

THE WORSTS AND THE BESTS IN REGIONAL UNEMPLOYMENT

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Executive Summary

The non-agricultural unemployment rate in Turkey remained at 13.0 percent from 2016 to 2017. However, regional labour markets behaved asymmetrically. Out of 26 regions, 11 registered increases in non-agricultural unemployment while in 13 of them decreases are observed and in 2 regions unemployment rate did not change. When regions are compared with their non-agricultural unemployment rates, it is worth noting the significance of the large gap between the region with the lowest rate (6.1 percent) in Trabzon (TR90) and the highest rate (30.1 percent) in Mardin (TRC3).

When a more comprehensive assessment is made by considering labour market dynamics, Mardin region emerges as the worst region according to non-agricultural unemployment rate (30.1 percent), non-agricultural employment rate (24.8 percent) and decreasing labour force and employment. The second worst region, Van (TRB2) follows Mardin (TRC3), with a high unemployment rate (19.7 percent) and also the second low employment ratio (29.5 percent). Also, we observe the highest increase (5.3 percentage points) in unemployment rate in this region.

A comprehensive assessment shows that Tekirdag-Edirne-Kirklareli (TR21, Thrace) and Ankara (TR51) are ranked at the first places among the best regions. Thrace has relatively low non-agricultural unemployment rate (9.8 percent) and the highest non-agricultural employment rate (49.5 percent). The non-agricultural unemployment rate in Ankara (11.6 percent) is relatively high but it is the only region among the best ones which had a decrease in unemployment rate (0.1 percentage points). Also, Ankara follows the Thrace with the second highest non-agricultural employment rate (46.7 percent).

Methodological reminder for the analysis of regional unemployment

Annual data from Household Labour Force Survey (HLFS) covering the whole year is published by Turkstat (TÜİK) in March. As the annual data comprehends regional figures it gives the occasion to scrutinise regional labour market dynamics. Last year, we published the research brief titled as “The Worst and The Bests in Regional Unemployment” (Research Brief 17/211) on May 17. In this brief, we had examined the causes of large inequalities between unemployment rates as well their changes in size and in opposite directions for 2016. In the current research brief, we examine the regional unemployment for 2017 with the same approach.

As we mentioned in the former research brief, although the non-agricultural unemployment rate (thereafter “unemployment rate”) provides a more realistic understanding about regional inequalities

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compared to general unemployment rates, it is not sufficient to understand the severity of regional unemployment.¹ The share of non-agricultural employment in the non-agricultural working age population (thereafter “employment ratio”) is as important as the level of unemployment. We think that the use of these two indicators allows us to make a better assessment of regional labor markets. The Box titled as “Impact of agricultural employment on regional unemployment” and the Annex Figure 1 can be examined for a more comprehensive analysis.

From 2016 to 2017, although the annual average of non-agricultural unemployment rate remained at 13.0 percent, changes in unemployment rates reflect various regional labor market dynamics like in the past years.² Unemployment decreased in 13 regions, increased in 11 regions and did not change in 2 regions. A simple comparison of unemployment according to the size of changes will not be sufficient too. Unemployment may increase due to a decline in employment or a faster increase in labor force compared to employment. In the second case, increasing employment mitigates the severity of the increase in unemployment. On the other hand, unemployment may decrease along with a stronger decline in labor force. It is doubtful that the decrease in unemployment in this case can be considered as a positive development. To summarize, the main labor market dynamics has to be taken into consideration when comparing changes in unemployment rates. The detailed information about all these methodological problems can be found in our previous research brief (seen Betam Research Brief 17/211, “The Worst and The Bests in Regional Unemployment”)

Worst regions in terms of unemployment and employment

Figure 1 shows 26 regions in descending order for 2017 and 2016 unemployment data. In the period of 2016-2017, while the unemployment rate remained at 13 percent at the country level, high differences in 2016 (from 30.1 percent to 7.2 percent) continue in 2017 (from 30.1 percent to 6.1 percent). On the other hand, the average absolute deviation among the regions increased from 3.5 to 3.7. **To summarize, the inequalities in regions increased rather than decreased.** We would like to mention that Turkey is the third country in Europe after Spain and Italy in terms of regional inequalities.³

In 2017, Mardin-Batman-Şırnak-Siirt (TRC3) region has the highest unemployment as in the period of 2016 with 30.1 percent. In order to underline the exceptional magnitude of this rate, we would like to remind that during the Great Depression (1930-34) as well during the Great Recession (2008-09) the highest unemployment rates have been observed around 25 percent. The **Van-Muş-Bitlis- Hakkâri (TRB2) region which has the seventh highest unemployment rate in 2016, has the second highest**

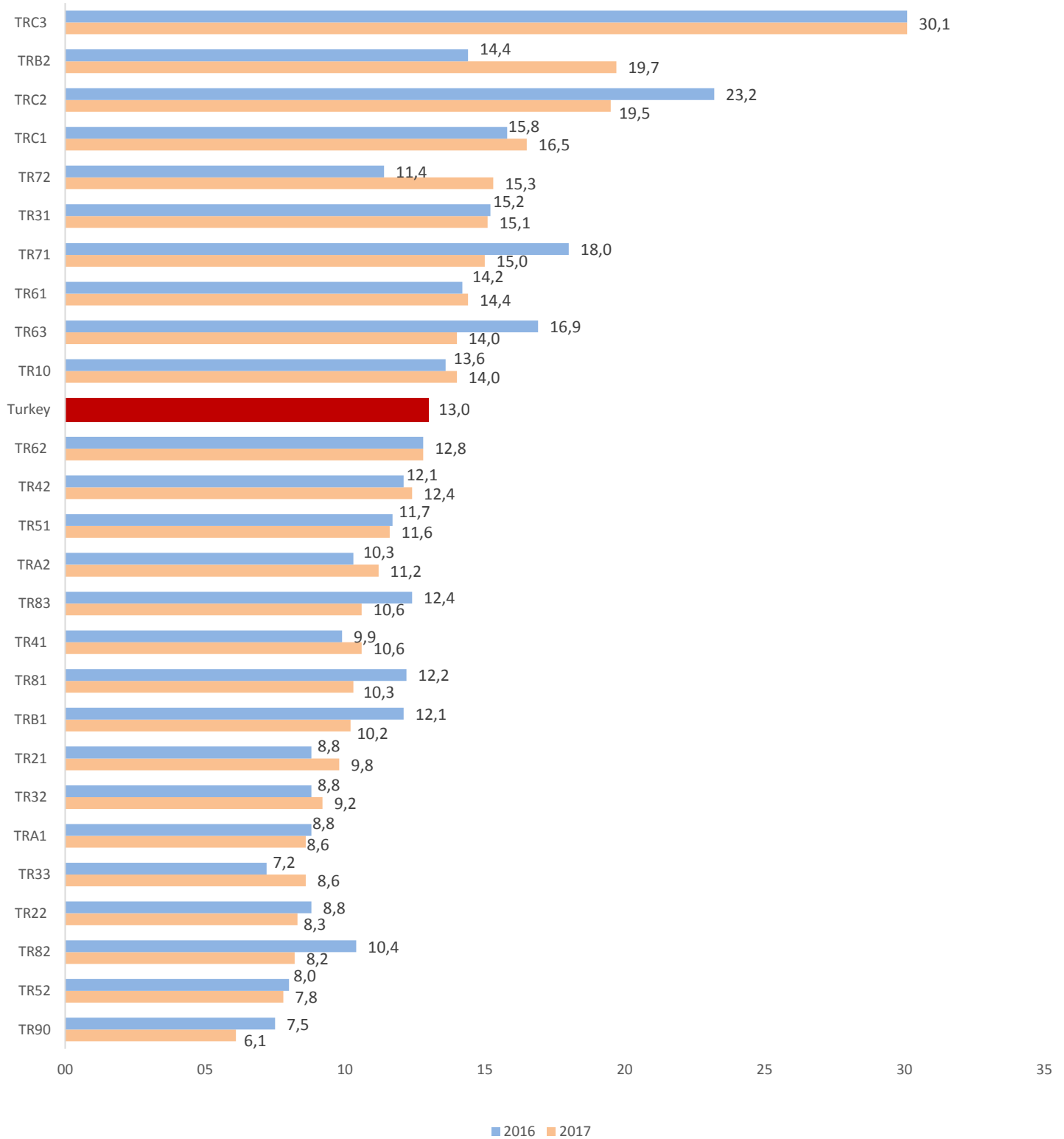
¹ The ranking of regions according to non-agricultural unemployment rates differs from the ranking according to general unemployment rates. For a comparison of these rankings see Betam RB 17/211. Here is a typical example for 2017: Şanlıurfa-Diyarbakır (TRC2) is ranked as third highest non-agricultural unemployment rate with 19,5 percent while it is ranked as fifth highest general unemployment rate with 13.8 per cent.

² The Fact that the unemployment rate stagnated at 13 percent from 2016 to 2017 conceals the large variations that occurred during two years. The seasonally adjusted serial of unemployment rate shows that this rate increased strongly from 11.8 to 14.2 per cent between April 2016 and December 2016 as the consequence of low growth-low employment regime; the yearly average of unemployment rate has been estimated at 13 per cent. Then high growth-high employment regime took start and unemployment rate decreased to 12.3 percent in December 2017. By coincidence the yearly average has been estimated at 13 per cent again.

³ According to general unemployment rates Turkey has been ranked third with 3.6 average deviation, Italy second with 4.4 and Spain first with 5.1.

unemployment rate with 19.7 percent in 2017. These two regions are followed by Şanlıurfa-Diyarbakır (TRC2) with an unemployment rate of 19.5 percent, Gaziantep- Adıyaman- Kilis (TRC1), with 16.5 percent, Kayseri, Sivas, Yozgat (TR72) with 15.3 percent.

Figure 1: Regional non-agricultural unemployment rates (% ,2016, 2017)



Source: Turkstat, Betam. TRC3:Mardin, Batman, Şırnak, Siirt, TRB2:Van, Muş, Bitlis, Hakkari, TRC2:Şanlıurfa, Diyarbakır, TRC1:Gaziantep, Adıyaman, Kilis, TR72:Kayseri, Sivas, Yozgat, TR31:İzmir, TR71:Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir, TR61:Antalya, Isparta, Burdur, TR10: İstanbul, TR63:Hatay, Kahramanmaraş, Osmaniye, TR62:Adana, Mersin, TR42:Kocaeli, Sakarya, Düzce, Bolu, Yalova, TR51:Ankara, TRA2:Ağrı, Kars, Iğdır, Ardahan, TR41:Bursa, Eskişehir, Bilecik, TR83:Samsun, Tokat, Çorum, Amasya, TR81:Zonguldak, Karabük, Bartın, TRB1:Malatya, Elazığ, Bingöl, Tunceli, TR21:Tekirdağ, Edirne, Kırklareli, TR32:Aydın, Denizli, Muğla, TR33:Manisa, Afyon, Kütahya, Uşak, TRA1:Erzurum, Erzincan, Bayburt, TR22:Balıkesir, Çanakkale, TR82:Kastamonu, Çankırı, Sinop, TR52:Konya, Karaman, TR90:Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane.

As we underlined in the methodology part, even a comparison limited to non-agricultural unemployment might not be sufficient for evaluating the labor market performances of the regions. Taking non-agricultural unemployment rate and non-agricultural employment rate (Annex Table 1) both into consideration is more meaningful criterion of labor market performance. If in two regions unemployment rates are quite close but in one region the employment rate is higher than the other, we may claim confidently that the labor market performance in the first region is better than the second one.

Taking these two performance indicators into consideration, we can rank 26 regions and determine the worst and the best regions. Interregional comparison becomes easier and more comprehensible when the figure is divided into four sub-spaces by the average unemployment rate of 13 percent and the average employment ratio of 41.8 percent (Figure 2). **The worst regions are placed on the upper left part.** The unemployment rates of these regions are above of the national level while their employment ratios are below the national level. On the other hand, **the best regions are placed on the lower right part.** The unemployment rates of these regions are below of the national level while their employment ratios are above the national level. **The regions having high unemployment and employment rates are placed on the upper right part of the figure. The regions with low unemployment and employment rates are placed on the lower left part of the figure.**

In 2017, there are **7 regions in the worst area: It is obvious that that Mardin region (TRC3) represents the worst case by far.** It is the region with the lowest employment rate as well as the highest unemployment rate. The unemployment rate in Van (TRB2) and Şanlıurfa (TRC2) regions are at about the same level. At the same time, the employment rate is slightly higher in Şanlıurfa-Diyarbakır. It should be noted that **three worst regions are from the Southeast of Turkey. High unemployment and low employment in Southeast arise from structural factors such as low income and development levels and low female labor force participation.**

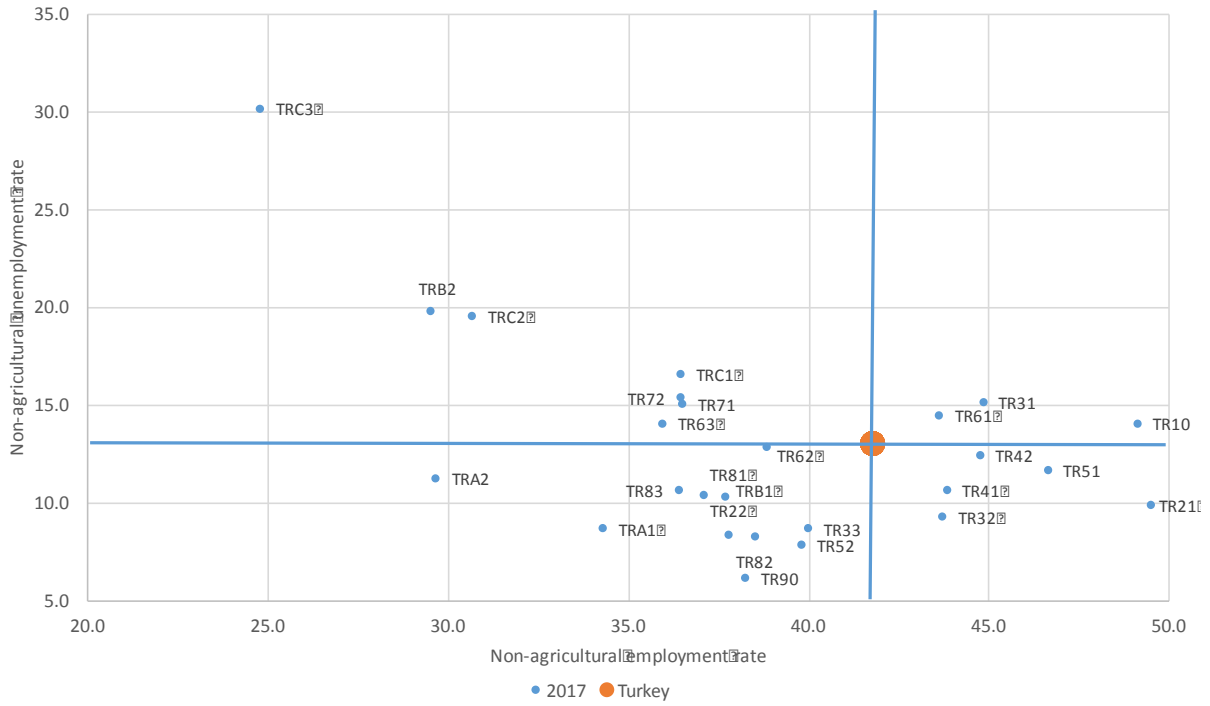
Other 4 regions ((Gaziantep-Adıyaman-Kilis (TRC1), Kayseri-Sivas-Yozgat (TR72), Kırıkkale-Aksaray-Niğde-Nevşehir-Kırşehir (TR71, Kapadokya), Hatay-Kahramanmaraş-Osmaniye (TR63)) have almost the same employment rate. From 2017 to 2016, the region **Kayseri-Sivas-Yozgat (TR72) are added** in the worst area while others 6 regions remain at the same area (Annex Figure 1).

Gaziantep-Adıyaman-Kilis and Kapadokya regions were added in the worst area from 2015 to 2016 as the regions having the highest unemployment increase (Betam RB 17/211). The effects of the Syrian crisis in Gaziantep region come to fore while the shock in tourism was effective in Cappadocia. The Syrians migrants have important effect on increasing unemployment in recent years in Gaziantep region which have the highest rate of Syrians over region population (17 percent).⁴ Whereas, in the

⁴ In Gaziantep (TRC1) region, the non-agricultural unemployment rate was 9.4 percent in 2014, 11.4 percent in 2015, 15.8 percent in 2016 and 16.5 percent in 2017.

Cappadocia region, there is an important decline in unemployment rate from 18 percent to 15 percent. This improvement may arise from the improvement in tourism. The only region where unemployment has decreased for two years is Hatay-Kahramanmaraş-Osmaniye region.⁵ However, this is not sufficient to get rid of the worst area. We will discuss the move of Kayseri-Sivas-Yozgat region into worst area below.

Figure 2: Regional distribution of non-agricultural unemployment and non-agricultural employment rates (% , 2017)



Source: TURKSTAT, Betam. TRC3:Mardin, Batman, Şırnak, Siirt, TRB2:Van, Muş, Bitlis, Hakkari, TRC2:Şanlıurfa, Diyarbakır, TRC1:Gaziantep, Adıyaman, Kilis, TR72:Kayseri, Sivas, Yozgat, TR31:İzmir, TR71:Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir, TR61:Antalya, Isparta, Burdur, TR10: İstanbul, TR63:Hatay, Kahramanmaraş, Osmaniye, TR62:Adana, Mersin, TR42:Kocaeli, Sakarya, Düzce, Bolu, Yalova, TR51:Ankara, TRA2:Ağrı, Kars, Iğdır, Ardahan, TR41:Bursa, Eskişehir, Bilecik, TR83:Samsun, Tokat, Çorum, Amasya, TR81:Zonguldak, Karabük, Bartın, TRB1:Malatya, Elazığ, Bingöl, Tunceli, TR21:Tekirdağ, Edirne, Kırklareli, TR32:Aydın, Denizli, Muğla, TR33:Manisa, Afyon, Kütahya, Uşak, TRA1:Erzurum, Erzincan, Bayburt, TR22:Balıkesir, Çanakkale, TR82:Kastamonu, Çankırı, Sinop, TR52:Konya, Karaman, TR90:Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane.

Note: This figure is suggested by Assoc. Prof. İnsan Tunalı. We would like to thank him for his contribution

The regions which are in the upper right part in Figure 2 are also important: Firstly, let us say that these three regions were in the same area in 2016. İstanbul (TR10) is the region having the second highest employment rate after Thrace. Moreover, its unemployment rate (14 percent) is slightly above of the national level (13 percent). In this respect, İstanbul is in a position quite close to the best regions. Antalya-Isparta-Burdur (TR61) have a higher unemployment rate (14.2 percent) and lower employment rate (43.7 percent). Its unemployment rate had increased by 2.1 percentage points in 2016 because of the tourism shock and it continued increasing albeit slightly by 0.2 percentage points in 2017. In this area, the status of İzmir (TR31) is remarkable. **İzmir has the highest unemployment**

⁵ It is worthy to note that Hatay region is has the highest second Syrian ratio (16.2 per cent) after Gaziantep region. This exceptional case reveals that unemployment may decrease despite a high Syrian population.

rate with 15.1 percent in the West. At the same time, it has rather a high employment rate (44.9 percent). The main reason of high unemployment in İzmir is the high unemployment rate among women.⁶

Best cases in regional unemployment and employment

In 2017, the lowest unemployment is in the Trabzon-Ordu-Giresun-Rize- Artvin- Gümüşhane region (TR90, East Black Sea) with 6.1 percent. Konya-Karaman (TR52) and Kastamonu-Çankırı-Sinop (TR82) regions follow the East Black Sea region with 7.8 percent and 8.2 percent, respectively. Erzurum, Erzincan-Bayburt (TRA1) and Manisa-Afyon-Kütahya-Uşak (TR33) has the 8.6 percent unemployment rate. **However, all these regions are placed in lower left part of Figure 2) as they have lower unemployment but in the same time lower employment rates comparing to national average.** In these regions, low non-agricultural employment mostly arises from low female participation in non-agricultural sectors.⁷

There are five regions in the best area in terms of non-agricultural employment and unemployment rates. The unemployment rates are presented in ascending order such as: Aydın-Denizli-Muğla (TR32), Tekirdağ-Edirne-Kırklareli (TR21, Trakya), Bursa-Eskişehir-Bilecik (TR41), Ankara (TR51) and Kocaeli-Sakarya-Düzce-Bolu-Yalova (TR42). These 5 regions were also in the best performing area in 2016. These are mainly the most developed industrial regions in Turkey. In addition, their non-agricultural employment rates are higher than country average; moreover, their female participation is remarkable.⁸

Among these regions Thrace (TR21) is the region with clearly the highest non-agricultural employment (49.5 percent, Annex Table 1). In addition, it is ranked in second place after Istanbul in terms of non-agricultural female employment rate (Annex Table 2). Whereas it is in the eighth order in terms of unemployment rate (9.8 percent), this rate is still quite below of country average (13 percent). In order to note the difficulty arising when two performance indicators are considered in the same time we can try to compare Thrace East Black Sea regions.

Black Sea region has the lowest unemployment rate (6.1 percent) but in the same time has a quite lower employment rate, at 38.3 percent, comparing to Thrace. Which one does perform better than other? **It could be claimed that Thrace is the best performer when the criteria of unemployment below country average and employment above country average are considered.** In addition, it should be noted that Thrace was clearly the best region in 2016; however, its non-agricultural unemployment rate increased from 8.8 percent to 9.8 percent in a recent year while it decreased from 7.5 to 6.1 percent. So, if multiple indicators like unemployment, employment and change in unemployment are

⁶ For a comprehensive analysis on high female unemployment in İzmir see the Betam's report "İzmir Büyükşehir Belediyesi'nin İzmir ekonomisine ve istihdamına katkısı: 2004-2016", November 2017".

⁷ Low non-agricultural employment rates are caused by low female participation rates in non-agricultural sector. Noting that for Turkey the female participation rate in non-agricultural sector is 22.5 percent In 2017, the same rate in 6 regions of this area is as follows: Erzurum (TRA1) 14,6; Konya (TR52) 17,1; Manisa (TR33) 19,4; Balıkesir (TR22) 20,3; East Black Sea (TR90) 20,7 and Kastamonu (TR82) 21,0 (Annexe Table 2).

⁸ Non-agricultural employment rates are 30.4 percent in İstanbul (TR10), 29.3 percent in Thrace (TR21), 27.6 percent in Ankara (TR51), 24.3 percent in Bursa (TR41), 24.6 percent in Kocaeli (TR 42), respectively (Annex Table 2).

taken into consideration, Black Sea might be the best performer according to weights attributed to these 3 indicators. The design of a comprehensive performance index lacks crucially.

In this frame work Ankara emerges also as a good performer as it has an unemployment rate (11.6 percent) lower than the country average but relatively high one but it decreased from 2018 to 2017 albeit by only 0.1 percentage points. However, Ankara is the third region after Thrace and Istanbul with its 46.7 percent of employment and female employment rates. Lastly, it should be noted that the 5 regions in the best area are in Western Turkey.

Regions where unemployment increased

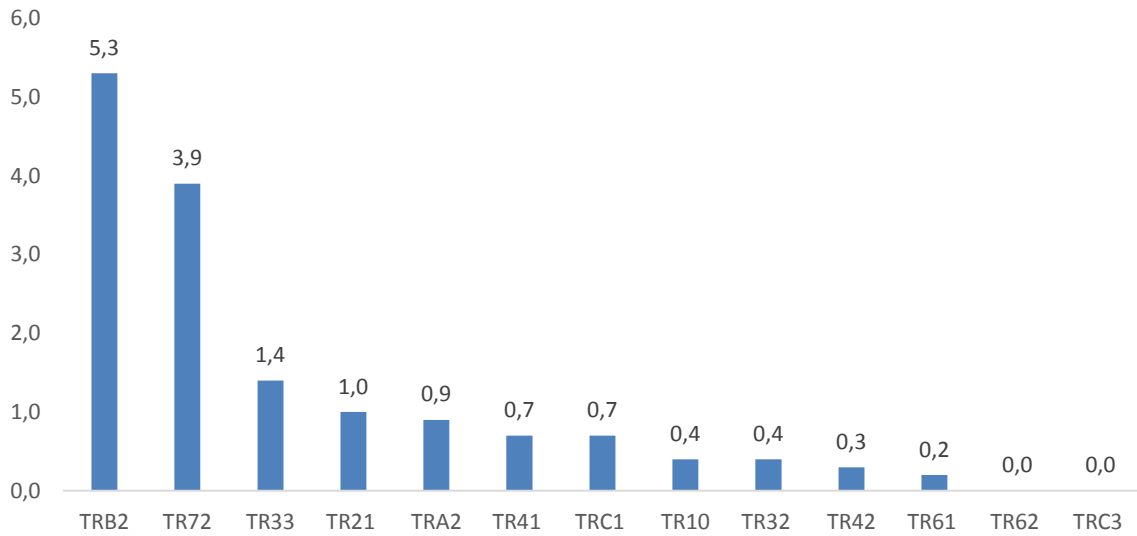
From 2016 to 2017, unemployment decreased or increased in regions while non-agricultural annual unemployment rate remained at 13 percent as we mentioned in introduction part. It is not a new event, it has been observed in the past years. Changes in unemployment presents an additional dimension to the assessment of regional performances.

Out of 26 regions, **13 had some increases and 2 had no changes in unemployment, while 11 registered increases.** The regions where unemployment increased and remained constant are presented in descending order in the Figure 3. **The two regions that suffered from very high unemployment increases are Van-Muş-Bitlis-Hakkâri (TRB2) which is the second region among worst regions and Kayseri-Sivas-Yozgat (TR72) which moved into in the worst area.** Unemployment rates increased by 5.3 and 3.9 percentage points and reached 19.7 and 15.3 percent, respectively in these two regions. The cause of this jump in both regions is the insufficient increase in employment against a strong increase in labor force (Table 1). The employment increase in Van region is 9.8 percent whereas labor force increased by 17.1 percent. Given these strong increases we one may say that severity of unemployment increase has been mitigated. These increases are 2.5 percent and 7.2 percent, respectively for Kayseri region. The low increase in employment in Kayseri is noticeable.

There is a quite negative improvement in terms of dynamics of labour force in Ağrı (TRA2) region. The increase in unemployment rate in this region is relatively low with 0.9 percentage points. Nevertheless, the reason behind this increase is a higher absolute decline in employment than labour force (Table 1). Similarly in **Mardin (TRC3) region** albeit unemployment remained constant we observe the highest absolute declines both in employment (9 thousand) and in labour force (13 thousand). Let us to recall that this region might be considered **as the worst performing by all labour market indicators**

The other example of unchanged unemployment is Adana-Mersin (TR62) region. In our previous research brief (see Betam, Research Brief 17/211) we stated that this region suffered from the highest decline in employment and labour force (23 thousand and 14 thousand, respectively). From 2016 to 2017 this region seems to have recovered since the increases in employment and labour force reached 56 and 64 thousand; obviously, the constancy of unemployment in these two regions cannot be interpreted in the same way in regards of labour market performance.

Figure 3: Regions where non-agricultural unemployment increased: u_{td} (in pp, 2016-2017)



Source: TUIK, Betam. TRB2: Van, Muş, Bitlis, Hakkâri, TR72: Kayseri, Sivas, Yozgat, TR33: Manisa, Afyon, Kütahya, Uşak, TR21: Tekirdağ, Edirne, Kırklareli, TRA2: Ağrı, Kars, Iğdır, Ardahan, TR41: Bursa, Eskişehir, Bilecik, TRC1: Gaziantep, Adıyaman, Kilis, TR10: İstanbul, TR32: Aydın, Denizli, Muğla, TR42: Kocaeli, Sakarya, Düzce, Bolu, Yalova, TR61: Antalya, Isparta, Burdur, TR62: Adana, Mersin, TRC3: Mardin, Batman, Şırnak, Siirt

Note: u_{td} : Non-agricultural unemployment rate

Table 1: Change in non-agricultural labor force and employment in regions the where non-agricultural unemployment increased (thousands, 2017)

Regions	Δ LFtd	Δ Etd	Δ utd
TRB2 (Van, Muş, Bitlis, Hakkâri)	61	30	5,3
TR72 (Kayseri, Sivas, Yozgat)	46	14	3,9
TR33 (Manisa, Afyon, Kütahya, Uşak)	53	37	1,4
TR21 (Tekirdağ, Edirne, Kırklareli)	38	28	1,0
TRA2 (Ağrı, Kars, Iğdır, Ardahan)	-1	-3	0,9
TR41 (Bursa, Eskişehir, Bilecik)	68	51	0,7
TRC1 (Gaziantep, Adıyaman, Kilis)	29	19	0,7
TR10 (İstanbul)	135	91	0,4
TR32 (Aydın, Denizli, Muğla)	78	67	0,4
TR42 (Kocaeli, Sakarya, Düzce, Bolu, Yalova)	74	61	0,3
TR61 (Antalya, Isparta, Burdur)	65	54	0,2
TR62 (Adana, Mersin)	64	56	0,0
TRC3 (Mardin, Batman, Şırnak, Siirt)	-13	-9	0,0

Source: TURKSTAT, Betam.

Note: Δ LFtd: the change in non-agricultural labor force, Δ Etd: the change in non-agricultural employment, Δ utd: the change in non-agricultural unemployment

Regions where unemployment decreased

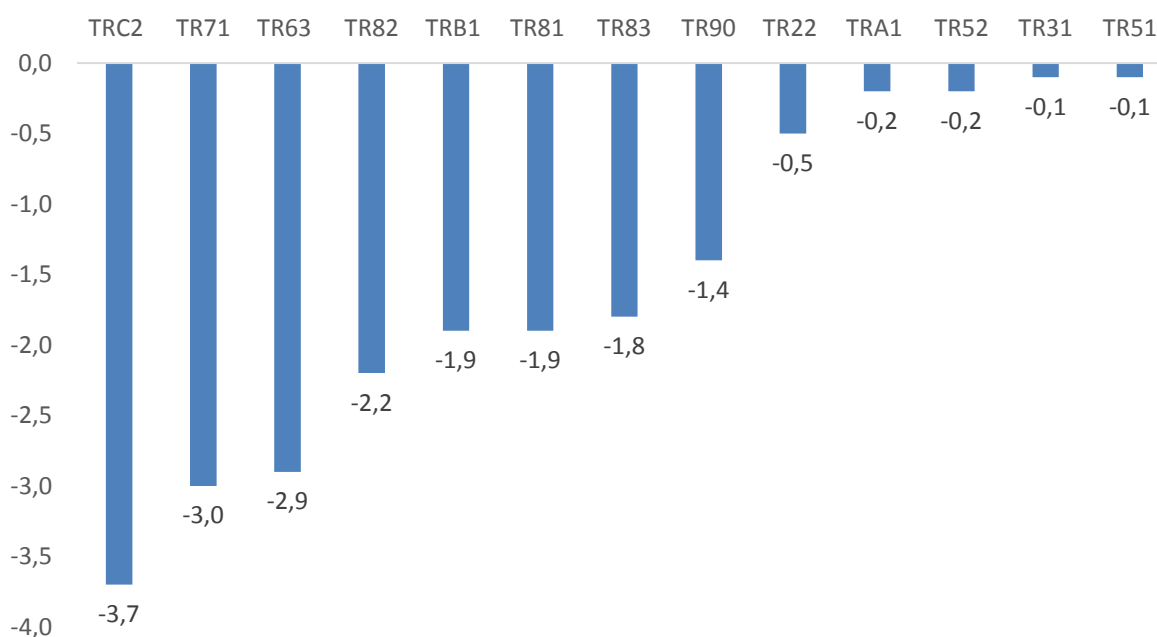
Figure 4 shows the regions where unemployment rate has decreased. **The strongest decline (3.7 pp) happened in Şanlıurfa-Diyarbakır (TRC2) region.** But despite this impressive improvement this region is ranked 3rd according to unemployment rates. This result is originated from a higher increase in employment (54 thousand) compared to the labor force (34 thousand) (Table 2). In this sense, it is a **quite positive development.** However, the positive improvement was not enough to get rid of the

worst area. We recall that employment rate in this region is among the lowest ones with 30.7 percent (Annex Table 1).

We stated that in the period of 2015-2016, Cappadocia is the worst region in terms of labor market dynamics because there was a jump in unemployment and this jump stemmed from the decrease in employment (see Betam Research Brief 17/211). Nonetheless, in 2016-2017, **Cappadocia (TR71) region is the second region in terms of decline in unemployment with 3 percentage points**. The reason behind the decline is a higher increase in employment than the labor force (24 thousand and 14 thousand, respectively) (Table 2). Although this positive improvement, Cappadocia (TR71) is above the national average (13 percent) with 15 percent of unemployment rate and below the national average with 36.5 percent in employment rate.

Regarding the positive labor market dynamics, there are other four regions where declines in unemployment rates stemmed from a stronger increase in employment than labor force. These regions are Hatay (TR63) (-2.9 pp), Kastamonu (TR82) (-2.2 pp), Samsun (TR83) (-1.8 pp) and Balıkesir (TR22) (-0.5 pp) respectively. Despite this, we should underline that Hatay region still have high unemployment rate (14.0 percent). On the other hand, the performance of Balıkesir (TR22) region which have already low unemployment rate is remarkable since the unemployment rate declined from 8.8 to 8.3 percent.

Figure 4: Regions where non-agricultural unemployment decreased u_{na} (in pp, 2016-2017)



Source: TUIK, Betam. TRC2: Şanlıurfa, Diyarbakır, TR71: Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir, TR63: Hatay, Kahramanmaraş, Osmaniye, TR82: Kastamonu, Çankırı, Sinop, TRB1: Malatya, Elazığ, Bingöl, Tunceli, TR81: Zonguldak, Karabük, Bartın, TR83: Samsun, Tokat, Çorum, Amasya, TR90: Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane, TR22: Balıkesir, Çanakkale, TRA1: Erzurum, Erzincan, Bayburt, TR52: Konya, Karaman, TR31: İzmir, TR51: Ankara.

Out of 13 regions where unemployment decreased, three regions differ from the other regions. In these regions, the effect of decreases of labour force on decreases on unemployment is remarkable. In Malatya (TRB1) region, while employment remains constant labour force decreases by 10 thousand causing a decrease of 1.9 percentage points in unemployment rate decreased by. In Zonguldak (TR81)

and Trabzon (TR90) regions, unemployment rates decreased by 1.9 and 1.4 percentage points while the labour force slightly declined by 1-2 thousand and the employment increased by 4-8 thousand.

Table 2: Change in non-agricultural labor force and employment in the regions where non-agricultural unemployment decreased (thousand, 2016)

Regions	Δ LFtd	Δ Etd	Δ utd
TRC2 (Şanlıurfa, Diyarbakır)	34	54	-3.7
TR71 (Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir)	14	24	-3.0
TR63 (Hatay, Kahramanmaraş, Osmaniye)	38	56	-2.9
TR82 (Kastamonu, Çankırı, Sinop)	7	10	-2.2
TRB1 (Malatya, Elâzığ, Bingöl, Tunceli)	-10	0	-1.9
TR81 (Zonguldak, Karabük, Bartın)	-2	4	-1.9
TR83 (Samsun, Tokat, Çorum, Amasya)	14	25	-1.8
TR90 (Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane)	-1	8	-1.4
TR22 (Balıkesir, Çanakkale)	8	10	-0.5
TRA1 (Erzurum, Erzincan, Bayburt)	19	18	-0.2
TR52 (Konya, Karaman)	21	21	-0.2
TR31 (İzmir)	56	49	-0.1
TR51 (Ankara)	62	57	-0.1

Source: TURKSTAT, Betam.

Note: Δ LFtd: the change in non-agricultural labor force, Δ Etd: the change in non-agricultural employment, Δ utd: the change in non-agricultural unemployment

General evaluation

While unemployment rate in Turkey remained constant at 13 percent from 2016 to 2017, regional labor markets behaved quite differently. The unemployment rate decreased in 13 regions, increased in 11 regions and did not change in 2 regions. The regional mean absolute deviation, 3.5 in 2016, increased to 3.7 in 2017. As result, the existing regional inequalities in unemployment have become even deeper. **There is actually a profound gap between the lowest (6.1 percent) and the highest non-agricultural unemployment rates (30.1 percent)** as if we are looking at different countries where labor markets present different characteristics. This striking divergence could not be explained only by insufficient labor mobility among regions. Factors like highly unequal development levels, large differences in female labor force participation and asymmetric effects of economic shocks produce particular labor market structures and dynamics for different regions.

Since a synthetic index of performance combining unemployment rate, employment ratio and both size and direction of changes in unemployment is no available yet, it is not possible to rank the regions systematically. Nevertheless, as we tried in this research brief, using the main labor market indicators it seems that it is at least possible to determine the regions in the worst and the best positions.

No doubt, Mardin-Batman-Şırnak-Siirt region is the worst case. This region has the highest non-agricultural unemployment rate in both 2016 and 2017. Also, this region has the lowest non-agricultural employment rate (24.8 percent). Although the unemployment rate remained constant this was result of decreases in labor force and employment. **Van-Muş-Bitlis region follows the Mardin region with 19.7 percent of unemployment and 29.5 percent of employment rates.** In addition, the

highest increase in unemployment (5.3 pp) is recorded in Van region. Kayseri-Sivas-Yozgat region may be considered as the worst third region. This region where employment rate was already standing below of country average, it joined the worst area with a strong increase of unemployment rate by 3.9 percentage points.

It is difficult to specify the region that clearly stands out in the best area. We stated the Thrace as the best case in 2016 without hesitation. But the increase of employment by 1 percentage points (from 8.8 to 9.8 percent) in 2017 renders the assessment relatively difficult. However, considering that the unemployment rate (9.8 percent) is still far below of the country rate (13 percent) and moreover, unemployment increased was the result of a stronger increase of labour force than increase of employment and finally employment rate increased to 49.5 percent, **we think that Thrace deserves the first place among the better performers.**

In other 3 regions (Aydın-Denizli-Muğla, Bursa-Eskişehir-Bilecik ve Kocaeli-Sakarya-Düzce-Bolu-Yalova) which are located in the best area, the unemployment rates also increased by 0.3-0.7 percentage points. Nevertheless, it is worthy to note that, like in Thrace, unemployment increases were the result of stronger increases in labour force than in employment. **Only exception is Ankara region where unemployment slightly decreased by 0.1 percentage points** as the result of a stronger increase of employment than labour force. Considering this performance, **Ankara must be considered without doubt as the second best performer after Thrace.**

Annex Table 1: Regional non-agricultural unemployment rates and non-agricultural employment ratios (% , 2017)

Regions	Non-agricultural unemployment rate	$E_{na}/(WAP - E_a)$
Turkey	13.0	41.8
TR21 (Tekirdağ, Edirne, Kırklareli)	9.8	49.5
TR10 (İstanbul)	14.0	49.1
TR51 (Ankara)	11.6	46.7
TR31 (İzmir)	15.1	44.9
TR42 (Kocaeli, Sakarya, Düzce, Bolu, Yalova)	12.4	44.8
TR41 (Bursa, Eskişehir, Bilecik)	10.6	43.9
TR32 (Aydın, Denizli, Muğla)	9.2	43.8
TR61 (Antalya, Isparta, Burdur)	14.4	43.7
TR33 (Manisa, Afyon, Kütahya, Uşak)	13.0	41.8
TR52 (Konya, Karaman)	8.6	40.0
TR62 (Adana, Mersin)	7.8	39.8
TR82 (Kastamonu, Çankırı, Sinop)	12.8	38.9
TR90 (Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane)	8.2	38.5
TR22 (Balıkesir, Çanakkale)	6.1	38.3
TRB1 (Malatya, Elâzığ, Bingöl, Tunceli)	8.3	37.8
TR81 (Zonguldak, Karabük, Bartın)	10.2	37.7
TR71 (Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir)	10.3	37.1
TR72 (Kayseri, Sivas, Yozgat)	15.0	36.5
TRC1 (Gaziantep, Adıyaman, Kilis)	15.3	36.5
TR83 (Samsun, Tokat, Çorum, Amasya)	16.5	36.5
TR63 (Hatay, Kahramanmaraş, Osmaniye)	10.6	36.4
TRA1 (Erzurum, Erzincan, Bayburt)	14.0	36.0
TRC2 (Şanlıurfa, Diyarbakır)	8.6	34.3
TRA2 (Ağrı, Kars, Iğdır, Ardahan)	19.5	30.7
TRB2 (Van, Muş, Bitlis, Hakkâri)	11.2	29.7
TRC3 (Mardin, Batman, Şırnak, Siirt)	19.7	29.5

Source: Turkstat, Betam

Note: E_a : Agricultural employment, E_{na} : Non-agricultural employment, WAP: Working age population

Annex Table 2: Regional non-agricultural female employment rate (2017)

Regions	Non-agricultural female employment (%)
Turkey	22.5
TR10 (İstanbul)	30.4
TR21 (Tekirdağ, Edirne, Kırklareli)	29.3
TR51 (Ankara)	27.6
TR31 (İzmir)	27.5
TR32 (Aydın, Denizli, Muğla)	26.5
TR61 (Antalya, Isparta, Burdur)	25.6
TR41 (Bursa, Eskişehir, Bilecik)	24.7
TR42 (Kocaeli, Sakarya, Düzce, Bolu, Yalova)	24.6
TR62 (Adana, Mersin)	21.2
TR82 (Kastamonu, Çankırı, Sinop)	21.0
TR90 (Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane)	20.7
TR22 (Balıkesir, Çanakkale)	20.3
TR33 (Manisa, Afyon, Kütahya, Uşak)	19.4
TR81 (Zonguldak, Karabük, Bartın)	18.6
TR83 (Samsun, Tokat, Çorum, Amasya)	18.2
TRB1 (Malatya, Elâzığ, Bingöl, Tunceli)	17.5
TR52 (Konya, Karaman)	17.1
TR63 (Hatay, Kahramanmaraş, Osmaniye)	16.2
TR71 (Kırıkkale, Aksaray, Niğde, Nevşehir, Kırşehir)	15.2
TRC1 (Gaziantep, Adıyaman, Kilis)	15.1
TRA1 (Erzurum, Erzincan, Bayburt)	14.6
TR72 (Kayseri, Sivas, Yozgat)	14.4
TRC2 (Şanlıurfa, Diyarbakır)	10.7
TRA2 (Ağrı, Kars, Iğdır, Ardahan)	8.6
TRB2 (Van, Muş, Bitlis, Hakkâri)	7.4
TRC3 (Mardin, Batman, Şırnak, Siirt)	7.2

Source: Turkstat, Betam

BOX: The impact of agricultural employment on regional unemployment rates

Turkish Statistical Institute releases overall and non-agricultural unemployment rates separately for the 26 regions (NUTS 2). To conduct a regional comparison, which of these rates should we preferred? This is a legitimate question since not only there exist large gaps between two rates for numerous regions but also the regional ranking according to these rates are different. For example, Ağrı-Kars-Iğdır-Ardahan (TRA2) region holding general unemployment rate of 4.9 percent is ranked second from bottom but it is ranked 2th with a non-agricultural unemployment rate of 10.3 percent.

The principal source of the gap between overall and non-agricultural rates is the large differences in the share of agricultural employment in total employment across regions. The Turkish agriculture sector is mainly dominated by family producers. The unemployment rate in agriculture is very low because individual members of farming families participate more or less in economic activities. Indeed, we measure the number of unemployed in non-agricultural sector as 3 million 396 thousand for 2017 by using the non-agricultural unemployment rate (13 percent) and the non-agricultural employment (22 million 725 thousand). Since the number of total unemployed is 3 million 454 thousand in 2017, the number of unemployed in agriculture can be estimated at 58 thousand level.

Assuming that unemployment in agriculture does not exist, the link between overall unemployment rate and non-agricultural rate can be formulated as below:

$$U \sim U_{na} \rightarrow \frac{u_{na}}{u} = \frac{U_{na}}{LF_{na}} \times \frac{LF}{U} \sim \frac{LF_{na} + LF_a}{LF_{na}} = 1 + \frac{LF_a}{LF_{na}}$$

U : Total number of unemployed; U_{na} : Number of non-agricultural unemployed, u : Unemployment rate
 u_{na} : Non-agricultural unemployment rate LF : Total labor force; LF_{na} : Non-agricultural labor force; LF_a : Agricultural labor force

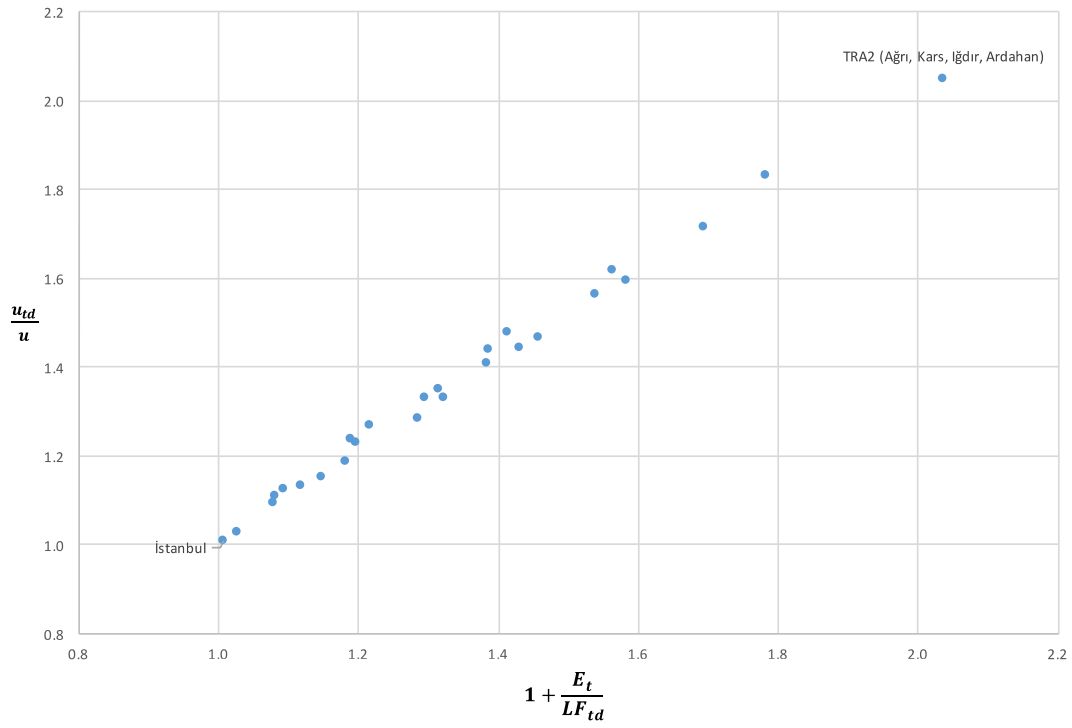
$$U \sim U_{na} \rightarrow LF_a \sim E_a; E_a = \text{agricultural employment}$$

$$\frac{u_{na}}{u} = 1 + \frac{E_a}{LF_{na}}$$

$\frac{u_{na}}{u}$ ratio represents the relative difference between the overall and the non-agricultural unemployment rates, $\frac{E_a}{LF_{na}}$ ratio represents the relative weight of agricultural employment.

The figure below shows the link between the relative differences among the overall and the non-agricultural unemployment rates ($\frac{u_{na}}{u}$) and the relative weight of agricultural employment ($\frac{E_a}{LF_{na}}$) for 26 regions using Turkstat data.

Annex Figure 1 : Relationship between $\frac{u_{na}}{u}$ and $1 + \frac{E_a}{LF_{na}}$ (2017)



Source: Turkstat, Betam