INDUSTRIALIZATION DYNAMICS OF THRACE REGION AND INDUSTRIAL CLUSTERS IN CORLU

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ABSTRACT

In this study, industrialization dynamics of Thrace Region is investigated. In Corlu case study, structure of industry is analyzed and industrial clusters in Corlu are focused. The main locational determinant of firms and their main characteristics, the kind of cooperation they develop in the competition condition, main information channels between them, their innovation activities and impact on region's economy are investigated. It is find out that these firms only concentrate physically and they do not have the qualifications that industrial clusters which is used as regional development tools all over the world.

1. INTRODUCTION

Industrial clusters are important tools for regional growth all over the world. Firms develop different kind of cooperation in different fields with their subcontractors and their competitors against competition caused by globalization and liberalization. Competition conditions force firms to be innovative at technology, design and organization. Information flow among the firms within clusters is also necessary for innovation. Spatial concentration of firms in a specific locality is not enough but collaboration among them is also necessary in order for the firms coming together physically work as a cluster. From the theoretical point of view, industrial firms tend to move from core regions to peripheral regions. Firms which need bigger land and cheaper labors diffuse towards small towns. Size of cities is another reason of relocation of industries. In other words, firms producing more standard products decide to settle in places where they can make cheaper production. Industry located

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in Istanbul Metropolitan area started to move towards Thrace region after 1970's. Metropolitan city plans produced in 1970's and governments' decentralization policies for them were the main reasons of this relocation process. Industries, which came to the Thrace region, concentrated on certain places. Tekirdag, one of the most industrialized cities in Thrace, and Corlu, one of the counties of Tekirdag, are the most effected centers from these developments.

1.1 Aim, Content and Method of the Paper

One of the main aims of this research is to find out industrialization dynamics of Thrace region. Another aim is to search location criteria and qualifications of industry firms in Corlu, how they cooperate under pressure of competition, which information channels they use, their innovation efforts and their plans for the future in Thrace region.

In second and third part of the paper, the literature survey related to the effects of city size and core-periphery relations on location of firms as well as the qualification of industrial clusters are put forward. In the fourth part, firstly, socio-economic structure and industrialization dynamics of Thrace region are searched. Secondly industry sector in the region is analyzed by using geographical concentration coefficient, sector specialization index and location quotient. Finally, industrial clusters in the region are investigated by focusing on Corlu as a case study. In this case study, cluster maps are produced in order to present the number of firms coming from different sub industrial sectors in different periods and the location they are concentrated. By the help of findings received from Corlu case study, qualification of firms, cooperation they develop, information channels they use, innovation efforts they put are found out.

In the paper, a couple of analysis techniques which are related to each other are used. Secondary data is used to describe socio-economic structure. In Corlu case study, by using NetCad program, clustering behavior of firms in space in certain periods is mapped. To describe Corlu industrial clusters, primary data received by questionnaire and interviews are analyzed.

2. EFFECTS OF CITY SIZE AND CORE-PERIPHERY RELATIONS ON LOCATION OF INDUSTRY FIRMS

Inputs of industry sector are labor, capital, land and services. Cost of these inputs except capital is related to city size, in another word to population. As the price of land rises the city size rises also but in a declining ratio. This situation is valid for wage of labor as well. In bigger cities transportation cost and rents are much higher. For this reason people living in bigger cities spend much of their wages for transportation and rent than people living in smaller cities. Due to the higher wages in big cities people prefer to live there.

Firms can find out optimum city size where their cost is lower. Firms which need bigger lands and employ cheaper labor prefer smaller cities. Textile firms are example for this group. On the other hand, firms which need more skilled labor with high wage prefer big cities. This kind of firms settles in the CBD (central business district) of the cities (Evans, 1991). For Vernon, firms which produce non-standardized and new product take place in the core cities as the product needs to be matured. These firms have research & development activities. When the product becomes standard the firm do not need more skilled employee and move from core cities to periphery cities (McCann, 2001).

Economic development starts in certain places due to natural resources and geographical advantages. Because of positive internal and external economies these places become development pole. Periphery regions around these centers either lose their economic importance and power or develop by the effects of centers.

Some of the negative effects of center on periphery are migration of employee from periphery to center, transfer of capital and collapse of industry in periphery. Increase of purchase power of periphery and increase of demand due to the increase of purchase power can be given as examples for positive effects of center on periphery. As a conclusion, center pulls employee and capital, buys raw material from periphery while selling technology and product to it. Increase at prices, environment pollution, getting crowded of the city cause center to lose its attraction. So, investments move to the periphery. For Myrdal, less developed regions can not make investment to develop. This situation becomes a vicious circle; less developed regions stay less developed due to lack of many. Transfer of economic development from center to

periphery with the positive effects of center can be met only in developed countries (Dinler, 2001).

Between 1976 and 1997, it was seen that manufacturing activities moved from big metropolitan cities at center to small cities at periphery in Canada. It can be explained with that big cities lose their attraction for manufacturing activities by the time because of development of transportation facilities which cause these activities to become independent from cities. Periphery regions become more attractive with their cheaper labor and bigger land (Brown and Baldwin, 2003).

Movement of textile sector in Europe is a very good example for changing geography of manufacturing. As 60% of total cost is workmanship in textile business, this sector is influenced by increase at labor wage. Movement of production to other places where wage is lower has been a production strategy in this sector for years. Textile business moved from West Europe to periphery regions which were less industrialized in 1950's and 1960', from North Europe to South Europe in 1970's and 1980's. Since end of 1990's it has been moved towards to Asian countries to make cheaper production (Hudson, 2002).

3. INDUSTRIAL CLUSTERS AS A TOOL FOR ECONOMIC DEVELOPMENT

For Porter (Porter, 1998), industrial cluster is a concentration of industrial activities, which has competition power raised from agglomeration economies. He emphasizes that industrial cluster is more than agglomeration because of the innovation resulting from cooperation between firms in cluster. (Benneworth and others, 2003). World Bank explains cluster as production network where firms, institutions producing information and clients are connected with an adding value chain.

Firms tend to concentrate on space. Being together physically provide some advantages to firms, which is called agglomeration economies. According to agglomeration theory, firms located close to each other in the same industrial region benefit from big scale industrial production, technological and organizational innovations. External economies which are explained as non-paid production factor express that firms take advantage from where they settle or increasing of number of firms around them (Dinler, 2001).

Guerrieri and Pietrobelli classified industrial clusters in 4 categories (Basant, 2002). A similar classification was made by Markusen (Evren, 2005). Table 3.1 shows

Table 3.1: Features of Industrial Districts Types

Features	Marshallian ID	Hub-and-Spoke District	Satellite Industrial Platform	State-Anchored Industrial District
Prevailing Market Structure	Local SME's	One/several large firms and suppliers	Large firms external to the district	One/several government institutions providing infrastructure
Economies of Scale	Low	High	High	High
Local firms' Level of Activity	High	Low, except for services	Low to moderate	Low or none
Intra-district Trade	Highly developed	Between large enterprise and suppliers	Minimal	High between institutions and suppliers
Key Investments	Local decision	Local decision, but globally dispersed	External decision	In local government or external to the ID
Buyer-Producer Cooperation	Important	Low	Low or none	Low
Regulation of Relationships	Long-term contracts	Long-term contracts	Short-term contracts	Short-term contracts
Cooperation with Firms Outside the ID	Low	High	High with parent company	High with parent company
Labor Market	Internal to the district Highly flexible	Internal to the district flexible	External to the district, internal to the large enterprise	Internal (government capital), national from other institutions
Personnel Exchanges	High	Medium	High, external origin	Medium/high (professional)
Labor (out) migration	Low	Medium	High for high skills, low for low skills	Low unless government institution leaves
Local Cultural Identity	Developed	Developed	Virtually absent	Developed
Sources of Financing and Technical Assistance	Internal to the ID	Large firms	External	External
Local Trade Associations	Strong Presence	Virtually absent	Absent	Weak
Role of Local Government	Important	Important	Important	Weak
Long-term Growth Outlook	Good Look	Depending on large firm &industry dynamics	Threatened by relocalization of activities	Depending on government institution

(Source: Basant, 2002)

different qualifications of different clusters. Clusters can be mixed of some of these groups. Marshallian Industrial District is a cluster consisted of local and small firms working in the same industry. Hub-and-spoke Industrial District becomes one or more big firms that work as a hub turning local economy. Satellite Industrial Platform contains big scale firms which are directed from outside of the region. These firms come to the region due to its market potential, cheap labor and governments' policies. These firms make production independent from each other. Inthis kind of cluster, local production chain do not develop, which separates this cluster from the others. State-Anchored Industrial Districts is a cluster where a government institution or a university is an actor in the middle of the local economy (Evren, 2005).

Competitors, clients, universities, consultants, serving firms are the information sources of firms. Daily activities like sports or meal activities, fairs, seminars provide informal communications which play a very important role at transferring information. Firms get technology by either buying or creating or copying (Basant, 2002).

Innovation is a power for firms, regions and countries to increase their competition power. Isaksen conceptualizes innovation as a complex, interactive learning process (Isaksen, 2001).

Clustering is a prior condition to establish regional innovation system. Organizations which produce and transfer information like universities, colleges, education institutions, research and development institutions and technology institutions are very important parts of innovation system.

Economic transformation caused by globalization is an integration process directing by cooperation of nations (Isaksen, 2001). Fast globalization and conditions createdby information technology effect competition power of firms as information and technology become sources shared by everybody. Economic activities become activities which do not have space and place. As a conclusion, globalization and information technology are both opportunity and threat for clusters all over the world. Clusters increase competition power of firms by improving efficiency and innovation potential of them. Porter relates competitiveness of regions and countries to competitiveness of the main industries of them. For him, in advanced economies, sources of income and job are regional industrial clusters rather than single firms or single industries (Newlands, 2003). Under conditions of growing competition, firms

forming industrial clusters develop cooperation at process, product and practice. (Basant, 2002).

4. DEVELOPMENT OF INDUSTRY AT THRACE REGION

4.1 Socio-Economic Structure and Dynamics of Industrialization of Thrace Region

Thrace is a sub region of Marmara which is one of the most developed regions of Turkey. Edirne, Kirklareli and Tekirdag are the cities of this region which are in the hinterland of Istanbul, one of the biggest metropolitan cities in the world. Industry has been moved fast towards to Thrace region from Istanbul since 1970's and Tekirdag and Kirklareli have been more influenced from this process. In this research demographic data were investigated to analyze socio-economic structure of the region. Total population, urbanization ratio, population density are over average of Turkey while birth rate, average size of household are under average.

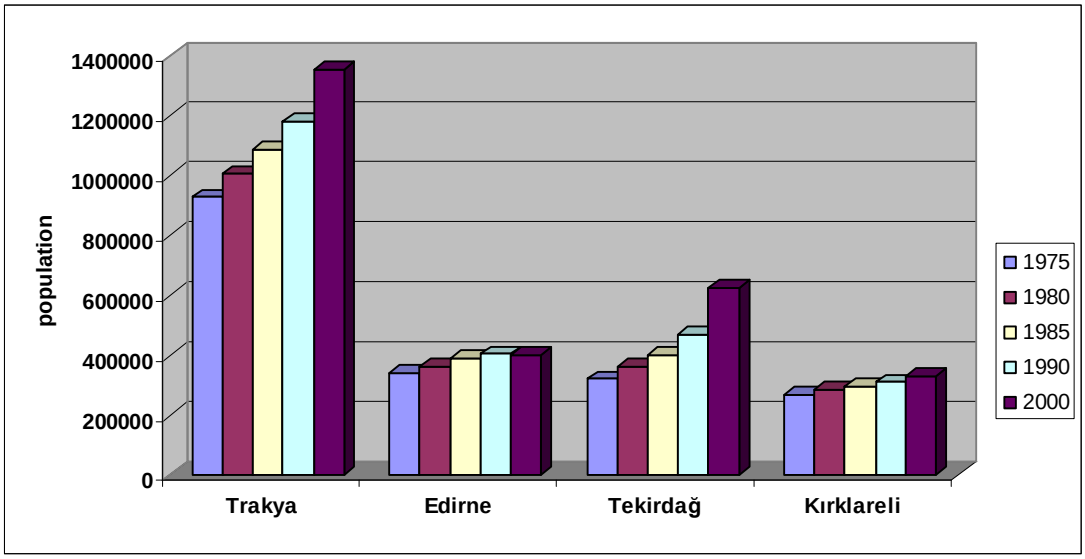

Table 4.1.1: Population Change of Cities in Thrace Region Between 1975 and 2000 (Source: TUIK)

Population of the region increased between 1980 and 2000 continuous as seen in table 4.1.1 and rate of population increase of Tekirdag was over average of Turkey in 1980's. Unemployment rate in Thrace is under average of Turkey. As far as GNP produced in different sectors is concerned, share of agriculture has been declining for all 3 cities, share of service belonged to Edirne and share of industry belonged to

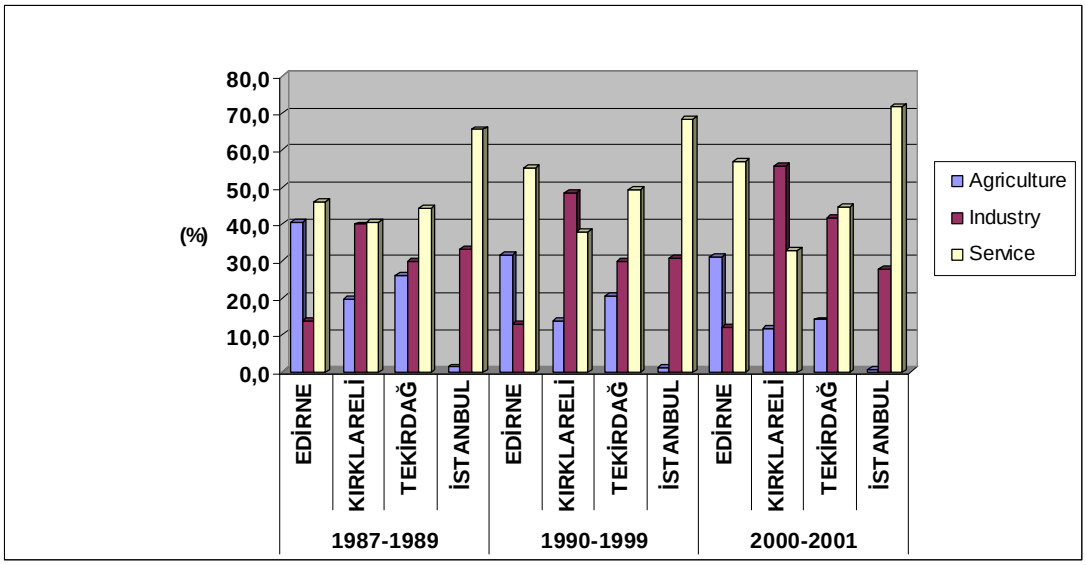

Table 4.1.2: GNP Produced in Thrace Region Cities and Istanbul by Sectors
(Source: TUIK)

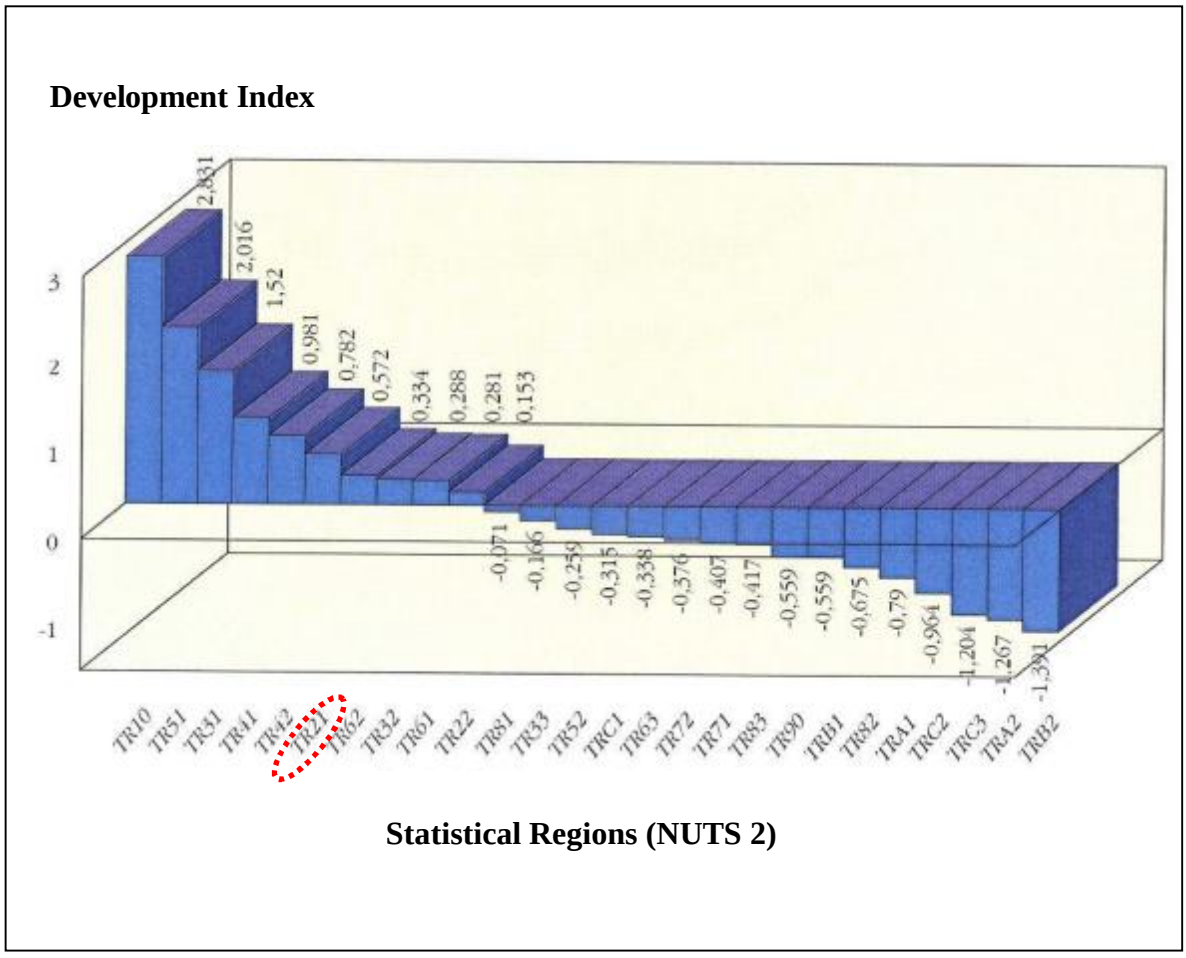

Table 4.1.3: Socio-Economic Development Level by NUTS II
(Source: DPT, 2003)

Tekirdag and Kirklareli has been rising. Share of service of GNP produced in Istanbul, which is the position of core, has been rising as well (table 4.1.2). Employment in service sector in Edirne, employment in industry sector in Kirklareli and Tekirdag have been increasing as well. As a result, Thrace region coded as TR21 at NUTS II level is in the 6th rank between 26 NUTS II regions in the terms of socio-economic development (table 4.1.3).

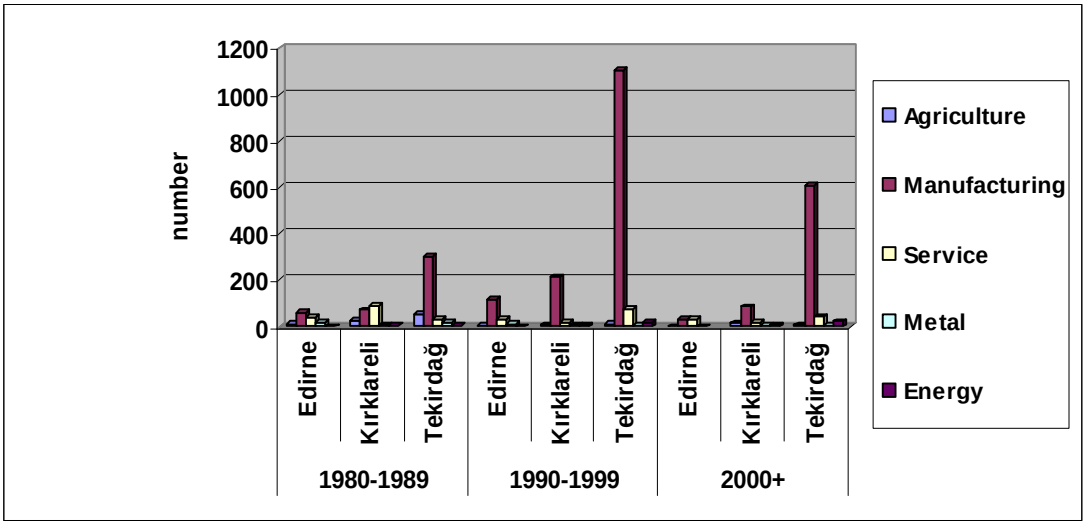

Table 4.1.4: Stimulated Investments Given to Thrace Region by Years and Sectors (Source: Treasure Undersecretary)

All these data show that socio-economic development level was over average of Turkey and economy of the region moved towards industry from agriculture between 1980 and 2000 and its economy is based on mainly industry today. Industry and employment created by industry play very important role at development of the region. Process of metropolitanization of Istanbul, economic and physical plans produced for both Thrace and Istanbul, stimulated investment given by governments' are the main reason of development of industry in the region. Most of the stimulated investments were given to Thrace between 1990 and 1999 and mostly for industry sector as seen table 4.1.4. Tekirdag got more stimulated investments than the other cities did. Istanbul, which had a position of traditional industrial center, transferred industrial activities that was labor-intensive and had low value added to the peripheral cities. So that it consolidated its regional core position by service and industrial activities using high technology in 1980's. Increasing share of industry at economic activities in peripheral cities caused by transferring industry from Istanbul rather than their inner dynamics (DPT, 2003).

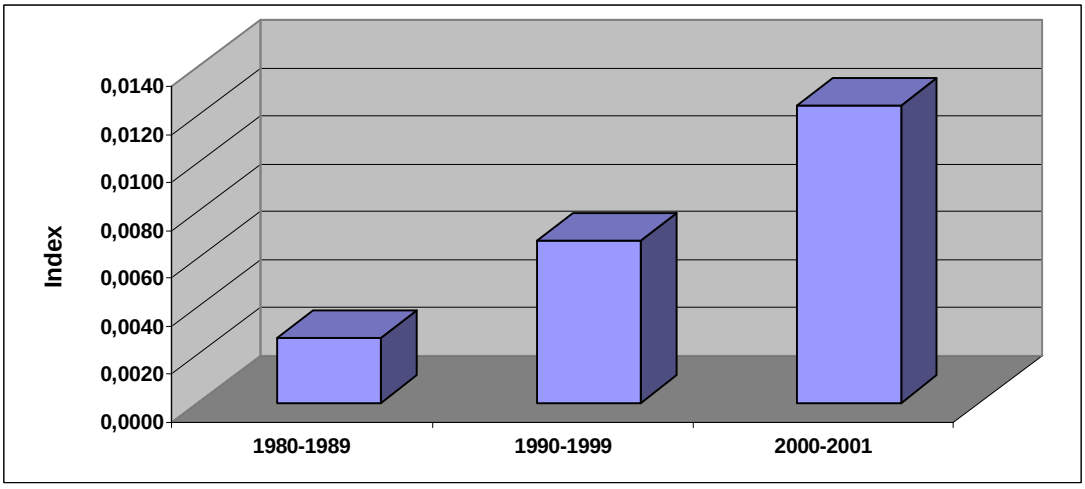

Table 4.1.5: Regional Specialization Index of Thrace Region

As Herfindahl Regional Specialization Index * of Istanbul and Thrace region between 1980 and 2001 is investigated it is found out that as index of Thrace increases index of Istanbul decreases. This finding is parallel to the expectation of that as index of core decreases index of periphery increases in the core-periphery relation. As shown at table 4.1.5 and table 4.1.6 specialization trend on industry in Thrace rises while it declines in Istanbul

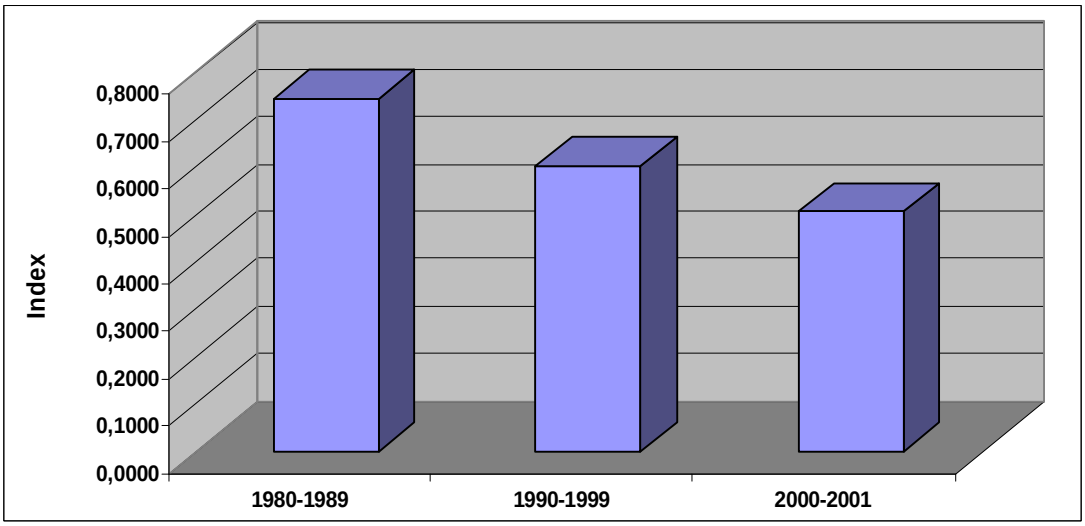

Table 4.1.6: Regional Specialization Index of Istanbul

*Herfindahl Regional Specialization Index calculated with employee number for each city shows level of specialization of the region. In the framework of regional integration, this index is expected to rise in periphery region and to decline in core region (Baypınar, 2003).

4.2 Analyses of Industry in Thrace Region

Structure and dynamics of 9 industrial sub sectors are analyzed by three different methods. Firstly, geographical concentration coefficient is calculated for each of three cities. After that sector specialization and diversity level is analyzed by herfindahl index which is calculated by employee number. Lastly, sector localization quotient is used.

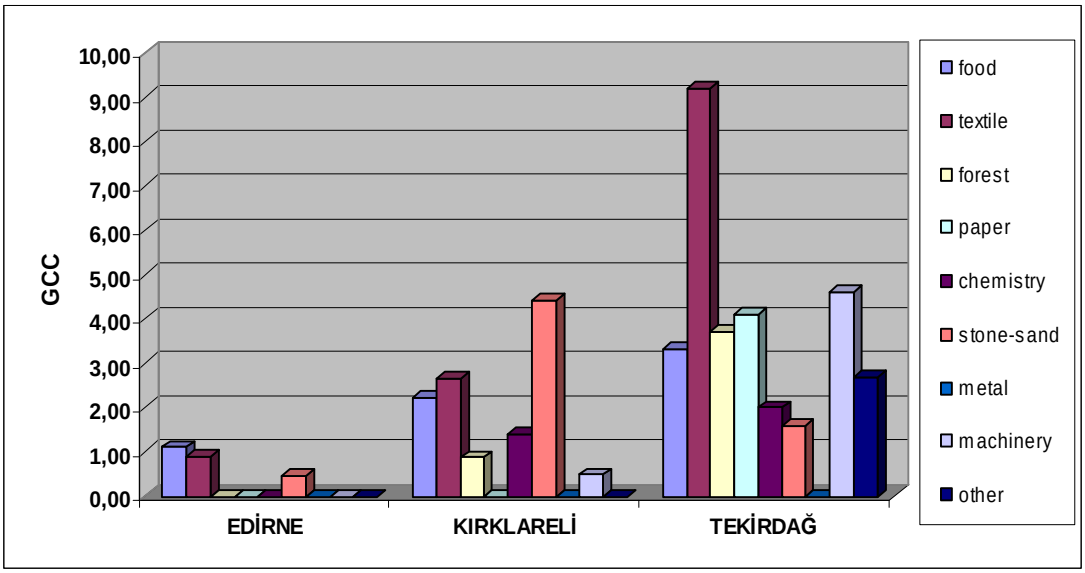

Table 4.2.1: Geographical Concentration Coefficient of Industrial Sub Sectors in Thrace Region

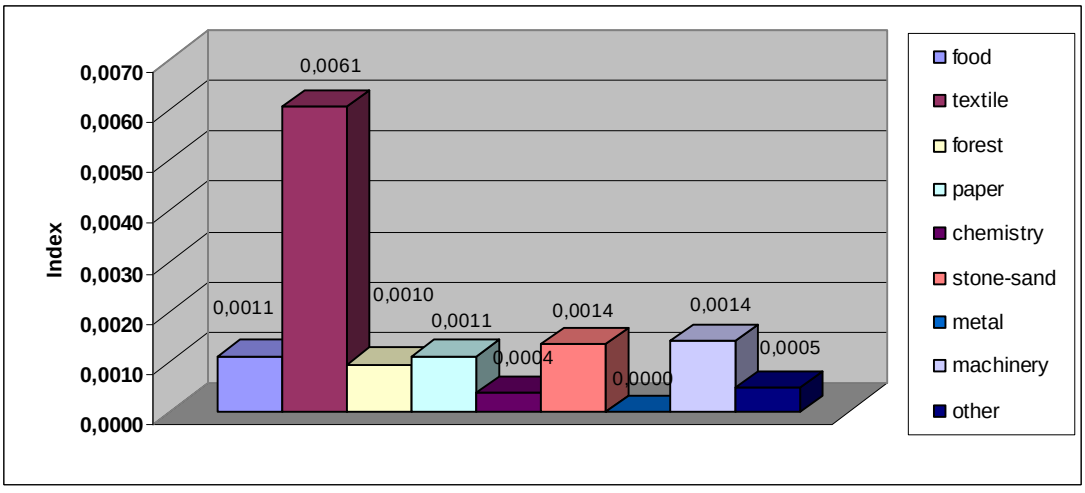

Table 4.2.2: Sector Specialization Index

With the methods of geographical concentration coefficient, physical concentration of sectors on cities regarding size of city is investigated.

GCC<0,5 means low production

0,5<GCC<1,5 means production is close to the average of Turkey

GCC>1,5 means production gets concentrated

As seen table 4.2.1 GCC of none of the sector in Edirne is over 1,5. Production of food, textile, stone-sand industry is concentrated on Kirklareli. Production of all sectors except stone-sand and metal industry is concentrated on Tekirdag. Especially textile production level is very high. Sector specialization and diversity data put forward dimension of sector specialization and localization. Herfindahl Sector Specialization Index is calculated by employment data.

0<E<1 => As index rises specialization at sector rises

As index declines diversity rises

In Thrace region textile sector has the highest specialization rate. The specialization rate of the other sectors is low which means diversity is high in these sectors (table 4.2.2).

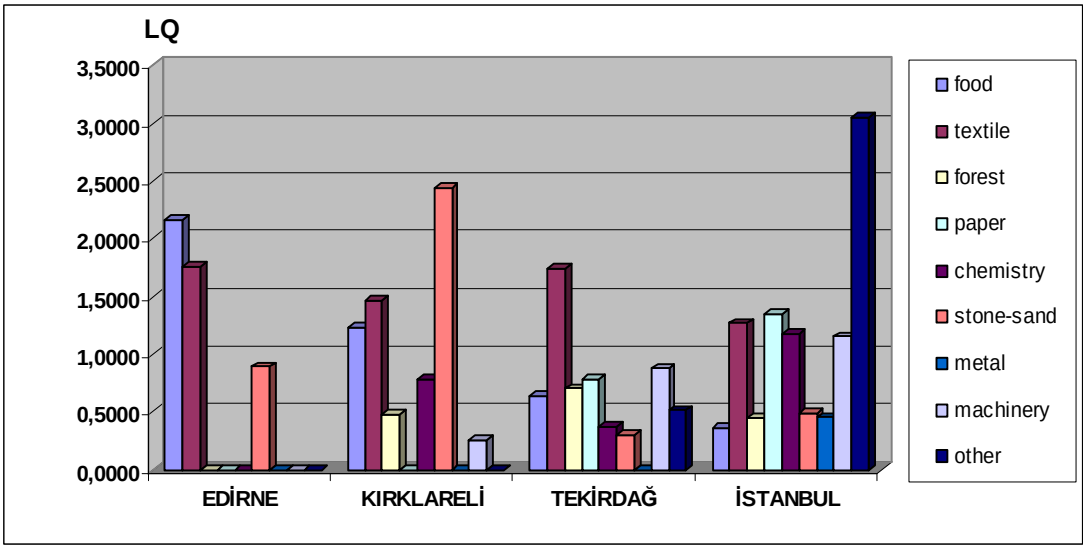

Table 4.2.3: Location Quotient of Thrace Region and Istanbul (LQ)

To find out which sector is concentrated on which region in terms of employment localization quotient is used.

Lq>1 => this region has higher employment than average of Turkey for that sector

Table 4.2.3 shows localization quotient of Istanbul and Thrace region. Employment at food and textile in Edirne, employment at food, textile and stone-sand in Kirklareli, employment at textile in Tekirdag are higher than average of Turkey.

4.3 Industrial Clusters in Thrace Region: Corlu Case Study

Corlu, one of the biggest counties of Tekirdag, is most influenced from the fast industrialization process which has been experienced since 1980's.

According to Government Statistic Institution's (DIE) data of 2000 and 2001, Corlu has 140 manufacturing firms employed more than 10 workers.

Clustering behavior of firms on space before 1980's, between 1989 and 1989, between 1990 and 1999 and after 2000's is investigated by cluster maps prepared for the research (appendix a, b, c, d). These maps show that firms came to the region mostly after 1990's (appendix a). Fast industrialization seen after 1990's is parallel to stimulated investment given by government mainly after 1990's. Textile and leather sectors are the main industries which have big amount of firms (Olcay ve Erkut, 2005).

Industry firms located in 4 different axes in Corlu, Cerkezkoy road, Tekirdag road, Edirne road, Turkgucu road and in Leather Organized Industry Region (OSB) in the middle of Corlu. It was find out that firms preferred the axes they placed due to the transportation advantages.

A questionnaire was applied to the 57 firms and interview was made by the selected firms. Questions were determined according to the conceptual model of the research process (table 4.3.1.). In the first part of questionnaire, questions were related to localization criteria. In the second part, questions were asked to find out qualification of the clusters. Third part was prepared to investigate source of technology and information of firms and their innovation capacity and efforts. Fourth part had questions related to cooperation. The questions in fifth part were about future plans of firms under conditions of competition by globalization. The findings and results of this research can be summarized as below.

Firms in Corlu show typical characteristics of the Satellite Industrial Platforms, one of the 4 cluster types. Headquartes of large amount of firms is outside of the region and relations with this center which makes important decisions are very strong.

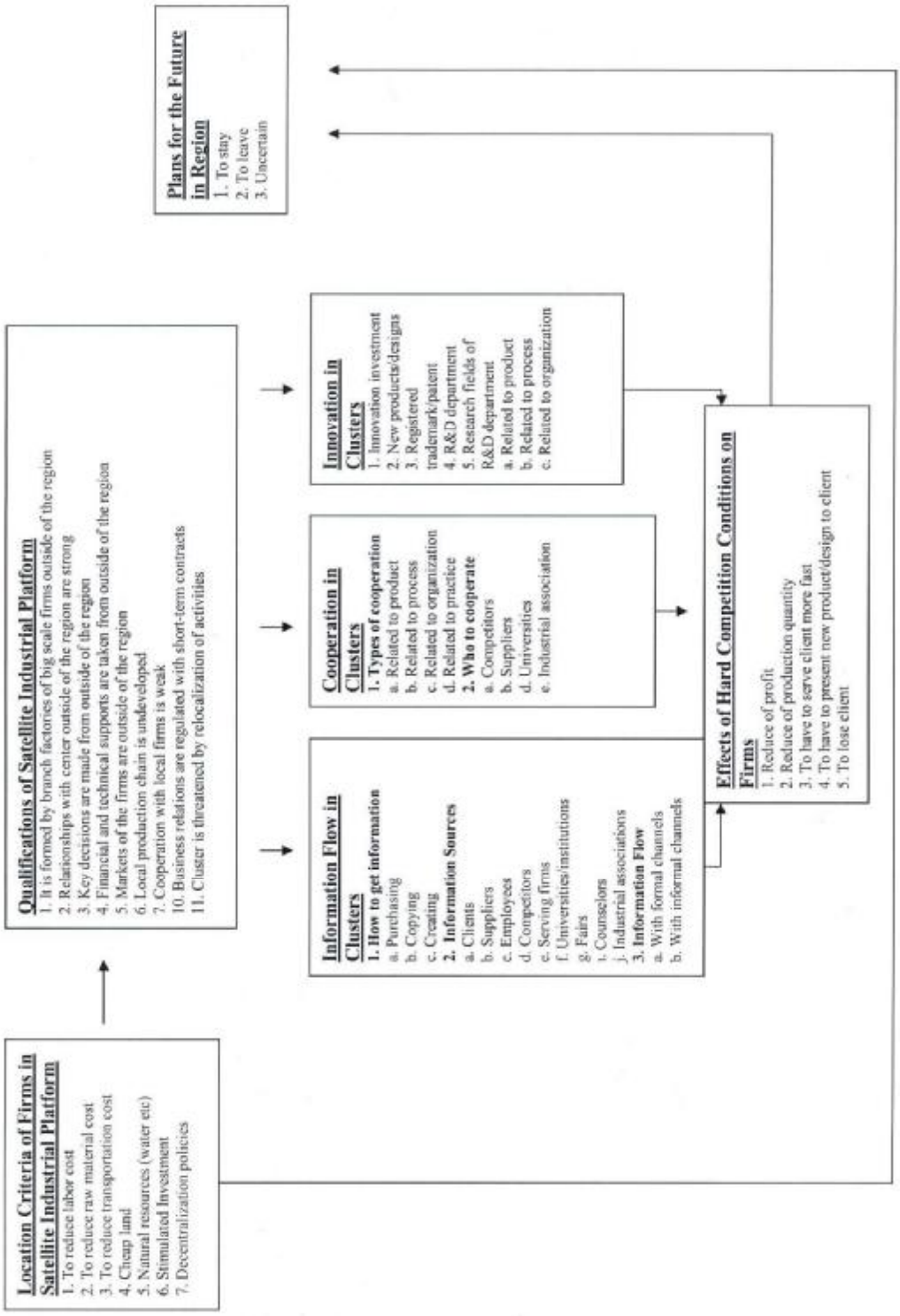

Table 4.3.1: Conceptual model of the research process

Market of the firms is outside of Corlu as well. Local production chains and cooperation with local firms are weak. The main reasons why firms located in Corlu are proximity to Istanbul, existence of big size land, natural resources-especially water sources that textile industry needs-, low transportation and labor cost, stimulated investment given to the region. These data prove that firms came to Corlu as the result of stimulated investment and decentralization policies of Istanbul. It must be outlined the fact that Istanbul was not convenient any more for firms to make cheaper production, to find big land. Moreover it got difficult for people to live in this city because of the problem met in the most of the metropolitan cities like environmental pollution, traffic problem, high cost of living. That's why people and firms moved to the periphery. This process is a part of metropolitanization process which can be seen in the other metropolitan cities all over the world. As a conclusion changing geography of manufacturing in Thrace region and Istanbul has political, scientific and economic reasons.

Firms reach technology and information in different ways. However machinery industry tends to create its technology itself more than the other industries do. Firms hardly benefit from universities and institutions although Corlu has a university. Fairs and daily activities are the main informal information channels used. Although there are firms established with foreign investment only 25% of these firms share information received from main firm with local firms. Unfortunately Corlu clusters can not benefit from these firms that are very important information and innovation resources. Total innovation investment of 60% of the firms is under 15%. However competition force caused by globalization forces firm to make new designs and to produce new products. Most of the firms work on new designs and products. Some of these firms have foreign designer living abroad who are watching and following new trend on the behalf of them. Nearly half of the firms have a research and design department which works on mainly product.

Half of the firms cooperate in local level. This cooperation is mainly related to solving problems faced during the production. Cooperation with customer causes innovation. Universities are hardly preferred. Cooperation level with competitors is very low and generally in the way to exchange same items and same materials used in the production by rival firms. These firms are close to each other and their relations are week.

All the firms are affected by increased competition force and their profit gets lower. To prevent to lose their customers firms are in an effort to present innovations. Firms

think that in the long term firms may get smaller. Textile and machinery industries could put relocation in their agenda. As mentioned in the second part textile sector tends to move places where labor cost is cheaper. Two advantages of Thrace against cost pressure are quality and short term production.

Although firms came to the region for cheap labor cost and stimulated investment nowadays the other regions given stimulated investment by government have lower cost. Firms prefer to stay Corlu for not cheaper but for more qualified production. Skilled labor force is an important factor for the qualified production. Immigrants came from Bulgaria and settled in Thrace region have manufacturing experience and discipline which are difficult to be find in the people living less developed places given stimulated investment. Firms believe that even years after it would be difficult to catch this manufacturing discipline and mentality in these less developed regions.

Nearly all firms tend to stay in Corlu in the future. However prediction on how long industry sector would stay in Corlu varies. 32% of the firms estimate that industry to be here 5 or 20 years more. 5% of the firms are uncertain about future of industry in Corlu. 33% of the firms avoid to response this question as it is a strategic question. But it is possible to say that competition conditions and costs will affect the future of industry in the region.

Results of interviews and questionnaire have revealed that firms act more individually. Consciousness of being part of a cluster, producing cooperation and sharing information has not been developed. Even innovation efforts are individual and not shared. It is not possible to mention about regional innovation system. As most of the firms located here came from out side of the region their aim is not regional development but individual profit. Researches show that to exist under pressure of competition firms have to make cooperation, innovation and be cluster not only physically but also mentally. Not individual firms but clusters can be strong in the changing world.

5. CONCLUSION

Industrialization of Thrace region is a result of metropolitanization of Istanbul, physical plans made for Thrace and Istanbul, stimulated investments given by governments' rather than inner dynamics of Thrace. While industry decentralized from Istanbul it was not planned where it settled and firms located agricultural lands by partial plans. At one side, the region benefited from economic and social

advantages brought with industry at the other side it faced physical, environmental and social problems. Planning issues of three cities, Edirne, Kirklareli and Tekirdag, need regional approaches.

While making plans and producing policies for Istanbul in the future last experiences should be regarded to be able to sustain and protect natural resources of Thrace region. Water sources have been polluted; agricultural lands have been run out. Fast population increase has been caused unplanned urbanization. Infrastructure has been insufficient for the population. This situation necessitates Istanbul and Thrace to be planned in an integrated way by a regional approach. What planning methods would be used and who would be the planning actors would be a discussion subject in the future.

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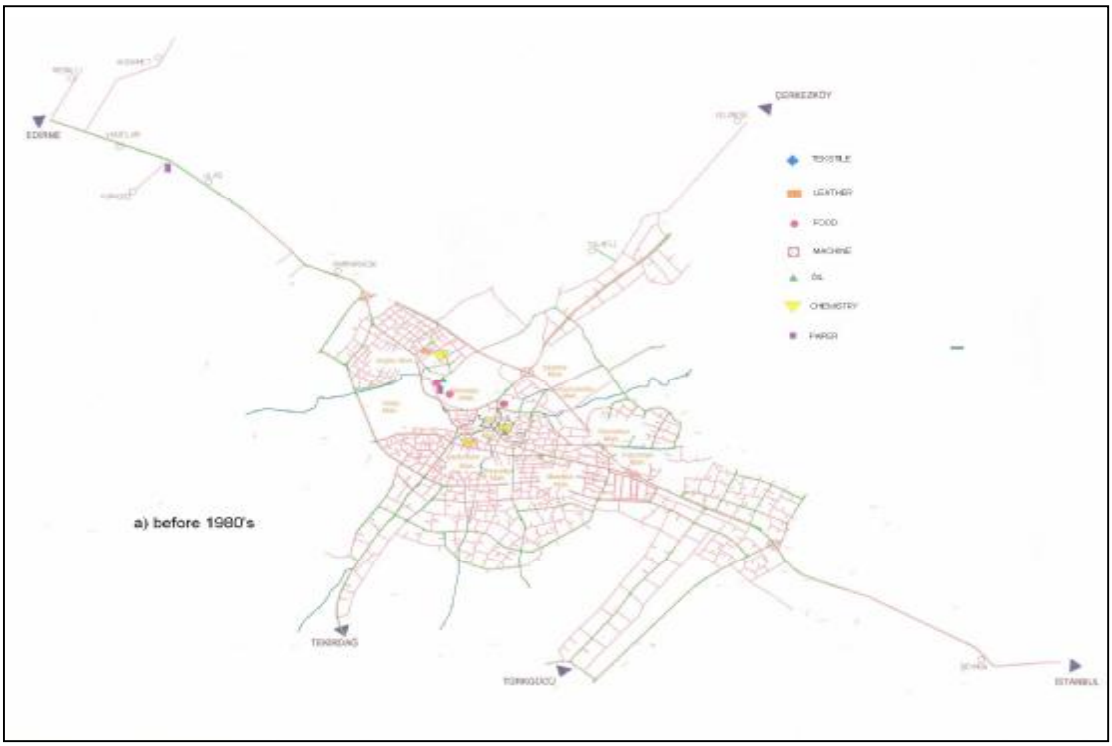
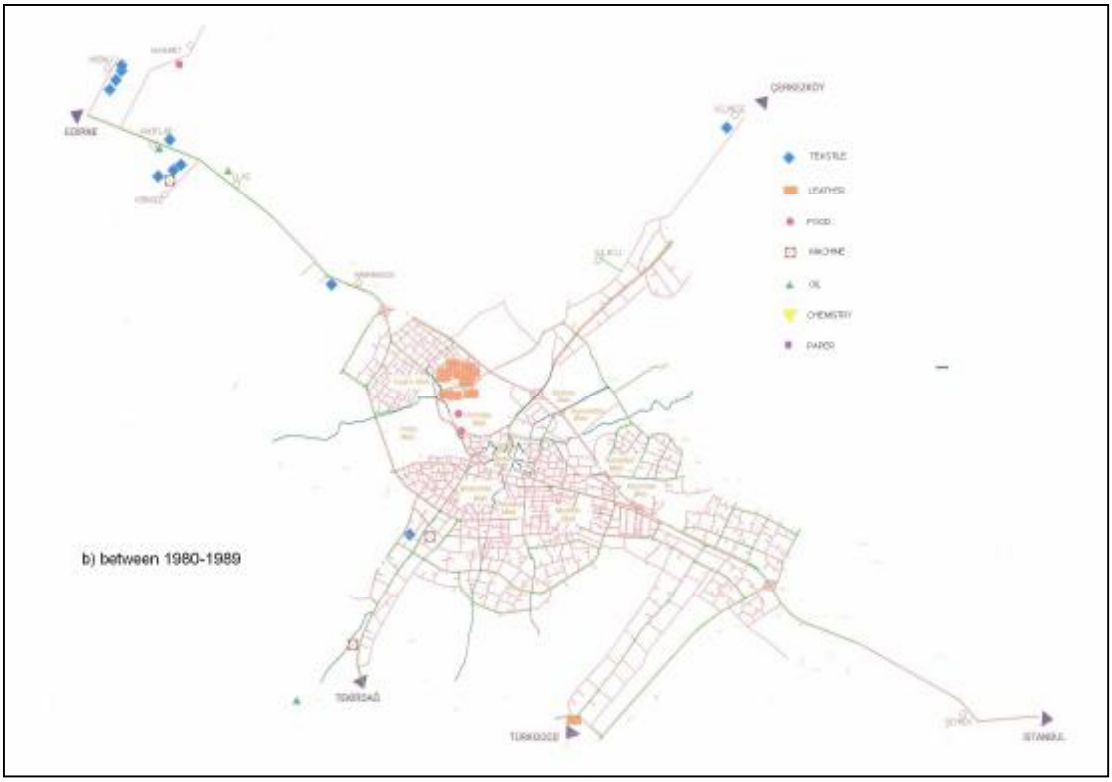
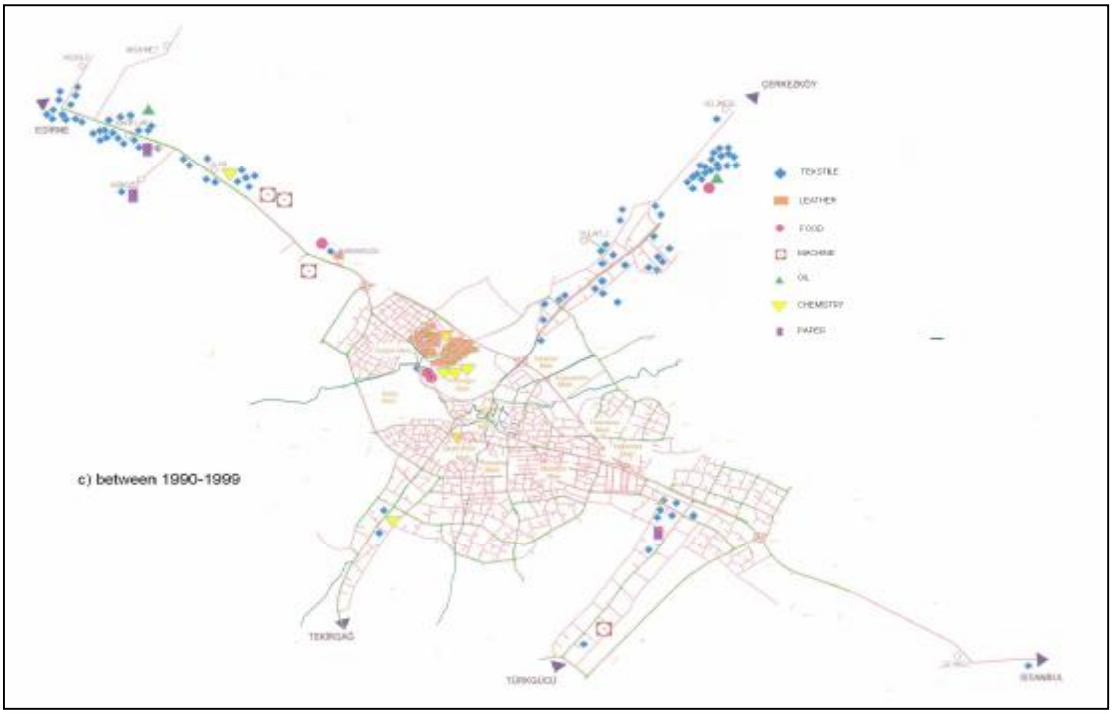
APPENDIX



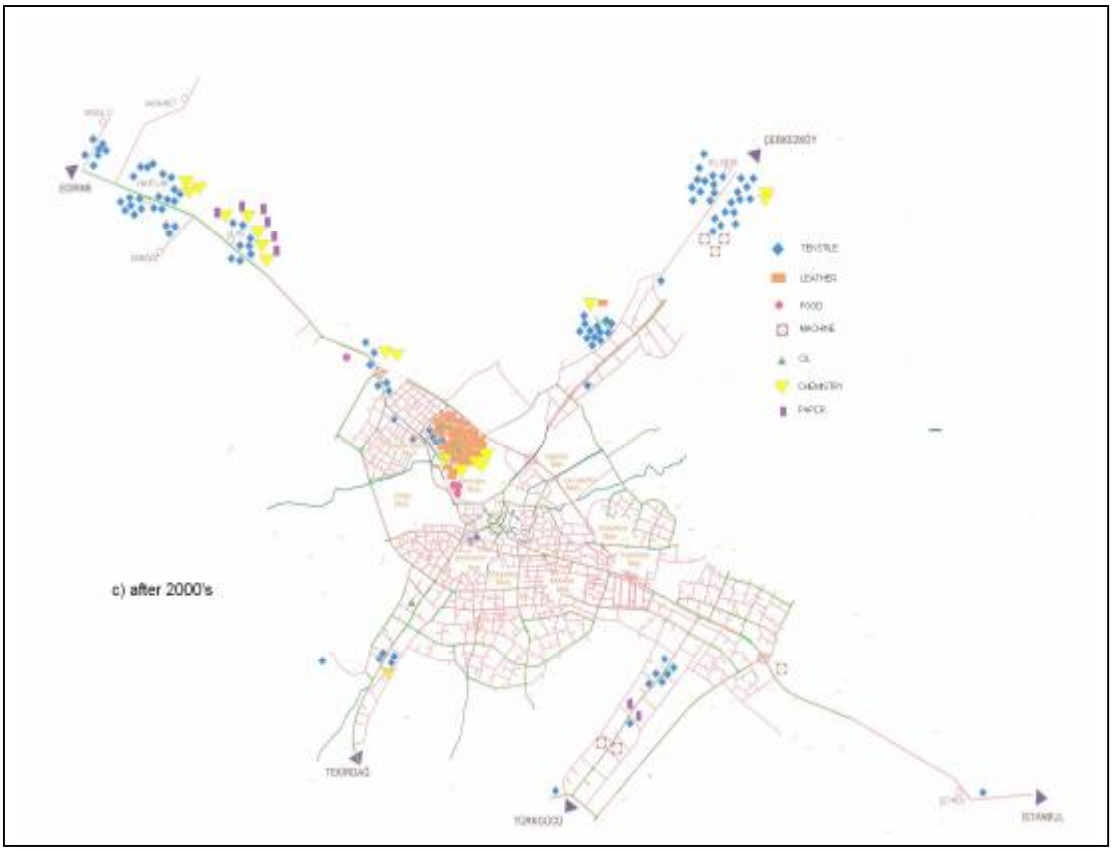
Map a: Industry Firms Located in Axes in Corlu Before 1980's



Map b: Industry Firms Located in Axes in Corlu Between 1980 and 1989



Map c: Industry Firms Located in Axes in Corlu Between 1990 and 1999



Map d: Industry Firms Located in Axes in Corlu After 2000's