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Centre – Periphery Relations Through the Trans-European Motorway in Turkey

43rd Congress of the European Regional Science Association: "Peripheries, Centres, and Spatial Development in the New Europe", 27th - 30th August 2003, Jyväskylä, Finland

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The 43rd Congress of the
European Regional Science Association
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Centre – Periphery Relations Through the Trans-European Motorway in Turkey
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Abstract:

European Spatial Development Perspective aims to decentralise the congestion from the centre of Europe to peripheral countries, by supporting development through urban corridors, and decreasing regional disparities to create a competitive regional system. Therefore studies on urban corridors of the peripheral countries connecting to European system are needed, to formulate policies of development in these countries, within harmony to European policies.

Such a corridor in Turkey is a part of the Trans – European Motorway (TEM) corridor, Edirne-Ankara Axis. Two most important metropolitan centres of Turkey located in this corridor, Ankara and Istanbul have improved their road connection to Europe through completed TEM projects, that pass parallel to the older Turkey Transit Road.

This paper tries to analyse whether if the development of provinces in Edirne-Ankara Axis and ESDP policies draw a common frame. Provincial data are used to analyse the level of regional specialisation, change in the GDP per capita, and the development of business services in finance, real estate, insurance sector and transportation, storage and telecommunication sector. The study covers the period between 1980 to 1998, regarding the economic policy change in Turkey by 1980 and the beginning of TEM co-operation by 1977.

Introduction

Anatolia has through history been a bridge between Middle Asia, Middle East, North-east Africa and Europe. After the World War II, construction of an overall road network through Turkey (Turkey Transit Network) has enabled modern inland accession to these regions from Europe, and Istanbul and Ankara have started to experience growth mostly based on in-migration from rural areas after the 1950's. Private manufacturing companies as well started to develop in these provinces following international integration agreements. A second large scale project, , Trans – European North-South Motorway Project was put into action by 1977, including Turkey and other Eastern and Central European countries by United Nations / Economic Commission for Europe, initially funded by UNDP (UNECE, 2003) . The structure of the projected motorway system did not differ widely from Turkey Transit Road Network especially in North-western Turkey, due to geographic constraints within the country.

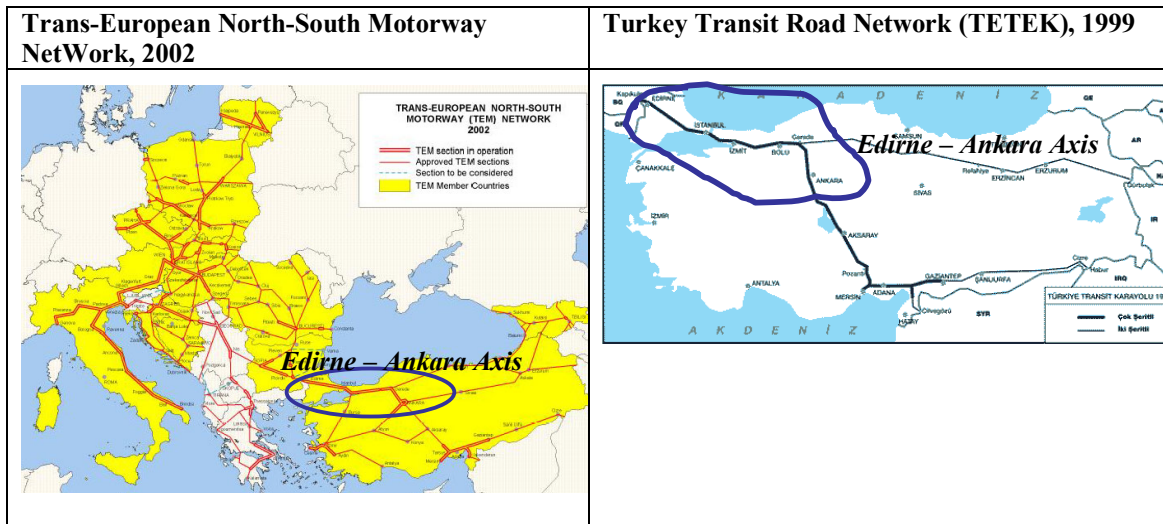


Figure 1 – Trans european North-South Motorway network and Turkey Transit Road Network, Parallel channels, UNECE 2003 and KGM, 2003

The year 1980, following, has been a date of change in the economic policy of Turkey. The import substitution model left its place to an export base model, relying on the industrialisation of the country. Following privatization and financial liberation, the number of employees in public manufacturing companies with 10 or more workers fell from 287.189 at 1980 to 143.516 at 1998, while in private sector it rose to 1.062.648 at

1998, from 499.806 at 1980¹. In accordance with privatization of public companies, also the number of new private manufacturing firms possessed a serious growth in this period, and new industrial centers emerged.

The only inland gateway to Europe from Turkey, Edirne-Ankara axis in this era witnessed the strongest change in the spatial organization of economic activities. As Turkey's main trade partner is now EU and Turkey is a candidate country for the EU, these changes need an evaluation under the policies of the European Spatial Development Perspective. Though Edirne-Ankara Axis can be considered to be a quite peripheral region of Europe, it is the only inland route to EU countries from Anatolia, and connects the capital city Ankara to EU. Thus, this region may be considered as part of the urban corridors within Europe, or an extension of scenarios like Red Octopus (Van Der Meer, 1998) or that of Doxiadis' (1970).

European Spatial Development Perspective was born thirty years after Doxiadis, based on years of debates, aiming to re-shape European geography, in an environment of high international integration in many dimensions. The scale that ESDP covers surely introduces questions like what will happen where its results reach? Two main destinations, Istanbul-Ankara and Moscow, in this picture of ESDP need to be placed in a more elaborated way in this context. The urban corridors from these centers through the heart of Europe have experienced and will definitely experience also in the future, serious changes due to integration. These changes in these corridors need to be investigated in parallel to the new theories of trade and international economics which have achieved a special place within the European debates of integration. Ongoing debates on theories of trade and international economics have been mostly carried on a national or continental scale. These studies have presented valuable results showing spatial effects of integration throughout Europe (Brühlhart, 1996, Midelfart-Knartvik, et al, 2000, Landesmann, 1995, Paluzie et al, 2000).

Contemporary trade and international economics theories assume that internal and external scale economies should be reflected in greater locational concentration of activities, specialisation of regional and national economies through regional and national integration, while neo-classical models rely on perfect competition and

¹ (SIS, Manufacturing Industry, Average of Annual Employment Statistics)

constant returns, thus foresee convergence among regions (**Fujita and Thisse, 2002**). Studies, however show that there is little or no evidence about increasing general regional specialisation levels in European countries. (**Traistaru et al, 2002**), **Paluzie et al, 2000**). As some sub-national regions increase their regional specialisation levels, others would experience decreasing specialisation levels, thus it might not be possible to monitor changes in the general regional specialisation levels. Even if regional specialisation levels do not change much in a country, still there may be some sub-country level differentiations and faster developing regions. Regions with initial advantages are argued to be advantageous in an environment of economic integration. The new economic geography models assume that geographical advantage is endogenous and suggest that regional specialisation may be the result of *the spatial pattern of agglomeration of economic activities* (**Krugman, 1991a,b, by Traistaru and others, 2002**). As a country experiences increasing international integration, the transportation costs or trade costs decrease, but still the labour would not be perfectly mobile, due to various reasons like cultural differences, cost of movement, but most of all, the non-existence of an effective labour mobility agreement. Regarding imperfect mobility of labour, the cumulative causation mechanisms that lead to the agglomeration of economic activities are shown by **Krugman and Obstfeld, (2000)**, and **Stiller, (2000)** and regarding decrease in the transportation costs by **Ludema and Wooton (1997)** and **Belleflame et al(2000)**. This is very much alike the candidate country Turkey, who has been subject to decreases in trade barriers and improved transportation and communication connection to European countries by the political change in the Balkans and construction of new roads and telecommunication infrastructure, but still with limited labour mobility rights.

Following debates above, while some regions increase their specialisation level, the country or the upper level region may experience increasing geographic concentration of activities. The geographic concentration of economic activities within the country need not to follow the same line with the supra-national scale as mobility is more mobile within the country. The changes in the industrial organization and the development of firms that are flexibly specialised lead to the formation of clusters in the subcenters or peripheral regions, instead of core regions, and may lead to decreasing geographic concentration levels in the country.

So, a firm relocates to a new region;

- Increases the variety of goods.
- Increases labor demand, hence labor prices. (Decreasing returns to scale)
- But, (within the same country), labor follows the firm or the firm attracts labor to the new region and it offsets the barrier to agglomeration (increasing returns) **(Richardson, H. , 1994).**

If we progress these debates to the scale of urban corridors, we have to place metropolitan centers in this framework. **Castells,(1989), Richardson, H., (1994), and Hudson, (1997)** argue that due to technological progress in information and telecommunication sector, metropolitan areas will control the production systems. **Castells (1989)** argues that the combination of a high degree of control of production in a small number of global cities with the elimination of all other agglomeration benefits at any location anywhere will happen **(Sassen, 2001).**

In this context, it may be argued that increasing international integration will lead to the increasing power of metropolitan areas or core regions, by dispersed decentralised concentration of industries in peripheral regions or subcenters through urban corridors (as there develops a better transportation infrastructure among these urban regions and form urban corridors) within a country. Increasing regional specialisation in the regions near metropolitan centers and decreasing regional specialisation levels in these metropolitan cores may be expected, among decreasing geographic concentration levels in a country like Turkey at the intermediate level of international integration.

This kind of transition could actually be interpreted as the development of an urban corridor, as the transportation or trade costs would decrease in parallel to developed transportation and telecommunication infrastructure among large markets or metropolitan areas. Edirne-Ankara Axis in this context be taken as the part of an urban corridor in sub-continental scale, e.g. South-Eastern Europe. Regarding the scenario Red Octopus **(Van Der MEER, 1998)**, this axis could be even interpreted as similar to the route to Moscow, the peripheral metropolitan of Europe similar in size to Istanbul by population. Or, of course these two metropolitan areas may be accepted as well as the core of other systems out of Europe, preferably.

Three important urban policies of ESDP aim to:

- Strengthen the metropolitan regions and areas in a global integration context,

- Support economic attractivity and diversity in these regions
- And control urban sprawl and decrease pressure on settlements. (EC, 1999)

The first policy emphasize that a well-developed strong and productive metropolitan system is necessary for global integration Metropolitan centers are accepted as the basis of success in international competition in ESDP (Faludi and Waterhout, 2002).

Second policy aims on attracting new firms and services to the region, while decreasing specialisation levels in the core by leaving a mono-centric economic structure and increasing variety of economic activities.

The third policy aims to keep peripheral areas under control as suppliers of cheap labour and decrease pressure on the core regions. Thus, ESDP policies for urban areas seek to provide help for the creation of global metropolitan cities within Europe, disperse industries to peripheral regions and control population movements in this environment. Mobility of labour, goods, capital and information are to be improved by the Trans – European Networks. The least mobile ingredient in this scene however seems to be labour, still.

This paper tries to analyse whether if in Turkey after 1980, the time when the country's economic policy changed to export-base model, regional specialisation levels in the metropolitan cores that form the Edirne-Ankara axis have decreased and if increased in the surrounding regions.

First, a general framework is drawn. The effects of the change in the economic policy on the export rates of industries are described.

The geographic structure of the Edirne-Ankara axis and the European spatial development scenarios related to this urban corridor are evaluated in the second part.

In the third part, strengthness of metropolitan areas and control power, economic diversity, and change of location of manufacturing industry are evaluated using data on the change of GDP per capita in regions in Edirne-Ankara Axis as an indicator of productivity, new firm numbers in finance and transportation sectors as an indicator of control power, and data on manufacturing industry covering employment and firm numbers to analyse the change in regional specialisation and geographic concentration levels.

In the conclusion, the results and the ESDP policies are evaluated.

Change in the Economic Policy in Turkey, From 1980 to Today

At 1980, Turkey changed its economic policy to export based model, from import substitution model. This change brought together liberalisation and as well the privatisation of public manufacturing enterprises.

During 1980-1994 the commodity shares in exports in the world have changed significantly, while basic metal industries and food and beverage industries have lost shares, and chemicals, machinery, electrical and electronic products and wood products, clothing industries (excluding textile) have increased their shares **(EC 1997)**.

The characteristics of Turkey's industrial exports have changed from the dual domination of food, beverages and tobacco industries and textile, wearing apparel and leather industries at 1980 to the dual domination of fabricated metal products, machinery and equipment industry and textile, wearing apparel and leather industries at year 2000 (see appendix, table a). The share of manufacturing industries in total exports have risen up to 95,23% by year 2000, from 76,33% at 1980. The amount of exports in all manufacturing industries were tenfold from a total of 2.1 billion USD at 1980 to 21 billion USD at 2001. Thus some of the industries have increased their absolute export values more than 50 times in this period of 22 years (see appendix, table b).

Fabricated metal products, machinery and equipment industry(38) and textile, wearing apparel and leather industries(32) have increased their total share up to 59.74% in all exports by year 2001 (see appendix, graphic a and table a).

European Union countries' share in Turkey's international trade increased from 31% in 1982 to 48.7% at 1995 and to 53.1% by 1999. As the exports of Turkey increased, the industrially well developed metropolitan centers of Istanbul, Ankara and Bursa in the Edirne – Ankara axis witnessed a dramatic change.

Edirne – Ankara Axis

Being the only inland connection to Europe from Turkey, Edirne-Ankara Axis is an interesting urban corridor for regional integration studies. Edirne is the only inland gateway to Europe from Turkey, thus rail and road connections to Europe start from this province. This rail and road system reaches to Ankara, and then to Eastern Anatolia connecting Armenia and Iran, and Southern Anatolia, connecting Syria.

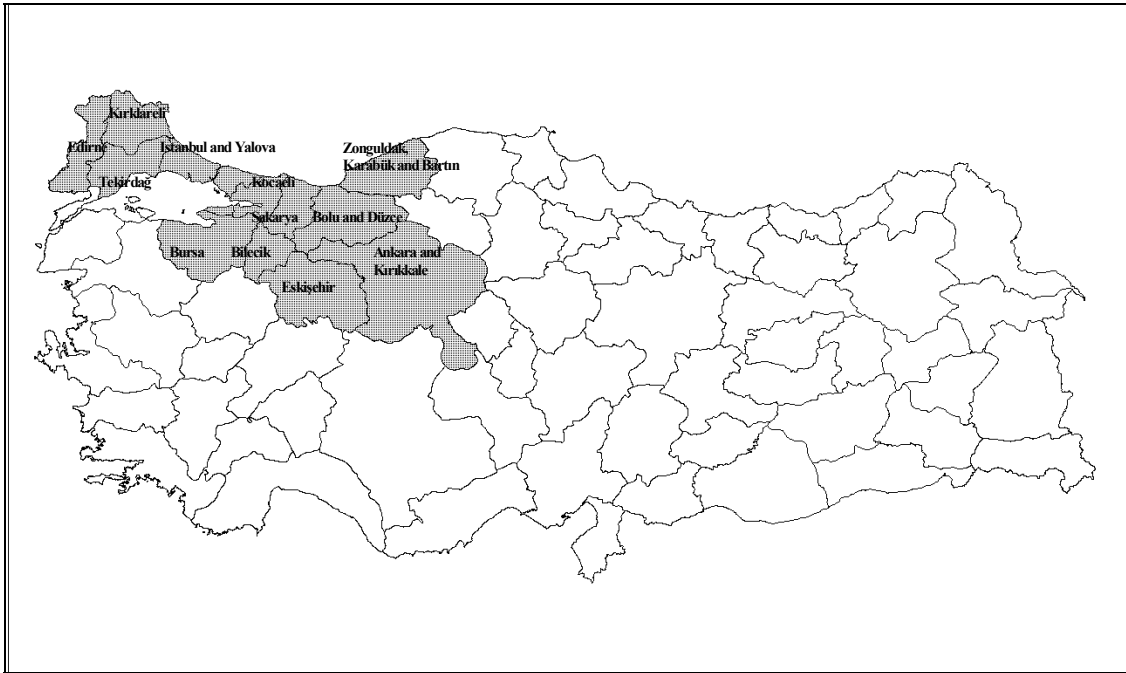


Figure 2 –Regions in Edirne-Ankara Axis used in this study

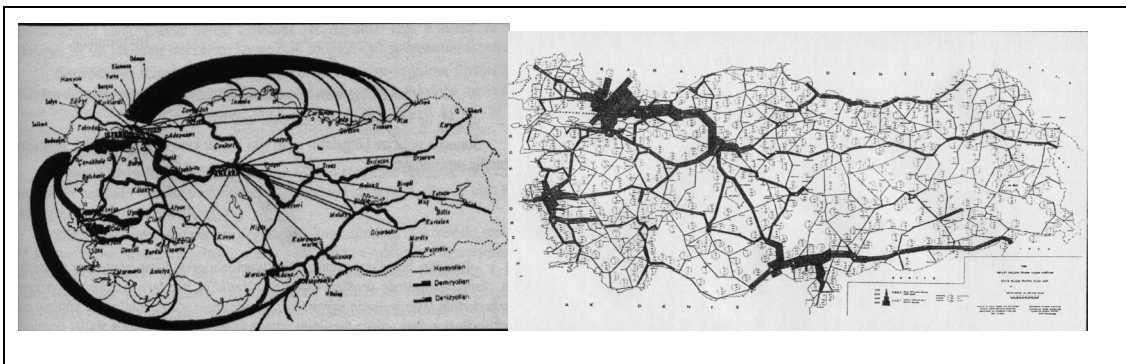


Figure 3 –Rail and road traffic densities at year 1985 in Turkey, **Dinler, 2001**

This axis has a special place for Europe, as it is the shortest inland connection to Middle –East, Middle Asian and North-Eastern African countries. Where the end of the axis come, scenarios on European spatial development starts.

Among those, **Doxiadis'** Europe in the year 2060 is an interesting scenario suggesting how population will be concentrated through urban corridors in Europe. One of the urban corridors in this scenario pass through coastal settlements of Greece and connect Tekirdağ, Istanbul and Zonguldak to European system. Another coastal system is connected via Bulgaria to this corridor, connecting eastern and north-eastern European regions to Turkey. (**Göçer, 1977**).

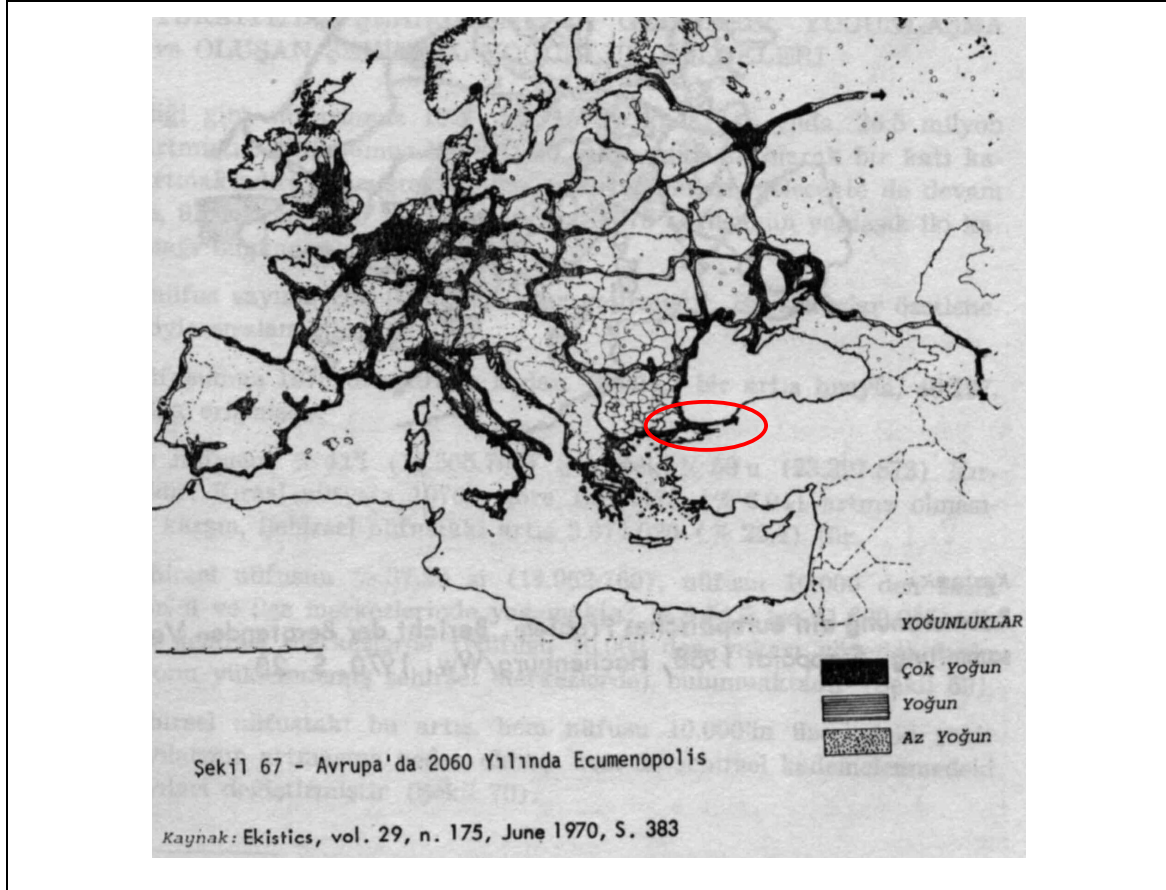


Figure 4– Ecumenopolis in Europe, by year 2060, **GÖÇER,1977**

Originally by **Doxiadis, 1969**, An Introduction to the Science of Human Settlements, Ekistics, Vol. 29, n.175, S.383

In a recent scenario, Red Octopus, there is no track of such a corridor (**Van Der Meer 1998**),. **Karaman and Levent (2000)** have argued on the Red Octopus Scenario, and have extended one of the branches through Istanbul.

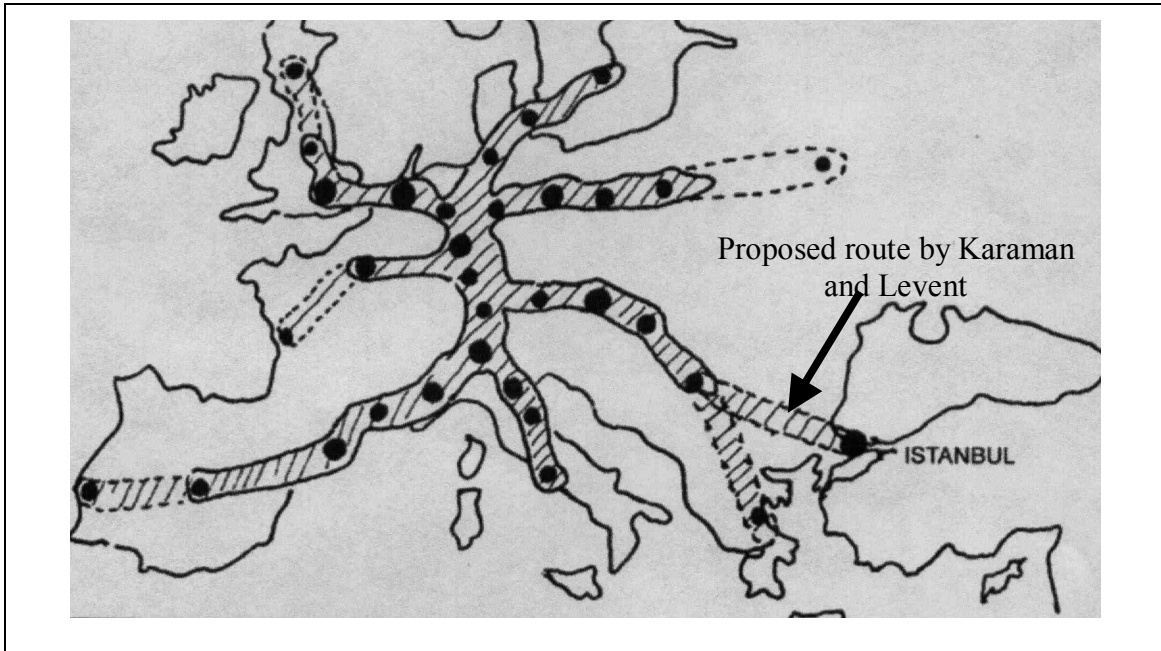


Figure 5 – Modified Red Octopus by **Karaman and Levent (2000)**, after **Van Der MEER(1998)**

Though Edirne-Ankara axis has not been mentioned in most of the sketches or diagrams related to European space, as it is viewed as rather a connection to Europe than a part of Europe by almost all, the importance of the corridor for ESDP may be understood reminding that

- Turkey’s main trade partner today is EU,
- The corridor forms an important part of road and rail projects that aim physical and economic integration to Europe since 50 years, or arguably, since one and a half century.

Thus, an evaluation of ESDP policies and the development of the axis might be indicative for the future of Turkey and South-eastern Europe.

Part of Trans-European Motorway, is built via this route, from Edirne until Ankara, supported by a second bridge on the Bosphorus and has increased the accessibility of the capital to European countries. The road is to be extended until İçel-Adana on the South-East.

On a similar route, Trans European Railroad Projects are as well in the agenda of Turkey, emphasizing mostly on the connection between Ankara and Istanbul (**UNECE, 2003**). The existing rail line follows roughly the same route, passing Bilecik and Eskişehir instead of Bolu-Düzce. Bursa enjoys fast marine connection by ferries to Istanbul.

One of the breakpoints of the road connection is Bolu, where geographic constraints limit road construction, and a tunnel project has been yet uncompleted.

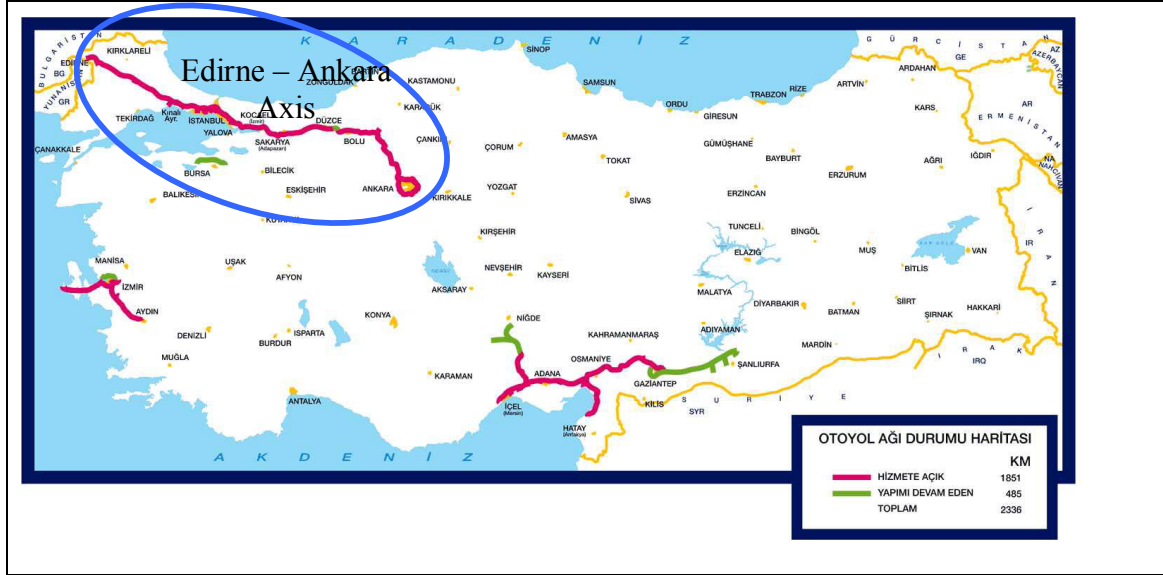


Figure 6 - Completed roads under TEM Project, KGM, (2003)

Methodology, Data Set and Results

An evaluation of the development in the axis regarding ESDP policies need a complex and comprehensive approach to the issue. Yet, in this paper, only three main policy objectives are to be taken into consideration. As mentioned above, three important urban policies of ESDP aim to:

- Strengthen the metropolitan regions and areas in a global integration context,
- Support economic attractivity and diversity in these regions.
- And control urban sprawl and decrease pressure on settlements. (EC, 1999)

In this framework, this paper seeks to analyse whether

- If metropolitan regions have become stronger,
- If regional specialisation levels are decreasing in these metropolitan regions,
- And if the periphery attracts the industries and dispersed decentralised concentration of industries at the periphery is realized, which would increase the employment opportunities and decrease pressure on the core regions,

within the Edirne-Ankara Axis.

To provide comparability to other researches, province level data is used in this paper. This scale is equivalent to NUTS III level. While there were only 67 provinces at 1980, at 1998 there were 80 provinces in Turkey. To overcome the problem of continuity in the dataset, new provinces' data are combined to old provinces, where new provinces' administrative centers were before in their borders..

Thus;

1. The strength might be interpreted as terms of productivity per capita and the control power of metropolitan regions.

- Productivity may be measured by simply comparing per capita GDP of regions. 1990 and 1997 Census of Population data by State Institute of Statistic in Turkey (SIS) are used together with 1990 and 1997 GDP values in 1987 fixed prices by SIS, at the province level.

The axis, excluding Sakarya and Bolu-Düzce regions, have had increasing per capita GDP and they were above the national average by year 1997. Though highway to Ankara pass from Bolu - Düzce, this region is characteristically a border region, due to geographic barriers, mountains. Thus, Sakarya may be accepted as the utmost peripheral region of Istanbul, While Bolu-Düzce as the utmost peripheral region of Ankara.

GDP Per Capita Groups in Turkey at 1997

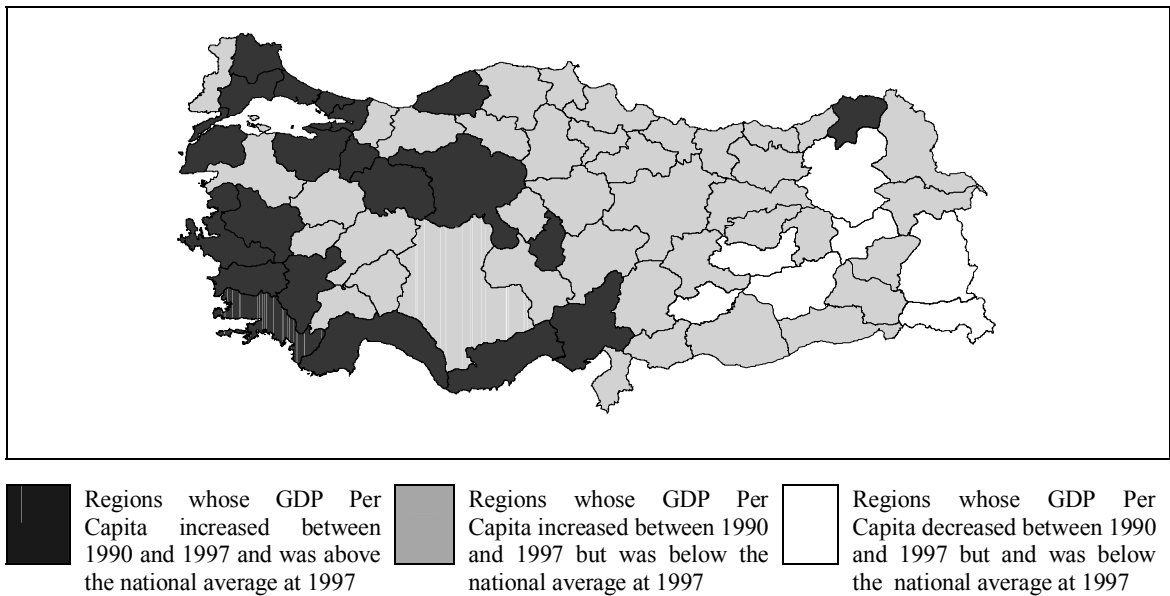
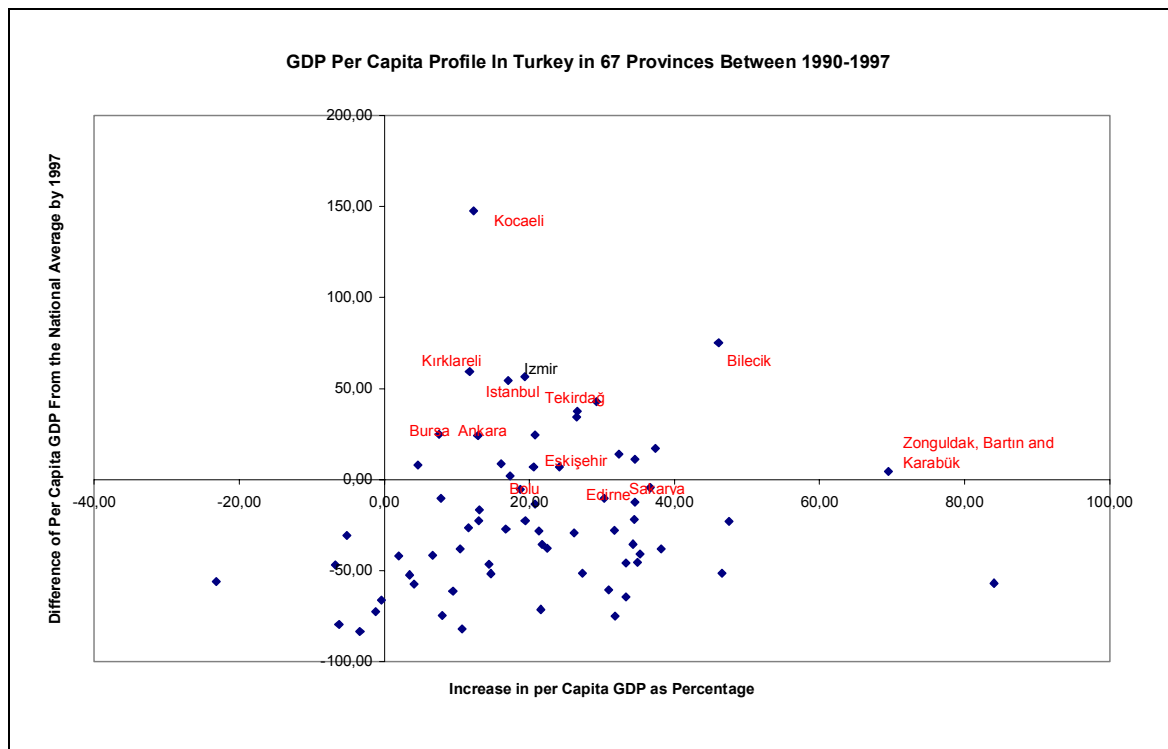


Figure 7 - GDP Per Capita Groups in Turkey at 1997, State Institute of Statistics, Annual GDP Data on 1990 and 1997 at 1987 fixed values are used

If the same data are used for the map above are used on a graph, it is seen that the most peripheral regions Edirne, Sakarya and Bolu-Düzce have quite close GDP per capita values, Where

- a) Tekirdağ and Kırklareli regions are close to Istanbul-Yalova, and Kocaeli values, forming a larger core.
- b) Secondary centers like Bursa and Ankara have quite close values.
- c) Regions characterised by metal industry like Zonguldak-Bartın-Karabük and Bilecik have high increase rates in per capita GDP (See graph 1 below).



Graph 1 – GDP Per Capita Profile in Turkey at 1997, State Institute of Statistics, Annual GDP Data on 1990 and 1997 at 1987 fixed values are used

The graph above clearly shows that the Edirne – Ankara axis plays a special role in the country’s economy, and it seems to be the most productive part of the country also in the near future.

- Control power of core regions may be interpreted using the number of new firms especially in **business services like**
 - **transport and storage, and,**
 - **financial institutions and insurance.**

New firms statistics are derived from Annual New Firm Statistics of 1990 and 1995 by SIS at the province level.

Table 1 - Share of provinces in the number of new firms in finance, insurance, leasing and real estate business as percentage of national total

Provinces	1990	1991	1992	1993	1994	1995
06 – Ankara and Kırıkkale	18,16	19,67	20,33	17,66	16,30	14,72
11 – Bilecik	0,15	0,10	0,00	0,05	0,05	0,08
14 – Bolu-Düzce	0,58	0,26	0,27	0,32	0,61	0,54
16 – Bursa	1,90	2,88	2,43	2,62	2,91	3,27
22 - Edirne	0,15	0,36	0,24	0,32	0,46	0,35
26 - Eskişehir	0,22	0,36	0,44	0,43	0,87	0,95
34 – Istanbul and Yalova	45,22	42,94	43,08	41,88	42,12	41,07
39 – Kırklareli	0,22	0,31	0,24	0,07	0,10	0,21
41 –Kocaeli	1,46	1,18	1,37	1,40	1,82	1,93
54 – Sakarya	0,22	0,51	0,48	0,50	0,56	0,79
59 – Tekirdağ	0,29	0,72	0,51	1,08	0,73	0,68
67 – Zonguldak-Bartın-Karabük	0,80	0,31	0,34	0,70	0,36	0,60
Total Share in Turkey	69,37	69,59	69,73	67,01	66,89	65,18

The axis is obviously the dominating center for finance, insurance, real estate and related services sectors, regarding the table 1 above. Though, due to the loss of shares of Istanbul and Ankara, overall share of the axis in number of new firms in this sector in Turkey dropped gradually. Increasing share of Bursa and Kocaeli shows that these regions also show progress in the development of financial services.

Table 2 - Share of provinces in the number of new firms in transportation, storage and communication business as percentage of national total

Provinces	1990	1991	1992	1993	1994	1995
06 – Ankara and Kırıkkale	6,72	9,62	8,16	9,38	9,50	8,30
11 – Bilecik	0,15	0,14	0,08	0,20	0,04	0,14
14 – Bolu-Düzce	0,30	0,42	1,22	1,03	1,18	1,33
16 – Bursa	2,09	1,39	1,80	2,64	3,08	2,00
22 - Edirne	0,45	0,28	0,49	0,54	0,61	0,46
26 - Eskişehir	0,30	0,56	0,73	0,64	0,77	1,19
34 – Istanbul and Yalova	38,66	44,35	42,29	39,77	35,71	34,12
39 – Kırklareli	0,45	0,28	0,24	0,24	0,16	0,11
41 –Kocaeli	1,49	1,67	1,96	2,20	2,52	2,77
54 – Sakarya	0,60	0,70	0,90	0,68	0,37	1,02
59 – Tekirdağ	1,04	0,42	0,24	0,49	0,57	0,70
67 – Zonguldak-Bartın-Karabük	0,60	0,98	0,24	1,07	0,53	0,56
Total Share in Turkey	52,84	60,81	58,37	58,87	55,03	52,68

The same four provinces with the highest share in new firms in financial services also take the first four places in transportation, storage and communication business. Rise and fall of shares in the number of new firms in this sector in Istanbul-Yalova, Ankara and Bursa regions have kept the axis' share in the country almost unchanged between 1990-1995.

2. Regional specialisation levels are measured by dissimilarity index following **Traistaru et al. (2002)**. The dataset consists of manufacturing companies with 10 or more workers, disaggregated at the province level, by SIS. The dataset covers 19 years, from 1980 to 1998.

Dissimilarity Index

E = Total Employment in Manufacturing Industry
S = Shares
i = Manufacturing Industry Branch
j = Region (in this study provinces are accepted as regions as they are suitable to make a comparison with NUTS III level)

S_{ij}^S = Share of employment in industry "i" in region "j" in total employment of region "j"

s_i = Share of country employment in industry "i" in total country employment.

$S_{ij}^S = E_{ij} / E_j = E_{ij} / \sum_i E_{ij}$

$s_i = E_i / E = \sum_j E_{ij} / \sum_i \sum_j E_{ij}$

S_{ij}^C = share of employment in industry "i" in region "j" in country employment of industry "i"

S_j = share of total employment in region "j" in country employment

$S_{ij}^C = E_{ij} / E_i = E_{ij} / \sum_j E_{ij}$

$S_j = E_j / E = \sum_i E_{ij} / \sum_i \sum_j E_{ij}$

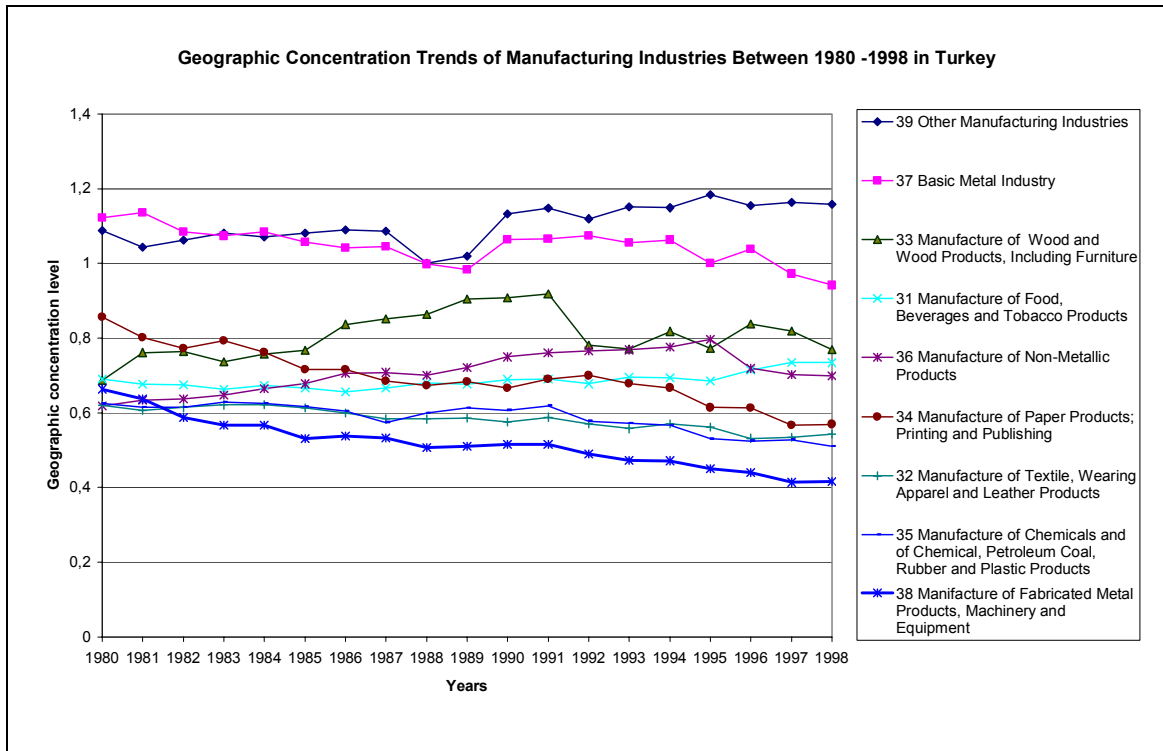
Regional Specialisation Measure

$DSR_j = \sum_i | S_{ij}^S - s_i |$

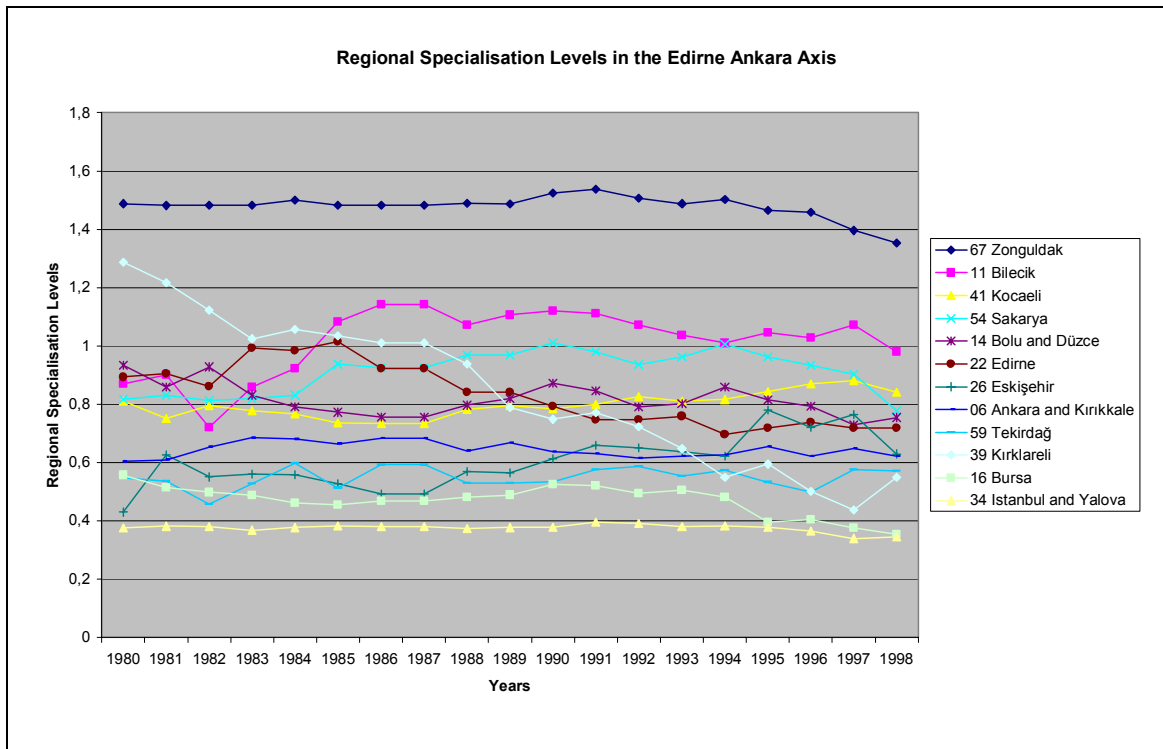
Geographic Concentration Measure

$DCR_i = \sum_j | S_{ij}^C - s_j |$

This method is used by **Traistaru et al (2003)**, derived from Krugman (1991) at their study on five candidate countries to analyse whether if European integration lead to rising regional specialisation and geographic concentration of activities in the border regions in accession countries. Values may vary between "0" as the minimum and "2" as the maximum regional specialisation or geographic concentration.



Graph 2 – Geographic concentration trends of manufacturing industries covering companies with 10 or more employees during 1980 – 1998 period.



Graph 3 – Regional specialisation levels in the Edirne Ankara Axis during 1980-1998, due to data on manufacturing companies with 10 or more workers.

The change in the regional specialisation levels in the axis show that Kırklareli had the sharpest decrease in regional specialisation levels, which came close to its neighbours Tekirdağ, Istanbul-Yalova regions and Bursa. Bursa and Istanbul have the lowest regional specialisation levels in the region. Zonguldak's regional specialisation level, with the loss of public companies and privatization have started to fall.

3. The change in the location of manufacturing industry to peripheral regions is tracked simply by the change in the number of manufacturing companies with 10 or more workers from 1980 to 1998. This data set is the same set used for the calculation of regional specialisation levels. As the number of firms vary sharply among regions, instead of using direct numbers, share of the every region within region groups where number of companies increased or decreased are used. The following figures are prepared to show the losers and the winners.

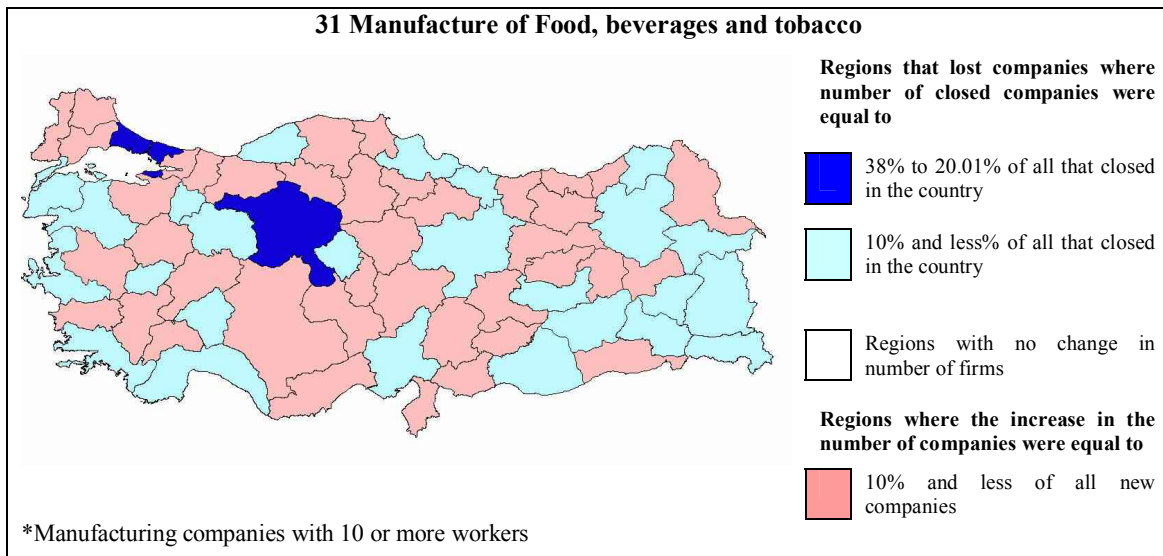


Figure 8 - Change in the number of firms in manufacture of food, beverages and tobacco from the year 1980 to 1998, as percentage groups

As seen on the figure (8) above, the manufacture of food, beverages and tobacco industries have been moving out of large metropolitan areas in the western and middle Turkey. The largest losses are in Istanbul, and Ankara. Bursa has been attracting companies in this sector, unlike other metropolitan centers. As shown before, the geographic concentration level of this industry has not changed much over 19 years. This industry has also lost weight in the export of Turkey.

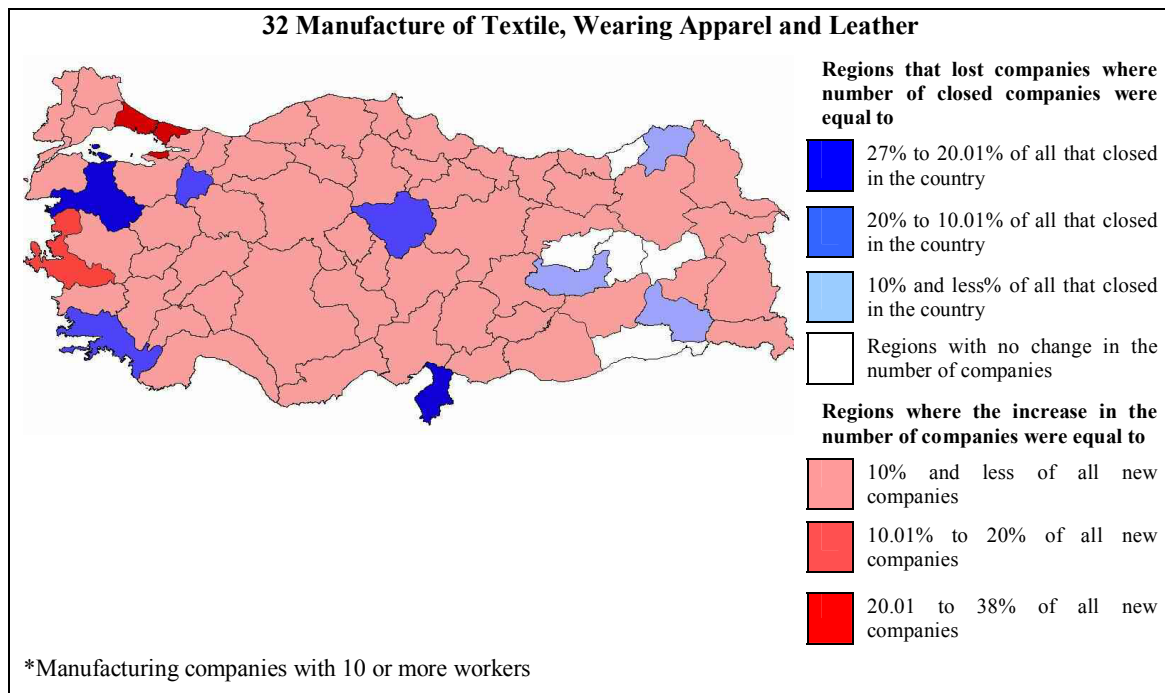


Figure 9 - Change in the number of firms in manufacture of textile, wearing apparel and leather from the year 1980 to 1998, as percentage groups

The textile industry have grown fast in the country since 1980 and have become the main exporting sector of Turkey, not only among other manufacturing sectors. By 1995, 40% of all exports were from this sector alone. It is seen that this sector has developed in the countrywide, but it is clearly observed in the figure (9) above that mostly its agglomerated in Istanbul through 19 years. Other important center has been Izmir, where sea access to international markets were also available as in Istanbul. It is interesting to see that Balıkesir, a region between Istanbul and Izmir has been the region which lost most in this sector. Though industry's geographic concentration level has been falling due to high levels of growth in the country, it may be argued that agglomeration in large metropolitan centers with access to international markets is the reality.

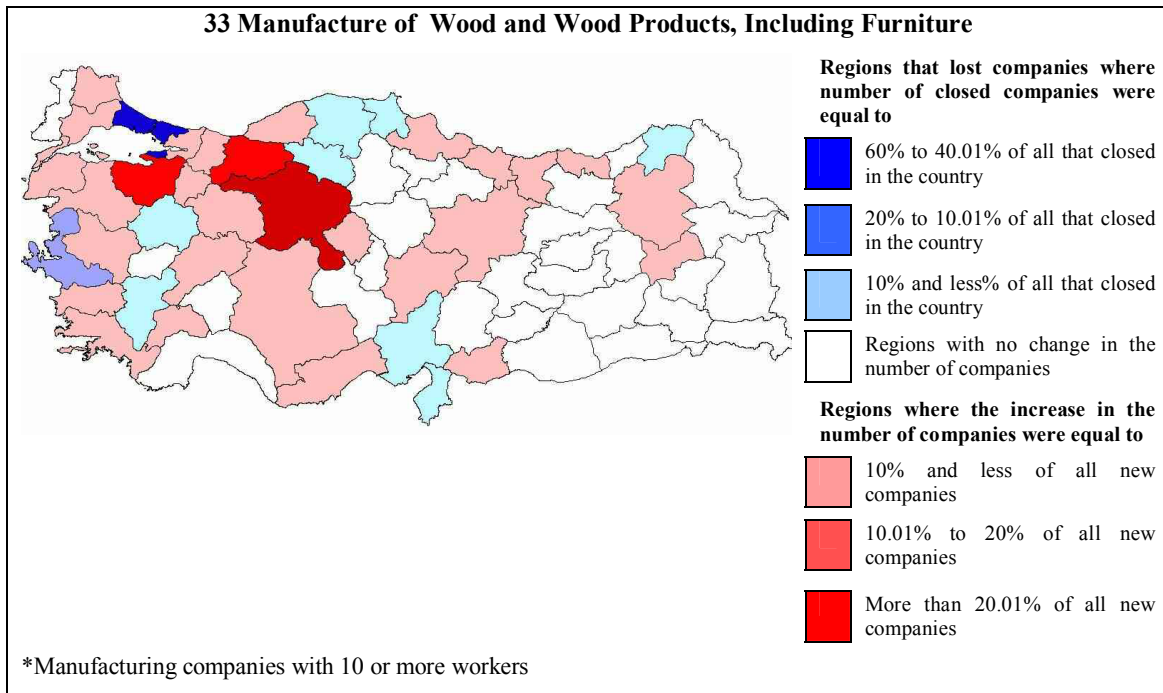


Figure 10 - Change in the number of firms in manufacture of wood and wood products, including furniture from the year 1980 to 1998, as percentage groups

Manufacture of Wood and Wood Products and Furniture has decentralised from Istanbul to Bursa and Ankara, and not surprisingly to Bolu – Düzce where natural resources are available. With a neglectable share in the exports, it is possible to say that this industry is replaced by textile industry in 19 years. Slightly increasing geographic concentration level of this industry is due to the development in the Edirne-Ankara Axis.

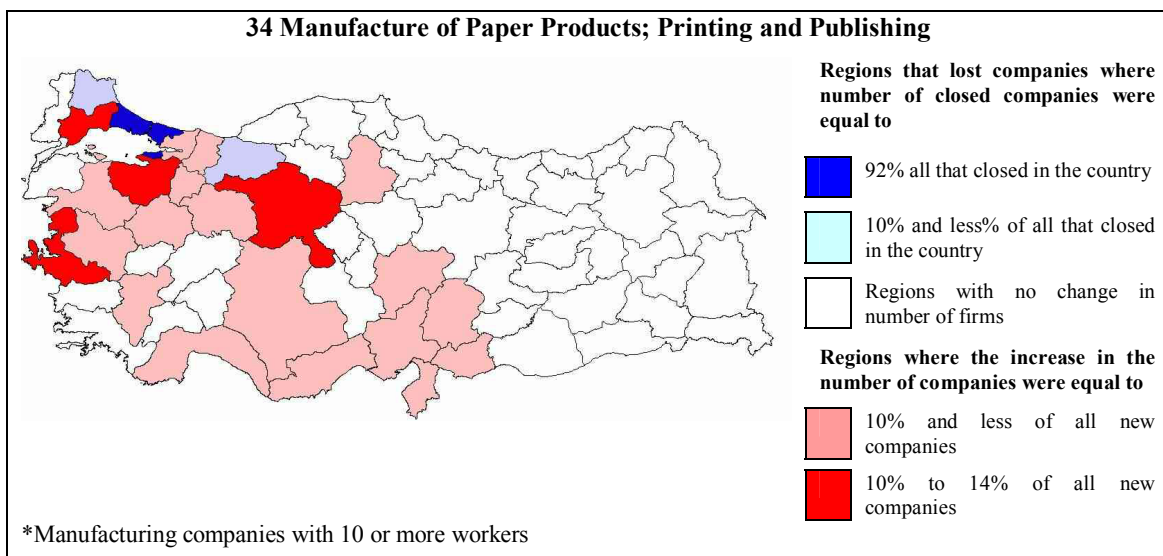


Figure 11 - Change in the number of firms in manufacture of paper products, printing and publishing from the year 1980 to 1998, as percentage groups

Istanbul was once the heart of manufacture of paper products, printing and publishing industry in Turkey. This industry has moved out of Istanbul apparently, to other western regions. The less developed Eastern part of the country, has not been able to attract this industry in 19 years. The most important developments are in Ankara, Bursa and Tekirdağ in the axis. Izmir, is another center where industry is developing. It may be concluded that this industry is decentralised from its primary center to secondary centers. The industry still is heavily represented within the axis. Having a sharp fall in the geographic concentration levels, this industry is a good example of dispersed decentralised concentration of a manufacturing industry where developments in the transportation structure and opening to international markets are in effect. Further investigation of the industry would be interesting, regarding that exports from this industry increased 59 times from 1980 to 1998, but still very low among other sectors. (See appendix table b)

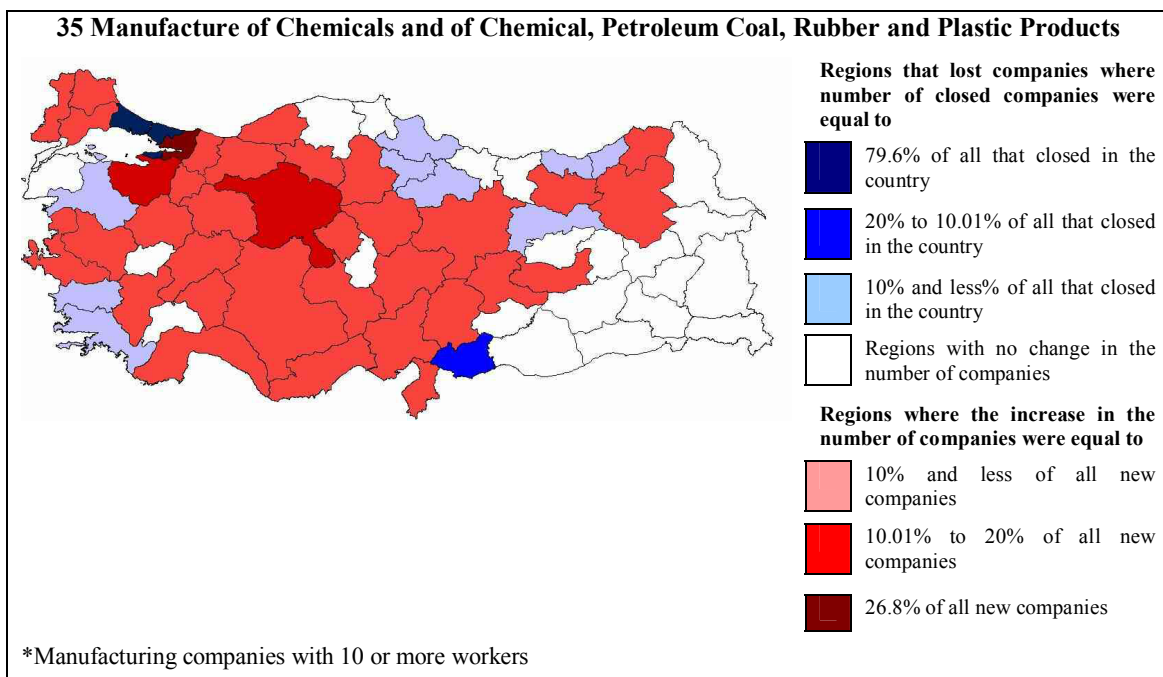


Figure 12 - Change in the number of firms in manufacture of chemical, petroleum, coal, rubber and plastic products from the year 1980 to 1998, as percentage groups

Quite similar to paper and printing industry, chemicals and chemical, petroleum, coal, rubber and plastic products industry has also moved away from Istanbul to secondary centers like Ankara - Kırkkale, Bursa and Kocaeli. Though the geographic concentration level was very low at the beginning of the period, at 1980, it further decreased and is one of the lowest concentrated industry in Turkey. Though, it is still developing faster within the axis rather than other regions.

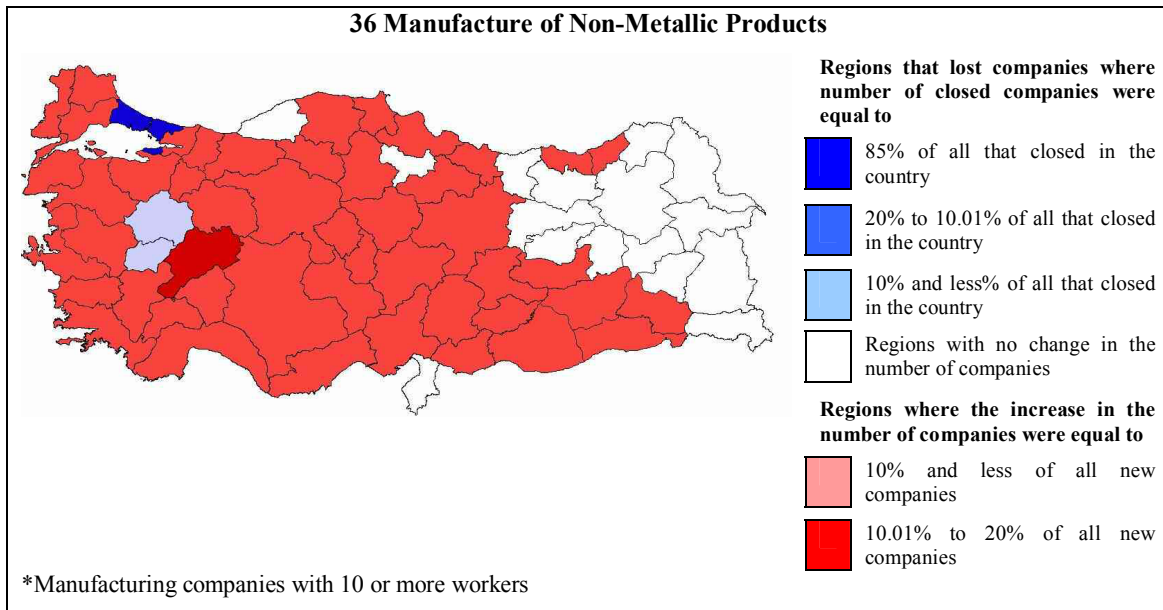


Figure 13 - Change in the number of firms in manufacture of non-metallic products from the year 1980 to 1998, as percentage groups

The manufacture of non-metallic products have been sharply decentralised out of Istanbul, but not heavily concentrated in another region. The geographic concentration level of this industry were increasing until 1995, but then started to decrease. Steadily increasing its share in total exports, this industry has countrywide developed, and moving away from the largest center.

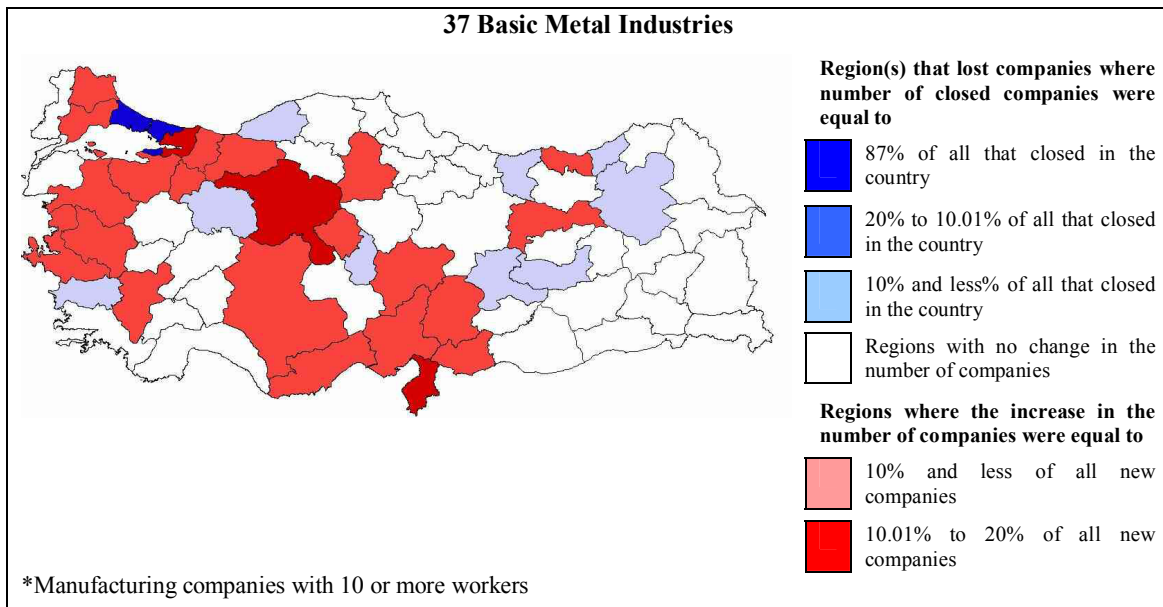


Figure 14 - Change in the number of firms in manufacture of basic metal products from the year 1980 to 1998, as percentage groups

The shrinking basic metal industry has been moving out of Istanbul to other centers through transportation corridors. From Istanbul to Ankara and to Izmir, regions between

have witnessed an increase in the number of companies in this sector. From Ankara to the mid southern region Hatay, where important plants of basic metal industry was already located, number of companies also increased. Thus, it may be concluded that through transportation corridors, this industry dispersed to regions where it was also heavily located at the beginning. Zonguldak-Bartın-Karabük is an exemption in this case, though it was a primary location for this industry, like Istanbul, the number of companies has been falling. Privatization has played a major role in this sector. Though decreasing, this industry still possess very high levels of geographic concentration regarding other industries.

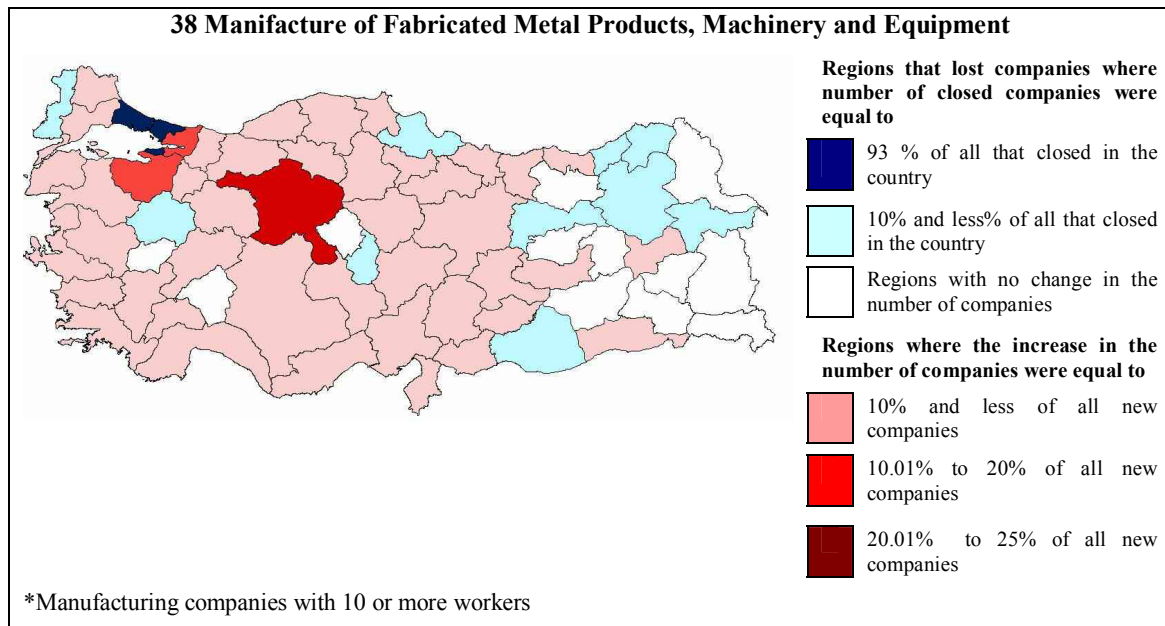


Figure 15 - Change in the number of firms in manufacture of fabricated metal products, machinery and equipment from the year 1980 to 1998, as percentage groups

Manufacture of fabricated metal products, machinery and equipment, following basic metal industries have left Istanbul in this period. Unlike basic metal industry, this industry had a very low geographic concentration level at 1980. It further deconcentrated and by 1998 it was the lowest geographically concentrated industry in Turkey. Though the development of secondary centers Bursa and Ankara are following the pattern of basic metal industries. The Edirne-Ankara axis still is the most important center for this industry. From a share 3,3% in 2.1 billion USD export volume at 1980, this industry increased its share to 23.80% at year 2000, in approximately 20 billion USD export volume.

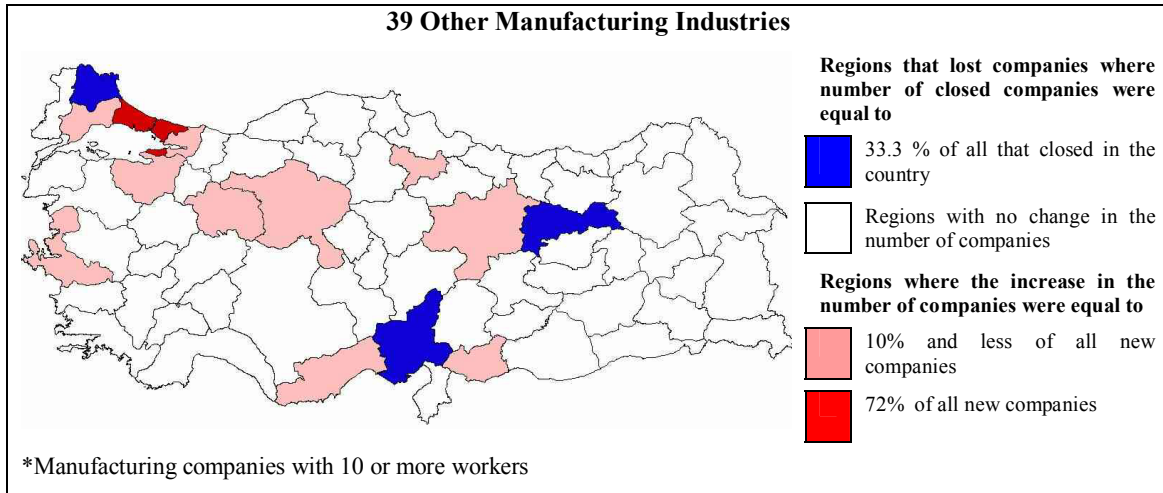


Figure 16 - Change in the number of firms in other manufacturing industries elsewhere not specified from the year 1980 to 1998, as percentage groups

Other manufacturing industries have been concentrating in Istanbul. This small industrial branch has the highest geographic concentration level and it is increasing further, parallel to the developments in Istanbul. This industry is slightly developing in the remaining regions of the axis.

In table (3) Istanbul- Yalova, Ankara – Kırıkkale and Bursa regions are compared. While Istanbul –Yalova and Bursa had very low levels of regional specialisation at the end of the period, Ankara-Kırıkkale still had higher values. While Ankara-Kırıkkale region attracted industries, in Istanbul-Yalova and Bursa regions average company sizes grew in parallel to growth within the country. However, Ankara-Kırıkkale and Istanbul-Yalova regions have attracted most of the new firms in finance-insurance-real estate and transportation-storage-communication sectors. The increase in GDP per capita is significantly higher than Bursa, though in Bursa industries developed much faster than in Ankara-Kırıkkale.

Table 3 – Metropolitan Regions within the Edirne-Ankara Axis

	Metropolitan Regions			TURKEY
	Istanbul (and Yalova)	Ankara (and Kırıkkale)	Bursa	
Regional Specialisation Level at 1980*	0,376	0,604	0,557	1,022
Regional Specialisation Level at 1998*	0,346	0,623	0,354	0,962
Number of manufacturing companies at 1980*	3919	560	395	8707
Number of manufacturing companies at 1998*	4007	1004	856	12332
Total change in the number of manufacturing companies between 1980-1998*	88	444**	461**	3625
Number of employees at 1980 in manufacturing industries*	242115	41179	32593	786995
Number of employees at 1998 in manufacturing industries*	338051	67710	112965	1206164
Average firm size in manufacturing industry at 1980*	62 employees	74 employees	83 employees	90 employees
Average firm size in manufacturing industry at 1998*	84 employees	67 employees	132 employees	98 employees
GDP Per Capita Change 1990-1997	%17,05	%12,89	%7,53	21,06%
Cumulative Net increase in the number of firms in finance, insurance and real estate services 1990-1995	8290	3391	547	19622
Cumulative Net increase in the number of firms in transportation and storage sector	3763	877	233	9978

*Manufacturing companies with 10 or more workers

**Bursa and Ankara had the highest share in the regions where number of companies in manufacturing industry increased. Net increase in the number of companies in Bursa was 12,65% and in Ankara was 12,18% of all regions' sum where number of companies increased.

Conclusion

Throughout international integration, Turkey has experienced strong changes in the location of industrial activities. It has been found that primary industrial centers Istanbul-Yalova and Bursa has reached to very low levels of regional specialisation, while in Ankara-Kırıkkale there was not a significant change. Ankara-Kırıkkale and Bursa have attracted many industries while textile and wearing apparel industry concentrated in Istanbul. Metal products, machinery and equipment industry, vice versa

decentralised sharply, reaching the lowest geographic concentration levels. But, this industry is still heavily located within the Edirne-Ankara Axis. The change in the spatial organization of these industries which hold a large sum in the exports of the country after 1980's need further attention to be paid, in decreasing regional disparities by a balanced regional development, and need to be further evaluated within a wider framework including international urban corridors within Europe.

Istanbul-Yalova, Bursa and Kocaeli regions have become a wider supra-region, by increasing accessibility and increasing number of business services like transportation, communication and finance. Tekirdağ as well seems to be a future member of this core. Ankara has become the second largest center attracting these services.

Productivity in the axis has positively changed, and even the most peripheral regions in the axis seem to reach to gdp per capita levels above the national average in the short term.

The progress in the TEM project thus might result in further decentralisation of industrial activities to other regions out of Edirne-Ankara axis, while may lead to further concentration of business services within the metropolitan cores of the axis. Increase in the average number of employees in Istanbul-Yalova and Bursa regions may be interpreted as an indicator of high competitiveness and success. Thus, Istanbul-Yalova, Tekirdağ, Kocaeli and Bursa seems to form a major center in the peripheral South-Eastern European system. This major center now needs a better defined place within the ESDP.

In the longer run, it may be expected that due to the deconcentration of economic activities disparities among regions within Turkey should fall, but still continue widely, regarding that business services tend to concentrate in metropolitan regions and these regions still possess high rates of increase in gdp per capita. If disparities are to be decreased, the metropolitan and periphery relations need to be developed through further infrastructure investments, like in the Istanbul-Bursa-Kocaeli-Tekirdağ regions.

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Appendix

Table a - Share of Manufacturing Industries in All Exports During 1980-2000

Year	31 Manufacture of Food, beverages and tobacco	32 Textile, Wearing Apparel and Leather Industries	33 Manufacture of Wood and Wood Products, Including Furniture	34 Manufacture of Paper Products Printing and Publishing	35 Manufacture of Chemicals and of Chemical, Petroleum Coal, Rubber and	36 Manufacture of Non-Metallic Products	37 Basic Metal Industries	38 Manufacture of Fabricated Metal Products, Machinery and Equipment	39 Other Manufacturing Industries	Share of manufacturing Industries in total Exports
1980	35,53	27,86	0,29	0,10	4,47	2,60	2,02	3,33	0,13	76,33
1985	16,52	31,71	1,80	0,75	11,51	2,92	12,18	9,81	0,44	87,65
1990	15,83	38,02	0,37	0,51	10,55	3,10	13,44	8,15	0,20	90,16
1995	15,74	40,21	0,57	0,66	8,95	3,18	10,57	13,28	0,54	93,70
2000	10,08	37,06	0,73	0,69	8,96	4,01	8,16	23,80	1,72	95,23

Table b - The Development of the Value of Exports in Manufacturing Industries Between 1980-1998

Industry No.	Manufacturing Industry	Exports in 1980	Exports in 1990 (1980 as index)	Exports in 1998 (1980 as index)
31	Manufacture of Food, beverages and tobacco	100	198,37	353,97
32	Textile, Wearing Apparel and Leather Industries	100	607,62	1341,53
33	Manufacture of Wood and Wood Products, Including Furniture	100	568,06	1810,20
34	Manufacture of Paper Products; Printing and Publishing	100	2205,31	5910,31
35	Manufacture of Chemicals and of Chemical, Petroleum Coal, Rubber and Plastic Products	100	1052,13	1696,27
36	Manufacture of Non-Metallic Products	100	530,63	1240,27
37	Basic Metal Industries	100	2961,21	3767,88
38	Manufacture of Fabricated Metal Products, Machinery and Equipment	100	1090,87	5059,79
39	Other Manufacturing Industries	100	661,11	7421,99

(USD Prices are used, State Institute of Statistics, Turkey, 2002)

Table c - Geographic concentration levels of manufacturing industries between years 1980-1998 in Turkey

	31	32	33	34	35	36	37	38	39
Year	Manufacture of Food, beverages and tobacco	Manufacture of Textile, Wearing Apparel and Leather	Manufacture of Wood and Wood Products, Including Furniture	Manufacture of Paper Products; Printing and Publishing	Manufacture of Chemicals and of Chemical, Petroleum Coal, Rubber and Plastic Products	Manufacture of Non-Metallic Products	Basic Metal Industries	Manufacture of Fabricated Metal Products, Machinery and Equipment	Other Manufacturing Industries
1980	0,690	0,619	0,687	0,857	0,624	0,618	1,122	0,663	1,088
1981	0,677	0,606	0,761	0,801	0,615	0,633	1,135	0,636	1,043
1982	0,675	0,614	0,764	0,773	0,615	0,637	1,085	0,587	1,063
1983	0,663	0,621	0,736	0,792	0,628	0,647	1,073	0,567	1,080
1984	0,673	0,622	0,757	0,762	0,625	0,664	1,084	0,566	1,070
1985	0,667	0,613	0,768	0,716	0,616	0,677	1,057	0,530	1,081
1986	0,655	0,600	0,837	0,716	0,604	0,705	1,042	0,538	1,090
1987	0,666	0,583	0,852	0,685	0,574	0,708	1,045	0,532	1,086
1988	0,679	0,583	0,864	0,674	0,599	0,700	0,998	0,506	1,000
1989	0,677	0,586	0,905	0,684	0,613	0,721	0,984	0,510	1,020
1990	0,689	0,574	0,908	0,665	0,607	0,750	1,063	0,514	1,132
1991	0,691	0,588	0,918	0,690	0,619	0,760	1,066	0,515	1,148
1992	0,677	0,570	0,781	0,700	0,578	0,766	1,075	0,490	1,120
1993	0,695	0,557	0,770	0,678	0,572	0,768	1,056	0,472	1,151
1994	0,694	0,571	0,818	0,667	0,567	0,776	1,063	0,472	1,149
1995	0,685	0,561	0,773	0,614	0,530	0,797	1,001	0,450	1,184
1996	0,715	0,531	0,837	0,612	0,525	0,719	1,038	0,439	1,155
1997	0,735	0,535	0,818	0,567	0,528	0,703	0,972	0,413	1,163
1998	0,734	0,543	0,769	0,569	0,510	0,698	0,941	0,416	1,159

Table d – Regional Specialisation Levels in the Edirne-Ankara Axis During 1980-1998*

Years	Ankara- Kırıkkale (06)	Bilecik (11)	Bolu- Düzce (14)	Bursa (16)	Edirne (22)	Eskişehir (26)	Istanbul- Yalova (34)	Kırklareli (39)	Kocaeli (41)	Sakarya (54)	Tekirdağ (59)	Zonguldak Bartın Karabük (67)
1980	0,604	0,871	0,934	0,557	0,893	0,430	0,376	1,287	0,810	0,818	0,548	1,488
1981	0,610	0,900	0,859	0,515	0,906	0,626	0,382	1,217	0,751	0,830	0,537	1,482
1982	0,654	0,722	0,928	0,498	0,862	0,551	0,380	1,123	0,796	0,814	0,458	1,482
1983	0,685	0,860	0,831	0,489	0,993	0,561	0,369	1,025	0,777	0,821	0,528	1,483
1984	0,680	0,923	0,791	0,462	0,985	0,559	0,378	1,057	0,767	0,832	0,598	1,499
1985	0,665	1,083	0,772	0,456	1,015	0,529	0,384	1,036	0,736	0,937	0,514	1,483
1986	0,684	1,142	0,756	0,467	0,923	0,492	0,380	1,011	0,735	0,925	0,593	1,482
1987	0,684	1,142	0,756	0,467	0,923	0,492	0,380	1,011	0,735	0,925	0,593	1,482
1988	0,640	1,072	0,797	0,482	0,842	0,569	0,374	0,938	0,782	0,968	0,531	1,489
1989	0,668	1,106	0,820	0,489	0,842	0,566	0,377	0,789	0,795	0,970	0,531	1,488
1990	0,638	1,119	0,872	0,525	0,794	0,613	0,378	0,749	0,784	1,011	0,535	1,523
1991	0,631	1,112	0,847	0,521	0,748	0,660	0,396	0,771	0,800	0,979	0,576	1,538
1992	0,616	1,071	0,790	0,494	0,746	0,650	0,392	0,722	0,826	0,935	0,586	1,506
1993	0,622	1,038	0,801	0,506	0,759	0,638	0,381	0,648	0,811	0,963	0,554	1,488
1994	0,626	1,010	0,859	0,483	0,698	0,621	0,384	0,550	0,816	1,007	0,574	1,502
1995	0,656	1,046	0,815	0,395	0,719	0,780	0,379	0,595	0,843	0,962	0,533	1,465
1996	0,622	1,028	0,793	0,406	0,738	0,721	0,366	0,502	0,870	0,934	0,498	1,458
1997	0,648	1,071	0,730	0,376	0,718	0,765	0,340	0,437	0,882	0,903	0,575	1,396
1998	0,623	0,981	0,755	0,354	0,718	0,630	0,346	0,550	0,842	0,777	0,571	1,353

*Manufacturing companies with 10 or more workers

Graphic a - The Change in the Value of Exports in Manufacturing Industries in Turkey during 1980-2001 in USD

