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The Effect of Linear Taxation versus Progressive Taxation on Economic Growth - Empirical Evidence in European Countries

Alban Elshani¹, Lekë Pula², Fëllënza Lushaku³, Ardi Ahmeti⁴

Abstract: Today in the world there is a great political and academic debate as to which type of tax should be applied, linear or progressive taxation. In this paper, we will show which countries have the highest economic growth, the countries applying the linear taxation or those applying the progressive tax. A total of 35 European countries have been surveyed. On one side there are 20 European countries included, OECD members applying the progressive taxation and the other side includes 15 European countries applying linear taxation. For this study, 13 years have been taken into consideration from 2002 (the year when the Euro was introduced) until 2014. There are 456 observations in total. The main focus has been the economic growth in these European countries. Data on Gross Domestic Product (GDP) per capita are taken from the World Bank database, while other variables are obtained from the OECD database and the country's statistics agencies. Data on other variables are presented in % of Gross Domestic Product. Findings show that countries applying the linear tax experience the largest economic growth, whereas countries applying progressive tax have a smaller economic growth of 3.13% compared to countries applying linear taxation.

Keywords: economic growth; linear taxation; progressive taxation; GDP per capita

JEL Classification: H26

1. Introduction

Defining the term tax is extremely difficult. To show its importance, Benjamin Franklin stressed that “in this world, nothing is as secure as death and taxes.” This famous statement by Benjamin Franklin is based on historical reality. Each person is obliged to pay taxes and other contributions implied by law. The art of taxation consists in determining such tax rates in order to provide the greatest possible income, with the minimum taxpayer response. (Jean Baptist Colbert, as cited in Becker & Mulligan, 2003)

The government’s main goal is to apply an optimal tax rate, whereby a combination of tax rates would be made. Many authors have come up with this issue, trying to find an optimal taxation system. The first publications aimed at achieving an optimal taxation system date back to 1927 with Ramsey (1927), later in 1971 with Diamond & Mirrlees (1971). Still, their model has not found extensive implementation in the fiscal systems in many countries. At the end of the nineteenth century, Edgeworth examined the optimum tax rate equation using a simple model, resulting in a progressive radical tax structure - revenues are collected from above until full equality is achieved. (Atkinson & Stiglitz, 1976) The amount of tax

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that can be collected by the taxpayers depends on the tax rate. Proponents of the linear (flat) method consider that this is a fair way of calculating because each contributes in proportion to its income. Proportional taxes are simpler and less costly. While proponents of the progressive approach consider that this type of taxation is fair because it enables a redistribution of assets and a reduction in inequality.

When determining a linear, progressive or regressive tax, the amount of tax charge should be taken into account. Examining the advantages and disadvantages of the progressive, linear or regressive tax, and generally, the analysis and assessment of a tax system, are closely related to the problem of the tax burden, both low and high. (Jelcic, 1983) The definition of linear taxation is simple, it describes a situation in which the income tax rate is constant, regardless of the level of income. (Rosen, 2002) Disturbances arise because some people think progressivity through the marginal tax rate - the change in the tax paid in relation to the change of income. (Rosen, 2002)

2. Literature Review

2.1. The Effect of Tax on Economic Growth

Many authors have dealt with taxes and their impact on economic growth. Many books have been written and many scientific works have been published, which have come to different conclusions. Depending on the countries surveyed, the results are also different. But what matters is, according to almost all authors, taxes have impacted on economic growth, whether positively or negatively. The following we will review the literature concerned with the effects of taxes on economic growth.

Fiscal policy instruments have different effects on production and interest rates. The effect of fiscal policy on production seems to be rather modest but continuous. (Kofi, 2011) Economic development and fiscal structure have a strong bond between themselves. Tax revenues are important only in developed countries and the tax effects are very difficult to empirically measure. (Easterly & Rebelo, 1993) Financing tax expense reduces economic growth in developed countries and affects economic growth in developing countries. (Miller & Russek, 1997) Fiscal incentives are based on cutting tax revenues, which negatively impacted economic growth. (Alesina & Ardagna, 2010)

The authors Tanzi & Zee, (1997) concluded that government taxes and expenditures have an impact on GDP growth, with Atkinson & Stern (1980) indicating the same effect. They studied Great Britain from 1973 to 1979 and came to the conclusion that taxes have a very small impact on economic growth in the long run. Reducing marginal tax rates by 1% causes GDP growth per capita in the coming year of 0.50%, so taxes have negative effects on GDP per capita growth. (Barro & Redlick, 2011) Increasing total revenues, including tax revenues, has a negative impact on investment and GDP. (Blanchard & Perotti, 2002) The same opinion is shared by the authors Fölster & Henrekson (2001). According to the authors, it is said that the increase in tax revenues has a negative correlation with GDP growth. Mendoza, Milesi-Ferretti, & Asea (1997) think that taxes can affect investment, but their effect on GDP is not significant. Tax revenues have no impact on economic growth and it is very difficult to empirically measure. (Easterly & Rebelo, 1993)

Bleaney, Gemmell & Kneller (2001) examined the OECD member states from 1970 to 1995. They came to the conclusion that direct tax revenue (PIT and CIT) reduces economic growth. While Value Added

Tax has a positive impact on economic growth. The same authors, in their work “The Timing and Persistence of Fiscal Policy Impacts on Growth: Evidence from OECD Countries,” expanded the study from 1970 to 2004 and came to the same conclusion. Personal Income Taxes and Corporate Income Taxes negatively impact economic growth. These two types of taxes undermine economic development in the long run followed by budget deficits. (Gemmell, Kneller & Sanz, 2011) A high tax rate of Corporate Income Tax associates with a low rate of economic growth. (Goolsbee, 2004) Reduction of Corporate Income Tax by 1% causes GDP growth from 0.1% to 0.2%, so there are negative effects. (Lee & Gordon, 2005)

Value Added Tax has a negative impact on economic growth. (Emran & Stiglitz, 2005) While, according to author Harberger (1962), Value Added Tax - consumption tax does not have any impact on economic growth.

2.2. Linear Taxes

The linear tax aims to equalize something that is in advance equal - people who earn the same amount pay the same amount of tax. According to Günther Friedrich Fehlinger (2015), President for Tax Reform in Europe “low rates will reduce the incentive to avoid taxation, which, however, has a certain cost, especially for transition countries a simple, straightforward system and low is proven to be successful by creating a moral tax and a sudden increase in state budget revenues across Central and Eastern Europe.”

Linear taxation originates in the tax system of Persia. (Fateh, 1928) This form of tax was used in every country until the time of the Great Depression (1929-1933), where its application was questioned. At this time the application of progressive tax began. However, the application of the linear tax began to be applied in some Eastern European countries. The first person who upheld this tax method was the well-known economist Adam Smith (1838), who did not call it a linear tax but based on his theories hinted that he had thought about this system.

Many authors have given their opinions regarding the application of linear taxation. Hall & Rabushka (1983) find that if a linear tax is applied, the minimum wage should be exempt from tax. According to Rosen (2002), it is said that after a seven-year period, linear taxation positively affects social welfare and capital formation. The same opinion was also made by Auerbach, Aaron & Hall, (1983), who claim that “the impact of a linear tax on the economy is not immediate, but economic growth is noticed only after seven years from its application.” According to Keen, Kim, & Varsano (2006), the application of linear tax is a source of improvement of horizontal equality and efficiency as well as simplicity. Linear tax with some exceptions has progressive effects on the poorer layer. (Brown, Mitchell, Poterba & Warshawsky, 1999) Personal Income Taxes in countries applying linear tax have a negative correlation with economic growth, while Corporate Income Tax has little impact on economic growth. (Widmalm, 2001)

2.2.1. The Tax Structure in Eastern and Southeastern Europe Countries

The first country applying the linear tax was Jersey in 1940 with a tax rate of 20% (Keen, Kim & Varsano, 2006), while in Europe the first country applying the linear tax was Estonia, in 1994. (Ellis & Peter, 2012)

After Estonia, other Baltic states like Latvia and Lithuania followed the Estonian road, applying the linear tax rate. In 2001, Russia also applied the linear tax rate, but only to Personal Income rather than

Corporate Income. In 1997, Estonia's economic performance was impressive. In that year in Estonia, there was an economic growth of 6%. (Ellis & Peter, 2012) From the income perspective, Russia also had an impressive experience. After the application of linear taxation in Russia, out of the total revenues, 26% were from Personal Income Tax, which was also the main purpose. The proponents of the application of linear vs. progressive tax have won points in the case of Russia. Russia applied the linear tax in 2001, which proved to be very successful in economic growth.

In practice, none of the countries applying the linear tax have adopted a clean taxation system. Current tax reforms have been removed from the principle of "a similar tax rate" and have applied a variety of tax rates. In particular, they changed the base level of income that is exempt from taxation. Depending on the states, tax rates vary and virtually no country applies the same tax rate (even though they are linear taxes).

Based on findings from Hall & Rabushka (1983), Rosen (2002), Keen, Kim, & Varsano (2006), Auerbach, Aaron & Hall (1983), Mitchell et al. (1999) the main argument of the linear tax application is based on its simplicity. As features are mentioned: transparency, reduction of administrative costs and reduction of complications. These positive indicators are commonly used in countries that had a high fiscal evasion. The application of linear tax sometimes affects the reduction of tax distortions and as such influences the growth of economic efficiency. In particular, the application of a linear tax on personal income tax and corporate income tax provides incentives to work and invest if the tax burden is reduced compared to the pre-reform level. A strong argument for the application of linear taxation may be investment growth, employment growth, and growth of production. (Schratzstaller & Wagener, 2005) As far as economic growth is concerned, Central and Eastern European countries had a large increase in Gross Domestic Product and these have come as a result of the change of the fiscal system (transition from a progressive tax to linear taxation).

Countries that have recently applied linear tax have done this mainly in the hope of boosting economic growth. Baltic countries such as Estonia (1994), Latvia (1995) and Lithuania (1994) had linear taxes of 24%, 25%, and 33%, respectively an amount of tax-exempt from the mid-1990s. On 1st of January 2001, a linear tax of 13% was applied by Russia as well. Ukraine followed the example of Russia with a 13% linear tax in 2003, which later increased to 15% in 2007. In 2004 Slovakia introduced a linear tax of 19% on the majority of taxes (personal income tax, taxation in corporate income, VAT, etc.) Romania applied a 16% linear tax on personal income and corporate income tax on January 1, 2005. Macedonia applied a linear tax of 12% on personal income and corporate income on January 1, 2007, and promised to cut to 10% in 2008. Albania has applied a linear tax rate of 10% between 2008 and 2014. Bulgaria applied a 10% linear tax on corporate income tax and personal income tax since 2008. (the above data were obtained from the tax administrations of the respective countries and the International Monetary Fund, processed by the author).

Following we present the participation of total revenues and tax revenues in the Gross Domestic Product. Their share in GDP is expressed in percentages.

Table 1. Tax structure (% of GDP) - Countries applying linear tax (2002-2014 average)

| Country | Total revenue | Tax revenue | Direct taxes | Indirect taxes | Other | Nontax |
|---------|---------------|-------------|--------------|----------------|-------|--------|
| ALB | 25.45 | 22.84 | 3.45 | 12.26 | 7.13 | 2.62 |
| BH | 46.04 | 37.26 | 3.48 | 19.71 | 14.07 | 8.78 |
| BG | 31.40 | 29.82 | 4.49 | 13.52 | 11.81 | 1.59 |
| EST | 37.47 | 31.73 | 7.27 | 12.87 | 11.60 | 5.74 |
| CZ | 39.34 | 33.76 | 6.77 | 10.77 | 16.22 | 5.58 |
| HUN | 44.38 | 37.92 | 8.44 | 15.44 | 14.04 | 6.46 |
| LTU | 32.79 | 29.05 | 5.47 | 14.07 | 9.50 | 3.74 |
| LET | 34.50 | 28.30 | 3.70 | 12.81 | 11.79 | 6.20 |
| SVK | 36.17 | 30.07 | 5.98 | 10.92 | 13.17 | 6.10 |
| ROM | 31.14 | 27.98 | 6.57 | 13.11 | 8.30 | 3.16 |
| SRB | 41.80 | 37.37 | 6.26 | 18.08 | 13.02 | 4.44 |
| MKD | 31.90 | 28.14 | 3.38 | 13.60 | 11.16 | 3.76 |
| RUS | 37.69 | 28.51 | 8.41 | 7.66 | 12.43 | 9.18 |
| GEO | 25.88 | 20.79 | 6.93 | 11.98 | 1.88 | 5.09 |
| UKR | 44.26 | 25.90 | 9.40 | 12.16 | 4.34 | 18.35 |

Source: World Bank Indicators, OECD, State Statistical Office of the respective countries, IMF, processed by the authors

It is to be noted that in these years, Georgia had the greatest economic growth in 2007 with 12.34%, respectively 13.83% GDP growth per capita. After Georgia, these countries followed: Ukraine in 2004 had a GDP growth of 12.10%, respectively 12.95% GDP per capita. Latvia in 2006 had a GDP growth of 11.90%, or 12.93% GDP per capita. Lithuania in 2007 had a GDP growth of 11.09% and 12.41% of GDP per capita. Estonia in 2006 had a GDP growth of 10.27% and 10.92% GDP per capita.

2.3. Progressive Tax

The first progressive tax on personal income was presented at the time of the Renaissance in Italy and later in the 17th and 18th centuries in France and the Netherlands. However, this does not mean that this type of tax has not been used before. The application of this type of tax is encountered since Solon's time (596 BC) and two centuries later in Nausinicus era. (1% to 20%) (Jelcic, 1983) Progressive tax as a permanent phenomenon exists in France since 1791, in England and the US since 1798, in the Netherlands since 1796, in Germany and Austria since 1857, in Switzerland since 1860. The application of this kind of tax became more often only in the twentieth century. But the modern progressive income tax genesis is dedicated to the end of the eighteenth century in the UK. (Westin, 2013)

The term "progressive tax" in the same sense as today was first used by Joseph Garnier. According to him, this means moderate taxation, otherwise called limited progressive taxation. (Sigot, 2010) When the tax base increases with the tax base then we can say that we are dealing with progressive taxation. There are many different opinions about progressive taxation. Many theorists are of the opinion that the application of progressive tax presents justice in the collection of taxes.

Representatives of the theory of sacrifice justify this by pointing out that lower-income persons are more resistant to tax payment than those with higher incomes. (Jelçiq, 1983) Representatives of the theory of marginal benefit start from the thesis that the usefulness of things that the taxpayer possesses is diminished by the use of those things, so they have less and less value. (Jelçiq, 1983)

Many different authors have given different thoughts; some of them were for and some against progressive taxation. According to author John Stuard Mill (1848), the progressive tax makes all citizens

sacrifice equally. Dorn (1996) claims that progressive tax violates the principle of equality before the law. Authors Klinghoffer & Elkis (1992) assumes that with the application of the progressive tax of the rich must pay more than the poor. This means that those who earn more should pay a higher tax rate. From this statement, we can conclude that people with higher incomes have to pay more because they use the goods of that state more. The author Downes (1999) was against the progressive tax application, he said: "Progressive tax unjustly forces the rich to pay more tax." He added: "The rich do not benefit anything more from the tax system." Contrarily, Shapiro (1996), claims that the rich should pay more because they benefit most from national income. Lakoff and Budner (2007) state that "progressive tax benefits the public (people), the public (the people) benefit the rich." According to Jelcic (1983), "progressive taxation affects economic activity because it helps increase the resistance to tax payment and as such negatively affects taxpayers' morals."

As for the issue of employment, many authors gave their thoughts. Some authors such as Koskela and Vilmunen (1996) concluded that the application of progressive tax impacts positively on employment growth, while some other authors such as Fuest and Huber (2000) concluded that the application of progressive taxation is not necessarily good for employment.

According to Okun (1978), the choice of the best taxation system lies in the balance between "honesty or equality" and efficiency. According to Hungerford (2012), the change in the highest marginal tax does not affect economic activity, the reductions of this tax are not correlated with savings, investments, and productivity growth, however, the decrease of this tax has a high correlation with increasing inequality or the concentration of revenues at the highest share of distribution. Fieldhouse (2013) has taken the progressive tax application for study and has come to the conclusion that progressive tax increases budget revenues by improving public debt and improves inequality without having a negative impact on economic growth. In the long run, Personal Income Tax has a negative impact on economic growth in countries applying the progressive tax, while Corporate Income Tax has no impact at all. (Widmalm, 2001) According to Elshani & Ahmeti (2017), in the countries applying the progressive tax, Personal Income Tax has a negative impact on economic growth, while Corporate Income Tax and Value Added Tax have a positive impact. The above authors took the study of 20 European countries (from 2002 to 2014), OECD members applying progressive taxation. Bird & Zolt (2005) oppose the above authors. According to them "Personal Income Tax in developed countries has a positive impact on economic growth and these countries have to apply progressive taxation."

Statistical data and economic theory show that the optimal system is the progressive one. The popularity of the progressive tax application has not diminished, on the contrary. Advantages of progressive tax weigh more than its shortcomings. This is the main reason that most developed countries apply progressive taxation.

2.3.1. Tax Structure in Central and Western European Countries

Usually, progressive taxation is applied to countries with a low degree of corruption. To be categorized as a country applying progressive tax it is not said that the two types of taxes (Personal Income Tax and Corporate Income Tax) apply progressiveness. If only one of the taxes (usually Personal Income Tax) is progressive then it can be said that that country applies progressive taxation. The study includes countries applying progressive taxation and are OECD member states within Europe. These countries are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands,

Norway, Poland, Portugal, Spain, Sweden, Switzerland, Great Britain and Slovenia. Each country, based on their fiscal policies, also sets the tax rates.

States applying this type of taxation do not recognize immediate economic growth. Their economic growth is a gradual but secure growth. While countries applying linear taxation are experiencing an immediate economic growth, in other countries this growth is gradually increasing year after year.

Below we will present data from countries applying the progressive tax, from 2002 to 2014 (average). Total revenues and other tax revenues are presented as a percentage of GDP.

Table 2. Tax structure (% of GDP) - Countries applying progressive tax (average 2002-2014)

| Country | Total revenue | Tax revenue | Direct taxes | Indirect taxes | Other | Nontax |
|---------|---------------|-------------|--------------|----------------|-------|--------|
| AUT | 49.03 | 41.53 | 11.52 | 14.24 | 15.22 | 7.50 |
| BEL | 49.77 | 43.25 | 15.59 | 13.13 | 11.61 | 6.52 |
| DNK | 54.76 | 46.45 | 27.36 | 19.32 | 2.81 | 8.31 |
| FIN | 52.77 | 42.20 | 15.67 | 17.51 | 7.90 | 10.57 |
| FRA | 50.38 | 42.84 | 9.98 | 13.68 | 15.79 | 7.54 |
| DEU | 43.56 | 35.18 | 10.37 | 12.93 | 11.03 | 8.38 |
| GRC | 41.84 | 32.19 | 7.39 | 14.19 | 8.82 | 9.65 |
| ISL | 42.66 | 36.12 | 14.92 | 16.21 | 2.64 | 6.53 |
| IRL | 34.23 | 28.73 | 11.57 | 12.86 | 2.37 | 5.51 |
| ITA | 45.33 | 41.48 | 13.82 | 13.54 | 11.80 | 3.85 |
| LUX | 43.87 | 37.79 | 13.34 | 14.55 | 6.96 | 6.08 |
| NLD | 42.83 | 35.88 | 9.56 | 13.10 | 11.68 | 6.95 |
| NOR | 56.61 | 41.65 | 19.59 | 14.24 | 6.68 | 14.96 |
| POL | 39.44 | 32.74 | 6.63 | 16.29 | 8.40 | 6.70 |
| PRT | 41.67 | 31.81 | 8.86 | 17.00 | 4.80 | 9.87 |
| ESP | 38.02 | 33.24 | 9.62 | 11.04 | 10.19 | 4.78 |
| SWE | 52.16 | 44.29 | 16.12 | 14.79 | 12.19 | 7.87 |
| SUI | 33.19 | 26.74 | 11.20 | 7.14 | 6.40 | 6.45 |
| GBR | 37.92 | 33.31 | 12.51 | 13.54 | 3.24 | 4.61 |
| SVN | 43.48 | 36.99 | 7.50 | 17.62 | 11.26 | 6.49 |

Source: World Bank Indicators, OECD, processed by the authors

Unlike the countries applying the linear tax, in the countries applying the progressive tax, GDP growth per capita is smaller, but there is a constant increase. From 2002 to 2014, Iceland's highest share of GDP per capita in 2004 was 7.27%. While the biggest decline in GDP per capita has been Greece in 2011 with a 9.00% drop in GDP per capita.

3. Methodology

A literature review has shown that most studies have used the Panel model, which is also the best model when dealing with many countries for many years. The use of panel data makes it possible to evaluate changes in time, but also differences between states. Taking Data in the form of a Panel makes it possible to have more data and as a result, we are more accurate. Through the application of the Panel Model, it is possible to control the variable that in reality is very difficult to measure, this is especially true in our case (the rules and laws are the same for each country, but their tax rate may change from year to year). Our Panel Data is strongly balanced. By this, we mean that we have data for all countries for a similar period of time. To determine which countries had a higher GDP per capita, we used the Panel Random Effects

model with Dummy Variable, where with D1 we have marked the countries applying the progressive tax while with D0 we have marked the countries applying the linear tax.

States are divided into two groups. In the first group, a total of 15 European countries applying linear taxation or at different periods have changed the type of taxation such as: Albania, Bosnia and Herzegovina, Estonia, Latvia, Lithuania, Bulgaria, Serbia, Macedonia, Russia, Ukraine, Georgia, Romania, Slovakia, Hungary and the Czech Republic.

The second group includes the European states, OECD members, which apply progressive taxation such as Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Republic of Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, Great Britain and Slovenia. The time period that has been analyzed is from 2002 to 2014. The total number of observations is a total of 456 observations with full data.

Variables are GDP growth per capita, Personal Income Tax and Corporate Income Tax, Value Added Tax, together with revenues from customs and excise, other tax revenues and non-tax revenues. Data on Gross Domestic Product are obtained from the World Bank database. Other variables are obtained from the database of the International Monetary Fund, the OECD database, the Statistical Office of the respective states and finally processed by the author. These variables have been used by most authors who have dealt with this problem. (Martinez-Vazquez, 2011; Canavire-Bacarreza & Martinez-Vazquez, 2013; Kneller, 1999; Padovano, 2001; Widmalm, 2001; Schweltnus, 2008; Arnold, 2011; Romer, 2010; Lee & Gordon, 2005; Mendoza, Milesi-Ferrett & Patrick, 1997)

4. Findings

Below we will present the results obtained through the application of the econometric PANEL data, Random Effects with dummy variables, where with D0 we mark the countries applying the linear tax and D1 the countries applying the progressive tax.

```

Random-effects GLS regression              Number of obs   =          456
Group variable: id                       Number of groups =           35
R-sq:                                     Obs per group:
within  = 0.0823                          min =           13
between = 0.7130                          avg  =          13.0
overall = 0.1858                          max  =           14

Wald chi2(5)    =          92.48
corr(u_i, X)   = 0 (assumed)              Prob> chi2      =          0.0000
    
```

| | Coef. | Std. Err. | z | P> z | [95% Conf. Interval] | |
|--------------------|------------------|-----------------|--------------|--------------|----------------------|------------------|
| Progressive | -3.128352 | .4951588 | -6.32 | 0.000 | -4.098845 | -2.157859 |
| dir.tax | .0001834 | .0511514 | 0.00 | 0.997 | -.1000714 | .1004383 |
| ind.tax. | -.0400993 | .0631083 | -0.64 | 0.525 | -.1637894 | .0835907 |

| | | | | | | | |
|--------------|--|-----------|----------|-------|-------|-----------|-----------|
| other taxes. | | -.1286093 | .0468216 | -2.75 | 0.006 | -.2203781 | -.0368406 |
| nontax | | -.2148071 | .0603174 | -3.56 | 0.000 | -.3330271 | -.096587 |
| _cons | | 7.231472 | 1.119266 | 6.46 | 0.000 | 5.037751 | 9.425194 |

| | | | | | | | |
|---------|--|-----------|-----------------------------------|--|--|--|--|
| sigma_u | | .38191939 | | | | | |
| sigma_e | | 3.6115574 | | | | | |
| rho | | .01105922 | (fraction of variance due to u_i) | | | | |

From the foregoing, we conclude that the countries applying the progressive tax have a smaller GDP growth per capita compared to the countries applying the linear tax. In other words, the countries applying the linear tax have a higher GDP growth per capita by 3.13% than those applying progressive taxation.

Below we will show GDP growth per capita in the countries applying the linear tax and the countries applying the progressive tax. At the same time, we will try to show in which countries there has been a greater GDP growth per capita.

Table 3. GDP growth per capita in % (average)

| GDP per capita | | |
|----------------|-----------------------------|----------------------|
| Year | States with Progressive tax | States with Flat tax |
| 2002 | 1.22 | 5.65 |
| 2003 | 1.11 | 6.76 |
| 2004 | 2.92 | 7.28 |
| 2005 | 2.04 | 7.18 |
| 2006 | 3.13 | 7.80 |
| 2007 | 3.35 | 8.15 |
| 2008 | (0.15) | 3.85 |
| 2009 | (4.72) | (6.36) |
| 2010 | 1.15 | 2.61 |
| 2011 | 0.67 | 4.10 |
| 2012 | (1.07) | 1.88 |
| 2013 | (0.20) | 2.33 |
| 2014 | 1.25 | 2.22 |

Source: World Bank Indicators, processed by the author

The table shows GDP growth per capita for each year. On one hand, there is the average GDP growth per capita in the countries applying the progressive tax (average), while on the other hand, the average GDP growth per capita is presented in the countries applying the linear tax. The GDP growth per capita trend is more pronounced in the countries applying the linear taxation, and this coincides with the results obtained with the econometric model.

The GDP growth trend per capita of countries applying a linear tax to those applying the progressive taxation better can be seen in the chart below.

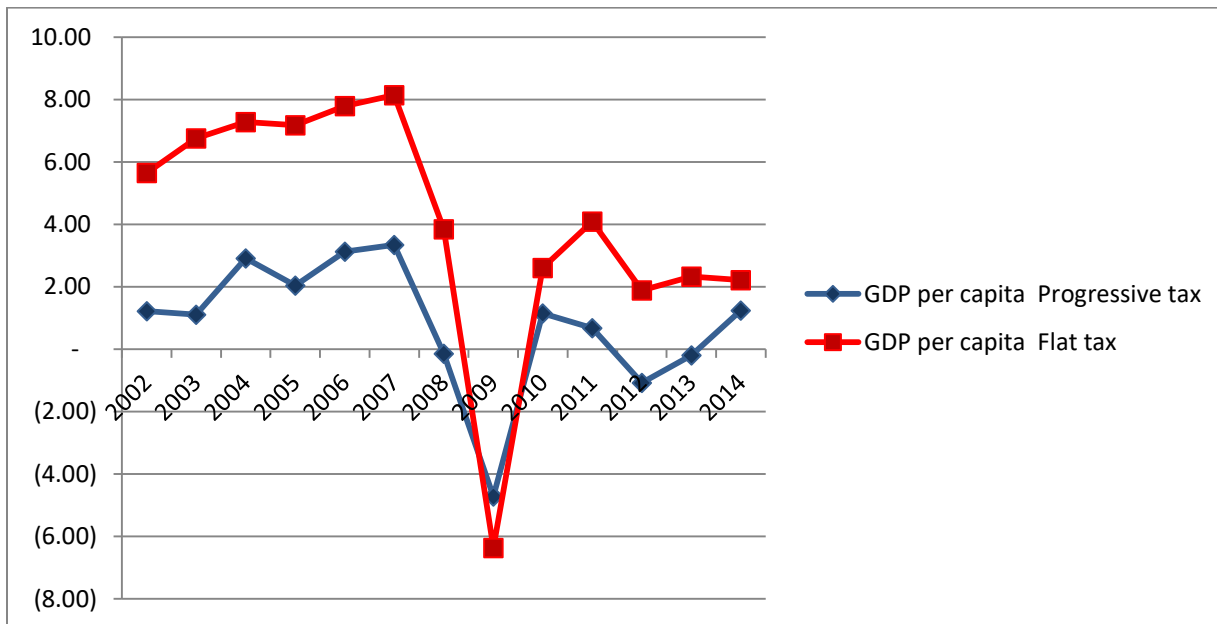


Figure 1. GDP per capita: linear tax vs progressive tax

In the period from 2002 to 2008, the trend of GDP per capita has been more pronounced in the countries applying the linear tax. However, in times of crisis (2009), GDP per capita has declined by countries that apply progressive taxation. Following the financial crisis of 2009, the growth trend has been more pronounced in countries applying linear taxation.

5. Conclusion

Our aim in this analysis has been to see which countries have had greater economic growth. We have studied all countries, such as those applying the linear tax, as well as those applying progressive taxation. Altogether, 35 countries have been received from 2002 to 2014 with a total of 456 observations. Through Dummy Variables we have come to the conclusion that: countries applying progressive tax increase less (have lower economic growth) for 3.128% compared to countries applying linear taxation. States applying linear tax have a greater economic growth than those applying progressive taxation.

If there is no financial crisis in the world then it is better to apply linear taxation. If there is a financial crisis, the application of progressive tax is more appropriate. States applying linear tax recognize an immediate economic growth, while countries applying progressive tax do not have immediate economic growth but have a gradual GDP growth. East and Southeast Europe usually apply linear taxation and the application of this type of taxation has lower administrative costs than the application of progressive taxation. If low tax rates are applied, then the tendency to escape taxes decreases. Even those who do not deal with taxes make it much easier to apply this type of tax, compared to the progressive one, which is more complicated. A strong argument for the application of linear taxation may be investment growth, employment growth, and growth in production. The other argument of linear tax application lies in its simplicity. As features are: transparency, reduction of administrative costs and reduction of complications. The application of this kind of tax sometimes affects the reduction of tax distortions and as

such affects the growth of economic efficiency. Pay at the same percentage of the amount you have earned.

In order to apply the progressive tax, a large number of persons participating in the collection of taxes are required. The application of progressive taxation requires a larger, more educated but also more paid tax administration. This implies increased spending on the Tax Administration. Therefore, as such, this type of tax can only be applied to countries with educated staff and the opportunity to pay them.

6. References

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