A CROSS- REGIONAL WELFARE COMPARISON FOR TURKEY

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Executive Summary

TURKSTAT has published the data for regional household consumption expenditures by combining the household expenditure surveys that it had conducted in 2005-2006-2007. We have compared Turkish regional welfare levels, by using their shares in the total expenditure categorized according to main expenditure groups. To do this, we have adjusted the regional data according to their shares in the total population, and to the relevant regional price indices. Following these adjustments, we are able to compare the average consumer's real consumption across regions.

These adjustments yield three important results. First, İstanbul still holds the first place in welfare terms. Second, the gaps between North-East Anatolia, Middle-East Anatolia, South-East Anatolia and the rest of Turkey are considerably wide and South-East Anatolia is significantly behind on the welfare scale. Third, apart from these three Eastern Anatolian regions, there are no large welfare differences across regions.

Household Consumption Expenditures and Welfare Levels

TURKSTAT has published the data for regional household consumption expenditures by combining the household expenditure surveys that it had conducted in 2005-2006-2007.[1] The data consists of the shares of regions in total (countrywide) expenditures categorized according to main expenditure groups. Our aim is to highlight the regional welfare differences.

The importance of household expenditures stems from the fact that they constitute an important measure of household welfare. It is generally agreed upon that the expenditure data is more reliable than the income data for welfare analysis, as the latter has a low probability of being measured correctly due to false or missing statements (particularly in developing countries) and also it is not very easy to account for the non-wage income accurately. Therefore, expenditure is generally preferred to income in the welfare literature.

Table 1 presents the city contents of NUTS-1 regions which are used in the Household Expenditure Survey. [2]

Table 1 City contents of NUTS-1 regions.

Name of Region	Cities
İstanbul	İstanbul
West Marmara	Edirne, Tekirdağ, Kırklareli, Çanakkale, Balıkesir

Aegean	İzmir, Manisa, Kütahya, Uşak, Afyon, Aydın, Denizli, Muğla
East Marmara	Bursa, Yalova, Kocaeli, Bilecik, Sakarya, Düzce, Bolu, Eskişehir
West Anatolia	Ankara, Konya, Karaman
Mediterranean	Burdur, Isparta, Antalya, İçel, Adana, Hatay, Osmaniye, Kahramanmaraş
Central Anatolia	Kırıkkale, Kırşehir, Aksaray, Niğde, Nevşehir, Yozgat, Kayseri, Sivas
West Black Sea	Zonguldak, Bartın, Karabük, Kastamonu, Çankırı, Sinop, Çorum, Samsun, Amasya, Tokat
East Black Sea	Ordu, Giresun, Gümüşhane, Trabzon, Rize, Artvin
North-East Anatolia	Erzincan, Bayburt, Erzurum, Ardahan, Kars, Ağrı, Iğdır
Middle-East Anatolia	Malatya, Elazığ, Tunceli, Bingöl, Muş, Bitlis, Van, Hakkari
South-East Anatolia	Gaziantep, Kilis, Adıyaman, Şanlıurfa, Diyarbakır, Mardin, Batman, Siirt, Şırnak

Data Adjustment

In order to perform a cross-regional comparison of welfare, the regional data should be adjusted according to two factors: Population and regional price indices.

Population Adjustment

For a cross-regional welfare comparison, it is crucial to adjust each region's expenditure share with respect to their population shares. As the consumption expenditures in a region are positively correlated with the number of people inhabiting that region, adjusting the expenditure shares according to each region's population share would yield a relatively comparable dataset. Table 2 presents the populations and population shares of each region in 2007 based on the Address Based Population Registration System.[3]

Table 2 Regional populations and population shares.

NAME OF REGION	POPULATION	POP. SHARE
İstanbul	12,573,836	17.8%
West Marmara	3,052,555	4.3%
Aegean	9,299,322	13.2%
East Marmara	6,417,153	9.1%
West Anatolia	6,651,887	9.4%
Mediterranean	8,906,427	12.6%
Central Anatolia	3,776,927	5.4%
West Black Sea	4,477,457	6.3%
East Black Sea	2,488,652	3.5%
North-East Anatolia	2,212,759	3.1%
Central-East Anatolia	3,558,432	5.0%
South-East Anatolia	7,170,849	10.3%
TOTAL	70,586,256	100%

Taking the population shares into account allows us to compare the average consumers in each region and thus provides us with the possibility of establishing a framework for cross-regional welfare comparison. As clearly seen in Table 2, the distribution of the population across regions is not uniform. 18% of the population lives in İstanbul. The two

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[3] It might have been more suitable to use the average of 2005-2006-2007 populations and population shares, as those are the years in which the Household Expenditure Survey was conducted. However, TURKSTAT has not updated the population projections for 2005 and 2006, using the Address Based Population Registration System yet.

most populated regions are İstanbul and the Aegean and the least populated regions are North-East Anatolia and Eastern Black Sea regions.

Adjusting for Regional Price Indices

Another element which might influence the regional expenditure disparity is the cross-regional price differential, i.e. the price differences across regions of the same good or service. Hence we adjust the population-adjusted regional consumption expenditure shares with respect to 3-year-averages (2005-2006-2007) of the regional price indices categorized according to main expenditure groups. By doing so, we are able to compare to some extent the average *real* consumption across regions.[4]

Converting Regional Price Indices from NUTS-2 to NUTS-1

TURKSTAT publishes regional price indices categorized according to main expenditure groups at the NUTS-2 level. We have converted this dataset into the NUTS-1 level, in order to use it in adjusting the regional expenditure dataset. The methodology of the conversion is as follows: We have obtained a coefficient for each NUTS-2 region from the relationship between the NUTS-2-based within-region expenditure shares and NUTS-1- based within-region expenditure shares. Then, we used this coefficient in summing the NUTS-2 price indices, e.g. The Western Marmara region allocates 23.6% of its spending to food and non-alcoholic beverages and 5% of its spending to alcoholic beverages and tobacco. For two NUTS-2 regions that make up the Western Marmara region: Tekirdağ-Edirne-Kırklareli and Balıkesir-Çanakkale, these shares are 20.6% - 4.5% <u>and</u> 27.5% - 6.2% respectively. From 20.6x + 27.5y = 23.6 and 4.5x + 6.2y = 5, we can solve for x and y and then substitute them into x *TEK price +y*BÇ price to obtain the regional price indices on NUTS-1 level. Our approach might be introducing a bias as the relationship between expenditure shares and price indices may not be completely analogous. We do not expect this bias to significantly alter the main results of our analysis.
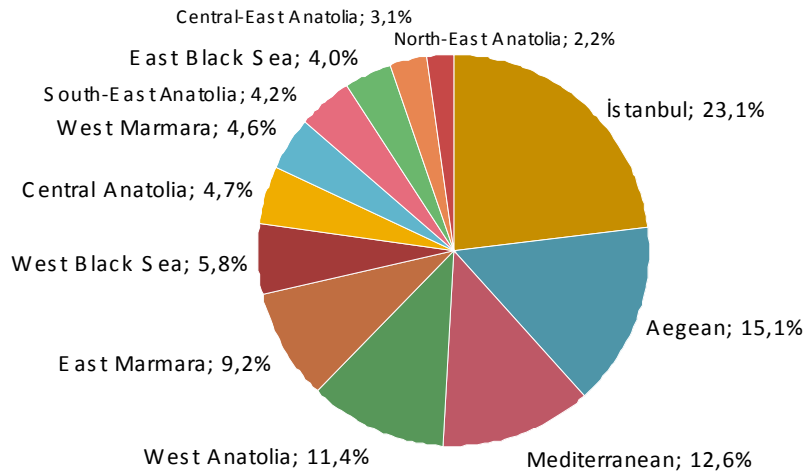

In welfare terms, İstanbul holds the first place, while South-East Anatolia holds the last place.

The figures below present the unadjusted, population adjusted, and population and regional-price-indices-adjusted cross-regional consumption expenditure distributions respectively.
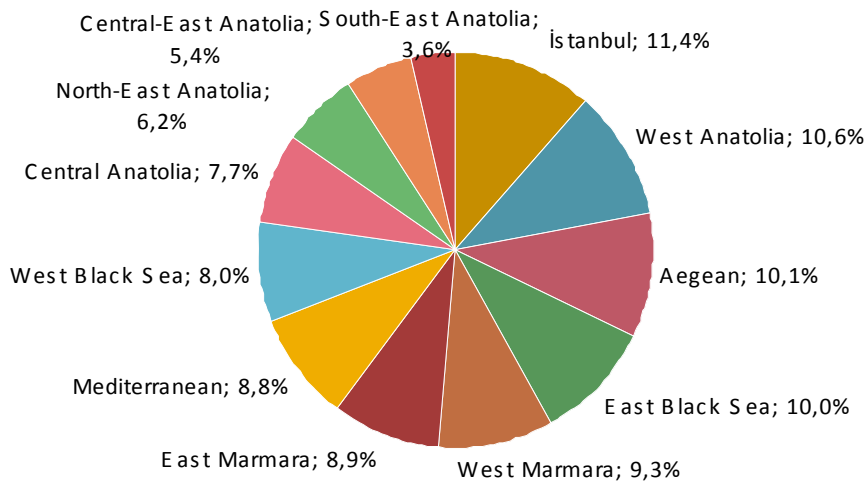
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[4] When constructing regional price indices, TURKSTAT ignores the cross-section dimension and takes into account solely the time dimension, which means that the regional price indices do not reflect the price differentials between regions at the starting year of the index. Thus, using these indices to adjust our data does not mean that we fully take into account the regional price differences. Instead, it takes into account the cross-regional differences in **inflation rates**. (E.g. an index constructed as İstanbul = 2003 = 100, Southeastern Anatolia = 2003 = 100 implicitly assumes that the starting year prices in both regions are the same, thus allowing only for incorporating the inflation differential. If instead, it was constructed as İstanbul = 2003 = 100, Southeastern Anatolia = 2003 = 85, it would allow for the inclusion of both the differences in price level and inflation rate in the picture).

Figure 1 Unadjusted regional expenditure shares in total consumption expenditures.

Central-East Anatolia; 3,1%
North-East Anatolia; 2,2%
East Black Sea; 4,0%
South-East Anatolia; 4,2%
West Marmara; 4,6%
Central Anatolia; 4,7%
West Black Sea; 5,8%
East Marmara; 9,2%
West Anatolia; 11,4%
Mediterranean; 12,6%
Aegean; 15,1%
İstanbul; 23,1%

Figure 2 Population adjusted regional expenditure shares.

Central-East Anatolia; 5,4%
South-East Anatolia; 3,6%
North-East Anatolia; 6,2%
Central Anatolia; 7,7%
West Black Sea; 8,0%
Mediterranean; 8,8%
East Marmara; 8,9%
West Marmara; 9,3%
East Black Sea; 10,0%
Aegean; 10,1%
West Anatolia; 10,6%
İstanbul; 11,4%

Figure 3 Population adjusted regional expenditure shares that are adjusted with respect to regional price indices.

Central-East Anatolia; 5,6%
South-East Anatolia; 3,8%
North-East Anatolia; 6,2%
Central Anatolia; 7,8%
West Black Sea; 8,1%
East Marmara; 8,7%
Mediterranean; 8,8%
West Marmara; 9,2%
Aegean; 9,9%
East Black Sea; 10,2%
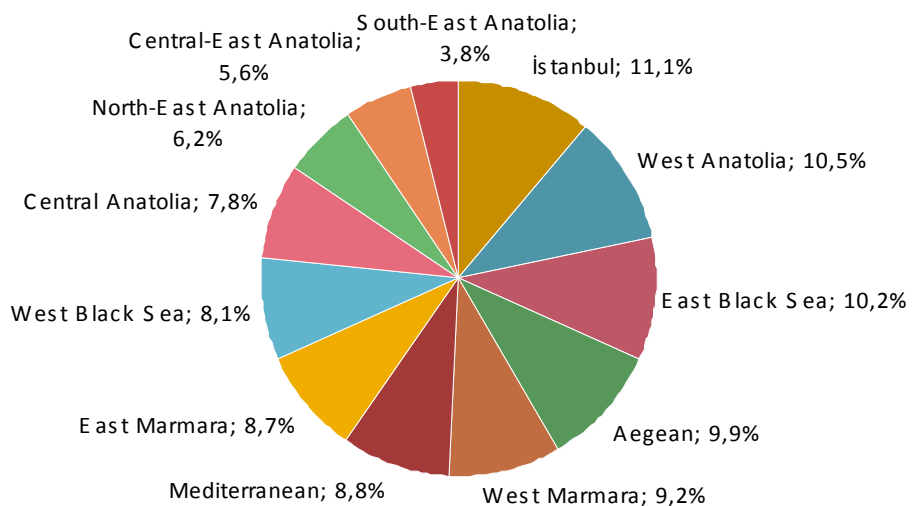West Anatolia; 10,5%
İstanbul; 11,1%

Figure 3 reveals that the adjustments that we have made alter the results given in Figure 1 significantly. The share of İstanbul decreases dramatically (more than 50%) and the shares of Aegean and Mediterranean regions fall considerably too. While the share of the South-East Anatolia declines somewhat due to its high share in population, all of the remaining regions experience a rise in their shares. A visual comparison of Figure 1 and Figure 3 reveals that the adjustments alter the ordering significantly as well. Particularly, the increase from 4% to 10.2% in East Black Sea region's expenditure and the replacement of this region from 9th place to 3rd place highlights the importance of population adjustment and adjustment according to regional price indices. Another point that needs to be emphasized is that the major part of the variation originates from the population adjustment. This is clear when Figures 1, 2 and 3 are compared.

Additionally, we present the fully adjusted regional expenditure distribution classified according to main expenditure groups.

Table 3 Population and price adjusted regional expenditure distributions, classified according to main expenditure groups.

| REGION	Food and Non-Alcoholic Bever.	Alcoholic Bev., Cig., Tobac.	Clothing and Footwear	Housing and Rent	Furn.., home care serv.	Health	Transport.	Comm.	Ent. and Culture	Educ. Services	Rest. and Hotels	Various Goods and Services
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
İstanbul	8.8%	9.7%	8.7%	13.5%	8.4%	14.9%	12.4%	11.2%	10.5%	14.2%	16.7%	10.7%
W. Marmara	8.4%	10.8%	9.0%	9.5%	8.6%	9.4%	10.2%	8.9%	9.6%	9.6%	10.8%	9.4%
Aegean	8.9%	10.5%	9.5%	10.3%	9.5%	10.0%	11.9%	9.9%	11.7%	8.3%	10.0%	8.7%
E. Marmara	7.8%	8.9%	8.2%	9.1%	8.2%	8.8%	9.1%	8.7%	9.2%	6.6%	10.4%	10.3%
W. Anatolia	9.0%	10.1%	9.5%	12.0%	9.5%	9.5%	11.3%	11.0%	13.3%	16.2%	10.1%	10.3%
Mediterran.	9.0%	7.9%	8.8%	8.1%	9.1%	9.2%	9.9%	8.8%	9.5%	11.2%	7.9%	9.0%
C. Anatolia	8.5%	9.7%	8.7%	8.0%	8.2%	6.6%	5.7%	7.8%	6.8%	6.1%	5.0%	6.7%
W. Black Sea	8.9%	7.6%	7.9%	7.5%	10.6%	8.5%	7.1%	8.0%	8.0%	7.1%	6.4%	8.9%
E. Black Sea	10.5%	9.4%	10.1%	8.4%	11.3%	11.9%	11.0%	10.9%	9.9%	9.8%	10.7%	11.8%
North-East Anatolia	7.4%	7.2%	7.2%	6.0%	6.7%	2.5%	4.9%	6.7%	5.5%	4.9%	5.3%	5.6%
Central-East Anatolia	6.9%	4.6%	7.2%	4.5%	6.3%	5.5%	4.4%	4.9%	3.9%	4.0%	4.9%	5.2%
South-East Anatolia	5.8%	3.7%	5.1%	3.0%	3.6%	3.1%	2.0%	3.2%	2.1%	2.0%	1.7%	3.4%

İstanbul holds the first place in only 4 out of 12 main expenditure groups, namely housing, health, communication and restaurants and hotels. Eastern Black Sea region holds the first place in food and non-alcoholic beverages, clothing and footwear, furniture and home care services and various goods and services. The biggest share in educational services and entertainment and cultural spending belongs to West Anatolia which contains the capital city Ankara. The biggest share in alcoholic beverages and tobacco related product spending belongs to West Marmara. An average consumer in the Aegean region spends the most for transportation. South-East Anatolia, on the other hand, holds the last place in every main expenditure group.

These adjustments also allow us to conduct cross-regional welfare comparisons through comparing the real consumption expenditures of an "average" consumer across regions.

As seen in Figure 3, the width of the gap between the three regions with the lowest welfare levels and three regions with the highest welfare levels is striking. Moreover, South-East Anatolia clearly appears detached in terms of welfare, from the rest of Turkey.

Figure 4 shows the distances of expenditure shares to the median expenditure share across regions. The median expenditure share lies between an average consumer in East Marmara and an average consumer in the Mediterranean. This figure reveals that the distance of the three East-Anatolian regions to the median of Turkey is larger (both in absolute terms and compared to negative regions) than the rest of Turkey. The reason that we use median instead of average is that when expenditure and income are considered, the average tends to be affected by outliers whereas the median provides a better measure of central tendency. In this particular case, an average consumer in İstanbul spends around 2.5 percentage points more than the median, whereas the average consumers of the Eastern Anatolian regions who are in the lower end of the distribution spend much less than the median (almost 5 percentage points less than the median).

Figure 4 Deviations of the adjusted regional expenditure shares from the median.
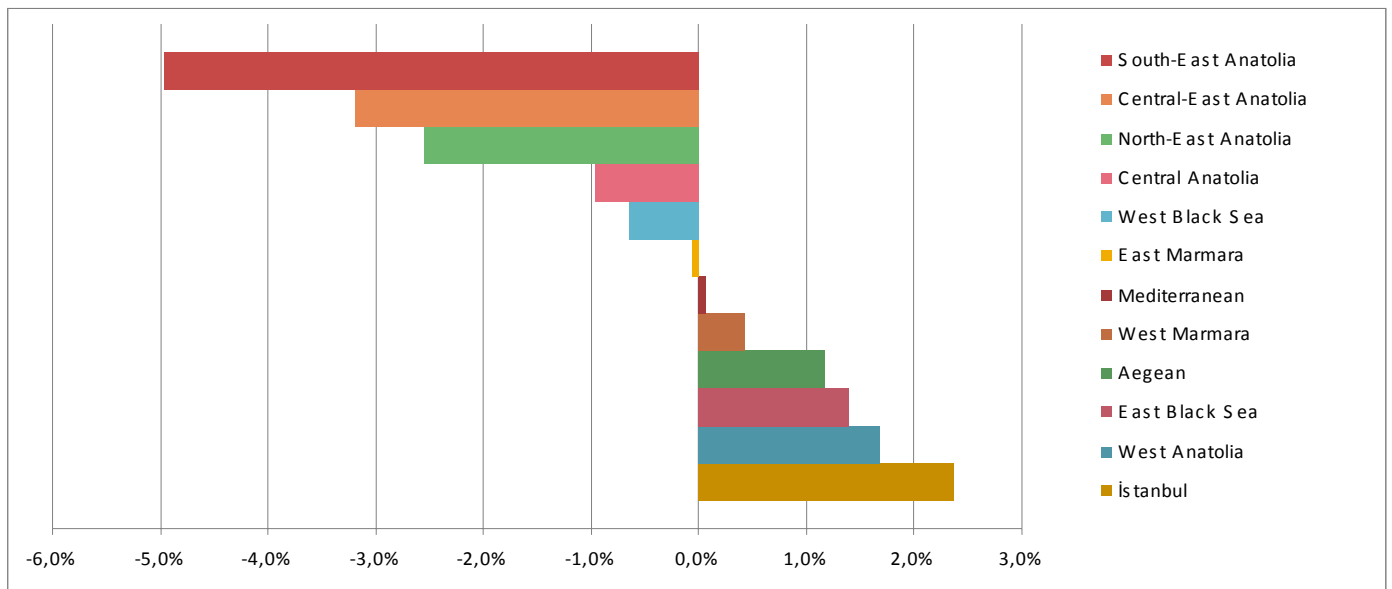
Additionally, in Table 4, to emphasize the welfare positions of East-Anatolian regions (with a particular emphasis on South-East Anatolia), we present the real expenditure of an average household residing in İstanbul as a multiple of the real expenditure of average households residing in other regions.

Table 4 contains some interesting facts. An average household residing in İstanbul spends in total, nearly 1.8 times more than the one residing in North-East Anatolia, 2 times more than an average household residing in Central-East Anatolia and 3 times more than an average household residing in South-East Anatolia. Focusing on sub-groups of expenditures, we can see that an average household residing in İstanbul consumes 1.5 times more of food and non-alcoholic beverage and 1.7 times more of clothing and footwear goods than an average household from South-East Anatolia. Notice that when it comes to food and non-alcoholic beverages, the average household in İstanbul does not spend much than those residing in non-Eastern Anatolian regions. Nevertheless, the gap starts to widen when non-food expenditure groups are concerned. An average household residing in İstanbul spends 2.9 times more on education than an average North-East Anatolian, 3.6 times more than an average Central-East Anatolian and nearly 7 times more

than an average South-East Anatolian. It allocates, in real terms, 1.5 times more to restaurant and hotel spending than an average Aegean which is the nearest to itself in that sub-group and a massive 10 times more than an average South-East Anatolian which is the most distant to itself in that expenditure sub-group. Furthermore, even though housing and health expenditures are not as crucial as food and clothing for subsistence, the gaps concerning these are substantial as well.

Table 4 The real expenditure of an average household residing in İstanbul, as the multiple of the real expenditures of average households residing in other regions.

REGION	TOTAL	Food and Non-Alcoholic Bever.	Alcoholic Bev., Cig., Tobac.	Clothing and Footwear	Housing and Rent	Furn.., home care serv.	Health	Transport.	Comm.	Ent. and Culture	Educ. Services	Rest. and Hotels	Various Goods and Services
W. Marmara	1.2	1.0	0.9	1.0	1.4	1.0	1.6	1.2	1.3	1.1	1.5	1.5	1.1
Aegean	1.1	1.0	0.9	0.9	1.3	0.9	1.5	1.0	1.1	0.9	1.7	1.7	1.2
E. Marmara	1.3	1.1	1.1	1.0	1.5	1.0	1.7	1.4	1.3	1.1	2.1	1.6	1.0
W. Anatolia	1.1	1.0	1.0	0.9	1.1	0.9	1.6	1.1	1.0	0.8	0.9	1.6	1.0
Mediterran.	1.3	1.0	1.2	1.0	1.7	0.9	1.6	1.2	1.3	1.1	1.3	2.1	1.2
C. Anatolia	1.4	1.0	1.0	1.0	1.7	1.0	2.2	2.2	1.4	1.6	2.3	3.3	1.6
W. Black Sea	1.4	1.0	1.3	1.1	1.8	0.8	1.8	1.7	1.4	1.3	2.0	2.6	1.2
E. Black Sea	1.1	0.8	1.0	0.9	1.6	0.7	1.3	1.1	1.0	1.1	1.4	1.6	0.9
North-East Anatolia	1.8	1.2	1.3	1.2	2.2	1.3	5.9	2.5	1.7	1.9	2.9	3.1	1.9
Central-East Anatolia	2.0	1.3	2.1	1.2	3.0	1.3	2.7	2.8	2.3	2.7	3.6	3.4	2.1
South-East Anatolia	2.9	1.5	2.6	1.7	4.5	2.4	4.8	6.1	3.5	5.0	6.9	10.0	3.2

Even though the imperfect price-index adjustment might affect the size of the gap between the regions with lowest welfare levels and the regions with highest and middle welfare levels, it would be unrealistic to assume that this imperfection could be a major determinant of the gap. Finally, we might say that even the welfare differences between non-East Anatolian regions are more or less at socially acceptable levels, the gap between the East Anatolian regions, (especially for South-East Anatolia) and the non-East Anatolian regions is huge, and that this picture might potentially imply a lack of "middle class" in East Anatolian regions.