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# Towards sustainable development. Relationship between HDI and GDP per capita in Albania

Klodiana GORICA, Anita GUMENI

**Abstract**— GDP growth represents only economic growth, and does not necessarily represent development of a country and social welfare for its residents. Many researchers, in order to avoid this discordance, have tried to create an index that is multi-dimensional and can measure development and welfare, beside the economical element. Human Development Index is a complex index that tries to measure social wealfare in each country based on three criteria of human development: a long and healthy life, acces to knowledge and good living. This paper will analyze the relation that exists between Gross Domestic Product per capita and HDI in Albania. Pearson correlation coefficient is used to measure this relation. Linear regression is used to measure the association between Gross Domestic Product per capita and HDI in Albania. We conclude that economic growth is a necessary but not sufficient condition for achieving human development in a country. Critical role, in the development process, play the institutions that affect the design and implementation of the policies, and the creation of equal opportunities.

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**Index Terms**—: Correlation, Development, Gross Domestic Product **(GDP**), Human Development Index (HDI), Social Welfare

## 1 Introduction

Sustainable development, according to the definition given by the United Nations World Commission on Environment and Development in 1987, means "Meeting the needs of present generations without compromising the ability of future generations to meet their own needs." However, despite all the attention devoted to the concept, the perception of its core message remained ambiguous. Sustainable development covers a complex range of ideas and meanings, generally consisting of three lines: economic growth, environmental protection, and social progress (United Nations, 1996). Policymakers should manage to balance these three pillars in appropriate way, since ignoring one of the aspects can threaten the whole development process. Sufficient goods and services are needed to maintain a well-functioning society. In addition, renewable resources should not be overexploited and economic growth should fully take into account distributional equity, health, education, and political accountability.

The national progress can be measured in many ways, however the most widely accepted measure of a country's economic progress is the Gross Domestic Product (GDP). GDP is the monetary value of all goods and services produced in a country, for a period of one year. GDP per capita is used as well to determine the position of a country over time or relative to that of other countries.

- *Prof.Asoc.Klodiana Gorica is currently Vice Dean of Faculty of Economy, University of Tirana, Albania.* *klodi_gorica@yahoo.com*
- *Msc. Anita Gumeni is a Phd candidate on Sustainabler Development Faculty of Economy University of Tirana, Albania. anitagumeni@yahoo.gr*

The information obtained from the GDP have a significant impact on the creation of economical expectations of a nation, on making decisions by private and public agents and give policymakers and analysts an easy-to-use tool that helps steer economic. The GDP is thus considered as a synonymous of social welfare.

Since its creation, GDP and GDP per capita have received much criticism. According to the economists GDP measures only monetary transactions related to the production of goods and services, based on an incomplete picture of the system, and it is not necessarily a measure of welfare or even a significant measure of standards of living. GDP measures only those items that can be priced, it automatically excludes things that are not in the economic area, such as, family stability, clean air and a low crime rate, pollution, human rights, equal distribution ect..Therefore, economists have started to pay attention not only to economic growth rates, but as well to the quality of its development (W. Baumol, W. Oates 1998).

After the realization that GDP is a measure of economic quantity, not economic quality or welfare, other alternative economic and social indicators are designed, proposed and used to address the growing. One of these indexes is the Human Development Index (HDI) that measures a country's average achievements in three basic aspects of human development: longevity, knowledge, and a decent standard of living. Longevity is measured by life expectancy at birth; knowledge is measured by a combination of the adult literacy rate and the combined primary, secondary, and tertiary gross enrolment ratio; and standard of living by GDP per capita which gives a more complete picture about the level of development of a country and helps in making the right policies, which aim not only to economic growth, but also increase the welfare of a country.HDI ranks all countries into three groups: low human development (0,0 – 0,499), medium human development (0,5 – 0,799) and high human development (0,8 – 1,0) (Todaro and Smith, 2002).

Various economists have studied the link between economic growth and

the increasing prosperity of a country, as Sadequl Islam (2010) who analyzed the relationship between GDP per capita and HDI in developing countries. He observed a relationship “inverted U“of GDP per capita and HDI average for the developing countries. Shoma and Sarika Tondon Swaha (2010) evaluated the correlation between economic growth and HDI for ASIAN 5 (five countries of South Asia), which resulted positive but weak. Khodabakhshi Akbar (2011) showed that GDP in India had a good growth but the HDI was very low.
The rest of this paper is organized as follows: section 2 criticisms of GDP and why this index is not sufficient to measure the well-being of a country. In the third section, we analyze the HDI index, its components and parameters. In the fourth section, we examine correlation that exists between HDI and GDP per capita. Conclusions will be given in the fifth section.

## 2 Criticisms of GDP

Using GDP and GDP per capita as an indicator of a country's welfare, has faced a lot of criticism. Moreover, criticism has come from some of the most respected economists of the 20th century, including various Nobel laureates. Among the most well-known critics are Kuznets (1941), Galbraith (1958), Samuelson (1961), Mishan (1967), Nordhaus and Tobin (1972), Hueting (1974), Hirsch (1976), Sen (1976), Scitovsky (1976), Daly (1977), Hartwick (1990), Tinbergen and Hueting (1992), Arrow et al. (1995), Vellinga and Withagen (1996), Weitzman and Löfgren (1997), Dasgupta and Mäler (2000), and Dasgupta (2001).

GDP does not share the benefits of cost. "No one will see only the earnings of a company to assess its performance. Very important is the balance there of, which reflects assets and liabilities. The same goes for a country." Stigliz (2005) According to Mishan (1967) and Toby (1977), GDP should be evaluated as the total value of the costs of economic activity in a country. Economists William Nordhaus and James Tobin (1972) wrote that “GDP is not a measure of welfare."

Sen (1976, 1979) considers the implicit treatment of income distribution as the main objection against GDP. An unequal distribution of income means unequal opportunities for prosperity. "But welfare of a country can be measured by national income", see Simon Kuznets in 1942 (one of the architects of GDP) .

Overall GDP reflects only transactions that have a market price and neglects all informal transactions that can be performed outside formal markets. The existence of the informal economy complicates the meaurement of the welfare of a country by GDP. The fact that the informal economy is left out of consideration explains why GDP per capita for many countries in the latter group can be so extremely low. At the same time, it can easily give a wrong picture of how (un)happy people really are. Over time, relationships and values that occupy the informal economy, in a country changes compared to the official. At a certain time, economic growth may not coincide with increasing prosperity, it can happen as a result of the return of informal activities (e.g. work in black) in formal activities (Mishan and Daly, 1967). GDP also does not take into account voluntary work, housework, childcare ect.

GDP shows the quantitative development of a country and not the quality of development. It does not reflect the costs because of environmental damage and the depletion of the stock of natural resources (Thomson et al, Talberth 2007). Damaged or polluted natural resources are not considered by GDP, but when will spend to regenerate these resources this with be shown as GDP growth, due to this we will result "richer” (Atkinson et. al., 1997).

For all the above reasons it is necessary to propose other parameters of GDP, in order to include in their estimates the environmental and social aspect. Indicators that can determine not only the welfare of a country's development, but also to be able to determine the stability of this development. These parameters, by being multidimensional, can give us more information about the performance of a country's economy and help in the selection and design of appropriate policies to economic and social sustainable development.

## 3 Human development index (HDI)

The main reason of introducing a new measurement index from UNDP was to center attention away from income towards a more broad measure of human development. “At all levels of development, the three main development components of a country deal with the possibilities of people to lead a long and healthy life, to acquire knowledge and to have access to resources needs for a decent standard of living” (UNDP 1990).

HDI is a new measurement of social welfare of a country. HDI is based on three dimensions of human development: in a long and healthy life, being knowledgeable, and a decent standard of living. HDI is a statistical indicator that tries to measure the social dimension and the economic dimension of development (UNDP). This index is devised by Mahbub ul Haq,(1990) it has been developed form Noblest Amartya Sen (1990) and has been introduced by UNDP. HDI takes value from (0) lower bounds to (1) upper bounds of development. A country development is classified as high when HDI takes values over 0,800, medium development when HDI is between 0.500-0.800 and low development when HDI is less than 0.500 (UNDP).

Table 1 Dimensions and indicators of HDI

| Dimensions | Indicators | Index |
|---|---|---|
| Income | GNI/capita | HDI (Human Development Index) |
| Education | MYS: mean years of schooling | |
| | EYS: expected years of schooling index | |
| Life Expectancy | LEI: life expectancy at birth | |

Indexes used in computation of HDI are measured by international agencies with special knowledge in the collection and processing of data such as United Nations Population Division (UNPD) for calculation of Life Expectancy Index, United Nations Educational Scientific and Cultural Organization (UNESCO) for the calculation of Education Index and World Bank (WB) for calculation of GDP per capita.

The estimation of this index has changed slightly during years and now is used as follows.

(I life 1/3. I education 1/3 .I Income 1/3)➔

- $$LEI = \frac{actualvalue - \min .value}{\max .value - \min .value}$$
    - $(max = 83{,}2 \ min = 20\ )^1$

[1] The average value calculated from UNDP based on observations and measurements for the period 1980-2010

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- $MYSI = \dfrac{acualvalue - \min .value}{\max .value - \min .value}$

  - $(max = 13, 2\ min = 0)^2$

- $EYS = \dfrac{actualvalue - \min .value}{\max .value - \min .value}$

  - $(max = 20,6\ min = 0)^3$

- $EI = \dfrac{\sqrt{MYSI * EYS}}{0,951}$
- $II = \dfrac{ln\, \mathrm{GNI}_{pc} - \ln(100)}{\ln(107,721) - \ln(100)}$
- $HDI = \sqrt[3]{LEI * EI * II}$

Since introducing, HDI, has been an important alternative measurement of development. However, HDI as well, is criticized from different economists. First of all it has been criticized for the way of choosing the variables, since it does include variables that measures the human development like equity, political and human rights, income distribution ect Hermele Keneth (2006). Sagar and Najam (1998) pointed out that: "HDI presents a destroyed picture of the word". This index still fails to take into consideration any ecological parameters. In addition, there are critical positions to statistical methods used to calculate HDI (Kelley, 1991, Srinivasan, 1994, Ravallion, 1997)



## 4 CORRELATION BETWEEN GDP/CAPITA AND HDI IN ALBANIA

### 4.1 Methodology

This paper purpose is to analyze the movement of the two parameters GDP and HDI and to investigate if there is any significant correlation between their trends.

We will test the following hypothesis:

*H0: There is no significant correlation between the human development and economic growth per capita in Albania.*

*H1: There is a significant correlation between the human development and economic growth per capita in Albania.*

We include our data in IBM SPSS statistics of vers 20.0. In this study Pearson, correlation is used to measure relationship between HDI and GDP per capita, simple linear regression is used to study the correlation between these variables. Data for Gross Domestic Product per capita are retrieved from Word Bank; data for Human Development Index are retrieved from United Nations Development Program during 1990-2011. For our research purpose, we consider a level of significance below 0.5.

- Gross Domestic Product per capita (GDPc) – independent numeric variable (X)
- HDI (HDI) – depended numeric variable (Y)

Table 2 Model summary

| Model | | 1 |
|---|---|---|
| R | | .486a |
| R Square | | 0.237 |
| Adjusted R Square | | 0.198 |
| Std. Error of the Estimate | | 0.03843 |
| Change Statistics | R Square Change | 0.237 |
| | F Change | 6.196 |
| | df1 | 1 |
| | df2 | 20 |
| | Sig. F Change | 0.022 |

Pearson correlation coefficient ρ = .486 shows that correlation between HDI and GDPc, in Albania is positive but low for the regression as o whole. We use t-statistic to test the validity and the riability correlation coefficient. P value is (p = 0.022) < (α = 0, 05) this shows that we have gain a significant coefficient at the confidence level 95%.

The coefficient of determination R Square (R2 = 0.237) indicates that approximately 23.7% of HDI is explained by the GDPc in Albania during 1990-2011.

Table 3 Coefficients

| Model | | 1 (Constant) | GDPc |
|---|---|---|---|
| Unstandardized Coefficients | B | 0.687 | 1.58E-05 |
| | Std. Error | 0.014 | 0 |
| Standardized Coefficients | Beta | | 0.486 |
| t | | 49.102 | 2.489 |
| Sig. | | 0 | 0.022 |

Albania has high ranking of HDI, it is considered to be in the category of a medium high human development countries. However, the correlation though positive is not high. This implies that growth has increased faster than development. Albanian economies have made significant progress in growth but not in the index of development. The scatter plot (fig.1) reflects the interference. This interference is clearer if we compare the growth trend between GDP and HDI (fig.3 and fig.4 corespondaly) it is obvious that GDP has a positive growth trend on the

[2] The average value calculated from UNDP based on observations and measurements for the period 1980-2010
[3] The average value calculated from UNDP based on observations and measurements for the period 1980-2010

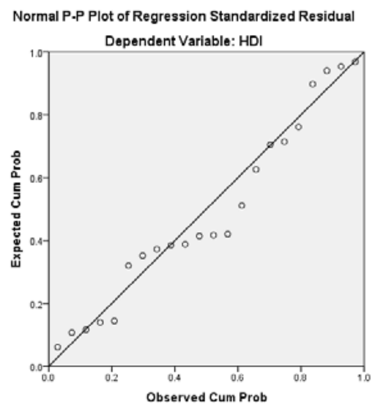


Fig. 1. Plot of regression Standadized residual. Depend varaiable HDI, independed variable GDP

contrary HDI has a negative growth trend.

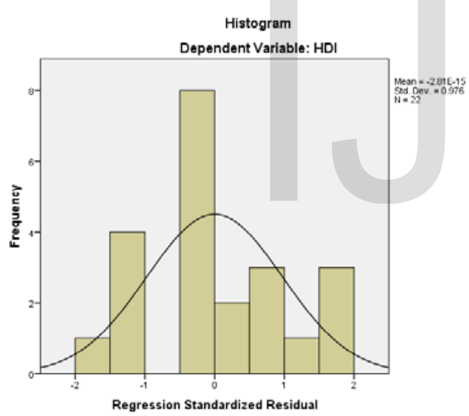


Fig. 2. Histogram

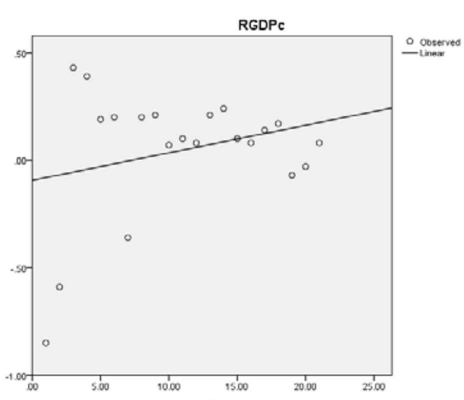


Fig. 3. Growth rate of GDP per capita in Albania during 1990-2011

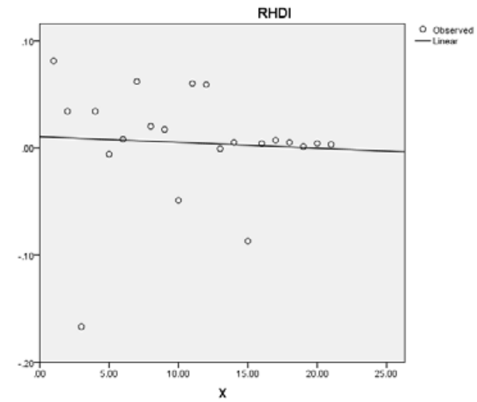


Fig 4. Growth rate of HDI in Albania, time period 1990-2011



## 5 Conclusion

Results in this article shows that between GDP per capita and Human Development Index, in the economy of Albania, exist a fair and average correlation, a difference in GDP has a low positive effect on HDI. This fact shows that an increase in economic variables does not necessary imply an increase in the social welfare of the population. On the contrary, in Albania HDI trend growth has been decreasing, while the trend of GDP growth per capita has been rising.
Policy makers objective should not simply be a country's economic growth, but increaseing his welfare. We conclude that economic growth is a necessary but not sufficient condition for achieving human development in a country. Critical role, in the development process, play the institutions that affect the design and implementation of the policies, and the creation of equal opportunities.

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