Araştırma Makalesi ● *Research Article*

Comparison of Argentina and Turkey in Calculation of Regional Human Development Index

Bölgesel İnsani Kalkınma Endeksi Hesaplanmasında Türkiye ve Arjantin Karşılaştırması

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MAKALE BİLGİSİ

ÖZ

Bu çalışma, Türkiye ve Arjantin gibi ekonomik büyümenin hızlı bir trend içinde gerçekleştiği ülkelerde son on beş yıllık kalkınma seviyelerini incelemektedir. Diğer çalışmalarda olmayan önemli bir eksiklik giderilerek ilk olarak her iki ülkede de belirlenmiş bölgeler için bölgesel İnsani Kalkınma Endeksi geliştirilmiştir (HDI). Daha sonra bu endeksler bölgeler bazında karşılaştırılmıştır. Bu şekilde her iki ülkenin kalkınma seviyelerini mukayese etmek mümkün olmuştur. Bu yolla ülkeler arası bölgesel İnsani Kalkınma Endeks hesaplanıp ülkeler arası kalkınma seviyeleri karşılaştırılabilecektir.

ARTICLE INFO

ABSTRACT

This study analyses development level in both Turkey and Argentina in the last fifteen years, when both countries faced rapid economic growth and witnessed its huge impact on social welfare. In particular, this study intended to create new local development indexes in the case of both governments decide to allocate resources to different regions of these countries. To do that a Regional Human Development Index (HDI) for each region in every country was built. This attempt is considered a new contribution to the literature and intended to fill the gap in this field.

1. Introduction

After World War II, developed economies subjected to the ravages of the war and new states that were separated from their colonies and re-established, experienced that it is no longer sufficient to measure their level of development with a measure of economic growth rate. Therefore, they started to feel the need for a new measurement technique that undertakes the task of developing different parameters such as education, health, income level that puts people at the center.

The national Human Development Index (HDI), developed by the United Nations Development Program (UNDP), has been created in 1990 in order to respond to this need. With this measurement method, it is possible to take a picture of the living standards of people at the level of knowledge, health and income at the national level, to set targets for further improvement if there is a deficiency and to make the planning that should be followed to reach them.

Even if the Human Development Index is used to understand the standard life of the individuals who make up that society for almost every country, even more standard and stronger variables than this index are needed in order to make a real welfare comparison between the two countries.

In this study, the Human Development Index was chosen to determine the development level of the countries. This index was created by the United Nations (UN) in 1990 to describe three basic standard variables: i) "literacy" in relation to education; ii) "life expectancy" in relation to health, and iii) "income" in relation to purchasing power and consumption capacity. However, it is necessary to create regional calculations in order to bring a more detailed perspective to this index, which has been prepared only at national level, and to have information at local or regional level.

In fact, with the method of calculating the Regional Human Development Index (RHDI), not only will more detailed information be provided about the development levels of the people who make up that society, but also a calculation method will be developed to make comparisons between nations, so a deficiency in the literature will be eliminated.

In this study, while the comparison of development levels between Turkey and Argentina is made by calculating and comparing the Regional Human Development Index (RHDI it will be remained in the positive economy field, not in the normative field. To create this index, the information has been obtained from many official institutions such as the Turkish Statistical Institute (TURKSTAT) and the Ministry of Finance in Turkey; and such as the National Statistical Institute (INDEC) and the Ministry of Economy in Argentina.

In the first part of this study, while a short theoretical review on development economics is placed, in the next section, in section two, the calculation and comparison of the Regional Human Development Index for Turkey and Argentina will be made. In the next section, the findings will be discussed and the study will be concluded.

2. A Brief Overview on Development Economics

From the Second World War until the 1960s, the concept of development was tried to be explained solely with economic growth, and economists generally focused on income and production growth. Especially in the 1950s, with the independence of the former colonies, there was a rapid increase in the number of underdeveloped countries in the World. After gaining their political independence, since these countries accepted the concept of economic growth as a basic indicator of the increase in the welfare level of a country, they have embarked on economic growth.

In this context, until the 1960s, numerous mainstream economists have accepted GDP per capita (gross domestic product) as a reliable and comparable measure of economic performance; They stated that it is an indicator that can even include non-measurable elements such as education and health.

However, in the 1960s, when the underdeveloped countries began to criticize the current international economic order, on the grounds that it did not help their economic growth, and on the contrary caused the gap between them to grow even more, economists argued that the GDP used in the measurement of performance was inherently deficient.

Development economists, such as Samartya Sen, who analyzed the phenomenon of underdevelopment and suggested solutions, sought ways to increase the level of development by focusing on issues such as insufficient industrialization, lack of rapid capital accumulation and the current hidden unemployment in the agricultural sector. (Sen, 1992; 6-14, 1985, 1993, Sirinivasan, 1994). Harvey Leibenstein advocated views that support the low income trap (Leibenstein, 1960). Paul Narcyz Rosenstein Rodan has contributed to the balanced development literature with the big push model and analyzed underdeveloped economies and argued that in such economies the market alone cannot allocate resources in the most appropriate way and is not sufficient for development (Radan, 1944).

Mrydal (1974) has a similar approach. According to Mrydal (1974), development is the forward movement of the entire social system.This social system includes non-economic factors as well as economic factors.

Compared to the developed world, developing countries key features by Todaro and Smith (2007); low life expectancy and productivity level, human lack of capital, high levels of income inequality and complete poverty, high population growth rates, social fragmentation and social conflicts, large rural population, rapid migration to the city, low level of industrialization, difficulties created by geographical conditions, financial sector and other underdevelopment in sectors, weak development where the impact of colonialism is still institutions are listed as foreign dependency (Todaro ve Smith, 2007, s.38).

Development economists have pointed out that "GDP is insufficient in terms of reflecting the depth and breadth of economic and social diseases such as distribution of economic benefit, poverty, malnutrition, low literacy, limited personal freedom and low life levels," (Todaro, 1992b: 359).

Although the importance attached to the issue of development has started to lose its old value in recent years, the concept of development is still explained not by economic performance alone, apart from economic growth, but rather by the ability of people to lead a quality life with a healthy life, a good education and a high income level. According to this, while economic growth shows only a numerical increase, it should turn into a tool that improves people's lives rather than being an aim alone.

According to Bal and Bahadır (2021) the meaning of development concept has changed according to theoretical developments and the dominant economic school of thought. Classical economics had the dominant perspective of the long term literature. However, the fact that economic crisis emerged with policies grounded of these theories could not solve the development problems and brought back with new way of searching.

New research has been done and various human development indicators and indices have been developed to better explain the concept of development and measure a good life (Jahan, 2002: 1). Some of the most well-known pioneering measurement initiatives using these indicators are: (Todaro, 1992a: 359):

1. For many developing countries in the 1960s and 1970s, the United Nations Research Institute on Social Development conducted a series of studies using a composite index formula with 16 basic indicators, nine of which are social and seven of which are economic.

2. A study was conducted by Adelman and Morris in 1967, which classified 74 developing countries according to 41 variables. (Adelman ve Morris, 1967).

3. Physical Life Quality Index was established for the years 1970 and 1980 by the Overseas Development Council in Washington. In this measurement, a comparative and time series study was conducted and focused on three basic social indicators. These are infant mortality rate, life expectancy and adult literacy rate. This study covered all developed and developing countries.

4. In 1990, the Pakistani economist Mahbub ul Haq (Baru, 1998) from UNDP compiled the HDI, which reflects the human-oriented development approach developed by Amartya Sen in the 1980s. Since 1990, it has been published regularly in HDRs every year

The common point of all these studies is that GDP per capita is insufficient in order to explain development, it should be based on human in the development process, and these studies should be supported by social indicators in a wider way. The most important work has come from UNDP (2001), the global development organization of the United Nations. With the publication of HDRs, the human development perspective in development has entered into a very important development (Streeten, 1994).

Considering the use of the term development in Turkey and Arjantina and its historical background, it has been observed that it does not date back to very old times, and that recent information is more frequent.

3. Creation of Regional HDI for Turkey and Argentina

Although many variables and estimates are needed to examine the level of development, only one variable is used in this study to explain development in the most possible way. So we choose the human development index as a proxy of a group of several basics variables. This index is made by the United Nations (UNDP, 2001) to put in one single number three key life standard variables: "literacy", related to education; "life expectancy", related to health and "income", related to buy power and consumption capacity.

To do it so, we adapt UN methodology to lower population levels and we build our Regional Human Development Index (RHDI), so we can compare with the income allocation for every region of both countries. For he Regional Development Index, the limited literatüre review has been conducted. However, Silvia and Ferreira-Lopez (2014) propose a regional development index for Portugal at the NUTS III level, based on the methodology of the human development index (HDI) from the United Nations Development Programme. Acs et al. (2015) constructed a regional application of the Global Entrepreneurship and Development Index (GEDI) that captures the contextual features of entrepreneurship across regions. Using institutional data and survey data, weaknesses in the incentive structure that affect regional development can be identified. In Giaoutzi et al. (2016)1book, Maria Giaoutzi reviewed the regional dimensions of SMEs in Greece and emphasized the importance of regional issues of SMEs. Anand and Sen (1995) also calculated gender inequality in HDI and compared regions on the basis of these calculations.

The data we use in this research are from Türk Stat in Turkey (2000-2014) and National Fiscal Coordination Office (DNCFP – Dirección Nacional de Coordinación fiscal con las Provincias) and Statistics National Institute (INDEC – Instituto Nacional de Estadísticas y Censos) in Argentina (2000-2014). Both data are in local currency, so we change to U.S. Dollars at the date exchange rate.

First, the different geographical regions that will be subject to the study, both Turkey and Argentina are shown in Table 1 and Table 2. Then, Regional HDI's were calculated.

Table 1: Regions and Provinces in Turkey

Regions	Provinces
Akdeniz	Adana, Antalya, Burdur, Hatay, İsparta, Mersin, Kahramanmaraş, Osmaniye
İstanbul	İstanbul
Ege	Afyonkarahisar, Aydın, Denizli, İzmir, Kütahya, Manisa, Muğla, Uşak
Güney Doğu Anadolu	Adıyaman, Diyarbakır, Gaziantep, Mardin, Siirt, Şanlıurfa, Batman, Şırnak, Kilis
Batı Marmara	Balıkesir, Çanakkale, Edirne, Kırklareli, Tekirdağ
Doğu Marmara	Bilecik, Bolu, Bursa, Eskişehir, Kocaeli, Sakarya, Yalova, Düzce
Batı Anadolu	Ankara, Konya, Karaman
Orta Anadolu	Kayseri, Kırşehir, Nevşehir, Niğde, Sivas, Yozgat, Aksaray, Kırıkkale
Batı Karadeniz	Amasya, Çankırı, Çorum, Kastamonu, Samsun, Sinop, Tokat, Zonguldak, Bartın, Karabük
Doğu Karadeniz	Artvin, Giresun, Gümüşhane, Ordu, Rize, Trabzon
Orta Doğu Anadolu	Bingöl, Bitlis, Elazığ, Hakkari, Malatya, Muş, Tunceli, Van
Kuzey Doğu Anadolu	Ağrı, Erzincan, Erzurum, Kars, Bayburt, Ardahan, Iğdır

Source: Türk Stat

Table 2: Regions and Provinces in Argentina

Regions	Provinces
Noroeste	Catamarca, Jujuy, Salta, Tucumán
Gran Chaco	Chaco, Formosa, Santiago del Estero
Litoral	Corrientes, Entre Ríos, Misiones
Cuyo	La Rioja, Mendoza, San Juan, San Luis
Pampa	Buenos Aires, Cordoba, La Pampa, Santa Fé, Ciudad Autónoma de Buenos Aires
Patagonia	Chubut, Neuquén, Río Negro, Santa Cruz, Tierra del Fuego

Source: INDEC

3.1   Regional Human Development Index (RHDI) construction

This part includes the estimation of our RHDI for each region, which we obtain as an average of all Provinces in each region. So we use the same methodology to construct the index at national level. That is to say, we use the same variables like "years of education"; "life expectancy"; "Income per capita" for every province and every region.

a.   Life Expectancy Index (LEI):

$$LEI = \frac{LE-20}{85-20} \tag{1}$$

Where LE is the life regional life expectancy.

b.   Education Index (EI):

$$EI = \frac{MYSI+EYSI}{2} \tag{2}$$

Where MYSI is mean years of School Index: $MYSI = \frac{MYS}{15}$; and EYSI is Expected years of Schooling index: $EYSI = \frac{EYS}{18}$.

c.   Income Index (II):

$$II = \frac{\ln(GNIpc)-\ln(100)}{\ln(75000)-\ln(100)} \tag{3}$$

Where GNI_{pc} is the Regional Gross Domestic Income per capita.

d.   Finally, the Regional Human Development Index we obtain as follows:

$$RHDI_{it} = \sqrt[3]{LEI_{it} \ x \ EI_{it} \ x \ II_{it}} \tag{4}$$

Where $RHDI_{it}$ is the Human Development Index for the Region "i" for the year "t".

In this index the outcome can be a number between 0 and 1, where 0 is worst situation and 1 is the best situation.

3.2. Data Description

Once we obtain the HDIs for each region, we can show the evaluation of RHDI in the following graphics for "Istanbul"; "Ege" and "Güneydoğu Anadolu", in the case of Turkey; and "Pampas", "Gran Chaco" y "Cuyo" in the case of Argentina. In all of them, the slope of the points shows a growth trending.

During the period under review, the RHDI estimations for Turkey are around 0,6473 (Güney Doğu Anadolu) in 2006 and 0,8821 (Doğu Karadeniz) in 2003. The highest RHDI are in Doğu Karadeniz, Ege and Istanbul, and in some cases are above the national estimation. For example in 2013, the United Nations Development Program (UNDP) estimated a national HDI of 0,759; in that year we estimate 0,792 for Istanbul; 0,771 for Ege and 0,86 for Doğu Karadeniz.
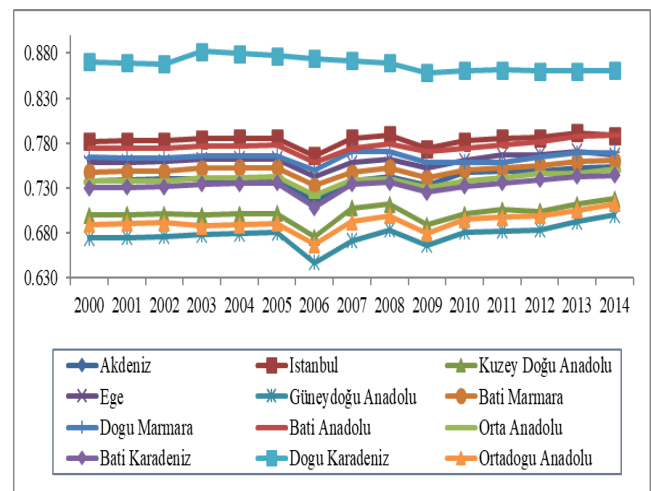
Figure 1: RHDI Turkey Evolution

The LHDI results for Argentina is as follows. After the economic crisis and the devaluation suffered in Argentina, you can see a sharp drop in income received by the regions.
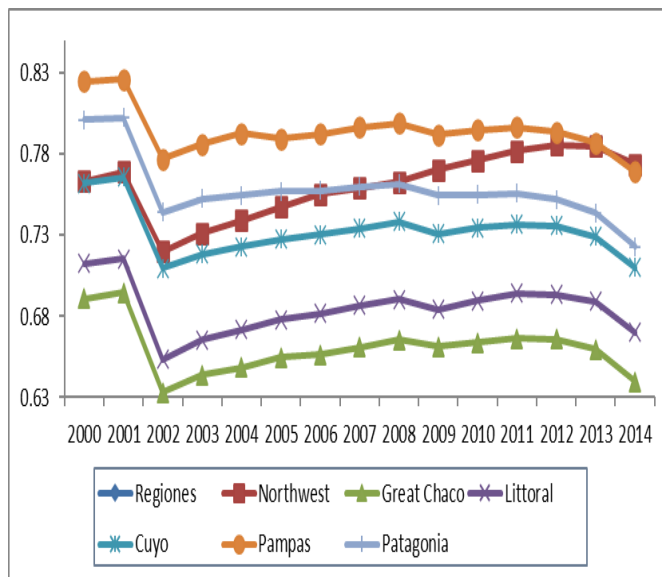
Source: United Nations

4.   Conclusion

We began our research with a research question which was how to compare development levels of two similar countries. Later we selected the Regional Human Development Index (RHDI) as the tool to comnpare two countries.

We choosed Turkey and Argentina because both countries have similar both economics and productive structure, both of them have experimented similar political and economic process and crisis, but in the last fourteen years faced a big and steady growth that allow them increase its medium class income. But there still a long way to be considerer as developed countries. Meanwhile both countries have to provide and assure minimum public goods and services.

In both countries we can research about their population standard life but we should use one international measure so we can make a real comparison between them. So we choose the human development index as a proxy of a group of several basics variables. This index is made by the United Nations (UN) to put in one single number three key life standard variables: "literacy", related to education; "life expectancy", related to health and "income", related to buy power and consumption capacity. Unfortunately, this index is published for a national level and, as we should considerer the locals and regional level we need to adapt this index to lower populations levels.

As not many studies conducted about Regional Human Development Index to compare regions and countries within the countries, we intended to fill the gap in the literatüre and made a small contribution to development literatüre.

To build our own index we took the information from

several official institutions, like Türk Stat and Ministry of Finance in Turkey in one hand and; INDEC, this is the National Institute of Statistics, and the Ministry of Economics in Argentina, on the other hand. Bu araştırmada kullanmak üzere toplanan veriler Türk Stat Türkiye'den, Arjantin'deki DNCFP'den (Dirección Nacional de Coordinación Fiscal con Las Provincias) ve INDEC'den (Instituto Nacional de Estadísticas y Censos) alınmıştır.

We used a Regional HDI because inside this index we can include both economics and welfare variables. Since the methodology for building the index includes "literacy"; "life expectancy" and "local Gross Domestic Product (GDP)"; this index resume in only one number between 0 and 1 (0 as worst situation and 1 is the best situation) how good in the standard life and opportunities in one region inside both countries.

In the study, the Regional Human Development Index for Turkey, which is divided into 12 regions and Argentina, which is divided into 6 regions, showed different trends between 2000 and 2014 due to different economic turbulences. While the government in Turkey faced a sudden decrease in RHDIs during the 2007-2008 global economic crisis, With the sudden and severe devaluation in Argentina in 2001, RHDIs have witnessed a rapid decline in almost all of the 6 regions. However, while RHDIs entered an upward trend in Turkey in 2013 and 2014, this trend was still decreasing due to the ongoing economic crisis in Argentina.

By calculating Regional Development Index we managed to compare two countries and came to conclusion that even though two countries are different from each other, in terms of culture and politics, RHDI calculations show that two countries are very different from each other, in terms of RHDI.

Appendix. Supplementary Materials

Supplementary Materials with this article can be found in online version at journal website (click to download)

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