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## Regional Development Policies And Industrial Employment Change In Turkey: A Shift Share Analysis (1992-2008)

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# **REGIONAL DEVELOPMENT POLICIES AND INDUSTRIAL EMPLOYMENT CHANGE IN TURKEY: A SHIFT SHARE ANALYSIS (1992-2008)**

**Zeynep ELBURZ**  
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## **ABSTRACT**

Regional policies in Turkey, have been carried out with Five Years Development Plans since 1960, which known as “planned period”. Main goals and objectives of these development plans have changed according to the conditions of periods, nevertheless emphasize of the regional disparities in development plans have remained its place. Despite this, several studies show that regional policies and policy instruments in Turkey have not succeeded to reduce regional disparities. The first reason for this failure has been seen as the dilemma that developing countries commonly has faced. In developing countries such as Turkey, in order to ensure economic growth, regional policies subordinate due to the conflict between regional policies and development policies. The second reason is the preparation of regional policies without considering the regional economic dynamics in Turkish regions. This paper has focused on the basis on the criticism of the preparation of regional policies without take into account of regional economic dynamics.

The aim of this paper is to measure and evaluate the regional economic performance in Turkey in order to ensure the preparation of appropriate regional policies for regional sectoral and economic performances. In this way, information about region’s economic activities and sectoral structure will be provided for the policy makers. In this study, Shift-Share analysis is chosen from traditional tools for measuring and evaluating regional economic performance. In Shift-Share analysis, the change in employment is partitioned into three components measuring the influence of national share, industrial mix, and regional shift.

Regional total and manufacturing industrial employment (NACE REV 1.1) changes in Turkey are estimated in 26 NUTS 2 regions from 1992 to 2008. The results of Shift-Share analysis of total employment change in Turkey indicate that only two NUTS 2 regions – TR10 Istanbul and TR41 (Bursa, Eskişehir, Bilecik) - have local industries that grow faster than national level with competitive advantages. Also results of manufacturing employment changes show that Istanbul has a great spillover effect on its hinterland.

**KEY WORDS:** Regional Policies, Shift Share Analysis, Industrial Employment, Turkey

**JEL CODES:** L60 O25 R11 R12 R58

## 1. INTRODUCTION

Regional policies, which fundamental issues are to increase economic activities in lagging regions and to reduce inter-regional and intra-regional income inequalities, are constantly on the agenda for both developed and developing countries for last fifty years. The experience of regional policies in Turkey has started with the establishment of State Planning Organization in 1960. Before that date, it is hard to discuss about regional policy and its implementations in Turkey because of the country-wide development and industrialization goals of state. After the establishment of SPO, regional policies have started to carry out with Five Years Development Plans and so far 8 Five Year Development Plans have been prepared. In 2000's the regional policy approaches has changed due to the process of accession on European Union. Since that year some basic modifications have been made in order to harmonize with EU's regional policies. Despite this experiences, several studies such as Berber *et.al*, (2000), Karaca (2004), and Gezici and Hewings (2004), has concluded that regional disparities still remain and increase and furthermore leads to researchers to think about the achievement of implemented regional policies.

The failure of regional policies in Turkey can be explained by several reasons, but this study focused on criticisms about the preparation of regional policies without considering the economic dynamics of regions. The best example of inappropriate regional policies with regional economic dynamics in Turkey is the Priority Provinces for Development (PPD) policy which is in effect since 1968. PPD policy contains 22 provinces at first but today this number increased to 49 provinces and 2 districts. This policy qualifies more than half of the total number of provinces as priority for development and also gives exactly the same priority for all of them without considering the region's economic performance and sector composition.

The aim of this paper is to measure and evaluate the regional economic performance in Turkey in order to ensure the preparation of appropriate regional policies for regional sectoral and economic performances. Shift-Share analysis and Location Quotient technique has been chosen from traditional tools for measuring and evaluating regional economic performances. The next section describes the methodology and data while section 3 presents sectoral concentration and level of manufacturing sector in NUTS 2 regions. Section 4 presents the results of Shift-Share analysis in total and manufacturing sectors. Finally section 5 evaluates the results and offers some concluding remarks.

## 2. METHODOLOGY AND DATA

Regional economic performances need to be measure and evaluate by planners and policy makers due to assess a region's overall performance relative to that of other regions and to assess which industry sectors are performing better in the region. Shift-Share analysis is one of the traditional tools for regional economic performance measuring and evaluating which is commonly used by researchers (Stimson *et. al*, 2006).

According to the Hirsch (1973), Shift-Share analysis is a framework for both describing and projecting secular changes in selected macroeconomic variables for sub national areas. Berzeg (1978) identify Shift-Share analysis as systematically describing differences in the growth rates, by industry and by regions.

The purpose of Shift–Share analysis is to disaggregate the growth of an industry into its three contributing parts - national share, industrial mix, and regional shift - of regional growth (Blakely & Bradshaw, 2002). The technique was first applied in the U.S. to calculate employment change from 1939-1954 by Dunn in 1960. Contributions by Fuchs (1962) and Ashby (1964) formalized the "classic" Shift–Share equation and helped popularize the technique (Selting & Loveridge, 1992).

The formula of Shift-Share analysis:

$$e_{i,t} \equiv e_{i,t-1} + (NS_i + IM_i + RS_i)$$

$$\Delta e_i \equiv e_{i,t} - e_{i,t-1} \equiv NS_i + IM_i + RS_i$$

$$NS_i \equiv e_{i,t-1} (E_t / E_{t-1} - 1)$$

$$IM_i \equiv e_{i,t-1} (E_{i,t} / E_{i,t-1} - E_t / E_{t-1} - 1)$$

$$RS_i \equiv e_{i,t-1} (e_{i,t} / e_{i,t-1} - E_{i,t} / E_{i,t-1})$$

$e_i$  = regional employment in  $i^{th}$  sector

$E$  = national total employment

$E_i$  = national employment in  $i^{th}$  sector

$t-1$  = initial year of period

$E$  = regional total employment

$t$  = finish year of period

**National share (NS):** that is, that part of change attributable to overall national trends. The national share (NS) component measures the regional employment change that could have occurred if regional employment had grown at the same rate as the nation (Stimson *et. al*, 2006).

**Industrial mix (IM):** that is, that part of change attributable to the industrial composition or mix of the region. The industry mix (IM) component measures proportional shift due to a difference in industry growth between the region and the nation (Stimson *et. al*, 2006). A region that contains a relatively large share of industries that are fast (slow) growing nationally will have a positive (negative) industry mix effect. The positive values indicate that the industry composition of the local area was tilted toward faster growing industries. Negative results would have indicated just the opposite (Dinç, 2002).

**Regional shift (RS):** that is, that part of change attributable to regional advantage or competitiveness. The regional share (RS) component measures the differential shift due to differences in rates of growth of the same industry between the region and the nation as a result of factors such as national resources, other comparative advantages or disadvantages, leadership and entrepreneurial ability, and the effects of regional policy (Stimson *et. al*, 2006). The regional share component can help identifying a local area's economic strengths and comparative advantage.

By interpreting the results of Shift-Share analysis, it is possible to explore the advantages of the local area, as well as to identify growth, or potential growth industries that are worthy of further investigation (Dinç, 2002). According to Marquez *et. al*, (2009) its widespread use is explained by its simplicity, modest data requirements, and the fact that the results are relatively easy to assess and interpret.

Another traditional tool for measuring and evaluating regional economic performance is Economic Base Theory (EBT). EBT views an economic system as composed of two parts:

- non-basic, is viewed as producing for local consumption; and
- basic, is viewed as producing goods and services primarily for external consumption.

The location quotient (LQ) method is the most popular and widely used economic base theory analysis technique. Location quotients (LQ) are applicable when identifying an area's industrial specialization relative to a benchmark region, often the nation. Location quotients (LQ) are computed as follows:

$$LQ_i = (e_i / e) / (E_i / E)$$

where:

$e_i$  = employment in sector i in region r

$E_i$  = national employment in sector i

e = total employment in region r

E = national total employment

The resulting location quotient may be interpreted in the following manner (Wang and Hofe, 2007):

**Location Quotients  $> 1.0$**  the region has a greater share of employment in industry  $i$  than the benchmark region. The higher the LQ is, the greater the region's specialization in this industrial sector.

**Location Quotients  $= 1.0$ :** The region's share of employment in industry  $i$  is equal to that of the benchmark region. It is assumed that the region is completely self-sufficient and neither exports nor imports the goods or services of this industry. All employment is considered non-basic.

**Location Quotients  $< 1.0$ :** If industry  $i$  has a smaller share of employment than the benchmark region-the region falls below the level of self-sufficiency and needs to import to meet local demand for that particular industry sector's goods and services. All employment is considered non-basic (Wang and Hofe, 2007).

In this study, these two traditional tools have been chosen for analyzing the regional economic performances. Shift-Share analysis can describe and decompose the employment changes in a specific time period while LQ technique can present the one year's specialization of industries in the regions. Both of them just need easily accessible data and also give important results about regional and sectoral dynamics. Besides these, Shift-Share analysis emphasizes the region-specific portion of the regional employment change with Regional Shift (RS) component.

In this study, firstly LQ technique has been used to analyze the specialization of all sectors in 26 NUTS 2 regions with the employment data of 2008 to give a general view of regions sectoral compositions. After that two different Shift-Share analyses has been made for both total employment and manufacturing employment changes in 26 NUTS 2 regions in Turkey from 1992 to 2008. The employment data are taken from TurkStat 1992-General Census of Industry and 2008-Business and Annual Industry and Service Statistics. For total employment change non-agricultural 12 sectors and for manufacturing employment change manufacturing industry sub sectors codes from 15 to 37 will be used in the study.

### 3. SECTORAL CONCENTRATION IN NUTS 2 REGIONS

Regional development is closely related with the level and composition of the manufacturing sector and that's why regional distribution of manufacturing sector is very important for

regions in the development process. Before measuring regional economic performances with Shift-Share analyses, regional distribution and sectoral concentration of manufacturing sector should be investigated to understand dynamics of regions.

Table 1 presents the regional total and manufacturing employment with their share in national and regional employment ratio in 1992 and 2008. According to this table, TR10-Istanbul has 672.336 labor force and 166.744 of them is employed by manufacturing sector with the %24.8 share of it in 1992. Also TR10-Istanbul has cover %30.7 of total manufacturing employment within Turkey in the same year. TR31-Izmir has following TR10-Istanbul with 44.090 manufacturing labor force and %8.1 share of manufacturing employment in the total employment. In 2008 TR10-Istanbul still has the largest manufacturing employment with 939.013. Share of manufacturing employment of TR10-Istanbul in total manufacturing employment has increased to %32.8 in 2008. TR41-(Bursa, Eskişehir, Bilecik) is following TR10-Istanbul with %10.7 share. Another important point can be seen in Table 1 that the biggest manufacturing employment increase has happened in the neighbouring regions of TR10-Istanbul like TR21-(Tekirdağ, Edirne, Kırklareli), TR41-(Bursa, Eskişehir, Bilecik) and TR42-(Kocaeli, Sakarya, Düzce, Bolu, Yalova) regions.

Figure 1 presents the spatial distribution of share of regions in the total manufacturing employment in 2008. It can be easily seen that manufacturing sector is mostly concentrated in traditional industry centers like TR10-Istanbul, TR31-Izmir, TR51-Ankara, TR41-(Bursa, Eskişehir, Bilecik) and neighbors of these centers like TR42-(Kocaeli, Sakarya, Düzce, Bolu, Yalova) region.

Figure 1. Regional Manufacturing Employment Share in National Manufacturing Employment (2008).

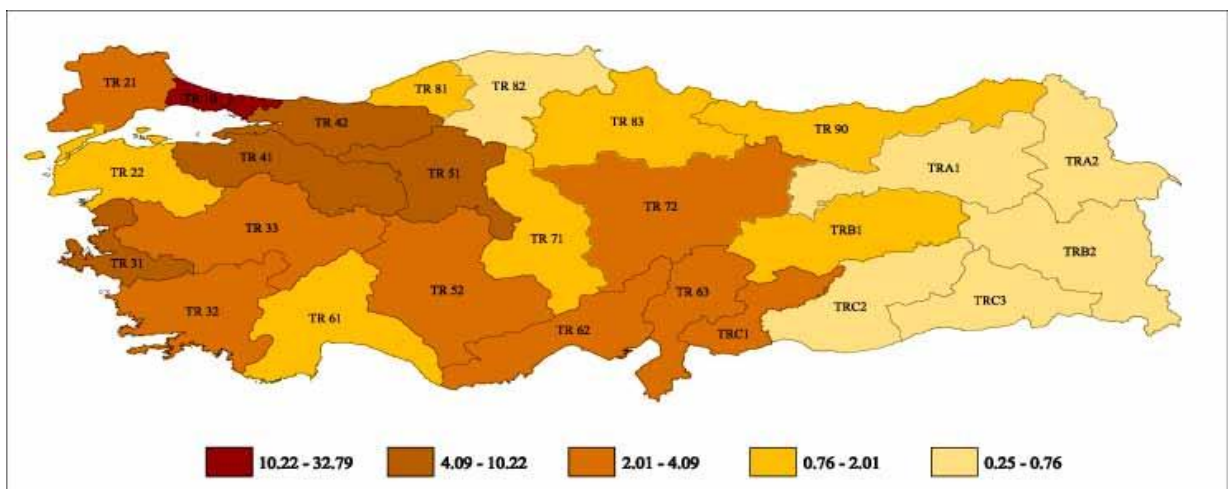


Table 1. Regional manufacturing employment change (1992-2008)

	1992				2008			
	A	B	C	D	A	B	C	D
TR10	166.744	672.336	24,8	30,7	939.013	3.119.158	30,1	32,8
TR21	7.535	53.261	14,1	1,4	117.203	245.752	47,7	4,1
TR22	11.104	63.506	17,5	2,0	45.562	174.531	26,1	1,6
TR31	44.090	199.440	22,1	8,1	195.987	632.380	31,0	6,9
TR32	21.897	112.290	19,5	4,0	100.986	402.966	25,1	3,5
TR33	23.394	118.767	19,7	4,3	99.509	295.939	33,7	3,5
TR41	37.947	147.732	25,7	7,0	292.736	624.246	46,9	10,2
TR42	15.599	95.083	16,4	2,9	214.359	516.495	41,5	7,5
TR51	41.106	258.303	15,9	7,6	165.743	880.175	18,9	5,8
TR52	17.107	72.403	23,6	3,1	74.140	258.344	28,7	2,6
TR61	11.864	85.837	13,8	2,2	52.354	413.671	12,7	1,8
TR62	28.143	155.118	18,1	5,2	75.709	375.189	20,1	2,6
TR63	15.645	76.554	20,4	2,9	67.099	240.774	27,9	2,3
TR71	6.944	44.052	15,8	1,3	31.175	124.086	25,1	1,1
TR72	11.492	64.093	17,9	2,1	75.731	261.180	29,0	2,6
TR81	5.099	68.646	7,4	0,9	37.026	122.995	30,1	1,3
TR82	3.984	23.652	16,8	0,7	16.980	60.422	28,1	0,6
TR83	16.083	96.032	16,7	3,0	57.669	235.509	24,5	2,0
TR90	12.453	78.154	15,9	2,3	46.637	227.859	20,5	1,6
TRA1	3.469	30.291	11,5	0,6	7.827	69.941	11,2	0,3
TRA2	1.756	17.935	9,8	0,3	7.149	53.363	13,4	0,2
TRB1	6.111	42.664	14,3	1,1	29.113	129.188	22,5	1,0
TRB2	2.887	23.939	12,1	0,5	11.917	82.273	14,5	0,4
TRC1	20.140	70.896	28,4	3,7	72.846	218.569	33,3	2,5
TRC2	7.810	51.498	15,2	1,4	21.782	169.232	12,9	0,8
TRC3	2.763	24.449	11,3	0,5	7.364	78.475	9,4	0,3
Total	543.166	2.746.931		100,0	2.863.616	9.989.155		100,0

**A:** regional manufacturing employment   **B:** regional total employment   **C:** regional manufacturing employment share in total regional employment   **D:** regional manufacturing employment share in national manufacturing employment



After the coming out of sectoral concentration of manufacturing industry in NUTS 2 regions, another analysis has been made for all regions for all sectors. To analyze which region has a concentration on which sector, Location Quotient (LQ) technique has been used. According to the results of this analysis which shown in the Table 2, TR81-(Zonguldak, Karabük, Bartın) and TRC3-(Mardin, Batman, Şırnak, Siirt) regions concentrated in Mining and Quarrying sector. TR21-(Tekirdağ, Edirne, Kırklareli), TR41-(Bursa, Eskişehir, Bilecik) and TR42-(Kocaeli, Sakarya, Düzce, Bolu, Yalova) regions concentrated in Manufacturing and, TR61-(Antalya, Isparta, Burdur) and TR32-(Aydın, Denizli, Muğla) regions concentrated in Hotels and Restaurants sector. These results will be evaluated below with the results of Shift-Share analyses.

#### **4. FINDINGS OF SHIFT-SHARE ANALYSES**

After presenting the regional sectoral concentration of NUTS 2 regions by LQ technique, two different Shift-Share analyses has been made to measure and evaluate the regional economic performances. First, Shift-Share analysis is about total employment change in 26 NUTS 2 regions form 1992 to 2008. Table 3 shows the results of this analysis and according to this table; TR10-Istanbul is the first region in total employment increment. Moreover, TR10-Istanbul, TR31-Izmir, TR41-(Bursa, Eskişehir, Bilecik), TR51-Ankara and TR71-(Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir) regions have positive Industrial Mix component which can be interpreted that fast growing sectors have located in these regions from the beginning. The other 21 NUTS 2 regions has negative Industrial Mix component, which means slow growing sectors located in these regions.

Another important point is; 13 regions which include TR10-Istanbul, TR21-(Tekirdağ, Edirne, Kırklareli), TR32-(Aydın, Denizli, Muğla), TR41-(Bursa, Eskişehir, Bilecik), TR42-(Kocaeli, Sakarya, Düzce, Bolu, Yalova), TR52-(Konya, Karaman), TR61-(Antalya, Isparta, Burdur), TR72-(Kayseri, Sivas, Yozgat), TRA2-(Ağrı, Kars, Iğdır, Ardahan), TRB1-(Malatya, Elazığ, Bingöl, Tunceli), TRC2-(Şanlıurfa, Diyarbakır), TRC3-(Mardin, Batman, Şırnak, Siirt) and TRB2-(Van, Muş, Bitlis, Hakkari) have positive Regional Shift component. This means that the share of fast growing sectors in regional economy has risen because of competitive advantages of these regions.

Table 2. Location Quotient (LQ) in regions (2008).

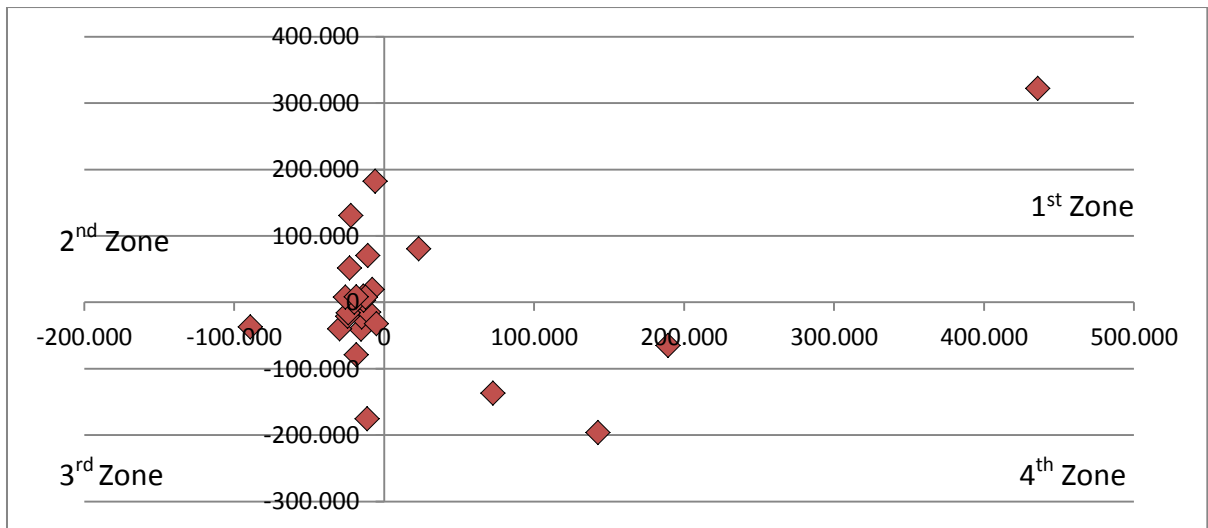
	Mining and Quarrying	Manufacturing	Construction	Retail and Wholesale Trade	Hotels and Restaurants	Transportation and Communication	Real Estate and Business	Education	Health and Social Services	Other Social and Personal Services
TR10	-	<b>1,05</b>	0,88	0,98	0,83	0,92	<b>1,28</b>	<b>1,08</b>	<b>1,13</b>	<b>1,10</b>
TR21	<b>1,36</b>	<b>1,66</b>	0,76	0,77	0,78	0,70	0,57	0,78	0,64	0,57
TR22	<b>2,02</b>	0,91	0,94	<b>1,07</b>	<b>1,49</b>	<b>1,02</b>	0,55	0,98	0,70	<b>1,07</b>
TR31	-	<b>1,08</b>	0,99	<b>1,02</b>	0,82	0,85	<b>1,14</b>	0,90	<b>1,01</b>	0,90
TR32	<b>2,00</b>	0,87	0,71	0,97	<b>2,32</b>	<b>1,02</b>	0,65	<b>1,10</b>	0,94	0,86
TR33	-	<b>1,17</b>	0,70	0,98	<b>1,14</b>	<b>1,11</b>	0,69	0,94	-	<b>1,01</b>
TR41	0,57	<b>1,64</b>	0,74	0,75	0,83	0,65	0,78	0,73	0,59	0,88
TR42	-	<b>1,45</b>	0,93	0,80	0,66	<b>1,12</b>	0,65	0,59	0,64	0,78
TR51	<b>1,16</b>	0,66	<b>1,86</b>	0,86	<b>1,04</b>	0,93	<b>1,63</b>	<b>1,46</b>	<b>1,03</b>	<b>1,11</b>
TR52	<b>1,13</b>	<b>1,00</b>	0,57	<b>1,21</b>	0,80	0,99	0,68	0,97	<b>1,08</b>	0,86
TR61	-	0,44	<b>1,22</b>	<b>1,10</b>	<b>2,87</b>	0,90	0,97	0,79	<b>1,09</b>	<b>1,19</b>
TR62	0,74	0,70	0,91	<b>1,20</b>	0,76	<b>1,22</b>	<b>1,00</b>	<b>1,26</b>	<b>1,53</b>	<b>1,02</b>
TR63	0,38	0,97	0,85	<b>1,17</b>	0,82	<b>1,17</b>	0,53	0,73	0,85	0,90
TR71	-	0,88	<b>1,29</b>	<b>1,13</b>	<b>1,13</b>	<b>1,03</b>	0,62	0,95	0,60	<b>1,04</b>
TR72	<b>1,88</b>	<b>1,01</b>	<b>1,80</b>	0,97	0,68	0,78	0,72	<b>1,04</b>	0,76	0,90
TR81	<b>12,01</b>	<b>1,05</b>	0,69	0,88	<b>1,02</b>	0,86	0,39	0,99	0,95	0,86
TR82	<b>1,40</b>	0,98	<b>1,30</b>	0,94	0,64	<b>1,26</b>	0,81	0,62	<b>1,05</b>	<b>1,19</b>
TR83	-	0,85	0,76	<b>1,25</b>	0,86	<b>1,23</b>	0,69	0,76	0,95	0,93
TR90	-	0,71	<b>1,15</b>	<b>1,22</b>	<b>1,06</b>	<b>1,34</b>	0,72	<b>1,03</b>	0,67	0,81
TRA1	0,98	0,39	0,72	<b>1,42</b>	0,64	<b>1,94</b>	0,71	<b>1,03</b>	<b>1,21</b>	0,52
TRA2	-	0,47	0,28	<b>1,75</b>	<b>1,20</b>	<b>1,43</b>	0,30	0,52	-	<b>1,00</b>
TRB1	-	0,79	<b>1,35</b>	<b>1,17</b>	0,73	<b>1,15</b>	0,71	<b>1,24</b>	<b>1,18</b>	0,87
TRB2	0,20	0,51	<b>1,25</b>	<b>1,26</b>	0,61	<b>1,85</b>	0,52	<b>1,29</b>	<b>1,75</b>	0,80
TRC1	-	<b>1,16</b>	<b>0,79</b>	<b>1,08</b>	0,80	0,92	0,51	0,55	<b>1,45</b>	<b>1,40</b>
TRC2	0,93	0,45	<b>1,24</b>	<b>1,19</b>	0,54	<b>1,72</b>	<b>1,26</b>	0,79	<b>1,21</b>	0,97
TRC3	<b>3,57</b>	0,33	0,69	<b>1,12</b>	0,96	<b>2,60</b>	0,61	<b>1,56</b>	0,96	0,86

Nevermore, regions such as TR51-Ankara, TR62-(Adana, Mersin), TR31-Izmir and TR71-(Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir) have negative Regional Shift component so these regions have not got competitive advantages. The reasons of not having competitive advantages for these regions should be explored in detailed analysis, since the regions are containing the significant metropolitan cities of Turkey.

All 26 NUTS2 regions have separated to 4 zones in Figure 2 and Figure 3 according to their Industrial Mix and Regional Shift component values.

- First zone: If industrial mix and regional shift are both positive then it means this region has initially fast growing sectors and their share has been increased.
- Second zone: If industrial mix is negative and regional shift is positive then it means this region has initially slow growing sectors but their share has been decreased.
- Third zone: If industrial mix and regional shift are both negative then it means this region has initially slow growing sectors and their share has been increased.
- Fourth zone: If industrial mix is positive and regional shift is negative then it means this region has initially fast growing sectors but their share has been decreased.

Figure 2. Industrial Mix and Regional Shift Component Zones for Total Employment Change



(the x-coordinate shows the Regional Shift, the y-coordinate shows the Industrial Mix)

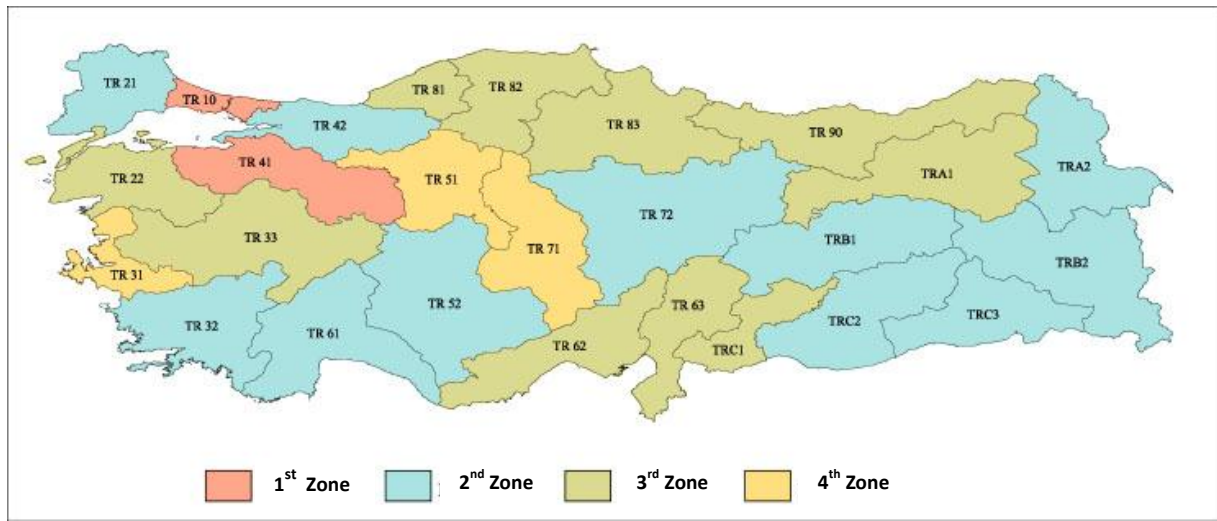
According to the Figure 2, most of the regions have clustered closely with each other in second and third zones except five regions. Common point of these five regions is their positive industrial mix component which means they both have fast growing sectors initially, even they locate in two different zones.

Table 3. Change in total employment in Turkey between 1992-2008 by the components of Shift-Share analysis

	<b>Total Shift</b>	=	<b>National Share</b>	+	<b>Industrial Mix</b>	+	<b>Regional Shift</b>	<b>Zone</b>
TR10-Istanbul	2.469.933	=	1.711.981	+	435.864	+	322.088	I
TR21-(Tekirdağ, Edirne, Kırklareli)	194.549	=	135.020	+	-11.020	+	70.549	II
TR22-(Balıkesir, Çanakkale)	111.143	=	167.152	+	-15.427	+	-40.581	III
TR31-Izmir	440.814	=	505.152	+	72.639	+	-136.978	IV
TR32-(Aydın, Denizli, Muğla)	295.331	=	283.829	+	-7.834	+	19.336	II
TR33-(Manisa, Afyonkarahisar, Kütahya, Uşak)	195.365	=	265.210	+	-29.708	+	-40.137	III
TR41-(Bursa, Eskişehir, Bilecik)	480.996	=	377.745	+	22.926	+	80.325	I
TR42-(Kocaeli, Sakarya, Düzce, Bolu, Yalova)	422.907	=	246.788	+	-5.990	+	182.109	II
TR51-Ankara	623.472	=	676.916	+	142.641	+	-196.085	IV
TR52-(Konya, Karaman)	186.041	=	190.660	+	-13.931	+	9.312	II
TR61-(Antalya, Isparta, Burdur)	329.745	=	221.310	+	-22.214	+	130.649	II
TR62-(Adana, Mersin)	220.606	=	407.629	+	-11.442	+	-175.581	III
TR63-(Hatay, Kahramanmaraş, Osmaniye)	164.360	=	201.501	+	-14.941	+	-22.200	III
TR71-(Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir)	80.672	=	-43.382	+	189.201	+	-65.147	IV
TR72-(Kayseri, Sivas, Yozgat)	197.191	=	168.737	+	-22.983	+	51.437	II
TR81-(Zonguldak, Karabük, Bartın)	54.465	=	180.711	+	-89.154	+	-37.092	III
TR82-(Kastamonu, Çankırı, Sinop)	36.800	=	62.290	+	-10384	+	-15.106	III
TR83-(Samsun, Tokat, Çorum, Amasya)	143.837	=	241.736	+	-18.668	+	-79.231	III
TR90-(Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane)	152.671	=	198.268	+	-24.303	+	-21.294	III
TRA1-(Erzurum, Erzincan, Bayburt)	39.703	=	79.736	+	-23.933	+	-16.100	III
TRA2-(Ağrı, Kars, Iğdır, Ardahan)	35.698	=	46.582	+	-13.630	+	2.746	II
TRB1-(Malatya, Elazığ, Bingöl, Tunceli)	88.210	=	108.057	+	-19.927	+	79	II
TRB2-(Van, Muş, Bitlis, Hakkari)	58.354	=	63.073	+	-12.377	+	7657	II
TRC1-(Gaziantep, Adıyaman, Kilis)	148.236	=	185.465	+	-5.124	+	-32.106	III
TRC2-(Şanlıurfa, Diyarbakır)	117.756	=	135.740	+	-25.899	+	7.915	II
TRC3-(Mardin, Batman, Şırnak, Siirt)	54.045	=	64.421	+	-18.597	+	8.221	II

According to the Figure 3, only two regions - TR10-Istanbul and TR41-(Bursa, Eskişehir, Bilecik) – which are in the 1<sup>st</sup> zone, have fast growing sectors initially and they have competitive advantages for these sectors. 11 regions have been located in the 2<sup>nd</sup> zone, and these regions have competitive advantages without having fast growing sectors initially. Regions in the 3<sup>rd</sup> zone are the most noteworthy ones due to lack of neither fast growing sector nor competitive advantages. Another important finding is that most developed regions such as TR31-Izmir, TR51-Ankara and TR71-(Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir) have fast growing sector, however they do not have any competitive advantages.

Figure 3. Map of Industrial Mix and Regional Shift Component for Total Employment Change



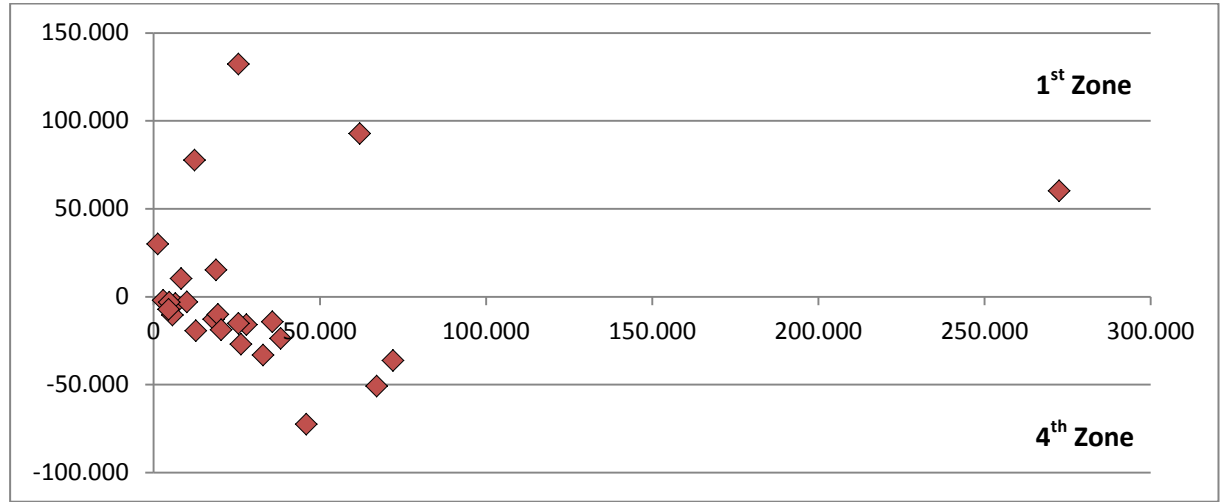
As a second step, we conducted Shift-Share analysis for manufacturing employment change in 26 NUTS 2 regions from 1992 to 2008. Table 4 indicates that industrial mix component is positive for all of the regions, which means all regions have fast growing manufacturing industry sub sectors initially. Regional shift component is positive for TR71-(Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir), TR21-(Tekirdağ, Edirne, Kırklareli), TR42-(Kocaeli, Sakarya, Düzce, Bolu, Yalova), TR41-(Bursa, Eskişehir, Bilecik), TR81-(Zonguldak, Karabük, Bartın), TR72-(Kayseri, Sivas, Yozgat) and TR10-Istanbul regions. Fast growing manufacturing industry sub sectors have located in these regions and their share has been increased because of competitive advantages of regions. Other regions have negative Regional shift component and it can be interpreted that these regions have not got any competitive advantages for manufacturing sector. Surprisingly these regions include traditional industry centers such as TR31-Izmir, TR51-Ankara, TR62-(Adana, Mersin) in addition to lagging regions, as we suggest examining those regions in detail for another study.

Table 4. Change in manufacturing employment in Turkey between 1992-2008 by the components of Shift-Share analysis

	<b>Total Shift</b>	=	<b>National Share</b>	+	<b>Industrial Mix</b>	+	<b>Regional Shift</b>	<b>Zone</b>
TR10-Istanbul	772.269	=	439.697	+	272.464	+	60.108	I
TR21-(Tekirdağ, Edirne, Kırklareli)	109.668	=	19.870	+	12.312	+	77.486	I
TR22-(Balıkesir, Çanakkale)	34.458	=	29.281	+	18.144	+	-12.967	IV
TR31-Izmir	151.897	=	116.264	+	72.044	+	-36.411	IV
TR32-(Aydın, Denizli, Muğla)	79.089	=	57.742	+	35.780	+	-14.433	IV
TR33-(Manisa, Afyonkarahisar, Kütahya, Uşak)	76.115	=	61.689	+	38.226	+	-23.800	IV
TR41-(Bursa, Eskişehir, Bilecik)	254.789	=	100.065	+	62.006	+	92.718	I
TR42-(Kocaeli, Sakarya, Düzce, Bolu, Yalova)	198.760	=	41.134	+	25.489	+	132.137	I
TR51-Ankara	124.637	=	108.395	+	67.168	+	-50.926	IV
TR52-(Konya, Karaman)	57.033	=	45.111	+	27.953	+	-16.031	IV
TR61-(Antalya, Isparta, Burdur)	40.490	=	31.285	+	19.386	+	-10.181	IV
TR62-(Adana, Mersin)	47.566	=	74.212	+	45.986	+	-72.632	IV
TR63-(Hatay, Kahramanmaraş, Osmaniye)	51.454	=	41.255	+	25.564	+	-15.366	IV
TR71-(Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir)	24.231	=	-6.939	+	1.244	+	29.926	I
TR72-(Kayseri, Sivas, Yozgat)	64.239	=	30.304	+	18.778	+	15.157	I
TR81-(Zonguldak, Karabük, Bartın)	31.927	=	13.446	+	8.332	+	10.149	I
TR82-(Kastamonu, Çankırı, Sinop)	12.996	=	10.506	+	6.510	+	-4.020	IV
TR83-(Samsun, Tokat, Çorum, Amasya)	41.586	=	42.410	+	26.280	+	-27.104	IV
TR90-(Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane)	34.184	=	32.838	+	20.349	+	-19.003	IV
TRA1-(Erzurum, Erzincan, Bayburt)	4.358	=	9.148	+	5.668	+	-10.458	IV
TRA2-(Ağrı, Kars, Iğdır, Ardahan)	5.393	=	4.631	+	2.869	+	-2.107	IV
TRB1-(Malatya, Elazığ, Bingöl, Tunceli)	23.002	=	16.114	+	9.986	+	-3.098	IV
TRB2-(Van, Muş, Bitlis, Hakkari)	9.030	=	7.613	+	4.717	+	-3.300	IV
TRC1-(Gaziantep, Adıyaman, Kilis)	52.706	=	53.108	+	32.909	+	-33.312	IV
TRC2-(Şanlıurfa, Diyarbakır)	13.972	=	20.595	+	12.762	+	-19.384	IV
TRC3-(Mardin, Batman, Şırnak, Siirt)	4.601	=	7.286	+	4.515	+	-7.200	IV

All 26 NUTS 2 regions have classified to 2 zones in Figure 4 and Figure 5, since the industrial mix component is positive for all regions. According to the Figure 4, most of the regions clustered in the 4<sup>th</sup> zone, while only seven regions are in the 1<sup>st</sup> zone and have competitive advantages for manufacturing industry sub sectors.

Figure 4. Industrial Mix and Regional Shift Component Zones for Manufacturing Employment Change



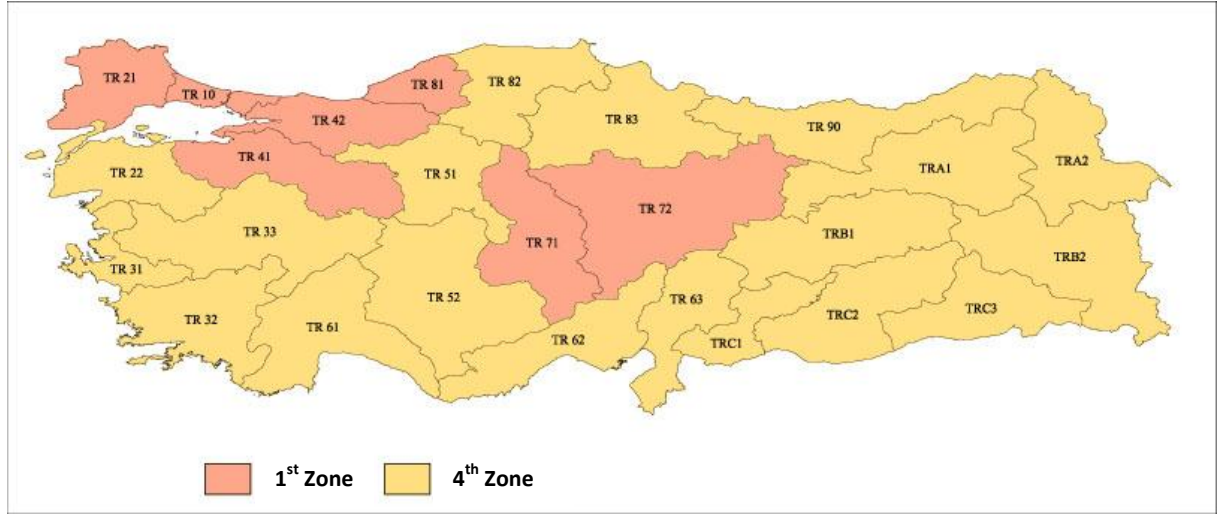
(the x-coordinate shows the Regional Shift, the y-coordinate shows the Industrial Mix)

In Figure 5, the spatial distribution of competitive regions for manufacturing industry sub sectors can be seen easily. It is obvious that TR10-Istanbul has a great spillover effect on its neighbours which cover TR21-(Tekirdağ, Edirne, Kırklareli), TR41-(Bursa, Eskişehir, Bilecik) and TR42-(Kocaeli, Sakarya, Düzce, Bolu, Yalova) regions. Also public manufacturing investments have an effect on competitive advantages of regions for manufacturing industry sub sectors like in TR71-(Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir) and TR81-(Zonguldak, Karabük, Bartın) regions. Moreover, another outstanding point of this figure is TR72-(Kayseri, Sivas, Yozgat) region itself which is one of the new industry centers of Turkey.

## 5. CONCLUSION

The aim of this study is to measure and evaluate the regional economic performances of 26 NUTS 2 regions in Turkey. For this reason Shift-Share analysis has been chosen from traditional measurement of economic performance methods. After the analysis of total and manufacturing employment changes between 1992-2008 for NUTS2 regions in Turkey, some important outcomes have been reached.

Figure 5. Map of Industrial Mix and Regional Shift Component for Manufacturing Employment Change



First analysis is about total employment change and results are evaluated together with Location Quotient (LQ) outcomes. The results of LQ would be helpful to realize the concentration of the sectors and specialization of the regions. When we get the results of Shift-Share analysis in terms of the competitive advantage of the region, it would be possible to orient the incentives with respect to the sectoral composition of the region. In order to increase the economic performance of the regions, there should be incentives to attract the fast growing sectors to the region and to analyses the competitive advantage of sector specialization.

According to the results of Shift-Share analysis for manufacturing employment change, there are 7 regions which take place in the 1<sup>st</sup> zone and have competitive advantages on manufacturing sector. The spillover effect of Istanbul on its neighbouring provinces should be considered, but the significancy of TR42-(Kocaeli, Sakarya, Düzce, Bolu, Yalova), TR41-(Bursa, Eskişehir, Bilecik) and TR21-(Tekirdağ, Edirne, Kırklareli) regions as traditional industrial regions should not be neglected as well. Also public industry investments have a great effect on TR81-(Zonguldak, Karabük, Bartın) and TR71-(Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir) regions. TR72-(Kayseri, Sivas, Yozgat) regions can be evaluated as Anatolian tigers. Manufacturing competitive advantages of this region come from its endogenous dynamics, which make it good example for the other regions.

To conclude, considering regional economic performances and analyzing sectoral dynamics with level of manufacturing sector would help regional policies to reach their goals.



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