THE IMPACT OF REDISTRIBUTION ON INEQUALITIES AND ECONOMIC GROWTH

NERĂU VLAD

PHD CANDIDATE, THE BUCHAREST UNIVERSITY OF ECONOMIC STUDIES

Abstract:
The article analyses the impact of inequalities and redistribution on economic growth. The analysis starts from testing the European Union on accomplishing the dual objective of economic growth and social equity. In order to test this hypothesis, I proposed a model which correlates the three variables above mentioned with foreign investments per capita. The model contradicts a vision of previous research, which considers that redistribution negatively affects economic growth and proves that a sustainable economic growth can be obtained by reducing inequalities. In addition to empirical evidence, the article analyses the social impact of inequalities. They do not only affect economic growth (stricto sensu) but also the development of society (lato sensu), by causing a series of desequilibriums which undermine social consensus. The social consensus is greatly needed to adjust to major shocks EU confronts with nowadays.

Keywords: Panel Cointegration, Redistribution, Inequalities and Economic Growth

JEL Classification: C23, O11, O15, O47

1. Literature review

It is well known that wealth distribution and inequality affects the capacity of a society for turning income into welfare. Atkinson defines inequality as percentage of lost potential welfare, considering the adversity of society towards inequalities. My fundamental question regarding welfare is: does inequality only affects the welfare of a society generated from a given level of income or does it influence the distribution of income? In other words, „does the way in which the slices of the cake are sliced influence the size of the cake”?

The answers to the above question, according to previous studies, are divided into 2 categories: vision of those who claim that redistribution reduces stimulus for supra-productive persons (persons who pay more than they get) to generate added value, thus causing the reduction in economic growth ratio; And the vision in accordance with the main idea behind the Scandinavian model which claims that redistribution influences the level of social inclusion of less privileged persons (by education, public health, etc) so that the whole society can benenit from their skills.

Another conclusion is that inequality reduces the income growth for the poor, yet not for the rich. Barro studies a panel of countries and reaches the conclusion that there is a certain amount of correlation between inequality and economic growth. According to his studies, inequality has the tendency of slowing down economic growth in poor countries and encouraging it in rich countries. Likewise, Forbes studies a panel of countries and comes to the conclusion that for a short and medium period of time, an increase in the level of income inequality has a positive impact on economic growth. Barenjee and Duflo argue that the economic growth ratio is a U-shape inverted function of net modifications of inequality, aspect which might explain the differences between the results obtained by previous authors and the fact that the function is a non-linear one. Davis builds a model which emphasis both the negative relation between economic growth and income inequalities between countries, and the positive relation observed within the countries in course of time.

The relations between the increasing inequality, the risk of a new crisis and a sustainable economic growth have progressively drawn the attention of economists. Rajan emphasises the way in which inequality intensifies the

1 Atkinson, A.B.: On the measurement of inequality. J. Econ. Theory 2, 244–263 (1970)
level of leverage effect and of financial cycle, thus facilitating the conditions of a new crisis. Stiglitz\(^7\) emphasises the role of political-economic factors (especially the influence of the rich) allowing for financial excesses and speculative bubbles before the appearance of crisis. Berg and Ostry\(^8\) emphasise the fact that higher income equality can cause a sustainable economic growth. My study is based on the relatively shy consensus of previous studies regarding economic growth, which claims that inequality can undermine progress in health and education sectors and can cause political and economic instability. But, most importantly, it can undermine the social consensus, the most needed aspect in order to face major shocks, and, at the same time, it can reduce the ratio and sustainability of economic growth. My study also intends to analyse the sustainability of the dual EU objective of „economic efficiency” and „social equity”. Is there a compromise needed between these two apparently contradictory objectives or can they be accomplished together? Although the negative effect of redistributive politics represents the main aspect in the book written by Arthur Okun\(^9\) which emphasis the efficiency „leaks” born in the effort of reducing inequalities. In order to avoid wrong conclusions, and accept an argument like „the treatment for inequality-redistribution can be worse for a patient (economic growth) than the disease itself”, we have to firstly check if interventions for diminishing inequality invariably lead to a loss in economic efficiency. To this aim, I proposed an econometric model which takes into account GDP per capita, FDI per capita and an indicator which measures the level of inequalities.

2. Research Methodology

A relatively common practice consists of a panel cointegration technique to estimate a bivariate long-term relation. Galor and Moav\(^10\) emphasize the impact of inequality on development process in the long run. In their model, inequality stimulates economic growth in the early stages, when the main source for growth is represented by accumulation of physical capital. In the advanced stages of development, when the main cause of economic growth is human capital, the effects of inequality are reversed. Deininger are Squire\(^11\) find a negative correlation between the inequality of initial assets (land) and economic growth in the long run.

In my opinion, it is not reasonable to assume that changes in income per capita are mainly caused by changes in income distribution. But, it is more reasonable to assume that the ratio of investments is an influential factor of income per capita in the course of time, and inequalities represent the element of interest in this study. Investments can also function as a proxy for some unobservable factors and fluctuate in time and may have an impact on both inequality and income. In conclusion, investments should be included in analysis in order to control the omitted non-stationary variables.

The procedure of testing the hypotheses mainly consists of analysing the transmission channels of inequalities generated by the market in order to produce economic growth. Figure 1 shows both direct and indirect effects of inequalities and redistribution of economic growth. In order to econometrically test the impact of inequalities on economic growth, I proposed the following model:

\[ \log(\text{GDPpc$}) = C1 + C2*\text{EHII} + C3* \log(\text{FDIpc$}) \]

Where:

- \( \log(\text{GDPpc$}) \) – represents GDP per capita expressed in dollars, the data I used are found on World Bank site.
- \( C1 \) – is the constant
- \( \log(\text{FDIpc$}) \) – represents the net Foreign Direct Investments per capita, expressed in dollars, the data I used were found on World Bank site.
- \( \text{EHII} \) – represents the estimated Household Income Inequalities, it has the form of Gini Index and it is expressed in percentages. The data were taken from the site of Texas University in the project regarding Inequalities (found on http://utip.gov.utexas.edu/data.html). The great advantage of this set of data is the fact that they are completely comparable in space and time. The data set combines information from United Nations Industrial Development Organization (UNIDO) with information from the data set of Deininger and Squire of World Bank. Other relevant information is taken into consideration, such as the employment ratio in industrial sector for the total population, the degree in which a country became urbanized and population growth.
- The data set covers a period of 17 years, 1991-2007, and 22 countries are taken into consideration, all EU members (Croatia, Estonia, Luxemburg, Poland, Portugal, Sweden) were excluded from the analysis because the lack


of a complete data set. In the proposed model, human capital was not included as independent variable as, in this case, I would have omitted the effects of inequalities which operate via human capital.

GMM (Generalized Method of Moments) was used for estimators’ soundness. In order to be insured against heteroscedasticity and autocorrelation, I used the White cross-section ponderation matrix. As instruments, I used Log(FDIpc)(-1) and EHII(-1) as self-regressive variables.

3. Empirical Analysis

Model and data

A methodological problem of cross-country approach used in most studies is that changes in levels of inequalities can be a consequence of economic growth, as Kuznets\textsuperscript{12} hypotheses suggests. Recent studies attempt to correct this problem of endogenity by using methods which use instrumental variables. It is known that regressions with instrumental variables may lead to false results when instruments are weak or not valid. Similarly, it is also known that variables which can be considered valid instruments are hard to find. Another problem of cross-country analyses or panel analyses is the use of the rate of income increase as a dependent variable, whereas the inequality level is used to explain this variable. The ratio of income rises are somehow stable in time whereas inequalities have abruptly increased in most of the countries, beginning with 1980. To conclude, the use of time-averaged data, although a common practice, should be used with skepticism if we want to eliminate de effects of business cycles. There also economists (Ericsson et al.)\textsuperscript{13} who demonstrated that means can induce false simultaneous correlations between time-averaged data, even if the original series was not correlated. Both the sign and the magnitude induced by correlation can differ from the base data.

The model I proposed tries to overcome these problems by implementing a technique of etergenous panel cointegration in order to examine the long term effect of inequality on income per capita for 22 EU countries, for a period of 17 years, in 1991-2007, with annual observations and not with time-average data characteristic of previous research. The etergenous panel of cointegration has sound estimators and eliminates a variety of problems which many times have an impact on empirical work. They include omitted variables and endogenous regressors. Moreover, the methods of panel cointegration can be implemented for a shorter period of time in comparison to a model based on time series. Despite the fact that there are certain limitations of econometric models, I consider that the results I obtain can contribute to clarifying the relation between the economic growth and the inequalities and this way establishing a common ground for the fundamental question whether inequalities have an impact on economic growth. Before preceeding to econometric calculations, I would like to focus attention on the channels by which economic growth, redistribution and inequalities correlate.

 labour market and capital. (Saint-Paul and Verdier, 1993, 1997). In such cases, the politics of redistribution may increase both equality and economic growth. All studies so far have ignored general effects of redistribution, both the direct ones (line D figure 1) and the ones which operate with the help of inequalities (line C and E figure 1), mainly because the problems of inequalities and redistribution have not been analysed simultaneously.

In my opinion, a useful approach to overcome this problem is to examine more carefully the empirical evidence regarding specific elements of redistributive politics in different countries and environments. By doing so, we may benefit from their best practices. In order to back up my hypothesis that redistribution does not necessarily influence economic growth in a negative manner, I elaborated a chart in which I took into consideration 2 clusters of EU countries. The chart underlines the inequality generated by the market and the inequality felt by population as a result of redistribution.
Figure 2 compares net inequality (on vertical axis) with gross inequality (or the one generated by the market, on the horizontal axis). Each dot in the chart represents the position of a country following redistribution. A country situated on the line drawn at 45 degrees would have an identical net inequality with the one generated by the market. A country situated considerably below this diagonal would have a net inequality much more reduced than the one generated by the market (a more powerful redistributive policy). As one can notice in the chart, all countries are below the line drawn at 45 grades, which indicate a certain amount of redistribution. On average, the distance from the line grows in direct ratio to the size of inequalities generated by the market, aspect which proves the fact that countries with a higher inequality generated by the market have the tendency of redistributing more. Grouping the countries in 2 clusters according to the distance they have from the diagonal line (that meaning in accordance with the redistributive politics) we shall have: Cluster 1 (Bulgaria, Ireland, Italy, Spain) which redistribute less and Cluster 2 (Belgium, Denmark, Finland, Holland) which redistribute more. The most important aspect to be noticed following this division into 2 categories is the fact that an increased redistributive policy not only brings damage to economic growth in the long run, but on the contrary, it gives it a beneficial impulse. Furthermore, it increases the capacity of these countries of turning the economic growth into general welfare.

4. Causality and effect

Cause and effect are also very difficult to establish in terms of the relation between market inequality and redistribution. A significant part of previous research regarding redistribution states, that market inequality leads to redistribution, by using economic policy. (for example Meltzer- Richard effects). Caminada, Groudswaard, Koster (2012), OECD (2011), and Paulus and others (2009), assumed that redistributive fiscal politics reduce net inequality, considering the inequality generated by the market. IMF (2014) made the same assumption in their analysis of fiscal redistribution. Under any circumstances, redistribution undoubtedly influences behaviour in ways in which they can change job offers and salaries and as a result, inequalities generated by the market. There are very few proofs to clarify the impact of these effects.
Redistribution which takes from the rich and gives to the poor reduces the job offers from the rich (as they have higher taxes and for the poor (who get advantageous incentives which diminish their interest for work). What we should bear in mind from previous research in the field is: first of all, the critical value of using data which are adapted to the analysed problem. For instance, the analytical basis for the effect of inequality on economic growth refers to net inequality (after taxes) which affect both stimulents and perspectives for stability and social consensus, although a lot of studies have not attached a great deal of attention to this division because these studies bring together pre-taxation data with post-taxation data. Secondly, we have to be aware of the fact that there are complicated inter-connections between analysed variables – economic growth, inequality, and redistribution - which imply the necessity of a simultaneous empirical analysis. Thirdly, we have to remain open-minded when confronted to the results of empirical analyses: theory may be interpreted in many ways.

5. Results of the model

This part of the study examines the long-term effects of inequalities on GDP per capita. GMM method is used (Generalized Method of Moments) in order to have sound estimators. White cross-section ponderation matrix is used in order to insures ourselves against heteroscedasticity and self-correlation. Autoregressive variables Log(FDIPC)(-1) și EHII(-1) are introduced as instruments.

Dependent Variable: LOG(GDPPC$)
Method: Panel Generalized Method of Moments
Date: 04/10/14 Time: 13:08
Periods included: 16
Cross-sections included: 22
Total panel (balanced) observations: 352
White cross-section instrument weighting matrix
White cross-section standard errors & covariance (d.f. corrected)
Instrument specification: C LOG(FDIPC$) (-1) EHII(-1)
Constant added to instrument list

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>8.973111</td>
<td>0.605540</td>
<td>14.81837</td>
<td>0.9999</td>
</tr>
<tr>
<td>EHII</td>
<td>-0.036793</td>
<td>0.011260</td>
<td>-3.267601</td>
<td>0.0012</td>
</tr>
<tr>
<td>LOG(ISDPCS)</td>
<td>0.316248</td>
<td>0.054171</td>
<td>5.837990</td>
<td>0.9999</td>
</tr>
</tbody>
</table>

R-squared 0.336380 Mean dependent var 9.451915
Adjusted R-squared 0.332577 S.D. dependent var 0.968366
S.E. of regression 0.791116 Sum squared resid 218.4265
Durbin-Watson stat 0.341507 J-statistic 2.34E-21
Instrument rank 3

One argument against the obtained results may arise because of the value of coefficient $R^2 = 0.33$, value considered relatively reduced from the statistical point of view. Yet, this value is knowingly accepted, and the explanation of raising GDP per capita by using an econometric model with only 2 independent variables can be a simplified representation of reality at its best. In my opinion, this approach is preferable to a fallacy of misplaced concreteness. Forcing the validity of statistical tests to adjust to an ongoing change like the economic process would require the necessity of new variables and so on. Using econometric models in economic science is nothing like the art of a wood-carver who chooses the perfect chiesel to prove he can carve a splendid Madonna out of every woodblock.

Another possible counter-argument to this model is that unlike other models, it does not include a variable to take into consideration human capital (education, for example). Yet, including human capital in order to estimate inequality long-time effects on GDP per capita would rule out the effects of inequalities which operate by its impact on this variable. If equality facilitates the accumulation of human capital and consequently it stimulates economic growth, as proven in a study of Galor and Moav\(^{14}\), then we leave out the effect of increasing inequalities which operate via human capital by including this variable in the regression.

The results indicate the fact that an increase of inequalities by a percentage would lead to a GDP decrease per capita by app. 3.6 percentage, whereas an increase of FDI per capita by 1% would lead to a GDP increase by 0.31 percentage. Although relatively increasing or decreasing values of inequalities have a significant impact on GDP per capita, we have to take into account the fact that they have known just an average modification of 3 percentages in the period 1991-2007. On the other hand, modifications of FDI per capita are significantly higher.

Results are not consistent with the fact that on average, there is a major compromise between reducing inequalities by redistribution and economic growth. If such a compromise had ever existed, then redistribution shouldn’t have had only a simple negative effect on economic growth, but a significantly more negative effect than that of inequalities. If this the case, then redistribution which reduces inequalities would have been on average detrimental to economic growth, considering both direct effect of an intense redistribution and the resulted effect of reducing inequalities. The results obtained after solving the econometric model and the ones indicated by chart 2 reject the hypothesis of a compromise between redistribution and economic growth. The coefficient of inequalities is obviously negative, whereas redistribution has positive long-time implications, as the chart suggests. This situation emphasizes the fact there is a win-win situation rather than a compromise, in which redistribution has a pro-economic growth effect.

As figure 1 show, the total effect is represented by the combined lines C, D and E. As far as the estimation of direct effects (lines D and E) is concerned, we can’t trust the bilateral significant causality between redistribution and inequality generated by the market (where line A should have had arrows at both sides), as the varied technique I used isolates the effects of each variable while keeping constant the others. Nevertheless, the calculations of redistribution general effect implies that redistribution does not have effects on market inequality, for instance changing the relative job offer for various education levels and consequently for corresponding remunerations.

6. Social implications

My objective for this part of the study is to demonstrate the ultimate aim of economic science, namely its social implications. I shall resume here to the aspects strictly correlated with inequalities, redistribution and economic growth.

Firstly, my study attempts to correlate our increasing inequality with the decline of chance for equality. This pattern shall easily be noticed across all countries, and not only in EU countries considered in this study – countries with a higher level of inequality regularly prove less equality of chances. As „The curve of Great Gatsby”15 suggests, what’s concerning about this relation is the future of globalization, in our specific case, Romania’s future as part of EU. The increasing trend of inequality in the latest years undoubtedly demonstrates that a future chance of equality will be progressively diminished. If this the case, and the level of inequalities progressively higher, then most of social, economic and political problems Europe confronts nowadays, as result of inequalities, will get worse.

So far, considering the results, it is more and more clear that economic science and eventually society is increasingly divided, and middle class progressively getting smaller. The worst problem is that, this division does not only apply to the income level. It may as well be noticed with the help of other more relevant social indicators such as: health, education, crime etc. As inequalities of family income lead invariably to inequality of educational chances, it is obvious that inequality of chance starts long before one begins school education. Let us just consider the conditions the poor people confront with as soon as they are born, such as nutrition, environmental pollution, conditions which invariably affect them for a lifetime16. Economic science provides a special name for this tragic lack of social mobility: „Trap of Poverty”. Work motivation is negatively affected by people’s distrust in equality of chances, this being a real negative psychological stimulus. On the contrary, for instance, in Northern countries, where equality of chances and social mobility are higher, work productivity is better. As a conclusion, if motivation is replaced by alienation, we shall have social division instead of social cohesion.

Another problem caused by inequalities that can be reduced by redistribution, still avoided by economic science as it is hard to quantify in numbers, is the psychological problem. Depression caused by unemployment is one example in point. People who are fit for work and willing to work do not find a job will suffer inevitably not only because their income is lower but also because they feel they are worthless, they mean nothing. Mass unemployment is a social tragedy, deepened by the recent crisis and with a greater impact in EU countries with higher level of inequality and a lower level of redistribution. (Greece, Spain, Italy).

15 Krueger,, The Rise and Consequences of Inequality”, refers to the systematic relationship between inequality and a standard mobility indicator (elasticity of income between generations)
7. Conclusions

This study analyses the long term relation between inequalities and economic growth by using techniques of panel cointegration. The benefits for using panel cointegration are eliminating some problems which affected previous studies such as: omitted variables, countries’ heterogeneity, endogeneity and effects induced by series of average-time data type. By implementing series of annual data for 22 countries in 1991-2007 period, I reached the conclusion that inequalities have a negative impact on economic growth in the long run. To be more specific, redistributive policies do not only affect the way in which income is distributed, but they can also increase the quantum of this income. Redistributive policies should facilitate the capital accumulation for people situated at the lowest part of the income distribution pyramid. In a world in which human capital has become more important than physical capital, inequality can create barriers against capital accumulation and consequently cause damage to economic growth. By interpreting the results in the context formulated by Golden and Katz who demonstrated the fact that success in the 20th century of United States of America was greatly due to the fact that they applied public education at the national level long before European countries follow their example, makes plausible the explanation concerning the negative impact of inequalities on economic growth.

Yet, we should still be cautious when defining economic policies by using the analysis of a cross-country regression. We have to be aware of the fact that certain economic policies are susceptible to have different effects in different countries and different periods, and it is difficult to establish a completely trustworthy causality. However useful micro-economic analyses might be, they leave one question still open: What is the overall relation on the whole? What is there to understand if we look the forest behind the trees? The conclusion of this study is: the hypothesis that there is major compromise between redistribution and economic growth does not hold ground (at least even the best available macro-economic data do not back up this theory) and the explicative model of economic growth should be reconsidered so as to take into account this invalidation.

Likewise, it is also a mistake to believe that economic science should focus on economic growth leaving inequalities to be solved by default. The mistake stems from the fact that inequalities are disagreeable from the ethical point of view but also from the fact that a pronounced inequality leads to a weak and unsustainable economic growth. Secondly, there are surprisingly few empirical proofs to back up the disruptive effects of redistribution on economic growth at the macro-economic level. We have to underline the fact that both the proofs in this study and the historical ones back up the hypothesis that extreme redistribution beyond a certain level, can have negative effects on economic growth. Average redistribution, as well as the decrease of inequalities associated with this redistribution, is at the same time associated with a more evident and long-lasting economic growth.

Additionally, we should under no circumstances neglect the over-interpretation of the results we obtain, especially if we use them to set directions for macro-economic decisions. It is very difficult to objectively get from simple correlations to sound statements about causality. I did not analyse in this study possible effects of redistribution on inequalities generated by the market. I also have to mention the uncertainty caused by the lack of reliable data, especially redistribution data. My study of redistribution analyses only direct taxes and subventions, as a result I did not properly emphasize the direct redistributive effects of public authorities in educational or health sectors, which seem to be more favourable to growth than the aspects considered in this study. However, it is known from previous experiences and economic principles that beyond a certain point, redistribution is harmful to economic growth and such extreme equality can not be beneficial to economic growth.

Overall, a last important conclusion should be underlined: extreme prudence attached to redistribution issues so far, and consequently lack of action, is less likely to be adequate in most cases. On average, in different countries and in the course of time, the measures taken by governments regarding redistribution seem not to be favourable to economic growth, except for the fact when they were extreme. Reducing the inequalities led to both a higher level of social development and to a more sustainable economic growth. These conclusions should initiate more substantial research. Even taking into account the results regarding average effects, it is still important to attempt to make redistribution more efficient. A deeper analysis of this mechanism would help us better understand the situation, and suggestions for macroeconomic policies would better match reality and the final social goals of EU.

8. References and Bibliography


11. Krueger A„ The Rise and Consequences of Inequality”