

Regional Labor Markets in Turkey

The Evolution of Regional Unemployment and Structural Challenges

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Executive Summary

Regional unemployment is a poorly documented topic in Turkey. In this research brief, we analyze unemployment in 26 NUTS2 regions in Turkey from 2005 to 2011. Given that agricultural employment varies considerably across regions, we focus on the non-agricultural unemployment. Using regional agricultural and non-agricultural employment data as well as total labor force and unemployment data released by TurkStat, we estimate the number of unemployed persons in non-agricultural sectors and the non-agricultural unemployment rate.

Non-agricultural unemployment rates vary by more than twofold across regions in Turkey. Very generally, we can say that unemployment is lower in the West than in the East. Manisa¹, Balıkesir and Bursa regions have the lowest unemployment rates in 2011. On the contrary, Ağrı, Van and Gaziantep regions have the highest unemployment rates. However, there are also regions with high unemployment rates in the West regions with low unemployment rates in the East. For example, İzmir and Kocaeli, which are two developed regions compared to the rest of Turkey, have non-agricultural unemployment rates above Turkey's average. The underlying cause is high increases in labor force due to the high levels of migration to these regions.

The evolution of regional unemployment is also different across regions. The overall unemployment rate slightly declined in the period of 2005-11 while unemployment rate decreased in 12 regions and increased in the remaining 14 regions. The largest declines in unemployment rates in the last six years were in Malatya, Adana, Kırıkkale and Ankara regions. Ağrı, Antalya, Van and Zonguldak were the regions with the highest increase in unemployment rates. Zonguldak was the only region with a decline in non-agricultural employment, albeit limited, in the last six years. Clearly, Zonguldak is facing serious economic challenges. Note that increase in non-agricultural employment in Antalya was significantly below average as well.

The findings indicate that regional unemployment has very different dynamics. Regions where unemployment rate decreased due to strong increase in employment (Balanced Developing Regions) are situated on the North-South axis in Middle Anatolia and Middle-East Anatolia. Regions where unemployment rate decreased due to weak increases in employment coupled with even weaker increases in labor force (Cooling Regions) cluster around North West Anatolia and Middle Black Sea Region. Regions where strong increases in employment were subdued by stronger increases in labor force and thus unemployment increased (Regions under pressure) are located in East and South East (intra-regional migration). Industrialized regions like Tekirdağ, İzmir and Kocaeli (inter-regional migration) are also in this category.

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¹ Each NUTS2 region consists of at least one region. Provinces constituting a region are presented in the brackets when any region is written for the first time. However, later we use only the name of the region, which is equal to the first province in it. For instance, the name of the region including Manisa, Afyon, Kütahya, Uşak provinces is "Manisa".

Unemployment is generally lower in the West, higher in the East But with surprising exceptions

We usually follow unemployment rates at the national level. However, unemployment rates differ through regions. If we look at NUTS2 level comprising 26 regions, we see that the difference between the highest and the lowest unemployment rates across regions can be as large as twofold. Differences in regional unemployment rates point to important structural differences across regions. Moreover, they are also a sizeable ingredient of regional economic inequality.

The non-agricultural unemployment rate instead of the overall unemployment rate is a more relevant statistic for the study of regional unemployment in Turkey as the agricultural employment is still high and varies tremendously from one region to other. On the other hand, agricultural production is still dominantly done by family farms, implying an unemployment rate of almost zero in agriculture, distorting the overall unemployment rate in a region.² In other words, a high share of agricultural employment in total employment in a region may cause a low unemployment rate, *ceteris paribus*. In 2011, the difference between non-agricultural unemployment rate and overall unemployment rate was the highest at 10.2 percentage points in Ağrı, 6-7 percentage points in Van, Trabzon and Kastamonu (See App. Figure 2 and App. Table 1). There is a high correlation (86.8 percent, See App. Figure 1) between the share of agricultural employment in total employment and the difference between non-agricultural unemployment rate and total unemployment rate. This indicates the strong effect of agricultural employment on unemployment.

In this context, non-agricultural unemployment rate provides a clearer picture of regional unemployment. TurkStat releases regional agricultural and non-agricultural employment data; however it does not release non-agricultural labor force and unemployment series. We estimate non-agricultural regional labor force and the non-agricultural unemployment series (App. Table 1 and 2).³

Map 1 shows the regional variation in non-agricultural unemployment in 2011. Regions colored with light red in the map have the lowest non-agricultural unemployment rate. Hence, 4 regions with the lowest unemployment rate are presented as follows, respectively: Manisa (8.3 percent) Balıkesir (Balıkesir, Çanakkale) (8.4 percent), Bursa (Bursa, Eskişehir, Bilecik) (8.6 percent) and Samsun (Samsun, Tokat, Çorum, Amasya) (9.3 percent) (App Figure 2 and App Table 1). As clearly seen in the map, except for Samsun, these regions are in Western Turkey and are among the developed regions. However, İzmir, which is the second largest city in Western Turkey, has a very high unemployment rate; 16.5 percent. Unemployment rate in Kocaeli region (14.7 percent), which is one of the most industrialized regions, is above average (13.2 percent).⁴ These findings show that the size of the labor force, thus migration, as well as employment levels affect unemployment.⁵ Note that Ankara region (Ankara is the Capital) is below average (9.9 percent) due to both a high industrialization level and a large number of public employees.

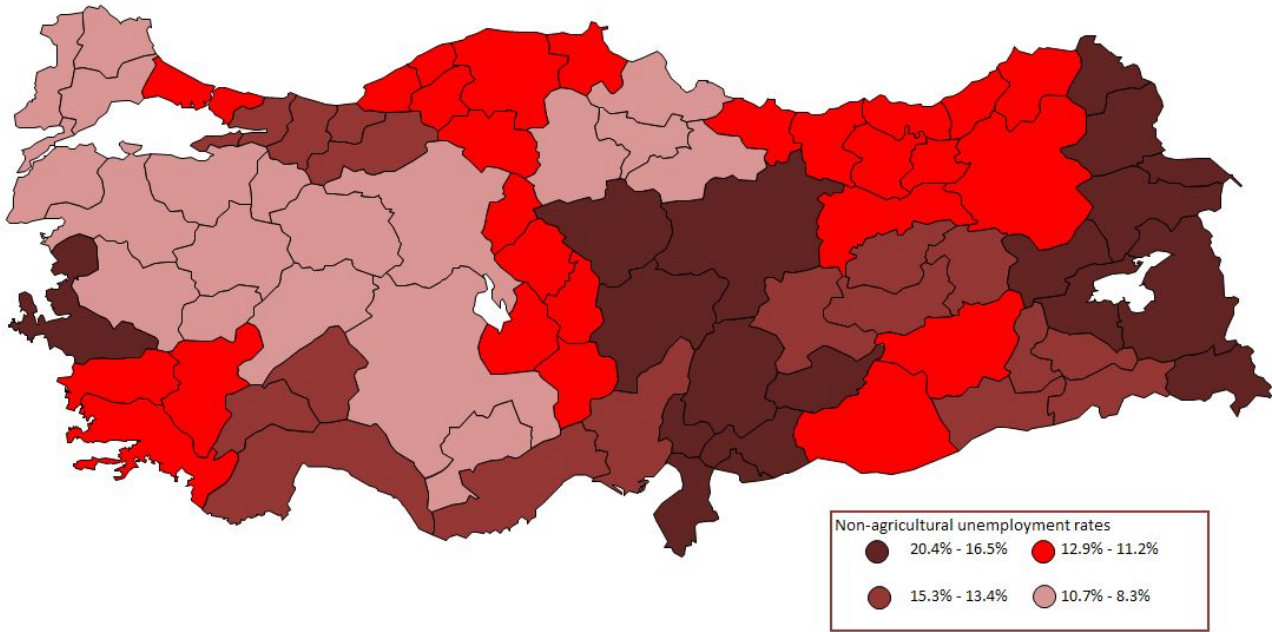
² According to labor market statistics released by Turkstat, the number of unemployed persons in agricultural is 72 thousand on average and agricultural unemployment rate is 1.2 percent.

³ Betam estimates non-agricultural unemployment rate since TurkStat does not release this series at the regional level. While regional agricultural and non-agricultural employment data series are released by TurkStat, non-agricultural labor force data series are not released. As stated in the text, the number of unemployed in agricultural sectors is too low due the structure of agriculture in Turkey. Therefore, we assume that there no unemployed in agriculture; in other words, we assume that agricultural labor force is equal to employment. Under this assumption, we calculate an approximate non-agricultural labor force by subtracting agricultural employment from total labor force. Thus, we conduct an approximate non-agricultural unemployment data using the non-agricultural employment data provided (See. App Table 1)

⁴ Here, we calculate average of 26 NUTS2 regions. Thus, these numbers differs from overall unemployment rates released by TurkStat. (See. App Table 1)

⁵ TurkStat has been releasing internal migration statistics at regional level since 2008. Rate of net migration is equal to net migration over total population in that region. Note that net migration is equal to in-migration minus out-migration. If net migration has positive sign, it corresponds to in-migration. Negative sign corresponds to out-migration. According to the results, Izmir and Kocaeli regions

Map 1: Regional unemployment rates (2011)



Source: Household Labor Force Survey released by TurkStat; BETAM

4 regions with the highest unemployment rates are as follows: Ağrı (20.4 percent), Van (19.4 percent), Gaziantep (Gaziantep, Adıyaman, Kilis) (17.8 percent) ve Hatay (Hatay, Kahramanmaraş, Osmaniye) (17.2 percent). It is not surprising that Van and Ağrı are among the regions with the highest unemployment rates. However, high unemployment rates in Gaziantep and Hatay, which are quite developed and industrialized regions, are unexpected.

There are other unexpected findings in the data. We present two typical examples: Kayseri (Kayseri, Sivas, and Yozgat) and Şanlıurfa (Şanlıurfa, Diyarbakır). While Kayseri is industrialized above Turkey's average, non-agricultural unemployment rate in the region (16.7 percent) is also well above Turkey's average (13.2 percent). On the other hand, Şanlıurfa is not a leading region in terms of industrialization, but it has a low non-agricultural unemployment level (11.2 percent). What are the possible causes of these findings? First reason that comes to mind is diversity of provinces within each region in terms of development and employment levels. For example, while Kayseri is developed above Turkey's average, Sivas and Yozgat are not.

We cannot calculate approximate values of non-agricultural unemployment at the provincial level since TurkStat does not release⁶ agricultural and non-agricultural data series at this level in Turkey. However, estimated provincial general unemployment data series released by TURKSTAT in 2010 gives an idea (TurkStat 2010, Main Labor Force Indicators by Province)⁷. While general unemployment rate was estimated as 14.1 percent in Kayseri, this rate was 13.6 and 12.7 percent in Sivas and Yozgat, respectively. It is obvious that high unemployment rates in Sivas and Yozgat are not the source of the high unemployment rate in the Kayseri region. Also, low unemployment rate in the Şanlıurfa region cannot be explained by low unemployment in Diyarbakır. According to estimations released by TURKSTAT in 2010, total unemployment

have been receiving migrants from 2008 to 2011; hence rate of net migration is very high. For instance, rate of net migration is 0.2 percent in İzmir region and it increases to 0.6 percent in Kocaeli region (See. App Fig 4).

⁶ Turkstat estimate only labor force and employment participation rates in a confidence interval.

⁷ See. http://www.turkstat.gov.tr/HbGetir.do?id=6275&tb_id=1

rate in Şanlıurfa is 12.4 percent, while it is 13.5 percent in Diyarbakır. The difference is negligible. Hence, the migration to and from regions should be considered in any analysis investigating regional unemployment.⁸

Unemployment: regions where it increased, regions where it decreased

Unemployment boom in South West of Turkey

Changes in regional unemployment from 2005 to 2011 are presented in Map 2: Regions colored with blue and its shades represent regions where unemployment decreased, while regions colored with red and its shades represent regions where unemployment increased (Note that darker colors correspond to larger increase or decrease in unemployment rate). While unemployment rate decreased in 12 regions of 26 NUTS2 regions from 2005 to 2011, it increased in the remaining 14 regions (See Map 2 and App. Figure 3). In the period we consider, average non-agricultural unemployment rate decreased from 14.3 percent to 13.2 percent.⁹ 5 regions with the highest decreases in non-agricultural unemployment rate are as follows: Malatya (Malatya, Elazığ, Bingöl, Tunceli) (from 27.3 percent to 15.3 percent), Adana (Adana, Mersin) (from 22.3 percent to 14.7 percent), Kırıkkale (Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir) (from 17.8 percent to 11.9 percent), Ankara (from 15.1 percent to 9.9 percent); 5 regions with highest increases in non-agricultural unemployment rate are presented as follows, respectively: Ağrı (from 8.3 percent to 20.4 percent)¹⁰, Antalya (Antalya, Isparta, Burdur) (from 8.3 percent to 13.4 percent), Van (from 16.1 percent to 19.4 percent), Zonguldak (Zonguldak, Karabük, Bartın) (from 10.5 percent to 12.5 percent) and Aydın (Aydın, Denizli, Muğla) (from 11 percent to 12.9 percent) (See App Table 1 and 3).

Out of 12 regions where non-agricultural unemployment rate decreased, employment increased strongly (above average) in 8 regions and relatively in 3 regions (close to average). Although there have been strong and relatively strong increases in labor force in these regions, we observe a decline in unemployment since these increases stayed below the employment increases. The largest increase in non-agricultural employment was in Malatya (47.5 percent) (App Table 2 and 3). However, as the labor force increased only by 26.6 percent, which was quite above average (19 percent) a record decline occurred in unemployment: 44 percent (App Table 3). We observe similar patterns in 3 regions in which unemployment decreased significantly (Adana, Kırıkkale and Ankara), (See App Table 2 and 3).

In the 5 regions where unemployment increases were sizeable, very different patterns emerge: Ağrı region is an exception due to a base effect (see foot note 10) as the non-agricultural labor force and employment are at very low levels. The second highest increase in non-agricultural unemployment was in Antalya region where the increase in unemployment was due to both a large increase in non-agricultural labor force (18.9 percent) and a relatively low increase in employment (12.3 percent) (See App. Table 3). In Aydın region unemployment increased despite a high raise of employment (18.2 percent, See App Table 3) because labor force increased more rapidly: 20.8 percent. Note that Antalya and Aydın regions, in South West of Turkey,

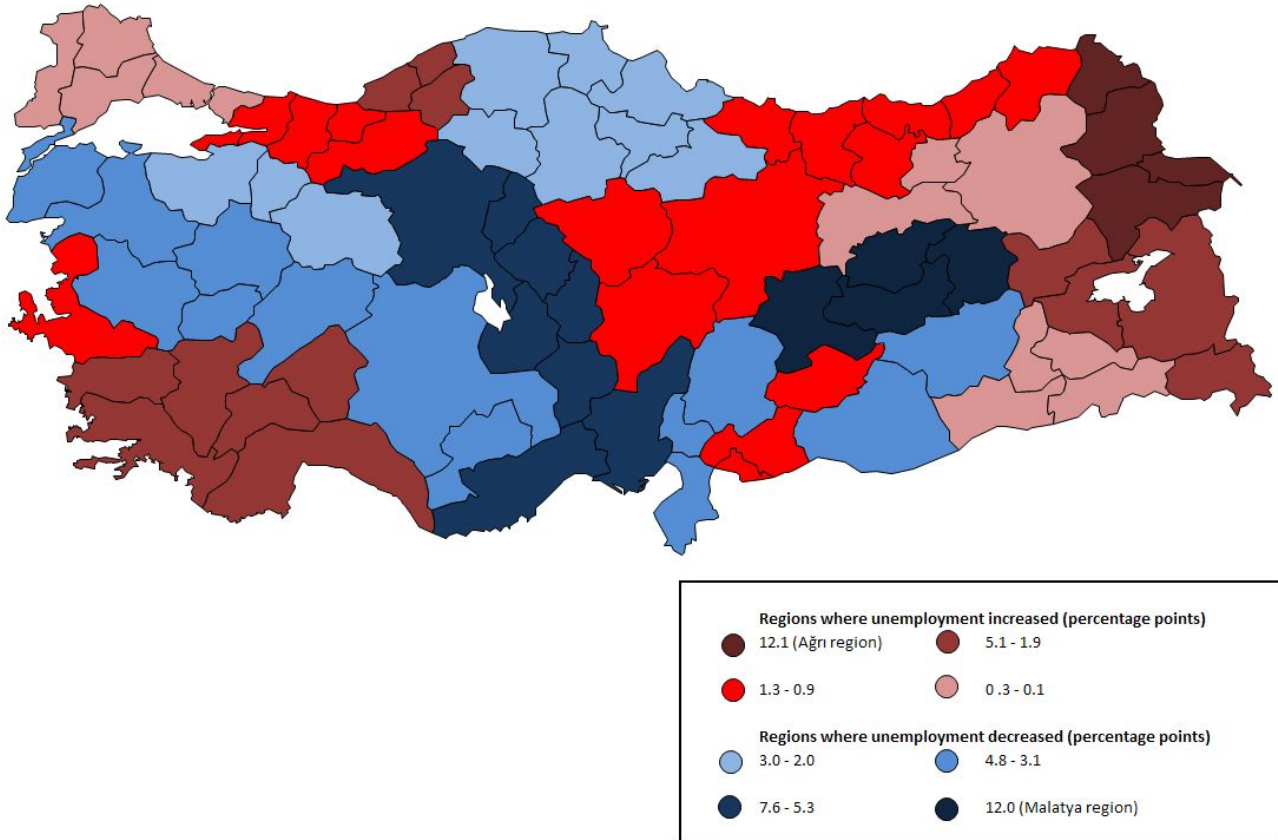
⁸ Şanlıurfa region has been experiencing out-migration since 2008; the rate of net migration is -0.5 percent (See App Fig 4).

⁹ According to TurkStat, non-agricultural unemployment rate was 13.5 percent in 2005 and 12.4 percent in 2011. Average numbers pertaining to regions are different due to two reasons. Firstly, non-agricultural unemployment rate released by TurkStat is based on a direct and weighted calculation. In this research brief, we consider non-weighted average of 26 regions in Turkey. The secondary reason is that regional unemployment rates are estimated "approximately" (See Footnote 3).

¹⁰ Tremendous increase in non agricultural unemployment (145 percent) in Ağrı region is driven by a base effect: while non-agricultural employment increased by 31 thousand, non-agricultural labor force increased by 59 thousand. Hence, the number of unemployed increased by 28 thousand causing a large increase in unemployment rate. The non-agricultural unemployment rate increased two and half times because of a low non-agricultural labor force (191 thousand in 2011).

are important recipients of migration from East and South East of Turkey¹¹; in the last six years, the regions could not create enough employment to absorb migrants. We should also keep in mind the difficulties the Kurdish migrants face in the labor market such as low human capital endowments and discrimination, which may increase unemployment rates in these regions.

Map 2: Change in regional NA unemployment rates from 2005 to 2011



Source: Household Labor Force Survey released by TurkStat; BETAM

The causes of unemployment increases in Van and Zonguldak differ from Antalya and Aydın. Most prominent cause of the increase in unemployment in Van region is migration from rural to urban areas within the region¹². There was a tremendous increase in non-agricultural labor force in this region from 2005 to 2011: 79 percent. It is not difficult to see that the main reason of high increase in non-agricultural labor force is the migration from rural to urban areas given that this region a source of migration.¹³ In the period we analyzed, while overall agricultural employment in Turkey increased by 19.2 percent, the fact that it remained 7.7 percent in Van shows that the migration from rural to urban areas was strong. (See App Table 4). Therefore, unemployment in Van increased despite a large increase in non-agricultural employment (72 percent). On the other hand, main factor behind the increase in unemployment in Zonguldak region has been the decline in non-agricultural employment. Zonguldak is the unique region with a slight decrease in non-agricultural employment from 2005 to 2011: -0.4 percent. Increase in non-

¹¹ Antalya and Aydın regions have been receiving migrants like İzmir and Kocaeli regions (See Footnote 2). While rate of net migration in Antalya is 0.9 percent in 2011, the rate is 0.2 percent in Aydın region (See. App. Fig 4).

¹² From 2008 to 2011, change in rate of net migration in Van region is the largest across Turkey at -1.3 percentage points. While inter-regional migration statistics are released by TurkStat, intra-regional migration statistics are not released. Consequently, although migration – i.e. decomposition of intra-migration cannot easily be identified, we cannot rule out the migration from rural to urban.

¹³ According to the results of Address Based Population Registration system, while overall population increase in Turkey is 5.9 percent from 2007 to 2011, it is 4.4 percent in Van region. The share of population in provinces/ districts in total population barely changed.

agricultural labor force was low (1.9 percent), but enough to increase unemployment. The region experienced out-migration since it could not create employment.

Regional Labor Markets Dynamics

Findings above show that there are different dynamics in regional labor markets. Changes in unemployment are basically due to changes in employment and in labor force. These two variables can move in the same direction as well as in reverse. As expected, non-agricultural employment and labor force increased together during the period considered, except for the crisis period. However, each region experienced different magnitudes of increases in employment and labor force. Consequently, unemployment increased or decreased according to the relative magnitudes of these increases.

Non-agricultural employment increased in 25 regions, Zonguldak was the only exception. However, the increases vary from 3 percent (Trabzon region) to 72 percent (Van region). Increases in non-agricultural employment substantially depend on regional GDP growth and on the employment elasticity of growth. Unfortunately, TurkStat has not release regional GDP series since 2008.

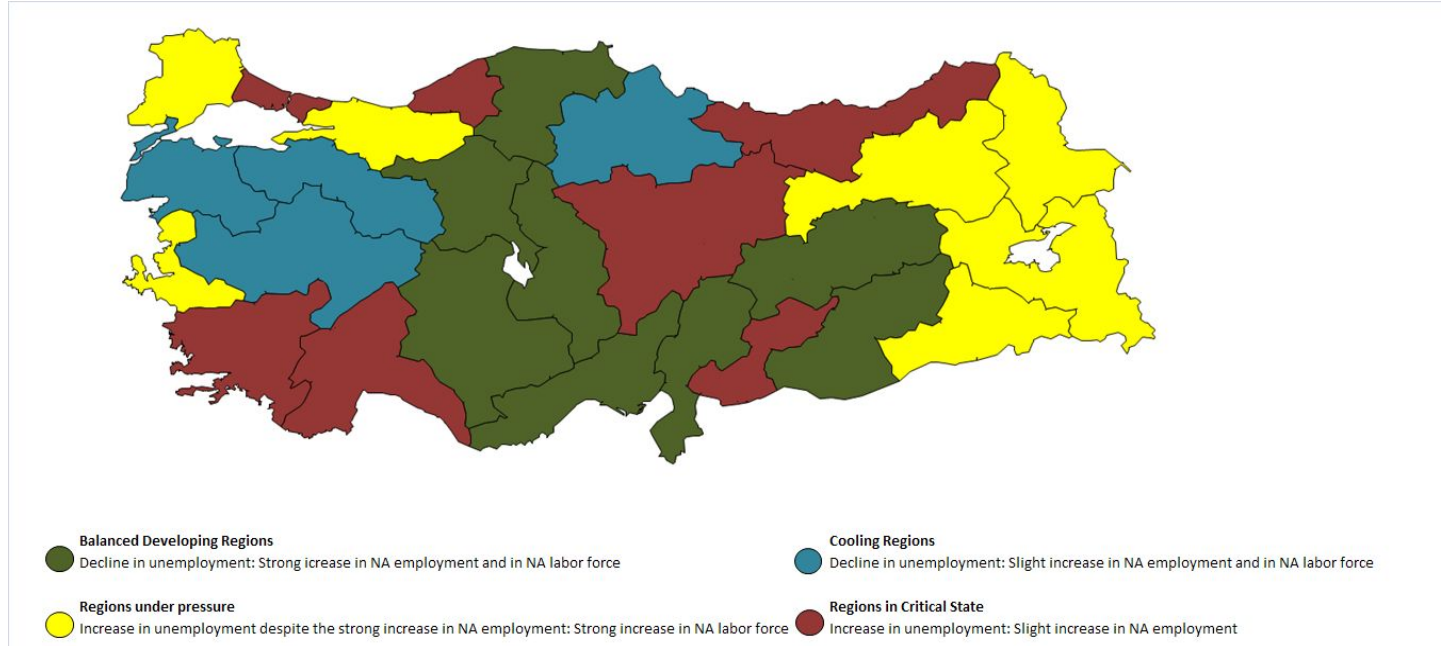
Non-agricultural employment increased annually by 3.4 percent in Turkey from 2005 to 2011; this corresponds to a 20.5 percent cumulative increase. Note that increases in 15 regions are above this average (See App. Table 3). However, increases in employment may not be enough to decrease regional unemployment. The increase of non-agricultural labor force matters. We observe that non-agricultural labor force increased annually 3.2 percent in Turkey from 2005 to 2011, which corresponds to a 19 percent cumulative increase. Note that the increase of non agricultural labor force in 13 regions is above this average.

There are three basic driving factors behind the increase in non-agricultural labor force: Population increase, increase in female labor force participation and migration. We do not think that regional variations in population increases are large enough to cause regional differences in unemployment rates. Regional female labor force participation rates in urban areas have not been documented yet. Migration seems to have played an important role given that some regions experienced increases in non-agricultural unemployment even when they had sizeable increases in non-agricultural employment. This must be due to large increases in labor force due to migration. Van and Aydin are examples in this regard. As stated above, unemployment increased significantly in these two regions despite high increases in employment. Note that increase in labor force in Van (78.9 percent) region was due to rural to urban migration in the region, while the increase in Aydin region (20.8 percent) was due to in-migration.

We think that 26 regions can be clustered in 4 subgroups taking into consideration the particularities of regional labor market dynamics, at the expense of losing important nuances. The first group comprises the regions where unemployment decreased due to large increases in non agricultural employment despite sizable increases in labor force in the same time. We call them as “Balanced Developing Regions” (green colored regions in Map 3). The second group contains the regions where unemployment also decreased due to small increases in non agricultural employment but even smaller increases in labor force. We call them as “Cooling Regions” (blue colored regions in Map 3). The third group includes the regions where unemployment increased due to relatively large increases in non-agricultural employment but even larger increases in labor force. We call them as “Regions under Pressure” (yellow colored regions in Map 3). Finally, the fourth group compasses the regions where unemployment rates increased due to small

increases in employment with rather large increases in labor force. We call them as “Regions in Critical State” (red colored regions in Map 3).

Map 3: Regional classification of NA unemployment rates (2005-2011)



Source: Household Labor Force Survey released by TurkStat; BETAM

Balanced Developing Regions (green) are mostly located in Middle Anatolia. Malatya, Kırıkkale, Ankara and Şanlıurfa are most prominent regions of this group. Except for Samsun, Cooling Regions (blue) are located in North West of Anatolia: Balıkesir, Bursa and Manisa regions. We observe that increases in employment (industrialization) have been saturated in these regions. Also, one can observe that the labor markets are not pressured by migration. Regions under Pressure (yellow) can be classified under two sub-groups: Industrialized regions of Western regions and the underdeveloped East. In the three industrialized regions (İzmir, Kocaeli and Tekirdağ) large increases of labor force, mainly driven by migration from East, played an important role in the raise of unemployment.¹⁴ In the Eastern regions the large increases in non-agricultural labor force are mostly caused by intra-regional migration from rural to urban areas. Regarding the Regions in Critical State (red), we observe that they are distributed evenly across Turkey. İstanbul and South West (Antalya and Aydın), among the most developed regions, are in this group. Increase in unemployment rate in İstanbul has been only 2.3 percent, which indicates that İstanbul is very close to Balanced Developing Regions while Antalya, with an increase of 62 percent in unemployment rate, is in a desperate situation. As stated above, Antalya region has been very far from creating enough jobs to fight migration pressures. Increases both in employment and labor force in East Black Sea have been too low. The region cannot create enough employment and is exporting part of its labor force. Unexpectedly, Kayseri region, quite industrialized, shows similar patterns; increases in employment and in labor force are too small. These two last regions experienced slightly increases in unemployment; they are close to Cooling Regions.

The situation of Gaziantep region is very exceptional. From 2005 to 2011 non-agricultural employment increased by 17.7 percent, which is close to average, while labor force increased by 22.8 percent. However the increase of employment (31 percent) occurred in full after 2007 when exports to Middle East¹⁵ started

¹⁴See net migration rates in App Fig 4.

¹⁵ See Betam Research Brief “Arap Baharı ve Avrupa Borç Krizi İhracatı Teğet Geçti” written by Barış Soybilgen: <http://betam.bahcesehir.edu.tr/wp-content/uploads/2012/02/Arast%C4%B1rmaNotu126.doc>

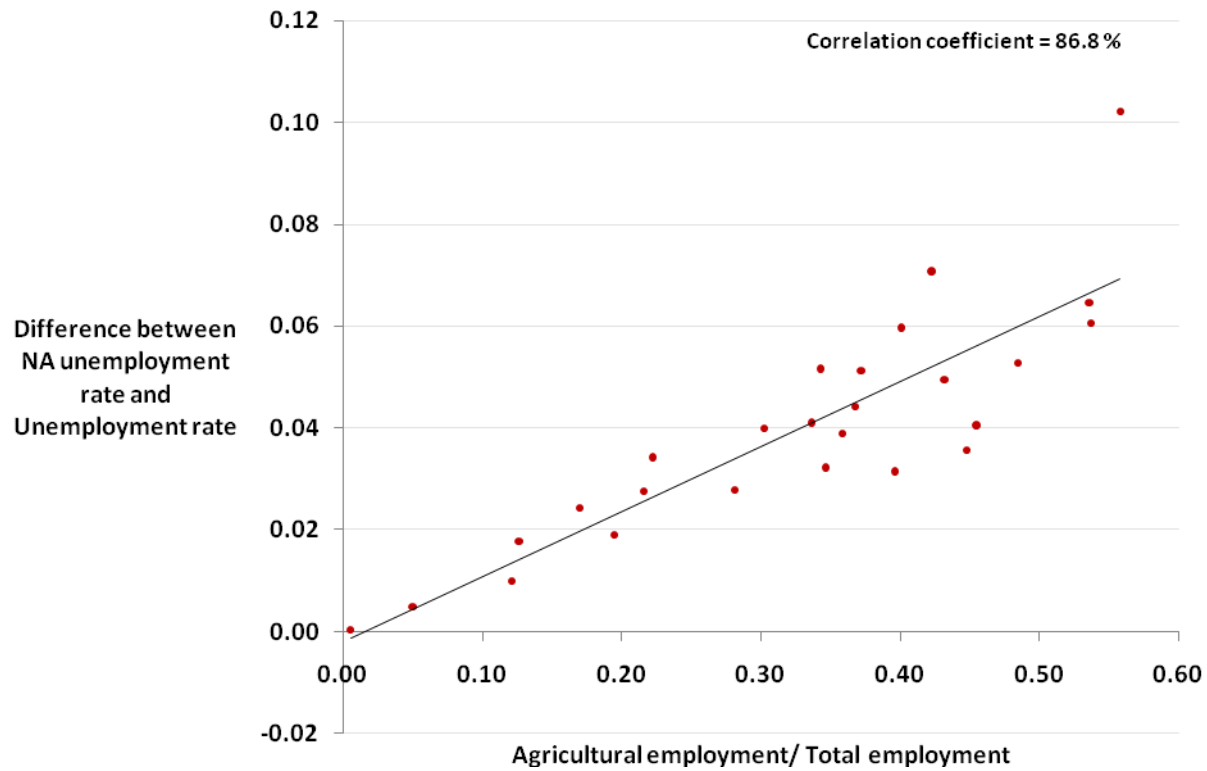
to boom. Until then non-agricultural employment decreased in this region (App. tables 2 and 3). So, Gaziantep region would be clearly belonging to Balanced Developing Regions during the period from 2007 to 2011.

Policy Recommendations

Evaluation of unemployment at the regional level shows that regional labor market dynamics are important in understanding and fighting unemployment. It is clear that more research is needed regarding the interplay between regional economic growth and employment as well as migration dynamics. We believe that cooperation between regional development agencies and researchers will be very productive in regional policies. Considering the findings of this research brief, let us suggest some policy recommendations at the regional level.

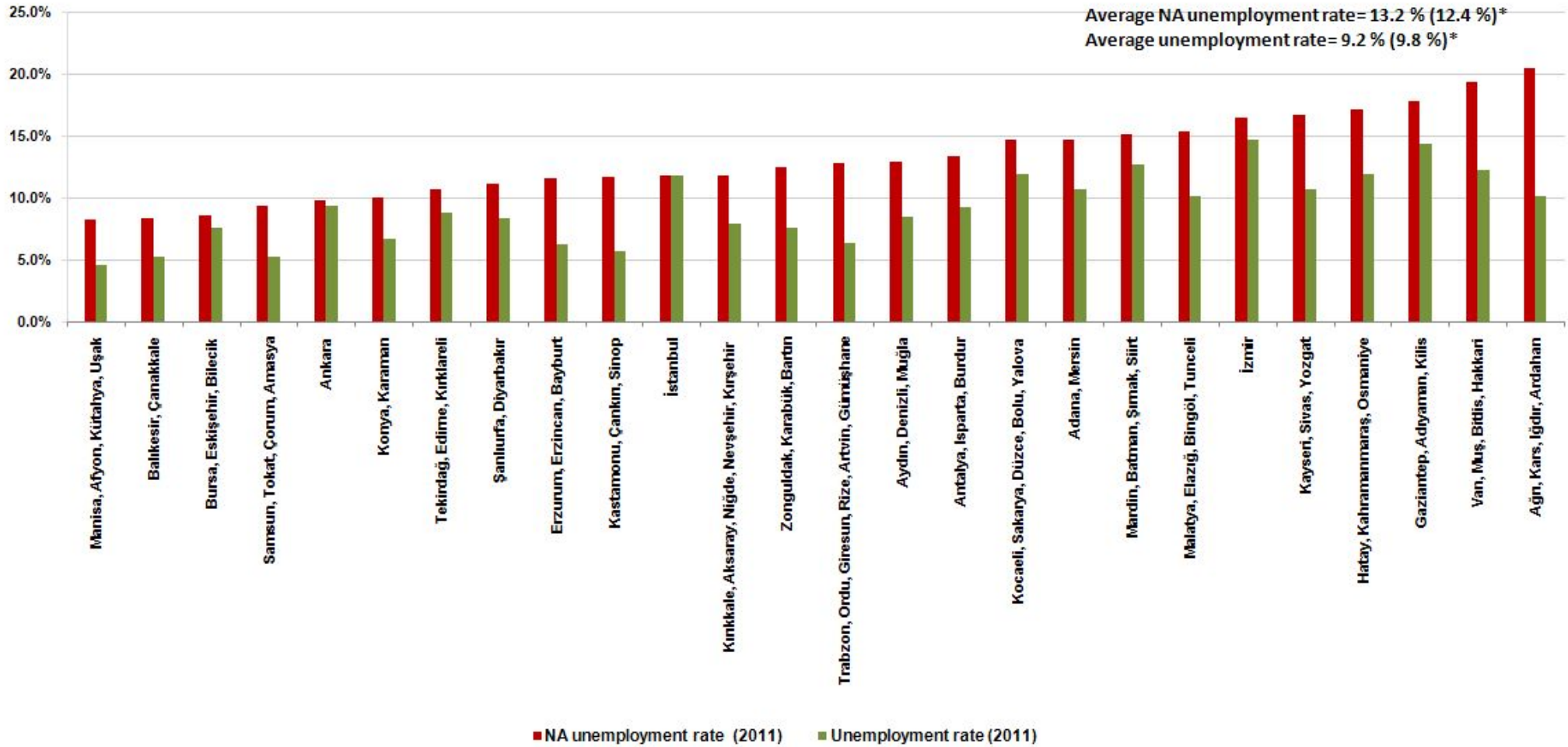
1. Investment incentive framework recently announced should be reconsidered in regions characterized by low increases in non-agricultural employment. Some regions, despite their low capacity of job creation in non-agricultural sectors have been positioned in relatively developed regions. In this context, Zonguldak region is a striking example. While non agricultural employment decreased in this region, the three provinces forming it are classified as 3rd and 4th level regions regarding investment incentives, which place them as relatively developed regions.
2. The determinants of intra-regional migration motivations such as terrorism and structural problems in agriculture should be well understood in order to design appropriate policies.
3. Active labor market policies should be designed to help unemployed migrants find jobs in the developed regions of Western Turkey, like İzmir, Antalya, Aydın, Kocaeli etc.
4. The impact of exports to neighborhood countries on employment is very important. Gaziantep and Mardin regions are typical examples. In these two regions, while non-agricultural employment has been decreasing until 2007, it is significantly increasing since 2007. So, opening the border with Armenia and developing frontier trading with Iran should be included on the political agenda.

App Fig 1: Correlation coefficient between the share of agricultural employment in total employment and the difference between NA unemployment rate and unemployment rate



Source: Household Labor Force Survey released by TurkStat; BETAM

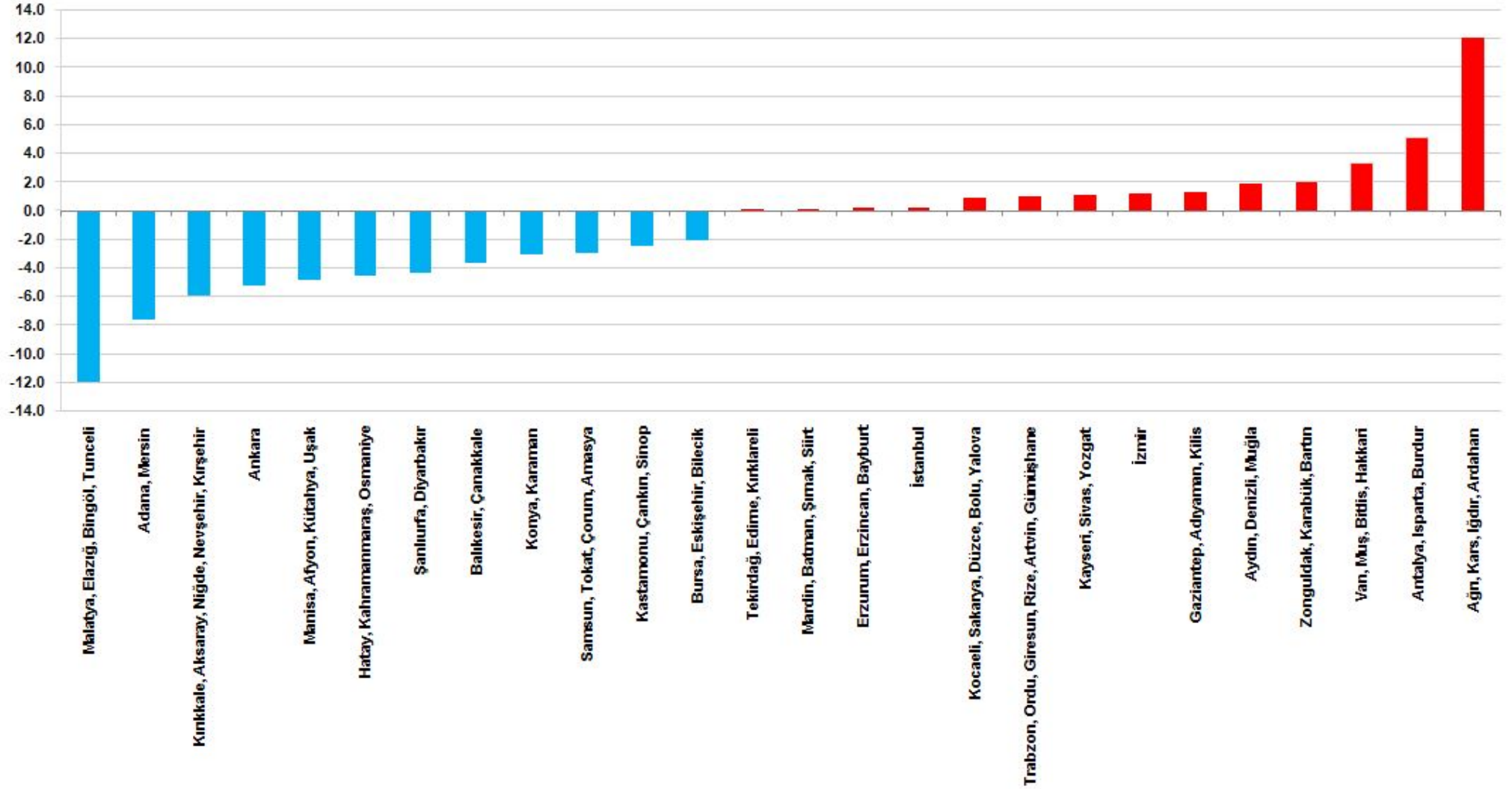
App Fig 2: Regional unemployment rates (2011)



Source: Household Labor Force Survey released by TurkStat; BETAM

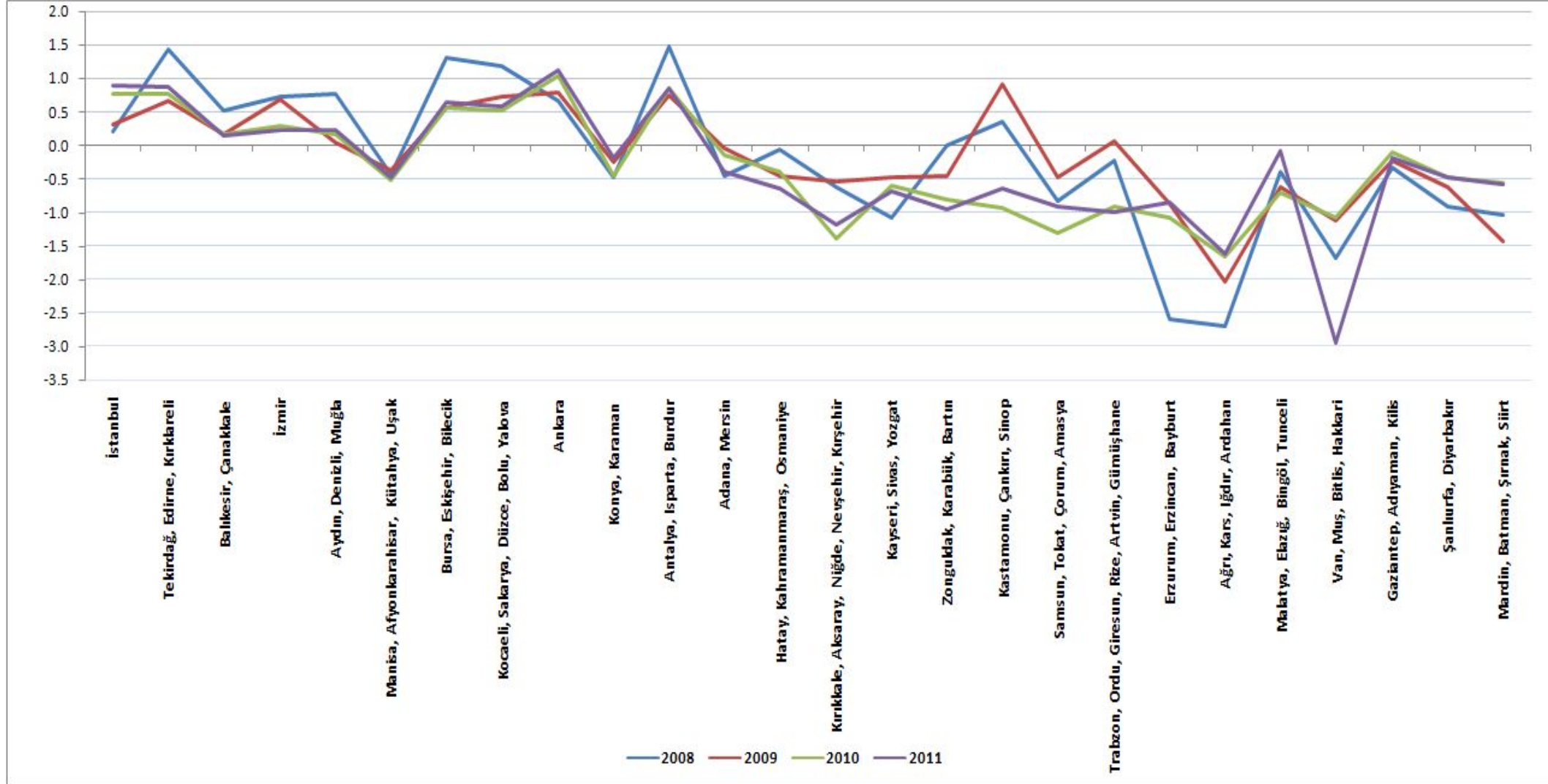
* Numbers in the brackets are weighted averages released by TurkStat. Hence, they are slightly different from Betam's calculation.

App Fig 3: Change in regional NA unemployment rates from 2005 to 2011 (in percentage points)



Source: Household Labor Force Survey released by TurkStat; BETAM

App Fig 4: Rate of net regional migration from 2008 to 2011 (%)



Source: Internal Migration Statistics released by TurkStat

App Table 1: Unemployment rates by NUTS2 regions

NUTS2 Regions	Unemployment rate (%)							NA Unemployment rate (%)						
	2005	2006	2007	2008	2009	2010	2011	2005	2006	2007	2008	2009	2010	2011
TR10 (İstanbul)	11.5	11.4	10.4	11.2	16.8	14.3	11.8	11.6	11.4	10.4	11.2	16.9	14.3	11.8
TR21 (Tekirdağ, Edirne, Kırklareli)	8.1	8.3	7.8	11.2	13.0	9.8	8.8	10.6	10.2	9.6	13.7	16.2	12.2	10.7
TR22 (Balıkesir, Çanakkale)	6.8	6.2	5.5	7.5	8.5	7.7	5.3	12.1	11.1	9.7	11.5	13.4	12.1	8.4
TR31 (İzmir)	13.9	12.0	10.5	11.8	16.2	15.1	14.7	15.3	13.3	11.5	12.6	17.5	16.7	16.5
TR32 (Aydın, Denizli, Muğla)	7.3	7.7	9.9	10.8	14.2	11.9	8.5	11.0	11.1	13.3	14.2	18.7	16.7	12.9
TR33 (Manisa, Afyon, Kütahya, Uşak)	8.1	7.4	7.3	8.3	11.0	7.6	4.7	13.1	11.5	11.0	12.3	16.9	12.0	8.3
TR41 (Bursa, Eskişehir, Bilecik)	9.2	8.0	8.1	10.3	13.9	10.1	7.6	10.6	9.3	9.4	11.7	15.5	11.2	8.6
TR42 (Kocaeli, Sakarya, Düzce, Bolu, Yalova)	12.2	11.7	11.6	10.8	15.0	13.0	11.9	13.8	13.3	13.4	12.8	18.1	15.8	14.7
TR51 (Ankara)	14.7	12.7	11.5	11.8	13.6	12.1	9.4	15.1	13.1	11.9	12.0	13.8	12.5	9.9
TR52 (Konya, Karaman)	9.7	11.3	10.6	10.2	10.1	8.4	6.8	13.1	15.1	14.4	14.6	14.2	12.4	10.0
TR61 (Antalya, Isparta, Burdur)	6.5	7.7	7.0	8.9	11.4	10.7	9.3	8.3	10.4	9.9	13.0	16.3	15.3	13.4
TR62 (Adana, Mersin)	18.4	16.9	15.7	16.8	22.0	16.7	10.7	22.3	20.6	19.6	21.2	28.4	22.3	14.7
TR63 (Hatay, Kahramanmaraş, Osmaniye)	15.7	12.2	12.4	15.8	18.0	13.6	12.0	21.7	16.9	16.9	21.0	24.1	19.6	17.2
TR71 (Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir)	10.5	10.4	9.5	10.1	14.9	10.1	8.0	17.8	16.4	14.3	13.6	21.2	15.5	11.9
TR72 (Kayseri, Sivas, Yozgat)	11.4	11.5	11.6	11.4	13.2	13.7	10.7	15.6	14.3	15.2	15.1	17.2	18.3	16.7
TR81 (Zonguldak, Karabük, Bartın)	7.2	6.0	8.4	6.9	7.3	10.8	7.6	10.5	8.7	13.1	12.1	13.5	17.0	12.5
TR82 (Kastamonu, Çankırı, Sinop)	8.6	5.0	4.2	6.7	9.4	8.3	5.7	14.2	11.3	8.3	12.0	15.4	15.0	11.8
TR83 (Samsun, Tokat, Çorum, Amasya)	6.2	7.2	8.7	7.4	6.9	7.2	5.3	12.3	12.8	14.9	13.8	13.4	12.4	9.3
TR90 (Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane)	5.5	5.6	6.6	5.8	6.0	6.1	6.4	11.9	11.2	12.4	11.2	12.4	12.5	12.9
TRA1 (Erzurum, Erzincan, Bayburt)	4.3	5.0	5.7	6.3	7.7	6.2	6.3	11.3	9.6	9.8	11.9	14.9	13.5	11.6
TRA2 (Ağrı, Kars, Iğdır, Ardahan)	3.3	5.1	6.0	5.6	9.4	10.3	10.2	8.3	11.0	15.4	16.8	22.7	21.6	20.4
TRB1 (Malatya, Elazığ, Bingöl, Tunceli)	18.8	14.1	13.2	14.5	16.8	11.9	10.2	27.3	22.0	20.5	20.2	24.2	19.2	15.3
TRB2 (Van, Muş, Bitlis, Hakkari)	8.2	7.8	12.4	14.2	16.4	17.0	12.3	16.1	15.9	20.9	20.3	23.8	24.9	19.4
TRC1 (Gaziantep, Adıyaman, Kilis)	13.8	15.2	18.0	16.4	17.2	12.1	14.4	16.5	18.3	23.0	22.4	21.5	15.3	17.8
TRC2 (Şanlıurfa, Diyarbakır)	10.9	12.1	13.8	14.1	18.8	13.1	8.4	15.5	15.6	17.5	19.7	24.6	17.1	11.2
TRC3 (Mardin, Batman, Şırnak, Siirt)	11.1	15.7	19.9	17.4	15.1	11.8	12.7	15.0	18.8	24.5	21.9	18.6	15.8	15.1
Overall unemployment rate (TurkStat)	10.6	10.2	10.3	11.0	14.0	11.9	9.8	13.5	12.7	12.6	13.6	17.4	14.8	12.4
Average unemployment rate (Betam)								14.3	13.6	14.3	15.1	18.2	15.8	13.2

Source: Household Labor Force Survey released by TurkStat; BETAM

App Table 2: Regional Non-agricultural (NA) employment and labor force levels

NUTS2 Regions	NA Employment							NA Labor Force						
	2005	2006	2007	2008	2009	2010	2011	2005	2006	2007	2008	2009	2010	2011
TR10 (İstanbul)	3693	3794	3835	3909	3715	3931	4189	4176	4281	4282	4402	4468	4588	4751
TR21 (Tekirdağ, Edirne, Kırklareli)	396	414	414	434	435	461	509	443	461	458	503	519	525	570
TR22 (Balıkesir, Çanakkale)	298	288	326	340	336	342	347	339	324	361	384	388	389	379
TR31 (İzmir)	946	987	1091	1083	1070	1150	1232	1117	1138	1233	1239	1297	1381	1475
TR32 (Aydın, Denizli, Muğla)	582	601	620	652	689	681	688	654	676	715	760	847	818	790
TR33 (Manisa, Afyon, Kütahya, Uşak)	546	592	577	564	532	577	589	628	669	648	643	640	656	642
TR41 (Bursa, Eskişehir, Bilecik)	944	953	961	999	979	1014	1087	1056	1051	1061	1131	1158	1142	1189
TR42 (Kocaeli, Sakarya, Düzce, Bolu, Yalova)	696	745	756	800	785	844	949	807	859	873	917	958	1002	1112
TR51 (Ankara)	1171	1238	1291	1325	1319	1388	1468	1380	1425	1465	1506	1531	1586	1629
TR52 (Konya, Karaman)	398	411	441	486	507	487	485	458	484	515	569	591	556	539
TR61 (Antalya, Isparta, Burdur)	610	628	637	625	614	655	685	665	701	707	718	734	773	791
TR62 (Adana, Mersin)	701	750	781	750	747	818	866	902	945	971	952	1044	1053	1015
TR63 (Hatay, Kahramanmaraş, Osmaniye)	473	487	493	515	507	547	584	604	586	593	652	668	680	705
TR71 (Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir)	226	249	258	261	264	277	304	275	298	301	302	335	328	345
TR72 (Kayseri, Sivas, Yozgat)	412	424	423	409	425	445	445	488	495	499	482	513	545	534
TR81 (Zonguldak, Karabük, Bartın)	238	241	218	210	212	224	237	266	264	251	239	245	270	271
TR82 (Kastamonu, Çankırı, Sinop)	109	118	122	139	148	147	150	127	133	133	158	175	173	170
TR83 (Samsun, Tokat, Çorum, Amasya)	462	505	542	507	486	508	543	527	579	637	588	561	580	599
TR90 (Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane)	467	494	500	524	488	470	481	530	556	571	590	557	537	552
TRA1 (Erzurum, Erzincan, Bayburt)	125	160	166	170	160	154	168	141	177	184	193	188	178	190
TRA2 (Ağrı, Kars, Iğdır, Ardahan)	121	130	104	94	109	127	152	132	146	123	113	141	162	191
TRB1 (Malatya, Elazığ, Bingöl, Tunceli)	221	234	245	276	276	277	326	304	300	308	346	364	343	385
TRB2 (Van, Muş, Bitlis, Hakkari)	167	169	201	239	247	256	287	199	201	254	300	324	341	356
TRC1 (Gaziantep, Adıyaman, Kilis)	384	357	345	360	401	464	452	460	437	448	464	511	548	550
TRC2 (Şanlıurfa, Diyarbakır)	317	336	334	309	359	406	437	375	398	405	385	476	490	492
TRC3 (Mardin, Batman, Şırnak, Siirt)	210	208	191	196	228	266	303	247	256	253	251	280	316	357
Overall (TurkStat)	14913	15516	15871	16178	16037	16911	17967	17240	17773	18159	18725	19415	19849	20510
Average (Betam)	14913	15513	15872	16176	16038	16916	17963	17300	17840	18249	18787	19513	19960	20579

Source: Household Labor Force Survey released by TurkStat; BETAM

App Table 3: Change in regional labor force series

NUTS2 Regions	Unemployment rate (%)				NA Unemployment rate (%)				NA Employment (%)				NA Labor Force (%)			
	2005-11	2005-07	2007-09	2009-11	2005-11	2005-07	2007-09	2009-11	2005-11	2005-07	2007-09	2009-11	2005-11	2005-07	2007-09	2009-11
TR10 (İstanbul)	2.6	-9.6	61.5	-29.8	2.3	-9.7	61.4	-29.8	13.4	3.8	-3.1	12.8	13.8	2.5	4.3	6.3
TR21 (Tekirdağ, Edirne, Kırklareli)	8.6	-3.7	66.7	-32.3	0.9	-9.4	68.5	-33.9	28.5	4.5	5.1	17.0	28.7	3.4	13.3	9.8
TR22 (Balıkesir, Çanakkale)	-22.1	-19.1	54.5	-37.6	-30.2	-19.8	38.2	-37.0	16.4	9.4	3.1	3.3	11.8	6.5	7.5	-2.3
TR31 (İzmir)	5.8	-24.5	54.3	-9.3	7.6	-24.8	52.0	-5.9	30.2	15.3	-1.9	15.1	32.1	10.4	5.2	13.7
TR32 (Aydın, Denizli, Muğla)	16.4	35.6	43.4	-40.1	17.3	20.7	40.4	-30.8	18.2	6.5	11.1	-0.1	20.8	9.3	18.5	-6.7
TR33 (Manisa, Afyon, Kütahya, Uşak)	-42.0	-9.9	50.7	-57.3	-36.8	-16.1	54.0	-51.1	7.9	5.7	-7.8	10.7	2.2	3.2	-1.2	0.3
TR41 (Bursa, Eskişehir, Bilecik)	-17.4	-12.0	71.6	-45.3	-19.1	-11.1	64.0	-44.5	15.1	1.8	1.9	11.0	12.6	0.5	9.1	2.7
TR42 (Kocaeli, Sakarya, Düzce, Bolu, Yalova)	-2.5	-4.9	29.3	-20.7	6.6	-2.6	34.7	-18.8	36.4	8.6	3.8	20.9	37.8	8.2	9.7	16.1
TR51 (Ankara)	-36.1	-21.8	18.3	-30.9	-34.7	-21.6	16.6	-28.6	25.4	10.2	2.2	11.3	18.0	6.2	4.5	6.4
TR52 (Konya, Karaman)	-29.9	9.3	-4.7	-32.7	-23.5	9.7	-1.1	-29.5	21.9	10.8	15.0	-4.3	17.7	12.4	14.8	-8.8
TR61 (Antalya, Isparta, Burdur)	43.1	7.7	62.9	-18.4	62.0	19.7	65.1	-18.0	12.3	4.4	-3.6	11.6	18.9	6.3	3.8	7.8
TR62 (Adana, Mersin)	-41.8	-14.7	40.1	-51.4	-34.1	-12.2	45.4	-48.4	23.5	11.4	-4.4	15.9	12.5	7.6	7.5	-2.8
TR63 (Hatay, Kahramanmaraş, Osmaniye)	-23.6	-21.0	45.2	-33.3	-20.9	-22.2	42.9	-28.8	23.5	4.2	2.8	15.2	16.7	-1.8	12.6	5.5
TR71 (Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir)	-23.8	-9.5	56.8	-46.3	-33.3	-19.8	48.4	-43.9	34.5	14.2	2.3	15.2	25.5	9.5	11.3	3.0
TR72 (Kayseri, Sivas, Yozgat)	-6.1	1.8	13.8	-18.9	7.0	-2.2	12.6	-2.8	8.0	2.7	0.5	4.7	9.4	2.3	2.8	4.1
TR81 (Zonguldak, Karabük, Bartın)	5.6	16.7	-13.1	4.1	19.2	24.9	2.4	-6.9	-0.4	-8.4	-2.8	11.8	1.9	-5.6	-2.4	10.6
TR82 (Kastamonu, Çankırı, Sinop)	-33.7	-51.2	123.8	-39.4	-17.0	-41.6	86.5	-23.7	37.6	11.9	21.3	1.4	33.9	4.7	31.6	-2.9
TR83 (Samsun, Tokat, Çorum, Amasya)	-14.5	40.3	-20.7	-23.2	-24.2	20.9	-10.4	-30.1	17.5	17.3	-10.3	11.7	13.7	20.9	-11.9	6.8
TR90 (Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane)	16.4	20.0	-9.1	6.7	8.2	4.6	-0.4	3.8	3.0	7.1	-2.4	-1.4	4.2	7.7	-2.5	-0.9
TRA1 (Erzurum, Erzincan, Bayburt)	46.5	32.6	35.1	-18.2	2.0	-13.8	52.2	-22.3	34.4	32.8	-3.6	5.0	34.8	30.5	2.2	1.1
TRA2 (Ağrı, Kars, Iğdır, Ardahan)	209.1	81.8	56.7	8.5	145.0	85.4	46.9	-10.0	25.6	-14.0	4.8	39.4	44.7	-6.8	14.6	35.5
TRB1 (Malatya, Elazığ, Bingöl, Tunceli)	-45.7	-29.8	27.3	-39.3	-43.9	-25.1	18.2	-36.6	47.5	10.9	12.7	18.1	26.6	1.3	18.2	5.8
TRB2 (Van, Muş, Bitlis, Hakkari)	50.0	51.2	32.3	-25.0	20.5	29.8	13.9	-18.4	71.9	20.4	22.9	16.2	78.9	27.6	27.6	9.9
TRC1 (Gaziantep, Adıyaman, Kilis)	4.3	30.4	-4.4	-16.3	7.8	39.2	-6.4	-17.2	17.7	-10.2	16.2	12.7	19.6	-2.6	14.1	7.6
TRC2 (Şanlıurfa, Diyarbakır)	-22.9	26.6	36.2	-55.3	-27.7	13.3	40.2	-54.5	37.9	5.4	7.5	21.7	31.2	8.0	17.5	3.4
TRC3 (Mardin, Batman, Şırnak, Siirt)	14.4	79.3	-24.1	-15.9	1.0	63.6	-24.2	-18.6	44.3	-9.0	19.4	32.9	44.5	2.4	10.7	27.5
Overall (TurkStat)	-7.5	-2.8	35.9	-30.0	-8.1	-6.7	38.1	-28.7	20.5	6.4	1.0	12.0	19.0	5.3	6.9	5.6
Average (Betam)					-7.5	0.0	27.6	-27.5	20.5	6.4	1.0	12.0	19.0	5.5	6.9	5.5

Source: Household Labor Force Survey released by TurkStat; BETAM

App Table 4: Regional agricultural employment

	Agricultural Employment							
	2005	2006	2007	2008	2009	2010	2011	Change (2005-11)
TR10 (İstanbul)	15	14	12	14	11	16	22	%46.7
TR21 (Tekirdağ, Edirne, Kırklareli)	133	111	111	110	124	127	123	%-7.5
TR22 (Balıkesir, Çanakkale)	251	262	266	210	224	226	228	%-9.2
TR31 (İzmir)	113	117	111	88	100	153	178	%57.5
TR32 (Aydın, Denizli, Muğla)	333	290	248	245	266	332	400	%20.1
TR33 (Manisa, Afyon, Kütahya, Uşak)	390	369	332	309	342	383	477	%22.3
TR41 (Bursa, Eskişehir, Bilecik)	169	161	181	152	131	126	150	%-11.2
TR42 (Kocaeli, Sakarya, Düzce, Bolu, Yalova)	108	116	127	165	193	209	261	%141.7
TR51 (Ankara)	45	45	40	27	23	54	77	%71.1
TR52 (Konya, Karaman)	161	158	189	243	239	264	257	%59.6
TR61 (Antalya, Isparta, Burdur)	198	260	285	318	314	329	347	%75.3
TR62 (Adana, Mersin)	194	208	242	248	303	355	375	%93.3
TR63 (Hatay, Kahramanmaraş, Osmaniye)	233	227	214	210	226	300	305	%30.9
TR71 (Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir)	188	179	154	98	141	178	170	%-9.6
TR72 (Kayseri, Sivas, Yozgat)	181	122	150	163	155	186	298	%64.6
TR81 (Zonguldak, Karabük, Bartın)	120	130	140	182	205	154	180	%50.0
TR82 (Kastamonu, Çankırı, Sinop)	81	168	141	137	111	140	174	%114.8
TR83 (Samsun, Tokat, Çorum, Amasya)	522	446	458	501	519	426	453	%-13.2
TR90 (Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane)	621	552	510	547	587	567	555	%-10.6
TRA1 (Erzurum, Erzincan, Bayburt)	240	171	133	175	188	200	158	%-34.2
TRA2 (Ağrı, Kars, Iğdır, Ardahan)	191	176	194	221	195	177	192	%0.5
TRB1 (Malatya, Elazığ, Bingöl, Tunceli)	135	163	168	137	159	208	193	%43.0
TRB2 (Van, Muş, Bitlis, Hakkari)	195	209	171	125	141	159	210	%7.7
TRC1 (Gaziantep, Adıyaman, Kilis)	90	92	120	170	130	150	129	%43.3
TRC2 (Şanlıurfa, Diyarbakır)	160	111	111	155	146	157	171	%6.9
TRC3 (Mardin, Batman, Şırnak, Siirt)	86	52	60	68	65	104	62	%-27.9
Overall (TurkStat)	5154	4907	4867	5016	5240	5683	6143	%19.2

Source: Household Labor Force Survey released by TurkStat