Saso Kozuharov and Vladimir Petkovski. 2018. The Impact of Social Transfers on Inequality Measured by Gini Index: The Example of Macedonia. *UTMS Journal of Economics* 9 (1): 49–61.

Review
(accepted April 24, 2017)

THE IMPACT OF SOCIAL TRANSFERS ON INEQUALITY MEASURED BY GINI INDEX: THE EXAMPLE OF MACEDONIA

Saso Kozuharov[1]
Vladimir Petkovski

Abstract
Through the past few decades the problem of income inequality and welfare segregation has become quite significant for the economies of the countries worldwide. Republic of Macedonia as a country in development is presented with a serious challenge into decreasing the income inequality witch has risen for average 4% annually over the past 15 years, according to the GINI index. Socio-economic inequality can be represented as major problem for a developing country, and must be considered as one of main priorities for increasing the economic development in the following years. Many factors can be targeted as to influence the socio-economic segregation, one of them being the social protection program.

The main goal of this article is to show the impact of social transfer expenditures on the socio economic inequality in Republic of Macedonia measured through the GINI index. In accordance to reaching this goal, the econometric model of regression and correlation was conducted towards determination of the linkage between the social transfers and inequality measured with Gini coefficient. According to the conducted research a true bond and thus the impact on inequality by the social transfer expenditures was determined.

Keywords: income segregation, welfare, social protection benefits, social expenditures.

Jel Classification: G17; C22; G32

INTRODUCTION

Through the past few decades the problem of income inequality and welfare segregation has raised itself as the most significant for the economies of the countries worldwide. The recent estimates show that the world's 85 richest people have the same amount of wealth as the poorest 50 percent. Recent inequality scholarship fixates on trends in the amount of inequality and largely ignores trends in the form of inequality. The authors describe three ideal-typical inequality regimes (big-class, micro class, and gradational)

[1] **Saso Kozuharov**, PhD, Full Professor, University of Tourism and Management in Skopje; **Vladimir Petkovski**, PhD, Assistant Professor, University of Ss. Cyril and Methodius Economic Institute, Skopje, Macedonia.

and identify the mechanisms driving a shift toward or away from each of them (Weeden and Grusky 2012). Income inequality is a broader concept then poverty. It defines the level of income distribution in a current country. Even tough inequality can be foreseen as a necessary part of the rewording structure of the modern economic systems which promotes innovation, individuality and entrepreneur initiative; beyond a certain point it can become harmful for the economy and society as hole. High social and economic inequality can lead to high level of poverty and social exclusion, which further compromises the economic growth of the countries.

Enormous economic gaps exist within countries and even more so in the world as a whole. Inequality is unacceptably high in most developing countries and has, on average (weighting countries by population) been increasing for the last several decades. It has enormous social costs, partly by making poverty unnecessarily widespread and partly through other social and psychological mechanisms (Berry 2013). In this paper inequality is measured and explained through the concept of measurement i.e. Gini index. The Gini coefficient is derived from the Lorenz curve, and sorts the population from poorest to richest, thus showing the cumulative proportion of the population on the horizontal axis and the cumulative proportion of expenditure (or income) on the vertical axis (Haughtonand and Khandker 2009).

Social and economic inequality can be a product of variety of different factors in the country's economy. More so redistributive policies which are the central theme of many economic researches through the past decades implicate to the utmost importance of the subject of economic and social inequality, and its effect on the economic development, sustainability and growth. Pareto was probably the first economist to suggest a way of measuring the inequality of incomes (Maccabelli 2009).

Arthur Okun in his famous 1975 book on the tradeoffs between efficiency and equity and on the efficiency "leaks" showed that efforts to reduce inequality can be transferred into creating more inequality. Examples could include taxes on activities with negative externalities paid mostly by the better-off but harmful to the poor (such as, perhaps, excessive risk-taking in the financial sector), cash transfers aimed at encouraging better attendance at primary schools in developing countries, or spending on public capital or education that benefits the poor (Ostry, Berg, and Tsangarides 2014). Also some authors believe that government spending in social transfer issues such as healthcare, education, unemployed benefits, child and family allowances and social retirement benefits can also present a tool for decreasing the economic and social inequality. However, the most important issues connected with the degree of social and economic inequality still remain the factor of unemployment and the degree of poverty in one society.

Nevertheless some studies predict a negative effect of inequality on growth and some a positive effect. Answers to the controversy have usually been sought in the problems of the estimation technique, the measure of inequality or in some form of non-linearity in the relationship between inequality and growth (Malinen 2012).

According to Malte Luebker the system for tackling high social inequality can be achieved through two principal mechanisms. The first mechanism that Malte Lubker considers is the social security systems which can benefit those with the lowest private sector incomes and the second mechanism being progressive tax systems which narrow the gap between rich and poor and thus reduce the income inequality (Lubker 2011).

Thomas Piketty in his book states the differences between the social care in the developed countries on one side and social care of the countries in development on the

other. Several differences which mostly concern the amount of social transfers and the practices of distribution of the same makes the system of social transfers in the developed countries much more efficient in the field of regulating the social and economic inequality. Most of all the reconstruction of the methods of the pension systems and methods of the distribution of unemployment transfers presents the main difference between the two social care systems.

The developed countries because of their available assets and efficiency can redistribute the income more efficiently than the countries in development, living the second ones still dependent from the first. This dependency further increases the economic and social inequality between the countries as well as in the systems of the developed countries (Piketty 2014).

The difference between the development in the economic systems and social economic policies in the countries had been a cause for development of the four different models for redistribution of the assets, i.e. (Joumard, Pisu, and Bloch, 2011):

1. "Nordic model" characterized by large and mostly universal cash transfers, a high level of spending on in-kind services and a tax mix which promotes redistribution (all Nordic countries and also Belgium are in this group);
2. A "Continental European model" characterized by large cash transfers with the lion's share for old-age pensions – i.e. redistributing income mostly over the lifecycle instead of across individuals – and a tax mix which does not promote redistribution across individuals, reflecting a small role for the personal income tax (Austria, France and Germany are representative);
3. An "Anglo-Saxon model", characterized by small cash transfers, and a tax mix which promotes income redistribution. This model can be divided in two sub-groups: those countries with transfers highly targeted on low-income groups (Australia and New Zealand being examples) and those countries characterized by little progressivity of cash transfers which are largely spent on old-age pensions (Japan and the United States are in this sub-group);
4. A lower-income group, where the welfare system is not well developed. Spending on transfers and the level of taxation are considerably below the OECD average, with a heavy reliance on consumption taxes.

According to the data gathered from the Statistical office of Republic of Macedonia, the country belongs into the lower income group countries concerning the model for redistribution of the income in the country. More so the heavy reliance on the consumption (indirect taxes) confirms the place of Republic of Macedonia in the lower income model group of countries.

The subject of this paper concerns the impact of the social transfers on the economic and social inequality in Republic of Macedonia. Also, the main hypothesis of this paper is the assumption that the social transfers have impact on the social and economic inequality in Republic of Macedonia measured with the Gini coefficient. The main goal is to define the impact and the link between the social transfers and the social and economic inequality in Republic of Macedonia, which is conducted through the econometric analysis in this paper.

1. METHODOLOGY

The research in this article is conducted using both quantitative and qualitative methods for research. The quantitative methods are consisted of statistical and econometrical analysis using correlation and regression as econometric models to determine the link and impact on social transfers on the income inequality in Republic of Macedonia. Statistical method is used to collect the data necessary for comparison of the income inequality of the south-east European countries and countries member of European Union.

The data was gathered from the data base of World Bank, OECD data base and Eurostat online sources, research in the field and other written sources. Econometric analysis presented in the last chapter of this research paper is based upon correlation and regression analysis on social transfers in order to determine the strength of the link and impact of the social transfers upon the income inequality in Republic of Macedonia measured with the Gini index. The analysis is conducted within the period of 13 years from year 2002 to year 2014. The data of the income gathered for social transfers of Republic of Macedonia is collected form the State Statistical office of Republic of Macedonia and other written sources.

Qualitative method that is used in the research for this article is comparative method. The comparative method is used to compare the income inequality measured with the Gini index for Republic of Macedonia, South-east European countries and the countries of European Union. Besides the comparative method, other qualitative methods are used in the process of research and conclusion findings, such as: analytical method, method of deduction and method of induction.

2. INCOME INEQUALITY MEASURED THROUGH THE GINI INDEX – COMPARISON OF THE SOUTH-EAST EUROPEAN COUNTRIES AND EUROPEAN UNION COUNTRIES

The most commonly used measurement of economic inequality is the Gini index or Gini coefficient. The Gini coefficient measures the income distribution in one society/country. The values of Gini coefficient can vary from 0 to 100, where 0 means total equality of the income redistribution in one society and 100 means total inequality of the income redistribution. Higher values of the Gini coefficient could indicate to unequal distribution of the acquired income in a given country. High values of the Gini index can indicate to increased social segmentation and social clustering in the country. Table number one presented below shows the income inequality measured by the Gini index for Republic of Macedonia, South-east European countries and EU countries. The table's purpose is to show the comparison between the income distributions of the countries for the period of the year 1998 till year 2014.

From the table presented below it can be seen that the Gini index has different values for the countries taken into consideration in this research. Among the countries taken into consideration for the purpose of the research, the highest values of Gini index and thus the highest degree of income inequality has Republic of Macedonia (seen by the average value of the Gini index in the period of 1998 till 2014). The highest value of the Gini coefficient recorded in the observational period can be seen in the case of Republic

of Macedonia with 44,2 in 2008, 2011 and 2012 in comparison to the other countries form south-east Europe and EU countries. On the other hand the lowest value of the Gini index among the countries taken in consideration for the research is recorded in Slovenia in 2008, estimated to 23,72. At the same time Slovenia also has the lowest average value of the Gini coefficient with 26,7. Also it can be determined that the average value of the Gini coefficient in Slovenia is lower than the average value of the Gini coefficient of EU 27 countries which is estimated to 30,5.

Excluding Republic of Macedonia which has a 25% higher Gini index then the EU 27 countries, and Greece with average value of the Gini index of 34,7, other countries taken into consideration for the purpose of this research have average value of Gini coefficient approximately as the EU 27 countries. The results of the research presented in Table 1 point to Republic of Macedonia as the country with the highest values of Gini coefficient, and according to the theory review presented in the introduction this could also point to the highest economic and social inequality from the selected countries in the observational period.

Table 1. Review of the Gini index in the south-east European countries, EU countries and Republic of Macedonia

Year	Macedonia	Serbia	Albania	Bulgaria	Greece	Croatia	Bosnia and Herzegovina	Slovenia	Romania	EU 27
1998	28,1			26,4	37,2	29,45		29,41	29,44	
1999						27,17			29,42	
2000	34,4				34,4	31,33			30,25	
2001				33,8		31,1	29,97		29,43	
2002	38,8	32,7	31,7					29,15	30,23	
2003	39,0	32,8	31,7	28,9				30,82	29,91	
2004	38,9	33,0	31,7		33,7	28,83	34,4	31,15	30,4	
2005	39,1	33,4	31,7					24,63	29,82	30,6
2006	42,8	29,7	31,2					24,48	30,61	30,3
2007		29,4	31,3	28,1	34		33,04		30,35	30,6
2008	44,2	28,2	30	33,6		33,61		23,72	29,53	30,9
2009	43,2	28,7	30						28,34	30,5
2010	43,6	29,7	30	35,8	34,7			24,94	28,16	30,4
2011	44,2	29,6	29,5	34,3	34,2			24,87	27,21	30,7
2012	44,2	28,2	29	33,2				24,1	27,33	30,4
2013	44,2									30,5
Average	40,0	30,5	30,7	31,8	34,7	30,2	32,5	26,7	29,4	30,5

Source:http://ec.europa.eu/eurostat/tgm/table.do?tab=table&language=en&pcode=tessi190 (accessed November 10, 2016), table 1. http://data.worldbank.org/indicator/SI.POV.GINI (accessed November 15, 2016), table 1.
Note: These data are based on Eurostat and World Bank Documents and Reports

Besides the presentation of the absolute values of the Gini index through the observational period of 16 years shown in Table 1, the percentage of growth and decline of the value of this index is also presented, and the data of the research are shown in a Table 2, presented below.

Table 2. Review of the growth and decline of the Gini index in the south-east European countries, EU countries and Republic of Macedonia

Year	Rep. of Macedonia	Serbia	Albania	Bulgaria	Greece	Croatia	Bosnia and Herzegovina	Slovenia	Romania	EU 27
1998										
1999						-8%			0%	
2000	18%				-8%	13%			3%	
2001				22%		-1%			-3%	
2002	11%							-1%	3%	
2003	1%	0%	0%	-17%				5%	-1%	
2004	0%	1%	0%		-2%	-8%	13%	1%	2%	
2005	1%	1%	0%					-26%	-2%	
2006	9%	-12%	-2%					-1%	3%	-1%
2007		-1%	0%	-3%	1%		-4%		-1%	1%
2008	3%	-4%	-4%	16%		14%		-3%	-3%	1%
2009	-2%	2%	0%						-4%	-1%
2010	1%	3%	0%	6%	2%			5%	-1%	0%
2011	1%	0%	-2%	-4%	-1%			0%	-3%	1%
2012	0%	-5%	-2%	-3%				-3%	0%	-1%
2013										0%
Average	4%	-2%	-1%	2%	-2%	5%	4%	-3%	-1%	0%

Source:http://ec.europa.eu/eurostat/tgm/table.do?tab=table&language=en&pcode=tessi190 (accessed November 10, 2016), table 2. http://data.worldbank.org/indicator/SI.POV.GINI (accessed November 15, 2016), table 1.
Note: These data are based on Eurostat and World Bank Documents and Reports

From table number two it can be seen that Croatia with 5% has the highest growth of Gini coefficient for the observational period, followed by Bosnia and Herzegovina and Republic of Macedonia with 4%. However, the highest growth of the Gini index can be noticed in Republic of Macedonia for the period of 1998 to 2000 where the index has risen for 18%, i.e. from 28,1 to 34,4 and Bulgaria where the Gini index value has risen for 22% for the same period. High average growth of the Gini coefficient points to further increase of the income inequality, which can present a threat to sustainable growth of the economies and the social welfare of the countries. The highest average decline of the Gini coefficient value according to the research can be seen in the case of Slovenia where the average decline of the Gini index for the observational period is determined to -3%. The single highest decline in the value of the Gini index is also registered in Slovenia in the year 2004 and 2005 when the value of the Gini index has decreased for 26%. Decrease of the Gini coefficient can indicate to decrease in economic and social inequality and income segregation, which can lead to a more sustainable economic growth of the country as well as increasing the social welfare of the people. Table 2 also shows that the average growth the Gini index of EU 27 countries is 0% for the observational period, meaning that the income inequality is established as stable at a certain level.

3. REVIEW OF THE SOCIAL PROTECTION SYSTEM AND SOCIAL EXPENDITURES OF REPUBLIC OF MACEDONIA, SOUTH EAST EUROPEAN COUNTRIES AND EU 28

As the impact of the financial and economic crisis was felt across the world, the need for social transfers towards the most effected layers of the population has increased. With the increase of the number of socially endangered people, the amounts of the social transfers had also increased in the past few years. According to the date from Eurostat the expenditure on social protection relative to gross domestic product (GDP), has

increased by 2.8 percentage points between 2008 and 2009, and continued to rise in the past years. Besides the rise in the social expenditures of the countries in Europe and worldwide, in order to tackle the imposing social and economic inequality new methods and policies for social transfers were also introduced. According to the European legal framework expenditure on social protection includes: social benefits, administration costs (which represent the costs charged to the scheme for its management and administration) and other expenditure (which consists of miscellaneous expenditure by social protection schemes, principally, payment of property income).

Conditional cash transfers are recognized widely as an effective demand-side social assistance intervention that complements the long-standing supply-side intervention of ensuring adequate supply of services. Despite the sophistication and complexity, targeting is not always efficient (Vadapalli 2009). Social protection benefits are direct transfers, in cash or in kind, by social protection schemes to households and individuals; the purpose of the transfers is to relieve the recipients of the burden of one or more of the defined risks or needs. Social benefits are paid to households by social security funds, other government units, non-profit institutions serving households (NPISHs), employers administering unfunded social insurance schemes, insurance enterprises, or other institutional units administering privately funded social insurance schemes. Social benefits are recorded without deduction of taxes or other compulsory levies payable by recipients. Social protection benefits are classified according to eight social protection functions (which represent a set of risks or needs):

- sickness / healthcare benefits — including paid sick leave, medical care and the provision of pharmaceutical products;
- disability benefits — including disability pensions and the provision of goods and services (other than medical care) to the disabled;
- old age benefits — including old age pensions and the provision of goods and services (other than medical care) to the elderly;
- survivors' benefits — including income maintenance and support in connection with the death of a family member, such as a survivors' pensions;
- family / children benefits — including support (except healthcare) in connection with the costs of pregnancy, childbirth, childbearing and caring for other family members;
- unemployment benefits — including vocational training financed by public agencies;
- housing benefits — including interventions by public authorities to help households meet the cost of housing;
- social exclusion benefits not elsewhere classified — including income support, rehabilitation of alcohol and drug abusers and other miscellaneous benefits (except healthcare).

Schemes responsible for providing social protection are financed in different ways. Social protection receipts comprise social security contributions paid by employers and protected persons, contributions by general government, and other receipts from a variety of sources (for example, interest, dividends, rent and claims against third parties). Social contributions include all payments by employers to social protection institutions (actual contributions) and social benefits paid directly by employers to employees (imputed contributions). Despite European Union objectives for economic and social cohesion,

current measures of regional development are defined economically, reflecting the separation in policy and academia between economic issues, concerned with growth, and social issues, concerned with redistribution (Perrons 2012)

In Republic of Macedonia according to the Law of Social Protection, social protection is a system of measures, activities and policies for preventing and overcoming the basic social risks such as, poverty reduction and social exclusion and also strengthening the social capacity for social endangered people. Social risk in terms of this law means:

- Health risks (illness, injury and disability);
- Old age and aging;
- Single parent family;
- Risks of unemployment, loss of income for sustenance on work, etc.;
- Risks of poverty and
- Risks of a different kind of social exclusion.

From the legal framework of the social protection in the Republic of Macedonia and EU countries it can be seen that the socio-economic problems that social protection addresses are similar and comparable. As an extension to this on the table presented below, the total social transfer expenditures as a percentage of GDP are shown for Republic of Macedonia, South-east European countries and EU 27. From the research results presented below it can be seen that Republic of Macedonia with 7.96% on average separates the smaller percentage of their GDP as social protection expenditures. On the other side Greece and EU 28 countries spend 28.3% and 28.1% on average respectively form their GDP for the purposes of social protection, in comparison to the countries taken into consideration for the observed period.

According to the data presented in Table 3, Romania with 14.6% on average is the closest country to Republic of Macedonia in terms of social transfer expenditures. However the percentage that Romania separates for the purpose of the social transfers is still twice as big as the one of Republic of Macedonia.

Table 3. Review of the social transfers as a percentage of GDP in the south-east European countries, EU countries and Republic of Macedonia

Year	Rep. of Macedonia	Serbia	Bulgaria	Greece	Croatia	Slovenia	Romania	EU 28
2001	10.62%							
2002	10.64%			24.0%		24.3%	13.6%	
2003	10.15%			23.5%		23.6%	13.1%	
2004	9.84%		15%	23.6%		23.3%	12.8%	
2005	9.54%	23.8%	15.1%	24.9%	17.5%	23.0%	13.4%	27%
2006	9.34%	24%	14.2%	24.8%	17.7%	22.7%	12.8%	26.6%
2007	7.55%	24.6%	14.1%	24.8%	18.5%	21.3%	13.6%	26.1%
2008	5.67%	23.2%	15.5%	26.2%	18.7%	21.4%	14.4%	26.7%
2009	5.06%	24.6%	17.2%	28.0%	20.8%	24.2%	17.2%	29.6%
2010	6.35%	23.2%	18.1%	29.1%	21.0%	25.0%	17.6%	29.4%
2011	6.15%	24.4%	17.7%	30.2%	20.7%	25.0%	16.4%	29%
2012	6.33%	25.1%	17.4%	31.2%	21.2%	25.4%	15.6%	29.5%
2013	6.26%	25.1%	17.5%	31.8%	21.9%	25.5%	15.1%	29.1%
Average	7.96%	24.2%	16.2%	28.3%	19.8%	23.7%	14.6%	28.1%

Source:http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tps00098&plugin=1 (accessed November 15, 2016), table 2.
Note: These data are based on Eurostat Documents and Reports

The review presented in Table number 3 can also be used for presenting the growth or decline of the social protections expenditure of the countries taken into consideration

for this research. The year to year growth or decline of the countries for the period of the observation is presented in the Table number 4. In order to equalize the output of the research because of the lack of data for some countries the time period of the observation is narrowed to 9 years. According to the data presented in Table 4, Republic of Macedonia is the only country from the presented that has decline in the expenditures for social transfers.

Republic of Macedonia also records the highest decline from year 2006 to year 2007 with 33% decline. The average decline of the social expenditures for Republic of Macedonia is recorded to be 7% on an annual level. However Republic of Macedonia also records the highest growth of the social transfers in one year with 20% growth. The great oscillations of the social transfer expenditures in Republic of Macedonia point to inconsistent social transfer police. This can further broaden the gap of inequality presented by the Gini index in the previous chapter.

Table 4. Review of the growth of social transfer expenditures in the south-east European countries, EU countries and Republic of Macedonia

Year	Rep. of Macedonia	Serbia	Bulgaria	Greece	Croatia	Slovenia	Romania	EU 28
2005	-2%	1%	1%	0%	1%	-1%	-5%	-2%
2006	-24%	2%	-6%	0%	4%	-7%	6%	-2%
2007	-33%	-6%	-1%	5%	1%	0%	6%	2%
2008	-12%	6%	9%	6%	10%	12%	16%	10%
2009	20%	-6%	10%	4%	1%	3%	2%	-1%
2010	-3%	5%	5%	4%	-1%	0%	-7%	-1%
2011	3%	3%	-2%	3%	2%	2%	-5%	2%
2012	-1%	0%	-2%	2%	3%	0%	-3%	-1%
2013	-2%	1%	1%	-2%	1%	-3%	-4%	-2%
Average	-7%	1%	2%	2%	3%	0%	1%	1%

Source: http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tps00098&plugin=1 (accessed November 15, 2016), table 2.
Note: These data are based on Eurostat Documents and Reports

Despite the case of Republic of Macedonia, other countries taken into consideration for this research have small but consistent growth of their social transfer expenditures. The highest growth between them is achieved by Croatia with 3%, and the lowest growth, or in the case no growth at all in the social transfer expenditures is recorded by Slovenia. For the purpose of the research and broadening the comparison of the social transfer expenditures of the selected countries, below a table is presented which shows the indicator for social transfers per capita in the countries included in the research. The indicator that is per capita social transfers equalizes the countries total social expenditures by dividing them with the total number of the population.

Large and economic developed countries can make larger expenditures for social transfers as a percentage form GDP on to basics. Firstly, the grater the number of population is in the country the greater the expenditures for social transfer will be, and second, more developed countries can have a larger amount of their GDP transferred to their population. However presenting the social transfer expenditures per capita can present a review of this issue which is the most comparable.

Table 5. Review of the social transfer expenditures per capita in the south-east European countries, EU countries and Republic of Macedonia in euros

Year	Rep. of Macedonia	Serbia	Bulgaria	Greece	Croatia	Slovenia	Romania	EU 28
2006	264.86	584.50	495.02	4,640.10	1728.15	3,512.13	591.29	6,176.74
2007	240.68	622.45	576.96	4,950.08	1985.32	3,648.36	809.40	6,528.42
2008	179.79	715.12	732.31	5,470.76	2,070.10	3,937.99	976.84	6,747.57
2009	169.81	854.62	807.72	5,790.63	2,167.64	4,210.18	998.03	7,007.50
2010	222.72	977.30	880.93	5,797.11	2,177.74	4,322.33	1,082.81	7,261.32
2011	218.23	1,049.66	928.11	5,673.12	2,129.78	4,409.55	1,070.21	7,379.28
2012	245.01	1,058.22	952.24	5,471.78	2,150.06	4,358.77	1,079.50	7,638.52
2013	253.80	1,113.13	1,017.13	5,532.80	2,218.95	4,445.68	1,081.05	7,859.34
Average	224.36	871.88	798.80	5,415.80	2,078.5	4,105.62	961.13	7,074.84

Source: http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tps00098&plugin=1 (accessed November 15, 2016), table 2.
Note: These data are based on Eurostat Documents and Reports

From the presented data in Table 5 it can be seen that Republic of Macedonia has by far the smallest per capita social transfer from the countries included in the research. This data only confirms what previously stated date had shown, i.e. that Republic of Macedonia has relatively small social-economic transfers to other countries taken into consideration, and furthermore these expenditures are in decline. This issue can be correlated with the high degree of socio-economic inequality measured by the Gini index (shown in chapter 1 of this paper). The highest per capita social transfers according to the date in the Table number 5 can be seen in the EU 28 countries which average 7,074.84 euros per capita on annual level. This can be connected to the low socio-economic inequality that EU 28 countries have. Social transfers can be directly linked to the problem of growing inequality in Republic of Macedonia; however an econometric analysis in the next chapter will determine the link and the impact of these transfers on inequality.

4. IMPACT ON SOCIAL TRANSFER EXPENDITURES ON THE INCOME INEQUALITY IN REPUBLIC OF MACEDONIA – REGRESSION ANALYSIS

In order to determine the link and relevance of the link between social transfer expenditures and income inequality in Republic of Macedonia measured with the Gini coefficient, an econometric analysis was conducted using the correlation and regression analysis. Socio-economic inequality measured with the Gini coefficient is taken into consideration as a depending variable in this paper, and through the correlation and regression analysis the impact of the independent variable that is social transfer expenditures is shown. The analysis is conducted on 11 observational years starting with year 2002 and ending it with year 2014. Although the period can be perceived as a rather small it still can give an insight into the bond between the income inequality measured with the Gini index and the expenditures for social transfers as a part of GDP in Republic of Macedonia. In this research correlation and regression analysis will be followed by determination of the significance and the strength between the social transfer expenditures and inequality linkage.

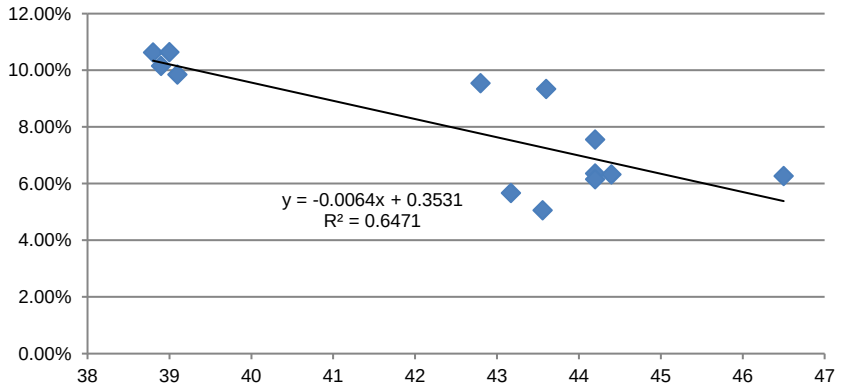

Figure 1. Review of the impact of social transfer expenditures on income inequality measured by the Gini index in Republic of Macedonia

The regression analysis showed that the impact of the social transfer expenditures on socio economic inequality is existent, i.e. there is a bond between the social transfer expenditures as e percentage of GDP in Republic of Macedonia and the income inequality measured with the Gini index. This can be seen at the Graph number 1 where R^2 is determined to 0.6471 and also another indicator that is Adjusted R^2 which takes into consideration the observational sample size is determined to 0.61 which indicates to relative strong link between the two variables. The regression is determined to linear function represented with the equation y (income inequality measured by Gini index) = -0.0064*(social transfer as a percentage of GDP) + 0.3531. The correlation index is determined to -0.8044 which is enough to claim that there is connection between the social transfer expenditures and income inequality in Republic of Macedonia. More so the correlation analysis shows that there is a strong inverse link between the two variables, i.e. the higher the social transfer expenditures are the lower the Gini coefficient of inequality will be. The regression analysis also passed the p-test for p<5% (p=0.09%), thus it can be deducted that there isn't any degree of randomization in the link between the two variables and that the bond between them is consistent. Also the regression model between the two variables passed the F-test for F-20.17, where the critical value of the F-test was determined to 4.844. The significance of the F-test is 0.091% for F-test significance critical value 5% and thus the bond between the two variables can be determined as significant. All the data presented above showed that there is a significant link between the social transfer expenditures and the income inequality in Republic of Macedonia. This can actually be expected as the social transfer expenditures are meant to directly influence and tackle the socio-economic problems of today. Their intent is also to tackle the problems with redistribution of the income in a current society therefore creating the more equally redistributed income and more equal society. The regression analysis showed that there is a significance link between the social transfers and socio-economic inequality, and also this bond is considered to be true considering that the regression has passed the t-test, t=-4.49 for t-test critical value 2.2 and t-test success probability -2.2 to +2.2.

CONCLUSION

Social transfer expenditures are vital for every country's economy. Their impact on the social welfare and inequality is considerable and significant. Social transfer expenditures can come in various forms dependent on the purpose for the social transfers and the method used to deliver the transfer to those in need. Countries of European Union and Republic of Macedonia have nearly the same structure for social transfer, i.e.: sickness / healthcare benefits, disability benefits, old age benefits, survivors' benefits, family / children benefits, unemployment benefits, housing benefits and social exclusion benefits not elsewhere classified. However according to the research in this paper Republic of Macedonia with 7.96% separates the least assets for social transfers as a percentage of their GDP in comparison to the other countries taken into consideration for this research.

According to the research Republic of Macedonia was the only country from the ones taken into consideration that realized decline in the social expenditure transfers as a percent of GDP, with the decline determined to -7% average annual declines in the previous 9 years. Still knowing that Republic of Macedonia belongs into the lower income group countries concerning the model for redistribution of the income in the country it is expected that the country can have fewer financial possibilities to assert higher social transfers expenditures.

The more developed countries taken into consideration for this research have more population and thus their expenditure for social transfers as a percentage of the GDP is bigger. But concerning is the fact that Republic of Macedonia also has by far the smallest social transfer per capita than the other countries taken into consideration. According to the research Republic of Macedonia realizes only 224.36 euro per capita social transfers annually, as an average value of the period of observations that is 8 years.

Regression and correlation analysis showed that the social transfer expenditures towards the socially and economically endangered people have a significant and true impact on the socio-economic inequality measured by Gini coefficient. According to the regression analysis the link between the social transfer expenditures as a percentage of GDP in Republic of Macedonia and socio-economic inequality measured by the Gini coefficient is considered to be inversely. That is that the highest social transfers will have an impact on the inequality by lowering it and low social transfers mean higher economic inequality.

The reviews of the social transfer expenditures and the regression and correlation analysis indicate that Republic of Macedonia can tackle the problem that is inequality by increasing the social transfer expenditures. This may not have immediate or grave impact on the inequality, but can certainly trace the path towards the more economically equal society. Knowing the fact that the more equal distribution of assets in a current country can lead to increased consumption, sustainable growth and increases social welfare, Republic of Macedonia can do better if the expenditures for social transfers as a percentage of the GDP are increase, even on expense on some other public or budget expenditures.

REFERENCES

Berry, Albert. 2013. Inequality, Poverty, and Employment: What do we know? *Revue Interventions economiques*, no.47. https://journals.openedition.org/interventionseconomiques/1867#authors (accessed November 15, 2016).

Haughtonand, Jonathan, and Shahidur R. Khandker. 2009. *Handbook of poverty and inequality*. Washington, DC: The International Bank for Reconstruction and Development/The World Bank.

Joumard, Isabelle, Mauro Pisu, and Debbie Bloch. 2011. Tackling income inequality: The role of taxes and transfers. *OECD Journal: Economic Studies* 2012 (1): 37–70.

Lubker, Malte. 2011. *The impact of taxes and transfers on inequality*. Travail Policy Brief no. 4. Geneva: International Labour Office. http://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---travail/documents/publication/wcms_160436.pdf (accessed November 22, 2016).

Maccabelli, Terenzio. 2009. Measuring Inequality: Pareto's Ambiguous Contribution. *History of Political Economy* 41 (1):183–208.

Malinen, Tuomas. 2012. Inequality and growth: Another look with a new measure and method. *Journal of International development* 25 (1):122–138.

Ostry, Jonathan D., Andrew Berg, and Charalambos G. Tsangarides. 2014. *Redistribution, Inequality and Growth*. IMF Staff discussion note SDN 14/02. International Monetary Fund. https://www.imf.org/external/pubs/ft/sdn/2014/sdn1402.pdf (accessed November 2, 2016).

Perrons, Diane. 2012. Regional performance and inequality: linking economic and social development through a capabilities approach. *Cambridge Journal of Regions, Economy and Society* 5 (1): 15–29.

Piketty, Thomas. 2014. *Capital in the twenty first century*. Trans. Arthur Goldhammer. Cambidge: The Belknap Press of Harvard University Press. https://dowbor.org/blog/wp-content/uploads/2014/06/14Thomas-Piketty.pdf (accessed November 12, 2016).

Vadapalli. K. Diwakar. 2009. Barriers and challenges in accessing social transfers and role of social welfare services in improving targeting efficiency: A study of conditional cash transfers. *An International Interdisciplinary Journal for Research, Policy and Care* 4 (1): 41–54.

Weeden, Kim A., and David B. Grusky. 2012. The Three Worlds of Inequality. *American Journal of Sociology* 117 (6):1723–1785.