, Ankara.

UNCTAD, 2002. *Trade and Development Report 2002*, Geneva, United Natoins.

Wasti, N, Kozan, K, Kuman, A,. “Buyer-supplier relationships in the Turkish automotive industry,” *International Journal of Operations & Production Management*, Vol. 26, No. 9, 2006, p.947-970.

Wasti, N., 2001. “Predictors of Trust in Buyer-Supplier Relations: A Contextual and Cultural Comparison of Japan and Turkey,” <http://www.econturk.org/yen5.pdf> (accessed 20 July 2007)

Whitley, R., 1996. “Business systems and global commodity chains: competing or complementary forms of economic organization,” *Competition and Change*, Vol.1, pp. 411-425.

Womack, J.P., Jones, D.T. and Roos, D., 1990. *The Machine That Changed the World*, Rawson Associates, New York, NY.

www.ccfa.fr

www.osd.org.tr/