Is there any effect of economic growth and human development on fiscal policy implementation?

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Abstract. *The paper's scope is to study the effect of socio-economic structures on fiscal policy implementation in the 28 European Union Member States between 2007 and 2017. Fiscal policy was defined by considering Government Revenue (GREV) and Government Expenditure (GEXP) as a percentage of Gross Domestic Product collected from the Eurostat database and referred to the general government. To determine the socio-economic structures, human development and economic growth were chosen. The following instruments were applied to describe these two indicators: Human Development Index (HDI) to describe human development and were collected from the United Nations Development Programme, and the Gross Domestic Product growth rate (GDPgr) collected from the World Bank to explain economic growth. The methodology applied to test the stationarity of the data is the Unit Root Test and the Ordinary Least Squares method to reflect the impact of economic growth and human development on fiscal policy. The results reveal that human development and economic growth play an essential role in implementing fiscal policy.*

Keywords: government revenue, government expenditure, policy, EU Countries

JEL Classification: E62, O15, O47

1. Introduction

The paper analyses how fiscal policy defined in terms of Government Revenue and Government Expenditure can influence socio-economic structures, expressed in terms of economic growth and human development for the 28 European Union countries during 2007-2017. The paper's main objective is to highlight the socio-economic variables that have an impact on fiscal policy implementations. To perform the analysis was applied two methodologies: Unit Root Test and Ordinary Least Squares method.

In general, fiscal policy is a part of economic policies. It encompasses the entire set of ideas, regulations, and strategies dedicated to ensuring the revenue collection and spending the expenditures appropriately with country needs. According to United Nations, human development is measured through some indicators that describe life aspects like knowledge, the standard of living, a long and healthy life.

It is well known that the government is playing a crucial role in achieving economic growth and development. For a long growth, government expenditures on education and health positively impact human development by improving it. Also, the accumulation of physical capital can be caused by government expenditures. (Kizilkaya et al. 2015)

The novelty of this research is described by the set of data that was applied combined with the selected period of time for the analysis. The paper is structured in 4 parts as follows: the first part represents the stage of knowledge between fiscal policy, economic growth, and human development. In section 2 is presented the data and the

methodology applied to find the impact of socio-economic structures on fiscal policy. The main results after applying the models are described in section 3. The paper ends with section 4, which represents the conclusions of the article.

2. Literature review

The researches on the relationship between fiscal policy and socio-economic structures have been increased in the last period. The existing literature regarding fiscal policy is vast and includes literature reviews, econometric analysis, and other findings.

There are different definitions or approaches to describe fiscal policy. According to Holt (2009), fiscal policy has a significant role in realizing the principle macroeconomic objectives that the government implements, such as a high employment rate, stability of prices, external balance of payments, and economic growth by applying integrated systems in the fiscal systems applied in time.

According to Lobonț (2012), public authorities are the ones that manage the fiscal policy instruments. They aim to influence the economy to achieve essential economic objectives, such as unemployment, capital formation, and growth.

Engin & Skinner (1992) described fiscal policy in two approaches: one approach is that fiscal policy is suppressing economic growth through distortionary taxation and inefficient government spending. The second approach is that the government plays an essential role by providing public goods and infrastructure.

Davies (2009) studies the impact of the expenditure size on the Human Development Index by applying a panel data model of 154 countries during 1975-2002. With the GMM model, the results suggest that the size of government expenditure directly impacts the Human Development Index.

The purpose of the study performed by Kizilkaya et al. (2015) was to test the effect of taxes, expenditures, infrastructure, and income on human development during 1998-2007 for 14 OECD countries. The results point out that government expenditure positively impacts human development and income taxes have a negative effect after applying panel FMOLS. A causal relationship has been established between government expenditure and income to human development in the long run.

Brașoveanu & Brașoveanu (2008) have studied the correlation between economic growth and fiscal policy in Romania during 1990-2017. Their empirical results point out that in Romania, direct and indirect taxes on economic growth are negative.

Stoilova (2017) analyses the trends of fiscal burdens and their impact on economic growth in the 28 European Union countries during 1996-2013. According to the author, empirical results point out that government expenditure does not impact economic growth while government revenues seem to affect growth.

The main goal of a country is the constant status of growth and sustainable development regardless of development. Therefore, any government must give priority to promoting human development which depends on improving human capital. The key in the formulation of fiscal policy is focused on human development. (Vijisandiran & Selvarasa, 2018).

According to Ali et al. (2012), fiscal policy plays a significant part in achieving economic growth and human development. Social welfare and human development are increasing because of the goods and services that the government gives through

public spending, by lowering the inequality and other obstacles that may appear in development. Also, the indirect and direct taxes can affect the ability of the expenditure by restricting development.

The literature highlights that human development and economic growth is playing a significant role in fiscal policy. The study aims to introduce new insides with the selected period and test the effect of economic growth and human development on fiscal policy implementation.

3. Data and Methodology

To study the impact of socio-economic structures and fiscal policy, a strongly balanced panel data of the 28 European Union Member States between 2007-2017 was applied Government Revenue and Government Expenditure as a percentage of Gross Domestic Product are the indicators applied to describe fiscal policy collected from the Eurostat database.

Socio-economic structures were defined by economic growth and human development. Human development was described by applying the Human Development Index collected from the United Nations Development Programme. To describe economic growth, we applied the Gross Domestic Product growth rate collected from World Bank.

The 28 European Union Member States are divided by the year of integration in the European Union. We have the new EU countries, which are the ones that entered after 2004, and old EU countries and are the ones that entered before 2004. The old EU countries list includes Austria, Belgium, Denmark, France, Italy, Spain, United Kingdom, Sweden, Luxembourg, Portugal, Ireland, Greece, Germany, Finland, and Netherland. The new EU countries are Bulgaria, Cyprus, Czech Republic, Poland, Romania, Slovenia, Slovakia, Croatia, Estonia, Hungary, Lithuania, Latvia, and Malta.

Human Development is measured through the Human Development Index (HDI). It represents a mean of three components of human development, such as long and healthy life, a decent standard of living, and knowledge. Human Development Index is measured according to some levels of development such as:

- 0,800 and 1.000 signify a very high level of human development
- 0,700 and 0,799 signify a high level of human development
- 0,550 and 0,699 signify a medium level of human development
- 0,350 and 0,549 signify a low level of human development

Unit Root Test was applied to test the stationarity of the data. If the data is not stationary, the shock and the effect are not going to disappear in time.

To see the impact of human development and economic growth on fiscal policy was applied the Ordinary Least Squares Method and was calculated by applying the following formula:

$$Y = \beta_0 + \beta_1 x_1 + \beta_2 X_2 + ... + \beta_n X_n + \varepsilon$$

where: y – dependent variable

$x_1...x_n$ – independent variables

β_0 - the value of y when the independent variables are zero

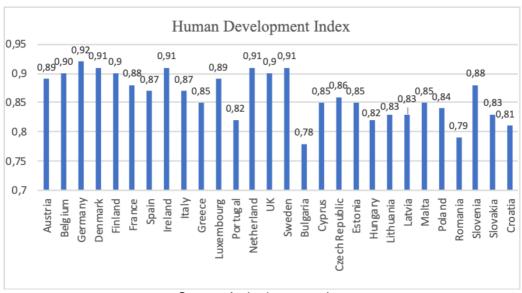$\beta_1...\beta_n$ – estimated coefficients of regression

In the analysis, the independent variables are Government Expenditure and Government Revenue as a percentage of Gross Domestic Product. The dependent variable is represented by the Gross Domestic Product growth rate and Human Development Index. The unit root test and regression analysis were performed with the Stata program.

4. Findings

In figure 1 is presented the average of Human Development Index in the 28 European Union member states during 2007-2017. The results reveal that Germany (0.92), Denmark (0.91), Sweden (0.91), Netherland (0.91), and Ireland (0.91) have a very high level of human development. On the opposite side, Romania (0.79) and Bulgaria (0.78) have the lowest value and are the only countries in the European Union in the second category of human development and have only high human development. Romania and Bulgaria are also relatively new in the European Union since 2007, so they still have to improve the standard of living for the citizens.

It can be seen a difference in human development levels between the old and new European Union countries. The new countries still have to improve some segments like education, health, human capital to improve this level of human development in the future.
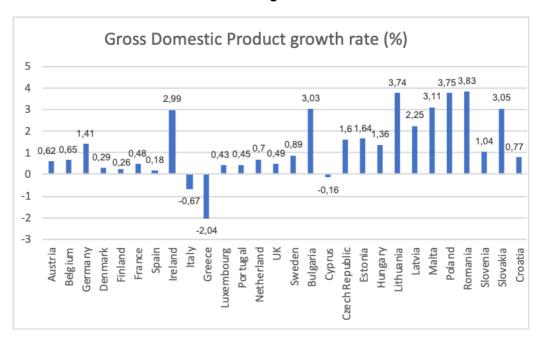
Figure 1. Human Development Index in the 28 European Union member states during 2007-2017

Source: Author's processing

In figure 2 is presented the average of the Gross Domestic Product growth rate in the 28 European Union member states during 2007-2017. The figure reveals that higher levels of growth are registered in the new European Union countries, such as Romania (3.83%), Poland (3.75%), and Lithuania (3.74%). The lowest level of growth is registered in Italy (-0.67%) and Cyprus (-0.16%). As is it well known, the Gross Domestic Growth rate is defined by the percentage increase in Gross Domestic Product and the negative values registered means that the economy is contracting and a recession may appear in the future. Also, a higher level of growth can cause inflation.

Figure 2. Gross Domestic Product growth rate in the 28 European Union member states during 2007-2017

Source: Author's processing

Table 1. Descriptive statistics

Variables	Observations	Min.	Max.	Mean	Std. Dev
Human Development Index (HDI)	308	0.76	0.93	0.86	0.03
Gross Domestic Product growth rate (GDPgr)	308	-14.26	23.98	1.29	3.91
Government Revenue (GREV)	308	25.8	56.4	42.48	6.23
Government Expenditures (GEXP)	308	26.1	65.1	45.53	6.48

Source: Author's calculations

In table 1 is presented the descriptive statistics of data for the 28 European Union member states between 2007-2017. The descriptive statistics summarize the number of observations, minimum, maximum, mean, and standard deviation of the following variables: Human Development Index, Gross Domestic Product growth rate, Government Revenue, and Government Expenditures as a percentage of Gross Domestic Product for the 28 European Union Member States between 2007-2017.

Table 2. Unit Root test

Variables	Unit Root test	Statistics
Human Development Index (HDI)	Hadri LM	27.52***

Gross Domestic Product growth rate (GDPgr)	Levin, Lin and Chu	-11.14***
Government Revenue (GREV)	Levin, Lin and Chu	6.59***
Government Expenditures (GEXP)	Levin, Lin and Chu	-11.77***

Source: Author's calculations
****Significance level of 1%*

Table 2 highlights the results of Unit Root tests applied. It can be observed that all the data is stationary. The unit root hypothesis is rejected on a significance level of 1%. The regression analysis can be performed now because the data is concluded.

Table 3. The results of the Ordinary Least Squares method (Dependent Variable: Gross Domestic Product growth rate and Human Development Index)

	Gross Domestic Product growth rate	Human Development Index
Variable	Coefficient	Coefficient
Government Revenue (GREV)	-0.68***	-0.003**
Government Expenditure (GEXP)	-0.57***	0.002***
Constant	1.01***	0.759***
R-squared	0.32	0.15
Adjusted R-squared	0.31	0.14
Number of Observations	280	280

Source: Author's calculations
***, **Significance level of 1% and 5%*

The estimated equations of the Ordinary Least Squares method is the following:

$$GDPgr = 1.01 - 0.68GREV - 0.57GEXP$$

$$HDI = 0.75 - 0.003GREV + 0.002GEXP$$

Table 3 presents the regression analysis results after applying the Ordinary Least Squares Method in the 28 European Union countries and considers the Human Development Index and Gross Domestic Product the dependent variables. The results from table 3 reveal that the Gross Domestic Product growth rate has a negative and substantial impact on government revenue and government expenditure at a significance level of 1%.

The results obtained are similar to Widmalm (2001), who made this analysis more in-depth by considering data from 23 OECD countries during 1965-1990 and discovered that tax revenue, especially the personal income taxes, has a negative correlation with economic growth. Accordingly, Arnold (2008), after making a panel growth regression for 21 OECD countries, reveals that corporate income taxes negatively impact growth. The negative results are also obtained by Chu et al. (2018), who studied the impact of growth on government expenditure during 1993-2012 for 37 high-income countries and revealed that government expenditure harms economic growth.

According to the results obtained in table 3, it can be concluded that Human Development Index has a significant impact on Government Revenue and Government Expenditure. The only difference is that the impact on Government Revenue is negative while Government Expenditure has a positive effect on fiscal policy at a significant level of 1%.

Since the fiscal policy is a part of public policy, we can also consider the results obtained by Calinovici et al. (2019), where was studied the human development effect on public policy in the 28 European Union countries during 2002-2017. After they applied the model with fixed and random effects, the results reveal that if the government is effective in law implementations and their quality, it will raise human development by increasing the standard of living, access to the health system, and proper knowledge.

Based on their research, Rahmawati & Intan (2020) reveals that government expenditures have a positive and robust impact on the Human Development Index and the essential affected component of spending was the expenditures on goods and services. The negative results on human development may be because the tax collection is not so good in all countries, and not all citizens pay their taxes on time.

5. Conclusions

The paper analyses the impact of economic growth and human development on fiscal policy in the 28 European Union Members during 2007-2017. To perform the analysis, the relevant indicators for describing fiscal policy were defined: Government Revenue and Government Expenditure as a percentage of Gross Domestic Product. Economic growth and human development were represented by the Gross Domestic Product growth rate and Human Development Index.

The methodology applied is the Unit Root test to test the stationarity of the data and the Ordinary Least Squares method to reveal the impact of economic growth and human development on fiscal policy. The Unit Root Test indicates that all the data is stationary after applying Hadri LM and Levin, Li and Chu.

The dynamics of economic growth highlight that in the old EU countries, the values are lower compared with the new ones. Also, the human development dynamics reflect the opposite, the old countries have the highest values, and the new ones have the lowest. In conclusion, the new countries still have to improve the standard of living, education, and health system. Romania and Bulgaria are the ones that have to work more to achieve these goals.

The Ordinary Least Squares reveals that Government Revenues and Government Expenditure positively but negatively impact economic growth, which was correlated with the existing literature. The results highlight that only Government Revenue has a negative impact on human development, while Government Expenditure exerts a positive and significant impact.

Starting from this analysis, future studies can be made by testing the components of government revenues and government expenditure on these socio-economic structures or considering others, like Gross National Income, Human Poverty Index, etc. The present paper can raise interest from politicians, citizens, and the government. The paper contributes to the fiscal policy field and finds the indicators with the highest impact in the 28 European Union Countries.

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