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EU Integration and the Change of Spatial Organization in Turkey

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Abstract:

After 1980, economic agenda changed and international trade and integration to global and regional systems gained more importance in Turkey, like in many countries. As a candidate of the EU Turkey as well has experienced a change in the spatial organization due to the development of industries in addition to other developments.

It has been shown by many other studies that integration process leads to a change in the industrial structure and spatial organization. The effect of the removal or lowering of trade barriers and its effects on the industrial location has been widely investigated in the New Economic Geography literature. These effects are of great importance for some essential grounds of European Integration, such as a balanced regional development and decreasing inequalities among regions to increase overall competitiveness, since they may cause an increase in the regional disparities and conflict with main targets of integration.

This paper analyses the change of spatial organization in Turkey through the integration process to the EU by using location quotient, dissimilarity index and some other indicators and tries to show whether if spatial organization changed in favour of existing centres or if new centres have emerged.

Introduction

The changes that date back to 1980s have led to a change in the competition's national structure in the single markets and have caused to the restructuring of competition in a regional level **Steiner (2002)**. Industrial agglomeration phenomenon has re-attracted the attention of economists after 1980's as a result of the regional integration movements in various geographies after the World War II. These integrations have blurred the line between the regions and international trade, and have led to the formation of a new literature that unifies the international trade theory, industrial organization theory and regional economics. New Geography Models have thus born out of this literature of new trade theories of 1970 and 1980s.

Regional Integration and Change in the Spatial Organization

Space has been left in the second place in the Classical Trade Theory although Ohlin tried to unify international trade with a general location theory, and trade differences among regions or nations have been tried to be explained by hidden characteristic features like factor differences (Heckscher-Ohlin Model) or difference of technology (Ricardian Model) **(Unay, 2000, Armstrong and Taylor, 2001)**. Therefore, the common point of view was that it is space which is unequal and as some regions produce some of the commodities, other regions will produce other commodities, due to comparative advantages of regions, and economic activity itself does not create any differences among regions. However, the unequal distribution of resources in the world is not enough in explaining the differences among nations and regions, and the structure of international trade shows that regions producing similar type of goods as well trade these goods among each other. These thus make the economies of scale essential in explaining the geographical distribution of economic activities **(Paluzie et al, 2000)**..

Neo-classical explanations on regional specialisation underline differences in productivity (technology) among regions, and their comparative advantages. New Trade Theories and New Economic Geography Models instead focus on increasing returns to scale, economies of agglomeration and competitive advantages that arise due to these first two conditions in explaining regional differences **(Traistaru et al, 2002, Armstrong and Taylor, 2001)**. Other views argue that as information has become faster than ever and as skilled human capital, individual and institutional customers are concentrated in some regions, there are still comparative advantages that can not be

ignored **(Porter, 1998).**. In both of the cases, it is clear that such an agglomeration is an advantage for the region. It may be claimed that both of these different approaches are in harmony on the importance of agglomeration.

In the Ricardian Model it is argued that international trade will cause the nations to leave inefficient production areas, and prefer to specialise on the production of a group of commodities. The model says that all the individuals and the nation will benefit from the international trade. However, due to transaction costs of changing to another production area and dominance of a political group who keep the traditional production, **Krugman and Obstfeld (2000)** argues that best production system might not develop in the country always.

Thus, both the inequal distribution of resources, and the inequal distribution of income may increase concentration of economic activities in some regions and cause a cumulative effect.

Regional competition for mobile resources like human capital, labour, international and local aid and investments for infrastructure or as a grant for new companies and attraction of population (As a higher population means a larger inner market and political power) has in the light of the debates above become another research subject. This competition between economic units refer to household income, firm productivity, local government performance, institutions of education or health services, and other units.*As far as competitors compete for macroeconomic objects and use macroeconomic parameters of action macroeconomic regional competition prevails* **(Batey and Friedrich, 2000)**.

Regional competition within a country for macroeconomic objects like per capita GDP, share of government investment and subsidies, promotion of new companies and attracting more people and businesses might result in the increase of regional imbalances. These all would end up increasing returns to scale,leading to an increase in regional differences in the longer term.

Empirical Studies on EU Integration and Change in the Spatial Organization

New trade theories argue that due to increasing returns to scale, firms will tend to locate to fewer locations to concentrate their production. Economic integration at the beginning drops trade barriers to an intermediate level, and geographical advantages might become important. As the economic integration proceeds and trade costs become

smaller, the balance may change and instead of transportation costs, labor costs may be the main force that drives economic activity to relocate to regions where labor is cheaper. Thus, at the first stages of integration, industries might prefer to concentrate to centers where market access is better, but at the later stages, they may prefer to locate to peripheral areas where labor is cheaper.

Paluzie et al, (2001) have studied how European integration changed the geographical concentration in Spain They have analysed the regional specialisation and geographical concentration levels for 30 industries at years 1979,1986 (When Spain joined to EC) and 1992. Applying an econometric analysis to identify the determinants of specialisation and concentration, they have found that regional specialisation did not increase during 1979-1992 period. Scale economies were found to be the most important determinant for geographical concentration. The authors of the study remind that regarding Spain joined the community at a later stage, trade costs changed very fast and there was already a very high level of geographic concentration.

Traistaru et al, (2002) have used regional manufacturing employment data and other variables at NUTS III level for Bulgaria, Estonia, Hungary, Romania and Slovenia to analyse how spatial organization pattern changed due to economic integration to EU between years 1990 and 1999. The data for manufacturing industry employment covers companies with 10 or more workers. They have used dissimilarity index as a relative measure for analysing regional specialisation and geographic concentration levels, derived from the index proposed by **Krugman, (1991)*.** They have found that average regional specialisation was increasing in Romania and Bulgaria and decreasing in Estonia. Average regional specialisation did not change in Hungary and Slovenia. They have found that industries relocated to border regions closer to the EU core and other accession countries which supports the idea that at the beginning of the integration accession to market is more important for industrial location. The method of this research is also used for this study.

The Case of Turkey – From 1980 Until Today

By the Economic Stability Package of 24th January 1980, import substitution model was left its place to an export oriented model as a tool for long-term development (**Mortan ve Çakmaklı, 1987**). In addition to those policies implemented between 1980-1988, financial liberation has as well found a place among other economic policies after

[*]1989 (**Kepenek ve Yentürk, 2001**). Turkey's trade relations to European Union meanwhile have progressed and European Union's share in Turkey's international trade increased from 31% in 1982 to 48.7% at 1995 and to 53.1% by 1999.

This change has consequently been to benefit of some regions, at the cost of stagnation in others. As happened in previous economic periods, the period after 1980 has also produced a transformation in the spatial organization. The penetration of industrial goods in the export of Turkey together with the development of higher technology industries and shrinking share of agricultural products are the characteristics of this period. Income differences among regions in the country meanwhile have increased. The benefits and losses of different social groups and regions, and the increase in the income differences have been subject to some studies **(Sönmez, 2001, Kepenek and Yentürk, 2001**).

To give an idea about the traditional core-periphery relations, the study of **Tekeli (1984)** has proved a simple but strong core-periphery pattern. He has drawn a schema using the ratio of per capita GDP of a province to the national average at 1980 and the increase in the population share of the province in the country between 1975-1980 and placing these data on a coordinate system. Ankara, İzmir and Istanbul in the West and İçel-Adana (as a dual center) in the south have been core regions whose per capita GDP was over the average and whose population share increased more than the national average by 1975-1980. While regions close to these provinces lost some of their population share in the country, their share of per capita GDP was higher than the average in the country. A center in the southeast have increased its population share while its per capita GDP rate to the national average was among the least. Other regions were lagging in population and per capita GDP.

Bölen's **(1982)** study where she analysed the industrial location decision and spatial organization in Turkey in the case of the Marmara Region, (Istanbul, Bursa, Kocaeli, Tekirdağ, Kırklareli, Sakarya, Balıkesir and Çanakkale) is another example in the core-periphery relations and have dramatical findings on regional competition. Industrial companies whose administrative centers are in Istanbul choose the closest region to

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[*] Krugman, P. 1991, "Increasing Returns and Economic Geography", *Journal of Political Economy*, 99, pp.484-499

Istanbul as the location of production, if that region is subject to government promotion. Thus, decision for location was almost always for the Marmara Region. The study shows that even though there are promotions, the center keeps its attractivity. However, the industries tend to locate to cheaper land if transportation connections are good with the center.

In their study focusing to the period between 1980-1997, **Gezici and Hewings (2001)** have found no evidence of convergence among provinces or among functional regions in Turkey. Where as provinces are equivalent to NUTS III level statistical units. Thus, core-periphery relations already existed within the country still continued.

Aydemir et al (1998) have studied SMEs in Turkey and the Eastern Black Sea Region of Turkey, and have found that the most important determinant of overall SME distribution in the country was the size of the external markets, and the SMEs that open to international markets which were located in the Eastern Black Sea Region had a tendency to move to Istanbul and Bursa. These findings are in accordance with other studies mentioned above which argued that industries tended to locate to regions which had better access to EU countries.

Tekeli (1984) has thus showed how was the spatial organization at 1980 in Turkey, while **Bölen (1982)** and **Aydemir et al (1998)** have showed that Istanbul and Bursa keep as important centers for industries. **Gezici and Hewings' (2001)** have shown that there was no evidence of convergence among provinces and core-periphery relations continued between 1980-1997.

How spatial organization changed between 1980-1998 and how regional competition continued in Turkey are analysed below.

The Methodology and the Data Set

To understand how spatial organization changed in Turkey after 1980 until today through the integration process to EU, province level changes are analysed. Province level is suitable for these studies as they are the largest regional administrative units, and they are as well the only statistical units where various data are available. That is why province level data also have been used in almost all studies in the country.

To understand whether if there is a significant change in the core-periphery relations and if new regions emerged due to regional competition, a set of data is used.

Spatial organization in the light of the concept of regional competition and core-periphery relations are studied by using following data:

- Regional specialisation and geographic concentration levels and trends using manufacturing industry annual average employment data, for companies with more than 9 workers, from 1980 to 1998, by State Institute of Statistics (SIS) of Turkey. This is studied whether if existing centers experienced more specialisation or less, and if there is a pattern of a core-periphery relation.
- GDP per capita with fixed prices, between 1990-1997, SIS Annual Data
- Population share at 1990 at 1997, SIS, Population Census 1990,1997
- Share of net increase in the number of firms between 1990-1997, SIS, Annual data
- Share of employment through private sector companies that received government promotion, annual data between 1991-1997, SIS

A dissimilarity index used by **Traistaru et al, (2002)** which, as mentioned above, they have derived from **Kurgman (1991),** is used here to calculate regional specialisation and geographic concentration levels.

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^S_{ij} = 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.

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

$s_i = E_i / E = \Sigma_j E_{ij} / \Sigma_i \Sigma_j E_{ij}$

S^C_{ij} = 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

$S^C_{ij} = E_{ij} / E_i = E_{ij} / \Sigma_j E_{ij}$

$S_j = E_j / E = \Sigma_j E_{ij} / \Sigma_i \Sigma_j E_{ij}$

Regional Specialisation Measure

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

Geographic Concentration Measure

$DCR_i = \Sigma_j | S^C_{ij} - s_j |$

This method is used by Traistaru, Nijkamp and Longhi, at their study mentioned above. The method is derived from Krugman 1991. Values may vary between "0" and "2". In their study, except Slovenia, values for regions were below "1".

To analyse the trends for regional specialisation in 19 years, same simple trend method used by Traistaru and others are used also here.

$SPEC_{jt} = \alpha_i + \beta_t + \varepsilon_{jt}$

$SPEC_{jt}$ = Annual regional specialisation measure of the province (region) by means of the dissimilarity index used above.

T = Independent variable(year)

α ve β = Parameters to be calculated,

ε_{jt} = remainder disturbance

To analyse the trends for geographic concentration in 19 years, same simple trend method is used.

$CONC_{jt} = \alpha_i + \beta_t + \varepsilon_{jt}$

$CONC_{jt}$ = Annual geographic concentration level for industry i by means of the dissimilarity index used above.

T = Independent variable(year)

α ve β = Parameters to be calculated,

ε_{jt} = remainder disturbance

For both of the trend models, 95% confidence level is used.

Other Parameters

GDP Per capita between 1990-1997 is used to track changes in measuring the province welfare level, by calculating percentage of difference from the national average of GDP per capita.

Population share of the provinces in the country at 1990 and at 1997 as percentage in total population are used directly to describe the population distribution pattern.

Net increase in the number of firms between 1990-1997 are calculated by subtraction of number of all closed firms in the provinces from the number of all new firms established in those provinces between 1990-1997. Thus, a cumulative value is used.

The employment created by government promoted companies for provinces between 1991-1997 are as well used as a cumulative data, as changes per year were intermittent, but when taken cumulatively, a clear interpretation was possible.

As since 1980, some district centers have become new province centers, number of provinces have changed significantly. There were 67 provinces at 1980, and at 1998 there were 81 provinces. Due to difficulties in interpretation of data, new provinces' data are combined with data of older provinces which they were before within the administrative borders. In the appendix, figure (a) explains which provinces' data are combined and which codes are given..The codes of the provinces are also given in the table (a) in the appendix.

Results

There has been a sharp increase in the employment in manufacturing industry among companies with 10 or more workers. Total employment has increased 53.26%, in the period between 1980-1998 period. Textile and leather industry has become the main manufacturing industry, employing 34.55% of all the workers in companies with 10 or more workers, at 1998. The increase in the number of employees in Manufacture of Textile, Wearing Apparel and Leather (32) and Manufacture of Fabricated Metal Products, Machinery and Equipment (38) consisted 82.83% of all new workers in all manufacturing industries.

Table 1- Change in the Employment in Manufacturing Industry in Turkey from 1980 to 1998

Industry Code	Manufacturing Industry	1980	1998	Change As %
31	Manufacture of Food, beverages and tobacco	185794	186166	0,20
32	Manufacture of Textile, Wearing Apparel and Leather	184224	416836	126,27
33	Manufacture of Wood and Wood Products, Including Furniture	16745	27657	65,17
34	Manufacture of Paper Products; Printing and Publishing	28285	36168	27,87
35	Manufacture of Chemicals and of Chemical, Petroleum Coal, Rubber and Plastic Products	74747	109329	46,27
36	Manufacture of Non-Metallic Products	58707	79414	35,27
37	**Basic Metal Industries**	**74181**	**66462**	**-10,41**
38	Manifacture of Fabricated Metal Products, Machinery and Equipment	161235	275832	71,07
39	Other Manufacturing Industries	3077	8300	169,74
Total		**786995**	**1206164**	**53,26**

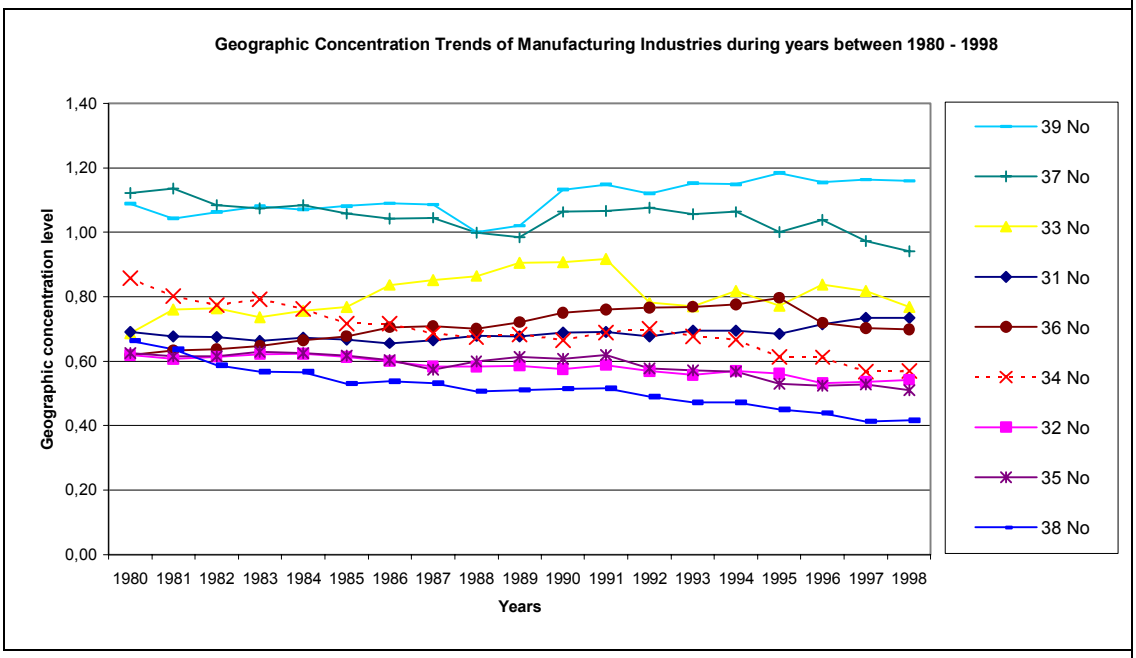
Note: Private and public companies with 10 or more workers in all provinces

Geographic concentration levels of some industries were decreasing while overall regional specialisation level did not change much in 19 years.

Table 2 - Geographic concentration trends in manufacturing industries in Turkey between 1980 – 1998

Industry No.	**Manufacturing Industry**	**Geographic concentration trends between 1980 – 1998**
31	Manufacture of Food, beverages and tobacco	0,0028
32	Textile, Wearing Apparel and Leather Industries	**-0,0049**
33	Manufacture of Wood and Wood Products, Including Furniture	0,0039
34	Manufacture of Paper Products; Printing and Publishing	**-0,0129**
35	Manufacture of Chemicals and of Chemical, Petroleum Coal, Rubber and Plastic Products	**-0,0060**
36	Manufacture of Non-Metallic Products	0,0070
37	Basic Metal Industries	**-0,0063**
38	Manifacture of Fabricated Metal Products, Machinery and Equipment	**-0,0116**
39	Other Manufacturing Industries	0,0068

Geographic concentration trends of manufacturing industries during years between 1980-1998



Private and public sector companies with 10 or more employees.

β numbers in 95% confidence level

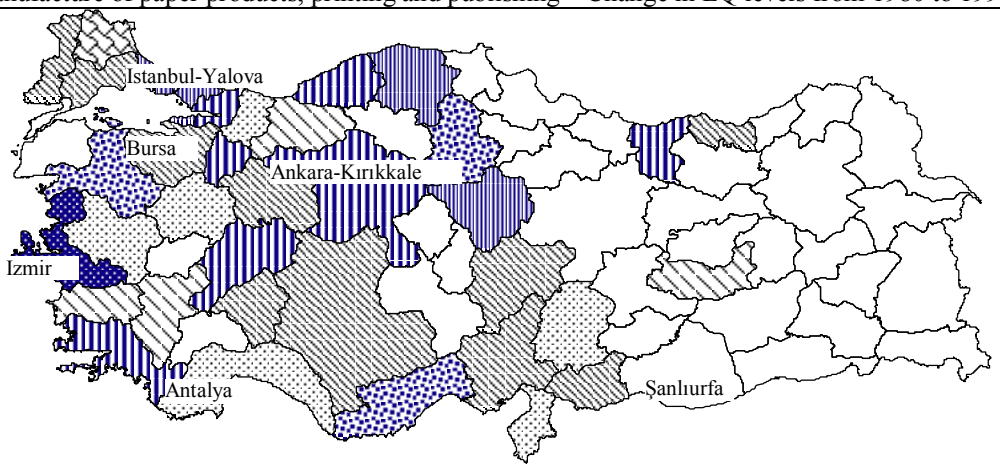
Geographic concentration levels of industries may be followed in the appendix, table (b).

Graph 1 Geographic concentration trends in manufacturing industries in Turkey between 1980 – 1998

Industries 32,34,35 and 38 have tended to decrease their geographic concentration levels between 1980-1998. Most significant changes are at the manufacture of paper products, printing and publishing (34) and manifacture of fabricated metal products, machinery and equipment (38). The change in the spatial distribution of these two industries is as follows:

As seen on the figure (1) below, paper products, printing and publishing industry has been more concentrated in Istanbul – Yalova and Izmir, but has been loosing its weight in Ankara-Kırıkkale provinces. The industry has been developing in many new regions, but significantly developed in the western part of the country, where regions are better developed. Thus, eastern regions are still far out of the reach of the benefits of the deconcentration of this industry.

34 Manufacture of paper products, printing and publishing – Change in LQ levels from 1980 to 1998



Provinces where industry was ;

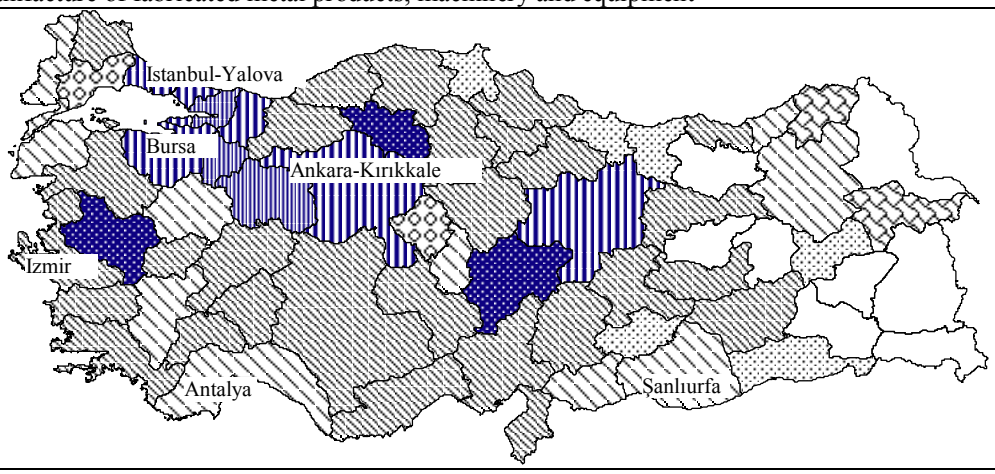
	Basic at 1980 and 1998, and LQ level increased		Basic at 1980 and 1998, but LQ level decreased		Non-basic at 1980, but became basic at 1998
	Absent at 1980, but became non-basic industry at 1998		Non-basic at 1980 and 1998, but LQ level increased		Non-basic at 1980, but became absent at 1998
	Absent both at 1980 and 1998		Non-basic at 1980 and 1998, but LQ level decreased		Basic at 1980, but became absent at 1998
			Basic at 1980, but became non-basic at 1998		Absent at 1980, but became basic at 1998

Location quotient values of this industry may be followed at table (c) in the appendix.

Figure 1- Manufacture of paper products, printing and publishing (34)– Change in LQ levels from 1980 to 1998

Fabricated metal products, machinery and equipment industry had the lowest geographic concentration level at 1998, and has a trend to decrease its concentration more. As seen at figure (2), the industry has been traditionally located through the railway between Istanbul and Ankara, but since 1980 to 1998, the industry has been more dispersed through other provinces. Emerging new provinces are the ones that are not far from the original centers. The eastern regions who had this industry as a basic industry at 1980 have lost to new regions in the east.

38 Manifacture of fabricated metal products, machinery and equipment



Provinces where industry was ;

	Basic at 1980 and 1998, and LQ level increased		Basic at 1980 and 1998, but LQ level decreased		Non-basic at 1980, but became basic at 1998
	Absent at 1980, but became non-basic industry at 1998		Non-basic at 1980 and 1998, but LQ level increased		Non-basic at 1980, but became absent at 1998
	Absent both at 1980 and 1998		Non-basic at 1980 and 1998, but LQ level decreased		Basic at 1980, but became absent at 1998
			Basic at 1980, but became non-basic at 1998		Absent at 1980, but became basic at 1998

Location quotient values of this industry may be followed at table (c) in the appendix.

Figure 2 - Manifacture of fabricated metal products, machinery and equipment (38) - Change in LQ levels from 1980 to 1998

Regional specialisation pattern in Turkey has significantly changed since 1980 to 1998. Overall decrease in regional specialisation is followed in the maps, showing that existing centers like Ankara-Kırıkkale, Istanbul-Yalova and Izmir had still less than average regional specialisation levels. Regarding the figure (3) below, it is clear that around these traditional centers regional specialisation levels are generally increasing, while in the centers these levels are decreasing.

Regional Specialisation Pattern in Turkey at Year 1980

Regional Specialisation Pattern in Turkey at Year 1998

Provinces with lower than average regional specialisation levels at the subject year

Provinces with higher than average regional specialisation levels at the subject year

Mean for year 1980 is 1.022 and Mean for year 1998 is 0.962

Figure 3 - Regional Specialisation Pattern in Turkey at Year 1980 and 1998

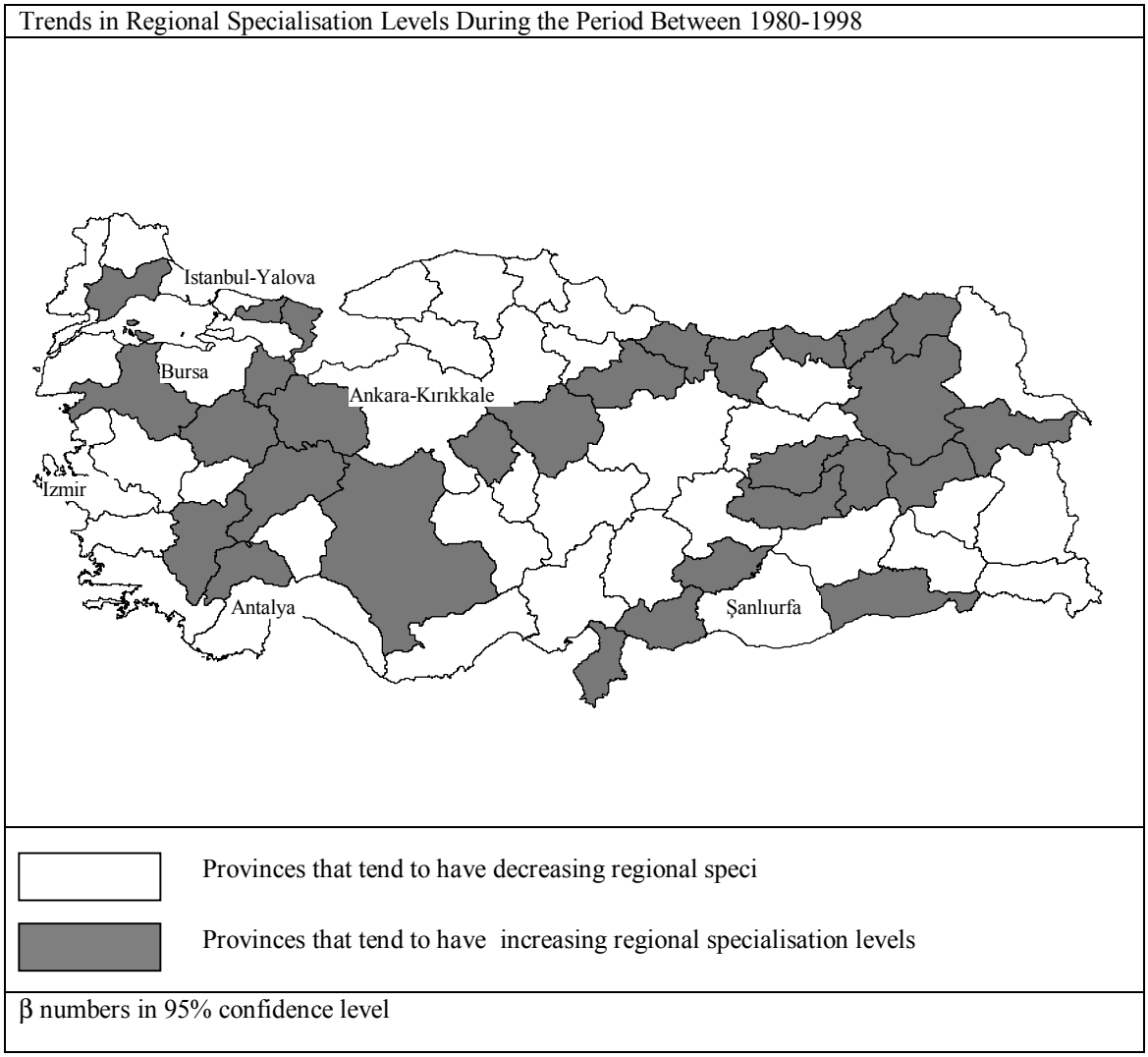
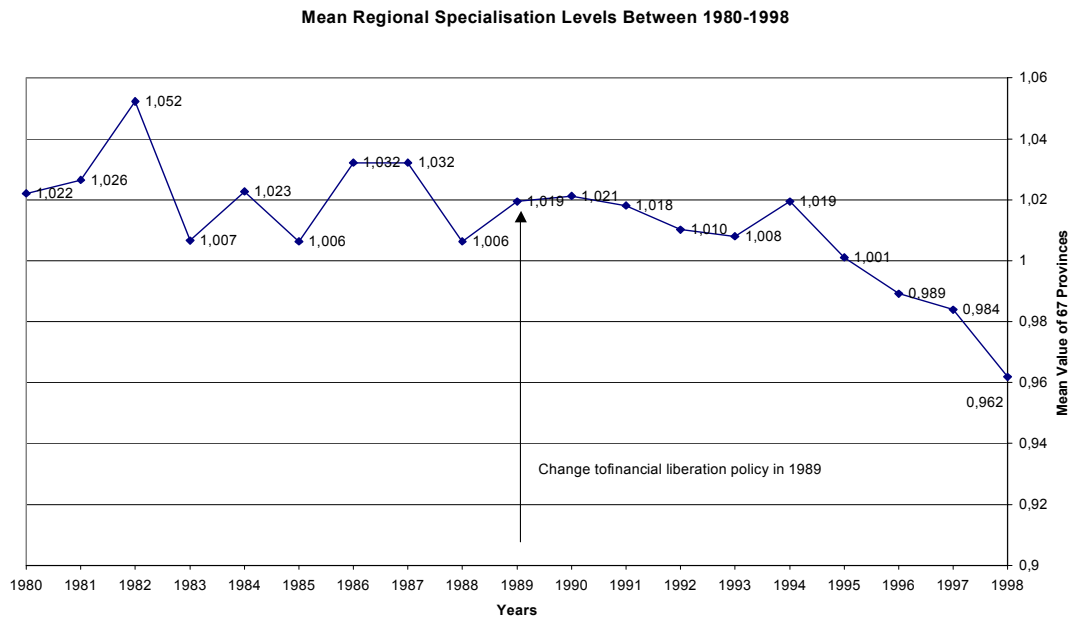


Figure 4 - Trends in regional specialisation levels in provinces in Turkey between 1980 – 1998

The new center in the south-eastern Turkey Şanlıurfa (63) has almost the same features with other centers. Around Şanlıurfa, there is increasing regional specialisation while in Şanlıurfa regional specialisation levels were below the national average both at 1980 and 1998 and tends to decrease.

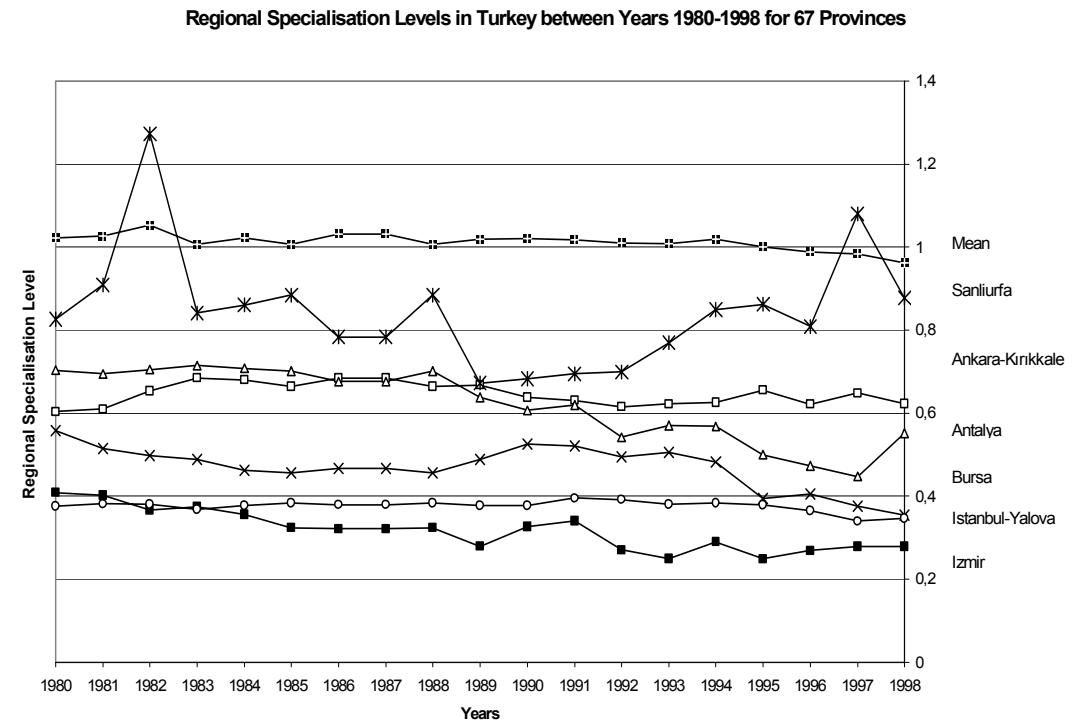
Change in the average regional specialisation level is given in graph (2). Graph (3). shows the regional specialisation levels of the selected provinces. Izmir, Istanbul-Yalova and Bursa had very low regional specialisation levels, while the country mean did not change much in 19 years. Ankara-Kırıkkale, the region where the capital of Turkey is located had higher regional specialisation levels, though decreasing.

Mean Regional Specialisation Levels of 67 Provinces Between Years 1980-1998 in Turkey



Graph 2 Mean Regional Specialisation Levels of 67 Provinces Between Years 1980-1998 in Turkey

Mean Regional Specialisation Levels of 67 Provinces Between Years 1980-1998 in Turkey



Graph 3 Mean Regional Specialisation Levels of 67 Provinces Between Years 1980-1998 in Turkey

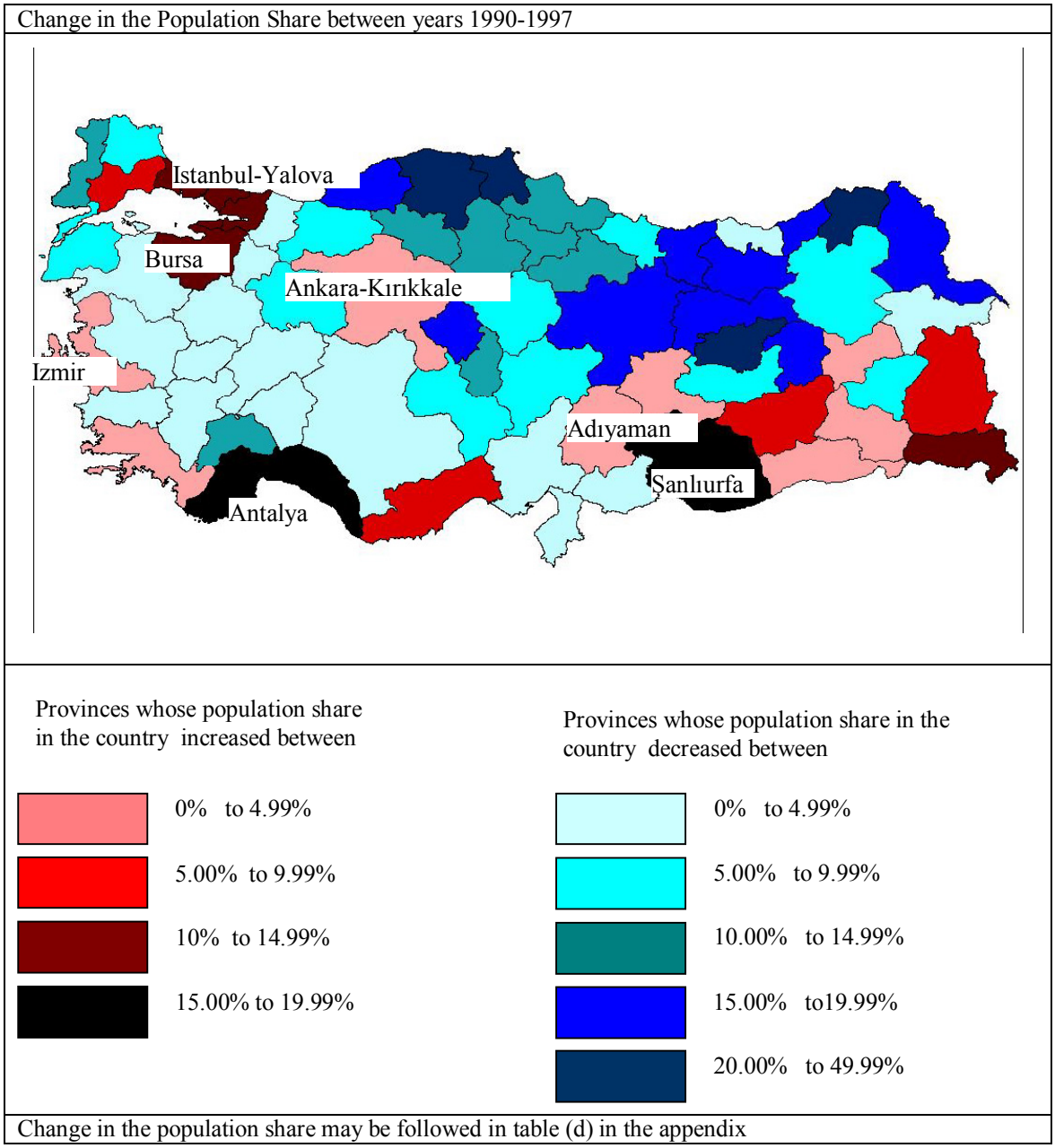
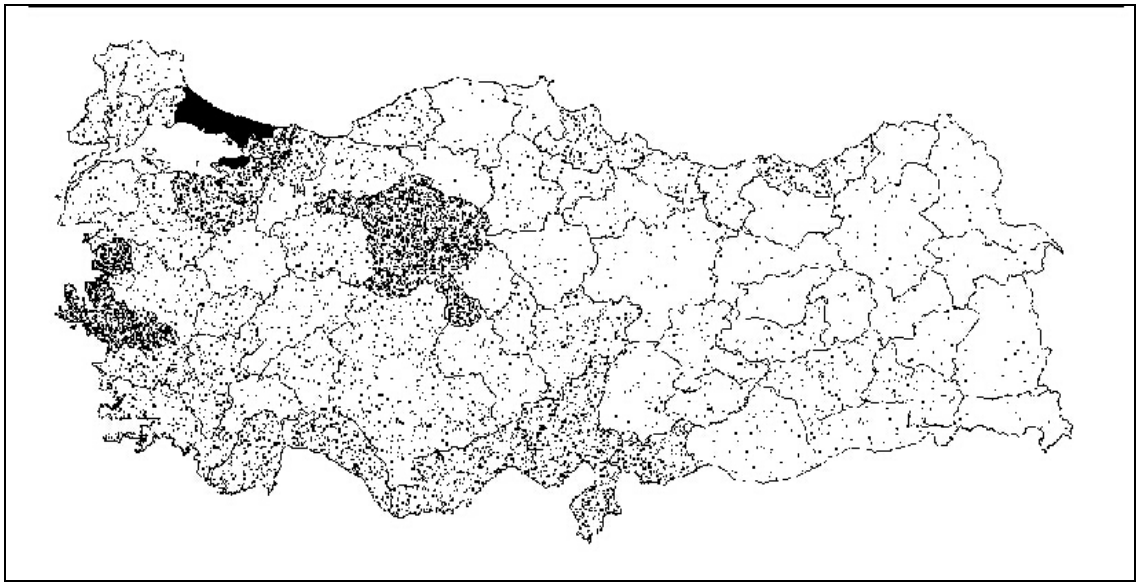


Figure 5 - Change in the population share of provinces in the country as percentage of nation between 1990-1997

Figure 5 above shows that Istanbul-Yalova, Bursa, Kocaeli and Tekirdağ have become a heavily populated single center. Ankara and Izmir have not increased their share in population as much, but new centers like Antalya, where tourism is the key industry and Sanliurfa, where GDP per capita levels are still below the national average have experienced an increase in their share more than 15% since 1990 until 1997.

Cumulative net increase in the number of firms in all sectors between 1990-1997 in Turkey



1 dot represents 25 firms.

See appendix, table (e) for values

Figure 6 - Cumulative net increase in number of firms in provinces in years between 1990 – 1997

The uneven distribution of new firms in the country prove that regional differences are increasing and economic activities in larger metropolitan centers are reinforced. There is also intensive activity in the western and southern coastal provinces, Izmir at one end and Adana-Icel-Hatay at the other end, two industrial centers, together with coastal provinces where there is intensive tourism activity posses higher increases in number of firms as can be followed at figure 6 above.

Istanbul – Yalova region has benefited most from the government promotion to private companies, and other regions like Bursa,Tekirdağ, Ankara and Izmir that experienced an increase in population share as well benefited. Increasing population and government investment promotions as well help in the reinforcement of the system (Figure 7).

Share of provinces in total employment created by government promotion to private companies between 1991 – 1997

Provinces with a share of created employment between 0% to 2.49%

Provinces with a share of created employment between 2.50% to 4.99%

Provinces with a share of created employment between 5.00% to 9.99%

Provinces with a share of created employment between 10.00% to 14.99%

Provinces with a share of created employment between 15.00% 20.00%

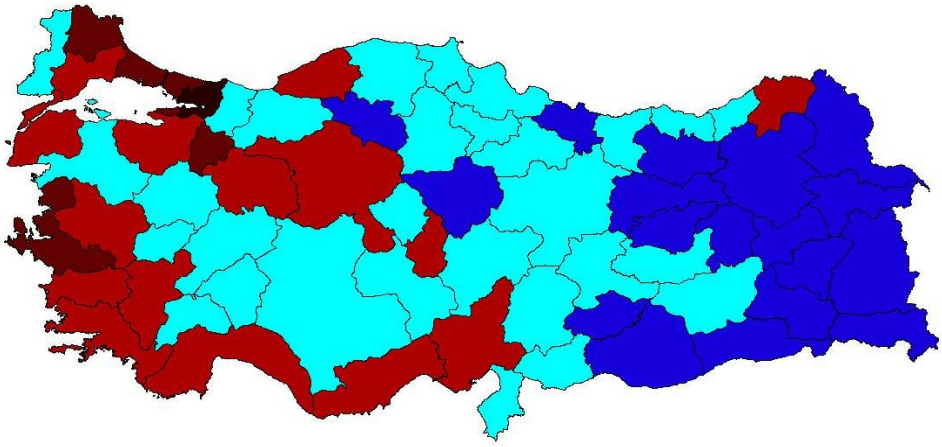
See appendix, table (f) for values

Figure 7 - Share of provinces in total employment created by government promotion to private companies between 1991 – 1997

Figure 8 below shows that regional GDP levels per capita are still higher in the Western part of the country, and existing centers still have much higher per capita GDP than average. Ankara in this sense is far behind Istanbul-Yalova and Izmir.

Difference of GDP Per Capita of Provinces than the National Average at Year 1990

Difference of GDP Per Capita of Provinces than the National Average at Year 1997



Provinces where per capita GDP is less than 50% to 84.9% than the national average

Provinces where per capita GDP is less than 0% to 49.9% than the national average

Provinces where per capita GDP is more than 0% to 49.9% than the national average

Provinces where per capita GDP is more than 50% to 99.9% than the national average

Provinces where per capita GDP is more than 100% than the national average

GDP values fixed to 1987 values in Turkish Lira
Population Census 1990 and 1997 used for per capita GDP calculation
See appendix, table (g) for values

Figure 8 - Differences in per capita GDP in Provinces at years 1990 and 1997 than the national average.

Conclusion

The empirical findings show that existing centers are still advantageous in the country, in attracting population and government promotion for private companies, they are more productive regarding per capita GDP, and they all possess low levels of regional specialisation. Istanbul – Yalova has become a larger center with Bursa, Tekirdağ, Kırklareli and Kocaeli provinces. However, Ankara – Kırıkkale and Izmir are still alone in their wider region. Emerging new center Antalya has not yet been as strong a center as Ankara and Izmir, but it has the highest increase in the share of population in the country, and is more productive in terms of per capita GDP than national average. Antalya is one of the main touristic centers in Turkey. Şanlıurfa, other emerging center however had a GDP per capita far below the national average, both at 1990 and at 1997.

Thus, existing centers have proved their competitivity in the country but the largest center (Istanbul) has included other provinces to a wider body, and regional disparities decreased in the near surrounding, but increased overall in the country. Eastern provinces still seem to be lagging behind, and other provinces which are stuck between Ankara, Izmir and Istanbul seem to also marginalize and lose power.

It may be concluded that economic integration to EU has not decreased regional disparities but has been for the benefit of already existing centers. Though in the longer term, due to the deconcentration of industries, regional disparities may decrease if supported by government promotions.

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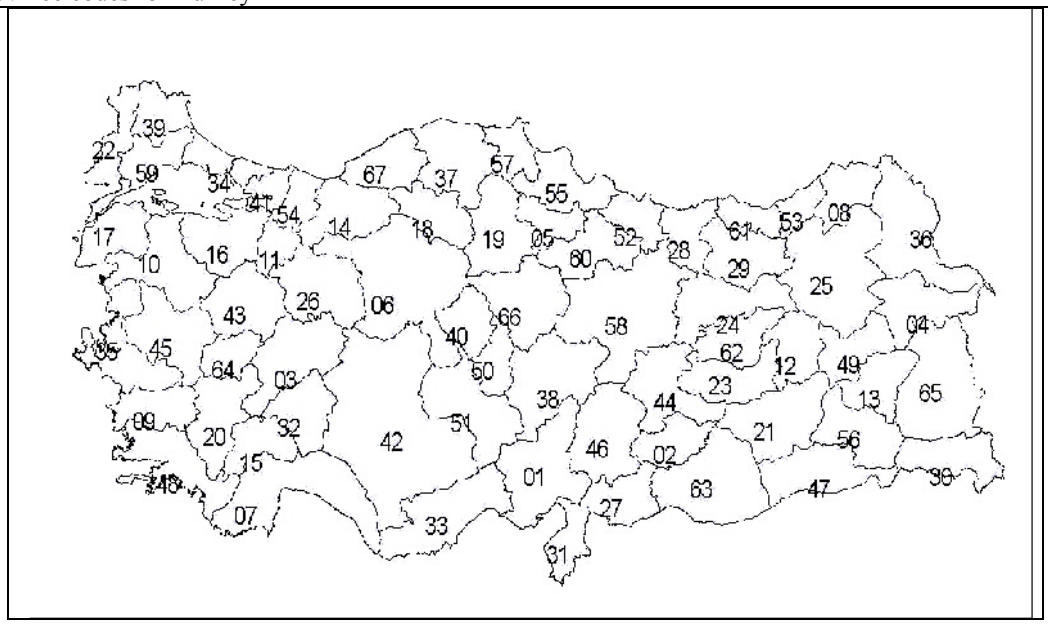
Appendix

Figure a - Province system used for this study

Province codes for Turkey



Note: Province system of 1980 is used. New provinces' data are included to provinces where new provinces' central districts was before in the borders. Thus, 67 regions take place.

Table a - Province system used for this study

Code	Provinces	New Provinces Combined with their Previous Province Centers.	Code	Provinces	New Provinces Combined with their Previous Province Centers.	Code	Provinces	New Provinces Combined with their Previous Province Centers.
01	ADANA	Osmaniye	24	ERZİNCAN		47	MARDİN	
02	ADIYAMAN		25	ERZURUM		48	MUĞLA	
03	AFYON		26	ESKİŞEHİR		49	MUŞ	
04	AĞRI		27	GAZİANTEP	Kilis	50	NEVŞEHİR	
05	AMASYA		28	GİRESUN		51	NİĞDE	Aksaray
06	ANKARA	Kırıkkale	29	GÜMÜŞHANE	Bayburt	52	ORDU	
07	ANTALYA		30	HAKKARİ		53	RİZE	
08	ARTVİN		31	HATAY		54	SAKARYA	
09	AYDIN		32	ISPARTA		55	SAMSUN	
10	BALIKESİR		33	İÇEL		56	SİİRT	Batman, Şırnak
11	BİLECİK		34	İSTANBUL	Yalova	57	SİNOP	
12	BİNGÖL		35	İZMİR		58	SİVAS	
13	BİTLİS		36	KARS	Ardahan, Iğdır	59	TEKİRDAĞ	
14	BOLU	Düzce	37	KASTAMONU		60	TOKAT	
15	BURDUR		38	KAYSERİ		61	TRABZON	
16	BURSA		39	KIRKLARELİ		62	TUNCELİ	
17	ÇANAKKALE		40	KIRŞEHİR		63	ŞANLIURFA	
18	ÇANKIRI		41	KOCAELİ		64	UŞAK	
19	ÇORUM		42	KONYA	Karaman	65	VAN	
20	DENİZLİ		43	KÜTAHYA		66	YOZGAT	
21	DİYARBAKIR		44	MALATYA		67	ZONGULDAK	Bartın, Karabük
22	EDİRNE		45	MANİSA				

Table b 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	Manifacture 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

Note: State Institute of Statistics data on companies with 10 or more workers in manufacturing industry branches are used.

Table c – Location Quotient Values of Provinces at 1980 and 1998 in Turkey for Manufacture of paper products, printing and publishing (34) and Manifacture of fabricated metal products, machinery and equipment (38)

Provinces	1980 LQ Levels of Manufacture of paper products, printing and publishing (34)	1998 LQ Levels of Manufacture of paper products, printing and publishing (34)	1980 LQ Levels of Manifacture of fabricated metal products, machinery and equipment (38)	1998 LQ Levels of Manifacture of fabricated metal products, machinery and equipment (38)
01	0,198	0,411	0,240	0,497
02	0,000	0,000	0,000	0,030
03	6,443	3,316	0,116	0,459
04	0,000	0,000	0,099	0,000
05	0,000	0,000	0,017	0,122
06	1,658	1,495	2,323	2,179
07	0,000	0,349	0,258	0,100
08	0,000	0,000	0,009	0,000
09	0,149	0,079	0,176	0,837
10	0,000	2,160	0,314	0,448
11	2,875	1,210	1,269	1,485
12	0,000	0,000	0,000	0,000
13	0,000	0,000	0,000	0,000
14	0,130	0,062	0,762	0,841
15	0,000	0,000	0,607	0,682
16	0,102	0,359	1,469	1,098
17	0,000	0,000	0,038	0,036
18	0,000	0,000	0,272	1,231
19	0,000	2,615	0,191	0,481
20	0,673	0,574	0,977	0,256
21	0,000	0,000	0,140	0,505
22	0,075	0,480	0,293	0,171
23	0,629	0,293	0,046	0,312
24	0,000	0,000	0,169	0,457
25	0,000	0,000	0,327	0,203
26	0,151	0,873	1,529	1,837
27	0,384	0,628	0,258	0,170
28	7,928	3,958	0,000	0,029
29	0,000	0,000	0,000	0,000
30	0,000	0,000	0,000	0,000
31	0,000	0,082	0,132	0,477
32	0,067	0,106	0,023	0,064
33	0,000	2,386	0,321	0,472
34	1,222	1,323	1,601	1,187
35	0,637	1,317	0,818	0,961
36	0,000	0,000	0,000	0,000
37	1,199	5,145	0,029	0,442
38	0,027	0,168	0,595	1,155
39	0,129	0,000	0,078	0,195
40	0,000	0,000	1,046	0,186

Table c – (Continued)

Provinces	1980 LQ Levels of Manufacture of paper products, printing and publishing (34)	1998 LQ Levels of Manufacture of paper products, printing and publishing (34)	1980 LQ Levels of Manifacture of fabricated metal products, machinery and equipment (38)	1998 LQ Levels of Manifacture of fabricated metal products, machinery and equipment (38)
41	4,126	1,690	1,054	1,511
42	0,125	0,940	0,243	0,820
43	0,000	0,403	0,101	0,021
44	0,000	0,000	0,005	0,164
45	0,000	0,255	0,310	1,562
46	0,000	0,575	0,055	0,224
47	0,000	0,000	0,000	0,099
48	21,889	13,785	0,151	0,410
49	0,000	0,000	0,000	0,060
50	0,000	0,000	0,123	0,087
51	0,000	0,000	0,276	0,897
52	0,000	0,000	0,000	0,134
53	0,000	0,000	0,042	0,005
54	0,000	0,331	2,392	2,310
55	0,000	0,000	0,102	0,224
56	0,000	0,000	0,000	0,000
57	0,000	0,000	0,000	0,071
58	0,000	0,000	3,509	1,982
59	0,301	0,823	1,815	0,831
60	0,000	0,000	0,023	0,165
61	0,116	0,219	0,127	0,351
62	0,000	0,000	0,000	0,000
63	0,000	0,000	0,569	0,448
64	0,000	0,000	0,105	0,380
65	0,000	0,000	0,000	0,000
66	2,301	3,156	0,061	0,478
67	1,202	1,146	0,023	0,104

Note: Employment data for private and public manufacturing industry companies with 10 or more workers, State Statistical Institute of Turkey is used.

Table d - Percentage Change in the Share of Population of Provinces between 1990-1997

Code	Provinces	Share of population by 1990	Share of population by 1997	% Change	Code	Provinces	Share of population by 1990	Share of population by 1997	% Change
01	ADANA and OSMANIYE	3,42	3,37	-1,46	39	KIRKLARELİ	0,55	0,51	-7,45
02	ADIYAMAN	0,91	1,08	18,87	40	KIRŞEHİR	0,45	0,38	-15,48
03	AFYON	1,31	1,27	-3,04	41	KOCAELİ	1,63	1,87	14,73
04	AGRI	0,77	0,74	-4,22	42	KONYA and KARAMAN	3,48	3,43	-1,58
05	AMASYA	0,63	0,55	-13,19	43	KÜTAHYA	1,02	1,02	-0,57
06	ANKARA and KIRIKKALE	6,35	6,44	1,46	44	MALATYA	1,24	1,30	4,30
07	ANTALYA	2,00	2,40	19,78	45	MANİSA	2,04	1,96	-4,13
08	ARTVİN	0,38	0,29	-22,31	46	K.MARAŞ	1,58	1,60	1,27
09	AYDIN	1,46	1,43	-1,98	47	MARDİN	0,99	1,03	4,08
10	BALIKESİR	1,73	1,64	-4,94	48	MUĞLA	1,00	1,02	2,15
11	BİLECİK	0,31	0,31	-1,71	49	MUŞ	0,67	0,67	0,73
12	BİNGÖL	0,44	0,37	-15,32	50	NEVŞEHİR	0,51	0,46	-10,68
13	BİTLİS	0,58	0,54	-7,58	51	NİĞDE and AKSARAY	1,12	1,05	-5,79
14	BOLU and DÜZCE	0,95	0,88	-7,47	52	ORDU	1,46	1,34	-8,73
15	BURDUR	0,45	0,40	-10,91	53	RİZE	0,62	0,52	-16,14
16	BURSA	2,83	3,12	10,23	54	SAKARYA	1,21	1,16	-3,79
17	ÇANAKKALE	0,77	0,71	-6,73	55	SAMSUN	2,06	1,84	-10,74
18	ÇANKIRI	0,44	0,40	-10,44	56	SİİRT, BATMAN and SIRNAK	1,50	1,56	3,55
19	ÇORUM	1,08	0,92	-14,69	57	SİNOP	0,47	0,34	-27,19
20	DENİZLİ	1,33	1,30	-2,35	58	SİVAS	1,36	1,11	-18,23
21	DİYARBAKIR	1,94	2,04	5,09	59	TEKİRDAĞ	0,83	0,90	8,71
22	EDİRNE	0,72	0,63	-11,61	60	TOKAT	1,27	1,11	-13,13
23	ELAZIĞ	0,88	0,82	-6,54	61	TRABZON	1,41	1,35	-4,41
24	ERZİNCAN	0,53	0,45	-15,91	62	TUNCELİ	0,24	0,14	-41,99
25	ERZURUM	1,50	1,39	-7,51	63	ŞANLIURFA	1,77	2,07	16,93
26	ESKİŞEHİR	1,14	1,05	-7,43	64	UŞAK	0,51	0,50	-3,56
27	GAZİANTEP and KILIS	2,02	1,97	-2,53	65	VAN	1,13	1,21	7,49
28	GİRESUN	0,88	0,73	-17,15	66	YOZGAT	1,03	0,95	-6,98
29	GUMUŞHANE and BAYBURT	0,49	0,40	-17,50	67	ZONGULDAK, KARABUK and BARTIN	1,95	1,63	-16,40
30	HAKKARI	0,31	0,35	14,24					
31	HATAY	1,97	1,90	-3,10					
32	ISPARTA	0,77	0,73	-4,63					
33	ICEL	2,24	2,40	6,91					
34	ISTANBUL and YALOVA	12,98	14,89	14,75					
35	İZMİR	4,77	4,95	3,84					
36	KARS, ARDAHAN and IGDIR	1,17	0,95	-19,01					
37	KASTAMONU	0,75	0,58	-22,80					
38	KAYSERİ	1,67	1,55	-7,29					

Note: Population census (1990 and 1997) data by State Institute of Statistics, Turkey are used in the calculation of shares of provinces.

Table e – Cumulative net increase in the number of firms between 1990-1997 in Turkey

Provinces	Cumulative net increase in number of firms in all sectors between 1990-97 in Turkey	Provinces	Cumulative net increase in number of firms in all sectors between 1990-97 in	Provinces	Cumulative net increase in number of firms in all sectors between 1990-97 in	Provinces	Cumulative net increase in number of firms in all sectors between 1990-97 in Turkey
01	9239	18	353	35	28764	52	1297
02	582	19	1308	36	632	53	857
03	1771	20	4005	37	528	54	2652
04	374	21	2177	38	4390	55	3392
05	697	22	1470	39	752	56	1393
06	44674	23	1056	40	549	57	307
07	11784	24	263	41	5577	58	924
08	319	25	1017	42	9364	59	2382
09	3376	26	2729	43	1090	60	855
10	3442	27	4531	44	1473	61	1959
11	386	28	1044	45	2901	62	64
12	362	29	202	46	1037	63	1248
13	327	30	270	47	1075	64	1092
14	2108	31	3717	48	4011	65	613
15	795	32	1292	49	298	66	771
16	12031	33	7854	50	773	67	1985
17	1317	34	118542	51	1453		

Note: Data by State Statistical Institute of Turkey, on new established firms and closed firms in provinces of Turkey is used. Firms who changed status are excluded.

Table f – Total Employment Created in Provinces in Turkey during 1991-1997, by Government Investment Promotion To Private Companies

Provinces	Total Employment Created by Government Promotion to Private Companies during 1991-1997	Percentage Share in the Country	Provinces	Total Employment Created by Government Promotion to Private Companies during 1991-1997	Percentage Share in the Country
01	40.345	2,69	35	105.067	7,00
02	7.958	0,53	36	8.628	0,57
03	6.476	0,43	37	9.507	0,63
04	1.164	0,08	38	28.791	1,92
05	4.352	0,29	39	25.867	1,72
06	75.057	5,00	40	3.608	0,24
07	46.904	3,12	41	30.699	2,04
08	1.134	0,08	42	45.267	3,01
09	14.731	0,98	43	8.544	0,57
10	15.122	1,01	44	14.808	0,99
11	12.573	0,84	45	17.966	1,20
12	573	0,04	46	38.935	2,59
13	1.482	0,10	47	5.831	0,39
14	17.685	1,18	48	22.198	1,48
15	2.323	0,15	49	854	0,06
16	96.145	6,40	50	3.971	0,26
17	9.025	0,60	51	7.283	0,49
18	12.171	0,81	52	4.246	0,28
19	9.693	0,65	53	1.888	0,13
20	54.093	3,60	54	18.924	1,26
21	15.831	1,05	55	7.981	0,53
22	9.395	0,63	56	5.984	0,40
23	4.330	0,29	57	4.951	0,33
24	2.791	0,19	58	7.542	0,50
25	5.729	0,38	59	112.177	7,47
26	25.652	1,71	60	5.567	0,37
27	45.237	3,01	61	6.078	0,40
28	2.831	0,19	62	300	0,02
29	1.360	0,09	63	16.817	1,12
30	10	0,00	64	7.687	0,51
31	14.434	0,96	65	3.051	0,20
32	5.965	0,40	66	4.109	0,27
33	21.925	1,46	67	46.764	3,11
34	285.093	18,99			

Source: Treasury of Turkey,

Table (g) Difference of GPD per capita of Provinces from the National Average in years 1990 and 1997

Provinces	Difference of GDP per capita from the national average at 1990 (%)	Difference of GDP per capita from the national average at 1997 (%)	Provinces	Difference of GDP per capita from the national average at 1990 (%)	Difference of GDP per capita from the national average at 1997 (%)
01	5,43	2,21	35	58,92	56,70
02	-30,64	-55,98	36	-71,37	-71,25
03	-43,28	-46,40	37	-36,83	-23,04
04	-80,37	-82,04	38	-33,68	-27,83
05	-38,45	-37,75	39	72,66	59,34
06	33,11	24,13	40	-36,09	-35,73
07	13,53	8,91	41	167,10	147,70
08	3,25	17,16	42	-24,40	-27,09
09	7,42	6,99	43	-21,52	-22,58
10	0,71	-10,28	44	-31,95	-37,90
11	45,35	75,39	45	31,53	37,58
12	-76,83	-74,78	46	-31,20	-42,04
13	-71,67	-74,72	47	-50,37	-57,30
14	-3,46	-5,29	48	33,86	42,95
15	-21,01	-12,22	49	-73,63	-79,58
16	40,66	24,95	50	0,09	11,26
17	24,89	24,59	51	-41,76	-35,41
18	-44,12	-52,23	52	-53,67	-51,28
19	-29,71	-21,94	53	-20,23	-26,43
20	4,32	14,02	54	-15,30	-4,37
21	-31,05	-46,90	55	-17,00	-22,50
22	-16,69	-10,30	56	-71,63	-56,87
23	-11,44	-30,63	57	-45,82	-38,18
24	-48,88	-51,58	58	-50,97	-45,37
25	-59,00	-66,26	59	28,70	34,50
26	4,45	7,08	60	-46,99	-40,76
27	-10,85	-16,71	61	-33,68	-41,58
28	-50,68	-45,70	62	-63,47	-60,48
29	-67,54	-64,25	63	-59,74	-51,27
30	-79,06	-83,29	64	-28,22	-28,07
31	-12,98	-13,21	65	-66,41	-72,59
32	-32,03	-29,14	66	-57,20	-61,31
33	25,23	8,22	67	-25,28	4,60
34	59,80	54,52			

Data derived from State Institute of Statistics, Turkey, GPD of Provinces in Turkish Lira in 1987 fixed prices and Population Census 1990 and 1997.