GDP GROWTH IN TURKEY: INCLUSIVE OR NOT?

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ABSTRACT In this paper, we discover the inclusiveness of GDP growth in Turkey over the course of the last decade. In doing so, we use a recently developed method a la Anand et al. (2013) which integrates efficiency and equity dimensions of economic growth in a single measure. We find that Turkish GDP growth was - on average - inclusive between 2002 and 2011. We also investigate cross-region and over-time developments for the available data period, and document significant heterogeneity in inclusiveness of economic growth across these dimensions. Moreover, the regional analysis based on 2006-2011 period reflects an efficiency-equity tradeoff in Turkey's economic growth.

JEL D63, O47, R11

Keywords Turkey, Inclusive growth, Regional growth, Income distribution, Per capita income

ÖZ Bu çalışma Türkiye'nin son on yıldaki GSYH büyümesini "kapsayıcılık" açısından incelemektedir. Bunu yaparken Anand ve diğerlerinin (2013) geliştirmiş olduğu, büyümenin verimlilik ve dengeli dağılım özelliklerini bir arada incelemeye olanak tanıyan yeni bir ölçüm metodu kullanılmaktadır. Temel bulgular Türkiye'de büyümenin 2002-2011 dönemi için kapsayıcı olduğunu göstermektedir. Bölgesel ve dönemsel gelişmelere odaklanıldığında, büyüme performansı açısından bölgeler arasında ve alt dönemlerde hatırı sayılır farklılaşmalar dikkati çekmektedir. Ayrıca, bölgesel analiz bulguları Türkiye'nin GSYH büyümesinde bir verimlilik-dağılım ödünleşimi ortaya koymaktadır.

TÜRKİYE'DE GSYH BÜYÜMESİ: KAPSAYICI MI DEĞİL Mİ?

JEL D63, O47, R11

Anahtar Kelimeler Türkiye, Kapsayıcı büyüme, Bölgesel büyüme, Gelir dağılımı, Kişi başına düşen milli gelir

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1. Introduction

In this paper we investigate the inclusiveness of GDP growth in Turkey between 2002 and 2011 using a recently developed method a la Anand et al. (2013) which decomposes growth into efficiency and equity dimensions.[1] The empirical results suggest that Turkish GDP grew inclusively - on average – between 2002 and 2011. A focus on the time dimension reveals sizable distortion in inclusiveness of growth during the Great Recession period. Moreover, we find substantial heterogeneity in inclusiveness across regional growth figures, which also reflect an efficiency-equity tradeoff in Turkish GDP growth.

The method we use (Anand et al. 2013) is based on a utilitarian social welfare function in which inclusiveness depends on income growth and distribution. It decomposes growth into efficiency and equity dimensions. Hence it allows separating the contributions of per capita income and distributional developments to inclusiveness of growth, and reflects the pro-poor economic growth as well.[2]

Adverse distributional consequences of Great Recession stimulated the discussion of inclusive growth recently in both academic and policy circles.[3] We contribute to this discussion by investigating the inclusiveness of economic growth in Turkey over the course of the last decade which contains the Great Recession as well as a strong growth period before and after the crisis. Although there is no unique definition of inclusive growth in the literature, one can briefly describe it as a model of growth in which benefits and opportunities derived from economic growth are distributed equitably across different parts of society. So, there are two main components of the concept of inclusive growth; first there should be improvement, second the benefits of this improvement should be broad-based. These two dimensions of the concept of inclusive growth are captured in the formulation we use (Anand et al. 2013) and named with "efficiency" and "equity" terms, respectively.

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[1] We focus on the period between 2002 and 2011 due to data limitation.
[2] See Kraay (2004) and Ravallion and Chen (2003) for a detailed discussion on pro-poor growth.
[3] See World Bank (2009), De Mello and Dutz (2012), Ianchovichina and Lundstrom (2012), http://www.ipc-undp.org and http://www.oecd.org/inclusive-growth.

Figure 1. Turkish GDP (PPP-constant USD) and Unemployment
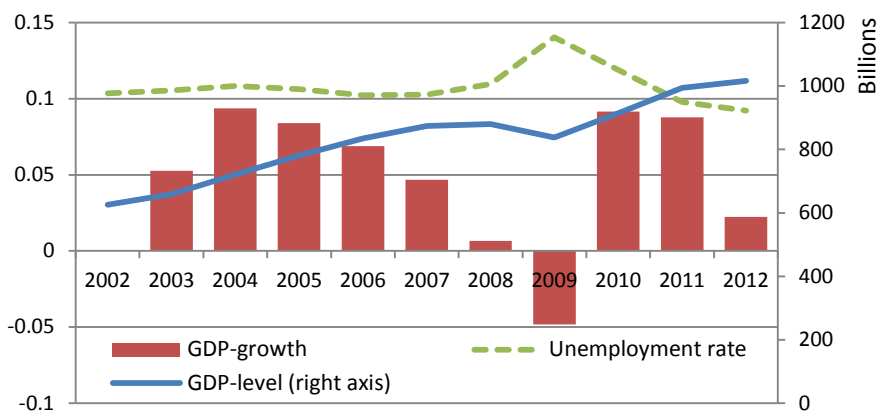
Source: TURKSTAT and OECD.

Turkey grew by 5.1% per year on average between 2002 and 2011. Reflections of this economic growth varied over time. In particular, between 2002 and 2007, average annual growth rate was 6.9%, however unemployment rate stayed relatively flat. Therefore it spurred a discussion of jobless and non-inclusive growth for that period. On the other hand, during the recovery period after Great Recession, economic growth came along with a sharp decline in unemployment, which is supposed to be reflected in better distributional consequences (Figure 1). Motivated by these discussions, we elaborate on the GDP growth of Turkey over the last decade and document the inclusiveness developments using a recent measure (Anand et al. 2013).

Calculations based on 2002-2011 period show that inclusiveness of Turkish GDP growth improved by 5.8% per year on average. Increase in per capita income contributed roughly two thirds of this improvement, and distributional developments (equity) contributed the rest of the progress in inclusiveness. When we exclude the period of Great Recession (2008-2009), inclusiveness progress turns out to be 9.1% per year on average. Urban versus rural area comparison returns that during 2006-2011 (available period), urban area improved equity better than rural area, whereas rural area outperformed in terms of per capita income growth.

We observe significant heterogeneity when we elaborate on regional developments between 2006 and 2011. In terms of aggregate inclusiveness progress, Mediterranean region performed best with an average annual inclusiveness growth rate of roughly 7%. It is followed by West Black Sea and Southeast Anatolia with 6% average annual improvement in

inclusiveness measure. East Marmara, Central Anatolia, and East Black Sea improved inclusiveness at an average annual rate of .5-1.5% which is the lowest rate of improvement among the regions. The rest of the regions improved between 2-4.5% per year. We also check whether this heterogeneity is related with developments in the vulnerable groups in Turkish labor market. In particular, we show that increase in non-agricultural low-skilled employment rate and non-agricultural female employment rate are positively correlated with the improvement in inclusiveness during the period of 2006-2011.

We elaborate more on the heterogeneity in inclusiveness by decomposing into per capita income and equity dimensions, which reflects an efficiency-equity tradeoff during the period of 2006-2011 for the twelve regions of Turkey. In other words, a better performance in per capita income improvement is, on average, associated with a worse performance in equity improvement, especially in the medium term.

We also calculate the size of deterioration in inclusiveness for the twelve regions during the Great Recession, and observe substantial heterogeneity. During 2008-2009, the inclusiveness is deteriorated most for Northeast Anatolia (20%). The least affected region is Mediterranean in which per capita income is decreased and equity is increased, and in aggregate terms inclusiveness is slightly improved (1%). Inclusiveness deteriorated between 3-15% per year in the rest of the regions during the Great Recession. Moreover, the most affected (measured as percentage decrease in per capita income) income deciles were the lowest earning ones during the corresponding period.

While the focus of this paper is on the particular case of Turkey, the intersection of growth and inequality literatures which also motivated the term inclusive growth paid attention on a broad set of questions. For instance, a number of studies including Ali and Son (2007), Kakwani and Pernia (2000), and Ravaillon and Chen (2003) developed methods for measuring inclusive, equitable or pro-poor growth.

A number of studies searched for the optimal policies to promote an equitable distribution of benefits and opportunities accrued from economic growth. For instance, Christiaensen et al. (2002) provide evidence on the interaction between various policies and poverty reduction using an African cross-country dataset. Klasen (2003, 2005) discuss policy options to achieve equitable growth. Immervoll and Richardson (2011) document evidence on redistribution policies and their effects on inequality in OECD countries. Some papers in the literature focused attention on the tradeoff between growth and inequality using cross country data (Forbes 2000, Banerjee and Duflo 2003, Deininger and Squire 1998, Li and Zou 1998, Barro 2000),

whereas others investigated the particular cases of different countries in terms of the evolution of growth and inequality (Datt and Ravallion 2002, McCulloch et al. 2000, Goh et al. 2009). Our paper aims to contribute to this strand of the empirical literature on economic growth by studying the case of Turkey.

Rest of the paper is organized as follows: we introduce the method of inclusiveness measurement in Section 2, we present the dataset in Section 3, we discuss the empirical results in Section 4, and we conclude in Section 5.

2. Measuring Inclusiveness

In this section we elaborate on the method of inclusiveness measurement developed by Anand et al. (2013).[4] Their idea of inclusiveness measurement is based on generalized concentration curves, which is constructed from social mobility curves.[5] A social mobility curve is defined as:

$$S \equiv \{y_i\}_{i=1}^n$$

where numbers 1 to n represent poorest to the richest people in the population. A generalized concentration curve is defined as a cumulative distribution of a social mobility curve as follows:

$$S^C \equiv \{\bar{y}_i\}_{i=1}^n$$

where we define:

$$\bar{y}_i \equiv \sum_{k=1}^{i} y_k / i$$

The arguments ($\bar{y}^i$) of generalized concentration curve (S^C) represent the average income of the bottom 'i' percent of population, therefore $\bar{y}^n$ represents average income in the population. Here, the index 'i' does not have to be percentiles; it can represent quintiles, quartiles, or another grid depending on data availability. Finer grids increase accuracy of measurement.

Shown in Figure 2 are various generalized concentration curves. They can be considered as shifted versions of each other. Now we are going to elaborate more on these curves to understand the inclusiveness implications of these types of shifts in generalized concentration curves. Let's assume a continuous hypothetical generalized concentration curve as AB in Figure 2, and denote the area under the curve as:

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[4] The welfare measure used in this paper purely based on the level and distribution of income which might lead to certain caveats. See OECD (2014) for a detailed discussion of various social welfare measures.
[5] See Kakwani (1980), Ali and Son (2007) for details of concentration curves, and Anand et al. (2013) for social mobility curves.

$$\bar{y}^* = \int_0^{100} \bar{y}_i \, di$$

Note that when the relationship between $\bar{y}^*$ and $\bar{y}$ determines equity dimension of income distribution in the population. By definition, the maximum value for $\bar{y}^*$ can be equal to $\bar{y}$. In this case, everybody in the population would have the same income, and the distribution would be maximum equitable. In the other extreme, where the ratio converges to 0, the income is concentrated in the higher income groups. Hence, the distribution gets less equitable in this case. Thus, the ratio of $\bar{y}^*$ to $\bar{y}$ represents the equity dimension of the generalized concentration curve of the population. Ali and Son (2007) describe it as income equity index (IEI):

$$\omega \equiv \bar{y}^*/\bar{y}$$

One can rearrange and differentiate the above equation as follows:

$$\bar{y}^* = \omega * \bar{y}$$
$$d\bar{y}^* = \omega * d\bar{y} + d\omega * \bar{y}$$
$$d\bar{y}^*/\bar{y}^* = d\bar{y}/\bar{y} + d\omega/\omega$$

Using the equation above, one can calculate the change in inclusiveness of a generalized concentration curve when it shifts. The formulation also allows for decomposition in terms of equity (distribution, ω) and efficiency (per capita GDP, $\bar{y}$). The relationship between the value of changes in $\bar{y}$ and ω, and inclusiveness can be summarized as follows: first, if change in both $\bar{y}$ and ω are positive, then the movement is certainly inclusive. If $\bar{y}$ increases and ω decreases, higher per capita income is reached at the cost of higher inequality. Whether it is an inclusive movement or not depends on the relative change in the two dimensions. If ω increases and $\bar{y}$ decreases, higher equality is reached at the cost of lower per capita income. Inclusiveness of this type of a movement again depends on the relative change in the two dimensions. If both $\bar{y}$ and ω decrease, then the movement is certainly non-inclusive. Figure 2 illustrates each case with examples.

Figure 2. Concentration Curve and Inclusiveness
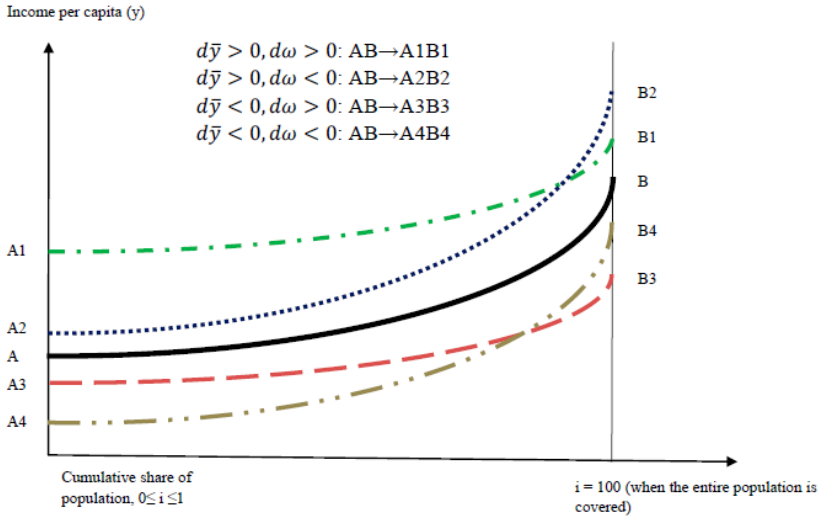
Source: Anand et al. 2013.

We would like to elaborate on the concentration curves by giving a numeric illustration. Let $y_i^t = (10,15,20,30,45,65,90,120,150)$ and $y_i^{t+1} = (60,70,80,90,110,125,145,165,190)$ represent two generalized concentration curves at time 't' and 't+1'. Following the definitions, we calculate $\bar{y}, \bar{y}^*$ and ω as:

$\bar{y}^t = 74.5$, $\bar{y}^{*t} = 33.5$, $\bar{y}^{t+1} = 125.5$, $\bar{y}^{*t+1} = 88.4$, $\omega^t = .45$, $\omega^{t+1} = .71$

From time 't' to time 't+1', change in $\bar{y}$ is 69% and change in ω is 57%. Both dimensions contribute positively to the inclusiveness of the income distribution in population. Therefore the movement in our example illustrates the one from AB to A1B1 in Figure 2. Total change in inclusiveness can be calculated either as a simple summation of the two or one can assign different weights to the two in order to reflect preferences over efficiency and equity.

3. Data

We obtain income distribution data from Turkish Statistics Institute (TURKSTAT).[6] It is provided in current Turkish Lira prices. If it was provided in an internationally comparable (PPP-adjusted) or real (CPI-adjusted) terms, then this data set would be sufficient to execute the empirical exercises in this paper. However, the income distribution data is provided in current prices denominated in Turkish Lira (TL). Using current prices measured in TL would overestimate the per capita income growth rates, which is a determinant of inclusive growth. Therefore, we process the income distribution data provided by TURKSTAT by using PPP-adjusted per capita GDP data obtained from Organization for Economic Cooperation and Development (OECD).[7] Specifically, what we do is as follows: we rescale the income distribution data for each year so that the income per capita in the TURKSTAT data is equal to the PPP-adjusted GDP per capita in constant US dollars.

Our process over the raw data does not affect the distribution but the levels. So, the income distribution does not change but per capita income levels in each decile group change. In other words, the ratio of income levels of the decile groups are the same with that of the raw data series. However, their levels, therefore growth rates over the time series alter after adjusting with PPP.

The regional analysis relies on the data obtained from TURKSTAT as well. However, we do not have regional per capita GDP data measured in PPP adjusted constant prices. Therefore we rescaled the regional data with the PPP factors that we used for aggregate (country level) data. Consequently, we obtained both aggregate and regional income distribution data measured in PPP-adjusted constant US dollars.

4. Results

4.1. Aggregate Economy

First we present the results regarding the aggregate Turkish economy for the period between 2002 and 2011. Here, we merge two datasets obtained from two separate surveys. The first one covers the period between 2002 and 2005; the other one covers 2006 to 2011.[8] When we present the progress between 2002 and 2011, we will take this fact into account and skip the progress between 2005 and 2006 (the years in which the two surveys breakdown) in order to avoid a possible inconsistency.

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[6] Income Distribution and Living Conditions Survey.
[7] We use constant prices, constant PPPs, US dollars.See http://stats.oecd.org for PPP data.
[8] Household Budget Survey for 2002-2005 and Income Distribution and Living Conditions Survey for 2006-2011.

Figure 3 shows the average income of each decile in Turkey between 2002 and 2011. In general, average income of each decile increased between 2002 and 2011, however there is a temporary decrease which corresponds to the Great Recession (2008-2009) period.

We draw the generalized concentration curves of Turkey for 2002 and 2011 in order to get an illustration of the progress in inclusiveness. As shown in Figure 4, the 2011 curve is shifted above 2002 curve, so average income of each income decile increased between 2002 and 2011. This is a positive contribution to inclusive growth. However, it does not cover the entire concept of inclusiveness. Formally, we need to calculate the change in equity (ω) and per capita income ($\bar{y}$) together in order to obtain the change in aggregate measure of inclusiveness.

Figure 5 depicts the progress in inclusive growth between 2002 and 2011. It decomposes the inclusiveness into per capita income and equity dimensions. In 2003, 2004, and 2005 both per capita income and equity components contributed positively to the inclusive growth. On average, per capita income ($\bar{y}$) grew by 6.3% per year and equity measure (ω) is improved by 3.2% per year between 2002 and 2005. Therefore, per capita income contributed roughly twice as much as equity to the inclusive growth in this period.

Figure 3. Evolution of Income Deciles: Turkey (PPP-adjusted US dollars)
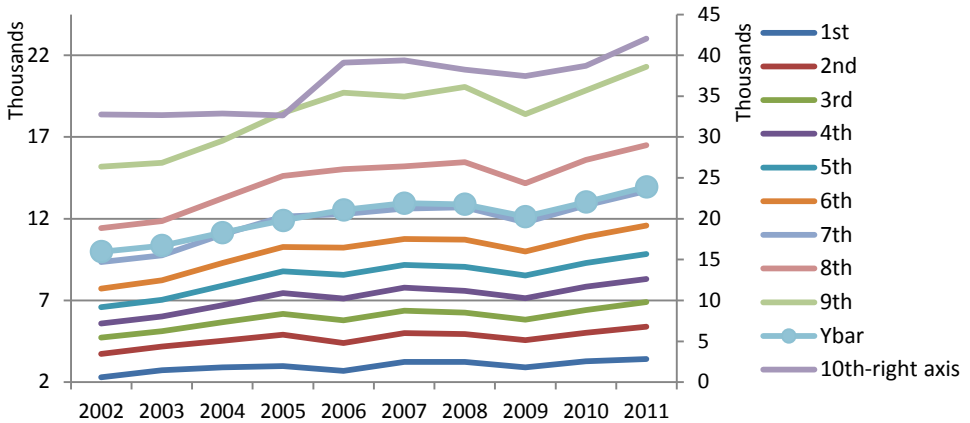
Figure 4. Generalized Concentration Curves: Turkey (PPP-adjusted US dollars)
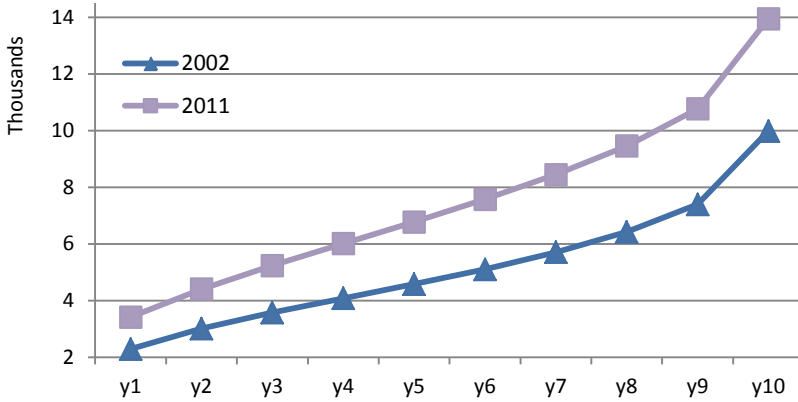
When we focus on the period between 2007 and 2011, which also contains the Great Recession period (2008-2009), we see a more heterogeneous picture. In 2007, ȳ and ωcontributed positively to inclusiveness, whereas in 2008 and 2009 we observe the opposite. In 2010, per capita income improved, however equity is regressed. In 2011, both components improved again. Between 2007 and 2011, on average, per capita income increased by 2.4% per year and equity improved by 1.1% per year.

Figure 5. Change in Inclusiveness: Turkey
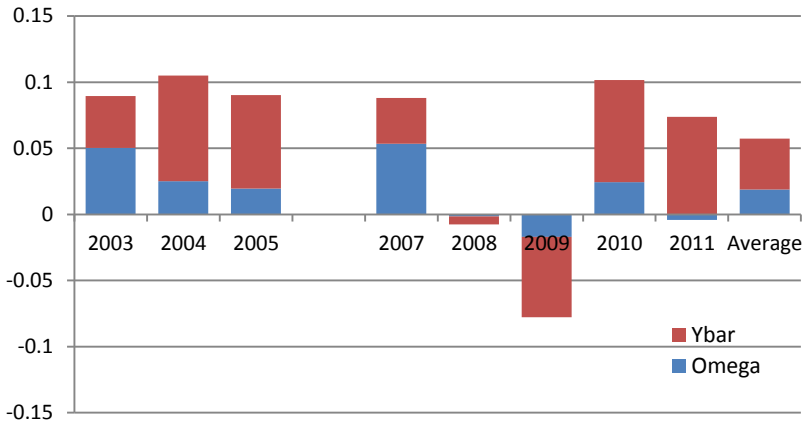
During the entire period of 2002-2011, ȳ increased by 3.9% per year and ω increased by 1.9% per year. Hence, the contribution of improvement in per capita income has been twice as much as that of equity to the

inclusiveness of economic growth in Turkey over the course of the last decade. As a result, the aggregate inclusive growth measure improved by 5.8% per year during the corresponding period. When we exclude the Great Recession, the average improvement turns to be 9.1% per year.

Some heterogeneity between urban and rural areas

As a first attempt to see whether the improvement in inclusiveness is dispersed among different areas of the country, we present the results for urban and rural areas for the period between 2006 and 2011 (due to data availability).[9] Figure 6 depicts the generalized concentration curves of urban areas and rural areas in Turkey for 2006 and 2011. In general, average income of each decile increased for both areas. At the first glance, the gap between the two curves seems to be widening towards higher deciles in the rural area. That points out a less progressive equity improvement in the rural area relative to the urban area. This is going to be clearer when we present the numbers for $\bar{y}$ and ω.

Figure 6. Concentration Curves: Urban Versus Rural Area (PPP-adjusted US dollars)

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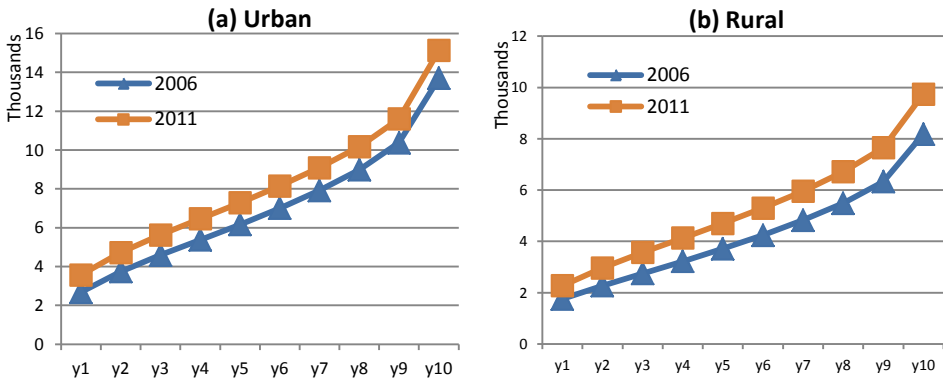
[9] Recall that we merged two datasets (Household Budget Survey and Income Distribution and Living Conditions Survey) for the aggregate economy. However, the urban and rural differentiation is available only in the second dataset which is available after 2006.

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Figure 7. Change in Inclusiveness: Urban Versus Rural Areas
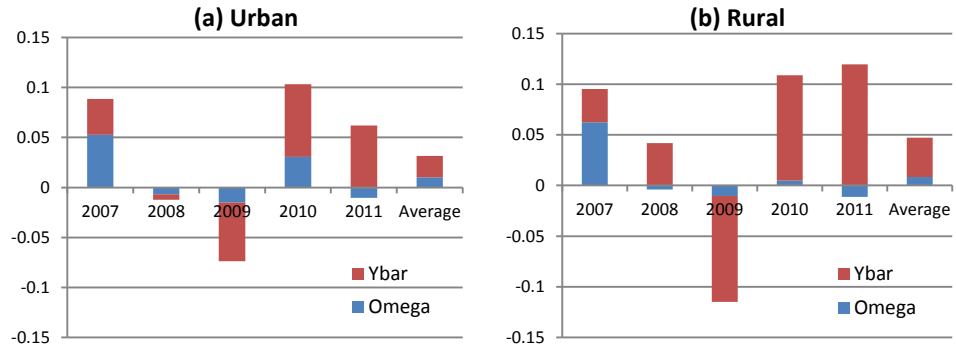
Figure 7 illustrates the inclusiveness developments in urban and rural areas separately between 2006 and 2011. In 2007, both dimensions contributed positively to inclusive growth in urban and rural areas. During the Great Recession (2008-2009), urban area regressed in terms of both dimensions; however rural area improved per capita income in 2008. On average, urban area and rural area improved per capita income by 2.1% and 3.9% per year, respectively. On average, urban area improved equity by 1% per year and rural area did .8% per year. Therefore, urban area performed better in terms of progress in equity and rural area did so in terms of per capita income progress. In terms of aggregate inclusiveness measure, on average, rural area improved by 4.1% per year in comparison with a 3.1% annual improvement of urban area.

4.2. Regional Developments between 2006 and 2011

In this section we present results for twelve regions to shed some light on possible cross-region heterogeneities in terms of inclusive growth. The list of regions is composed of Istanbul (1), West Marmara (2), Aegean (3), East Marmara (4), West Anatolia (5), Mediterranean (6), Central Anatolia (7), West Black Sea (8), East Black Sea (9), Northeast Anatolia (A), Central East Anatolia (B), and Southeast Anatolia (C).

Figure 8. Per capita Income in Twelve Regions (PPP-adjusted US dollars)
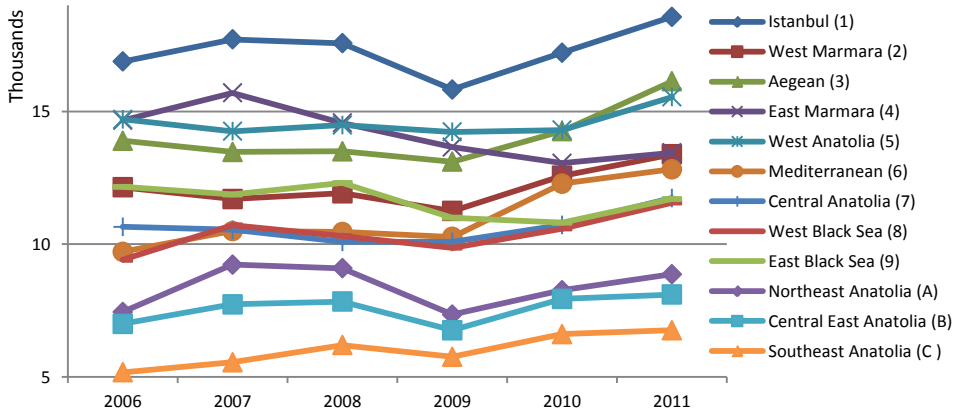
Figure 8 depicts the per capita income levels in twelve regions of Turkey. There is significant heterogeneity in per capita income levels of regions. Between 2006 and 2011, per capita income has increased in all regions except East Marmara (4) and East Black Sea (9).

We observe some mobility in terms of ordering of regions with respect to their average income depending on their relative performances over the corresponding period (Figure 9). Overall, six regions (Istanbul (1), Central Anatolia (7), West Black Sea (8), Northeast Anatolia (A), Central East Anatolia (B), and Southeast Anatolia (C)) did not move from their 2006 position, however the other six regions switched between their positions from 2006 to 2011. Mediterranean region moved from 8th to 6th position, West Marmara moved from 6th to 5th position, East Black Sea moved from 5th to 8th position, Aegean moved from 4th to 2nd position, East Marmara moved from 3rd to 4th position, and West Anatolia moved from 2nd to 3rd position over the 2006-2011 period.

Figure 9. Per capita Income Ordering in Twelve Regions (PPP-adjusted US dollars)
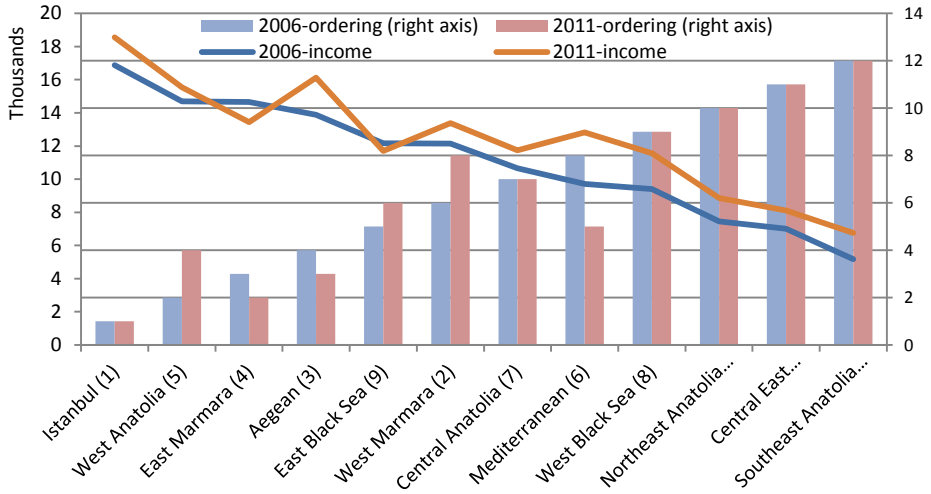
Figure 10. Equity Ordering in Twelve Regions (PPP-adjusted US dollars)
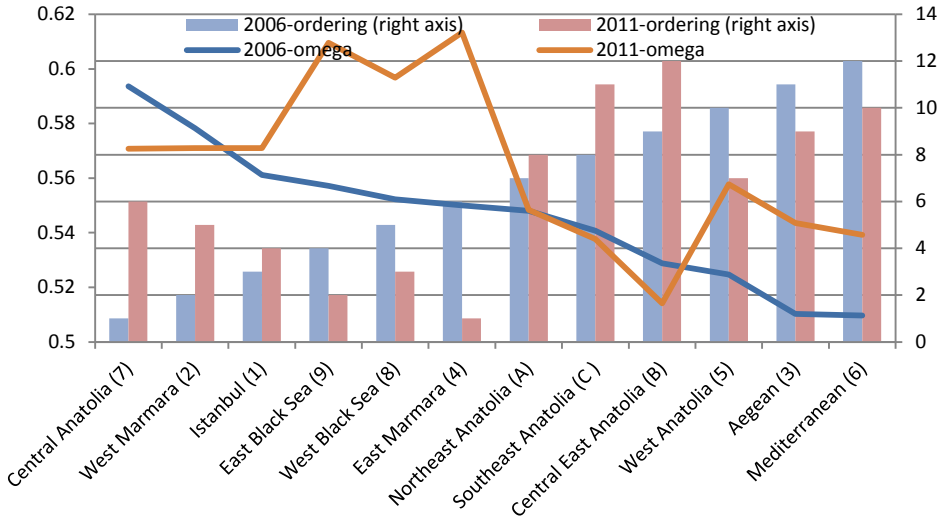
Figure 10 shows the evolution of ω (the measure of equity described in section 2) for the twelve regions of Turkey from 2006 to 2011. During the corresponding period, eight regions (Istanbul (1), Aegean (3), East Marmara (4), West Anatolia (5), Mediterranean (6), West Black Sea (8), East Black Sea (9), Northeast Anatolia (A)) improved their equity measure of income

distribution, whereas the other four regions (Central East Anatolia (B), Southeast Anatolia (C), West Marmara (2), Central Anatolia (7)) regressed in terms of distribution. When we compare the relative performances, we see that every region changed its position in ordering from 2006 to 2011. Aegean (3), East Marmara (4), West Anatolia (5), Mediterranean (6), West Black Sea (8), East Black Sea (9) improved their position in the ordering, whereas the rest of the regions decreased their positions.

Now, we calculate the average rate of growth in the two dimensions ($\bar{y}$ and ω) of inclusiveness and compare the regional performances during 2006-2011 period. This is going to allow us to compare the regional performances in terms of inclusive growth during the corresponding period. Figure 11 shows the average annual growth rate of $\bar{y}$ and ω for the twelve regions of Turkey between 2006 and 2011.Panel (a) of Figure 11 illustrates the per capita income growth performance of twelve regions between 2006 and 2011. Mediterranean and Southeast Anatolia performed best at about 6% average annual growth rate followed by West Black Sea and Northeast Anatolia at 4.5%. Central East Anatolia and Aegean regions' per capita income grew by roughly 3-3.5% per year on average, which is followed by Istanbul, West Marmara, and Central Anatolia with a 2% average annual growth rate. In West Anatolia, per capita income grew by roughly 1% per year on average. In East Black Sea and East Marmara, per capita income decreased by .5% and 1.5% per year on average, respectively.

Panel (b) of Figure 11 depicts the developments in income distribution of the twelve regions between 2006 and 2011.[10] Equity (ω) levels of Istanbul, East Marmara, West Black Sea, and East Black Sea grew between 1.5-2.5% per year during the corresponding period. Aegean, West Anatolia, and Mediterranean equity levels grew by roughly 1-1.5% per year. Equity levels of West Marmara, Northeast Anatolia, and Southeast Anatolia almost did not change. And, Central Anatolia and Central East Anatolia regressed roughly by .5% per year.

In order to get an aggregate measure of inclusive growth we sum up the two dimensions and present the performances of the regions in Figure 12. Mediterranean region (7.2%) performed best which is followed by West Black Sea (6.1%) and Southeast Anatolia (5.7%). Istanbul, Aegean, and Northeast Anatolia followed them with an inclusive growth rate of roughly 4.5% per year. West Marmara, West Anatolia, and Central East Anatolia inclusively grew by 2-3%per year. East Marmara, Central Anatolia, and East

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[10] Note that the advantage of our equity measure is that it is a component of a single inclusiveness measure such that equity and efficiency developments can be aggregated. Figure A.4 illustrates correlation between annual growth rates of Gini coefficient and this paper's equity measure for the 12 regions over 2006-2011.

Black Sea performed worst, however still inclusively grew by roughly .5-1.5% per year over the corresponding period.

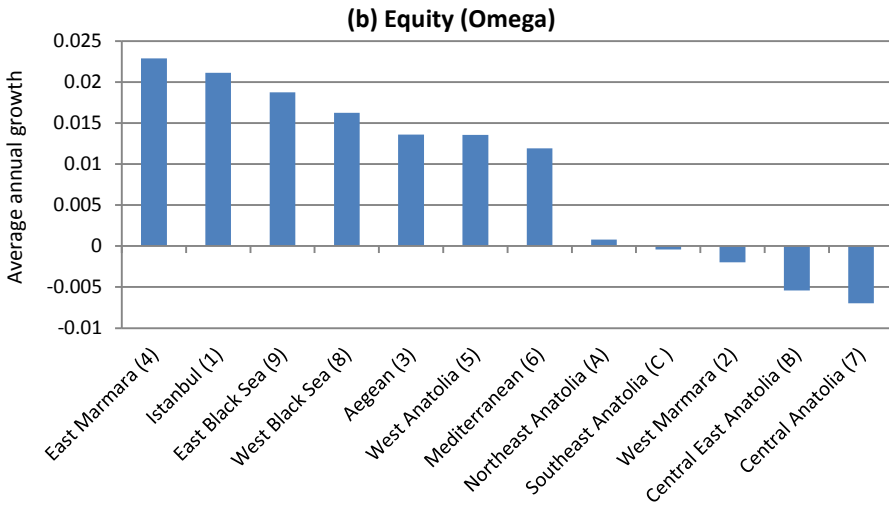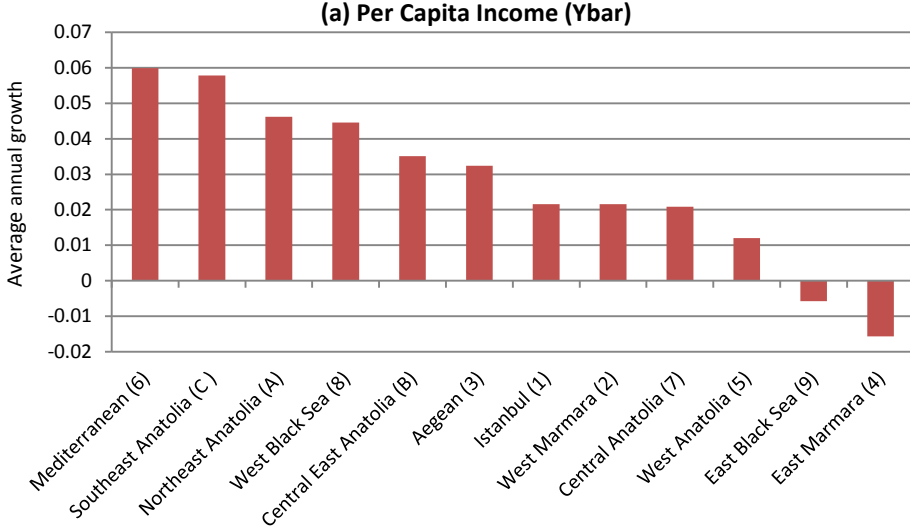**Figure 11. Components of Inclusive Growth for Twelve Regions**

(a) Per Capita Income (Ybar)

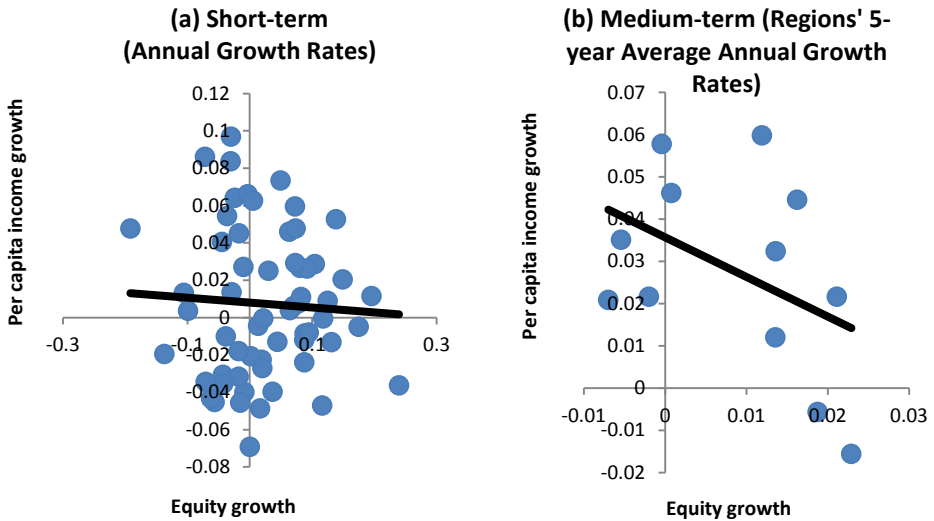(b) Equity (Omega)

Figure 12. Inclusive Growth Performance for Twelve Regions

Total (Ybar and Omega)
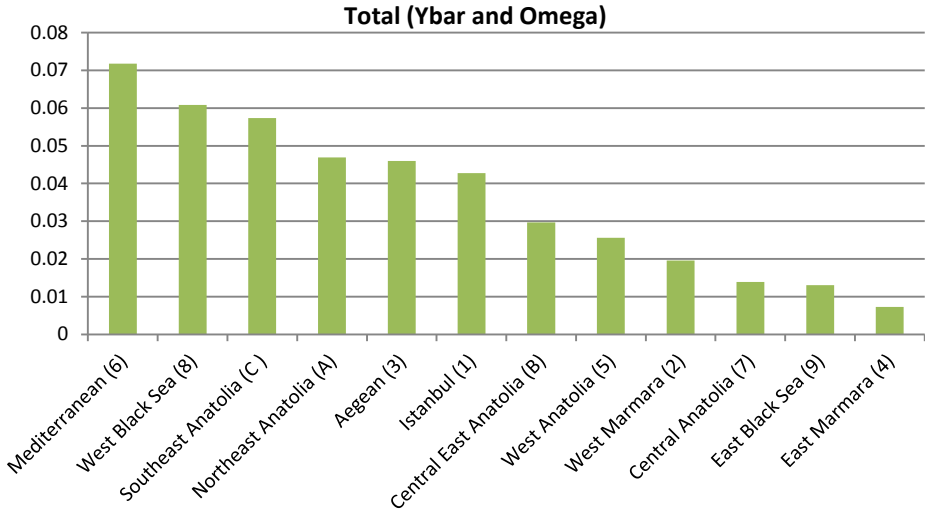
Figure 13. Efficiency – Equity Tradeoff

(a) Short-term (Annual Growth Rates)

(b) Medium-term (Regions' 5-year Average Annual Growth Rates)

We draw the per capita income growth rates against equity growth in Figure 13 to illustrate possible trade-off between the two dimensions of inclusive growth.[11] Left panel of Figure 13 depicts every region's annual

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[11] See Barro (2000), Deininger and Squire (1998), Forbes (2000), Lopez and Servén (2004), and Okun (1975) for further discussion on equity and efficiency tradeoff.

growth rate for each year between 2006 and 2011. Therefore, we have sixty observations in total. Since we draw each year's growth rate, we consider this as a short-term tradeoff between efficiency and equity. The right panel draws the 5-year average of annual growth rates for the twelve regions, which returns twelve observations in total. We call it medium-term tradeoff as we take average of five years' growth rates. The tradeoff between per capita income growth and equity growth seems to be more obvious over the medium-term; however there is still some tradeoff in the short-term as well.

Sources of heterogeneity among the regional performances

Low-skilled and female workforces are the most vulnerable groups in Turkish labor market similar to many other countries.[12] These groups have very low employment rates (Figure 14). Therefore one would naturally guess that improvement in these groups lead to improvement in inclusive growth. In Figure 15, we draw a scatter plot of non-agriculture low-skilled employment growth against inclusive growth components. Both per capita income growth and equity growth are positively correlated with the growth in non-agriculture low-skilled employment. Therefore, one can consider the improvement in low-skilled employment as one of the sources of Turkey's inclusive growth.

Figure 14. Low-skilled and Female Employment Rates in Turkey
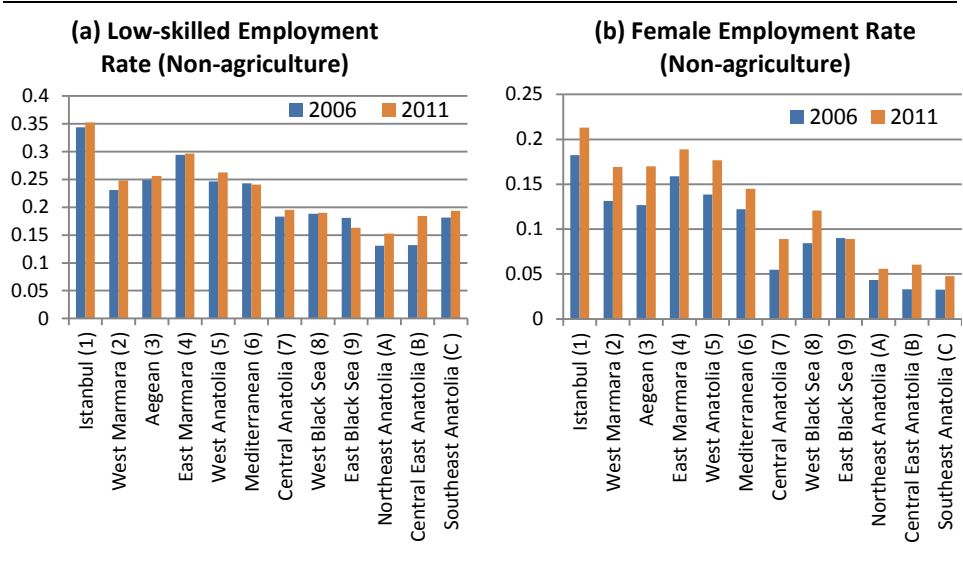
Figure 16 presents the scatter plots of growth in non-agriculture female employment rate against inclusive growth components. Per capita income

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[12] See Taskin (2013) for a summary of developments in other dimensions of Turkish labor market.

growth is positively correlated with female employment growth, whereas equity is slightly negatively correlated. In aggregate terms, female employment rate is positively correlated with inclusive growth.[13] The fact that increase in female employment does not improve the equity dimension of inclusive growth implies that the increase in female employment is not only observed in low-paying jobs but also in good-paying jobs. Hence, both low-income deciles and high-income deciles improved their per capita income through female employment and distribution did not improve asymmetrically towards the low-income groups.

Figure 15. Low Skilled Employment Rate and Inclusive Growth
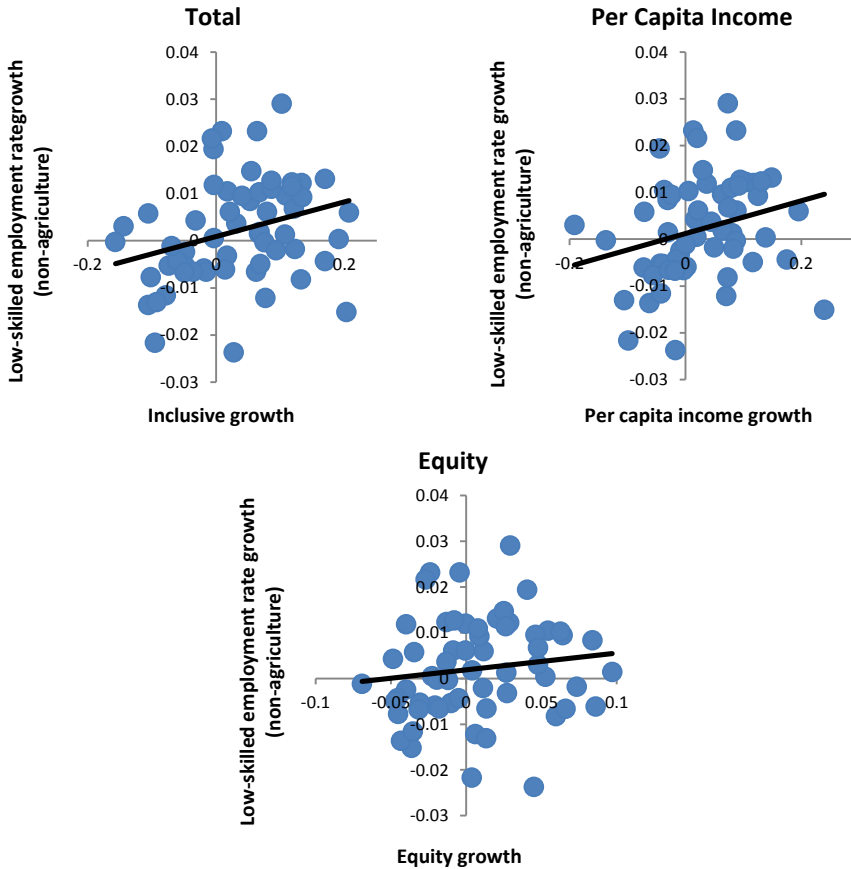
Figure 16. Female Employment Rate and Inclusive Growth
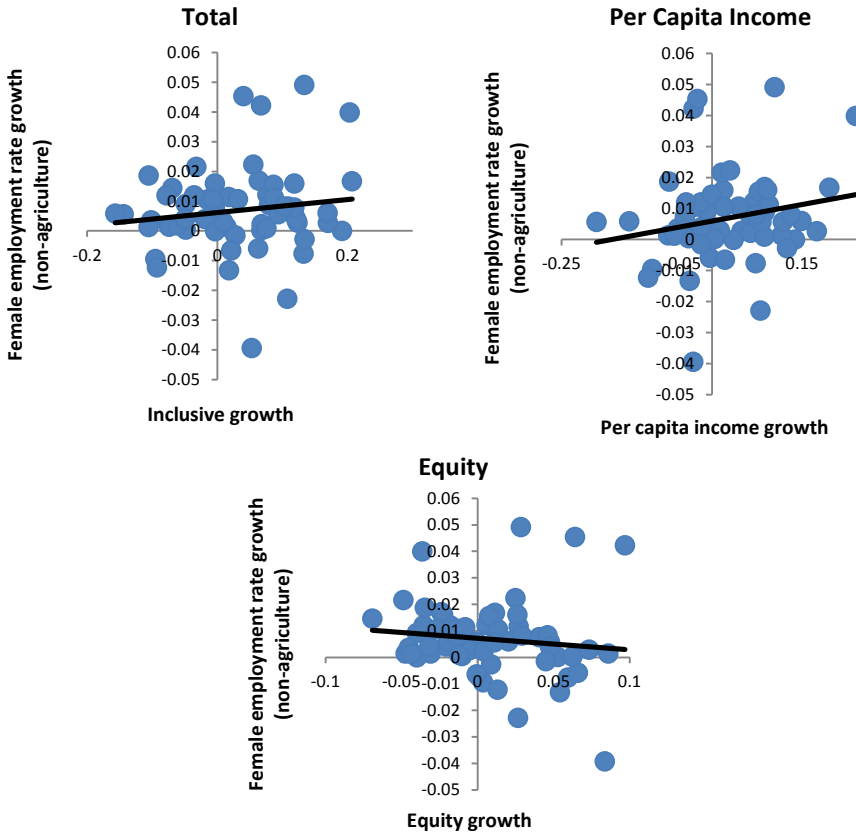
4.3. Focusing on the Great Recession

In this section, we present regional and income group developments during the Great Recession (2008-2009). In this regard, we first calculate percentage decrease in per capita income for ten income deciles during 2008-2009. In percentage terms, the most affected groups are the lowest earning groups as shown in Figure 17. This is probably due to the fact that lower-earning groups are mostly composed of low-skilled labor and they are the most vulnerable groups in terms of job losses during recessions. Per capita income of the lowest-earning decile decreased roughly 12% whereas that of the highest-earning decile decreased slightly less than 5% during the Great Recession. In general, per capita income of the nation decreased by roughly 7% during 2008-2009 period.[14]

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[14] OECD (2013) documents similiar results for a large set of countries.

Figure 17. Effect of Great Recession on Income Groups
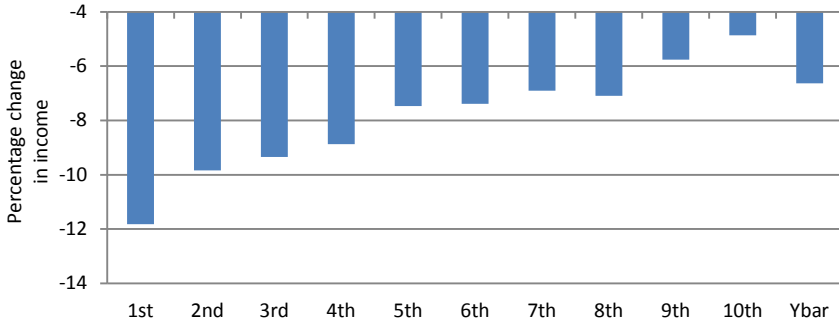
The regional developments also reflect significant heterogeneity (Figure 18). In terms of per capita income, the most affected region is Northeast Anatolia with a 20% decrease during the Great Recession. Per capita income of East Marmara and Central East Anatolia decreased by roughly 13%, and that of Istanbul decreased by roughly 11%. Per capita income levels of the rest of the regions decreased less than or equal to 8% during the Great Recession. As an exception, Southeast Anatolia increased its per capita income by roughly 4% during this period.

In terms of income distribution (equity), the most deteriorated region was Central Anatolia with a 10% decrease in equity measure (ω). The distribution of Southeast Anatolia, West Marmara, and West Anatolia are deteriorated by roughly 6-8%. West Black Sea, Istanbul, East Black Sea, Central East Anatolia, and Aegean equity measures are deteriorated by less than or equal to 4%. Southeast Anatolia's equity measure did not change, and Mediterranean and East Marmara improved during the Great Recession.

In aggregate inclusiveness terms (per capita income and equity combination), Southeast Anatolia was the most affected region during the Great Recession with a 20% decrease in aggregate inclusiveness measure. Central East Anatolia, Istanbul, Central Anatolia, West Black Sea, West Marmara, and East Black Sea deteriorated by 10-15%. In the rest of the regions except Mediterranean, inclusiveness measure decreased by less than 10% during this period. Mediterranean region improved slightly during the Great Recession.

When we compare the developments across the regions during the Great Recession, we observe a negative correlation between per capita income and equity. The regions which are affected most in per capita income are, on average, least affected in terms of equity. This again reflects the tradeoff between efficiency and equity during the Great Recession similar to the reflection in the entire period of 2002-2011.

Figure 18. Effect of Great Recession on Twelve Regions
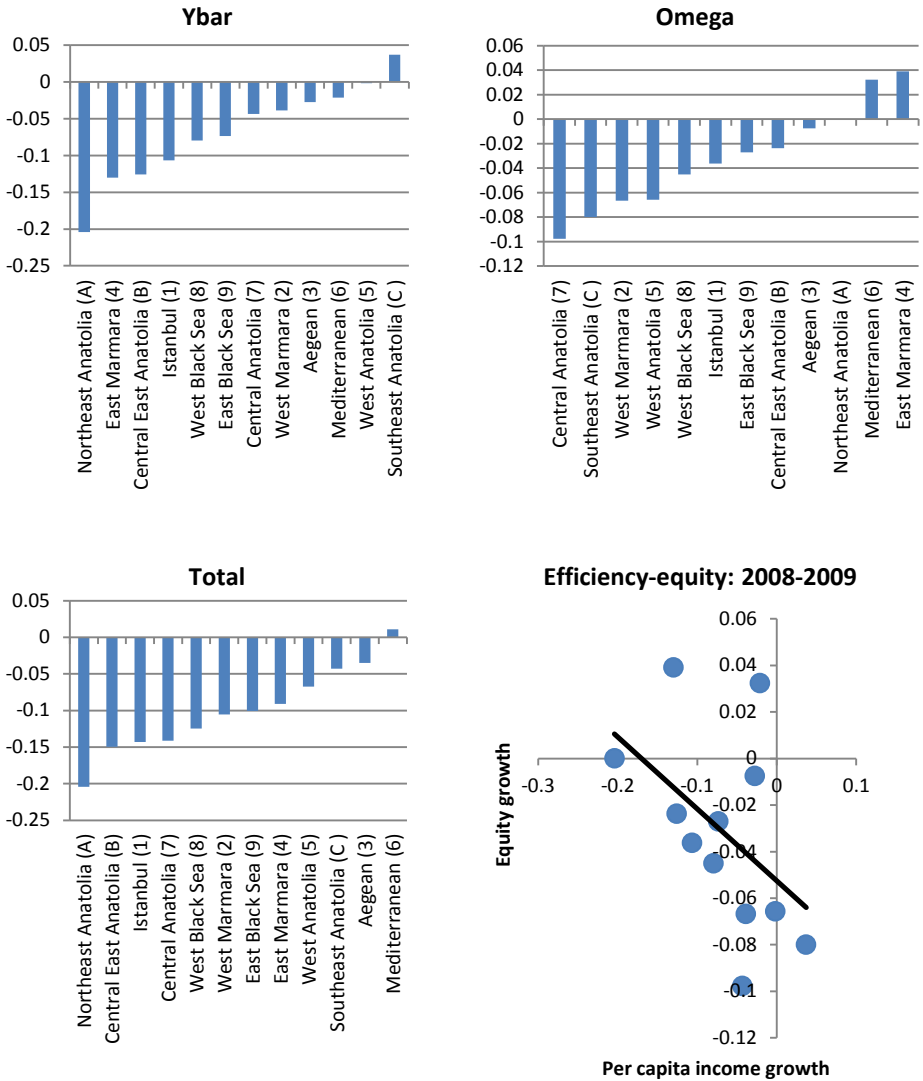
5. Discussion and Conclusion

In this paper we document some stylized facts to shed light on the inclusiveness of economic growth in Turkey over the course of the last decade. We find that – on average – Turkish economic growth was inclusive between 2002 and 2011. An examination of cross-region and over-time developments for the available data period reveals significant heterogeneity in inclusiveness of economic growth across these dimensions. We also

check whether this heterogeneity is related with developments in the vulnerable groups in Turkish labor market. In particular, we show that increase in non-agricultural low-skilled employment rate and non-agricultural female employment rate are positively correlated with the improvement in inclusiveness during the period of 2006-2011. Moreover, the heterogeneity based on regional analysis reflects an efficiency-equity tradeoff in Turkey's economic growth. As a result of limited data availability, this paper does not provide a complete investigation on the sources of heterogeneity in the twelve regions of Turkey, however gives important insights across some dimensions.

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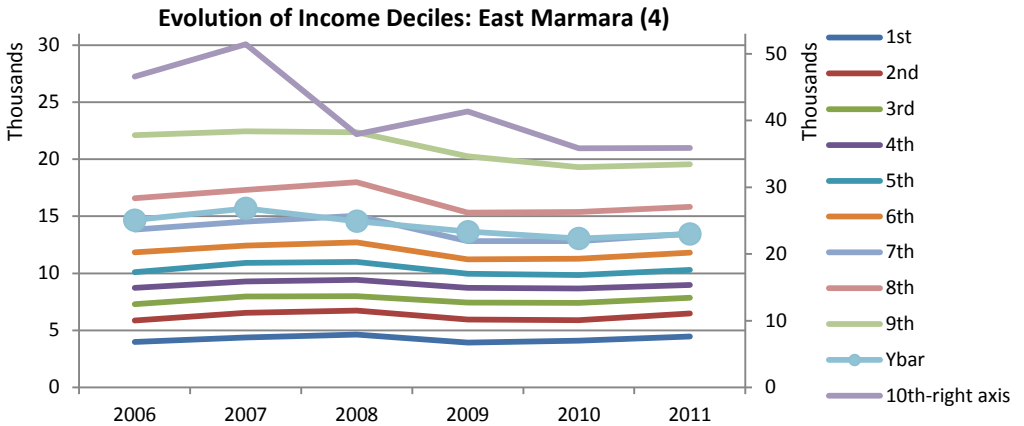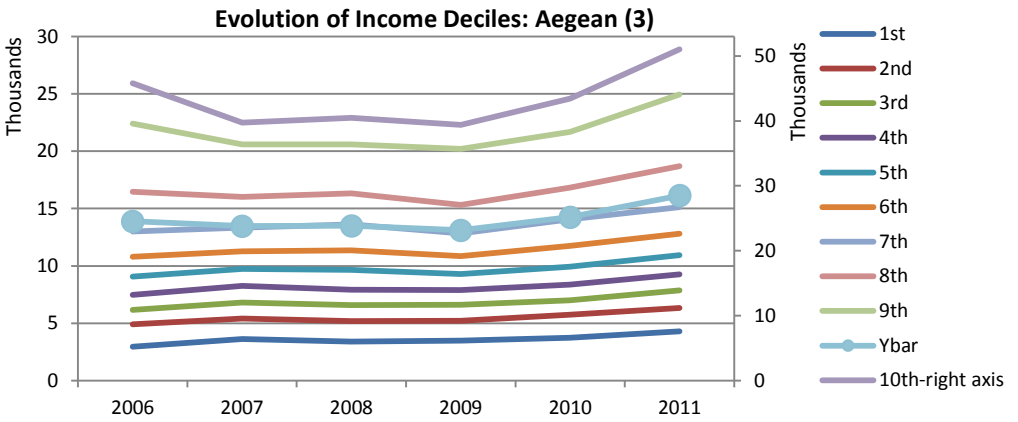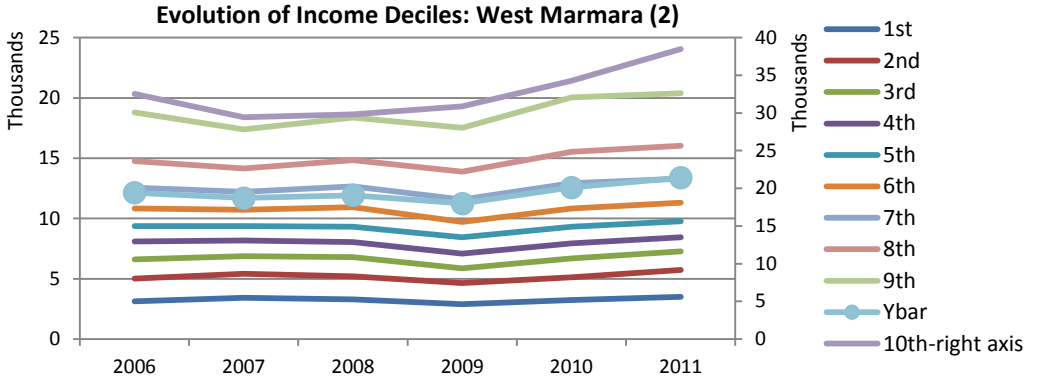
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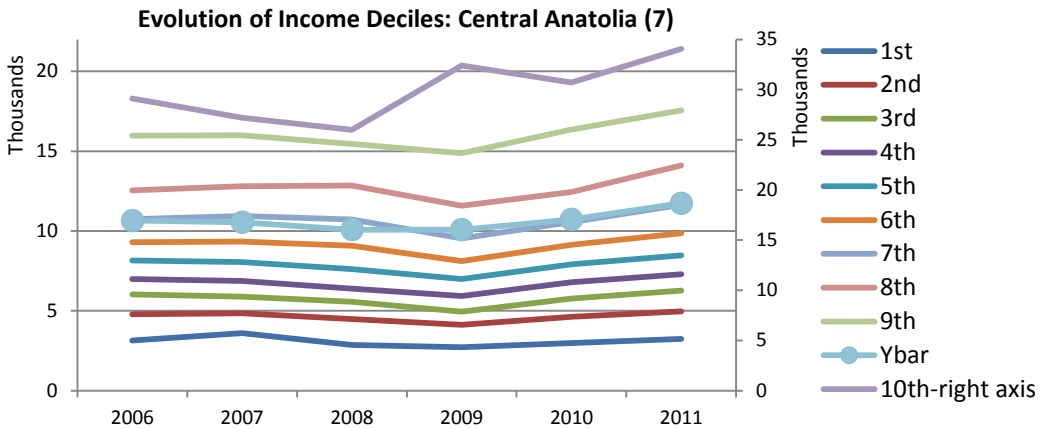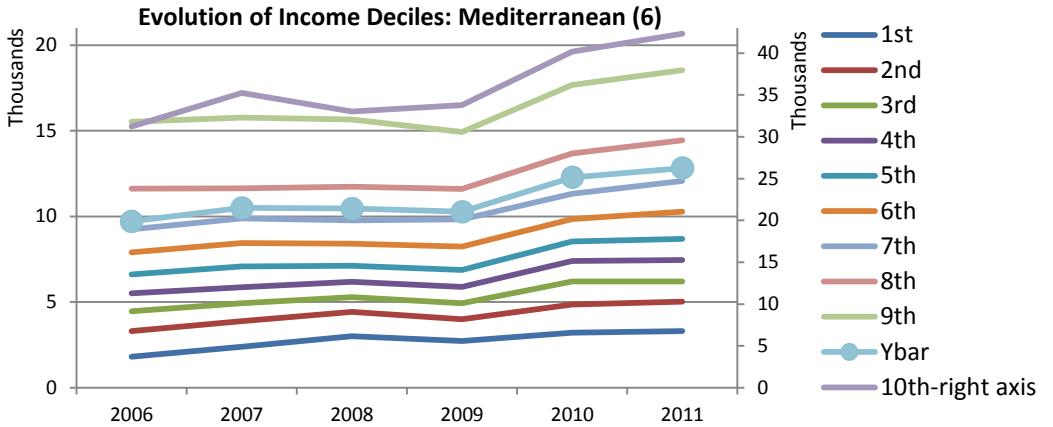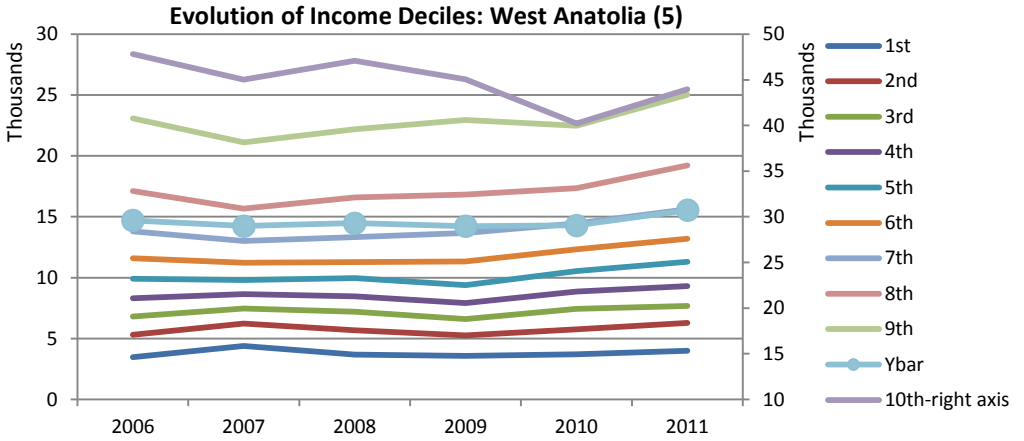
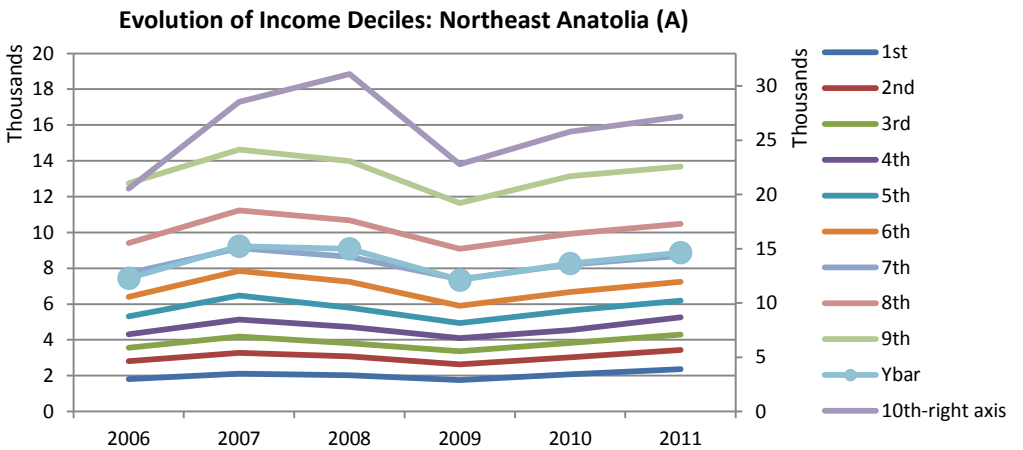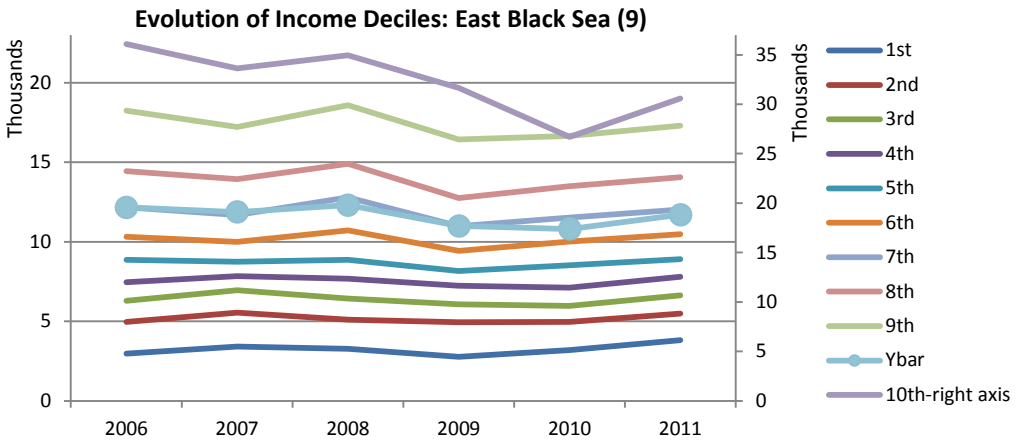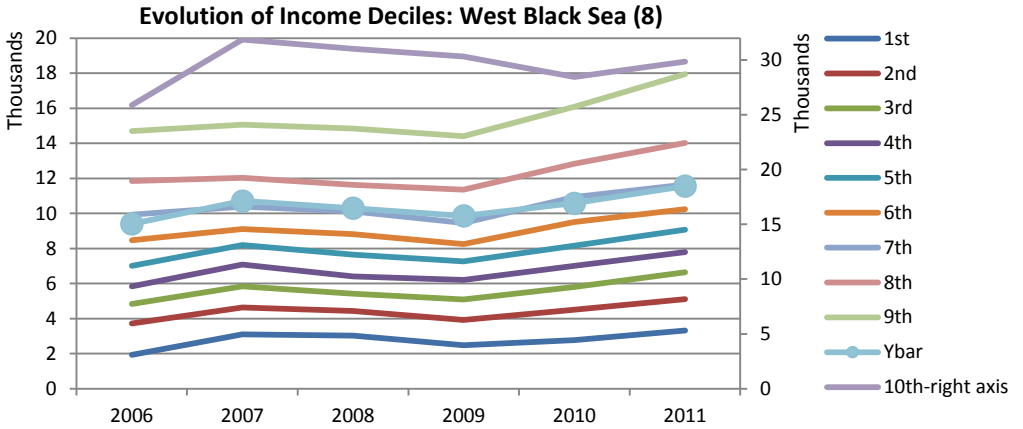World Bank. 2009. "What is Inclusive Growth?." mimeo.

Appendix

Figure A1. Evolution of Income Deciles for Twelve Regions (PPP-adjusted US dollars)

Evolution of Income Deciles: Urban

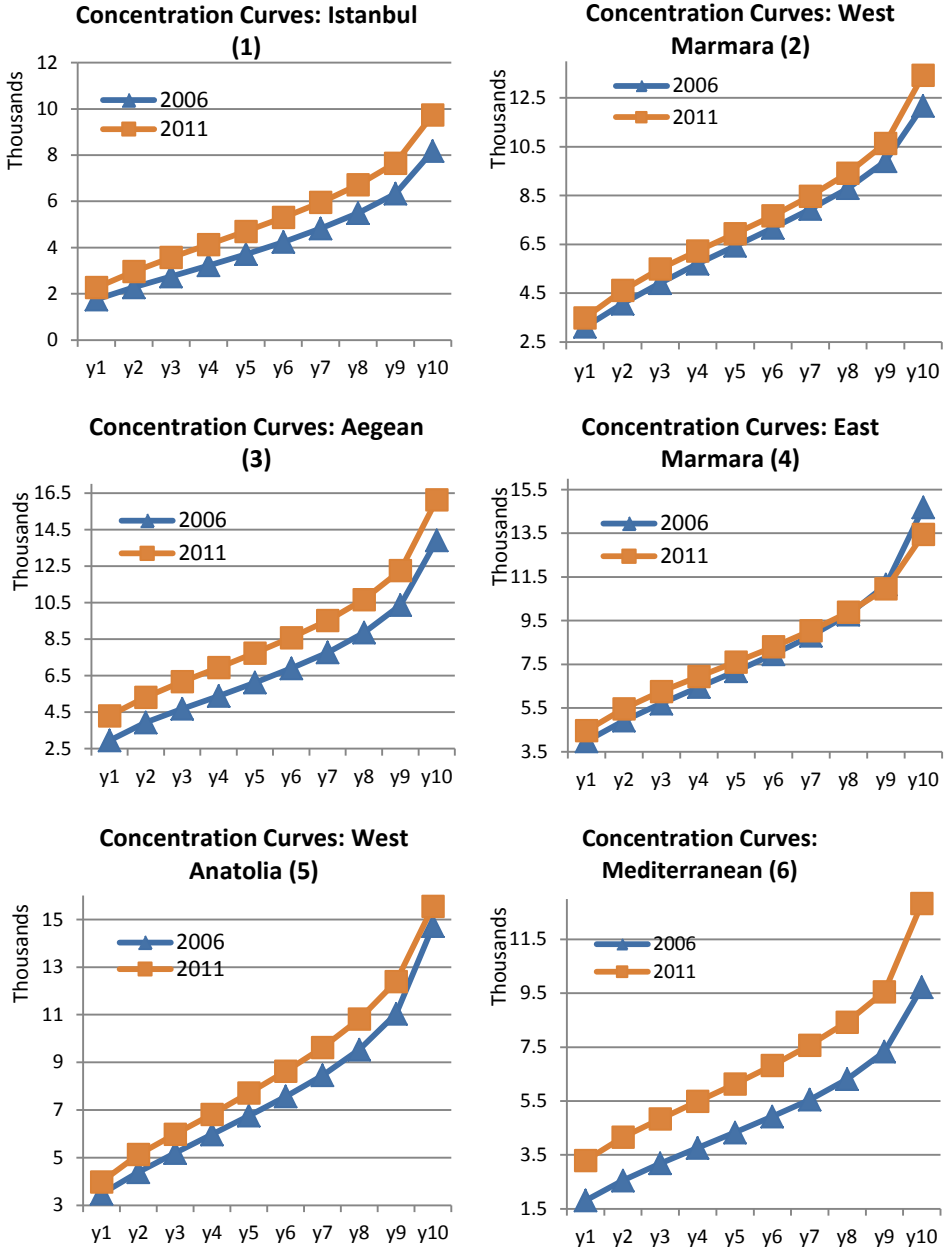Legend: 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, Average, 10th-right axis

Evolution of Income Deciles: Rural

Legend: 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, Average, 10th-right axis

Evolution of Income Deciles: Istanbul (1)

Legend: 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, Ybar, 10th-right axis

Evolution of Income Deciles: West Marmara (2)

Evolution of Income Deciles: Aegean (3)

Evolution of Income Deciles: East Marmara (4)

Evolution of Income Deciles: West Anatolia (5)

Evolution of Income Deciles: Mediterranean (6)

Evolution of Income Deciles: Central Anatolia (7)

Evolution of Income Deciles: West Black Sea (8)

Evolution of Income Deciles: East Black Sea (9)

Evolution of Income Deciles: Northeast Anatolia (A)

Evolution of Income Deciles: Central East Anatolia (B)

Evolution of Income Deciles: Southeast Anatolia (C)

Figure A2. Evolution of Concentration Curves for Twelve Regions (PPP-adjusted US dollars)

Concentration Curves: Istanbul (1)

Concentration Curves: West Marmara (2)

Concentration Curves: Aegean (3)

Concentration Curves: East Marmara (4)

Concentration Curves: West Anatolia (5)

Concentration Curves: Mediterranean (6)

Concentration Curves: Central Anatolia (7)
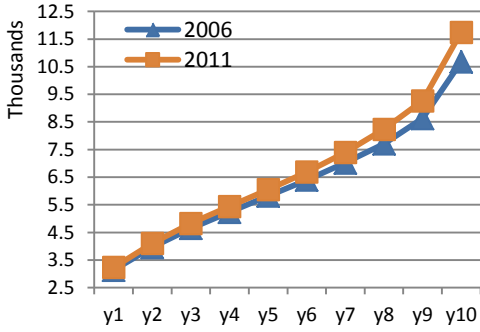
Concentration Curves: West Black Sea (8)
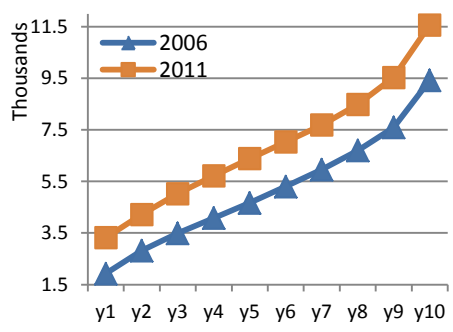
Concentration Curves: East Black Sea (9)
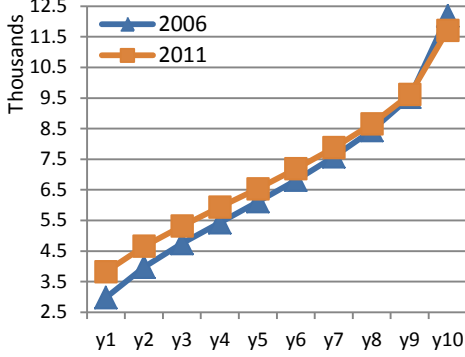
Concentration Curves: Northeast Anatolia (A)
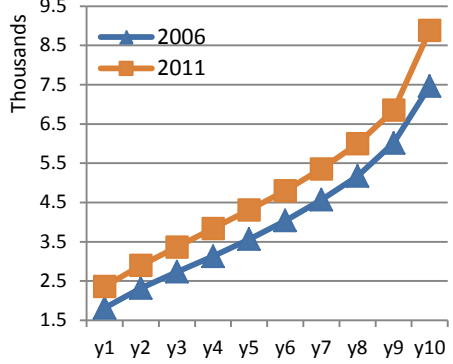
Concentration Curves: Central East Anatolia (B)
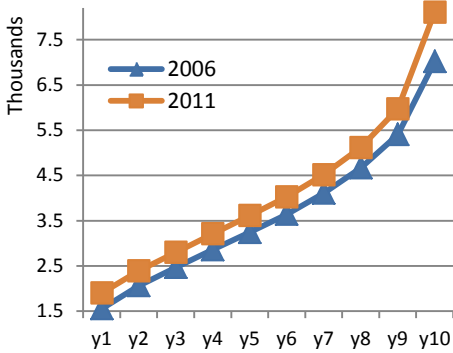

Concentration Curves: Southeast Anatolia (C)
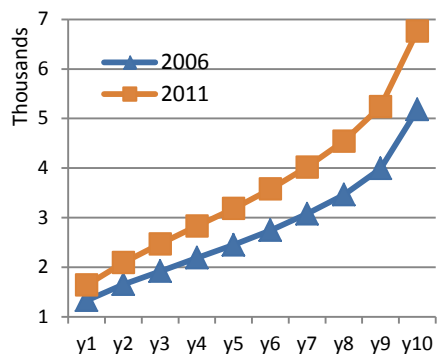
Figure A3. Evolution of Inclusiveness for Twelve Regions

Change in Inclusiveness: Istanbul (1)
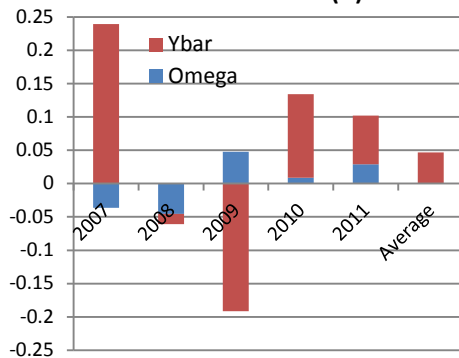

Change in Inclusiveness: West Marmara (2)

Change in Inclusiveness: Aegean (3)

Change in Inclusiveness: East Marmara (4)

Change in Inclusiveness: West Anatolia (5)

Change in Inclusiveness: Mediterranean (6)
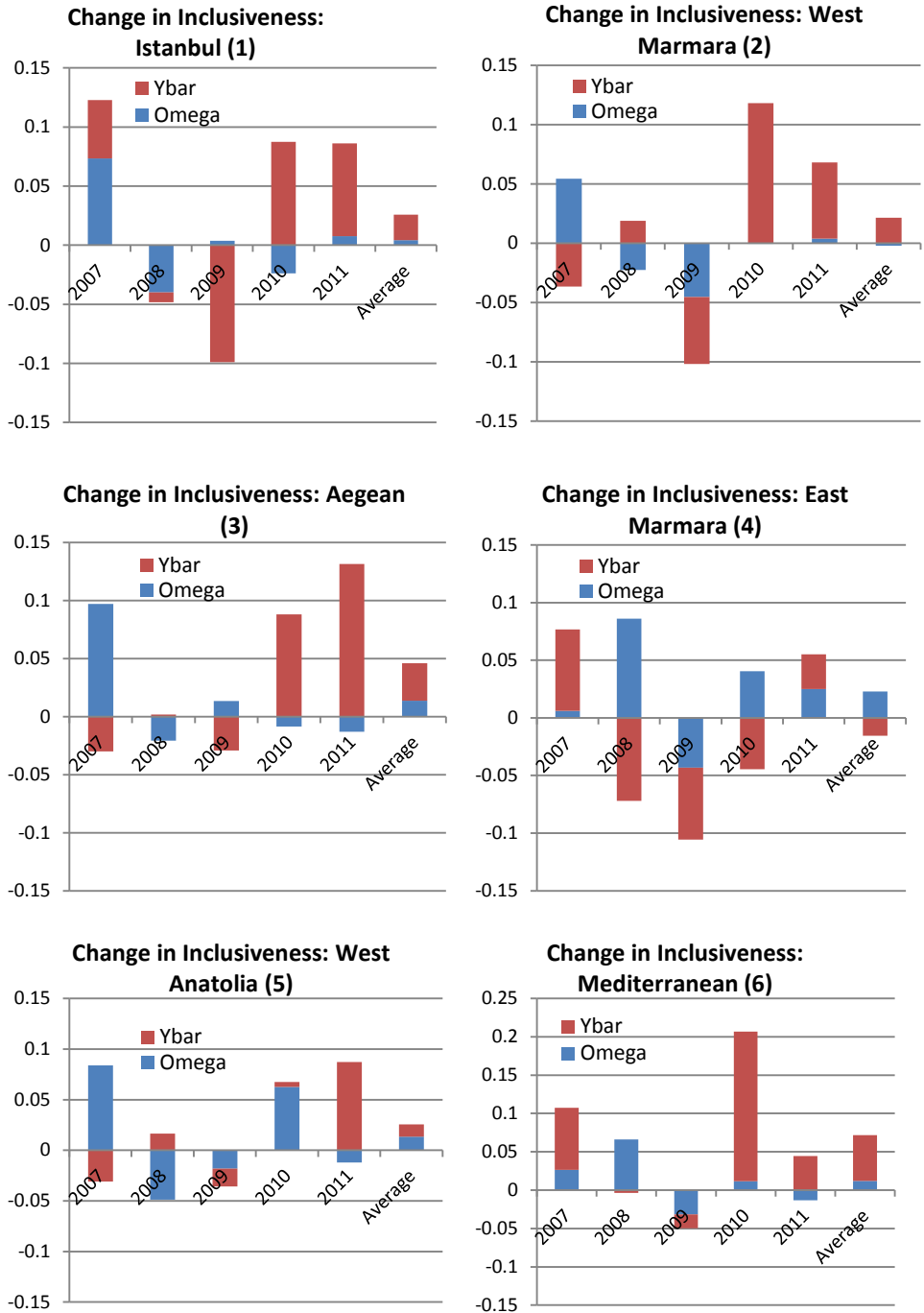
Change in Inclusiveness: Central Anatolia (7)
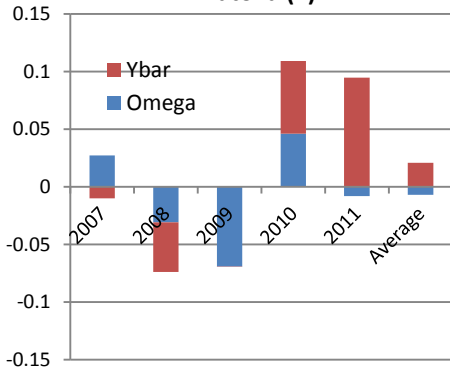
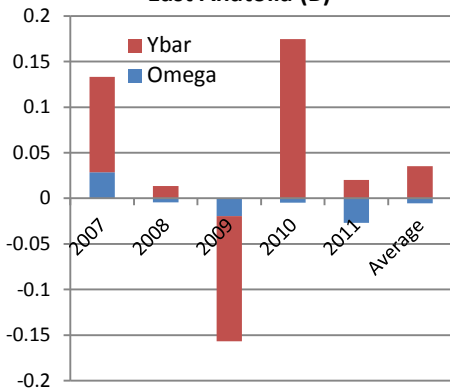### Change in Inclusiveness: West Black Sea (8)
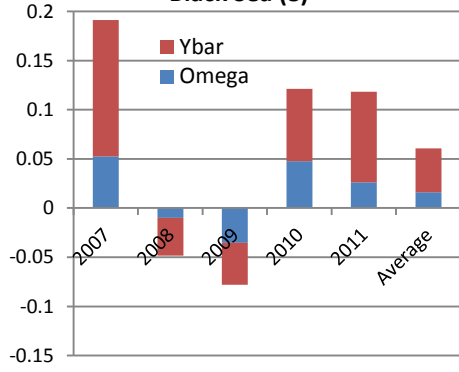
Change in Inclusiveness: East Black Sea (9)
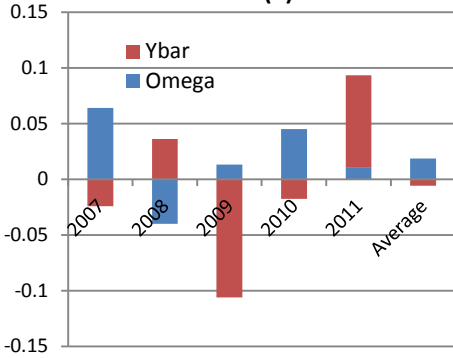
Change in Inclusiveness: Northeast Anatolia (A)

Change in Inclusiveness: Central East Anatolia (B)
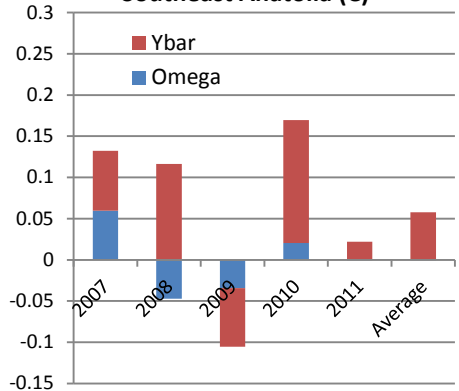

Chnage in Inclusiveness: Southeast Anatolia (C)

Figure A4. Omega Versus Gini Coefficient (annual Growth Rates)